

THE ENGINEERING AND MINING JOURNAL



(Published Every Saturday at 253 Broadway, New York.) Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. LXIV. AUGUST 14. No. 7.

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Main Office: 253 Broadway (P. O. Box 1838), NEW YORK. Telephone Number, 3,095 Cortlandt. New York Cable Address—"ROTHWELL." (Use McNeill's or A B C 4th Edition Code.) London Cable Address—"WELLROTH."

Branch Offices: Chicago, Ill., Monadnock Building, Room 737. Denver, Colo., Boston Building, Room 206. Salt Lake City, Utah, 230 Atlas Building. San Francisco, Cal., 207 Montgomery Street. Birmingham, Ala., Chalfoux Building. London Eng., Office, 20 Bucklersbury, 366 & 367. E. Walker, Manager. English subscriptions to the JOURNAL may be paid at the London office at the rate of \$7 = £1 8s. 9d.; the publications of the Scientific Publishing Company may be bought at the rate of 4s. 3d. to the dollar, net.

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The friends of technical education will be glad that Lehigh University has been enabled to continue its good work notwithstanding the serious depreciation of the securities in which its endowment is invested. The promptness with which the legislature of Pennsylvania went to its aid, and the expressions of sympathy for its difficulties and appreciation of its benefits which were tendered from all sides, must be gratifying to the corporation, faculty and alumni, and especially to the president of the University, that eminent chemist, Dr. Thomas P. Drown.

The Peruvian Legation at Washington, in view, it is stated, of numerous applications from parties in this country who wish to engage in mining and prospecting in Peru, gives notice that the granting of gold claims is temporarily suspended until Congress has acted on a proposal now before it to modify the mining laws. The particular change under discussion is an increase in the tax which is now levied on all such concessions, and under the existing law amounts to 15 soles Peruvian (equivalent to about \$7 United States currency) half-yearly on each claim. Concessions will, however, be granted, providing those who accept them will signify their willingness to submit without objection to any increase to the tax which may be decided upon.

The extraordinary growth of the tin plate industry in this country is shown by the announcement that a shipment of 500 boxes of plates has been made this week from the works of the United States Tin Plate Company, at Elwood, Ind., to Italy. This is, we believe, the first exportation of any considerable quantity of American tin plate, and it is said to be only the beginning of a trade which it is to be hoped will grow to considerable proportions. The shipment to Italy is the more noteworthy since that country has been making lately great progress in tin plate manufacture, and the imports from Wales, whence its supply has heretofore been derived, have been falling off steadily. The Elwood Company also intends making shortly a shipment of its plate to England.

Another week has passed without bringing any material change in the strike of the Western coal miners. The main point of attack on the part of the strikers is still untouched, and large shipments of coal from the West Virginia mines continue to be made. The supply has been sufficient to prevent any scarcity at the manufacturing centers and in this way to weaken the force of the strike. A new attack has been begun on the mines of the Westmoreland region along the Pennsylvania Railroad, which usually ship a good deal of coal eastward, but are now sending it to Pittsburg; and it is this westward shipment which the strikers want to stop.

The tactics adopted by the men present some novelty, the plan being for the striking miners to assemble in large force near mines which are still working, and by their numbers and the arguments which they present to persuade the miners employed to join them. So far violence has been carefully avoided in these demonstrations, which have been effective at some points, while they have failed at others. In West Virginia and at one or two points in Pennsylvania the mine owners have obtained injunctions from the courts, but these proceedings have already raised some nice points of law as to how far a court can interfere with the right to hold meetings, as long as trespass on private property is avoided.

The successful beginning of work at the new basic open-hearth steel plant in Birmingham, Ala., calls attention to the possible entrance of the South into the steel market. The output of that section in the past has been so closely limited to pig iron that it has not been considered at all as a competitor in steel or any finished products of steel. Of course the production is for the present so limited that it will hardly supply the needs of the Birmingham Rolling Mill; but there is little doubt that it can and will be increased considerably in the future.

There does not seem to be any probability of the establishment of a new rail mill in the South, but a considerable trade in beams, girders and structural iron for Southern cities could be built up, and a mill at Birmingham could readily compete with the Pennsylvania works at all the cities along the Ohio, and would have a considerable advantage over them in any town on or west of the Mississippi below Cairo.

It is, moreover, a question still, whether with the present low costs, both of material and labor, it would not be possible for Southern steel works to furnish billets at a price which would enable them to take at least part of the trade of those Eastern mills which work on purchased billets. It is quite possible also that a trade in billets and tinplate bars for export might be built up, while there are possibilities in wire-rods also. As long as costs are kept down to the present limit, there will be no trouble in finding a market for Southern steel.

The treatment of gold and silver telluride ores such as have been found in Kalbarlie and other districts of Western Australia has been exciting much discussion among contributors to our Australian contemporaries,

and a good deal of nonsense has been written on the subject. As a matter of fact the fear as to the treatment of these ores is a bugbear. We have them in large quantities in our own district of Cripple Creek, and to a less extent in the Black Hills. The Cripple Creek ores are treated by chlorination or cyanide lixiviation, or are sold to the silver-lead smelters. The disposition which is made of them is governed solely by the net yield which may be counted upon from the various buyers. The cyanide and chlorination works probably save about 90 per cent. of the assay value of the ore as an average. The silver-lead smelters save a much higher percentage, probably as high as 99 in good practice. According to the custom of the local ore market gold in ores is paid for at the rate of \$19 to \$20 per ounce. A purchaser realizes from the mint about \$20.50 per ounce on the gold which he recovers, which leaves him a certain margin, but in the case of the cyanide and chlorination works, where the salvage is comparatively low, he usually pays for more gold in an ore than he gets out of it. This difference has, of course, to be added to the cost of treatment. With ores up to a certain grade the cyanide and chlorination works can stand this loss and still compete with the smelters; over a certain point the smelter has the advantage. The Cripple Creek district is peculiarly well situated with respect to the silver-lead smelters, who, drawing large supplies of lead-bearing and basic ores from other districts, are able to take large quantities of the highly silicious ore of Cripple Creek. If only the Cripple Creek were available, their treatment by smelting would be out of the question. It is a waste of time to talk about smelting the silicious ores of Western Australia unless they can be brought together economically with other kinds of ore and fuel to make a proper smelting mixture. As to loss of gold in roasting telluride ores preparatory to chlorination or cyanide lixiviation, about which doubt has been expressed, the Cripple Creek experience has proved that this may be done with impunity so long as the roasting is executed with due care.

