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The British Aluminum Company has started its works at Foyers in Scotland. It has 14,000 H. P. derived from the beautiful Falls of Foyers on the Caledonian Canal, and now uses 3,500 H. P. and will make about 6,000 pounds of aluminum per day. Works in Ireland have also been started by the same company to make alumina from bauxite. Not content with this, the company has purchased in addition a water power in Norway and now owns 50,000 H. P.

The works of the Cowles Syndicate Company, owned by the British Aluminum Company, near Stoke-on-Trent, are now being used as a rod and wire mill and foundry for working aluminum products.

The figures of copper production and export for the first six months of this year, although more or less anticipated by the monthly statements, make a wonderful showing. The importance of the foreign market to take our surplus product never found such an illustration before, as our home market would have been entirely swamped by the home output. The total increase in the United States production was 11,668 long tons or 14.6 per cent., and the increase of exports, far in excess of the increase in production amounted to 74.1 per cent. The detailed figures will be found in our metal market report under copper. The stocks in sight in England and France are placed at 30,729 tons on the 30th of June, and the quantity afloat from Chile and Australia 5,550 tons, making a total of 36,279 tons, as against 36,901 on May 31st, thus showing a small decrease of more than 300 tons during the month, and a decrease of 22,236 tons as compared with July 1st, 1895.

For many reasons mining operators in this country should thank their stars that they are allowed to carry on their business under such favorable conditions, compared with those existing in South Africa and elsewhere. There should not be the slightest feeling of envy for all the wealth being extracted in the Transvaal, or for the fabulously rich veins being worked in West Australia, where in one case the tailings, owing to lack of water for proper treatment, average 4 ounces in gold.

A correspondent of our London contemporary *The Statist*, has prepared a statement showing to what extent the Transvaal Government could help the mining industry without hurting itself. In the first place, by direct and indirect taxation, by far the greater portion of which is borne by the mining community, the normal surplus of the Government is about \$7,500,000 upon a total revenue of less than \$20,000,000. Then comes the dynamite monopoly, which imposes an unnecessary tax on the mine owners of about \$2,405,000 a year, and the exorbitant charges of the Netherlands Railway, amounting to about \$4,750,000 a year in excess of 10 per cent. dividend on the share capital of the company. Altogether a good case is made out that were the miners treated in a fair spirit, they would be in position to earn a satisfactory dividend on the issued capital of the Witwatersrand mines, in addition to the dividends they are now paying.

The course of prices for copper shares ought to be governed almost entirely by the price of the metal, but unfortunately the question of mismanagement and speculation on the part of those who should act only as trustees for the stockholders, interfere with this natural result.

To take the active shares on the Boston market, for example, we find at the beginning of the year, with Lake copper at 10 cents and on July 16th with Lake at 11 1/2 cents, the prices were as follows:

	January 3.	July 16.		January 3.	July 16.
Atlantic	\$15.50	\$17.50	Old Dominion	\$17.00	\$12.75
Boston & Mont	58.00	83.00	Osceola	24.50	23.00
Butte & Boston	13.00	1.50	Quincy	121.00	112.50
Cal. & Hecla	295.00	303.00	Tamarack	115.00	77.00
Franklin	11.00	6.00	Wolverine	6.00	6.50
Kearsage	11.00	10.00			

There is great irregularity in these prices, yet good reasons can be given for the large depreciation that has taken place in some of these properties: Butte & Boston, Old Dominion and Tamarack, for example.

A great contrast is presented by the price of the copper companies' shares dealt in in London and Paris, where the improvement in value is uniform.

	January, 1896.	July, 1896.		January, 1896.	July, 1896.
Anaconda	4 3/4	4 7/8	Mason & Barry	4 3/8	2 3/4
Cape Copper	1 1/2	2 1/2	Namaqua	1	2 1/2
Copiapu	1 1/2	2 1/2	Rio Tinto	1 1/2	2 1/2
Libiola	2 1/2	3	Tharsis	4 1/4	6

These prices require no comment.

Resuscitation in Case of Electric Shock.

We have endeavored before to impress upon mine superintendents and others closely associated with electric power plants, the importance of knowing just what to do and do promptly in case of accidental shock to any of their employees. A recent article by Professor Darin, published in *L'Eclairage Electrique*, states that in experiments made on animals as well as in 26 executions carried out in New York State, it was found that after the passage of the current the physicians declared the idea absolute; in the autopsies organic lesions and intercranial effusions

of blood were found in only two cases, there being no organic alteration in the other cases. From this the author concludes that death was due to stoppage of respiration and syncope; and that when the lesions do not exist, death is only apparent and respiration would be possible. In other words, in but two cases out of 26, according to this author, prompt and intelligent measures to resuscitate would doubtless have been successful. If this is so, under the conditions above where a high voltage and best contacts possible are obtained with the object of execution, it would seem that any ordinary case of accidental shock ought not to prove dangerous if prompt action is taken, unless the victim is physically unsound.

Amendment of McArthur-Forrest Patents Refused in Australia.

We are not astonished at the Australian refusal to amend the McArthur-Forrest cyanide patent, owned by the Australian Gold Recovery Company, Limited. The application came before the Commissioner of Patents at Melbourne, "for leave to amend the specification." The desired amendment is to insert the following words by way of preamble to the claim: "We do not claim generally the use of solutions of any strength, but" (here follows the existing claim) "the process for obtaining gold and silver from ores and other compounds consisting in treating such ores, or compounds, with a dilute solution containing cyanogen or a cyanide, or other substance, or compound containing, or yielding, cyanogen substantially as specified."

The argument taken by counsel for the objectors and sustained, was that the desired amendment would make the specification substantially different from the invention claimed by the specification as it now stands. The counsel further submitted that the amendment was too wide and indefinite, no indication of the strength of the solution being given.

On this point with reference to the evidence laid before the Commissioner by the McArthur-Forrest people, he states in his decision, "I do not think—with great respect for the opinions of Prof. Dewar and Mr. Blackett—that the amendment discloses any such "exact proportions" as the mining community has a right to expect in a claim of this kind. . . . "The verb to dilute simply means to weaken, and on the whole the proposed amendment is to my mind wanting in certainty."

Turning to another aspect of the case the Commissioner quotes from a decision by Lord Westbury in a House of Lords appeal case, to the effect, that it was never intended that an amendment of a patent should convert a bad specification into a good one.

"It seems to me," says the Commissioner, "that the object of this present application is to amend the specification—not by correcting and explaining what was known, but imperfectly stated originally—but by introducing subsequently acquired knowledge" . . . "and there is no doubt in my mind that the amendment is the outcome of subsequently acquired knowledge."

One important statement made by the Commissioner was, "I do not think persons legitimately engaged in mining pursuits should have a bad patent hanging over them, and possibly deterring them from obtaining the full advantage of their labors." "If these patentees knew originally what they now desire by way of amendment they either wilfully or inadvertently suppressed what they were bound to disclose."

"I have come to the conclusion that it is my duty to refuse this application."

So long as the South-African suit is not settled, and there remains any chance of further litigation in this country, it is not likely that the McArthur-Forrest people will sit down and be satisfied with this decision, as a quiet acceptance of it, as final, would be most injurious to their interests and there are many courts of appeal from a decision by a Commissioner of patents, finally ending with the House of Lords.

Exit Merced.

Merced stock with the recent assessment of \$2 a share paid is selling at \$3.50 a share, or \$1.50 for the stock that was going at \$50 a share, and which was being boomed to \$100 when the *Engineering and Mining Journal* exposed its worthlessness in September last.

The mill has been closed after demonstrating that the ore was about \$1.65 to \$2 a ton, and costs \$4 or \$5 to mine and mill, so this brilliant example of Bigelow financial and mining enterprise has probably ended its short but merry life.

It will be remembered that in September last we stated that the ore in this mine ran from nothing to five dollars a ton. The mill returns have confirmed the accuracy of this estimate; they are as follows:

MILL RETURNS OF THE MERCED MINE.				
	March.	April.	May.	June.
Tons milled.....	1,285	2,303	2,280	2,873
Yield in free gold.....	\$1,630	\$8,700	\$5,101	\$3,400
Yield gold from sulphurets.....	505	1,687	1,432	1,307
Total yield per ton.....	1.67	4.51	2.82	1.64

The returns for March and April were published in May, and we then

* Counting that 90% of the assay value of the sulphurets will be recovered.

pointed out the probability that the comparatively high return (\$4.51 per ton) in April was due to the selection of the ore, apparently with the double object of ascertaining the best the mine could produce, and of stimulating the price of the stock while insiders were unloading.

The mill returns have since been declining and have now reached what is probably near an average grade. The total amount milled in four months, including what appears to have been selected ore, has been 8,741 tons, producing (on the assumption that 90 per cent. of the assay value will be recovered from the sulphurets), \$23,761 or an average of \$2.72 per ton. The ore opened, by a very large expenditure during more than a year, being now exhausted, and it being quite clear that there are no dividends in \$1.64 ore which has cost probably more than double that amount, the mill has been closed, or as the treasurer of the company, Mr. Thomas Nelson, euphoniously expresses it:

"This result (\$1.64 per ton) was obtained from rock taken from the spur vein, from which all our other mill returns have been made. It is thought that we have sufficiently tested the upper levels of this part of our property, which is the only place at present where there is sufficient development to furnish a constant supply of rock to the mill. We shall therefore stop the mill and confine our attention to the deeper development of this portion of our property, and sampling from other parts, using the mill for this purpose when necessary."

This probably means that as a little rich ore can be accumulated, the mill will be started up and a flurry made in the stock to help insiders to make a speculative turn.

The \$1,200,000 represented by the stock or the much larger amount, probably \$2,500,000 or \$3,000,000 paid by the present stockholders, may be considered as permanently sunk, as much so as the money invested in any of the numerous wildcat enterprises floated by the unscrupulous adventurers who have been such a curse to the mining industry. It is infinitely to be regretted that Mr. A. S. Bigelow, a gentleman who not only enjoyed a high reputation for upright dealing, but who a few years ago justly and emphatically denounced the policy of secrecy in mine management should have so fallen from grace as to adopt like methods which have brought about the present scandal.

It remains to be seen whether Directors or Trustees of stockholders have any responsibility in such utter failures as that of the Merced, the Butte & Boston, etc., and we shall be pleased to record the final answer to this interesting and important question.

NEW PUBLICATIONS.

THE DYNAMO, HOW MADE AND HOW USED. By S. R. Bottone; ninth edition; illustrated. London: Swan, Sonnenschein & Co., Lim.; 1896. New York: Macmillan & Co. Pages, 113. Price, 90c.

The interest taken by amateurs in the manufacture of dynamos has made it necessary to issue a new edition, the ninth, of Bottone's little manual. It is intended to guide and aid the student who desires to add to his theoretical knowledge some practical experience in making and operating a dynamo electric machine of his own. It is not, however, simply a book of rules and directions, but discusses the principles underlying the construction of the machines, and combines theory and practice. Each part of a dynamo is taken up separately, and illustrations and diagrams are liberally supplied. The present edition contains 20 new sections, treating more particularly of errors into which the amateur constructor is apt to fall.

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.

United States Geological Survey: Fifteenth Annual Report, 1893-94. Pages 755; illustrated. Sixteenth Annual Report, 1894-95: Part 11., Papers of Economic Character: Part 111., Mineral Resources of the United States, 1894; Metallic Products, and Part IV., Non-Metallic Products. Pages 598, 646, and 734, illustrated, respectively.

United States Geological Survey: Bulletins No. 123—A Dictionary of Geographic Positions—Gannett. Pages 183. No. 124—Revision of the American Fossil Cockroaches, with Descriptions of New Forms—Swider. Pages 176, with plates. No. 125—The Constitution of the Silicates—Clarke. Pages 169. No. 126—A Mineralogical Lexicon of Franklin, Hampshire and Hampden Counties, Massachusetts—Emerson. Pages 180. No. 128—The Bear River Formation and its Characteristic Fauna—White. Pages 108, with map and illustrations. No. 129—Earthquakes in California in 1894—Perrine. Pages 25. No. 131—Report of Progress of Hydrography for the Calendar Years 1893 and 1894—Newell. Pages 126. No. 132—The Disseminated Lead Ores of Southwestern Missouri—Winslow. Pages, with colored map and illustrations. No. 133—Contributions to the Cretaceous Paleontology of the Pacific Coast: The Fauna of the Knoxville Beds—Stanton. Pages 132, with plates. No. 134—The Cambrian Rocks of Pennsylvania—Walcott. Pages 43; illustrated.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested. Letters should be addressed to the MANAGING EDITOR.

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

Trail Creek Mines.

Sir: It is commonly supposed that the Trail Creek mining district is situated altogether in British Columbia. It is true that prospectors had located up to the international boundary line in this district, West

Kootenay subdivision of British Columbia, in which has been developed during the past 12 months marvelous deposits of gold ore. The great War Eagle and Leroy mines are in this district.

Five miles, south of these noted producers and dividend payers just south of the boundary line in Stevens County, State of Washington, U. S., and seven miles north of Northport on the Columbia River on the south slope of Grouse Mountain, are several groups of gold mines, prominent among which are the Grand Prize group, the Daisy B., the Susie D., Spokane, and Tessie claims.

The Trail Creek District covers in fact not only West Kootenay, B. C., but also a large portion of the former Colville reservation, Stevens County, Wash., U. S. The reservation has been long known to contain valuable deposits of gold, but as it was on the lands set aside by the United States Government for the Indians, no mining could be done then until a treaty was made and the land thrown open to the public in March, 1896. Prior to this, however, prospectors satisfied of the value of this district crossed the boundary line and took up the rich mines now known as the Trail Creek mines in British Columbia.

My object is to show that the gold deposits are on both sides of the international boundary line.

New York, July 14th, 1896.

S. E. RAUNHEIM.

Effect of Varying Acid in the Cyanide Determination of Copper.

SIR: Messrs. C. and J. J. Beringer in their "Text Book on Assaying" give experiments under the head of "Cyanide Assay for Copper" which show that varying the amount of nitric acid does not affect the results in a direct way. The statement is as follows:

"On adding nitric acid to the solution it combines with a portion of the ammonia to form ammoniac nitrate; it will be seen from the last series of experiments that the lessening of the amount of free ammonia will decrease the quantity of cyanide required; but, on the other hand, the ammoniac nitrate which is at the same time formed will increase the amount required. Under the conditions of the assay these two effects neutralize each other, and such differences in the quantity of acid as are likely to occur are unimportant."

Their experiments were made in the following manner: Dissolve 10 grms. copper in 50 cu. cm. of water and 35 cu. cm. nitric acid, dilute to 1 l. 100 cu. cm. = 1 gm. copper. 20 cu. cm. of this solution were taken for each experiment, and 30 cu. cm. dilute ammonia added and water to 200 cu. cm. The results given are:

Nitric acid.....	5' cu. cm.	10' cu. cm.	15' cu. cm.
Cyanide required.....	21.6	21.7	21.2

I have experimented under the same conditions excepting that 15 cu. cm. of stronger ammonia were used instead of 30 cu. cm. dilute ammonia and the cyanide solution of less strength. My results gave:

Nitric acid added...	None.	3' cu. cm.	5' cu. cm.	10' cu. cm.
Cyanide required...	33.3 cu. cm.	34.9	35.4	36.4

These results show the variation is important and too great to be neglected.

Should the cyanide solution be standardized with such a solution of copper nitrate without the addition of nitric acid equal to the amount contained in the regular assay, then the results obtained would be very inaccurate, as the above experiments show.

F. N. FLYNN.

ARGENTINE, KAN., June 15th, 1896.

A MINING INCIDENT IN MONGOLIA.*

On the section of the Siberian Railroad from Sretinsk to Khabarovska, 2,000 versts, the work is of less marked urgency than on any other part of the line, since regular communication is already secured by the Amour River. Moreover, the present political conditions make it quite possible that the present location, which is on the northern side of the great river, may be replaced by a shorter and much more direct line further to the southward. This line would run from Sretinsk to Vladivostok, or from Sretinsk to Port Arthur. In fact, the preparatory works on the section, and especially the borings and explorations for bridge foundations at all the river crossings, have been suspended for the present.

The navigation of the upper Amour is carried on by barges and tow-boats having a very light draft of water, since there are numerous sand-bars in the river, which make the navigation difficult. It takes five days to go down the Chilka and the Amour from Sretinsk to Blagoviestchensk, a modern mining town, the center of the famous auriferous valley of the Zeya, the richest gold district yet discovered in Eastern Siberia.

Blagoviestchensk is put down in even the recent geographies as a petty post station and landing. Actually it is a flourishing mining town of the American type, with regular streets parallel to, and with avenues at right angles to the river; it has a large theater, electric lights and many other modern appliances; even a Pasteur institute was established there. In 1895 the population was 30,000 and was rapidly increasing. It is the San Francisco, or rather the Denver, of Siberia.

Descending the Amour from this point, a little after passing the mouth of the Argoun River, one leaves at the right, and consequently in Chinese territory, the rich gold-bearing placers of Joulouga, situated some 30 versts (20 miles) south of the Amour. These placers six or seven years ago were the scene of a rush which resembled some of those witnessed in the early days of California or Australia. Some of the prospectors who abound in the Amour region discovered these placers and began to work them, in spite of the Chinese law which strictly forbids the opening of mines, for fear that the ancestral shades might be disturbed. The news spread and men thronged to the new placers from all quarters. The mines of the Zeya were almost deserted for the time, and the operators in that district were seriously embarrassed by the difficulty of obtaining labor.

No collection of men can live without some law, and as there were no government authorities at hand, the Joulouga miners set up a government of their own. It was a purely republican one, like some of the early American mining districts. The community was ruled by the short, simple

and convenient jurisdiction of Lynch law. It was efficacious, and after it was once established it is said that the two capital crimes—murder and the theft of gold dust—were unknown.

At last, however, the news of the discovery reached the ears of the government at Pekin, and troops were sent to establish order, levy taxes and put a stop to the impious labors of the miners. The still untouched parts of the placers were too tempting, however, and instead of carrying out the government programme the troops disbanded, officers and men alike going to work to wash out the yellow metal. The scandal was too great even for a Chinese administration; a second expedition was sent under a strict and incorruptible officer, who cleared out the Joulouga District with a merciless hand. The Russian miners were all expelled and driven across the Amour, while all the Chinese caught were beheaded, many being first subjected to frightful tortures.

Chinese law was vindicated, order reigned and the Joulouga was once more an uninhabited desert.

Nevertheless this curious history was not ended. Suspended for a short time, work was again resumed when the incorruptible general returned to Pekin. The placers are worked at the present day, though by a smaller number of miners than formerly were there. Presumably the ancestral shades have become used to the noise of the pick, the running of water through the sluices and the jar of the rocker, for they have made no further complaint to their devotees at Pekin.

Experts familiar with the country estimate that the Joulouga placers have yielded up to the present time a total of 700 pounds, or 11,500 kilograms of gold, worth about \$7,000,000.

PROGRESS OF THE MINING INTERESTS.

Written for the Engineering and Mining Journal by John F. Blainy.

We often hear remarks made about "the progress of the mining interests," and I propose now to refer to what that progress is, in this country. It is not in more active exploration; that is always active and has existed since the earliest days of mining, nor is it in greater activity in trying to introduce capital into the country. Nor is it in greater facilities for transportation. This last, of course, is a most necessary thing, but it absolutely follows successful mining and new camps. The opening of a mine creates the demand for labor, and if it produces material to be transported, transportation is provided. The true source of progress, therefore, lies in the vigorous and genuine attempts made to open up the veins in such way as to prove the true value of them. The men of this section* are learning, but too slowly, that a ten-foot hole proves very little and that the holes are not worth a thousand dollars a foot. There have been many cases in the mining world of mines paying from the "grass roots," and the prospector is continually looking for one, but he must do as the placer miner, who is content with the fine gold and does not abandon his claim if he does not find thousand dollar nuggets. Mining requires perseverance and a good many hard knocks, and inasmuch as many are beginning to fully realize this, they are progressing. Instead of the 10-ft. hole you can now see prospects with shafts 50, 100, and 150 ft. deep, some times two of them and connected by drifts. They will sort their ore and show you certificates of sale of the ore at the sampler or smelting works; the best proof they can possibly have of what their vein is worth.

Having progressed so far with much hard labor and hardships, they deserve a good reward and if they are not too exorbitant in their demands, they are likely to get it. This is the main line upon which progress has been made. Persons may foot up the total amount of ore shipped to the sampler and say, "That is a very small amount from a large mining district," but that is not a proper judgment. The large producers are apt to ship direct to the smelter thinking they can do better than through the sampling works. We should judge, not altogether by the quantity sent away, but by the large number of small shippers. This is also an evidence of the great advantage the sampling works are to the small producers. The miner sees his ore sampled and gets his money at once, whereas otherwise he must pay extra freight on less than car-load lots and wait perhaps weeks for his money.

The fact that so many small lots of gold ore can be shipped presents the strongest evidence that the ore is in the country and that it only needs continued activity and perseverance to get it out. Whilst the shipping ore is being produced and sold to provide the laborer with his food and tools he must let the lower grade lie until he can find some means of treating it. He is fortunate if near enough to a custom mill to have it worked for him. In former years this was in many cases worked in arrastras, but they are scarce now. Mills are more numerous and the cost per ton for treatment has been much reduced. You can hear complaints of owners of mills that they get very little to do, but as there are some which are busy as long as the supply of water lasts we are apt to look for an explanation in another direction, namely, does the miner get as good work done as he ought to have?

Another line of progress is that the large mines are handled in a better manner than they have ever been before. Their mine work is well done, and their equipments become more and more complete. These then become "object lessons" to the smaller and less experienced miners. They are in this way educated up to the knowledge of what constitutes a mine and still more of a well-equipped mine. The claim-owner is not nearly so much of a loafer about town as he used to be, and if he is producing ore that he can sell, he spends most of his time on his claim, where he ought to be. I have always noticed that when a man has something good to sell, the purchasers are hunting him; it is not so necessary for him to hunt the purchaser.

Another evidence of progress lies in the method of buying ores. A few years ago there was a "flat rate" at the smelter, which was for some ores a very high rate and for others rather low. There has been a very material drop in the railroad freight rates, which is of great advantage to the miner. This drop has been greater than the reduction in the cost of smelting, but the abandonment of the "flat rate" has been of great benefit, and has educated the miner up to a better knowledge of his ores. He is careful now to note the per cent. of iron silica and zinc and governs himself accordingly.

These now are the elements of progress, and they are producing their effect in every district. There is one yet to be learned, and it will come

*Translated and abstracted from *La Siberie et le Chemin de Fer Trans-Siberien*, by M. M. D. Levat and Th. Sabachnikoff.

* Prescott, Ariz., June 27th, 1896.

in time. We must look to the large mines to give us examples of it, and they are doing so to a greater or less extent. I refer to the development of large reserves in the mine. Some men well understand it, but there are large numbers who do not, and especially the small miner—he is too apt to gouge out the pocket as soon as he encounters it. He cannot understand that that is like a reserve in his bank account. To let it stand is providing against a "wet day." When this principle is fully understood and acted upon, we shall be well on the road to thorough success.

These elements of progress are visible all through the country and are very encouraging signs for the future. The claim owners are becoming much more self-reliant, and when they become entirely so the goal will be reached.

COAL DISCOVERED IN ONTARIO.

Written for the Engineering and Mining Journal by A. McCharles.

A most important discovery has lately been made in the Sudbury district. It is well known that lignite coal exists around James' Bay, coming down in one place to within 200 miles of the main line of the Canadian Pacific Railway. But no one had ever imagined that coal would be found to the south of the "Height of Land," that forms the backbone of northern Ontario from the Ottawa River to Lake of the Woods, and especially as Sir William Logan had declared over 40 years ago that there was "no coal in Upper Canada." as the Province of Ontario was then called. Of course at that time little or nothing was known of these great northern regions, except along the shores of the Georgian Bay and Lake Superior. Even after the building of the Canadian Pacific Railway, and until the publication of Mr. Bell's map of the nickel belt in 1892, the rocks of the Sudbury district were supposed to be too old for the existence of coal in any of them, being mostly of Laurentian and Huronian origin. But in the trough between the two main nickel ranges there is one oblong area of Cambrian formation, consisting of dark colored sandstones and black slates, about 10 miles wide and some 40 miles in length, extending in a northeasterly direction from the township of Trill almost to Lake Wabigoon. In this Cambrian strip, a few miles south of the railway and 15 miles west of Sudbury, a prospector looking for gold has discovered a bed of fine anthracite coal, very clean, compact and said to be equal in quality to the best Pennsylvania hard coal. The extent of the deposit has not been ascertained yet, but the outcrop is over 20 ft. in width, and a number of men are at work stripping along the strike of the ledge. There is every probability that other coal beds occur in the same locality, and though the matter has been kept very quiet, several parties have already gone out to explore around there. It is quite possible that coking coal may be found farther to the north, and in that event the Sudbury district would become one of the great mining and industrial centers of the world. In any case, if this coal deposit is of permanent depth and equal in quality to the surface samples it will prove of immense benefit to Ontario, which now has to import all the coal used in the province.

ELECTROLYTIC ZINC EXTRACTION.*

The special difficulty in the way of electrolytic zinc extraction over and above those which occur in the treatment of other metals, is that the price of common zinc is M. 30 per 100 km., and of pure zinc only M. 31; while the cost of electrolyzing zinc sulphate or chloride solutions with a current of 2.5 volts is M. 18.96 when steam-power is used, or M. 13.33 with water power. With a surplus of from M. 11 to M. 17 per 100 kilos. to pay for roasting, leaching, etc., the process cannot compete with the distillation method for ordinary ores. It may be applicable either to ores too poor to treat in the usual way, or to those containing much galena and silver, which give difficulty in mechanical preparation; or it may be applied to roasted pyrites containing too much zinc to render it useful in the iron industry; or, finally, to waste zinc products.

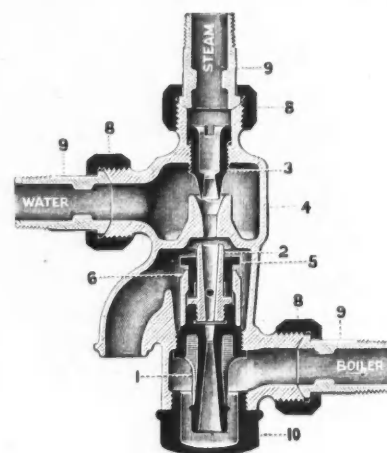
In practice the electrolyte is prepared with difficulty, as the anhydrous or basic zinc sulphate from the roasted ores dissolves very slowly, and is accompanied by iron, which interferes with the deposition of pure zinc, and is not easily removed. The ferrous oxide is not precipitated by the zinc oxide with which the ferric compound is ordinarily thrown down, nor is it completely peroxidized by blowing air through the hot solution, even for 24 hours (*Chem. Zeit.*, 1895, 19, 221). This solubility of interfering substances negatives the use of Luckow's process, in which the roasted ore is made the anode. But, as the treatment of argentiferous blende is the most desirable, it must be remembered that roasting at a low temperature leads to the deficient solubility of zinc compounds, while very strong roasting may lead to a loss of 70% of silver. Silver sulphate alone is very slightly volatile, but the presence of zinc compounds has been shown by Malagati and Durocher to increase the loss. The roasting of this mixed ore, followed by the leaching out of the zinc and the smelting of the residual silver-lead compounds, has been tried frequently, but with no success. A chloridizing roast which is successfully applied to the treatment of zinciferous burnt pyrites at Führfurt-a.-d.-Lahan and at Duisburg is not applicable to these ores by reason of the loss of silver, which may amount to 60%. After roasting, Ashcroft extracts zinc with ferric chloride solution (*Zeits. Elektrochem.* 1895, 2, 376). Heinzerling with magnesium chloride (*Chem. Zeit.*, 1892, 16, 1864), Hopfner with carnalite, and others with calcium chloride; but these substances do not appear to present any advantages. Alkaline zincate solutions have been recommended by Kiliani, Burghard and Hopfner, but no working results have been published.

Given a suitable solution, other difficulties arise during electrolysis. Unless the solution be constantly neutralized, the sulphuric acid formed at the anode soon causes a rough cathode deposit and a co-deposition of hydrogen. But if the solution be basic (and zinc sulphate solution readily dissolves a little of the oxide), a zinc sponge comes down, which prevents

the rolling of the metal, and oxidizes on re-melting. The same sponge is apt to deposit if the current strength be less than 150 amperes per square meter. Mylius and Fromm (*Zeits. anorg. Chem.*, 1895, 9, 144), and Nahnsen (*Berg u. Hütt. Zeit.*, 1891, 50, 383), consider that the sponge is due to the presence of oxygen, and that it contains oxide and basic salts; while others refer it to the formation of a zinc hydride. Copper, antimony and arsenic (the latter even in such small quantities as 0.04 per cent) interfere with the precipitation. The solution must be faintly acid; the best results are obtained with 0.016 per cent. of free sulphuric acid, but it is technically impossible to maintain the liquid at this strength. The presence of organic salts assists the deposition of zinc for analytical purposes; and the use of oxalic acid has been recommended by Perisch (*Chem. Zeit.*, 1893, 17, 285), lactic acid by Jordis (*Zeits. Elektrochem.*, 1895, 2, 148), and acetic acid by Watt; but the cost of the process would be considerably enhanced by these additions, and no results have yet been published. To prevent the formation of slime, Lindemann (*Chem. Zeit.*, 1895, 19, 1357) suspends zinc sulphide in the solution, but it is doubtful whether the evolution of hydrogen sulphide in this way would lead to the desired result. Siemens & Halske (this Journal, 1893, 698) recommend for the same object hypochlorous and hypobromous acid. The use of diaphragms has failed by reason of the difficulty in finding a suitable material for the purpose. Lorenz (this Journal, 1896, 39) has attempted the electrolysis of fused zinc chloride. But apart from the difficulty in evaporating the solution and obtaining anhydrous salts, and in finding a durable material for the furnace, the process is technically unmanageable. In Lipine (Upper Silesia) the Silesian Act. Gesellsch. f. Bergbau has tried a process of Nahnsen's for the extraction of zinc from blende ($ZnSO_4 + K_2SO_4$ or $MgSO_4$), and Speyer has shown (*Zeits. Elektrochem.*, 1895, 2, 46) that small quantities of 99.98% Zn were obtained, but the cost of production was prohibitive. Létrange showed electrolytic zinc at Chicago, and according to Gouch (*Berg u. Hütt. Zeit.*, 1895, 51, 402) this process may yet give good results. An English company is erecting near Sydney, N. S. W., works to treat the Broken Hill ores (containing 25% Pb, 26% Zn and 20 oz. Ag per ton) by leaching out the zinc and electrolyzing the sulphate; but it remains to be seen whether they will succeed, even with the cheap ore available. The electrolytic zinc at present in the market is not produced from ores, but either from zinc residues or from the comparatively valueless zinc chloride solutions of larger factories. Of the two available solutions, sulphate and chloride, the latter is to be preferred, because of the possibility of recovering the anode chlorine as a by-product.