The Mexican Coal Industry.

The Mexican government does not collect any statistics of mineral production within its domain, but in so far as the most important minerals and metals are concerned this need has been supplied by the *Engineering and Mining Journal* and *The Mineral Industry*. We are now able to report that the production of coal in the republic in 1896 was 253,104 metric tons and of coke 27,215 metric tons. The imports of coal were 236,124 metric tons and the exports 75,540 tons, so that the consumption may be estimated at 413,688 metric tons. Of coke there were imported 109,314 tons, and as there were no exports consumption amounted to 136,529 tons. Since there are no production statistics for previous years, it is impossible to make comparisons, but it is interesting at least to note that the domestic production now exceeds the imports, in view of the comparatively recent development of this industry in Mexico. The smaller proportion of the domestic coke in the consumption is due, of course, to the inferior quality of this product, the smelters of Monterey, San Luis Potosi and Aguas Calientes, who are the principal users of coke, being obliged to employ a large proportion of foreign for a satisfactory mixture. At the present time by far the largest part of the coal consumption in Mexico is due to the smelters and the railways. The factories on the lines of the railways use some, but there are not yet very many of these, while as a domestic fuel coal is scarcely employed in Mexico at all.

The Fall in the Price of Silver.

The recent fall in the price of silver is due undoubtedly to the continued large production and a decrease in the demand, though the causes for the latter and the reason for the suddenness of the fall in price are not at all clear.

It is to the East that we look naturally for an explanation, since so large a part of the current silver production is absorbed there, but the statistics of the exportation thither are perplexing. The shipments from London to China and the Straits have fallen off immensely while those to India have increased heavily, notwithstanding the late famine and the present disturbed condition of affairs there, so that the total sent to the East up to the end of July was about 10% greater than in the corresponding period last year. Nor were the exports in 1896 abnormally low, being considerably larger than in 1895. The receipts of silver in the United Kingdom for the first six months of the year, according to the Board of Trade returns were £8,360,294 against £7,010,663 in the corresponding period of 1896, the increase being due chiefly to larger imports from France, Belgium, Mexico and South America. The imports from the United States fell off from £5,051,754 to £4,922,102. The total exports from the United States during the same time were \$27,894,900, against \$29,927,230 in the first six months of 1896, indicating that the exports from San Francisco to China also fell off a good deal. These figures do

not show an unusual movement of the metal sufficient to account for the sudden and remarkable depreciation in value.

It seems not unlikely, therefore, that this has been due to the placing on the market in London of large stocks of which the existence was not commonly known, or stocks which were not known to be pressing for sale.

But whatever the cause, the fall has been so great that it must rapidly restrict production, affecting especially those mines which produce only silver, or silver associated with comparatively insignificant quantities of other metals. Thus it is announced already that the Ontario and Daly mines at Park City, Utah, are to be closed down, although the miners employed in them scarcely a month ago agreed to a reduction of wages. These mines in 1896 produced 1,704,565 ounces of silver, on which production the difference between the present price of silver and the average of 1896 means a loss of about \$200,000. The two companies paid dividends in 1896 to the amount of \$217,000, consequently their cost of production last year was probably not far below the present market value of the metal. Districts like Aspen, Rico and the San Juan, in Colorado, and Phillipsburg, in Montana, are likely to suffer severely, because their ores are essentially silver-bearing. On the other hand, the mines of Butte, Leadville and the Cœur d'Alene, which we estimate produced in 1896 upward of 20,000,000 ounces of silver in connection with copper and lead, when silver averaged 67.1 cents per ounce, will not be seriously affected down by the drop to 55 cents while copper and lead are selling as at present, though their profits will be of course proportionately diminished.

German and American Iron Production.

Of the three chief iron-producing countries Germany has in recent years shown the steadiest growth. Our own production has shown the most extreme fluctuations, the yearly output of pig iron having varied by no less than 3,000,000 tons within the past five years. Great Britain reached her maximum over 10 years ago and has since fallen far below the highest point, though in 1896 the maximum figures were equaled again. In Germany, however, the increase during the last 10 years has been steady and nearly even. There have been, of course, some variations in home demand, but these have been in great part offset by the growth of the export trade, which the Germans have pushed everywhere in the steady and systematic fashion which is characteristic of their methods.

The present year has been no exception to the rule of growth, even in comparison with last year, which was one of extraordinary prosperity. We have recently received the return of the Association of German Iron Masters for the first half of 1897, and from it we find that the total output of pig iron was 3,341,815 metric tons, a gain of 92,437 tons, or 2.9 per cent. over the second half of 1896, but 230,211 tons, or 7.4 per cent. over the first half of 1896, and 506,457 tons, or 17.9 per cent. over the first half of 1895.

In the table below we give the production for the half-year, arranged by kinds of iron, and we have added for purposes of comparison, the United States' production for the same period. The German output is in metric tons and our own in long tons:

	United States.		Germany.					
	1896.	1897.	1897.	1897.				
Foundry and forge irons	1,907,867	38.3	1,545,266	35.1	1,290,845	41.5	1,357,166	40.6
Bessemer pig	2,793,672	56.1	2,495,978	56.7	246,389	7.9	270,644	8.1
Basic pig	191,687	3.9	281,610	6.4	1,574,379	50.6	1,714,005	51.3
Spiegeleisen and ferro-manganese.	83,010	1.7	80,622	1.8
Totals	4,976,236	100.0	4,403,476	100.0	3,111,604	100.0	3,341,815	100.0

The German reports do not give spiegeleisen and ferro-manganese separately, but include those products with forge iron. Our own returns give foundry and forge irons together; in Germany they are stated separately, the total for foundry iron in 1897 having been 527,959 tons, or 15.8 per cent. of the whole output; and for forge iron 829,207 tons, or 24.8 per cent. In one respect the figures give similar results, though our own output diminished while that of Germany increased. The proportion of pig iron intended for conversion into steel showed a gain in Germany from 58.5 to 59.4 per cent., and in the United States from 61.7 to 64.9 per cent. The figures show that the hold which the basic steel process has obtained in Germany is increasing, the acid Bessemer process occupying a very subordinate rank.

Nearly all the German iron is made with coke at the present time. The charcoal furnaces are few in number and their output is insignificant as compared with the total. The changes in recent years in furnace practice in Germany have been, as with us, in the direction of concentration of work, the use of larger furnaces and the increase of production though they have not carried the use of labor-saving machinery as far as we have. The largest furnaces in Germany, however, are still smaller than our own, and there is nothing in that country, even at Hoerde or Essen, which will compare favorably with the Edgar Thomson or Duquesne works. Taking the average number of furnaces in blast this year, we find that the average output per furnace for the half-year was 24,216 tons of pig iron, against 30,365 tons in the United States. The

furnaces running on Thomas or basic pig in Germany are apparently larger and more modern as a rule, since their average output for the half-year was 47,611 tons, very much above the general result.

While the Germans have not yet established any blast furnace plants equal to the American in size, or in production as compared with dimensions of furnace, they are decidedly in advance of us in some particulars. The German ores, as a rule, are of lower grade than ours. The Minette ores of Luxemburg and Elsass-Lothringen, for instance, which are very largely used, carry only from 35 to 40 per cent. of metallic iron, and much ore is used in Siegen and Silesia which is no higher. They are close workers, and the by-products, which are so largely wasted here, are usually saved there. The coke is nearly all made in by-product ovens, and the waste gases from the blast furnaces are utilized in many places. The basic slags are sold to the fertilizer factories for their phosphoric acid and the use of acid slags for brick making and road metal is very common. Almost everything that can be used finds its place, and experts are constantly at work seeking new methods. If we are in advance in some directions, there are others in which we could study the German practice with advantage.

NEW PUBLICATIONS.

MINING ACCOUNTS AND COST SHEETS. By A. G. Charleton. London, England; The Institution of Mining and Metallurgy. Pages 72.

MINE COST-SHEET FORMS FOR MINING COMPANIES. By A. G. Charleton. London, England; Howard & Jones. Pamphlet, pages 12.

In the first-named pamphlet, which is a reprint of a paper read before the Institution of Mining and Metallurgy, Mr. Charleton has gone at some length into the question of mine accounts and the best methods of keeping them, a subject which deserves very careful attention. His object throughout is to urge the careful keeping of accounts, so that the mine manager may be able at all times to know the condition of affairs and the costs of working in detail, so that he can determine not only whether the mine is paying or not, but can tell when or where any part of the work is costing too much, and expenses can be cut down without injuring the property or lessening the efficiency of the operations. It is too often the case that costs are permitted to mount up to a figure which may seriously diminish the profits, simply because no one knows exactly whence the increase is coming; and that leaks and wastes are allowed to grow to a formidable extent before their existence is suspected. A proper and complete system of mining accounts would do much to prevent such results, because an increase in expenses in any direction would be at once detected and investigated. Without going into the details of Mr. Charleton's paper, his object is an excellent one, and its importance is well urged. The special forms suggested are from examples approved by use, and could doubtless be modified to suit special cases; the general rules and principles are sound.

Stockholders should consider one point, which we have often urged, and which Mr. Charleton well puts as follows: "There are two ways of running a company, one being to give directors and shareholders as much information as possible in a condensed form; while the other, and I fear the more usual, practice is to afford them as little as one can. If the management has nothing to be ashamed of, and therefore nothing to conceal, it is to its advantage, as well as to that of the company, that the fullest light should be thrown upon its operation and administration."

THE PRINCIPLES OF SOCIOLOGY: PART VIII.; INDUSTRIAL INSTITUTIONS. By Herbert Spencer. New York: D. Appleton & Company, 1897.

The last section of Mr. Herbert Spencer's colossal work, *Synthetic Philosophy*, is on "Industrial Institutions." However much his opinions may have shifted on certain subjects since he commenced his task half a century ago, his belief has remained firm in the doctrine of evolution, and therefore this, his last book, follows the line of argument of all its predecessors. He traces the development of our complex system of industrial life from the most primitive habits and customs of savage man through the simple, though arbitrary, modes of commercial and civil life in the middle ages.

He sees in militarism the great determining force in the past, and illustrates its influence, directly or indirectly, as a prominent factor in modern times. While his system, as well as his sympathies, tend strongly toward individualism, he cannot but recognize, though he does it with regret and reserve, the incompatibility of the free action of the individual with the full development of modern corporative and co-operative institutions, and, therefore, it is at this part that his pronounced preferences unduly sway his philosophical calmness, and prevent his seeing, not only the inevitable, but the indispensable, entrance of State interference, if not of State control. He draws largely from his vast store of extracts regarding the practices of early and of existing savage races, but he passes over very summarily the revolution, fraught with incalculable consequences, which has followed the introduction of steam. It has necessitated the agglomeration of wealth into great stock enterprises. It has forced labor to defend itself by combination against capital, too often disassociated from all human sympathies, and it has obliged capital to organize for defensive and aggressive warfare. He devotes only short chapters to Trade Unionism, Co-operation and Socialism. He closes with a despairing glance into the near future and a more hopeful view of a distant period, when, somehow or other, "if the process of evolution, which, unceasing throughout past time, has brought life to its present height, continues throughout the future, as we cannot but anticipate, amid all the rhythmical changes in each society, amid all the lives and the deaths of nations, there will go on that adaptation of human nature to the social state, which began when savages first gathered together into hordes for mutual defense—an adaptation finally complete." The prospect may be cheerful to the philosophical imagination, but it offers a rather dreary outlook to the average mortal, who, if not quite satisfied with his present lot, at least hopes that

his descendants will not have to wait through endless ages ere happiness shall dawn upon the race. Such a sentence is certainly a gloomy climax to 50 years of unremitting work, and a whole library of volumes, nor do we think that the growth of collectivism, which has led Spencer to take such a despairing view of modern society, really justifies it. There may for a time be a movement toward unnecessary governmental interference, but the pendulum will swing backward, in obedience to that tendency to oscillation, which Mr. Spencer has so often insisted on. The new order of commercial and industrial life has grown so rapidly and to such proportions that it has not been possible to adjust legislation always wisely and effectively to meet the needs and repress the evils which have been engendered by its novel conditions.