SELLERS' RESTARTING INJECTOR.

A good injector for boiler feed is the greatest comfort to the engineer, and the reverse is enough to turn his hair gray, with the usual result that he forswears injectors of all kinds forever and falls back on a feed pump.



SELLERS' RESTARTING INJECTOR.

Messrs. Jenkins Bros., of this city, whose valves are too well known for their excellence to refer to, have taken the appointment of selling agents for the Sellers' restarting injector, which is manufactured by the firm of Wm. Sellers & Co., of Philadelphia.

The experience which both of these firms have had in steam appliances is sufficient endorsement for most steam users.

The injector is simply constructed and contains but few parts. It is perfectly automatic in its action, restarting instantly after a temporary interruption of the steam or water supply. It raises the feed promptly on long lifts, with hot or cold pipes, and gives a good range of capacities.

A sectional view is given in the accompanying figure. Steam enters at the top, and passing down through the steam nozzle, No. 3, discharges through the draft tube into the overflow chamber and thence to the air, lifting the water to the injector. The partial vacuum caused by the condensation of the steam within the combining tube rises bushing No. 5 up against the draft tube and holds the lower bushing, No. 6, against the delivery tube, thus preventing the admission of air.

Upon removing the cap at the lower end of the body the end of the delivery tube will be seen projecting below the lower face of the body, so that a monkey wrench may be used to unscrew this tube, drawing out the tubes and the overflow bushings at the same time.

It is claimed that these injectors are the most perfect boiler feeders known and have the most economical consumption of steam. In designing the injector particular care was exercised to obtain a wide range, to enable it to work hot water and to get maximum lift.

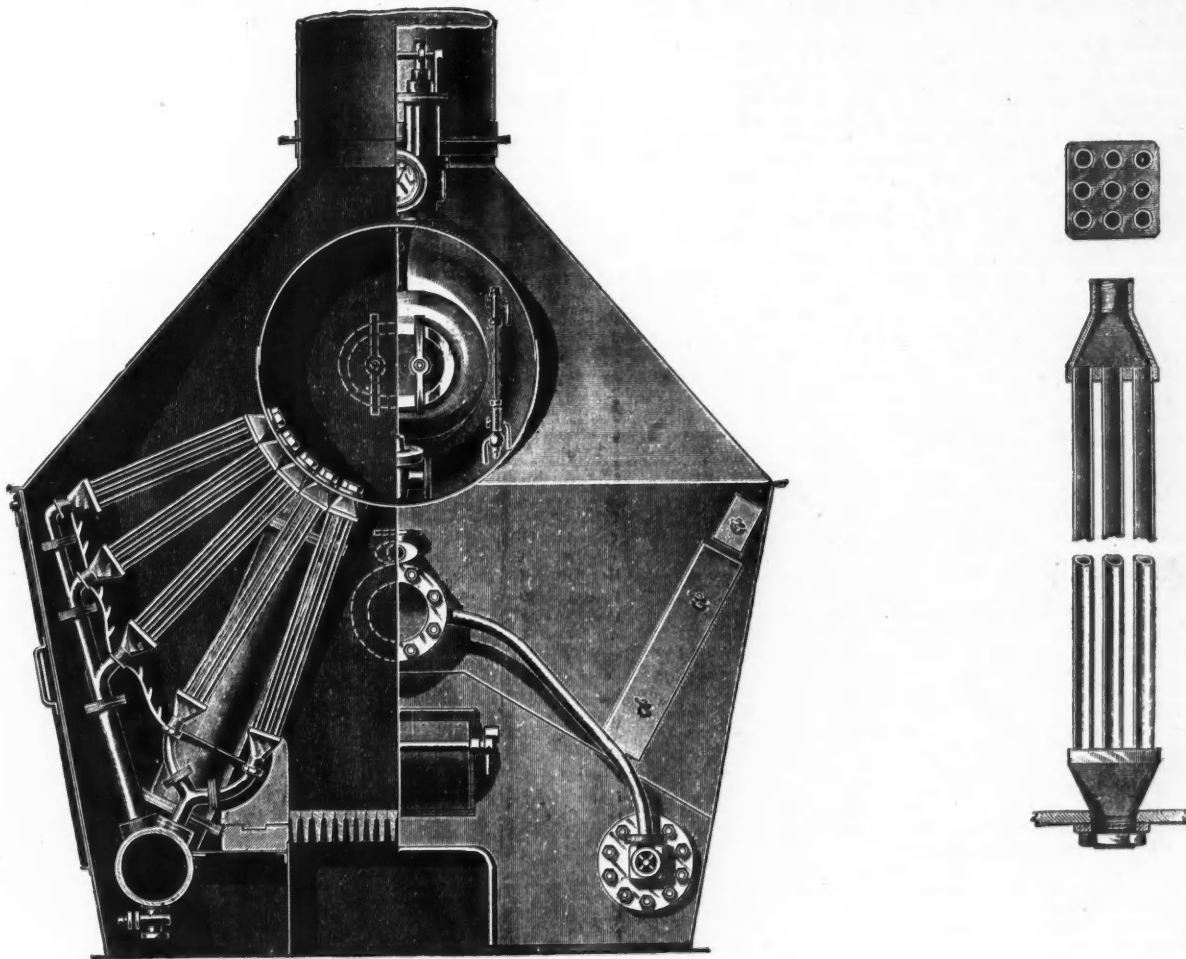
* *Jl. Soc. Chem. Ind.*
R. Neumann, *Chem. Zeit.*, 1896, 20.

PETERSEN'S WATER-TUBE BOILER.

A new form of water-tube boiler which has some advantages over older forms is being introduced to the notice of naval authorities and others by an influential syndicate in London. It is to be seen in operation at John Fraser & Sons engine works on the Thames, and Clarke, Chapman & Co., of Newcastle-on-Tyne, are undertaking its manufacture on a large scale. As will be seen from the accompanying illustration, its main feature is the use of what may be called a compound tube; that is to say, the tubes are arranged in groups of nine, each group being fixed into steel boxes at each end. The boxes at the upper ends of the tube pass through the shell of the steam barrel and those at the lower ends into pipes which connect with the lower two water drums. By this arrangement the heating surface is very greatly increased, while the number of holes drilled in the steam and water barrels is less than in ordinary water-tube boilers. Thus the strength of the boiler and the heating power are both increased. The arrangement of the tubes at the lower ends is such that there is no part of the tubes which is not in actual contact with the flames and heating gases, so that the cost of construction compared with the heating surface is comparatively smaller than in other boilers of the same type. Suitable baffle plates are arranged to confine the gases to the tube space, and the tubes are placed at such inclinations

CAUSE OF DEATH IN COLLIERIES.

A report, by Dr. John Haldane, on the causes of death in colliery explosions, with special reference to the Tylorstown, Brancepeth and Micklefield explosions, was recently published in a blue-book. The report contains a vast amount of valuable information on the composition of after-damp; the action on men and lights of the gases present in, or mixed with, after-damp; the action of after-damp, heat and violence, along the track of an explosion; the distribution of after-damp and other gases in a mine after an explosion; the distribution of smoke in underground fires; the positions at which bodies are found after an explosion, and the means of saving life in colliery explosions and fires. To understand the dangers to life after a colliery explosion, and the possibilities of escaping these dangers, it is necessary to have a clear idea of the action, both on men and lamps, of the gases which are likely to be present in the air of the mine. These gases so far as is known, are carbon dioxide, carbon monoxide, nitrogen, fire-damp and sulphurous acid. Oxygen may be deficient or absent. Dr. Haldane discusses the effects of these gases *seriatim*, and the information he brings together, as well as his own careful observations, should be valued by colliery managers, while it will certainly interest chemists and physiologists. In the case of the Tylorstown explosion, which, Dr. Haldane says, was vividly propagated through the three pits by coal dust, 57 men were



PETERSEN'S WATER-TUBE BOILER.

as to be at right angles to the path of the gases. As the tubes are straight they can be easily turned round so as to expose all their sides to the flame in turn, their life being thus prolonged. In a short time we hope to place before our readers the result of exhaustive independent trials, both of the steam-raising power of the boiler and of its safety and strength.

Tin Scrap.—Mr. Swinburne, of London, in a recent lecture stated that it was easy enough to recover tin from scrap electrolytically in a solution of hot caustic, but the difficulty was to find the scrap from which to skin the tin, as no one seemed to have any for sale. We may note that a considerable quantity of tin scrap is shipped from this country to Europe, chiefly from Baltimore. It is gathered up from the factories which supply the extensive canning establishments of Baltimore and the Eastern shore.

The Longest Span Cableway.—The longest span cableway in the world, it is claimed, is that put in something over a year ago for the construction of the Holyoke Dam, Holyoke, Mass. It has a length of 1,650 ft. The longest span cableway previously erected was one of 1,505 ft., at Point Pleasant, West Va. The Holyoke cableway has recently been remodeled by the Lidgerwood Manufacturing Company, putting in a new Lidgerwood carriage and the Miller patent fall-rope carriers. The original contractors for the cableway used a Lidgerwood engine, hence the plant as it stands to-day is practically the same as the ordinary Lidgerwood cableway. The head tower is 125 ft. high, the load carried six tons.

killed. Of this number 52, or 91 per cent. of the whole, were killed by afterdamp, the remainder being killed instantaneously by violence. In nearly every case of death from after damp, the parts of the skin or mucous membrane through which the color of the blood could be observed, had a red or pink color, instead of being leaden-blue or pale, as in the case of death from any other cause. This reddening, as seen in the face, hands, etc., often gave the body an extraordinary appearance of life. There seemed to be only one cause which could account for the carmine red color of the blood, namely, the presence of carbon monoxide. To make certain Dr. Haldane examined the blood from two of the bodies on the spot, by means of a spectroscope, and he found that not only was carbon monoxide present, but that the haemoglobin was nearly saturated with it. A quantitative determination proved that in both bodies the haemoglobin was 79% saturated. This result is of special interest, as it shows, for the first time, the percentage saturation of the blood at the moment of death from carbon monoxide poisoning.

The recognition of carbon monoxide in the air of mines is, as Dr. Haldane points out, a matter of much practical importance, and many lives have been lost through ignorance of the fact that the lamps, to which miners trust for the recognition of other gases, give no *direct* indication of carbon monoxide. A simple test, which there is every reason to think might be successfully introduced, is suggested: it is to observe the symptoms of a mouse or other equally small warm-blooded animal when exposed to the doubtful atmosphere. In small animals the rate at which the blood becomes saturated with carbon monoxide is far more rapid than in man; hence a small animal, such as a mouse, shows the effects of the gas far more rapidly than a man. Practically speaking, the condition of

a mouse which has been for a very short time in a poisonous percentage of carbon monoxide, indicates what will be the condition of a man carrying it after a much more prolonged stay in the same atmosphere. With a man at rest it takes about 20 times as long for the man as for the mouse to be distinctly affected by the gas. Dr. Haldane's experiments show distinctly how valuable the indications given by a mouse, or other small animal, would be to men exposed to danger from after-damp. It is therefore suggested that a few white mice might easily be kept for this purpose in the engine-room at the top of the downcast shaft, and be taken down in small cages by the rescue party.

Another point to which attention may briefly be directed is the color-test described by Dr. Haldane for use in post-mortem examinations as a criterion for carbon monoxide poisoning. A drop of the blood of the subject is diluted with about 100 times its volume of water, and is compared with a solution of normal blood, and with a similar solution saturated with coal-gas. According to the percentage saturation of the sample of blood under examination, the tint of the first solution will approach to that of the normal blood, or of the blood saturated with coal-gas (that is, with carbon monoxide), and a rough estimate may be made of the percentage saturations. The test is said to be more delicate than that with the spectroscope.—*Nature*.

THE GEOLOGICAL AGE OF GOLD.

Written for the Engineering and Mining Journal by Dan De Quille.

Among mining men and geologists there are various opinions in regard to the formation of gold-bearing quartz veins. Some maintain that the original occurrence of gold, as in veins, is almost exclusively confined to the older rocks, while others assert that the formation of these deposits belongs to a very recent geological period. Every vein is of more recent origin than the rock formation it traverses: when it intersects other lodes it is, of course, seen to be younger than these. Thus far the relative age of lodes may be easily ascertained, but seldom can their real age be determined, and that only approximately, when they can be referred back to a well defined sedimentary formation.

The age of lodes may at times be ascertained indirectly within a certain range, when it is evident that they owe their origin to reefs of certain eruptive rocks. Lodes of gold-bearing quartz are frequently associated with adjacent igneous rocks in such a manner as to compel the belief that their formation was caused by the upheaval of the eruptive rocks. Lodes, it is further to be noted, are usually found in regions in which igneous rocks have burst through crystalline schists or stratified deposits, and, as a rule, several occur together; therefore, when one lode has been discovered there is great probability that others of the same kind will be found in the neighborhood.

It appears probable that instead of gold-bearing veins all being formed during a certain period, their formation has been taking place at all periods since a firm crust of the earth has existed, but at different depths and at different times in various places, dependent upon geological events, such as the upheaval of reefs of igneous rocks, and various terrestrial convulsions, producing deep fractures and fissures. That the older rocks contain more lodes than recent ones is probably owing to the fact that they have for a much longer period been subjected to the possibility of lode formation in them. The older the rocks the more vicissitudes they must have passed through—the more they must have been shattered and fissured. Since all true lodes are aggregations of mineral matter in fissures, fissures must first have been formed and then filled. It is possible that the formation of all kinds of lodes is still taking place, but mostly at such depths that we cannot observe them.

While the majority of the known gold veins of the world are associated with the older rocks, there are not wanting many examples of auriferous deposits in the more recent formations. In the Tyrolese Alps are found auriferous slates; in Switzerland, on the Callanda, an auriferous vein is found in Jurassic strata; in Westphalia, near Graves, the Lias limestone is somewhat auriferous; in the Valley of the Aar traces of gold have been found in the Miocene sandstones and conglomerates, while the majority of the Hungarian and Transylvanian gold veins cut through Tertiary rocks, therefore must have been formed in or subsequent to the Tertiary age. This deposition of auriferous material in a Tertiary formation appears not to have been owing to insignificant chance; the gold-bearing veins of Transylvania doubtless owe their existence to geological events quite as regular and as legitimate as those which have in other places given birth to auriferous veins in the older crystalline and igneous rocks.

It is safe to say that the gold veins do not exist in violation of the physical laws which govern terrestrial events. The mines themselves are no trifling accident. They are as extensive and have been as productive as many gold mining districts in even the oldest rock formations. At one time, at and about the village of Voerocspatak—Red Brook—in Western Transylvania, no fewer than 300 veins were being worked. There were in operation over 1,000 quartz mills and the mines gave employment to several large and flourishing communities. The sandstone in which these gold mines are situated is said to belong to the Eocene, consequently the oldest of the Tertiary deposits.

Other examples of gold found in rocks of comparatively recent formation might be given, but it is not difficult to see that it is not in violation of any natural law. It is only because the recent rocks have not been so long exposed to shattering subterranean convulsions, and to the liability of having mineral veins formed in them, that they do not contain as many as the older rock formations, which have been rent, upheaved, tossed about and subjected to all manner of geological changes for ages incalculable. The formation of mineral veins is evidently a slow process. Undoubtedly the work is still in progress, as in the early ages of the world, but at great depths. The heat and pressure there appears to be necessary to the formation of most kinds of metalliferous veins. Ages after formation they make their appearance at the surface through upheavals of mountain ranges and the erosion of superincumbent strata. This work still proceeds. The coast of Peru has risen over 80 ft. since the Spaniards first set foot upon it. Three times, the geologists tell us, the Andes sank hundreds of feet beneath the ocean level, and again were slowly brought up to their present height. It was an operation covering untold millions of years, yet the Andes are rated geologically as "recent."

As regards the question of the age of gold, it is safe to say that the metal is as old as the oldest mountain on the face of the globe and as young as the babe born but to-day. It is of all the ages since the formation of mineral veins first began. Gold-bearing veins were doubtless formed during all geological ages, but locally at different times.

As to determined geological periods for the formation of the different metals we have already seen that there is no proof and but little evidence of there having been a special geological age for the production of each metal. But the most ancient gold placers the world over seem to indicate a period when there occurred some great diluvial cataclysm. That the oldest and greatest auriferous alluvial deposits were formed about the same time—the same period in the age of the world—seems to be shown by the fact that they all contain the bones of certain extinct animals. In the old deep-gravel diggings of California, in the most ancient deposit of alluvial gold, known locally as the "Blue Lead," are found the bones of the mastodon and other animals now extinct. Such bones have also been found in the ancient placers of Oregon and Wyoming.

In the Siberian Urals are extensive alluvial gold deposits of three different periods, and in the most ancient are found the bones of now extinct mammals, deposited at the same time as the material of the placers. The bones found are those of the *Elephas primigenius*, *Rhinoceros tichorinus*, *Bos*, *Equus*, etc. In South America are also found in the ancient deposits of auriferous gravel the bones of the mastodon, an extinct species of the horse, deer, and llama. Near Quito, in a deep ravine not far from the village of Riobamba, there are several thick strata of such bones in a high bank of alluvial material. These examples appear to show that during the age when the mastodon existed there occurred a great diluvial cataclysm—perhaps a world-wide flood—during which the ancient gold placers were formed. However, deluge or no deluge, it is quite evident that our oldest alluvial gold deposits the world over belong to the age of the mastodon.

The famous "Blue Lead" auriferous gravel deposits of California are of Pliocene origin, extending into the Post-Pliocene or Quaternary, but the gold found in the old lava-capped channels of the dead rivers and in the more recent Quaternary alluvial deposits, belongs to a much older geological period. It came originally from the quartz veins and schists of the great gold belt of the western slope of the Sierra Nevada range. Some, looking no further back than to the alluvial deposits, have thought the gold of California of quite recent origin. The auriferous slates of this belt are considered to belong to the Jurassic period.

In the Pacific Coast States it is now found that in many places gold occurs in several kinds of rock of quite recent geological age. In numerous localities the rhyolites and andesites are gold-bearing, and by most geologists these rocks are believed to have been erupted in Tertiary or even Post-Tertiary times. In some sections auriferous deposits of different ages are evidently mingled. In places where more or less gold has been found in some carboniferous rocks, and in the still older Cambrian and other Silurian strata, it has frequently been discovered that the deposition of a large part of the metal in these old formations has resulted from the intrusion of certain eruptive rocks, such as rhyolite, trachyte, quartz-porphphy and other lavas of the tertiary and pre-tertiary (post-cretaceous) time. In almost any formation it is always safe to give credit to intruded dykes of igneous rocks for the deposition of more or less gold.

In the Black Hills we have an example of gold being found in great abundance in rocks of the archæan or azoic period, the very oldest known formation. Here, too, in the same mines, the gold is of different ages. Masses of porphyry are seen to have been forced up from below in many of the leading mines, and those dykes of igneous rocks undoubtedly contributed largely to the deposition of the gold found in the locality. It is evident, however, that the quartz and schists of this region were gold-bearing ages and ages before the intrusion of the porphyry dykes. The proof of this lies in the fact that an auriferous conglomerate lies directly upon the archæan rocks, and in it not a fragment of the intruded porphyry dykes can be found. This is convincing evidence that the gold found in the conglomerate came from the archæan rocks worn and ground down by the waves of the Cambro-Silurian sea.

Thus it will be seen that in the great Pacific Coast gold field, gold of all geological ages exists. It is found in all formations from the recent to the oldest known on the face of the earth. Now that our thousands of restless and tireless prospectors are giving themselves up to the search for the yellow metal almost exclusively we may hear of auriferous finds in unexpected places and most unpromising formations. Already it has been found that gold occurs in several varieties of lava, as andesite, trachyte, rhyolite and basalt. In Colorado, at Cripple Creek, gold is found in dykes and quartz veins in rhyolite and phonolite. Also, in the same State, at Silver Cliff, gold occurs in the vents of old filled up craters and dykes of andesite, rhyolite and trachyte.

No metal is more widely distributed than gold; no metal is older than the "yellow metal," and no metal is younger. It is a metal contemporaneous with all the geological ages.

Electric Transmission in the Soignies Quarries, Belgium.—The electrical equipment of the Soignies Quarries, in Belgium, is interesting not only from its extent, but also from the fact of the use of three-phase alternating currents. The territory covered has an extent of 52 hectares and the formed method of operation by a central steam plant required a fuel consumption of from 4 to 5 kg. of coal per horse-power hour. The fuel consumption with electrical transmission and distribution is less than 1 kg. Three Cornwall-Galloway boilers are used and a 350-H. P. compound slow-speed engine. Two dynamos are used, one for lighting, furnishing 300 amperes at 125 volts, and a three-phase alternator of the Cerlikon type, furnishing about 200 H. P. for power work. The power-house is centrally located and three lines are run from it, the length of each being 200 m., 310 m. and 700 m. respectively. At present four 24 H.-P. motors, one 18 H.-P. motor and one 9 H.-P. motor are operated for running sand saws and diamond saws. About 57 H. P. of the alternating current is used for illuminating purposes. The Soignies Quarries is the first industrial institution in Belgium to use alternating current for power purposes and the results reached seem to fully justify the innovation.

TRAIL CREEK.

Written for the Engineering and Mining Journal by David B. Fogle.

The progress made by the Trail Creek camp during this year has been of two kinds—intensive and extensive. It has been equally remarkable in both respects. The improvement in the position and prospects of properties which had a certain standing last summer is sufficiently indicated by a number of circumstances. First comes the appreciation in the value of stocks. Of course a wider market and better advertisement have a tendency to inflate stocks, but as yet there is little or no inflation here. The stocks of all the producing mines have quadrupled in value, and at least ten stocks have been added to the market, which have a real, and, on the showing possessed by the properties they represent, a progressive value. One mine on Red Mountain, which has enough ore in sight to pay a net return of 50 cents per share on its capital stock, has never been quoted above 55 cents on the local market. This is because of the limited capacity of the West to absorb high priced shares, while no open market has as yet been developed in the East. The attention of promoters of the more doubtful class has been confined to the printing of stock certificates, which they peddle off in small quantities to the unsuspecting at a few cents a share. There is not, however, enough of a boom to make this business very successful, and so far it has not worked very much injury to the camp. After the appreciation of stocks the most satisfactory indication is the investment of capital in mining machinery. More mining machinery has been and is being set up in Trail Creek division this summer than was ever set up in any part of Canada during the same time before. The producing mines are all increasing and perfecting their plants, and a dozen companies besides are putting in such machinery as will adequately develop their property.

Improvement in transportation is another very remarkable proof of the growth of the camp. One railway is already at the dumps of the mines and another is under construction. Combined with the railway now in operation and the Trail smelter \$7 a ton have been taken off the charges of freight and treatment. The investment of capital required to accomplish this is a proof not only of progress but a guarantee of the confidence which the low grade ores of Trail Creek inspire among those who know what mines and mining are. The question of actual present dividends is always secondary to the practical miner, whereas it is of primary importance to the outsider. The miner looks to ore in sight and prospective dividends, the outside shareholders want immediate returns on their money. Up to the present time Trail Creek has paid \$307,500 in dividends. That sum has been paid by two mines. Every pound of ore on which that is the net return has been shipped by wagon, steamer and railway except the small amount hitherto consumed by the Trail smelter, which was also shipped by wagon. It would be absurd and unfair to take this as a criterion of Trail Creek's capacity. It is merely the first fruits. The dividends paid from Trail Creek will increase from year to year in geometric proportion for a few years yet, and then it will be possible to make an estimate of its probable maximum and possible duration. Calculations made at present must be equally uncertain, though in different directions, whether the actual or possible be accepted as a basis.

The extensive development of the Trail Creek camp is one of the most remarkable phenomena ever witnessed in a mining country. The area in which prospecting and development are now being prosecuted extends from the north fork of Salmon River, near the boundary line, up the east shore of the Columbia through the headwaters of Beaver, Bear, Champion and Waterloo creeks, then across the Columbia to the west, and north and south from there for thirty miles, including Burnt Pass, Six Mile, China, Sullivan, Murphy, Rock, Stoney, Trail and Sheep creeks. Nor has the extension been limited by the boundaries of the division. Far beyond the region indicated copper and gold ore is being found and opened up.

The most remarkable proof of this extraordinary activity is to be found in the receipts at the record office. These receipts are in the main small fees on the records of locations, transfers and legal work on claims, as well as miner's licenses. They have swelled the budget to the extent of very nearly \$26,000 this year already, which is more than last year's total and very nearly one-half of what was the entire yearly revenue to the province from West Kootenay three years ago.

Regarding the extent of gold-bearing area three main features have just been put forward. The first is, or rather was, that outside the paying properties on Red Mountain there were no mines present or future. The second is that wherever the characteristic eruptive rocks of Red Mountain are found, with iron cappings carrying even a trace in gold, pay ore will be found with depth. The third is that while many good mines will be opened up in different parts, pay chutes are not to be looked for under every iron capping.

The first of these theories has been disproved. The second makes the brain reel, and although it has received the endorsement of some men supposed to be scientific, seems neither reasonable nor probable. The third is the theory in which the ordinary mind takes refuge.

The special Trail Creek zone, so-called, not because it has been defined, but for convenience sake, has been proved to extend to the east across Trail Creek and in the direction of the Columbia River. Although there is in this extension only one mine, the "Crown Point," which is at present in a position to ship any great quantity of ore, sufficient development has been done, both in its vicinity and further east, to prove the continuity of the zone. While it is indisputable that good ore has been found on Champion Creek, Waterloo Creek and Murphy Creek, not to mention other parts of the district.

The wide acceptance of the second theory arises from the known difficulty of proving a negative. Some very startling developments have taken place on very worthless-looking property. And to argue from the particular to the general is not a method of reasoning, however fallacious, confined to the mining industry alone.

The most interesting and encouraging fact about the extensive development of Trail Creek division is that it is taking place on its own merits. It is not the wild enthusiasm of outsiders attracted by big dividends, which is covering the country with locations. On the contrary, it is the old and experienced prospectors by whom it is being opened up, assisted

and encouraged by success, it is true, but by no means liable to any false illusions. What the final outcome will be it is impossible to conjecture. Whether the future of these gold-bearing iron and copper sulphides is to be something the most prodigious the world has ever seen or not is a question that cannot be answered now. A definitive solution of the riddle held by these British Columbia hills will only be arrived at after years of patient work.

THE CARBON OR ASH DETERMINATION IN GRAPHITE OR COKE.

Written for the Engineering and Mining Journal by R. Helmhaecker.

The method pursued for determining the quantity of ash in graphite or coke consists mainly in heating the samples in a platinum crucible until the C is ignited. But to determine the percentage of ash present in the samples, and consequently the amount of C being equal in the balance to 100, there needs a long and even repeated heating. To avoid wearisome repetition of heating and combustion in the open air, the work of burning is performed in an excellent manner in a platinum spoon, a process used in the analyses of organic matters. A spoon charged with the weighed sample of graphite is included in a heated hard-glass tube, where the burning of C in a slow current of oxygen takes place. In weighing the remaining impurities (ash) or determining the resulting CO₂ of consumed C, the operation is accomplished. Though this process of elementary composition by determining the C (or ash) by the combustion in oxygen has been found to be perfectly satisfactory, it is circumstantial.

To determine the heating effect of a fuel, Berthier converted PbO (litharge) into metallic Pb (lead) by mixing the former with the fuel containing chiefly C. By treating PbO with C in melting in a clay crucible, the C reduces PbO to Pb in forming CO₂, the lead reduced or recovered being an equivalent percentage of the amount of C which is present in the sample. Gintl, in modifying this method, used a charge consisting of PbO with carbonaceous matter, also graphite in a hard-glass tube, weighed before and after the assay. But this process gave slight variations. To the first and oldest method of determining C in graphite or coke, Shtolba (in the *Bohemian Chemical Journal*) added some few slight improvements which might be advantageously practised. The method of determining the ash in graphite or coke according to Shtolba has been effected as follows: The sample, pulverized to a very fine powder, is mixed with metallic silver dust resulting from the precipitation and reduction of silver solutions. Two grams of graphite or coke are mixed with 1 gram reduced silver (dust), charged into a platinum crucible and heated by a Bunsen lamp to a bright cherry red or more, with the precaution that the silver rests unmolten. From time to time the crucible is removed from the fire, to observe with a magnifying lens if all C is consumed, and stirred with a platinum poker or platinum wire. In repeating this operation at the expiration of a quarter of an hour and more even the hardest combustible crystalline scales of Ceylon graphite are ignited by the heat. The process is finished when the weight of the cooling crucible with the sample becomes constant. While the time occupied in burning the graphite without the admixture of silver dust is several hours, the suggested method makes the whole duration of the process half an hour to one hour. And since there occurs a slight loss of platinum by this operation of heating a platinum crucible, which is attacked by the burning gases, it is recommended, to prevent the loss which the platinum undergoes in its weight, to put a smaller crucible, containing the sample, within a larger one, and to heat the outer one.

The fine impalpable powder of silver is obtained by precipitating the metal from silver solutions or recovering it from argentic chloride by reducing substances on the humid method. The precipitated powder of silver, after having been used once, can again be used subsequently. The reason why the method just assigned is adapted for combustion of graphite may be explained as follows: It is known that melted silver, when it becomes overheated, imbibes oxygen (sparkling of Ag). In this case it may also be probable that the precipitated silver powder, when heated, absorbs also oxygen from the air, which in its turn is consumed by the graphite, and in this way its combustion is facilitated.