No one will deny that corporations are sometimes guilty of a breach of law, and certainly all experience is to the effect that it is much more difficult to obtain convictions against and impose penalties upon them than it is to secure proof of guilt and to punish the individual. The old laws condemned a thief to be hanged. It was very easy to hang him if he could be caught, but it is not nearly as easy to prove that a vast combination of trade interests is robbing the public, and it is impossible to hang it. To keep in check the same tendency in corporations that exists in the individual man, to obtain by illegal means something to which they have no right, requires legislation of a very different class to the ordinary penal code. Heretofore legislative ingenuity has not devised the requisite machinery for effecting this desirable end, though innumerable fruitless attempts, which have often infringed dangerously on individual freedom, have been made; but as the object is legitimate and the motive right, it is reasonable to suppose that a remedy, which will not be subversive to our liberties, will be found. Yet it must be admitted that this group of legislative experiments is one of the most prolific sources of dangerous State interference. In reality, however, more danger lies in the callousness of the public mind to co-operative commercial interference than in the infringements of legislation. No stronger argument for socialism can be adduced than from the plea that it is to the advantage of the public as well as of the incorporators that huge trade combinations be effected, whose conditions require the individual manufacturer to waive his control over the disposal of his own property and products. He thus foregoes one of the highest and most intellectual functions of his business, and in handing it and himself over to a board of control reduces himself virtually to a piece of his own machinery. The inference the public draws is that if from such individual annihilation there accrues benefit, it would be still more to the advantage of the public were this consolidation carried a little further, and the State itself made the great incorporation. The progress of active socialism has kept accurate pace with the growth of corporations and combinations, and we cannot regard this concurrence as accidental. It does not follow that a certain measure of State control and even State ownership may not be for the public good. Still less does it follow that the tendency will be allowed to run into excess, to sap our liberties, and create a bureaucratic or any other form of despotism. No forecast of human progress under the laws of evolution can possibly anticipate a forward movement in the direction of individualism, and therefore there need be no alarm, even though society may seem to be hastening at times too rapidly on the road to collectivism. It will stop before irredeemable mischief has been done.

A. B.

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.

Adress-Buch sämtlicher Bergwerke Hutten und Walzwerke, etc. Gelsenkirchen i. W., Austria; Carl Bertenburg. Pages, 192.

Observations Techniques sur les Goldfields de Coolgardie, Australie Occidentale. Par Baron Sloet van Oldruitenborgh, Liege, Belgium; La Meuse, 1897. Pages, 45; with diagrams.

The Wealth and Progress of New South Wales, 1895-96. By T. A. Coghlan, Government Statistician. In two volumes. Volume I. Sydney, N. S. W.; Government Printer. Pages, 491.

Our Coal Resources at the Close of the Nineteenth Century. By Edward Hull, London, Eng.; E. & F. N. Spon, Limited, and New York; Spon & Chamberlain. 1897. Pages, 157. Price, \$2.50.

New South Wales Statistical Register for 1896 and Previous Years. Part III. Commerce. By T. A. Coghlan, Government Statistician. Sydney, N. S. W.; Government Printer. 1897. Pages, 235.

A Practical Treatise on Mineral Oils and Their By-Products. By Ilyd I. Redwood, London, Eng.; E. & F. N. Spon, Limited, and New York; Spon & Chamberlain. 1897. Pages, 336; 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.

The Ward District, Colorado.

Sir: I have recently been to Ward and looked over one of the oldest mining camps in Boulder County. For many years the low grade of much of the ore produced and the heavy freight charges—which added largely to the cost of supplies of all kinds—together with high smelting charges, kept down the production of ore and rendered profitless many investments of money and labor. Now, although the average distance to market—about 20 miles—has not been lessened by the building of new roads, the cost of supplies, freight and smelting charges has been so greatly reduced that mines can be worked at a profit that formerly would have netted a heavy loss. Supplies and freights can now be had for less than one-half what they cost 15 years ago, while smelting charges on the sulphide ores produced are only about one-fourth as high as then.

This reduction in the cost of mining and marketing the ores has brought

about a revival of interest in the old camp; and while there is no boom there is a great deal of solid work being done which is, in many cases, well repaid by results. Old mines are being reopened and many new, and apparently valuable discoveries made.

The Utica, Morning Star, Morning Star Extension, Newmarket, Giles and Nelson are among the old mines now being worked at a profit. New mills have been built, and modern methods of treating ores have been introduced to some extent, enough to show that the ores have value and the values can be saved.

A narrow-gauge railroad from Boulder is now being located and will, probably, be partly graded this season.

At Camp Talcott, about two miles below Ward, Colonel Brainerd is doing a large amount of work in opening some of his numerous claims. He has put in a fire power plant on the creek, where he has a fall of something over 700 ft., and conveys the power by electricity to the various places where he uses it. It is the intention to add a large mill—for which there is ample power—as soon as the mines are sufficiently developed to warrant its erection and determine the character of the ores. X.

BOULDER, COLO., July 25, 1897.

Rapid Methods of Analysis.

Sir: The abstract, in your issue of July 31st, of K. J. Sündström's paper on limestone analysis presents a very good method; but as the object is stated to be to make the determinations "quickly and correctly," it seems to me the method can be somewhat improved. He determines lime in the gravimetric way, but the method of dissolving the calcium oxalate in sulphuric acid and titrating with potassium permanganate is much more rapid and convenient. As to its accuracy, Fresenius' *Quantitative Analysis*, page 828, experiment 71, gives the following results:

Weighted as CaCO ₃	Titred with KMnO ₄
0.5617 CaCO ₃	0.5613
0.5620 "	0.5620

Incidentally, it would be safer to add a drop or two of nitric acid to oxidize the iron and any organic matter present before precipitating iron and alumina.