The Sulphur Trade.—In consequence of the rise in price of sulphur in Sicily the workmen in the mines have demanded an increase of wages, which the proprietors have declined to grant. The workmen have accordingly ceased all operations, and the situation threatens to become serious.

A Missing Link.—In an abstract of a communication made to the National Academy of Sciences some weeks ago, Prof. O. C. Marsh gives his conclusions after a careful personal examination of the famous fossils of the creatures named *Pithecanthropus Erectus*, found in Java by Dr. Eugene Dubois several years ago, and which have raised many disputes as to whether or not they belonged to a new connecting link between man and the higher apes. The fossils were examined by Professor Marsh at Leyden last September. He says: "After a careful study of all the *Pithecanthropus* remains and of the evidence presented as to the original discovery, the position in which the remains were found, and the associated fossils, my own conclusions may be briefly stated as follows":

"1. The remains of *Pithecanthropus* at present known are of pliocene age, and the associated vertebrate fauna resemble that of the Siwalik Hills of India.

"2. The various specimens of *Pithecanthropus* apparently belonged to one individual.

"3. This individual was not human, but represented a form intermediate between man and the higher apes.

"If it be true, as some have contended, that the different remains had no connection with each other, this simply proves that Dr. Dubois has made several important discoveries instead of one. All the remains are certainly anthropoid, and if any of them are human, the antiquity of man extends back into the tertiary, and his affinities with the higher apes become much nearer than has hitherto been supposed. One thing is certain—the discovery of *Pithecanthropus* is an event of the first importance to the scientific world."

CONVEYING-BELTS AND THEIR USE.*

By Thomas Robbins, Jr.

About six years ago the writer had occasion to visit a large magnetic iron ore concentrating plant, and then saw for the first time rubber belts used for conveying purposes. These belts were from 20 in. to 30 in. in width, and some of them were as long as 500 ft. between centers. When I spoke of the enormous amount of material they handled with a small expenditure of power, the superintendent assented, but at the same time complained that, although he bought the best quality of belts, the abrasion of the ore wore them out very rapidly, causing continually very large bills for repairs and renewals.

On close examination several interesting points were discovered:

1. It was noticed that the thin layer of rubber which covered the belt resisted the abrasion much longer than did a corresponding thickness of the cotton duck which formed the body of the belt; in fact, the life of the cover represented about one-half the life of the belt, although forming less than one-fifth of the total thickness.

2. Each layer or ply of duck wore out more quickly than the one pre-

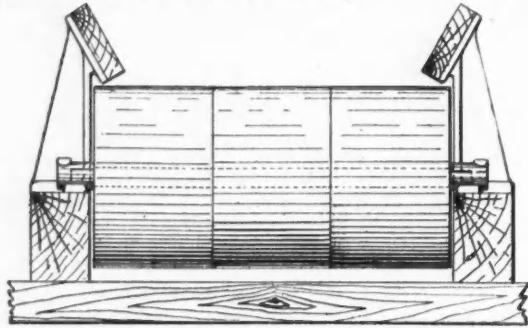


FIG. 1.—IDLER PULLEYS WITH SKIRT BOARDS.

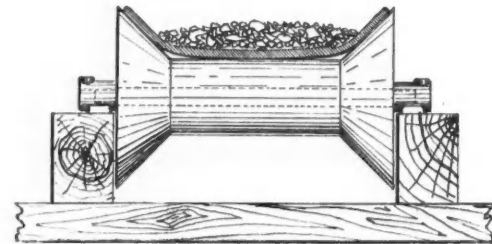


FIG. 2.—CONICAL SIDE IDLERS.

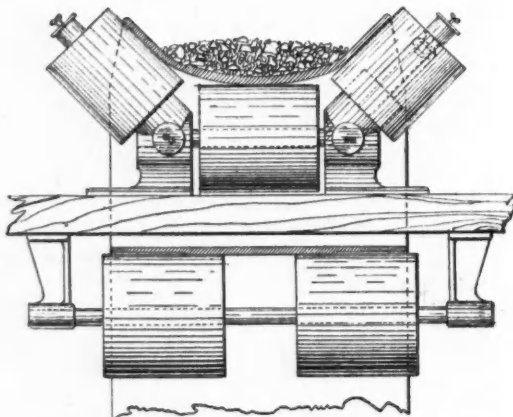


FIG. 3.—SUPPORT OF BELT BY THREE PULLEYS.

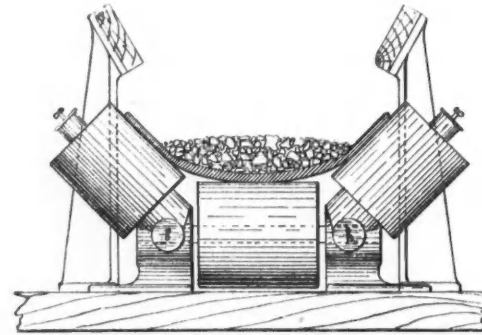


FIG. 4.—BELT SUPPORT AND SKIRT BOARDS.

ceding it, showing that the fibres were cut more easily under tension, and, of course, the tension on each fibre increased as the number of fibres bearing the tensile strain diminished.

3. The wear was greatest in a line along the center of the belt. Frequently this part would be so quickly destroyed as to cause the belt to split in two longitudinally, though at the same time the portion nearer the edges was almost as good as new.

Noticing these facts, it became obvious that the functions of the cotton duck should be solely to give the belt tensile strength, and that it ought to be so protected by some abrasion-resisting cover that it would not be injured by contact with the material conveyed. It is also evident that this protecting cover ought to be of extra thickness over the center of the belt, in order to stand the harder work forced upon that part. Being engaged then, as now, in rubber manufacture it was a simple matter to make a belt with a heavy rubber cover on the carrying side and thicker in the center than at the edges.

This reinforced cover renders the resistance to wear equal in all parts of the belt. Two patented forms are now made.

Wishing to ascertain what particular compound of rubber would make the most durable carrying-surface, I made a lot of small samples, each mixed differently, and exposed them to a very powerful sand-blast, which in its effect approximated the conditions to which the compound would be subjected in actual use, but it was more convenient for a large number of tests, being much quicker. The result of the first series of experiments indicated what grades of gum and what adulterants had better be left out, and also showed something that was very gratifying, namely, that there were certain adulterants which could be used in sufficient quantities to bring the cost down to a reasonable figure. I then made a second set of samples, following in the mixture the formula used in the more successful ones of the first set, but each new one was an attempt to improve upon its prototype.

Some of the samples, owing to more intelligent methods in mixing them, proved so durable that the sand-blast test became too tedious, and a more severe and expeditious one was needed. This was found in exposing a disc of the rubber 6 in. in diameter by $\frac{1}{4}$ in. thick to a heavy falling stream of crushed ore. The ore averaged about $\frac{1}{2}$ in. in size,

and was delivered in a compact and heavy stream from the end of a very fast-moving belt. The sample was so fastened to a board as to receive the whole stream of ore and immediately deflect it. In this way the rubber came in contact with 200 tons of ore per hour, of which each fragment was delivered with considerable force full upon it. At first it was easy to see the comparative loss of weight after the sample had been exposed to the ore for an hour or two. In the next series results were very apparent after a day's run, but later, as results were developed which I was willing to accept as final, it became necessary to weigh each disc before and after the exposure, and thus learn the percentage of loss.

Having at last decided upon the proper compound for the carrying surface, I applied it to the belts, and I may say that every belt made since that time, which was in 1892, is in good order to-day. In many cases, too, the belts which they replaced had been completely destroyed in three months' time under exactly similar conditions.

There are four principal methods of supporting conveying belts. First we will consider the oldest method, in which the belt lies flat upon a straight-faced, horizontal pulley. On account of the liability of the material to roll off the belt, this form is suitable only under certain conditions, as, for example, in the conveying of grain, which is so light that the resistance of the air makes it crowd together in

the center of the belt. The belt cannot be heavily loaded, and the feed must be so regulated that an even amount may be delivered to the belt at all times. If the material is below $\frac{1}{4}$ inch in size, the speed may be as high as 300 ft. per minute. In carrying larger stuff on flat belts the speed must be lower; but the most necessary thing is to keep the belt very tight, so that the material may not be jarred off in passing over the idler pulleys. This, of course, increases the strain on the bearings, and from that fact, together with their low efficiency compared with systems to be described later, we may consider flat-running belts as being out of date.

The second method (Fig. 1) is somewhat like the first, but with the addition of skirt-boards at the sides to increase the capacity of the conveyor. This method of rigging belt-conveyors is in great vogue among brick-makers and others who handle clay. It will be easily seen that the material must collect between the skirt-boards and the belt, and that, as it hardens, it will cut a strip off each side. The common practice is to start with a wide belt, and move the skirt-boards in as fast as these strips are cut off. When the width is so reduced as to render the conveyor totally useless, wheelbarrows are called into play until a new belt can be procured, and the entire process recommenced. This method is so entirely bad, that I refrain from further description. It is only fair to say, however, that the skirt-boards fill one useful purpose, as it is the practice of the men shoveling into the belt to rap their shovels against the boards in order to get rid of the sticky clay. A board for this purpose can be applied, however, to a much better form of conveyor, and in such a way that it cannot interfere with the belt. (See Fig. 4.)

The third method is a slight improvement upon the last, in that a trough is made by raising the sides of the belt instead of using boards as described above. The conical pulleys used for this purpose are shown in Fig. 2.

This method has an obvious fault. By reason of the difference between the two diameters, the outer edge of the pulley goes twice as fast as the inner edge. This causes a slip which soon wears out the under surface of the belt. For belts not wider than 14 in. this form is not bad, for, with small belts, the weight on the pulleys is light, and the effect of the slipping is consequently less severe.

The fourth, and best form of belt-support, is composed of three pulleys, one carrying the middle or bottom of the belt, and one on each side

*Abstract of paper read before the American Institute of Mining Engineers.

with its axis at an angle of about 45 deg. The shafts of all three pulleys are held in a pair of combination bearings which can be adjusted to different widths of belt.

I never supply any other form of support for belts wider than 14 in., and when I refer to troughed belts in this paper, it is to be understood that the sides are raised by means of these angle-pulleys, one common form of which is shown in Fig. 3.

There has been no mention hitherto of the means of supporting the empty part of the belt on its return. This is done by a single flat pulley or with a pair of smaller pulleys, with an interval between them, as shown in the lower part of Fig. 3.

It is sometimes possible to save money in constructing a long conveyor by combining the first and last methods of belt-support referred to. If the belt were run flat the whole distance, it would need to be so wide that the extra cost of the belt would be about equal to the money saved in using the cheaper flat form of pulleys; but by placing a set of troughing pulleys between every fourth and fifth set of flat pulleys, or at such other interval as may be found advisable, the load is so centered on the belt at each of these points that it has no time to overflow before it is again centered between the next pair. The use of a very wide belt thus becomes unnecessary, but the conditions are not always favorable to this plan.

On some conveyers it is often advisable to have, at intervals, a pair of idlers, running on a vertical axis, or inclined inward, so as to make a right angle with the edge of the belt. These will serve to keep the belt straight on the pulleys if there is any tendency to run toward one side, but with a good belt and strong, true supports these extra pulleys are not needed. (See Fig. 5.)

The large pulleys at the end of the belt should be slightly crowned on face, and the pulleys should not be less than 4 inches wider than the

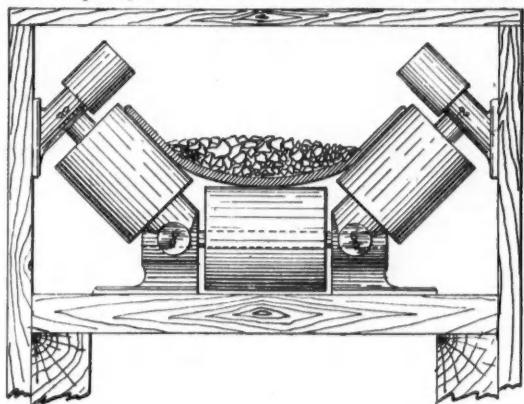


FIG 5.—BELT CARRYING WITH SIDE PULLEYS.

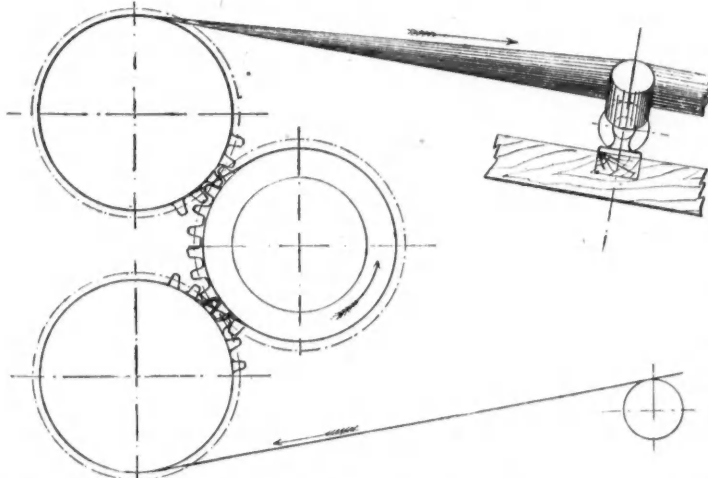


FIG. 7.—METHOD OF DRIVING LONG CONVEYORS FROM THE RECEIVING END

belt. The driving-pulley ought never to be less than 30 in. in diameter, and in the case of long wide belts 48 in. is advisable, as it allows the first return pulleys to be so placed as to give the belt a very large arc of contact on the driving-pulley. (See Fig. 6.)

Whenever it is possible, it is better to have the driving-pulley at the delivering end of the belt; but, if it must be at the receiving end, a triple set of pulleys connected by gears can be easily arranged which renders slipping impossible with the longest and heaviest loads. This scheme was first used by Mr. S. H. Edwards, superintendent of the Magnetic Iron Ore Company, at Benson mines, New York. (See Fig. 7.)

The proper distance between the sets of idler pulleys is an important factor in the economical running of the belt. The troughing pulleys should be from 4 to 6 ft. apart, according to the weight of the load, and for the return belt there should be pulleys placed under every alternate set of troughing pulleys, which would make the lower pulleys from 8 to 12 ft. apart.

(To be continued.)

Third-Rail Conductor on Nastasket Beach R. R.—The third-rail conductor instead of the trolley wire has recently been tried with success on the Nastasket Beach branch of the N. Y., N. H. & H. R. R. The system is applicable on elevated structures or converted steam roads.

THE ROCKS OF MANITOBA AND THE NORTHWEST AND USEFUL CLAYS.

In the early settlement of most countries, excepting such where the climate is very warm and largely rainless, wood is the chief material entering into the construction of dwellings and other buildings; but, as wealth increases, stone, concrete and slate gradually take its place to a very considerable extent, and it would seem probable that paper manufactured from wood pulp will in the near future to a large extent invade the domain now occupied by lumber as a building material.

In many portions of Mexico and the Western States, the early settlements were, so far as made by the Mexican Spaniards, buildings of all kinds were constructed almost wholly of "adobe" or sun-dried brick, in some cases made of pure clay, while in others they were mixed with a small percentage of straw or grass, and in very heavy and high walls, a stringer composed of slabs of stone or poles was placed in the wall, which acted as a bond. It has often occurred to the writer that the use of this article could be profitably employed in considerable portions of our own country. By making a building low and giving considerable eave to the thatch or roof, they would no doubt last for many years, and one constructed of this material would have the advantages of being very cool in warm weather and warm in cold weather and could be constructed with very little, if any, cash outlay on the part of the settler—a state of affairs which is highly desirable.

Lime and Limestone.—The article that comes next in importance in the way of building materials to lumber is lime, which is used largely in plastering and mortar and where good, clean gravel is readily obtained, may, and in the future probably will, be utilized largely in the construction of concrete buildings. Limestone is found in drift to a greater or less extent through Manitoba and the Territories. It is found *in situ* to an unlimited extent near the mouth of the Red River, extending for some miles both east and west of the same. There are also large outcrops of it on Lakes Manitoba and Winnipegosis and the Rocky Mountains in this region may be said to be almost wholly composed of this material. The writer in preparing this paper does not desire to create the impression that he has endeavored to report all the points at which outcrops of such materials are found; but is merely mentioning localities where such have come under his own personal observation.

Where limestone is being mentioned as found *in situ*, good quarries of

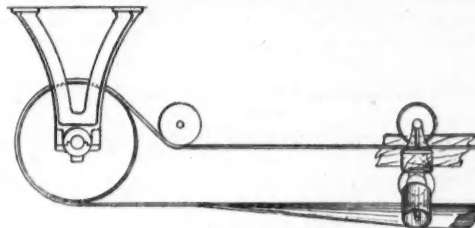


FIG. 6.—DRIVING PULLEY AND FIRST RETURN IDLER.

the rock for building material are readily obtained, in fact, in very many points are already opened and fairly well developed; and before leaving this branch of the subject it might be well to direct your attention to the probability of very extensive quarries of limestone being developed at the narrows of Lake Manitoba, the rock there lending itself very readily to a smooth finish at a low cost, and it is also alleged that the nature of the formation is such that blocks of large size can be easily quarried.

Drift Boulders.—Both granitic and limestone drift rocks may be found nearly everywhere to a greater or lesser extent throughout Manitoba and the Northwest, and, where they are large enough, they can generally be split into any desired shape or size and even where comparatively small, masons can construct buildings not alone substantial, but also ornamental. While on this subject, it may be of interest to mention a series of huge granitic rocks which have been deposited, no doubt through the influence of ice, along the foot hills of the Rocky Mountains. To convey an idea of the size of some of these, it may be mentioned that one particular boulder located on Section 21, Township 20, Range 1, West of the fifth meridian, shows above ground a bulk of 50 ft. in length, 30 ft. in width and about 25 ft. in height. How large a portion of it is hidden from sight below the ground has never been determined.

Granites.—Those who have had an opportunity of seeing the bridge piers erected by the Canadian Pacific Railway over the Winnipeg River, have no doubt been struck with the splendid appearance of these specimens of Aberdeen granite, of which they are composed. This material is obtained in the immediate vicinity, and the probabilities are that there is a very large field of this stone which can be had in blocks of any dimension, and there can be no doubt it is susceptible of as high and fine a polish as its original namesake, the "Aberdeen Granite," of Scotland, and it will probably in the future take a prominent part in the construction of any works where such material is required.

Sandstone.—There is a large outcrop of sandstone on Lake Winnipeg, which is pronounced to be first class. There are also some sandstones to be found in the vicinity of Turtle Mountain, the qualities of which, so far as endurance is concerned, would appear to be all that could be desired; but owing to its color and texture, it is doubtful whether it will ever find a market outside of the local consumption, for which, however, it is liable to become very valuable. An outcrop of sandstone may also be seen on the Assiniboine River in the neighborhood of Indian Ford and some stone has been brought to Winnipeg from this point; but owing to its cost it was not a successful financial venture. It may be useful for local purposes, but probably not beyond that. When the Cypress Hills are reached there are a considerable number of sandstone outcrops and very extensive beds are cross-cut in places by the South Saskatchewan, the Red Deer, the North Saskatchewan, the Bow, the Belly, the St. Mary's, the Waterton and the Old Man's Rivers; but the finest quality of sandstone is undoubtedly found along the foot-hills of the Rocky Mountains and the supply there is practically inexhaustible, enough to rebuild all the cities in the world as they exist at the present time. It would seem a great pity that with so much stone in the country, our

hard-earned cash should be sent across the line to our neighbors for the purchase of stone, as both quality and color is in favor of the domestic article. One is not rash in prophesying that the extensive use of red sandstone will prove anything but pleasing and soothing to the eye if carried to excess.

Dolomitic Limestone.—Vast deposits of this rock are met with in the Rocky Mountains, and can be obtained in any size blocks that is required. This material is very well fitted for bridge piers, in fact, any structure which is liable to be exposed to the action of water, combined with low temperature.

Clays.—Although the clays of a large portion of Manitoba will produce excellent brick, it is not probable that, owing to its geological age, clays of the highest possible value will be found within what may be termed the Red River Plateau. As you go west their age increases and you meet superior clays, and it is well known that at Medicine Hat there is a large outcrop of clay which will produce as fine terra cotta as is produced anywhere on the continent of America, and at Mitford, Alberta, it is claimed there is a clay which will produce the highest grade of fire brick.

It is unfortunate that investigation and experiments with these clays have not been more extensively and thoroughly conducted, as it would seem that, beyond all doubt, the country possesses clays which would make every possible kind of cement and material, such as Portland cement, paving brick, etc., which the country requires, so as to obviate the necessity of going outside our own boundaries for these articles and possibly also for very many kinds of pottery.

Slates.—Where the Canadian Pacific Railway crosses the backbone of the continent, there is a large outcrop of slate which gives every promise of becoming a valuable article of good quality as soon as there is demand enough to warrant capital going to the outlay of developing. This is a deposit situated on Kicking Horse River, near its mouth, which was mined or quarried to some extent a few years ago. Some was shipped to the coast, but the action of the moist climate there was too severe for it and disintegration set in. It is however, more than probable that the same slate, if used in Manitoba or the Northwest Territories, would prove a very good roofing material and withstand the influence of the atmosphere as well as most other roofing slates.

Ornamental Rock.—In the Rocky Mountains, along the line of the Canadian Pacific Railway there are to be found very large bulks of quartz carrying copper stains, which are capable of receiving a high polish, and are of a very beautiful color, resembling marble in finish, and would no doubt prove both useful and ornamental for the manufacture of table tops, mantels, etc.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

NATURAL GAS; RIGHTS OF LIFE TENANT.—One of the remaindermen having, at a sheriff's sale, purchased the life estate for the benefit of the life tenant, and having leased the land for mineral purposes, and the tenants having made large expenditures in boring for gas, with the knowledge of the other remaindermen, such others cannot enjoin them from removing the gas for sale, though they may be entitled, as against the remaindermen who purchased the life estate, to share in the royalties to be paid by the lessees.—*Gerkins vs. Kentucky Salt Company* (36 Southwestern Reporter, 1), Court of Appeals, Kentucky.

RIGHTS OF OCCUPANT IN MINING LANDS.—Where the right of the owner of mining lands to recover the same of persons in possession depends on whether they had forfeited their rights by failing for a certain time to work the mine or pay royalties on demand, and the testimony is conflicting as to whether instead of demand for immediate payment, there was not an agreement for payment when the amount of certain other royalty was determined, and as to whether the cleaning of shafts did not constitute working the mine, the court has no right to direct a verdict.—*Cleveland & Aurora Mineral Land Company vs. Ross* (36 Southwestern Reporter, 216), Supreme Court of Missouri.

SALE OF GOOD WILL OF A COAL COMPANY.—A party who was doing business under the name of the Newark Coal Company, unincorporated, on the formation of a corporation by that name, transferred to it his business and the good will of same, and was taken by the company into its employ, as an officer, for four years. The court held that on the severance of his connection with the company, and engaging in a rival business, he could not be enjoined from advertising himself as formerly connected with the company, as there was no covenant in his sale that he should not engage in such business, and one leaving a company has the right to make proper use of the fact that he has been connected with it in the past.—*Newark Coal Company vs. Spangler* (34 Atlantic Reporter, 932), Court of Chancery, New Jersey.

Nitric Acid Produced from Air.—It is reported that Messrs. Siemens & Halske, of Berlin, have patented in Germany a process for producing nitric acid from air. It is found that if air is mixed with ammonium gas and subjected to a discharge, obtained under certain definite conditions from an induction coil, ammonium nitrate is formed in large quantities, from which nitric acid is readily obtained. A mixture which has shown good results contains 100 parts by volume of air with one or two parts of ammonium gas. An excess of ammonium gas does not interfere with the reaction and can be recovered.

The "Day" Gas Engine.—The following extracts from a report by Messrs. Bramwell and Harris on the "Day" gas engines, recently tested in England, are of interest: "It appears to us that this design reduces to the greatest possible extent the number of working parts in a reciprocating engine. They are but three: the piston, the connecting rod and the crank with its shaft and fly-wheel. There are not any slide valves, cams or eccentrics or other contrivances of that kind. There are no complex arrangements of passages, and it thus becomes possible to work these engines at a number of revolutions, and to work them with certainty as regards explosion taking place at the desired time, which, so

far as we know, has not hitherto been attained in any gas engine. The question of the ability to make a large number of revolutions, coupled with the fact that there is a working impulse at each revolution, renders such engines peculiarly applicable for driving dynamos for electric lighting. . . . The Day gas engine seems to us to be singularly free from 'back' explosions. . . . To summarize the results, we may say that, in an engine developing only 6.1 I. H. P., the gas consumption (London gas) on an extended trial was as low as 24.38 ft. per indicated horse power per hour."

Theories of Electrolysis.—In *Science Progress* Mr. C. Dampier Whetham summarizes existing theories of electrolysis. Starting with the application of Ohm's law to electrolytes, he discusses the evidence which Kohlrausch deduced in regard to the specific character of ionic velocities. The hypotheses of Arrhenius, Ostwald and others concerning dissociated ions are next considered, and a number of interesting tables have been compiled by the author bearing upon the coefficient of ionization and constants of affinity of a number of electrolytes. The dependence of general physical properties, such as the osmotic pressure, freezing point, etc., upon the electrolytic characteristics of the liquid are discussed in relation to the researches of Mr. H. C. Jones on this subject. From established data, the author proceeds to summarize the hypothesis in regard to the dissociation accompanying the solution of highly stable solids. In regard to this branch of the subject he arrives by independent reasoning at the conclusions: "That pairs of opposite ions must be separated, and the ions exist free from each other's influence, and, secondly, that there must be a tendency toward the formation of more or less stable molecular aggregates between salt and solvent." The apparent contradiction involved in these two conclusions is got rid of by the fact that "since it is evident that one salt molecule can influence a large number of water molecules, it follows that the chemical forces are very far-reaching."

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 JULY 7TH, 1896.

- 563,380. **PROCESS OF ANNEALING METALS.** Horace K. Jones, Hartford, Conn. Filed May 13th, 1895. The method consists in placing the metal in an inclosing vessel heating the vessel and contents without admitting gas thereto until the metal begins to give off such gases as may be contained therein or gases are generated from other contents of the vessel, simultaneously venting the vessel to permit the gas generated therein to escape, continuing the heating until the metal is raised to the desired annealing temperature, then discontinuing the heat and introducing into the vessel while the gaseous atmosphere therein is contracting a non-oxidizing gas until the metal has cooled the pressure within the vessel during the introduction of such gas being maintained at such a low point that substantially no carbon is taken up by the metal if a gas containing carbon is employed.
- 563,401. **MINING MACHINE.** James M. McHugh, Boston, Pa. Filed August 23d, 1895. Combination of a stationary frame, a moving frame, and a chain carrying cutters mounted on the moving frame, the chain having vertical and horizontal rollers moving in contact with the frame.
- 563,553. **PROCESS OF MANUFACTURING WHITE LEAD.** Arthur B. Browne, Cambridge, and Edwin D. Chaplin, Natick, Mass. Assignors to the American Electric Lead Company, Kittery, Me. Filed December 20th, 1894. This process in the manufacture of white lead is by the separation of an electrolyte into a solvent of lead and an alkaline hydrate, which consists in passing an electric current from anode to cathode through the electrolyte and two foraminous diaphragms therein between the anode and cathode; maintaining the solvent and the hydrate separated on the outer sides of the diaphragms by preponderance of pressure of the electrolyte on the inner sides of the diaphragms; subjecting the metallic lead to the action of the solvent, to form a soluble salt of lead; adding an oxidizing agent to the solvent of lead to prevent the formation of insoluble salts of lead; and withdrawing and thereafter mixing the soluble salt of lead formed and the alkaline hydrate, to form a hydrate of lead.
- 563,551. **PROCESS OF MANUFACTURING OXIDES OF LEAD.** Arthur B. Browne, Cambridge, and Edwin D. Chaplin, Natick, Mass. Assignors to the American Electric Lead Company, Kittery, Me. Filed January 28th, 1895. The process consists in electrolytically separating a solution of a salt of an alkaline base into an alkaline hydrate, and a neutralizing agent, dissolving a metallic lead anode by a current of electricity in such alkaline hydrate, dissolving the oxid of lead so produced by an alkaline hydrate to form a plumbate of an alkaline base, and neutralizing such solution by the electrolytically-separated neutralizing agent, to precipitate the desired oxide of lead, and collecting the remaining solution in substantially the condition of the original electrolyte.
- 563,555. **MANUFACTURE OF WHITE LEAD.** Arthur B. Browne, Boston, Mass. Assignor to the American Electric Lead Company, Kittery, Me. Filed April 3d, 1896. In the manufacture of white lead by electrolysis, introducing the electrolyte between two pervious diaphragms interposed between the anode and cathode withdrawing the liquid from between the diaphragms as it becomes alkaline, subjecting metallic lead to the solvent of lead separated by passage of the current, to form a soluble salt of lead, and finally withdrawing said salt of lead and mixing it with the withdrawn alkaline liquid, to form a hydrate of lead.
- 563,604. **HYDRAULIC MINING MACHINERY.** Thomas B. Ludlum, Denver, Colo. Filed May 3d, 1895. Combination of a lower sluice box provided with riffles and having its exit and tapered or converging, the upper conductor having the flaring mouthpiece fitting snugly in the converging end of the lower sluice box, the upper sluice box having the enlarged mouth portion and the reduced terminating portion the upper walls formed with the transverse separating blocks and the lower walls of the upper sluice box being provided with riffles and the forcing nozzle above and below the lower sluice; whereby the forcing nozzles serve to force or drive the material toward the converging end of the sluice box through the conductor to the enlarged mouth of the upper sluice, the separating blocks separating the gravel and lower riffles of the upper sluice receiving the ore and preventing it from being carried away and preventing jamming in the sluice.
- 563,702. **MACHINE FOR CRUSHING AND PULVERIZING ORES.** Jacob C. Wiswell, Medford, Mass. Assignor by direct and mesne assignments, to Henry B. Wells and Solomon Eaton, Boston, Wingate P. Sargent, Melrose, and Henry G. Dillaway and Henry B. Brown, Quincy, Mass. Filed October 24th, 1895. Combination of a pan balls resting upon the pan; hollow inverted rolls supported upon the balls and means for rotating the rolls on their own axes and also causing them to travel about the pan in a circular path simultaneously.
- 563,705. **AMALGAMATOR.** Erastus C. Bennett, Denver, Colo. Filed October 5th, 1895. Combination of a tank having inclined sides and one or more valleys formed in its bottom, each valley having a central, upwardly projecting, longitudinal row of nozzles connected with a suitable air or water supply source, of an apertured pipe located on each or either side of the central row of nozzles, and suitable means for imparting to the apertured pipes a reciprocating movement.