In Vol. V. of *The Mineral Industry*, page 229, is given an abstract of Mr. G. L. Heath's paper on the colorimetric copper assay. His principal point seems to be the use of a sulphate rather than a nitrate solution, the reason being that sulphate standards are more permanent. Now, nitrate standards may safely be used for three or four months certainly; and the hour or hour and a half spent three or four times a year, on leisure afternoons, will surely be compensated by five or ten minutes saved each day in a busy assay office. When two men have to report 10 to 20 sulphurs, 6 to 12 coppers by cyanide titration, 3 to 6 irons and silicas in concentrates and calcines, 6 coppers in tailings and 10 to 12 in slags by colorimetric assay, for their forenoon's work, they wish to avoid all unnecessary steps, especially if the area of heating surface is limited and one set of samples is keeping another waiting for its turn over the burners.

It seems to me that the quickest procedure in the colorimetric method, after the slag is dissolved in acid, is to precipitate the hot solution with dilute ammonia (1 to 1), filter, wash once with hot water by decantation, dissolve the iron in hot dilute sulphuric acid (1 to 4), precipitate again, filter, and wash twice with hot water on the filter. This is the method adopted in the busiest assay office in Montana. If the work is properly done dehydration of the silica ought not to be necessary to insure ease of working and satisfactory results.

CHARLES D. DEMOND.

BOSTON, August 6, 1897.

[There is no doubt the titration of the lime with potassium permanganate is quicker than the gravimetric determination. The reason Mr. Sündström described the latter in his method of limestone analysis is probably because he checks results by titrating the weighed lime with HCl, though there is no apparent advantage in that since the check would be only on the weighing.—EDITOR E. & M. J.]

THE KLONDIKE PLACERS.

The mining claims on the Klondike are supposed to be laid out 500 ft. long parallel with the general direction of the creek and 666 ft. crosswise, the idea being to give each location the width of the gravel from rim rock to rim rock. The surveying of the claims so far laid out has been more or less crude, and when lines are re-adjusted it will probably appear that many have not obtained the full amount of ground to which they are entitled. Claims have to be recorded by an agent of the Dominion, for which a fee of \$15 has hitherto been charged. So far as we know the regulations under the new system laid down by the government for Klondike have not been published. Mines are under the control of a commissioner, who may call upon the detachment of mounted police stationed there to enforce his orders.

There is no precise information as to the character of the alluvial deposits. It is said that most of the creeks have a slight fall and wide bottoms, bedrock being often 20 ft. below the surface. The ground, which is frozen solid most of the year, never thaws more than a few feet. The pay streak is, consequently, dug by a kind of drift mining, a popular method being to thaw it by wood fires built against it. An account of the method adopted for working these frozen deposits in Siberia, where the conditions of climate, etc., are very similar, was given in the *Engineering and Mining Journal* for June 12th, 1897, page 599. The gravel thus obtained is piled up to be sluiced with the first water of spring. All lumber has to be whipsawed, costing \$150 per 1,000 ft., wherefore sluices are expensive.

The Klondike flows into the Yukon from the northeast, the town of Dawson being situated at its junction with the main river. Further upstream the Stewart River flows into the Yukon also from the northeast. Some prospecting has been done on the latter branch and good indications are said to have been found. Between the Klondike and the Stewart rivers is a large stream called Indian Creek, the gravel of which is said to be promising.

The coarseness of much of the Klondike gold, and the fact that nuggets attached to quartz are often found, indicates that the veins from which it originated are not far distant from the alluvial deposits. Small stringers of gold-bearing quartz are said to have been found in the bedrock, but naturally the adjacent hills have been scarcely looked over

yet, especially since their exploration is rendered more or less difficult by the heavy growth of moss with which they are covered. It is reported, however, that one lode of rich quartz from 3 to 8 ft. in thickness has been located on one of the creeks about 19 miles from the Yukon.

Although the present excitement has for the first time brought the Yukon region into prominent notice, gold has been known to exist in that region for at least 15 years, and 10 years ago, in 1887, a number of miners were or had been at work on the Canadian side of the boundary line. From an interesting historical review in the *Canadian Engineer*, we find that the first recorded explorations in the country were made about 1840, when a Mr. Campbell was commissioned by a Hudson Bay Company to explore the Upper Liard River. In the course of his work he traversed a part of the Pelly River, which unites with the Lewis to form the Yukon, and in 1847 established Fort Yukon at the mouth of the Porcupine River. In the following year he also erected Fort Selkirk, but four years later this was abandoned. Fort Yukon was found, in 1869, when the boundary line was run, to be in American territory, and the Hudson Bay Company removed its northern trading post to Rampart House, and later to the post now occupied, which is on the Porcupine, 20 miles from the Yukon. It is a matter of tradition that in the early days at Fort Yukon the Indian fur hunters occasionally brought in small quantities of gold dust, but no one seems to have been sufficiently interested to investigate the sources from which this was obtained.

The first systematic explorations were undertaken in 1877 by the Canadian Geological Survey, and an exploration expedition under Dr. D. M. Dawson, and Mr. Ogilvie worked its way through the Cassiar country in British Columbia and up to the Yukon. The maps prepared by this expedition and subsequently published by the Geological Survey of Canada are still the best existing of this region. At a later date the rush to Cassiar and its disastrous results will be remembered, and this seems for some time to have delayed further exploration of the northern territory.

The Yukon River is navigable for about 2,300 miles from its mouth, but only small boats are at present available as the navigation is interrupted at many points by bars and rapids. The magnitude of the river may be estimated from the fact that Mr. Ogilvie, the Canadian surveyor, put the rate of discharge of the river into the sea at 300,000 cu. ft. of water per second, which is greater than that of the Mississippi.

Much discussion is going on as to the construction of new lines of approach to the country in case its wealth proves of sufficient extent and permanence to attract a considerable population. The first and most obvious step is the construction of a railroad over the Chilcoot Pass, or more probably the White River Pass, from Dyea to a point on the river whence navigation could be secured to the Klondike and other gold regions—for it seems probable the Klondike will not continue to be the only center of attraction. Another line into the country which is proposed, and which seems quite feasible, will be formed by an extension or branch of the Canadian Pacific from Edmonton, about 50 miles to Athabaska Landing, from which point there is water navigation by the Athabaska River, the Great Slave Lake and its outlet and the McKenzie River to Fort McPherson, which is quite near the Klondike divide. The distance by this route from Edmonton to Fort McPherson is about 1,800 miles. Still another line which is being pressed upon the Dominion authorities is by way of Hudson Bay to the head of Chesterfield Inlet, whence a railroad portage of 175 miles would continue the line to a tributary of the Great Slave Lake; from that lake the route would be the same as that just described by the McKenzie River.

The Canadian government is taking additional measures to establish order and enforce its laws in the Klondike region. Besides the mounted police already on their way, a further detachment is to be sent with two Maxim guns. A law court is also to be established, and Justice McGuire, now stationed at Prince Albert, in the Northwest Territory, has been ordered by the government to the Yukon.

The latest report from Ottawa is that the government has decided to remit the proposed tax of 10 and 20% on gold produced from the placers, but this is not yet confirmed. Another report is that it has been decided to limit the size of the placer claims to 100 ft. along the creek or river, instead of 500 ft., as at first proposed.

The only official action so far taken by our government is the issue of a circular by the Secretary of the Interior warning miners and prospectors against the dangers of going to the North before next spring.

Storing Calcium Carbide in England.—*London Engineering* says that since the Order in Council of February 26th, 1897, in virtue of which certain parts of the Petroleum Acts, 1871 to 1881, were applied to carbide of calcium, the question of the expediency of exempting small quantities of this substance from the operation of the order has occupied the attention of the Home Office, and the Secretary of State, having been advised that such exemption might be safely extended to quantities of carbide of calcium not exceeding 5 lbs., when kept in separate, substantial, hermetically-closed metal vessels containing not more than 1 lb. each, an Order in Council has been made authorizing the keeping of not more than 5 lbs. of carbide of calcium in vessels as above described without a license, and the original order of February 26th has been amended accordingly. It is to be observed that where the carbide of calcium is not kept in vessels as above described no quantity may be kept without a license.

A New System of Mineralogical Records.—A. S. Cooper, who is State Mineralogist of California, has formed a new plan for furnishing mining statistics which is sure to win popular favor. The bulky matter that has emanated from the State Printing Office has tended sometimes to confuse, rather than to instruct, and the innovation is well received by the public. The new plan is a map of each country showing the nature of the mineral deposits—as well as the apparent growth—and is complete in detail. It will be accompanied by a short pamphlet which will be intended to cover all the points that practical mining men want. The idea is to do away with the issue of hundreds of pages, when a few will answer for all practical purposes. In pursuance of his plan Mr. Cooper has called in most of his field men, and he believes that the method which he intends to pursue will not only meet with popular approval, but that experts will see the advantage of the departure. It will also enable him to curtail the expense of his office, which is necessary since the Governor of the State has vetoed the appropriation from which payment is made for the reports.

THE SLATE INDUSTRY OF PENNSYLVANIA.

By James Hess.

According to an article by Mr. Hess in the *Yale Scientific Monthly*, slate is found in the United States in numerous localities, the deposits varying much in color. That of Vermont is green and dark purple of very fine quality, while that quarried in Washington County, New York, is red. The Pennsylvania slate is black or darkish blue. The Washington County red slate is especially prized for its unique color. It is very durable and is used chiefly for roofing and ornamental purposes.

The Pennsylvania slate belt begins in Sussex County, N. J., quarries being operated at Lafayette and Newton in that State. In Pennsylvania the belt extends through Northampton, Lehigh and Berks counties, in a southwesterly direction; there then occurs a break, but in the southern part of York County workable deposits appear again in what is known as the Peach Bottom region. The slate districts of Pennsylvania are often divided into the Bangor, Lehigh, Northampton Hard Vein, Pen Argyl and Peach Bottom districts, the most important being the Bangor. That district includes quarries at Bangor, East Bangor, Slateford and Mount Bethel. The Lehigh district embraces the whole of Lehigh County and a few quarries in adjoining counties. The quarries of Pen Argyl and

pure—that is, free from flint—it is worthless and is thrown on the dump. The best slates are distinguished by an appearance of compactness and solidity in their blocks, with nothing to suggest their fissile character; yet the latter should be so perfect that the blocks may be split into sheets of any desired thickness. For roofing slate durability of color and toughness are essential qualifications, while for school slates or blackboards a soft rock, free from hard spots or flaws, is required.

MINING LOW-GRADE GOLD ORES IN ALABAMA.

Written for the Engineering and Mining Journal by Wm. B. Phillips.

During the last three or four months I have been able to look carefully into certain gold deposits in Clay County, Alabama, and to do a considerable amount of prospecting on a large scale. I also repaired and operated a 5-ft. 3-screen Huntington mill and was permitted to observe the working of a 5-ft. 5-screen mill and a 10-stamp plant working on similar ores. Certain general conclusions have forced themselves upon my attention and it may not be amiss to outline broadly what appears to be the situation there. Whether the schists, slates, etc., are of Silurian or pre-Silurian age, whether they are of aqueous origin or not, whether the