PERSONAL.

MR. GEORGE R. MICKLE, M. E., has gone to Trail Creek, B. C., to look up gold properties for Toronto capitalists.

MR. TRAYLOR, representing the Colorado Iron Works, of Denver, recently paid a business visit to Globe, Ariz., and vicinity.

MR. BARRY SEARLE is leaving this country for South Africa to take charge of the Crown Deeps gold property in the Witwatersrand.

MR. J. PARKE CHANNING, recently delivered a lecture on "Mining Methods Employed in the Mines of Michigan" before the Butte (Mont.) Scientific Society.

PROFESSOR T. C. HOPKINS is at present at Bloomington, Ind., and will remain there until the middle of August, when he will return to State College, Centre County, Pa.

MR. A. M. KELLER, formerly of the Parrott, Mont., smelting works, is now in charge of operations at the works of the Mountain Mines Company, Keswick, Shasta County, Cal.

MR. WILLIAM HAMMOND HALL, ex-State Engineer, residing in San Francisco, Cal., has been awarded the Norman medal for 1895, by the American Society of Civil Engineers for his paper on the Santa Ana canal.

JUDGE STEPHEN F. BALLIET, President of the Evelina Mining Company, visited Baker City, Ore., on July 11th, and went at once to his properties in Cable Cove district. He spent several days there and will soon return to Des Moines.

MESSRS. E. M. DU MARAIS and E. P. ENDERS, two mining engineers sent out by the French Government to examine the new methods of mining and treating ores in the United States and Canada, visited the Sudbury district last week.

PROF. LETSON BALLIET, of Helena, Mont., late professor of geology and chemistry at the Arkadelphia Methodist College, who has been examining properties in Baker County, Ore., for the last six weeks, left July 16th for Reno, Nev.

MR. JOSEPH STRUTHERS, of the Columbia School of Mines, New York City, is in Butte, Mont. He is going to take charge of a class now studying mining there under Mr. ROBERT PEELE, and will give the students a thorough course in practical metallurgy.

MR. STEPHEN SANDER MOCK has retired from the old-established and well-known firm of Richardson & Co., of Copper Ore Wharves, Swansea. The business will be continued by the remaining partners, MESSRS. JOHN RICHARDSON FRANCIS and JOHN CROW RICHARDSON.

MR. ROBERT H. SAYRE, Sr., general manager of the Bethlehem Iron Company, accompanied by Mr. James K. Mosser, of Allentown, sailed on July 2 on the steamer "Columbia" on a trip to Europe, which will include a voyage around the North Cape and a visit to Norway and Sweden.

PROF. HENRY LOUIS, A. I. M. E., has been honored by the University of Durham. The distinction recently passed upon him, that of Professor of the Durham College of Science, has been added to, as the University, by a vote of convocation, conferred upon him the honorary degree of M. A.

MR. LOUIS S. NOBLE, M. E., of Leadville, Colo., formerly connected with the Little Johnny property and recently appointed general manager of the Leadville Gold and Silver Extraction Company, has left for London, Eng., to arrange the details of a contract by which he will assume the management of an important South African mining enterprise at Johannesburg.

MR. S. W. LAMOREUX, Commissioner of the General Land Office, has paid a visit to the Cripple Creek District, Colo., and to some of the Surveyor General's offices of the West to post himself on different matters connected with his department. It is the intention to increase the force at the Denver office, which, at present, is one of the most important in the West.

OBITUARY.

R. T. PARKER, famous in oil circles in the early stage of the Belmont oil excitement, the principal part of the oilfield being on his farm, died at Belmont, W. Va., July 7th, aged 77 years.

SAMUEL C. PECK, who had represented the Thomson-Houston and General Electric companies in Mexico for six years, during which time he had been very successful, died suddenly in June while en route from Mexico to Boston to undergo an operation for appendicitis. Mr. PECK had sold a great deal of apparatus for use in Mexican mills and power transmission plants.

COL. JAMES PICKANDS, member of the vessel and mine owning firm of PICKANDS, MATHER & Co., of Cleveland, O., died suddenly on July 14th of heart failure. Colonel PICKANDS was born December 15th, 1839. When the war came he enlisted as a private in the 124th Ohio and was promoted for bravery until he became Colonel of the same regiment. His sister is the wife of the Hon. M. A. HANNA, of Cleveland. He was a millionaire.

JOHN S. LANEHART died recently at Auburn, N. Y., aged 76 years. He was a member of the firm of Lanehart & Garrett, coal, coke, etc. During the war he acted as deputy provost marshal under the late Gen. John Knapp of Auburn. Afterward he served for six years as county clerk of Cayuga County, and later as agent and warden of the Auburn state prison for some years. On leaving the prison he entered the coal business, which afterward became known as that of Lanehart & Garrett.

SIR JOSEPH PRESTWICH, the eminent geologist, is dead, aged 80 years. He made geology his favorite study early in life, his first paper on the subject being read before the Geological Society in 1835. In 1874 he was elected to the chair of geology in the University of Oxford. When he resigned, in 1888, the university conferred on him the honorary degree of D. C. L. He had been president of the International Congress of Geology, was a Fellow of the Royal Society, a corresponding member of the Academie des Sciences, and an honorary member of a number of foreign scientific societies.

SOCIETIES AND TECHNICAL SCHOOLS.

UNIVERSITY OF WISCONSIN.—The students of the College of Engineering, University of Wisconsin, Madison, Wis., will publish quarterly the *Wisconsin Engineer*, a technical publication which aims to fittingly represent the work done in the university and by its alumni. The first number contains a well selected line of articles besides an alphabetically arranged index to current engineering periodicals which will be of much interest to engineers. This index is well arranged and extensive, and covers the leading English, French and German periodicals, and will be one of the permanent features of the magazine. The subscription price of the *Wisconsin Engineer* is \$1.50 per year.

ENGINEERS' CLUB OF CINCINNATI.—At the June meeting of the club Mr. G. W. Kittredge read an interesting paper giving some "Incidents in connection with the cyclone at St. Louis on May 27th." The details of the destruction wrought by it, particularly to railroad property, and many peculiar and wonderful features illustrating the fearful force that must have been exerted by the wind, were pointed out. A lease for the use by this club of the rooms of the Literary Club at its new quarters on Eighth street was approved and the President and Secretary authorized to execute the same.

An outing was given by the club and consisted of a visit to the works of the Laidlaw-Dunn-Gordon Company at Elmwood, the Proctor & Gamble Works at Ivorydale, the new shops of the Street Railway Company at Chester Park (where lunch was served), the Hunt Street Power House of the Street Railway Company and the Pennsylvania Bridge and the Suspension Bridge, both of which are being remodeled. Quite a number of the members and invited guests attended.

WESTERN FOUNDRYMEN'S ASSOCIATION.—A meeting of this association took place at the Great Northern Hotel, Chicago, July 15th. The paper read was on "The Practical Value of the Various Metal Loids in Cast-Iron," by Maj. Malcolm McDowell.

The following questions (Topical Questions Nos. 8 to 14), had been prepared for discussion in their order, or as many as could be reached, after the reading of the paper: (8) What is the proper amount of air, pressure of same, to melt iron in a cupola, and what are the effects of too little and too much air? (9) Is it economical to ventilate a foundry artificially? What has been your experience? (10) What is the best method of lighting a foundry of modern design? (11) Have any members of this association had any experience with Thurston's autographic torsion machine? If so, does it possess any merit over other forms of machines now in use for testing cast iron? (12) In order to overcome the variation in size of test bars incident to molding, is machining down to size to be recommended? (13) What is your experience as to the effect upon coke on exposing same freely outdoors? (14) What is your experience as to utility and efficiency of flexible shafting for use with grinders on heavy and intricate castings?

INDUSTRIAL NOTES.

The Dayton (Tenn.) Coal & Iron Company is erecting a coal washer plant, which will be very complete.

The Carborundum Manufacturing Company, of Monongahela City, Pa., has increased its capital stock from \$100,000 to \$200,000.

The New York & Cleveland Gas Coal Company will erect a large foundry and machine shop at Turtle Creek, Allegheny County, Pa.

The blast furnace of the Bellaire (O.) Steel Company, which has been closed down for six months past because of a shortage of orders, was blown in on Tuesday, giving employment to 200 men.

The Westinghouse Electric Machine Company will hold a special meeting of directors on September 2, to take action on approval or disapproval of an increase of the capital stock of the company.

The New Castle (Pa.) Tin Plate Company resumed operations in every department July 6th, and nearly 1,000 employees are working. The New Castle Tube Mill also resumed, employing 350 men.

The American Diamond Rock Drill Company, of New York City, has filed articles of incorporation at Albany. Capital, \$10,000. Directors: H. S. Goodridge, E. S. Innet, of New York City; C. H. Tompkins, of Somerville, N. J., and others.

The Greensburg Nut and Bolt Co., of Greensburg, Pa., sold the abandoned plant July 6 to Sidney J. Potts for \$2,000. When the works were built in 1890 by a company headed by Chas. Hotchkiss, it is said \$100,000 was put into the enterprise.

The Board of Directors of the National Saw Company held a meeting at their offices, Newark, N. J., July 2d, 1896, at which Mr. Sylvester S. Battin was elected president, Mr. Silas C. Halsey, vice-president, and Mr. F. B. Earle, secretary and treasurer.

The Pawtucket Manufacturing Company, of Pawtucket, R. I., has lately received through the agent of the Russian-American Railroad Company in Philadelphia an order for 15 belt machines to be used in the construction of the new lines of the company in Russia.

The Vulcan Iron Works of San Francisco, Cal., are building a double circular saw mill for McLean Bros., of Redding, Cal., and a portable saw mill for the Red Cap Mining Company, of Hoopa Valley; also a 10-ton ice-making plant for Hawaii, and a 5-ton refrigerating plant for Central America.

The Charlotte Furnace, at Scottdale, Pa., was put in blast on Monday, July 6, after a seven months' shut-down. It will be operated by the lessees, Corrigan, McKinney & Co., of Cleveland. The furnace has been relined and repaired and is expected to make from 175 to 200 tons of iron a day.

The Saltsburg (Pa.) Rolling Mill Company recently held a meeting of stockholders when the following officers were elected: President, S. M. Jackson; treasurer, S. M. Nelson; secretary, D. U. Remaley. The above named, together with John H. Jackson and W. B. Walker constitute the new board of directors.

The Columbus (O.) Machine Company has been reorganized by James Kilbourne and others. The principal specialty will be the production of blowing Corliss and slide valve engines, rolling mill and blast furnace work, punches, shears, etc. Their facilities enable them to turn and bore pulleys up to 30 ft. in diameter and 55 tons in weight.

John Taylor & Co., San Francisco, Cal., have commenced the manufacture of a combined crucible and muffle furnace that takes a 12 x 6 x 4 or "J" muffle, also No. 10 or equivalent size crucible. Either coke or coal can be used as fuel. Weight, complete, 250 lbs.; price \$25. Full particulars will be furnished by the makers upon application.

The Dunbar Fire Brick Company has contracted to furnish 750,000 coke brick for W. J. Rainey's new plant, at Mt. Braddock, Pa., and for an addition to his Elm Grove works. The company has just finished a contract for 1,200,000 bricks for the Solway Process Company, of Dunbar, Pa.; also another for 100,000 brick for the Dunbar Furnace Company.

The fires in the new plant of the Fowler Radiator Company, at Johnstown, Pa., have been lighted up and the machinery started for the first time since its completion. This plant was moved from Norristown to Johnstown and supplied with new equipment and new buildings. They began operations with about 75 employees and are well supplied with orders.

Haselton Furnace, of the Andrews Bros. Company, of Youngstown, is now being relined after a continuous run of 4½ years. Two Allis blowing engines are now in place and ready for furnace connections, a new Whitwell stove will be added, making four in all, and the battery of boilers will be increased to 16. It is estimated that these improvements will give a daily tonnage of 250 tons, nearly half of which will be used by the company in its own mills.

The strike at the works of the Brown Hoisting and Conveying Company, Cleveland, O., has assumed even more serious proportions than when the last outbreak of violence took place. The non-union men now employed have been set upon and beaten by the striking union men, and a number have been seriously injured. The city is now under martial law. Two companies of the Fifth Regiment are out, and it is probable that several more companies will be ordered out before the labor troubles are over. All the police have been mobilized in the police stations ready to be summoned.

The Phillips Mine Supply Company, of Pittsburg, has just finished a complete railroad tippie equipment and incline machinery for John Blythe & Co., on Elk River, near Charleston, W. Va.; one complete tippie for Imperial (Pa.) Coal Company; one complete river tippie equipment for the Southern Railway Company, Greenville, Miss.; one complete tippie for Himrod Coal Company, Westville, Ill.; one complete screening plant for J. H. Somers Fuel Company, Bellevernon, Pa.; also one Capel fan, 10 ft. diameter, for Imperial Coal Company, and one for Pittsburg Consolidated Coal Company, Primrose, Pa.

Among recent orders received by the M. C. Bullock Manufacturing Company, of Chicago, is one from Krippendorf, Dittman Company, Cincinnati,

O., for a 120 I. H. P. compound central valve non-condensing Willans engine for direct coupling. This is the third central valve engine that has been purchased by Krippendorf, Dittman Company for their shoe factory, as they are using electricity in almost every operation. Mr. Dittman, in company with Mr. Chas. E. Rice, their Consulting Engineer, made an extended investigation before deciding on the plant finally installed. The factory is complete and up to date in its equipment and arrangement.

Dow Steam Pump Works, of San Francisco, Cal., reports sales as follows: Complete pumping plant for Mrs. P. A. Hearst, of Sunol, consisting of pump house, electric motor and one of Dow's latest improved triplex plunger pumps, together with wiring, pipe line, etc.; Combined air and circulating pump for steamer *Barclay Golden*; sinking pump of 300 gallons per minute for S. C. Gold Mining Company, Placerville; underwriters fire pump for Sierra Lumber Company, Red Bluff; electric driven triplex plunger pump for the Banner Mine; large sinking pump for Blanchard mine; air pump for Gautamala; complete pumping outfit, consisting of pump, boiler and pipe line all set up, for country residence at Gilroy.

The Carbon Slate Company, of Slatington, has made the largest shipment of roofing slate in the history of the slate trade in Pennsylvania. It comprised 75 car loads, consisting of 3,750 squares, to be sent across the Atlantic to England. In addition to this 13 car loads, amounting to 674 squares, will be shipped to other points in Europe. The orders were sent by the representative and partner of the above company, Mr. Robert G. Pierce, who sailed for England on June 10th. Last December Mr. Pierce returned from Europe for 67 car loads, which were shipped the early part of this year. The slate merchants of Great Britain are highly pleased with the quality and color of the Carbon Company's slates, and many of them have been reshipped to Australia and South America.

TRADE CATALOGUES.

The F. D. Cummer & Son Company, Cleveland, O., has issued a handsomely printed and illustrated catalogue of the Cummer dryers, of which they are the sole manufacturers in the United States. This class of apparatus is used in connection with the manufacture of many materials now on the market, hence the necessity for an economical system is generally appreciated. The Cummer dryers, calcining machines, ore roasters, etc., have been adapted to meet existing requirements in all lines of trade, and on that account are sure to give satisfaction to their many users.

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.

OIL EXPORTS.—The Bureau of Statistics, Treasury Department, reports the exports of mineral oils from the United States in June as follows: Crude oil, 6,787,715 gals.; naphthas, 845,003 gals.; illuminating, 67,296,955 gals.; lubricating and paraffin, 4,186,320 gals.; residuum, 966 gals.; total, 79,116,959; an increase of 10,244,802 gals., as compared with the corresponding period of 1895. For the 12 months ending June, 1896, the total exports of oil were 880,354,125 gals., showing an increase of 4,697,981 gals. over the fiscal year 1895.

ALABAMA.

TALLADEGA COUNTY.

COPPER MINES.—A copper vein is being worked 25 miles from Anniston. The place is called Copper Hill. Mr. D. W. Detrick, who has charge of the mines, is a mining engineer of considerable experience, having operated at Johannesburg, Transvaal, and at Anaconda, Mont. He is backed by R. T. Wilson, of New York, and other northern capitalists.

ALASKA.

ALASKA TREADWELL GOLD MINING COMPANY.—This company reports its clean-up for the month of June, as follows: Period since last return, 31 days; bullion shipment, \$68,913; ore milled, 21,451 tons; sulphurets treated, 405 tons; of bullion there came from sulphurets, \$20,827. The working expenses for the month amounted to \$23,087. The average yield was \$3.21 per ton of ore milled.

STAMP MILLS.—It is reported that there are 500 stamps at present in operation in Alaska, with about 175 more contracted for.

ARIZONA.

GILA COUNTY.

(From an Occasional Correspondent.)

BREMEN'S MILL.—This mill on the old Riverside

Toll road is nearly completed, and will be running on ore about the middle of July.

GOLD GULCH.—Several promising claims in the vicinity of the Vassar Company's property have recently been taken up by New York men, the intention being to fully prospect and develop them. Indications point to a revival of interest in the district, which has been entirely neglected.

LAST GULCH.—The activity among the small gold properties at this camp, six miles from Globe, continues. Several new mills are talked of as well as bonding and sales.

OLD DOMINION COPPER MINING AND SMELTING COMPANY.—Mr. Hyams, the general manager of the Biglow interests, has been here the past week. As a result of a conference with leading business men and miners, he agreed to start up the property on July 6th, putting smelter and mine on a \$3 basis exactly as at the United Globe, belonging to Phelps Dodge & Co. He requested that the men should not dictate who should be hired, to which they agreed. He had no objection to a union. He said that Supt. Parnall's wage cutting, which brought on the trouble here, was done without authority from the home office. Mr. Parnall is retained as superintendent. Everyone here is pleased with the outcome of the troubles.

UNITED GLOBE.—This company has its tramway nearly completed from ore lines to smelter, and is making other improvements to increase its output.

PIMA COUNTY.

SAMPLING WORKS.—A special agent of the Treasury Department visited Nogales to inquire into the ore importations from Mexico at that port, and the need of government sampling works there. The *Oasis* says that after a thorough investigation the conclusion was reached that sampling works were needed at Nogales.

YAVAPAI COUNTY.

FORTUNE.—This mine lies between the Champion and the Pine Mountain claims. On the north end of this claim a shaft is down 160 ft. In the same shaft a crosscut was made east 200 ft., showing the vein to be 1 ft. of sulphide ore. The crosscut south 90 ft. on the vein, 1 to 3 ft. of ore, said to pan \$90 per ton. South further on are three shafts. The first is down 50 ft., the second 100 ft. and the third 60 ft.

GLADIATOR.—Supt. E. M. Foltz, of this mine, has run the main tunnel 604 ft. through hard rock. This tunnel taps the veins 500 ft. from the surface. The second tunnel above is in 115 ft., and is connected with the surface. The third tunnel is within 60 ft. of the surface and in 75 ft.

PINE MOUNTAIN.—This property is being operated under the laws of Colorado, under the name of the Pine Mountain Gold Mining Company. The officers are A. W. Rucker, president; J. L. W. Goddard, vice-president; F. A. Dorr, of Boston, treasurer; Kyle Rucker, secretary, and D. J. Warren, of Phoenix, general manager. The working shaft is down 400 ft. There are five levels running north and south in the vein in this 400 ft. The first level north is 100 ft., and south 250 ft. The second level north is 60 ft. and south 200 ft. The third north is 118 ft. and south 215 ft. At the bottom of 400 ft. the level north is 7 ft. and south 215 ft. All of these levels contain ore. The ore in this mine is of a high grade and was worked by the former owners in a 10-stamp mill that has lately been moved to the mine.

STANDARD.—This group is located in the Tower's Canyon; the owners are J. A. Forbes and John McKenzie. The main work has been done on the Buster claim by tunnels. The working tunnel enters the base of the mountain 150 ft., leaving an elevation sufficient for the erection of a mill in the canyon. Another tunnel enters the vein about 50 ft. above the main tunnel. There are several shafts sunk showing from 1 to 3 ft. of quartz.

CALIFORNIA.

AMADOR COUNTY.

BRIGHT.—The three-compartment shaft on this mine, just north of Jackson, is now down about 30 ft., and grading is being done for the placing of an engine so that hoisting can be done by steam power as soon as the engine is put up.

BUTTE COUNTY.

(From Our Special Correspondent.)

GOLD BANK.—This mine, in the Forbestown mining district, belongs to the W. W. Stow estate. Only the upper levels are being worked on account of the water. The new tunnel, which will be completed in about two months, will drain the mine and enable them to work the lower levels. About 100 men are employed.

CALAVERAS COUNTY.

THREE R.—Active operations have been resumed on this gravel mine on the Calaveras river. The necessary machinery for obtaining power from the river is now being put in, and a mill for crushing the gravel, which is of a cement nature, is to be erected. The company was recently incorporated, with a capital stock of \$50,000.

FRESNO COUNTY.

OIL FIELD.—It is reported that oil has been struck near the mouth of Panoche pass, and that parties from San Francisco who have been prospecting in that vicinity are taking up claims as fast as possible. This region lies 60 miles north of the Coalinga fields, and it is said, experts who have thor-

oughly examined the intervening country are of the opinion that oil will be found along the base of the Coast range all the way from Coalinga to Panoche.

OIL LINE.—A company has been formed, and articles of incorporation were filed July 3d, having for its purpose the building of a pipe line to bring oil to Fresno from the new field at Coalinga and to build a refinery here. The pipe line will be 60 miles in length, and will require but one pumping station, and that will lift oil to the top of the spur of the coast range, from which point it will flow to this city by gravitation.

HUMBOLDT COUNTY.

SUGAR BOWL MINING COMPANY.—This company has the ditch to its mine on the Trinity River near the Hoosa reservation. The ditch is two miles and a half long, and measures 20 in. deep, 30 in. at the top and 20 in. at the bottom. A crew of men have commenced putting in the pipe. The water will be brought to the claim from Campbell Creek.

RIVERSIDE COUNTY.

(From Our Special Correspondent.)

SANTA ROSA.—At this mine, seven miles west of Ferris, a rich strike has been reported. The vein is 2 ft. in width and widens as they go down. The ore is free-milling and assays about \$42 per ton. The 20-stamp mill will be started up as soon as sufficient ore has been accumulated on the dump. Oil is used as fuel.

SAN BERNARDINO COUNTY.

(From Our Special Correspondent.)

ROSE.—This mine, together with the Christie and Coupon mines, all located in the Mornogo mining district, have been sold to Denver people for \$75,000. The milling plant is to be increased, a chlorination plant erected and the Christie shaft deepened.

SAN DIEGO COUNTY.

(From Our Special Correspondent.)

GOLDEN CROSS.—At this mine, near Hedges, the mill is crushing 300 tons of ore per day. This property is still in the hands of W. W. Stewart, receiver.

SHASTA COUNTY.

(From Our Special Correspondent.)

MOUNTAIN.—These mines have not resumed active operations at their smelter at Keswick, but have a force of 200 men employed and a great deal of work is being done on the Iron Mountain Railway, which now is running only one train a day. Work will soon commence on the large rolling plant and four ovens are to be erected with a capacity of 125 tons each per day. The ore has to be roasted, on account of the sulphur, and then conveyed to the smelters.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

BLACK OAK.—At this mine, about one mile from Soulsbyville, there is estimated to be 40,000 tons of ore in sight, which will average \$50 per ton. A 35-ton cyanide plant is in course of erection on the property for the treatment of the ore. They expect to save over 80% of the assay value.

COLORADO.

EL PASO COUNTY.

(From Our Special Correspondent.)

The differences between the Midland Terminal and the Colorado Midland Railways show no evidence of a speedy settlement, and the two samplers recently erected on the line of the Midland Terminal Railway have no work to do.

BONANZA KING.—This mine, on Gold Hill, made its initial shipment from a shallow shaft on the Claypool Lease. This property, early in 1892, was considered a good one, and two shipments were made to the stamp mills at that time.

BRODIE CYANIDE MILL.—Last month 1,800 tons of ore were treated in this mill. A new furnace is being erected. The mill gives general satisfaction and buys low-grade ores.

C. O. D.—This mine, in Poverty Gulch, owned by the Rebecca Mining Company, is not yet in working order. The new pump, capacity 1,000 gals. per minute, will, it is expected, soon drain the mine, and shipments will then be the order of the day. The production of the mine this year has been very limited, on account of the great influx of water, twice necessitating a change of pump.

GARFIELD.—This mine, owned by the Bankers Mining & Milling Company, and situated on Bull Hill, is being worked on lease by seven partners, who manage to extract about a carload of ore each month. The ore is of fairly good grade, and by carload lots assays from 12 to 20 oz. A small lot of three tons recently sampled 81 oz. or \$1,620 per ton. The ore is well assorted, the pay-streak being small. The lessees have a lease on 300 ft. by 300 ft. The shaft has been sunk 250 ft., and the lessees have complied with all the requirements to hold the lease until the 1st of April next.

LAFAYETTE.—The mine adjoining the Ruby, owned by Judge Pendray, and worked under lease, has also suspended operations.

LONE STAR.—This mine, owned by the Arcadia Mining Company, has shown great improvement during the past two weeks. In June the profit shown on working 22 men from development work, sinking one shaft and extending two drifts amounted to over \$5,000.

MIDLAND.—This claim, owned by the Anchoris-

Leland Company, is still being worked by Mr. Connell and associates on lease. The shaft has been sunk 206 ft., and crosscutting is being conducted to intersect the vein at that depth.

RUBY.—The Rubicon Mining Company, owners of this mine, situated on Bull Hill, which was purchased last year for \$40,000, have closed down for some cause. The property was recently examined on a \$300,000 basis, so it was reported.

VOLCANO.—This claim is being examined by intending purchasers.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

The Miners' Union ordered a strike of all members in Cripple Creek, to take effect July 15th. The demands upon the operators is that they shall sign an agreement to employ none but union miners and that the wages shall be \$3 per day for eight hours' work. The former contest in Cripple Creek secured the wage and hours per day arrangement, but it was left to the option of the operators what class of miners they might employ. The camp today is mixed, though it is believed the union miners outnumber those not affiliating with the union. It is also understood that the silver camp of Aspen will likewise be included in the strike.

Leadville mines have been shut down for some weeks over the question of the recognition of the Miners' Union, and so far none of the operators has signified a desire to make terms with the union. It is said that the union is watching the railroads leading into Leadville for the purpose of preventing the entrance of new men to work the mines, and at the first appearance of these non-union workmen a reign of violence and mob law is anticipated.

IOWA GOLD MINING AND MILLING COMPANY.—The following particulars have been furnished by the Beall Investment Company, Denver Colo.:

The net returns from ore sales for the month of June were \$20,082.88. The expenses were about \$8,000. The directors declared the regular monthly dividend for June of 1c. per share, amounting to \$10,000, payable July 15th. This is a remarkable showing in the output for June, when it is considered that this total was made with the mill running but one shift.

It is the policy of the management to restrict the output until the new tramway is completed, which will be about August 10th. They are putting in the Bleichert tramway system, with a capacity of 150 tons a day, and a cost of \$22,400. They are paying now \$4 per ton to transport the ore from the mine to the company's mill. The mill was recently enlarged from a capacity of 35 to 80 tons per day, and is working satisfactorily, the tailings running only a trace in gold and 1 oz. in silver. Prof. Edmund Kirby declares that the Iowa ore is the best adapted to concentration of any in Colorado that has come to his notice. The crude ore is about \$20 value, and is concentrated about five into one, the concentrates being worth in round numbers \$100 per ton, three-fourths of the value of which is gold. The company recently put in a complete electric lighting plant for the mill, as well as a new air drilling plant for the mine.

The company is out of debt and has \$70,000 in its treasury. It has no stock for sale, and none of the stockholders are in the deal as a stock speculation in any manner. Two hundred thousand shares of stock were sold for the purpose of paying off the floating debt and making improvements and the stock has been listed upon the Colorado Mining Stock Exchange, of Denver, solely for the purpose of giving the small stockholders a market. The stock is not very actively dealt in, because most of the purchasers have bought it for investment, but what stock does change hands brings a price from 55 to 60c. per share.

GILPIN COUNTY.

(From Our Special Correspondent.)

FISK.—The water has now been lowered to within 20 ft. of the 800-ft. level, but the pumps in the Gregory incline do not seem to drain it further, and it is now being hoisted, to permit of the resumption of work at this level.

GOLD COIN.—The crosscut from the Kansas has just struck the California-Indiana vein, at a depth of 1,000 ft. from the surface, and a distance of 255 ft. from the Kansas vein. A small electric plant will be installed next week, of sufficient capacity to light the Kansas mill and both shaft-houses.

GREGORY-BOTTAL.—The water in the Gregory incline is now down to within 40 ft. of the bottom, and it is expected will all be out in a few days. From the Bottal lower workings it is being hoisted by bucket to the Bottal tunnel.

O. K.—Work has been temporarily suspended owing to the presence of gas in the workings. An attempt will be made to work with the aid of fan and air-pipes, but the lessees do not seem inclined to adopt the obvious remedy of making connection with the Bottal tunnel.

WAIN.—A new shaft-house is being erected over the shaft, to contain a new hoisting plant of sufficient capacity for working to a depth of 600 or 700 ft.

LAKE COUNTY.

(From Our Special Correspondent.)

In the strike situation everything is quiet and no change has occurred at this writing. The miners' union declares it will not arbitrate even should the opportunity offer. The miners say they want the increase of wages and no arbitration.

ARKANSAS VALLEY SMELTER.—This smelter is

making every effort to keep running, and is getting supplies of iron and ore from every point possible. There is a big demand for carbonate and siliceous ores, and a number of the smaller lessees are shipping regularly.

BIG GIANT.—Work on the new shaft is progressing rapidly, and the management has met the demand of the union to pay \$3.50 a day at this property. These people are after the Yankee Doodle ore chute.

BI-METALLIC SMELTING COMPANY.—The furnaces of this company, together with the preceding, are the only ones now running, and every effort is being made to keep them at work. Supplies, however, are limited.

BIG SIX.—Lessee Young informs me that he is pushing development work on the Nettie Morgan shaft, hence shipments are only running from 8 to 10 tons daily. The stuff is of a very good grade, and the results are profitable.

FIRST NATIONAL.—The strike of ore here was a good one and a nice body is being developed steadily.

MONARCH MINING COMPANY.—Manager Goodwin is pushing operations on the Monarch, Yalu and Yalu No. 1 shafts. The Monarch is down 300 ft. and drifting is to be commenced at once at the 230-ft. level. The Yalu is down 50 ft. and Yalu No. 1, 90 ft.

OURAY COUNTY.

CAROLINE MINING COMPANY, OURAY.—The electric power transmission plant at the Virginus mines of this company, which was one of the first in this country, has been in continuous operation since its installation in 1891.

The Virginus mines are near the summit of Mount Sneffels, in a region of perpetual snow, some 12,730 ft. above the level of the sea, or 5,000 ft. above timber line. They consist of some mines rich enough to repay mining under adverse circumstances and of others containing a low grade of ore, which could not be mined profitably without cheap power. This power is derived from the water of the Red Canon Creek, brought through a pipe line 4,000 ft. long to Pelton wheels, which drive General Electric bipolar dynamos. The current is direct and the voltage 800. The motors drive hoists, pumps, blowers, stamping mills and drills. An order was recently given to the General Electric Company, which put in the original plant, for an 800-volt two-motor mining locomotive for hauling the wagons in the mine. Before the adoption of electricity the company was paying \$18 a ton for their fuel, the daily expense of this item amounting to over \$100. The amount of power now used is double that formerly supplied by the superceded steam plant, and the saving probably more than repays the cost of the plant every year.

ROUTT COUNTY.

MICHIGAN HILL TUNNEL AND MINING COMPANY.—This company, of Pine Creek, has commenced work on the tunnel which is to cut Michigan Hill and will attain a depth of 1,800 ft., so as to give perfect drainage to all veins cut and provide for removing ore at much less cost than by hoisting to the surface.

GEORGIA.

HARALSON COUNTY.

ROYAL.—This gold mine is now in full operation and crushing 40 tons of ore per day. The company has been developing its property since last September and is said to have enough ore in sight for two years' run at present crushing capacity.

TALLAPOOSA.—The new gold chlorination plant erected here under the supervision of A. Theis, has been put into full operation, and report says has proved a success. The first charge of sulphuretted gold ores that was run through the chlorination plant showed that practically all the gold was extracted from the ore, leaving hardly a trace of gold in the tailings. This demonstrates the fact that the chlorination process will work the gold ores in this district.

IDAHO.

BLAINE COUNTY.

FORTUNA MINING COMPANY.—This company's mill crushes 40 to 50 tons of ore per day, according to the hardness of the rock.

SHOSHONE COUNTY.

AMERICAN PLACER MINING COMPANY.—Work at this company's property at Oro Fino is progressing, 15 men being employed. The flume is almost completed, being over a half mile in length.

INDIANA.

DELAWARE COUNTY.

MUNCIE NATURAL GAS COMPANY.—This company has finished seven wells, none of which are gushers, but all of which give a strong flow. Other gas companies are putting in wells.

KANSAS.

CHEROKEE COUNTY.

(From Our Special Correspondent.)

BAKER, HOLMES & Co.—The Blue Ribbon mine, on the Nine Acre lease, is operated by this company who are drifting at 90 ft. on a large face of lead and jack in open ground and have made several turn-ins of ore.

BRINKERHOFF LAND.—Sparks, Pauley & Co have leased 27 acres of this land near Cave Springs, on which there are six producing and about 20 prospecting shafts. They have struck lead and zinc ore

in paying quantities from 40 to 90 ft. in open ground and very little water. The following are the producing shafts: Hirsh, Black & Co. have their shaft down 63 ft. with sheet lead and zinc ore in the bottom. They struck lead at 41 ft. and went through 6 ft. of it, on which they are now drifting, resulting in an average of over 12,000 lbs. a week. Under the lead lies a 16-ft. face of zinc ore in soft black ground. They will put up a steam hoister and increase the output. Dean & Fixten are drifting at 65 ft. on a 9-ft. face of zinc ore in open ground and are producing over 7 tons of zinc ore each week. Hobarts, Bullock & Co. are drifting at 88 ft. on a 12-ft. face of lead and jack in open ground, but will sink deeper to get water enough to wash the ore. Sumner, Boyes & Co. are drifting at 90 ft. on a 30-ft. face of lead and jack in open ground and are making about 15 tons of free zinc ore, 20 tons of crushed ore and 5,000 lbs. of lead each week. They are sinking at night for water and hoisting pay dirt during the day. At the Baby Elephant shaft, good zinc ore has been struck at 95 ft. and 102 ft. it is in pay dirt. They are putting up a derrick and steam hoister and will sink deeper. At the Bessie Lee shaft, they are drifting at 95 ft. on a large face of free zinc ore in timbering ground. They have a pump and steam hoister, and will make a large turn in.

DEGRAFF BROTHERS' LEASE.—At the pump shaft they are sinking in rich dirt and are down 117 ft. having gone through 7 ft. of pay dirt. They will sink to 150-ft. level to drain the lease and furnish water to wash the ore. At the Miller and Ben Butler shafts last week they were putting in Freeman steam hoisters and this week will commence to hoist and clean up rich zinc dirt from the 112-ft. level. At the Kittrel shaft they lost some time on account of bad air and have put up a large blower and will make their usual turn-in this week. At the M. Quad shaft they are drifting at 112 ft. on a large face of zinc ore in hard ground.

NORTH EMPIRE COMPANY.—This company has leased 72 acres of the Murphy land and has over 35 producing shafts and about 50 prospecting shafts on it. There are two large concentrating plants in operation and two more building, one of which was finished last week and another will be finished in two weeks. Last week they turned in 637,950 lbs. of zinc ore, 125,100 lbs. of lead ore, 220,310 lbs. of sludge, for which they received \$7,859, and this was only 5 days' work. At the Rock Island shaft they have opened up a fine zinc prospect at 107 ft. In drifting a few feet from the shaft they broke into a mud opening that is rich in zinc ore and this week they will make a good output. At the Silver Dick shaft they have developed a large body of ore at 107 ft. in open ground. Rich dirt is being taken out. A large turn-in is expected.

KENTUCKY.

LEE COUNTY.

KENTUCKY RIVER COAL COMPANY.—This company, which succeeded the late Beautyville Coal Company, has been prospecting several weeks, and has struck a vein of coal 30 in. thick and of good quality. It is generally understood that the company will shortly put a large force of men to operating this newly-discovered vein of fine coal.

OHIO COUNTY.

McHENRY STATION COLLIERY.—This colliery, near Beaver Dam, is installing an electric plant, putting in mining machines, and will have an electric trolley engine for hauling the cars.

MICHIGAN.

DICKINSON COUNTY.

CUNDY.—The new plant of machinery for this mine, comprising hoisting engine, air compressors, pumps, etc., has been received at Quinnesec, and is being put in place as fast as possible.

MINNESOTA.

(From Our Special Correspondent.)

While ore shipments are falling off from all other parts of the Lake Superior District, those of Minnesota are still as heavy as ever and there is no indication that they are to decrease, except that at a few of the mines the forces have been somewhat reduced. This has but little effect, however, where the mines can be so quickly started up and pushed as can those of the Mesabi. On the Vermilion no reduction has come as yet, and the mines are all working as it none was expected.

Several of the Michigan parties who have gained large interests in the Gunfint, northeastern Minnesota region, have just returned from an extensive tour of investigation there. They claim to be well satisfied as to the richness of the region, and say that in a few months the surveys for railroad connection with the lake and with Duluth will be under way, and that all the needed money with which to build has been procured.

MESABI RANGE.

CANADIAN CONSOLIDATION.—This new organization has been formed to cover the work being done by Tom Hogan, near Hibbing, where he has one drill in 180 ft. of ore and another going into the same body. Neither holes have gone through the ore body, which is of excellent grade.

LAKE SUPERIOR MINES.—At the Hull and Rust mines of the Hibbing group the water still bothers the management and the pumps at the Rust were overcome by the water a few days ago. They are now lowering it once more. At the Hull the miners were compelled to climb out the other day to save their lives, the discharging valve of the pump in use

breaking just as they were at work connecting a new triple-expansion pump to the steam. Still a third pump was also to be connected in a few minutes. The water broke in from an underground stream and came with the noise of a Niagara, opening connection with what appears to be a natural drift about 6 ft. x 4 ft. in size, which has been explored for some 75 ft. The chief problem at both these mines has always been the excess of water, they apparently draining an immense subterranean basin that is of vast extent and full of water.

MAHONING ORE COMPANY.—Shipments have been resumed from this mine, and about 1,000 tons of ore are going forward daily. About 2,000 cars of dirt are being moved daily by the stripping contractors, and this will be increased to 3,000 cu. yds. in a short time.

MINNESOTA IRON COMPANY.—This company will explore several tracts that were the property of the Cincinnati Company, close to the Canton mine.

VERMILION RANGE.

DULUTH AND IRON RANGE.—The No. 5 dock will be completed in a few days and is said to be the most complete and finest piece of ore dock work ever constructed. It is 1,000 ft. long, is a double dock and is 50 ft. high.

MINNESOTA IRON COMPANY.—The daily shipments of this company are: From its Soudan mines 3,600 tons and from the Chandler 3,200 tons. The company is meeting with success in its explorations for ore on the Barager lands near Ely.

PIONEER IRON COMPANY.—This company is now hoisting and shipping 2,200 tons a day, a remarkable record for the mine, but only a part of what it can do when fully developed.

SOUTHALL MINING COMPANY.—This company has filed articles with the Secretary of State. Its capital stock is \$3,000,000, and the incorporators are A. C. Titus, M. Dalton and Miss Lizzie Fleming. These are simply paper incorporators.

MISSISSIPPI.

HINDS COUNTY.

COAL.—It is reported that a large vein of coal has been struck at West's station, near Jackson, and that a stock company has been organized to put in a mining plant.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The output of ore last week was a little larger than the week before as the weather was fine and the miners worked one day more. The demand for zinc ore was more active and the top price paid was \$21 per ton, with an average of \$19 per ton. There was left over in the district about 1,500 tons of zinc ore and about 3,000,000 lbs. of lead waiting for better prices. Lead ore sold last week at \$15.50 per 1,000 lbs., with the usual 50c. added for hauling. The prospect for a large output this coming week is good as the operators feel that they will receive a better price. The following was turned in by the different camps of the district: Joplin zinc, 1,400,850 lbs.; lead, 348,370 lbs.; value, \$20,375. Webb City zinc, 203,100 lbs.; lead, 22,210 lbs.; value, \$2,233. Cartersville zinc, 1,573,400 lbs.; lead, 169,440 lbs.; value, \$17,266. Galena, Kan., zinc, 2,640,000 lbs.; lead, 494,000 lbs.; value, \$31,200. Aurora zinc, 495,000 lbs.; lead, 40,000 lbs.; value, \$3,228. Mt. Vernon zinc, 116,750 lbs.; value, \$1,168. Wentworth zinc, 88,000 lbs.; value, \$902. Oronogo lead, 16,930 lbs.; value, \$71. Totals for the district: Zinc, 6,586,100 lbs.; lead, 1,090,950 lbs.; value, \$76,432.

Alonzo Cragin, J. A. Cragin, Charles DeGraff and Gordon Allen have an 80-acre lease of syndicate land near Peace Church, north of Joplin. A few weeks ago they started a prospect shaft and in sinking at 17 ft. signs of zinc ore were found accompanying coal car. At 27 ft., zinc ore nuggets an inch in size have been taken out in the last few days. It begins to look as though they will develop a large body of zinc ore. This will re-awaken a lively interest in a part of the territory situated north of Joplin where no work has been done for over two years. The land is in Turkey Creek Valley about a mile north of Lone Elm and the once famous McLee Mines.

BLAIR BOYS.—On the Midway lease, about two miles northeast of Joplin, they have opened up a fine body of zinc ore at 135 ft. in timbering ground. They concentrate their ore on the Reed & Co.'s steam plant and are making about 10 tons of zinc ore every 10 hours.

SILVER SHIELD COMPANY.—Last week this company started a drift at 120 ft. and opened up a large face of ore. They will put up a steam plant if the face of ore keeps on increasing in size.

UNO COMPANY.—On the Gramby Company's land this company last week started up their crusher and rolls. They will clean their ore on hand jigs at present, but will put in steam jigs as soon as they have plenty of power, having a 45-H. P. boiler and a 35-H. P. engine. They are drifting at 132 ft. on a large face of zinc ore in hard ground and no water and are producing about 30 tons of high-grade zinc a week.

MONTANA.

SILVER BOW COUNTY.

HIGH ORE.—It is reported that this mine, which is situated about three miles from the Hope, is making good progress in development work, and

that a strike has just been made of a vein of pay ore. The vein is a width of four feet and assays show gold and silver in paying quantities.

ORIGINAL.—The order for the hoisting plant to go on this mine, belonging to W. A. Clark, of Butte, has been placed with R. J. Cory, the general western manager of the E. P. Allis Company, of Milwaukee. The hoist will be among the largest yet placed in Butte and covers all the latest improvements in hoisting machinery.

PARROT SILVER AND COPPER COMPANY.—At the annual meeting of this company held recently, the old Board of Directors was re-elected; also the officers of former years, with the addition of Robert T. Grant as assistant general manager, making the list of officers as follows: President, Franklin Farrell; vice-president, Achille F. Migeon; secretary and treasurer, L. E. Gaylord; general manager, L. E. Gaylord; assistant general manager, Robert T. Grant.

NEVADA.

STOREY COUNTY.

OVERMAN MINING COMPANY.—At a meeting of the stockholders of this company held July 9, these officers were re-elected: President, W. G. Morrow; secretary, George D. Edwards; superintendent, A. Lackey.

NEW MEXICO.

LINCOLN COUNTY.

NORTH HOMESTEAK.—This mine is being worked with a small force, and good ore is being taken out from the south end of the claim, where no work has been done for the last eight years, except the driving of a tunnel at the 400-ft. level in the working shaft. This tunnel was completed last fall when the mine closed down.

SANTA FE COUNTY.

MIDNIGHT.—This claim, in the La Belle District, has passed into the hands of an Ohio company under lease for a year. The lessees pay a large cash bonus and agree to spend \$500 a month in development work. The Midnight vein is said to be 8 ft. wide, with a 30-in. pay streak.

VICTOR.—The owners of this mine, Cochiti, have leased and bonded it to Colorado men for 15 months on a basis of \$50,000. In addition to the bond, the lessees pay to the owners 10% of all \$50 ore and 15% of all ore sampling over \$50 that may be extracted, and they agree to do 30 days' work each month for 15 months.

NEW YORK.

CATTARAUGUS COUNTY.

GOLD.—It is reported that a ledge of gold-bearing rock has been discovered at Red House.

OHIO.

CARROLL COUNTY.

CARROLL AND JEFFERSON OIL AND GAS COMPANY.—This company has leased 4,000 acres of land on McGuire Creek, in Perry Township, and will build a derrick at once.

MORGAN COUNTY.

FEDERAL.—This pool, at present the scene of considerable activity, is of an ancient origin, some of the wells being 32 years old. In this pool there are 35 producing wells, making a production of 100 barrels per day from the first cow run sand. The average depth of these wells is about 100 ft.

OREGON.

BAKER COUNTY.

(From an Occasional Correspondent.)

CABLE COVE.—A company of capitalists of Des Moines, Ia., have purchased a large group of claims in this mining district and will begin development work at once. There are said to be five distinct gold-bearing veins on the property, and their croppings are covered by twelve full claims. About 100 acres of placer ground also belongs to the same company. Assays on large samples were taken from the float and croppings, running from \$2 to \$4. The width of the veins is from 4 to 12 ft. At 60-ft. depth the value is said to be about \$22. The ore is free milling and there is plenty of fuel and water on the ground.

The Cable Cove district is considered the richest in Eastern Oregon. The Excelsior & Eureka, the North Pole, the Columbia and half a dozen other good mines send in their monthly output, which speaks for itself. Beside this, considerable quantities of placer dust are brought to Baker City for sale from the foot of the Blue Mountains. The greatest depth yet attained is but 600 ft.

FLAGSTAFF.—At this mine, about three miles west of the Virtue, a steam hoist has been installed, the water for its use being hauled three quarters of a mile. The Flagstaff is operated by a French company, and is considered a valuable property.

VIRTUE.—This mine makes a clean-up of about 30,000 every month. They are working 65 men in three shifts. The mill is a 20-stamp with six Frue vanners.

WHITE SUAN.—This mine, under Manager J. W. Tigner, is doing only development work at present. A two-compartment shaft is being put down 100 ft. further from the 300-ft. level. This is expected to give plenty of new stoping ground. The Perry, Rachel, Del Norte and Alturus mines, all located from two to three miles west of the Virtue, are being opened. The great trouble with this immediate vicinity is lack of water and fuel, both of which

have to be hauled to the mines. Water costs \$1 per barrel for drinking, and wood \$6 per cord. All are hoping to strike water in the mine.

PENNSYLVANIA.

ANTRACITE COAL.

HILLSIDE COAL AND IRON COMPANY.—This company, at Forest City, has been making some extensive changes and improvements in the electrical power and motive department at No. 2 shaft. A new 22-ton mining locomotive has been added, the largest yet built for mining work. The locomotive is of the eight-wheel type, with four motors mounted directly on the axles, and is composed of two trucks, each a duplicate of the other, connected by a swivel drawhook, with special four-motor controller, enabling the locomotive to be run at full power and half speed, especially suitable for switching.

LEHIGH VALLEY COAL COMPANY.—This company's coal-storage plant at Chicago, on the Calumet River, opposite 100th street, has been completed, and is now ready for use. The plant consists of three large storage houses, 280 x 120 ft. each, with a total capacity of 225,000 tons of coal. Each storage house is fitted up with an independent engine for the transferring of coal to and from the bins. On the dock front are located the loading pockets and the hoists. The pockets are 50 ft. long and 24 ft. wide. The hoists extend more than half the length of the loading pockets and are 24 ft. wide.

PEERLESS COLLIERY.—The No. 13 vein recently cut at this colliery, near Shamokin, has proven to be one of the richest known in that locality. It is 7 ft. thick and the coal is reported to be of the finest quality. Nowhere in the region has this vein been touched and it was found necessary to tunnel 700 ft. at the Peerless before it was reached.

PLYMOUTH COAL COMPANY.—This company, with a capital of \$300,000, was chartered at Harrisburg July 7. The directors are John C. Haddock, Thomas R. Phillips and Charles W. Haddock, of Kingston, and George W. Shonk and James B. Davis, of Plymouth. Of the 3,000 shares of capital stock 2,700 have been issued to John C. Haddock as full paid capital stock, not liable to any further calls or assessments, in consideration of the conveyance by him to the corporation of coal lands in Luzerne County, with mining mineral rights and mining improvements and 43 acres of surface necessary for the business of the company. The whole is valued at \$270,000. The corporation is capitalized at \$300,000.

SOUTH DAKOTA.

LAWRENCE COUNTY.

CONSOLIDATED MINING AND MILLING COMPANY.—On the morning of July 6th fire destroyed the chlorination works of this company of Deadwood. The plant, which was a valuable one, has been idle for a number of months, a difference between stockholders compelling a shutdown. It was one of the most complete chlorination plants in the West and had been treating ores from the Portland group of mines. The loss on the mill will aggregate \$90,000, with no insurance.

Besides the mill the office-building, stables, storehouse and all the other outbuildings on the property were destroyed, which will bring the loss up to over \$100,000.

The fire communicated with the high trestle of the Elkhorn road, which crosses Whitewood Creek a short distance below the mill, and destroyed 110 ft. of it, entailing a loss of about \$2,000 to the railroad company. Considerable damage was done to the cribwork and trestling of the Burlington & Missouri road, which runs close to the scene of the fire. A loss of about \$900 was inflicted. The fire was clearly of an incendiary origin.

TENNESSEE.

HAMILTON COUNTY.

DAYTON COAL AND IRON COMPANY.—This company, Chattanooga, is adding to their plant at Dayton a Robison coal washer, which will greatly aid their operations.

OVERTON COUNTY.

BURT OIL COMPANY.—It is reported that this company, of Harriman, has struck a gas well on their property in this county, having a capacity of 1,000,000 cu. ft. per day.

UTAH.

SUMMIT COUNTY.

VILAO.—The latest assays are reported as follows: Copper, 10% to 35%; silver, 40 oz.; gold from \$2.50 to \$10. No lead or zinc. The tunnel work in the shaft is 175 ft., at the end of which the work of cutting a station has been begun. That done, a shaft will be sunk. The vein between the walls where the station is being cut is 20 ft. wide.

UTAH.

TOOELE COUNTY.

MERCUR.—It is reported that a contract has been made to drive a tunnel 500-ft. into the Mahoney group, which adjoins the August group. The tunnel is intended to tap the ledge which was struck in the shaft at a depth of 180 ft. There is said to be an 8-ft. body of the ore which runs from \$7 to \$12 in gold.

YELLOW JACKET MINING COMPANY.—It is reported that this company, of Ogden, through its President, Robert Lundy, has consummated the purchase of the White Cap group of four claims in Camp Floyd mining district, a mile and a half west

of Mercur, and adjoining the company's Yellow Jacket property on the south and east.

WASHINGTON.
PIERCE COUNTY.

TACOMA SMELTING AND REFINING COMPANY.—This company's product for June was 2,800 bars bullion, weighing 287,066 lbs., and copper matte weighing 110,500 lbs., containing 1,484.54 oz. gold, valued at \$30,685; 21,024.83 oz. silver at 68 $\frac{1}{2}$ c. per ounce, or \$14,402; 297,685 lbs. lead at 103c. per pound, or \$3,031, and 29,940 lbs. copper at 10 $\frac{1}{2}$ c. per pound, or \$3,031, a total of \$57,048. There were 67 men employed and the pay roll was \$4,863, and for wood choppers and teams \$852, a total of \$5,721.

SNOHOMISH COUNTY.

FLORENCE.—It is reported that H. F. Nettleton, Spokane, has bought the quartz mill, water rights and all the appurtenances belonging to the custom mill in Florence from F. J. Boyer and will improve its facilities for crushing the ore and saving its values to better advantage than the present plant affords. He intends to put in a 10-stamp battery equipment with vanner and everything complete in order to do all the custom work that may be presented.

SILVERTON.—It is reported that C. T. Austin, representing Trail Creek and New York investors, purchased the copper proposition on Deer Creek, near Silverton. The property is reported to have several hundred thousand tons of ore in sight.

STEVENS COUNTY.

It is reported that a deposit of mica has been discovered near Marcus. The claim is only five miles from the Colville.

WEST VIRGINIA.

MINGO COUNTY.

MARITIME COAL COMPANY.—The new electric mining apparatus placed in the mines of this company, at Thacker, has been tested and proves to be all that had been hoped. This will double their output.

OHIO COUNTY.

DAVIS COAL AND COKE COMPANY.—This company is erecting a large electrical plant at their Thomas mines, Wheeling. These mines will hereafter be illuminated, the cars drawn in and out of the mines and much of the labor performed by electricity. The use of electricity is expected to greatly reduce and facilitate the cost of mining coal, and the danger of accidents to be reduced to a minimum by the excellent light.

WETZEL COUNTY.

BARNSDALL & KAHL.—This well, on the Myers farm, on Carpenter run, a half-mile from Smithfield, has been drilled through the Gordon and fifth sands to the depth of 3,100 ft., and found all formations dry.

FOREIGN MINING NEWS.

AUSTRALIA.

COAL.—Advice has been received in Sydney that the proprietors of the Kebao (Tonkin) coal mines purpose taking advantage of the miners' strike at Newcastle to test the Californian market, and with that view have chartered the barque *Colorado*, a vessel of 1,036 tons register, to take the initial shipment.

COPPER.—A splendid find of a copper lode, carrying both gold and silver, has been made 26 miles northeast from Niagara. The outcrop is described as being 40 ft. wide and 10 ft. high, and assays 60% of copper, 10 oz. of silver, and 9 to 10 dwt. of gold per ton. The property has been placed under offer to a Melbourne syndicate.

KALGOORLIE.—It is reported that the lode has been struck in the 100-ft. crosscut from the east shaft of the Ivanhoe mine. The lode is a big cross lode connecting the Ivanhoe and Great Boulder main reefs. The cross reef runs diagonally between the two main lines of lodes, and was fairly rich at the point at which it went out of the shaft in the underlay.

MARITANA.—It is reported that Mr. J. C. Johnson, of Adelaide, has sold this gold mine at Kalgoorlie for £100,000.

BUENOS AYRES.

It is reported that a rich gold mine, in which the deposits are very large, located in the province of San Juan, has been purchased by a firm of American capitalists.

CANADA.

BRITISH COLUMBIA.

BRITISH COLUMBIA SMELTING AND REFINING COMPANY.—It is reported that this company, of Trail, B. C., are to have the entire output of the War Eagle, Iron Mask, Virginia, and probably the Pocrman, mines from July 1st, to January 1st, 1897, a period of six months. The details of the contract were not ascertained. The same company has also contracted for the product of the Crown Point. At this mine there are 3,000 tons of shipping ore on the dump.

BRITISH COLUMBIA—ROSSLAND DISTRICT.

EVENING STAR.—Sixty ft. of the new crosscut tunnel have been finished, leaving 70 ft. more to run to tap the main and cross veins at their junction. The surface work done since Superintendent J. M. Scrafford took hold consists of an open cut 65

ft. long on the east and west vein, which shows a continuous ore body of good average value. Assays are said to run from \$20 to \$50. On the north and south vein a cut 30 ft. long has also been made. This shows a large ore body, but not of as good a grade as is found on the other vein. The east and west vein is opened by shafts and cuts from one end of the Evening Star ground to the other.

JOSIE.—The shaft of this mine is being steadily sunk in 5 ft. of shipping ore. Over 200 tons have already been shipped from this point, which, it is said, averaged \$50 per ton. The cross-cut from the main tunnel is now only 25 ft. distant from the north vein, the shaft on which is down 45 ft. and shows ore the full width.

ONTARIO.

FOLEY.—This mine has been purchased by the Ontario Gold Mines Company, an American corporation composed of business men of New York and Detroit. The main shaft of the Foley mine is now down 210 ft. and has 300 ft. of tunnel work done. The vein is from 3 ft. to 6 ft. wide, but calling it only 3 ft. wide it would give a cube of ore 3 ft. wide, 210 ft. high and 300 ft. long, or 189,000 cu. ft. As 10 cu. ft. equal one ton of ore, there are 18,900 tons of ore in sight. The report of \$200 in gold to the ton as the product of this mine was probably from picked ore. The milling value of the ore will be at least \$25 to the ton, which will make the total value of the ore in sight \$472,500. In making that estimate, no account is made of ore taken from the first shaft, now down 153 ft.

(From an Occasional Correspondent.)

CANADIAN COPPER COMPANY.—This Canadian copper company is adding a third blast furnace to its plant this season. The three old mines of the company, namely, the Copper Cliff, the Stobie and the Evans, are being worked to their fullest capacity now, with an output of 450 tons of ore a day. The company is also opening up two new mines this year, one a little west of the Copper Cliff, and the other in the township of Denison, and known as the "Krane Hill," which is said to be a veritable mountain of high-grade nickel and copper ore.

CHICAGO NICKEL COMPANY.—It is said that this company intends to build a wire ropeway from Worthington station to the mine, a distance of four miles. They have a contract from Mr. Joseph Wharton, of Philadelphia, for 1,000,000 lbs. of nickel (in the matte) a year for the next two years.

ENGLAND.

A quarrel has broken out in England between the colliery owners in Yorkshire, Derbyshire, Nottinghamshire and Leicestershire on the one hand and the Midland and Great Northern Railway Companies on the other, which threatens to have serious consequences. Down to the end of 1892, it appears, the Midland and other railway companies carried 21 cwt. to the ton, but subsequently the Midland Company declined to carry more than 20 cwt. to the ton, with an allowance of 200 cwt. per truck for wastage. The coal interest rebelled against this innovation, and carried their case before the Railway Commissioners, declaring that the change involved an addition of about 2 $\frac{1}{2}$ d. per ton to the charge on an average consignment of coal to London. The Commissioners considered that the companies were justified in raising their rates to the extent of 2d. per ton. The companies now have taken a further step, announcing that the rates will not be altered in amount, but will apply hereafter to the standard ton of 20 cwt. An additional weight of half a hundredweight per ton will be carried free of charge, and will include an allowance for loss in transit. All the companies undertake to do is to deliver a ton of coal possessing the standard weight. There seems to be danger of a deadlock, the railroads declaring that increased working expenses justify an increase in the rates, while the coal men plead that the price of coal is now so low that the profit will not admit of higher cost for transit. The result is awaited with interest by the consumers.

MEXICO.

AGUAS CALIENTAS.—J. W. Childers is at present erecting reduction works at Ojocalient for a San Luis Potosi company, Mexican capitalists. Among other appliances is a battery of two Griffin mills.

HERMOSILLO.—It is reported that the Rothschild's agents here have just closed a deal for a group of the richest gold mines in this State. The purchase price is reputed to be \$5,000,000 in gold.