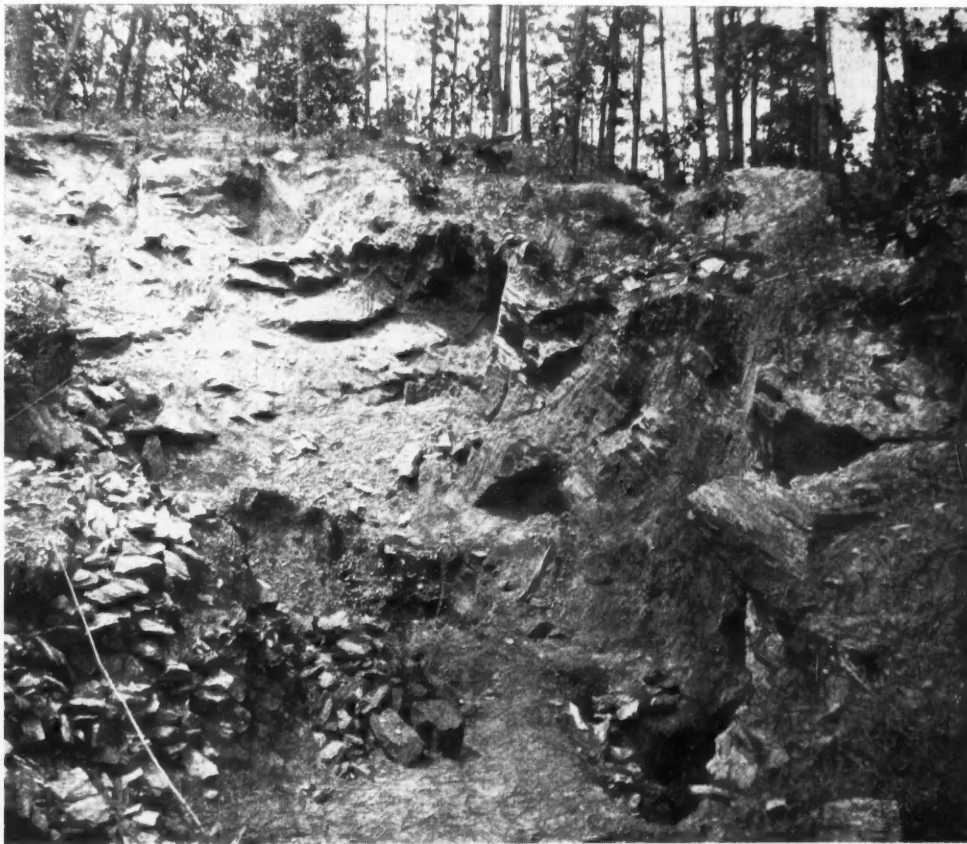


FIG. 1.—DECOMPOSED SCHISTS, CLAY COUNTY, ALABAMA.

Wind Gap constitute the Pen Argyl region. The Northampton Hard Vein region is composed of the quarries at Chapman's, Belfast, Seemsville, and one or two others, all in Northampton County. This region is particularly noted for the great hardness of its slate. The Peach Bottom embraces four quarries in York County, Pa., and five quarries in Harford County, Md. The slate of the last district is considered superior to any other for roofing purposes on account of its unchangeable color, smooth and glossy appearance and great durability.

The chief difficulty in slate quarrying in Pennsylvania is the existence of ribbons or bands of varying width and color, running across the cleaved surface of the slate and occurring at intervals varying from less than an inch up to a few feet. Slate cleaves readily at angles to this ribbon, but with great difficulty and in ragged lines when split in a parallel direction. The Peach Bottom quarries are free from these faults and are consequently easy to operate. The largest slate quarry in the United States is the old Bangor quarry in the Bangor District, the opening at which is 110 ft. long, 350 ft. wide, and has an average depth of 180 ft.

In quarrying slate the bed is first laid bare. The stone is then broken out in huge plates by machine drills and explosives. The blocks are raised to the surface by derricks, transferred to flat cars and run to the cutting and trimming sheds. That which is to be made into roofing slate is placed horizontally on a stand by workmen called "dressers," who with sharp knives, which are sometimes run by steam, cut it into sheets suitable for market.

The greater part of the workmen in the Pennsylvania quarries are Welshmen. In some quarries the slate is gotten out by contract, the men furnishing the blocks at certain rates according to the stock which is cut from them.

The waste in slate quarrying is very large. If it does not come out

dikes traversing them are really of igneous origin or not, are questions to be left to the trained geologist. But aside from these considerations the main question is: Is there enough paying ore in the district to warrant extensive gold-mining operations?

Clay County covers a considerable area, and there are many different classes of ores to deal with; but, as I take it, the chief reliance there for years to come will be the decomposed gneissoid schists and slates with the concomitant quartz seams of greater or less prominence. There may be places where it would pay to work the regular gold-bearing quartz, but for the most part the quartz will be of minor importance. If this is true, and from a careful study of the western part of the county, I believe it is, then the question narrows down somewhat. We have to deal with large masses of decomposed material *in situ* (Becker's saprolite), a great part of it yielding to the pick, but still requiring blasting for any large and economical output. The stuff carries free gold, sometimes in the interbedded thin seams of quartz, but generally in the rock itself. It not infrequently happens that the quartz itself is barren, but wherever gold is found quartz is invariably present. Some of the deposits have been opened to depths of 30 ft., 50 ft. and even 60 ft., the entire mass carrying free gold with, of course, richer and poorer streaks. The amount of gold varies from 50c. to \$2.50 per ton, the average being close to \$1.50. The upper portion, lying immediately under the top soil, is as rich as any of it, but the difficulty of saving the gold in this clayey mass is certainly a serious obstacle. It flurs the quicksilver to a remarkable degree, an observation first made in that district by Mr. Joshua Franklin, of the Idaho mine, an experienced mill-man, who has shown beyond doubt that the softer and more clay-like material, although it may pan well, yet does not yield its gold to amalgamation until the extremely fine and talcose material has been removed. He first directed my attention to the matter,

and I afterward confirmed the truth of his observations as applied to deposits in the same vicinity. It is a point of the utmost importance in dealing with these ores. In panning this material one might suppose that it would mill well, but not only does it flour the mercury, it also robs the plates of amalgam already caught. The local name of "placer" has been given to this clayey ore, but it is not a placer in the ordinary acceptation of the term. Doubtless it may have been moved down hill, but if so it has slipped on the underlying rock pretty much as a glacier moves. The gold is rounded, shot gold, and is generally bright. I have seen a few tons of this stuff soften hard amalgam on a shaking table, and actually remove it.

Underneath this, however, we come to the ore proper, gritty, tough, seamed with veinlets of quartz, and often stained with manganese oxides. It is the typical material for the Huntington mill. It needs grinding, not pounding, and will not suit a stamp mill at all. Experience has shown that with a stamp mill not more than one-third of the value that is saved in a Huntington mill can be secured, and no one has been able to work the ore profitably any other way than by grinding. It is useless to attempt to work it in a stamp mill.

It might be advisable at some places to send the harder material and the quartz to an auxiliary stamp mill, as the overs from the grizzly could be handled in this way to advantage. But this plan is not to be recommended except where this material carries good value. For ordinary purposes a grizzly with 1-in. openings in the clear and a crusher of the jaw and toggle-joint type will be found quite sufficient, and the stamp mill becomes unnecessary.