PARIAN GOLD REDUCTION & EXPLOITING COMPANY.—A prospectus of this company asks the co-operation of interested parties to form a fund of \$30,000 in one dollar shares for the purpose of erecting reduction works in the mining district of Parian in the State of Oaxaca. Clifford K. Robinson is the president of the organizing committee.

NEW SOUTH WALES.

A very valuable gold discovery has been reported from 12 miles beyond Marysville, on what is known as the Reefton track, adjacent to Armstrong's Creek. The discoverer had worked in the great Mount Morgan mine, and found stone here exactly the same, in great quantity and with good prospects. Mr. Cairns, a private geological surveyor, has reported to the company owning the lease, and it is stated that all his assertions are under statements. The discoverer considered it consisted of a great mountain of ore, and Mr. Cairns says he had good reason for saying so. The formation is a large dyke over 500 ft. wide, said to be payable all over. Fifteen dish prospects, taken indiscriminately, from

various parts of the outcrop over a considerable area in each instance gave payable free gold. Five tons treated at Bendigo recently gave a yield by actual crushing equal to 1 oz. 10 dwt. gold per ton.

SOUTH AFRICA.

CAPE COLONY.

NAMAQUA COPPER MINING COMPANY.—The advance statement for the year 1895, just published in London, shows a net profit for the year, after writing off depreciation, amounting to \$106,565, to which is to be added \$9,375 brought forward from the previous year, making a total of \$115,940. The directors recommended that \$35,000 be carried to reserve account and that a dividend of 7 $\frac{1}{2}$ % be paid, which will require \$70,745, leaving a balance of \$10,195 to be carried forward to the current year's account.

DE BEERS CONSOLIDATED COMPANY.—The directors have just declared a dividend of \$4.32 per share for the half-year ending with June, and a bonus of \$0.96 per share. With the dividend paid for the December half-year this makes a total of 40% on the stock. For several years previously the company has paid 25% yearly. The advance statement cabled from the Kimberly office shows that for the year ending June 30th the total earnings, including diamonds on hand, were \$16,595,000. The expenses were \$5,355,000, leaving a net balance of \$11,240,000. After providing for interest on debentures, sinking fund and all other charges, the net profit remaining was \$9,500,000. This does not include a balance of \$590,005 brought forward from the preceding year.

LATE NEWS.

It is reported that rich copper and iron rock is being brought from a new camp 50 miles up the west fork of Kettle River, about due west of Penticton, B. C., and a fine body of copper ore has just been found on the south fork of Rock Creek.

The steamer *Topeka*, from Juneau, brought 80 stranded miners from Cook's Inlet to Port Townsend, Wash., on July 15th. They report hundreds of others at Cook's Inlet stranded, out of money and on the verge of starvation. Unless the government sends relief and a vessel to bring them back to the United States, trouble is feared.

The strike situation at the Brown Hoisting and Conveying Works Company, Cleveland, O., assumed so dangerous a phase on the afternoon of July 16th that three more companies of troops were hurried to the scene just before quitting time, and encamped in the works.

Early in the afternoon crowds began to assemble and stood about sullenly, defiant of police orders to move on. There was so much evidence of a prearranged plan, every street leading to the works having its own division of the mob, that the authorities in hot haste sent for more troops.

When the 63 men who had been at work were placed in vans to be driven home from the works, it was found necessary to charge the mob twice before a passage could be made for the wagons.

The drivers had refused to leave the stables with the vehicles and policemen did the driving. During the melee jeers and threats were hurled at the police and military, and some stones were thrown.

The severest fighting was on Hamilton street, and in the charges about 40 strikers were pricked by the bayonets. After a passage had been forced the militia had all it could do to keep the mob from chasing the wagons.

The State Board of Arbitration began its work on the case July 16th.

PENNSYLVANIA.

TWIN SHAFT DISASTER.—The work of rescuing the 58 miners who were entombed June 28th has continued since our last report, but the progress, under the numerous difficulties, has been disappointingly slow. So far 450 ft. of the closed slope has been reopened, but as this distance must be doubled, the prospects of success under the present rate of advance (at most 15 ft. per day) are hopeless. Only a few believe it possible that any of the men can be found alive, while nearly everyone else thinks it extremely doubtful if even their bodies can be recovered. The ventilation has recently caused considerable trouble. Four per cent. of marsh gas is reported in the return air, a quantity that is highly dangerous and in which work can be carried on only with the greatest care. Besides this, the pumps which were worked during the time the mine was in operation were destroyed by the cave-in, so that an enormous accumulation of water must now exist in the place where the men are believed to be. These adverse conditions have caused the report that the work of rescue will shortly be abandoned, though the mine officials deny that they intend to discontinue.

The committee of three mine inspectors appointed by Governor Hastings to investigate the causes that led to the disaster were compelled to adjourn after being in session several days because of their inability to procure witnesses to testify. They resumed on July 16th, and completed their inquiry the same day, but it is not expected that their report will be ready for about five weeks. The testimony obtained seems amply sufficient to enable them to make a report that will be generally approved.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 17.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending July 11th, 1896, compared with the corresponding period last year:

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	72,114	1,816,235	1,892,704

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending July 11th and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	34,483	1,214,050	2,147,295
Barclay, Pa.....	544	21,930
Beech Creek, Pa.....	1,446,077
Broad Top, Pa.....	7,702	221,563	235,028
Clearfield, Pa.....	70,338	2,687,558	2,894,344
Cumberland, Md.....	1,580,873
Kanawha, W. Va.....	85,165	1,730,339	1,537,825
Phila. & Erie.....	875	37,936	28,790
Pocahontas Flat Top.....	177,355	1,890,361	1,517,515
Totals	276,362	7,833,760	11,417,507

* For nine days ending June 30th.
† Week ending June 27th.

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	19,744	514,105	448,260
Pittsburg, Pa.....	33,355	992,190	1,004,924
Westmoreland, Pa.....	36,616	1,053,535	1,001,317
Totals	89,715	2,559,830	2,454,501
Grand totals	366,077	10,423,590	13,872,008

Production of coke on line of Pennsylvania Railroad for the week ending July 11th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 76,834 tons; year, 2,362,165; to corresponding date in 1895, 2,975,221 tons.

Anthracite.

This has been another very quiet week for the anthracite coal trade. While some of the producers say that the larger dealers have bought more freely than a few weeks ago it cannot be taken for granted that there will be any large demand for coal before September. The few buyers that do come into the market in the meantime are obliged to do so to fill a hand-to-mouth demand. On the whole but little new business can be reported this week from either the Eastern or Western markets; they remain practically featureless.

Prices hold fairly firm for what little business is being done, and are \$3.75 for broken, \$4 for egg and chestnut, and \$4.25 for stove, subject to the usual commission of 15c.

The production of anthracite coal for the first six months of 1894, 1895 and 1896 is noteworthy, for it shows a very heavy decline.

Month.	Production.		
	1894	1895	1896
January.....	2,922,808	3,063,535	3,814,222
February.....	2,291,472	3,133,246	2,693,622
March.....	2,495,058	3,791,665	2,998,254
April.....	2,757,306	3,139,122	3,013,190
May.....	3,792,303	3,788,916	3,125,170
June.....	5,112,359	3,777,644	3,314,196
Totals.....	19,072,306	20,664,138	18,898,654

The stocks of coal at tidewater on July 1st, 1896, amounted to 627,048 tons, a decrease of 112,455 tons as compared with May, 1896.

As will be seen in the table given above, the production of anthracite coal in June, 1896, was 3,314,196 tons, showing a decrease of 463,448 tons as compared with the corresponding month in 1895, and 1,798,163 tons less than for 1894.

The sales agents in 1894 and 1895 endeavored with their "recommendations" to restrict the monthly output, but although the operating interests thought well of their efforts the production was largely in excess of their calculations. In the first half of 1896, however, there seems to have been a more strict adherence to the different "allotments," and the companies have kept very closely within their quotas. It cannot be said at this time what the actual output will be for the latter half of 1896 but it is expected to be less than last year.

Bituminous.

The soft coal trade has dropped off a little this week; the tonnage shipped over the various railroads to tidewater was fair.

The mines of the better grades of coal are doing a good business, while the lower grades are not in demand; average profits will equal those of last year.

The hammering for lower figures than those quoted by the association continues, but the efforts do not appear to be effective, except in bringing in one or two outside coals, some of which contain so much sulphur as to cause serious rusting of the iron-work of the cars in which it was transported. Exceedingly low prices are, of course, paid for this coal, which would probably be dear at any price if it be as bad as the owners of rival coals claim.

It is the general opinion of the trade that it is only a question of time when the consumers will recognize that the combination has control of the market and that the schedule prices will have to be paid, but it must be confessed they are extremely dull witted and slow to appreciate this enlightened view of the case.

The New England consumers are using more of the Dominion Coal Company's Nova Scotia product

than heretofore. The rivals of this company claim that it cannot continue to produce and deliver its coal in the New England States at present prices, but no itemized costs are cited in support of this view. Outside of six or eight vessels chartered by the Dominion Coal Company to run to New England ports it has lately taken 10 or 12 more of the larger class for four single trips.

The far East is taking a fair amount of coal, and the Sound ports are receiving possibly a little more coal than usual this year on account of the prevailing low rates of freight. The New York Harbor trade shows very little change, though it is regular and in a fairly active condition.

The reports from the bituminous combination meetings are meager. It is understood that the general discussion as to the restriction of production, which took place at the last meeting, was not definitely decided.

All-rail business is unchanged; only a fair amount of tonnage is going forward.

Transportation from mines to tide is good, but the empty cars are not returned as quickly as is usual. On the other hand, however, this does not restrict the car supply, as all the railroads seem to fill the demands for empty cars promptly.

In the coastwise market vessels are fully adequate to the demand, and the freight rates are at about the nominal figure, as will be seen below.

We quote current rates of freight from Philadelphia: To Boston, Salem, Portland and Portsmouth, 55¢@60¢; Providence, New Bedford and the Sound, 65¢; Wareham, 80¢; Lynn, 65¢@75¢; Newburyport, 70¢; Dover, \$1.10 alongside and towages; Saco, 80¢ alongside and towage; Bath, 60¢; Gardiner, 60¢@55¢; Bangor, 65¢. 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 20c. differential in favor of Clearfield and Beech Creek coals.

Buffalo.

July 16.

(From Our Special Correspondent.)

The anthracite and bituminous coal trade remains as per last report—lifeless and unsatisfactory. Buyers take coal only for immediate requirements.

The prices of anthracite coal are as follows: For 2,240 lbs. on board vessels at Buffalo, \$4.80 for grate, \$5.05 for egg, stove and chestnut; for 2,240 lbs. delivered at Bridges, \$4.50 for grate, \$4.75 for stove, egg and chestnut; at retail for 2,000 lbs. delivered within city limits, \$4.75 for stove; \$5.00 for egg, stove and chestnut; \$3.75 for pea and \$4.00 for Blossburg.

Coke production and output remain unchanged and price unvaried.

The lock in the new Sault Ste. Marie Canal is nearly finished and boats are expected to pass through about the middle of August.

Electricity is now working the large paper mills at Niagara Falls; this is the first time in the history of the trade where electrical power is used to operate paper machines. The mills now require steam only for heating and drying purposes. Ground was broken last week for the extension of the wheel pits of the Niagara Falls Power Company.

The shipments of coal from this port westward by lake from July 5th to 11th, both days inclusive, aggregated 69,025 net tons distributed as follows: 26,525 tons to Chicago, 18,000 tons to Milwaukee, 9,600 tons to Duluth, 625 tons to Toledo, 9,500 tons to Superior, 1,325 tons to Marine City, 1,250 tons to Bay City, 1,600 tons to Saginaw, and 600 tons to Racine. The rates of freight were 40c. to Chicago, Racine and Kenosha; 55c. to Michigan City, 35c. to Milwaukee and Saginaw, and 25c. to Duluth, Superior, Marine City, Bay City and Toledo.

The following statistics of the coal trade of Buffalo were compiled by Mr. William Thurstone, secretary of the Merchants' Exchange:

Receipts by railroad of coal for June not reported by request. Lake receipts none for several years past. Shipments by lake for the month of June 318,849 net tons, as compared with 270,381 net tons in 1895 and 384,633 net tons in 1894; for the season to July 1st, 1896, 644,183 net tons, as compared with 530,169 net tons in 1895 and 726,647 net tons in 1894. The receipts by canal for the month of June 3,924 net tons, as compared with 340 net tons in 1895 and 1,785 net tons in 1894; for the season to July 1st, 7,510 net tons, as compared with 340 net tons in 1895 and 1,785 net tons in 1894. The shipments by canal for the month of June 240 net tons, as compared with 1,352 net tons in 1895 and none in 1894; for the season to July 1st, 240 net tons, as compared with 2,248 net tons in 1895 and 1,461 net tons in 1894. The shipments by lake westward thus far this season show an increase of 114,014 net tons over 1895 and a decrease of 82,224 net tons under 1894.

Lake freights during June were 60¢@40¢ to Chicago, 55¢@35¢ to Milwaukee, 30¢@25¢ to Duluth and Lake Superior ports, 45¢ to Green Bay, 60¢@40¢ to Racine, 30¢@25¢ to Bay City and 25¢ to Toledo. A year since the rates for the month were 40¢@50¢ to Chicago, 35¢@45¢ to Milwaukee, 15¢@20¢ to Duluth and Lake Superior ports, 45¢ to Green Bay, 50¢ to Racine and 25¢ to Bay City and Toledo.

The distribution of coal thus far this year was as follows: 238,650 tons to Chicago, 195,515 tons to Milwaukee, 63,010 tons to Duluth, 12,325 tons to Racine, 10,975 tons to Green Bay, 3,140 tons to Kenosha, 200 tons to Oacoda, 3,795 tons to Bay City, 4,360 tons to Saginaw, 9,410 tons to Toledo, 1,200 tons to Lake

Linden, 3,844 tons to Fort William, 1,750 tons to Marinette, 325 tons to Hancock, 800 to Cheboygan, 4,900 tons to Ashland, 51,150 tons to West Superior, 670 tons to Sault Ste. Marie, 2,100 tons to Port Arthur, 650 tons to Sheboygan, 15,534 tons to Manitowoc, 2,200 tons to Gladstone, 100 tons to Alpena, 400 tons to Ontonagon, 300 tons to Bay Mills, 300 tons to Manistique, and balance to miscellaneous ports by vessels from Tonawanda.

Pittsburg coal operators are bidding for a portion of the 1,000,000-ton contract asked for by the New York Central Railroad Company. The owners of the mines located along the Pittsburg & Lake Erie Railroad and its branches expect to supply 400,000 tons.

Lake freighting of coal at Buffalo is dull again; coal is scarce and boats more plentiful than cargoes, and it takes a great deal of figuring to get a load; no change in the situation expected for a month, as rates declined 5¢@10c. yesterday p. m., making the Chicago and Milwaukee freight 30c.

Pittsburg.

July 16.

(From Our Special Correspondent.)

Coal Trade.—The unusual activity among the miners of the river district in their efforts to forestall a threatened reduction culminated in a special convention on Thursday. While the price has not been cut to any great degree in the river districts, the miners fear that such a move may be made by the operators any time, and they mean to be prepared for it. They realize that the river and railroad interests are now identical. Modern shipping facilities have deprived the river mines of exclusive markets. The river and rail coal are now placed on an equal footing in the markets, and when the rate suffers in one section a corresponding injury is communicated to the other. It is a realization of these facts that impels the miners of the river district in the present instance to try and unite with the railroad men for the common good. This idea is embodied in the call for the convention. There were no river shipments since our last. Coal men are very indifferent about a rise.

Coal.—The lower markets are overstocked with coal and prices are at extremely low figures. Mines are being worked and most of the coal in the Dunbar region is exhausted. The Uniondale mine, of the Rand Company, the Wheeler mine, of the Cambria Iron Company, and the Great Bluff mine, of the Humphrey Company, have nearly exhausted their supply of coal and are being worked to their last limits.

An outlet to tidewater was wanted and Washington Coal and Coke Company will build a bridge across the Youghiogheny River at Banning to connect the works of the company with the Baltimore & Ohio Railroad in order to get an outlet to Eastern tidewater points. The company is erecting 50 new coke ovens.

Connellsville Coke.—There was a falling off in the coke production and output, but less than was expected. The Rainey and Cochran plants are crowded with orders, being strictly six-day plants. Production shows a tonnage of 98,624 tons, a decrease of 3,044 tons. The shipments ran high, all things considered. The shipments, as noted below, amounted to 108,000 tons, being a decrease compared with the preceding week of 2,610 tons. The freight rate reductions are having a favorable effect on the coke trade. Trade channels are turned this way again and the prevailing opinion is that the trade in the Connellsville region will improve from this on. The week's trade shows 10,312 ovens in blast, with 7,635 idle. The bottom in dull coke business is now thought to have been reached and better conditions will prevail. The prospect for the coming week is favorable for a large increase in production. In the running order of the ovens in blast last week 1,202 ovens made six days, 9,632 ovens five days and 70 ovens four days. The shipments were distributed as follows: To Pittsburg, 1,927 cars; to points west of Pittsburg, 2,900 cars; east of Pittsburg, 1,178 cars; total, 6,005 cars.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 17, 1896.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From Jan., '95.	From Jan., '96.
	July 19, 1895.	July 17, 1896.		
Anthracite.	39	21,501	39	21,100
Coke.....	133	142,804	130	155,950
Charcoal....	17	3,731	23	6,600
Totals	189	168,036	192	183,650
				4,653,684
				5,735,097

Some people describe the market this week as dull, others as waiting, and both are, in a measure correct. The trade is unmistakably dull and buyers are waiting, not so much in the hope of lower prices as because no one is willing to do much until the financial situation is better defined. The uncertainty and apprehension as to the future are so great that it is doubtful whether a general lower level of prices would stimulate business at present. Undoubtedly there is an expectation that prices will be lower, and most people are speculating as to the stability of the various combines under present conditions. New orders are so light and the pressure for them so strong that it seems impossible to maintain the degree of co-operation needed to hold all the pools together.

The allotment of business by the nail pool for the

coming month is so light as practically to amount to a general shut-down, and this is only one instance. The steel pool is doing nothing; the same may be said of the steel-rail combine. The rail makers, it is understood, will meet soon to consider the situation.

July shows only a comparatively small reduction in pig-iron production from June, and there are still furnaces enough in blast to produce at the rate of over 9,000,000 tons a year. Unsold stocks of pig iron on July 1st amounted to 816,000 tons, an increase of 30,000 tons in June.

Representatives of the Eastern pig-iron makers held a meeting in Philadelphia this week, but adjourned without coming to any conclusion. A good many furnaces are holding back from this movement, and it is doubtful whether any combination can be formed.

NOTES OF THE WEEK.

The Illinois Steel Company at Chicago has signed the Amalgamated Association scale of wages with the usual stipulation that the company is to have the benefit of any concession that may be made to the Eastern mills hereafter.

The new steel steamer *Sir Henry Bessemer*, built at Cleveland, this week loaded at Ashland a cargo of 4,000 gross tons, or 4,480 net tons, of iron ore and sailed with it for Cleveland. It is claimed that this is the largest cargo of iron ore ever taken out of a Lake Superior port.

New York.

July 17.

The local market is still quiet and there is very little buying going on. Even in the structural market there is nothing new and no new orders are coming forward, the contracts for buildings in progress being generally placed. In other directions there is little or nothing to report for the week.

Pig Iron.—While we cannot quote any change in regular prices, the market is in bad shape and there are charges of irregular selling all around. There is, however, very little business to be noted.

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.—A few small contracts are still on the market. Nothing has been given out yet as to the big Brooklyn contract.

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.

Merchant Iron and Steel.—Business is still on a small scale, and there is no quotable change. We quote for common bars 1"0@1"20c; refined bars, 1"25@1"50c; soft steel bars, 1"25@1"35c. Other quotations are: Steel hoops, 1"50@1"90c; steel axles, 1"65@1"80c; links and pins, 1"65@1"75c; tire steel, 1"80@1"95c; spring steel, 2@2"20c. All prices are for delivery on dock, New York.

Plates.—The locomotive people have filled their requirements, and business is very quiet. Prices are nominally unchanged, though some people claim to be getting cheaper plates. Universal mill plates are 1"45@1"55c. For other sorts we quote: Tank, 1"40@1"50c; boiler shell, 1"45@1"55c; good flange, 1"65@1"75c; firebox, 2@2"40c. Charcoal iron plates are 2"25c for shell, 2"75c for flange, and 3"25c for best firebox. Rivets are 2"15@2"25c for steel and 3@3"25c for iron.

Structural Iron and Steel.—Business in this market is fair only and the mills are maintaining prices. We quote angles, 1"45@1"50c; channels, 1"70@1"80c; tees, 1"60@1"65c; beams, 1"70@1"80c, in quantities, with a slight advance for small lots.

Wrought-Iron Pipe.—There is nothing new for the week. We quote prices out of store as follows, with the usual shading for large quantities at mill: Butt black, 57, 10, 10, 10, 10; lap black, 67, 10, 10, 10, 10; butt galvanized, 52, 10, 10, 10, 10; lap galvanized, 55, 10, 10, 10, 10.

Nails.—Business is extremely quiet with practically 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.—We can report no business and no sales. The pool price of \$23.75 per ton at tidewater still holds, with girder rails \$28@30 per ton at tidewater. Rail fastenings are very quiet and unchanged.

Old Rails.—There is a little 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 no change in 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 15.

(Special Report of Rogers, Brown & Co.)

The increased interest which has been shown for some little time past in the low prices of foundry iron has resulted in contracts being placed for a fair amount of iron, but nothing like the amount that should be moving at the present time in this vicinity. Most of the iron sold has been for immediate consumption, as neither the consumer nor the producer cares to contract very far into the future, even at the present ruinous prices of foundry iron. We quote on a cash basis f. o. b. cars Buffalo as follows: No. 1 foundry strong coke iron, Lake Superior ore, \$13; No. 2 foundry strong coke iron, Lake Superior ore, \$12.50; Ohio strong softener No. 1, \$13; Ohio strong softener No. 2, \$12.50; Jackson County silvery No. 1, \$15.25; Southern soft No. 1, \$12; Southern soft No. 2, \$11.50; Lake Superior charcoal, \$14@14.50.

Cleveland. July 15.

(From Our Special Correspondent.)

Iron Ore.—Several sales were reported during the last week and it is thought by the dealers that the outlook for fall business is good. Only a few cargoes have been brought from the head of the lakes during the past 10 days, which has a tendency to make the market firm. So far as could be learned by inquiring at the offices of the principal dealers, there is practically no change in the price of ores, and the probabilities are that none will be made, unless freight rates make an unexpected jump upward. The mills and foundries which have been closed for several weeks will resume in a week or 10 days, and then there will be a larger demand for ores. At present no difficulty is being experienced in supplying the demand. Standard Bessemer are strong at \$4; standard non-Bessemer hematites are quoted \$3@3.25. A sale of Mesabi non-Bessemer was reported at \$2.65, a very slight advance over last week, but later another sale was made at last week's price.

The tonnage owners are hopeful that there will be an improvement in the ore rates from the North, but the shippers think otherwise. Last week's rates prevail this week, as follows: From the head of the lakes, 60c.; from Marquette, 55c. and from Escanaba, 45c.

Pig Iron.—There has been a slight decline in the price of pig during the past week, as will be seen by the following quotations: Lake Superior charcoal, \$13.50@14; bituminous coke No. 1, foundry iron, \$12.25; No. 2, \$11.75; Ohio Scotch No. 1, \$12.25; No. 2, \$11.75; Bessemer pig, \$12.25.

Philadelphia. July 17.

(From Our Special Correspondent.)

Pig Iron.—Nothing of moment has yet been accomplished in the way of organization of pig iron interests. Further efforts are to be made. Pig iron sells very slowly. There is no change in any way unless it is a slight increase in demand for a few of the finer brands. If a buyer made an offer within reason it would be considered just now, particularly on forge irons, in which some brokers say there may soon be some pressure to sell. There is a feeling of disappointment over the fact that demand shows no signs of improvement, and at the further weakness on most makes. No. 1 is \$12.50; No. 2, \$12; forge, \$11; Standard Bessemer, \$13; Basic, \$11.50.

Steel Billets.—Most large consumers want to see the outcome when middlemen's stocks disappear, or when they lose their control over undelivered stocks. There is no activity worth speaking of in the market. The price is \$21.50. Buyers give but little heed to intimations of higher prices.

Plate and Tank.—Prices are low and they may go lower, is what two or three brokers said in substance to-day. Certain big jobs are being figured on this week. A dozen small lots have gone through, and mill owners now say that business will be back to nominal proportions by August 1st. From the best sources of information it is learned that there is a strong probability that August business will be satisfactory. Tank iron has been shaded below 1"40 and shell below 1"50.

Structural Material.—A fair amount of business has been done this week in angles and beams for small jobs. We are told contractors of a number of office building enterprises are anxious to have all their iron delivered so that they can rush work and not have to wait occasionally. Angles are 1"40; beams, 1"70@2"20.

Steel Rails.—Quiet at \$28.

Old Rails.—Dull at \$14.

Scrap.—Some inquiry. Choice railroad is offered this week at \$12.50@13. There is very little movement in other kinds.

Merchant Bars.—There is no particular movement as yet and only a partial resumption. Prices are reported weak and business unimportant, in every office and mill visited. For large lots 1"20 in iron and 1"25 steel are quoted. Manufacturers are watching the movements of the pig iron makers. Consumers are not interested in the bar iron market in any way.

Nails.—Business is very light but prices are maintained.

Sheet.—Common iron orders are coming in slowly and prices range as usual from 1"0@2"80. Mills have fair work in sight. Summer consumption will be of moderate proportions. Bidding for the orders in sight is very spirited and margins will not improve much.

Skelp.—No new business has been closed this week. Interior mill managers have said that unless there is some backing out, a few good orders will be placed late this month or early in August.

Pipes and Tubes.—Agents are doing nothing more than keeping track of several jobs, but promoters and contractors are encountering some sort of obstacles that the "Street" does not understand.

Pittsburg.

July 16.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business was not very active; this, however, is generally the situation during most of July. The reasonable indisposition to trade to any extent has been increased by evidences of unsatisfactory industrial conditions and to some extent by the politics. In iron and steel products, not much can be said of a market so flat, but part of the inactivity is strictly seasonal; part is due to still unsettled questions about wages, and much more to a general disposition to defer orders until the future is clearer. Whether prices for finished products are too high or not they average relatively at least 10% higher than pig iron. The trade since our last continues to move along without any important feature; some dealers are of the opinion that no marked change for the better is expected until the general business situation is improved, but matters are certainly no worse than they were. The usual shut-down in the West for repairs is being prolonged, but no inconvenience is experienced on this account. As a general thing, buyers both of pig iron and of finished material are holding off, but not so much because of lack of orders as because they do not see any possibility of delay when they desire to place contracts. The local pig iron market is quiet and rather heavy, as it is known that some Southern iron is in search of a purchaser.

The Latest.—We can only report a dull and unsatisfactory market. Dealers seem altogether indifferent about doing business; prices generally speaking, are very weak. The principal topic of conversation is the money question, with a wide difference in the views of parties interested. For Bessemer pig, the lowest nominal quotations, Pittsburg delivery, July, are \$12.20. Steel billets are dull, \$19@19.75. No sales are reported at pool prices. The outlook is not a favorable one.

COKE SMELTED, LAKE AND NATIVE ORE.			BLOOMS, BILLETS AND SLABS AT MILL.		
Tons.	Cash.		Tons.	Cash.	
4,500	Bessemer, July, Aug. and Sept., Valley.....	\$11.50	1,000	Billets, July, at mill.....	\$19.25
3,000	Bessemer, July and August, Pits.....	12.25	500	Billets, July, at mill.....	19.50
2,500	Bessemer, July, Aug., Valley.....	11.50	500	Billets, July, at mill.....	19.00
1,500	Bessemer, July, Pits.....	11.00	300	Billets, July, at mill.....	19.25
1,000	Bessemer, July, Pits.....	12.30	SKELP IRON.		
500	Gray Forge, July, Pits.....	10.60	2,000	Sheared, Pits, 1.35 4 m.	
500	Gray Forge, July, Pits.....	10.50	400	Wide grooved, Pits.....	1.20 4 m.
500	Bessemer, July and Aug., Valley.....	11.50	300	Narrow grooved, Pits.....	1.20 4 m.
125	No. 2 Foundry, prompt, Pits.....	11.75	SKELP STEEL.		
100	Mil iron, July, Pits.....	10.60	475	Sheared, Pits, 1.20 4 m.	
100	No. 2 Foundry, July, Pits.....	12.00	350	Wide grooved, Pits.....	1.10 4 m.
100	Bessemer spot, Pits.....	12.35	300	Narrow grooved, Pits.....	2.10 4 m.
50	No. 2 Foundry, prompt, Pits.....	12.00	MUCK BAR, Cash.		
50	No. 1 Foundry, spot, Pits.....	12.50	500	Neutral, deliv'ed, Pits.....	\$20.50
50	No. 2 Foundry, spot, Pits.....	12.00	STEEL WIRE RODS.		
50	No. 2 Foundry, spot, Pits.....	12.90	500	5-gauge, deliv-ered, Pits.....	\$25.00
CHARCOAL.			BLOOMS, BILLETS, BAR ENDS		
400	No. 2 and 3 Foundry, Pits.....	15.80	350	Bloom and billet ends, delivered, Pits.....	\$13.50
150	Cold Blast, Pits.....	23.00	200	Open hearth steel, Pits.....	13.00
100	No. 2 Foundry, Pits.....	16.00	SHEET BARS.		
100	Cold Blast, Pits.....	23.50	700	Delivered, Pits.....	\$22.75
			500	Youngstown.....	22.25
			FERRO-MANGANES.		
			100	80% delivered, Pits.....	\$19.50

METAL MARKET.

NEW YORK, Friday Evening, July 17, 1896.

Gold and Silver.

Prices of Silver per Ounce Troy.

July.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$1	July.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$1.
11	4.88	31½	68¾	.532	15	4.88½	31½	68¾	.530
13	4.88	31½	68¾	.531	16	4.88½	31½	68¾	.532
14	4.88½	31½	68¾	.530	17	4.88½	31½	68¾	.532

Silver continues firm. The disposition of London is to absorb supplies without advancing prices. Shipments are large. Very little home speculation is in sight.

The United States Assay office in New York re-

ports the total receipts of silver at 75,000 oz. for the week.

Gold and Silver Exports and Imports.

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

Table with columns: Coin and bullion, In ores, Total excess, Exp. or Imp. Rows include Gold and Silver for June, 1896, and 1895.

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 16th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

Table with columns: Gold, Silver, Total Excess, Exp. or Imp. Rows include weekly and monthly data for New York.

Of the gold exported this week \$1,750,000 went to Germany, \$5,000 to London, and the balance to the West Indies; of the silver, \$4,250, went to South America, and the remainder to London.

Average Monthly Price of Silver

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

Table with columns: Month, 1896, 1895, 1894. Rows include January through June.

FINANCIAL NOTES OF THE WEEK.

The stock market has been overshadowed all the week by the unsatisfactory political situation, which has been aggravated by the steady withdrawal of gold for export to Germany, France and Canada.

The Treasury reserve is believed to be below \$94,000,000 this evening, as at the close of yesterday's business the amount was \$96,166,292. The withdrawal from Washington amounted yesterday to \$449,000.

The business of procuring gold coin in small amounts for individuals and institutions that presumably intend to hoard the precious metal is growing quite rapidly in Wall Street.

Comptroller Fitch will on July 28th next open bids for \$3,805,982 56 of gold bonds of this city.

The bill providing for an \$8,000,000 city loan has passed the Select Council of Philadelphia and received the signature of the Mayor.

The statement of the United States Treasury on Thursday, July 16th, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

Table with columns: July 9, July 16, Changes. Rows include Gold, Silver, Legal tenders, Treasury notes, etc.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$129,219,280.

Shipments of specie from San Francisco in June included \$1,216,454 silver and \$271,859 gold, a total of \$1,488,313.

Table with columns: 1895, 1896. Rows include Silver bars, Mexican dollars, Peru sols, Silver coin, Gold bars, Gold coin, Gold dust.

The destinations of the above shipments were as follows:

Table with columns: 1895, 1896. Rows include Hongkong, Shanghai, Japan, Central America, Honolulu, Mexico, New York.

Total... \$11,386,643 \$16,633,951

The most notable feature this year has been the decrease in shipments to China and the large increase in those to Japan.

The statement of the New York banks—including the 65 banks represented in the Clearing House—for the week ending July 11th, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

Table with columns: 1894, 1895, 1896. Rows include Loans and discounts, Deposits, Circulation, Specie, Legal tenders.

Surplus reserve... \$73,911,375 \$33,405,300 \$22,237,275

Changes for the week this year were increases of \$933,600 in loans and \$4,441,200 in deposits, \$33,900 in circulation, \$84,500 in specie, \$2,934,800 in legal tenders and \$1,909,000 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.

Table with columns: Gold, Silver, Total. Rows include Asso. Banks of New York, Bank of England, Bank of France, Imp. Bank of Germany, Austro-Hungarian Bank, Netherlands Bank, Belgian National Bank, Bank of Spain, Bank of Italy, Imp. Bank of Russia.

The return for the Associated Banks of New York is of date July 3d; all the others are of date July 16th, except the Bank of Italy, which is dated June 10th, and the Bank of Russia, whose return is dated June 1st-13th.

The foreign merchandise trade of the United States for the fiscal year ending June 30th is reported as below by the Bureau of Statistics of the Treasury Department:

Table with columns: 1894-1895, 1895-1896. Rows include Exports, Imports, Excess exports, Net excess of exports, silver.

Apparent balance of exports... \$233,472,309

The movement of gold and silver will be found in the usual place, at the head of this column.

Issues of new capital in London for the six months ending June 30th amounted to £79,494,000, against £52,189,000 for the corresponding half of 1895, £31,077,000 in 1894, and £25,949,000 in 1893.

Total new issues this year £7,486,000 were by mining companies, of which £4,258,200 were by West Australian concerns and £1,074,000 by New Zealand companies.

The subsiding of the operations for the new issue of rupee paper has had its effect on Indian Exchange, though the commercial demand continues good.

Domestic and Foreign Coins.

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

Table with columns: Bid, Asked. Rows include Mexican dollars, Peruvian soles, Victoria sovereigns, Twenty francs, Twenty marks, Spanish 25 pesetas.

Other Metals.

Copper.—The market continues dull, and very little business is doing. The general depression in business throughout the United States is affecting copper also, though not to a large extent.

The London market has lost some of its strength, and transactions are much smaller than they have been. Prices fluctuate from day to day, but in the main g. m. b's do not show any alteration.

Very little business in fine copper is reported from abroad, as buyers are well covered, and for the moment are not willing to pay the prices asked.

The following figures are given by Mr. John Stanton for the Producers' Committee as the production (in tons of 2,240 lbs.) of the United States, and also of the chief foreign mines, and the exports from the United States in June, and the six months ending June 30th:

Table with columns: June, Six Months. Rows include Production, fine copper, long tons; Reporting mines in U. S.; Pyrites and outside sources, U. S.; Reporting foreign mines.

The total increase in the United States production was 11,668 tons, or 14.6%. This was more than balanced by the extraordinary increase of 24,825 tons, or 74.1% shown in the exports.

Tin has held its own quite well, with a good, steady business going on, and we quote for July, August and September delivery 13.70@13.80.

The London market kept very firm, with hardly any alteration in quotations, closing at £61@£61 2s. 6d. for spot and £61 12s. 6d.@£61 15s. three months prompt.

Lead continues to be pressed for sale. There are evidently some accumulations in the hands of Western producers. Sales have been made at 2.95 New York for July shipment from the West and there are sellers over at this price.

The market abroad is dull but steady, Spanish lead being quoted £11 ls. 3d. and English lead 5s. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is dull at 2.70 for common, and 2.72½ for corroding. Sales are only of a retail character.

Spelter is flat. The consumptive demand does not increase, and the business done, which has not been large, was at slightly lower figures, viz., 3.95@4c., delivered New York.

The English market is flat at £17 15s.@£17 17s. 6d. for good ordinary brands and 2s. 6d. more for specials, but futures are obtainable 5s.@7s. 6d. less.

Antimony continues difficult of sale, and we quote Cookson's 7c.; U. S. Star, 6½c.; and Hallett's, 6½@6¾c.

Nickel.—Business is rather light, but prices are firmly held, and we continue to quote 34@35c. per lb. for ton lots and 38@38c. for smaller orders.

Platinum.—Demand is steady and prices are again a little higher, say \$14.50@15.50 per oz., New York. London quotations are 57s. 6d.@59s. per oz.

Quicksilver.—The price has been reduced from \$37 to \$35.50 per flask, New York. The London quotation has also been reduced from £8 10s. to £8 7s. 6d. per flask, with £8 7s. 6d. quoted from second hands.

Quicksilver receipts at San Francisco in June were 2,300 flasks. For the six months ending June 30th they were 18,439 flasks, against 13,696 for the corresponding half of 1895, and 12,406 in 1894.

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

Table listing prices for various metals: Aluminum (No. 1, 98% pure rolling ingots, per lb. 50@55c.), Bismuth (per lb. \$1.30@1.75), Phosphorus (per lb. 50@55c.), Platinum (per oz. \$14@15), Tungsten (pure, powder per lb. 45c.), Tungstic acid (per lb. 45c.), Ferro-tungsten (60% in ton lots, per lb. 60c.).

Average Monthly Prices of Metals

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

Table with columns for Month (January to June) and years 1896, 1895, 1894, 1893, 1892. Rows include Copper, Tin, Lead, and Spelter with their respective prices.

Imports and Exports of Metals.

Table showing imports and exports for New York in Week of July 9 and Year 1896. Categories include Aluminum, Antimony, Brass, Copper, Iron, Lead, Magnolia metal, Nickel, Steel, Tin, and Zinc.

* Metal Exchange Reports. † Week ending July 16.

Table for Baltimore showing weekly and yearly imports and exports for various metals like Bismuth, Chrome, Copper, Iron, Ferro-silicon, Lead, Limestone, Manganese, Spiegeleisen, Steel, Tin, and Zinc.

**From our special correspondent.

Table for Philadelphia showing weekly and yearly imports for Antimony, Copper, Ferro-Manganese, Ferro-Silicon, Iron, Manganese, Spiegeleisen, Tin, and Tin and black plates.

†† From New York Metal Exchange Reports.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, July 17.

Heavy Chemicals.—This is a very quiet season for the heavy chemical market, hence but little that is new can be reported this week. Bleaching powder and alkali remain featureless, while the sodas are firm.

Acids.—Although there are a few orders received by acid manufacturers at short intervals, it is said that the market is still of a very quiet nature, and the business that is being done is merely from hand to mouth.

Brimstone.—There are several inquiries for Sicilian brimstone on the market, which will probably take up the arrival of 1,200 to 1,300 tons expected next week. The prices at which this brimstone will be sold cannot be ascertained now, as they will be in accordance with the demand.

Mr. Louis H. Bruhl, United States Consul General at Catania, Sicily, recently made a report to the Department of State on the Italian sulphur trust, and among other things he states that the capital stock

of the company (Societa Anglo Siciliana) is \$1,000,000 (\$5,000,000). He goes on to say that Mr. Alexander Maccomb Chance, of Birmingham, England, reserves to himself in the agreement between the members of the company the privilege of manufacturing with his method 40,000 tons annually of recovered brimstone.

Fertilizing Chemicals.—There is nothing of an interesting character to note in the fertilizer market this week; it continues as quiet as last reported, with stocks for prompt delivery pretty well sold out. We quote: Sulphate of ammonia, gas liquor, \$2.27 1/2 @ \$2.30; bone, \$2.10 @ \$2.15. Dried blood, high grade, \$1.40 per unit f.o.b. Chicago.

Sulphate of Potash: 90-95%, New York and Boston, \$1.96 1/2; 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, \$1.03 1/2.

Muriate of potash remains inactive. The new prices are 1 7/8c. at New York and Boston; 1 7/9c. at Philadelphia, Baltimore and Norfolk, and 1 81/2c. at New Orleans for 80@85% (basis of 80%), in lots of 50 tons and upward.

Nitrate of Soda.—From a broker's point of view the market for nitrate of soda has a good tone, and it is not anticipated that prices will recede further for a little time at least. An arrival of 22,000 to 23,000 bags of nitrate of soda is expected on July 20th.

Glauber Salts.—The combination previously organized seems still in force, though it is reported that those who are the prime movers in the organization have been offering glauber salts during the week at prices below those agreed upon by manufacturers.

NOTES OF THE WEEK.

The shipments of phosphate rock from the port of Savannah, Ga., during the month of June, 1896, amounted to 4,430 tons, divided as follows: 2,430 tons to Rotterdam, 1,300 tons to Genoa, and 700 tons to St. Louis du Rhone.

Charleston, S. C.

(From Our Special Correspondent.)

The shipments of phosphate rock from this port for the month of June, 1896, were as follows, comparison being made with the corresponding period two years ago:

Table comparing phosphate rock shipments from Charleston in 1894, 1895, and 1896. Categories include Crude rock and Ground rock.

Liverpool.

July 7.

(Special Correspondence of Joseph P. Brunner & Co.) There is nothing encouraging with regard to heavy chemicals, the position generally being still dull and lifeless.

Soda ash is not easy to move, but quotations keep steady; the range for tierces according to market, being about as follows: Leblanc ash, 48%, £4 @ £4 5s. per ton; 58%, £4 5s. @ £4 10s. per ton. Ammonia ash, 48%, £3 5s. to £3 10s. per ton; 58%, £3 10s. to £3 15s. per ton, net cash; bags 5s. per ton less.

Caustic soda inactive, and for some markets prices are a shade easier. The nearest spot range, as to market, is about as follows: 60%, £6 5s. @ £6 7s.

6d. per ton; 70%, £7 5s. @ £7 7s. 6d. per ton; 74%, £8 2s. 6d. @ £8 7s. 6d. per ton; 76%, £9 @ £9 5s. per ton, net cash.

Bleaching powder idle and rather lower, the spot range for hardwood packages varying from £6 15s. @ £7 5s. per ton, net cash, as to destination. Chlorate of potash in retail demand, and 4 1/2 d. per lb. is about nominal spot quotations.

Bicarb. soda in fair request, £6 15s. per ton, less 2 1/2% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is firmly held at £8 6s. 3d. @ £8 10s. per ton, less 2 1/2% for good gray, 2 1/2% @ 2 1/2% in double bags f. o. b. here, according to quality. Nitrate of soda in moderate demand at £8 2s. 6d. @ £8 5s. per ton, less 2 1/2% for double bags f. o. b. here, according to quality. Carb. ammonia, lump, 3d. per lb.; powdered 3 1/4 d. per lb., net cash.

Valparaiso, Chile. May 23.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—Although transactions to the amount of 430,000 quintals have taken place in this article since our last circular, the majority of them are between producers. Our market has continued without any animation, owing to the very unfavorable quotations from Europe, the limits given being far below seller's pretensions. Producers in the most part prefer holiday in hopes of higher prices and have retired from the market. Sales of nitrate of soda within the last fortnight amounted to 406,000 quintals. We quote, 95%, June, 5s. 7d.; July, 5s. 8d., and 96%, June-July, 5s. 10 1/2 d.; sellers, with buyers at about 1d. below these figures: for forward delivery, although 5s. 8d. has been accepted for August, this figure cannot be given as a quotation. The price of 5s. 7d. with 2 1/2s. 6d. all-round freight stands in 7s. 5d. per cwt. net cost and freight without purchasing commission against quotation of 7s 2 1/2 d.

MINING STOCKS.

Complete quotations will be found on pages 70 and 71 of mining stocks listed and dealt in at:

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

New York, Friday Evening, July 17.

Were it not for the little activity in Brunswick Consolidated, a California stock, and Victor, a Colorado stock, together with a few others, the mining stock market in New York would have been without recognition this week inasmuch as brokers generally and the speculating public partially show no inclination to revive the old-time interest. This may be accounted for, no doubt, by the general condition of the country's affairs, and more especially of political matters. Moreover, there has been manifest a downward tendency in prices of stocks, and the total number of shares sold at both the Consolidated Stock and Petroleum Exchange, and the New York Stock during the week amount to 15,650 shares; but a slight increase as compared with last week, when sales aggregated 13,155.

The Comstocks were in sympathy with the condition of the whole mining stock market; they declined in price and show a decreased number of sales. Comstock Tunnel records dealings of only 500 shares at 8c. Other sales were as follows: 700 shares of Consolidated California & Virginia at \$1.70 @ \$1.95; 100 shares of Best & Belcher at \$1.75; 300 shares of Hale & Norcross at \$1.25 @ \$1.30; 400 shares of Ophir at \$1.00 @ \$1.10; 300 shares of Potosi at \$1.10; 700 shares of Sierra Nevada at 54 @ 60c.; 500 shares of Union Consolidated at 34 @ 53c.; 200 shares of Yellow Jacket at 42c., and 500 shares of Consolidated Imperial at 4c. Crown Point returned to the board of the Consolidated Stock and Petroleum Exchange this week, and we note sales of 500 shares at 45c.

Of the California stocks Brunswick Consolidated records dealings of 800 shares at 18 @ 20c., and Standard Consolidated 100 shares at \$1.45. The reason ascribed to the demand for Brunswick is that good development work is being carried on at this mine. In a letter dated July 11th, the superintendent, Mr. C. H. Morgan, writes the manager of the Brunswick Consolidated Gold Mining Company as follows: "The 800 level was advanced 15 ft. last week; the raise 4 ft. The ore body that was left in the hanging wall, some distance back, has apparently come into the drift again, as the drift has just encountered a vein about one foot thick coming into it from the hanging wall. The stopes continue to look and produce well. Everything that looks like quartz carries gold wherever encountered in the vicinity of the ore body. There is a vein of specimen rock now going into the slate footwall casing that is very rich in free gold. It is one inch thick. The shipments of bullion run from July 2d to 7th inclusive, 5 days, according to my weight was 8,587 oz., which resulted in a net return of \$1,449.99, as credited the company by Wells, Fargo & Company's bank, San Francisco, on July 10th."

The Colorado stocks have been shaded somewhat on account of the reported miners' strike in the Cripple Creek mining district. Victor has been traded in to the extent of 1,050 shares. It opened at \$7.25, fell to \$6.50, and at the close some sales were made at \$7.13. The decline in the price of this stock is also attributed to the weakness of the Paris

Bourse, which has induced those interested in Victor on the other side to send part of their holdings over here in the hope of getting better prices. Two weeks ago Victor sold for \$8 in New York, now it has dropped to \$6 and \$6.50. Regular dividends are being paid by the Victor Gold Mining Company, and so far as can be ascertained the mine is being worked at a profit. We also note sales of 100 shares of Portland at \$1.45; 800 shares of Mount Rosa at 13c.; 4,900 shares of Pharmacist at 8 @ 9c.; 200 shares of Creede & Cripple Creek at 4 @ 8c.; 200 shares of Cripple Creek Consolidated at 13c.; 500 shares of Croesus at 2c., and 100 shares of Lacrosse at 8c.

Horn Silver, a Utah stock, was dealt in at the close to the extent of 300 shares at \$1.95. The Montana prospect, Bedford Consolidated shows dealings of 2,200 shares at \$2.80 @ \$2.95.

Boston. July 16.

(From Our Special Correspondent.)

There has been a good deal of liquidation in the copper shares the past few days, and prices have declined in sympathy with the general stock market. As usual, the dealings in Boston and Montana have been large, and in the early days of the week the stock was very strong, and advanced from \$86 to \$89 1/2. The announcement of a dividend of \$2 regular and \$1 extra fell flat on the market, and the stock declined to \$82 to day, with a rally at the close to \$84. The treasurer says that the company has sold its product ahead sufficient to warrant the payment of the extra dividend out of the earnings, and another extra dividend of like amount in November without interfering with the plan of paying regular quarterly dividends of \$2 per share, and adding a large sum to the surplus of the company. Old Dominion has been quiet, and in early dealings was fairly strong, selling up to \$16. It is stated that the condition of affairs at the mine is the same as it was before the strike. There was a pressure to sell the stock to-day, which forced the price back to \$13, closing at \$13 1/2. The balance of the list was without special feature, although the tendency has been to a lower level.

Cal. & Hecla held firm at \$303 until to-day, when it broke to \$300 on small sales.

Quincy sold off to \$112, but that was freely bid for it and offered at \$114.

The scrip sold at \$79 1/2 and declined to \$78. Tamarack dropped from \$78 to \$72 on free selling, rallied again to \$78 and closed at \$76 1/2. Osceola was sold down to-day from \$24 1/2 to \$21, closing at \$21 1/2. Franklin declined from \$10 to \$8 1/2 and Kearsage from \$12 to \$9 1/2. Atlantic sold at \$16, a decline of \$2 1/2 from last sale (3d inst.). Tamarack, Jr. went off from \$10 to \$9, and Wolverine sold down to \$6 1/2. Butte and Boston sold at \$1 1/2, a decline of 1/4.

The gold-mining stocks were dull and lower. Merced, on the poor showing for the last three months, sold down from \$7, assessment \$2 paid, to \$3 1/2. This for a stock which sold at one time at \$48 is rather discouraging for investors in this class of property. Pioneer has held quite firm at \$3 1/2, but Santa Ysabel was heavy, and declined from \$10 to \$8 1/2. Gold Coins sold at 45c.

Chicago. July 14.

The following table gives the highest prices with sales of the stocks recorded on the Chicago Mineral and Mining Board for the week ending July 14th:

Table with columns: Stocks, July 8, July 9, July 10, July 11, July 13, July 14, Sales. Lists various mining stocks like Capazone, C. C. & C. Co., C. C. Golden Group, etc., with their respective prices and sales volumes.

Total shares sold, 338,100.

Colorado Springs, Colo. July 11.

(From Our Special Correspondent.)

The mining stock market during the past week has given refuge apparently to the bears, and they have thus far succeeded in parring down prices until these have reached an unsatisfactory state, as will be seen by the closing day's quotations. It is obvious that the brokers and speculating public in

general have been in sympathy with the depressed state of affairs throughout the country; hence the reaction in the mining stock market. It is my opinion, and likewise that of mining people generally, that a strike will be enforced in the Cripple Creek camp, and very soon too. If the miners' union is successful in ordering the men out, it is feared that in addition to a decreased production of gold mining stocks will be affected and the public's confidence in investment in these securities abated for a time at least.

From a broker's point of view the present condition of the market offers a good opportunity to buy cheap and in quantity mining stocks which will doubtless rise in value as soon as the so-called crisis has blown over.

Cleveland. July 15.

(From Our Special Correspondent.)

There was no movement of iron ore stocks during the past week, but a speculator offered to purchase a large block of the stock of the Champion Iron Company. His bid was too low, however, and no sale was made. It is the opinion of the Cleveland brokers that the sales of stock will be light until after the election and the financial policy of the Government is permanently fixed. Following are the quotations:

Table with columns: Name of Company, Par val., Bid., Ask. Lists companies like Adams, Aurora, Biwabik, Champion Iron Company, Chandler, Clark, Cincinnati Iron, Cleveland-Cliffs Iron Co., Jackson Iron Co., Lake Superior Iron Co., Lake Superior Consolidated, Mesabe Chief, Mesabe Mountain, Minnesota, Mountain, Pittsburg & Lake Angeline, Republic Iron Co.

Los Angeles, Cal. July 11.

(From Our Special Correspondent.)

The Los Angeles Mining and Stock Exchange, I understand from the secretary, Mr. F. J. Cooper, is going to place upon its board about five or six good mining stocks by August 1st. He also informs me that quite a few mining stocks could have been dealt in on the Exchange before this, but the officers of this organization are endeavoring to keep aloof from all "wild-cat" schemes. Those interested do not propose to have it said that the Exchange did not confine itself to legitimate business principles, whether such a policy, which will recommend itself to most people as being an honest one, results in success or not. Should they fail in their project, the officers will have the satisfaction of knowing that they did not allow themselves to be "used" as speculators and unscrupulous promoters.

The first application received for listing was from the Brown-Dake Gold Company with mineral claims located in the Hissayampa mining district, Yavapai County, Arizona. The capital stock of the company is \$1,500,000, and the officers are A. C. Dake, President; W. B. Palmer, vice-president; W. C. Brandon, treasurer; Frank Evans, secretary; T. B. Tomlinson, general manager. These gentlemen and J. J. Brown constitute the board of directors. The main office of the company is in Denver, Colo.

Of course it will take some little time before the Exchange will be in first class working order, as the people here are not accustomed to invest extensively in mining stocks.

Salt Lake City, Utah. July 11.

(Special Report of James A. Pollock.)

The presence of the holidays in the week just closed had the effect of flattening the mining stock market out somewhat, and as a result business was only fair, taken as a whole. Toward the close there was a material improvement all along the line, and the tendency was upward, with the exception of a few securities.

Ajax remained practically unchanged, although the offerings were limited. Some business was done at about the previous week's figures, making three weeks of practically unchanged quotations. Anchor picked up somewhat, bidding being more frequent and prices somewhat higher. The properties are still doing little. Bogan's sale of delinquents took place on Monday. Work is reported to be progressing. Bullion-Beck directors met to-day and declared the usual dividend of 15c. per share. The shipments are now heavy and the grade of ore put out first-class. Work with the diamond drill is now being prosecuted on the 900-ft. level. Thus far the drill has not shown up any bodies of great worth, but it is proving a great aid in prospecting. There was some business done in the stock.

This is the last day of the Centennial-Eureka option, and in the absence of definite information it looks as though the deal would not go. Such a result would not prove disappointing to the stockholders. The company is again shipping high-grade ore in good quantities, with the properties looking extremely well. Dalton & Lark did comparatively little. Daly did not improve in the bidding quotation, the reason being the continued delay in the resumption of dividends. The properties are in excellent condition. Daly-West continued strong,

with the demand quite active and the offerings light.

Four Aces and Eagle were both inactive. East Golden Gate is about to commence work with the diamond drill. The stock did little or nothing on the open market. Galena pays its July dividend of 5c. per share to-day. The stock continued strong. The Geyser-Marion suits are nearing the close in the District Court, although the first decision may be delayed for some weeks. Horn Silver was not active, and buyers and sellers failed to get together to any marked degree. The shipments from the properties are satisfactory, and the usual number of men are at work. Lucky Bill's delinquent sale takes place on Saturday. There is not a very large list of stockholders who have not paid up.

Mammoth stock sold down from the previous week's quotations, although all of the conditions in connection with the company were as they have been for months past. Shipments are regular and heavy. Mercur has declared its July dividend of 1 1/2 c. per share, payable on the usual date. Developments in the properties have been of a very gratifying nature, and everything is being operated to its capacity. The stock closed with the tendency upward. Morgan is now receiving its new hoisting machinery and will soon resume operations.

Ontario was quiet, although there were not heavy offerings of the stock. Silver King paid its July dividend of 25c. per share on the 7th. The stock was held firmly. The Sunshine directors have decided upon the increase in the milling plant, but the new capacity is yet a matter for adjustment. The properties are showing up in good shape, and the mill work is a success. The stock was not offered as freely as during the previous week. Overland is looking well. Swansea was somewhat off and closed considerably weaker. The mines are reported to be looking well. South Swansea is making a good showing. Utah paid its July dividend of 2c. per share on the 10th.

San Francisco. July 11.

(From Our Special Correspondent.)

The exchanges did not open this week until Wednesday, making a short week. The long holiday was followed by some appearance of activity, and at the opening prices were forced up and there was quite a little excitement. The movement was only on small transactions, however, and was followed on Thursday by a general break, which carried prices down again to about the level at which they started. The rest of the week was rather quiet, with few changes. The fact that there is nothing big on the market permits little movements to be worked up, but they soon collapse.

Some closing quotations are: Chollar, \$2.40@2.60; Consolidated California & Virginia, \$1.80@1.85; Hale & Norcross, \$1.55; Ophir, \$1.10; Potosi, \$1.05@1.15; Occidental, 95c.@1; Gould & Curry, \$2@2.25; Savage, 71@80c.; Mexican, 63@66c.; Crown Point, 48@50c. Very little was done outside of the Comstocks. Bodie Consolidated was quoted at 40c. and Mono at 16c.

The call board of the Gold Mining Exchange was closed all the week, and no business was done.

The official reports filed in accordance with law by the mining companies show balances on hand July 1st as follows: Andes, \$7,640; Alpha Consolidated, \$3,016; Alta, \$8,233; Best & Belcher, \$667; Consolidated California & Virginia, \$25,769 in coin and \$34,000 the assay value of unsold bullion, with the expenses of the past month unpaid; Consolidated New York, \$2,247; Chollar, \$2,544; Crown Point, \$10,118; Church, \$9,598; Exchequer, \$2,353; Gould & Curry, \$8,144; Julia Consolidated, \$519; Lady Washington, \$259; Mexican, \$15,407; Mono, \$229; Ophir, \$8,559; Occidental Consolidated, \$13, with \$4,000 due on note at the bank and an assessment in process of collection; Potosi, \$14,486; Savage, \$12,211; Silver Hill, \$1,587; Segregated Belcher, \$5,281; Syndicate, \$621; Union Consolidated, \$7,504; Utah Consolidated, \$2,804; Belcher, \$2,663; Bullion, \$5,303; Bulwer Consolidated, \$6,469; Bodie Consolidated, \$1,150; Confidence, \$1,736; Challenge Consolidated, \$14,409; Consolidated Imperial, \$974; Caledonia, \$4,573; East Sierra Nevada, 47c.; Overman, \$10,351; Scorpion, \$1,513; Silver King, \$435; Standard Consolidated, \$3,629.

The Hale & Norcross Mining Company reports having overdrafts at banks here and in Virginia City amounting to \$4,483, and has all the expenses of the mine for June to pay besides.

The Jackson Mining Company, of Eureka District, Nevada, has paid a dividend of 15c. per share. The dividends from this mine are irregular.

The Hartery Gold Mining Company, of Nevada County, California, has levied an assessment of 2c. per share, delinquent August 3d.

The annual meeting of the Savage Mining Company has been called for July 16th.

The annual meeting of the Yellow Jacket Mining Company has been called for July 20th.

The Gold Valley Mining Company has levied an assessment of 20c. per share, delinquent August 3d.

A quantity of ore from the mine of Como District, Nevada, has been sent to Bodie to be treated by the cyanide process as an experiment, which, if successful, may result in the establishment of a cyanide plant at Como.

BY TELEGRAPH.

San Francisco, Cal., July 17.—The opening quotations to-day were as follows: Best & Belcher, 66c.; Bodie, 41@42c.; Bulwer, 30c.; Chollar, \$2.45@2.50; Consolidated California & Virginia, \$1.75; Crown Point, 45c.; Eureka, 25c.; Gould & Curry, 82c.; Hale & Norcross, \$1.40; Mexican, 61c.; Mono, 18@20c.;

Occidental, 91c.; Ophir, \$1.05; Potosi, \$1.20; Savage, 5c.; Sierra Nevada, 57c.; Union Consolidated, 46@50c.; Yellow Jacket, 38c.

London. July 9.

(From Our Special Correspondent.)

The mining stock market has been quiet as a rule during the past week and the only feature of interest has been the announcement about the issue of further capital by the British South Africa Company. Many rumors as to the exact form of the issue have been passed round and they have had varying effects on the market, according to their character and credibility. It is, however, certain that the issue will take the form of debentures and will consist of £1,250,000 in £100 bonds, issued at 49 1/2% and bearing 5% interest. It is also certain that Rothschilds' have taken most of the issue and that they are selling them already at prices as high as 101. The only questions which the market need discuss is how the interest will be paid and what will happen if it is not paid.

Other South African shares have improved with Chartered, but very little business has been done. Most city men are preparing for Henley week and have cleared their books. The few who were left to-day (Saturday) did their best to make a boom and to pretend that as much business was going on as a year ago, but it was mostly pretense.

The West Australian market has been dull on the whole. The failure of the Barrel Amalgamating Plant at Hannan's Brownhill has had a depressing effect on the market, because it has brought home to investors the fact that in no mining country is the water question causing so much trouble. Many people have gone out of the market with the determination to keep clear of West Australia until some dry process has been perfected.

Other sections of the market, New Zealand, Indians and Americans, have been dull. There is a growing feeling that there will be a big boom in New Zealand before long and that British Columbians will have next chance. My own advice to everyone who says this is that they had better bring British Columbians along without much delay or the Americans will have got hold of all the good properties before them. The number of people interested in British Columbia constantly increases, and as they are sending out men of their own to obtain properties they will make money for their shareholders, but the promoter who waits for fashion will probably find himself left behind the Americans, who will surely snap up everything that is good.

The report of the Mesquite del Oro Mining Company working in Zacatecas, Mexico, for 1885 is not quite so bad as usual. The debenture interest has been paid and some debentures paid off, but they have not got so far as a dividend. It must be said that the directors are all first-class business men, and are not in any way adventurers. They deserve better luck than to be toiling on ore returning 5 dwts., with an occasional streak which helps to clear off their debts. The position is now so favorable that more money is to be raised to continue prospecting and to buy new machinery, but as the present financial arrangements are very complicated, and the new ones will be more so, your readers will forgive me if I refrain from entering into particulars. Besides most of the shares are held privately, and it is not a matter of public interest.

The Jay Hawk Company, working in Montana, have decided to abandon their silver mine and go to the New Zealand gold mines. They have already obtained a mine in the Hauraki District. The Jay Hawk Company is under the same control as the Hauraki Gold Mining Company, and as the latter has, during 18 months of its existence, paid nearly 400% on its share capital, the prospects of the Jay Hawk shareholders are bright.

It is gratifying to be able to record that English mining in one or two cases is looking up. For instance, Mr. Strauss, who was instrumental in introducing new capital at Dolcoath and converting Cornishmen to the limited liability system, has determined to examine all the old copper mines and to prospect for copper generally in Cornwall. There is no doubt that copper veins exist in Cornwall and that they could be profitably worked if modern ideas prevailed, and if Mr. Strauss follows up the subject and obtains local support, his efforts will be attended with success. Another case is the Great Lasey mine in the Isle of Man. This mine used to be exceedingly rich in silver lead, but during recent years little or no profit was made, owing to the pinching out of the veins. The directors were almost at the point of closing the mine, when a new discovery of a rich and extensive lode has been made. Probably the mine has thus obtained a new lease of life.

A company has been formed called the Pacific Borax and Redwood Chemical Works, Limited, to take over the properties of the Pacific Coast Borax Company, of San Francisco, and Redwood & Sons' chemical works, near London. These two companies have been intimately connected for some time, as Redwoods handled all the borax and borates brought to Europe from the mines and works of the Pacific Coast Borax Company. When Dr. Redwood, the founder of Redwoods works, died a short time ago, it was considered best to sell the properties of both companies to a limited liability company registered in London. The capital of the new company is £510,000, and there will be £100,000 debentures. During the year ended August 31st, 1895, the Pacific Coast Borax Company handled 9,570,000 lbs. of borax, and since then the rate of output has increased. Their policy has been to substantially

reduce the price in order to popularize it and increase its uses

Vancouver, B. C. July 10.

(From Our Special Correspondent.)

I have just learned that the Vancouver Mining Exchange will suspend business for a few months at least, owing to the lack of trading. This exchange was formed in April last by 35 of our principal citizens, men who are identified with the mining industry. It was the object of these gentlemen to eliminate the foisting of worthless mineral properties on outsiders, that is, investors across the line in the United States and foreign countries. It is expected the exchange will open again in a short time.

MISCELLANEOUS DIVIDENDS.

Dominion Coal Company, dividend of 4% on preferred stock, payable July 1st.

MEETINGS.

Bangkok-Cora Bell Mining Company, at the office of the Company, 627 Mining Exchange Building, Denver, Colo., August 6th, at 10 a. m.

Yellow Jacket Silver Mining Company, at the office of the company, Main street, Gold Hill, Nevada, July 20th, at 3:30 p. m.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Div.	Date.	Am't
Bay State.....	Cal....	32	July 7	July 30	.08
Belle Isle.....	Nev....	20	" 15	Aug. 12	.10
Best & Belcher..	".....	60	Aug. 6	" 27	.25
Bullion.....	Cal....	8	July 20	" 11	.15
Channel Bend....	".....	3	" 31	" 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	.70
Gold Belt.....	Utah..	"	" 20	" 10	.00 1/2
Granite Hill....	Cal....	15	" 29	" 19	.05
Hartery Con....	".....	19	Aug. 3	" 22	.02
Kentuck Con....	Nev....	12	June 22	" 12	.05
Leo.....	Mont..	"	" 23	" 14	.00 1/2
Mabelle.....	Ore....	2	July 13	" 3	.08
Marguerite....	Cal....	3	" 28	" 28	.10
Mono Gold.....	Cal....	37	" 6	July 27	.10
Mt. Diablo.....	Nev....	4	" 2	" 23	.05
Nimshew.....	Cal....	1	" 13	Aug. 3	.03
North Belle Isle	Nev....	24	" 12	" 10	.10
Occidental Con..	".....	23	" 7	July 28	.15
Pine Hill G. & S.	Cal....	8	" 13	Aug. 10	.05
Reward Gold....	".....	13	" 2	July 20	.03
Thorpe.....	Cal....	2	June 22	" 13	.10
Utah State Gold.	Utah..	1	July 20	Aug. 5	.00 1/2

DIVIDENDS.

NAME OF COMPANY	Current Dividends.		Paid since Jan. 1, 1896.	Total to date.
	Date.	Amount.		
*Alta Con.....			\$20,000	\$60,000
Alaska-Mexican			34,200	157,031
Alaska-Treadwell	July 1	1,850,000	200,000	2,875,000
Anaconda.....			750,000	700,000
Aurora Iron.....			6,000	107,510
Bangkok-Cora Bell	July 13	6,000	2,500	2,500
Big Six.....			450,000	4,075,000
Boston & Mont..	Aug. 20	15,000	110,000	2,060,000
*Bullion Beck & Ch	July -	500,000	1,500,000	45,850,000
Calumet & Hecla..	" 13	16,000	32,000	95,000
Cariboo.....	" 7	16,000	210,000	1,740,000
Centennial-Eureka			5,000	25,000
C. O. D.....			62,500	62,500
*Dalton & Lark..			600,000	65,000
Dominion Coal....			20,000	59,348
*Elkton Con....			54,390	41,000
Florence.....			21,000	45,000
Galena.....	July -	5,000	128,000	60,000
Gold Coin.....			18,000	527,179
*Golden Fleece ..	July 15	18,000	19,500	28,875
*Gold & Globe Hill			30,000	2,130,000
Hecla Con.....			25,000	3,159,918
Highland.....			188,500	5,900,000
*Homestake.....			50,000	5,130,000
Horn Silver.....			20,000	20,000
*Iowa.....			30,000	140,000
Iron Mountain....			112,500	135,000
*Isabella.....			100,000	175,000
*Le Roi.....	July -	7,500		
Jackson.....	" 1	20,000	20,000	1,070,000
Mammoth.....			200,000	450,000
Mercur.....			495,000	3,240,000
Minnesota Iron..	July 15	40,000	280,000	440,000
*Mont. Ore Pur. Co.			18,000	18,000
*Moon-Anchor....			6,000	790,000
Moose.....			50,000	13,280,000
Napa Con.....	July 1	20,000	105,000	188,000
*Ontario.....	" 31	15,000	125,000	2,072,500
Oscoda Con.....	" 25	50,000	1,000	1,000
Ottawaquachy....			120,000	743,000
*Portland.....			40,000	8,070,000
Quincy.....			262,500	712,500
Silver King.....	July -	37,500	100,000	100,000
Slocan Star.....			25,000	3,275,000
Small Hopes.....			100,000	100,000
Smuggler-Union..	July 1	50,000	23,500	73,000
*Union.....			15,000	147,500
Utah.....	July -	2,000	120,000	385,000
*Victor.....			12,000	42,000
*Victor M. & L....			25,000	157,500
War Eagle.....				
Totals.....			\$1,549,500	\$8,643,690

* June dividend paid. † Extra dividend.

STOCK QUOTATIONS.

BOSTON, MASS.*

Table of stock quotations for Boston, Mass. listing companies like Allouez, Arnold, Atlantic, etc., with columns for location, par value, and prices for various dates from July 10 to July 16.

* Official quotations Boston Stock Exchange. Total sales, 41,916.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table of stock quotations for Industrial Coal and Coal Railroad, listing companies like Balt. & Ohio, Ches. & Ohio, etc., with columns for par value and prices for various dates from July 11 to July 17.

* Official quotations N. Y. Stock Exchange. Total shares sold, 134,330.

NEW YORK.*

Table of stock quotations for New York, listing companies like Adams, Ajax, Alamo, etc., with columns for location, par value, and prices for various dates from July 11 to July 17.

* Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. Total shares sold, 15,050.

COLORADO SPRINGS, COLO.†

Table of stock quotations for Colorado Springs, Colo., listing companies like Ajax, Alamo, Am'ric'n, etc., with columns for par value and prices for various dates from July 6 to July 11.

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

ST. LOUIS, MO., STOCKS. Week ending July 14.

Table of stock quotations for St. Louis, Mo., listing companies like Central Lead, Con. Coal, etc., with columns for company name, office, par value, and prices.

SAN FRANCISCO, CAL.*

Table of stock quotations for San Francisco, Cal., listing companies like Alta, Belcher, Best & Belcher, etc., with columns for location, par value, and prices for various dates from July 11 to July 17.

* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.* Week ending July 15.

Table of stock quotations for Baltimore, Md., listing companies like Balt. M. & S., Conrad Hill, etc., with columns for location, par value, and prices.

* 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, etc., with columns for company name, par value, and prices.

* From our special correspondent.

LONDON.

June 26.

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

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par value, July 6, July 7, July 8, July 9, July 10, July 11, Sales. Lists various mining companies like L'd Mines, Anaconda, etc.

PARIS.

Week ending June 26.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Div. last year, Prices. Lists various mining companies from Acieries de Creusot to Vieille Montagne.

PHILADELPHIA PA.

Table with columns: NAME OF COMPANY, Loca-tion, Par value, July 9, July 10, July 11, July 13, July 14, July 15, Sales. Lists various mining companies like Acety. L.H.&P., etc.

MEXICO.

Week ending July 9.

Table with columns: NAME OF COMPANY, State, No. of shares, Last dividend, Last assessment, Prices. Lists various mining companies from Amistad y Concordia to Zona Min. de Pozos.

VALPARAISO, CHILE.

July 2.

Table with columns: NAME OF COMPANY, Capital, Share value, Last dividend, Prices. Lists various mining companies from Arturo Prat to Union.

SHANGHAI, CHINA.

June 12.

Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price. Lists various mining companies from Jelebu M. & Tr. to Sheridan Cop. M. Co.

SALT LAKE CITY, UTAH.

Week ending July 11.

Table with columns: Name of Company, Par value, Bld., Asked, Actual selling price, Name of Company, Par value, Bld., Asked, Actual selling price. Lists various mining companies like Ajax, Am. Nat. Gas, etc.

PITTSBURG, PA.

Week ending July 11.

Table with columns: NAME OF COMPANY, Loca-tion, Par val, Bld., Ask., Sell-ing price, NAME OF COMPANY, Loca-tion, Par val, Bld., Ask., Sell-ing price. Lists various mining companies like Mansfield, etc.

HELENA, MONT.

Week ending July 1.

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

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns: 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 \$48,890,000. 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
 Bullock, M. C. Mfg. Co.
 Burleigh Rock Drill Co.
 Clayton Air Compressor Works.
 Fraser & Chalmers.
 Ingersoll-Sergeant Drill Co.
 Laidlaw-Dunn-Gordon Co.
 (See Diamond Drills)
Air Hoists.
 Whiting Foundry Equipment Co.
Amalgamators
 Bucyrus Steam Shovel & Dredge Co.
 Fraser & Chalmers.
Amalgam Plates.
 Western Plating and Mfg. Co.
Anti-Friction Metals
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 Chester Steel Cast. Co.
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 Baker, Christian.
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 Penn. Am. & Ref. Wks.
 Penna. Salt Mfg. Co.
 Roessler & Haaslachher Chemical Co.
 Sargent, E. H., & Co.
 Solvay Process Co.
 Taylor, John, & Co.
 Troemner, Henry.
 Western Chemical Co.
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 Hamersley, Hamilton & La Maistre.
Automatic Hammer Needs
 Penberthy Injector Co.
Rabbit's Metal
 Besley, Chas. H. & Co.
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 Bartlett & Co.
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 Grandell & Huff.
 Crisp, Cr. Syn. Inv. Co.
 Crooks, E. G.
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 Duer, G. A. Co.
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 Handy & Harman.
 Hendrickson, W. J.
 Heron Bros.
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 Hicks & Benzie.
 Johnson, L. L.
 Keith, F. M.
 Key, J. J.
 Kinney, M.
 Krellander, C. F. & Co.
 Leubner, N.
 Lentz, John S.
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 McIntyre, W. H., & Co.
 Miller, Chas. N., & Co.
 Miller, J. W., & Co.
 Morath Investment Co.
 Northwestern Mfg. & Inv. Co.
 Partridge & Storer.
 Peck, Frank G.
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 Prouditt, J. W., & Co.
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 Sill & Sill.
 Smith, C. H.
 Sprague, J. A.
 State Trust Co.
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 Welles, E. F.
 White, Fred. B.
 White, Samuel.
 Williamson, W. W.
 Woods Investment Co.
 Wyoming Mfg. Bureau
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 Carpenter, Geo. B., & Co.
 Hendrie & Bolthoff Mfg. Co.
 Jeffrey Mfg. Co.
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 Metallic Cap Mfg. Co.
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 Climax Fuse Co.
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 Enterprise Boiler Co.
 Fraser & Chalmers.
 Heine Safety Boiler Co.
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 Pollock, Wm. L. & Co.
 Ridsion Iron Works.
 Stillwell-Bierce & Smith-Valle Co.
 Standard Boiler Co.
 (See machinery.)
Brattice Cloth
 Besley, Chas. H. & Co.
Brewers.
 Pabst Brewing Co.
Brick Machinery
 Fresse, E. M., & Co.
Bridges
 Berlin Bridge Co.
 Shiffner Bridge Co.
 (See Machinery.)
Car Wheels.
 Whiting Foundry Equipment Co.
Carbons
 Babcock, 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.
 Maryland Coal Co.
 Potts, F. & Co.
 Stickney, Conyngham & Co.
 Ward & Olyphant.
Chemists.
 Simonds & Wainwright.
Chilled Castings.
 Whiting Foundry Equipment Co.
Coal Cutters
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Leyner, J. Geo.
 Link Belt Machinery Co.
Compressors.
 Clayton Air Compressor Works.
 Norwalk Iron Works Co.
Concentrators, Crushers, Pulverizers, Separators, Etc.
 Allis, F. D. P. & Co.
 Blake, Theo. A.
 Bradley Pulverizer Co.
 Colorado Iron Works.
 Denver Eng. Works Co.
 Dodge Mining Machinery Co.
 Engelbach Mach. Mfg. Co.
 Fraser & Chalmers.
 Frue Vanner Concentrator.
 Hendrie & Bolthoff Mfg. Co.
 Krupp, F.
 Link Belt Machinery Co.
 McCully, R.
 Scoville, H. H., & Co.
 Stedman Foundry & Mach. Co.
 Walburn-Svenson Mfg. Co. See Machinery

Contractors. (See Machinery.)
Conveying Belts.
 Robbins Conveying Belt Co.
Conner Dealers and Producers.
 American Metal Co.
 Arizona Copper Co.
 Atlantic Mining Co.
 Babach S. & Ref. Co.
 Baltimore Cop. Wks.
 Bath, H., & Son.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Copper Queen Mfg. Co.
 Detroit Cop. Wks., Ltd.
 Elliott's Metal Co., Ltd.
Corrugated Iron
 Berlin Iron Bridge Co.
 Cincinnati Corrugating Co.
 Sikes Steel Roofing Co.
Cranes.
 Whiting Foundry Equipment Co.
Crawchies, Graphite, Etc.
 Denver Fire Clay Co.
 Dixon, Jos., Cruc. Co.
Cyanide.
 Roessler & Haaslachher Chemical Co.
Diamonds
 Bishop, Victor, & Co.
 Lexow, Theodor.
 New York Diamond Drill Co.
Diamond Drills.
 Bishop, Victor, & Co.
 Bullock Mfg. Co., M.C.
 Lexow, Theodor.
 New York Diamond Drill Co.
Sullivan Machinery Co.
 (See Air Compressors and Rock Drills.)
Draughtsmen.
 Young, Wm. R.
Drawing Materials
 Aloc, A. S. Co.
 Besley, Chas. H., & Co.
 Dietzgen, E., & Co.
 (See Engineering Instruments.)
Dredges
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Souther & Co.
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 Michigan Mining School.
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 Rose Polytechnic Institute.
 Worcester Polytechnic Inst.
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 General Electric Co.
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 Cooper, Hewitt & Co.
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 Denver Eng. Wks. Co.
 Electrical Engineering Co.
 (See Wire Rope Tramway and Machinery.)
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 Besley, Chas. H. & Co.
 New York Belting & Packing Co., Ltd.
Engineers. Chemists, Metallurgists
 See Directory Pages 4, 5 and 6.
Engineers' Instruments and Supplies.
 Aloc, A. S. Co.
 Buff & Berger.
 Bullock & Crenshaw.
 Dietzgen, E., & Co.
 Fauth & Co.
 Gurley, W., & L. E.
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 Stillwell-Bierce & Smith-Valle Co.
 Tod, William & Co.
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 Webster Camp & Lane Mach. Co.
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 Marion Steam Shovel Co.
 Souther & Co.
 Vulcan Iron Works.
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 Chur, A. T.
 Denver Fire Clay Co.
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 Brown, Horace.
 Dodge Mining Mach Co.
 Pollock, W. B. & Co.
 (See machinery.)
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 Ingersoll-Sergeant Drill Co.
Furn. Sinter.
 Climax Fuse Co.
Gas Engines.
 Norman, J. J., & Co.
 Weber Gas & Gasolene Engine Co.
 Pollock, Wm. L. & Co. | Wood, R. D. & Co.
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 Besley, Chas. H., & Co.
 Chester Steel Cast. Co.
 (See Machinery.)
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 Besley, Chas. H., & Co. | Dixon, Jos., Cruc. Co.
Harveyed Steel.
 Pierce & Mather Engineering Co.
Heavy Machinery
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 Fraser & Chalmers.
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 New York Belting & Packing Co. Ltd.
Injectors.
 Jenkins Bros.
 Penberthy Injector Co.
Insulated Wires and Cables
 Okonite Co., Ltd.
Insurance Companies
 Hartford Steam Boiler Inspect'n and Ins. Co.
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Joint Fittings
 Tight Joint Co.
Lead Linings for Chlorination Tubs.
 Raymond Lead Co.
Leocomotives
 General Electric Co.
 Hunt, C. W. Co.
 Porter, W. W. & Co.
 Asbestos Paraffine Co.
 Lubricators.
 Detroit Lubricator Co.
Machinery.
Dealers in Mining, Milling and Other Machinery.
 Allis, Edw. P., & Co.
 Bacon, E. C.
 Backett Foy & Mch. Co.
 Besley, Chas. H., & Co.
 Blake, T. A.
 Bradley Pulverizer Co.
 Buckeye Engine Co.
 Bullcock, W. C. Mfg. Co.
 Caldwell, H. W., & Co.
 Gann, W. A., & Bros. Co.
 Carpenter, Geo. B., & Co.
 Channon, H. Co.
 Colorado Iron Works.
 Connorsville Blower Co.
 Crandall & 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.
 Engelbach Ma. Mfg. Co.
 Field & Goetzman.
 Fraser & Chalmers.
 Hammond, Mfg. Co.
 Heine Safety Boiler Co.
 Hendrie & 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
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 American Metal Co.
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 Baker & Co.
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 Beaman, Wm. & Co.
 Bridgeport Copper Co.
 Cherokee-Lanyon Spelter Co.
 Cookson & Co.
 Elliott's Metal Co., Ltd.
 Eureka Co.
 Foster, Blackett & Wilson.
 James & Shakespeare.
Metallurgical Works and Ore Pur-chasers' Processes
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 Amer. Zinc Lead Co.
 Baker & Co.
 Balbach S. & Ref. Co.
 Baltimore Cop'r Wks.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Cookson & Co.
 Denver Eng. Wks. Co.
 Elliott's Metal Co., Ltd.
 Electro Cyanide Gold & Silver Ext'n Co.
 Foster, Blackett & Wilson.
 Fraser & Chalmers.
 Hine & Robertson.
 Hendrie & Bolthoff Mfg. Co.
 Hunt, C. W. Co.
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 (See Machinery.)
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 Carpenter, Geo. B., & Co.
 Crandall & Huff.
 Denver Eng. Wks. Co.
 Dodge Mining Machinery Co.
 Gates Iron works.
 Park'at & Wilkinson.
 Roessler & Haaslachher Chemical Co.
 Stieren, William E.
 (See Machinery.)
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 American Dev. & Mfg. Co.
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 Copper Queen Mfg. Co.
 Detroit Copper Mfg. Co.
 Eureka Co.
Nickel
 Canadian Copper Co.
Ore Cars.
 Truax Mfg. Co.
Ore Hoisters
 Brown, Horace F.
 Cummer, F. D., & Sons Co.
 David-Colby Ore Roaster Co.
Ore Feeding Works
 Hunt, F. F.
 Ledoux & Co.
 Montana Ore Purchasing Co.
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 Asbestos Paraffine Co.
 Braund, Randolp.
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 Hine & Robertson.
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 Fraser & Chalmers.
 Harrington & King Perforating Co.
Peroxide of Sodium.
 Roessler & Haaslachher Chemical Co.
Phosphor-Bronze
 Phosphor-Bronze Smelting Co.
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 Bucyrus Steam Shovel and Dredge Co.
 Ingersoll-Sergeant Drill Co.
Pipes
 Bowes, F. K.
 Pollock, Wm. L. & Co. | Wyckoff, A., & Sons.
Platinum
 Baker & Co.
 Johnson, Matthey & Co.
Powder
 Atlantic Dynamite Co.
 Atlas Powder Co.
 Ingersoll-Sergeant Drill Co.
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 Financial Times.
 Indian Engineer

Arms and Explosives.
 Australian Mfg. Stand.
 Bullionist.
 Colliery Republican.
 Denver Guardian.
 Economic Mining.
 El Minero Mexicano.
 Electrical Plant & Electrical Industry.
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 Blake, Geo. F. Mfg. Co.
 Cameron, A. S., steam Pump Works.
 Denver Eng. Wks. Co.
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 Eureka Co.
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 C. B. & Quincy R. R.
 Denver & Rio Grande R. R.
 Denver, Leadville & Gunnison Ry.
 Florence & Cripple Creek R. R.
 Illinois Central R. R.
 Mich. & E. of Kentucky.
 Rio Grande Southern R. R.
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 Aitcheson, R., Perf. Metal Co.
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 Fraser & Chalmers.
 Harrington & King Perforating Co.
 Mathiessen & Hegeler Co.
 Montana Ore Purchasing Co.
 Orford Copper Co.
 Pass, C., & Son, Ltd.
 Phelps, Dodge & Co.
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 State Ore Samp'g Co.
 Tod, William, & Co.
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 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Souther & Co.
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 Balbach S. & Ref. Co.
 Baltimore Cop'r Wks.
 Bridgeport Copper Co.
 Elliott's Metal Co., Ltd.
 Eureka City & Ref. Co.
 Mathison Smelting Co.
 Newark Pulv'g Wks.
 Orford Copper Co.
 Pennyl. Salt Mfg. Co.
 Picher Lead Works.
 Russell Process Co.
 State Ore Sampling Co.
 Walburn-Svenson Mfg. Co.
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 Carpenter Steel Co.
 Chester Steel Cast. Co.
 Chrome Steel Works.
 Crandall & Huff.
 Crescent Steel Co.
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 Denver Eng. Wks. Co.
 Gates Iron Works.
 Pierce & Miller Eng. nearing Co.
 Robinson & Orr.
 (See Metal Dealers.)
 Pollock, Wm. L. & Co.
 Taylor Iron & Steel Co.
 Jessop Wm. & Son Ltd.
 Walker Mfg. Co.
 Williams Mfg. Co.
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 Okonite Co., Ltd., The.
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 Sterlinger, Chas. H. & Co.
Tubes
 Besley, Chas. H., & Co. | Pollock, Wm. L. & Co.
Tubing-Rubber
 New York Belting and Packing Co. Ltd
Turbine Water-Wheels
 Leffel, Jas., & Co.
 Pelton Water Wheel Co.
 Stillwell-Bierce & Smith Valle Co.
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 Eddy Valve Co. | Jenkins Bros.
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 Bullock, M. C. Mfg. Co. | Tod, Wm., & Co.
 Fraser & Chalmers.
Vulcanite Emery Wheels
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 Pelton Water Wheel Co.
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 Sullivan Mach'y Co. | Williams Bros.
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 Chester Steel Cast. Co.
 Sheffield Car Co.
 Taylor Iron & Steel Co.
White Lead
 Cookson & Co.
 Foster, Blackett & Co.
Wire Cloth
 Aitcheson, R., Perf. Metal Co.
 Harrington & King Perforating Co.
Wire Rope & Wire
 Besley, Chas. H., & Co.
 Broderick & Hascom Rope Co.
 California Wire Wks. Co.
 Carpenter, G. B., & Co.
 Carpenter Steel Co.
 Channon, H. Co.
 Cooper Hewitt & Co.
 Hunt, C. W., Co.
 Ropes, Dodge & Co.
 R. B. King, J. A. Sons & Co.
 Ropeways Syndicate.
 Vulcan Iron Works.
Wire Rope Tramway
 Brown Hoist & Conv. Machine Co.
 California Wire Wks. Co.
 Colorado Iron Works.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.

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.

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1470 WANTED BY AN ENGLISH COMPANY a competent and experienced mine manager, to open up gold mine near Kat 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.

1475 WANTED - MINING ACCOUNTANT in California, age about 30, unmarried and Scotch preferred. Undeniable references as to personal character and practical experience. Able to arrange and control the accounts, returns and general commercial business of a large concern. Good salary to a first-class man. Address CALIFORNIA, ENGINEERING AND MINING JOURNAL.

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

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. 17,463, Aug. 22.

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. Obiege, 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. 17,437, July 25.

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 5.

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.

WANTED - A FIRST-CLASS ASSAYER for custom sampling works in the Northwest; experience and credentials of the best class indispensable; acquaintance with the business of custom sampling would be an advantage. Reply, stating record, references and salary, to NORTHWEST, ENGINEERING AND MINING JOURNAL.

GRADUATE, C. E., '95, WANTS POSITION during August and September on geological reconnaissance, exploration and mapping of undeveloped mineral property. Experience in geology and surveying. Address GEOLOGIST, ENGINEERING AND MINING JOURNAL. No. 17,461, Aug. 1.

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 11, 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.

TREASURY DEPARTMENT. - Office Supervising Architect, Washington, D. C., July 17th, 1896. - Sealed proposals will be received at this office until 2 o'clock p. m. on the 14th 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 South Bend, Ind., in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Superintendent at South Bend, Ind. 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 will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for the erection and completion (except heating apparatus) of the U. S. Post Office Building at South Bend Ind.," and addressed to WM. MARTIN AIKEN, Supervising Architect, Orig.

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 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 structures, with length of movable span or spans, and of stationary, 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 260 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 30 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, Platt County, Illinois, will receive sealed bids for a complete system of water-works until July 22d, 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. ADVERTISING RATES. (NONPAREIL MEASUREMENT.) Table with columns for Lines, Inches, Regular, One Month, Three Months, Six Months, Nine Months, Twelve Months, and Total. Includes SPECIAL POSITIONS section.

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References on Application.

Moreins & Neil Code Used.

Cable Address, ADAMCO, BUTTE.

DIVIDENDS.

GOLD-COIN MINES COMPANY,

44 PINE STREET, New York, July 20th, 1896.

A dividend of TEN CENTS PER SHARE has been
declared, payable August 10th, 1896, upon the new stock
of the Gold Coin Mine Company to stockholders of
record July 30th, 1896.

The transfer books of the company will be closed at
12 o'clock noon, July 30th, and will reopen August 10th,
at 10 a. m.

D. C. CHOATE, Secretary.

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.

QUINCY MINING COMPANY,

NEW YORK, July 22d, 1893.
DIVIDEND NO. 56.

SIX DOLLARS PER SHARE (\$4 semi-annual, and
\$2 extra) will be payable August 17th next, to regis-
tered holders, 25th inst.

Stockholders residing in Massachusetts will be paid
at the office of Mr. N. H. Daniels, Transfer Agent, 35
Congress street, Boston.

WM. R. TODD, Treasurer.

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

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Situated on Slate Ridge, Harford County, Md. This is
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Reference, J. A. BARNET, Delta, York Co., Pa. For
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tate 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., HUNT-
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4 3/8-inch diameter, 15-inch face; One Pulley, 18-inch diameter, 18-inch face; One Pulley, 53-inch diameter, 15-inch
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MEETINGS.

NOTICE.—A GENERAL MEETING OF

Stockholders of the United States Sulphur &
Chemical Company will be held at Room 205 Postal
Telegraph Building, 253 Broadway, New York, at noon
on Tuesday, July 28th, 1896, to elect Directors, adopt
by-laws, and transact any other business that may law-
fully be brought before it.

By order of the Incorporators.

July 7th, 1896.

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W. L. TRENHOLM, Vice-Presidents.
W. A. NASH,
JOHN Q. ADAMS, Secretary.
MAURICE S. DECKER, Treasurer.

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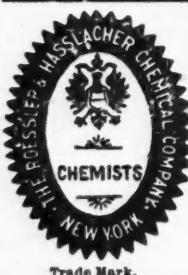
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