The accompanying photographs will show the situation at a typical deposit in Clay County. View No. 1 was taken near the top of a hill that rises to a height of 150 ft. above water level. A considerable amount of ore has been removed and treated in a Huntington mill successfully. The

glance it would appear that a gold ore carrying on the average \$1.50 per ton would not present many attractions. Under ordinary circumstances such an ore could not be profitably worked, and would be regarded rather as a geological curiosity than an ore of commercial value. But the conditions existing in Clay County are peculiar; they modify opinions based on richer ores, and cannot be judged correctly by those whose experience has been gained elsewhere, unless a personal visit has enabled the engineer to see for himself. For instance, if one were told that these ores exist as continuous masses for distances of 1,500 to 2,000 ft., as developed by test pits; that the deposits occur over several miles of territory; that in depth they have been worked to 60 ft. and in many places are 100 ft., 125 ft. and 150 ft. wide, and that the delivery cost should not exceed 20c. per ton with proper equipment, he would be apt to look skeptical, as I did, until I had seen for myself. During the last several months I have carefully looked into the matter, with a predisposition to doubt, and while I am not yet converted to the view that Clay County will be the seat of great gold-mining operations I think that it offers great attractions to the legitimate miner, and one who is content to secure fair, not extravagant, returns from investments.

For the most part, those who have written of Southern gold properties have been either boomers or have taken the other extreme. Between the two there has been but little room. A sober judgment, based on actual observations, with a full knowledge of local conditions, has seldom been rendered. It seems absurd, in these days of Klondike excitements, to speak of ore that will net 50c. a ton. But if there is ore in Clay County that carries even \$1 a ton and will yet give a profit of 50c. a ton, there is a great deal of money to be made from it—not, however, on a small scale, not with antiquated machinery, and not with miners and millmen fresh from the farm. Such ore as I speak of can be profitably worked only by the best gold-saving appliances in the hands of men who have



FIG. 2.—DECOMPOSED SCHISTS, CLAY COUNTY, ALABAMA.

dip is toward the southeast, at angles varying from 20° to 30°, the flatter inclination being near the surface. The amount of ore exposed is 33 ft. and every foot of it carries free gold in paying quantities. The upper 3 or 4 ft. is somewhat clayey in nature, but this gives place to a material that has to be blasted. It is not hard, but is tough, a decomposed gneissoid schist in place, with interbedded thin quartz seams, now and then showing also transverse quartz seams. The limit of the gold is toward the foreground, and the material here, though barren, does not differ in appearance from the pay-ore. View No. 2 is of the same deposit, 150 ft. along the strike, and view No. 3, another, taken 600 ft. along the strike. At this point the ore is more sandy to the feel, and is better, milling material.

View No. 4 is a photograph of the Clay County deposit—shown in Nos. 1, 2 and 3—taken from near the foot of the hill toward the summit. No. 5 is the foot-wall of the gold-bearing schist where it crops out in the bed of a creek. The water-power here is equivalent to 20 H. P., with a turbine, or Pelton wheel. The hills rise very abruptly from this place, east and west, and there is good placer both above and below the falls. Thus at the foot of the Horn mine hill are the meadows on Cauca Creek, where is good placer but the ground is at present pre-empted by a corn crop. View No. 6 is of the big drift at the Horn mine, showing 30 ft. of ore. At this place were found some of the most distinctly marked ore lenses I have seen—lenses within lenses, with alternating bands of manganese and ferruginous material, beautifully outlined.

The question now is whether material that can be mined and delivered to the mill for 20c. a ton, that carries something over \$1 a ton in gold and that exists in enormous masses, can be profitably worked in the Huntington mill, or a mill of similar design and construction? Leaving out of view the clay-like ore, for which special provision will have to be made—and it rarely comprises more than 8% of the deposit—we have to be guided by such general information as can be brought to bear, and by such experience as has been gained during the last 12 months. At first

been trained in their use. It is idle to contemplate success under any other conditions. Many failures in the South have been due more to the inefficient character of the labor available than to the refractory nature of the ore. The labor is willing; it is faithful and honest; but it does not know what to do, and a deal of trouble must be taken in training it.

I submit, in conclusion, the following propositions for consideration:

1. These ores exist in very large masses.
2. They carry from 50c. to \$2.50 in free gold per ton; will average over \$1, and are free of sulphur.
3. They can be mined and delivered to a mill for 20c. a ton.
4. There is abundance of good water that can be run by gravity into the mill tank.
5. Ordinary labor is 75c. a day; blacksmiths and carpenters \$1.50 a day. Pine lumber 70c. per M. at the saw-mill, or 80c. delivered. Good country board, with lodging, \$2.50 a week.
6. The distance from the railroad is from 9 to 12 miles. The roads are not good, but a great deal of hauling is carried on at all seasons.
7. The climate is excellent and the people hospitable.
8. And last, these ores, under proper management, will net 50c. a ton, and a plant for treating 100 tons a day can be put up and set going, with mills, boilers, engines, buildings, etc., for \$20,000.

Deep Coal Mines in Germany.—The shaft of the Freie Vogel Colliery, at Hoerde, which has attained a depth of 2,000 ft., has hitherto been the deepest in the Westphalian coalfield. This depth will, however, shortly be exceeded by two shafts at Gelsenkirchen, where, at the Rheinelbe Colliery, a new shaft is being sunk, the intention being to carry it down to 3,300 ft. The adjoining Dahlbusch Colliery is also sinking a new shaft to 2,600 ft. In both cases it is intended to work the coal seams at the deepest portion of the basin.

VITRIFIED BRICK AS A PAVING MATERIAL.

By J. W. Sibley.

In a paper read before the Alabama Industrial and Scientific Society, Mr. J. W. Sibley says that the term "vitrified" is not used in brick manufacture in its primitive sense—meaning of the nature of glass or glassy, which carries with it the idea of brittleness, a characteristic not permissible in a genuinely vitrified brick. By vitrification is meant the perfect blending of the constituents into a homogeneous mass, and thoroughly annealed, so as to obtain the maximum degree of hardness and toughness, together with the minimum tendency to absorption of water.

Vitrified bricks have been made from shales, bastard fire-clays and pipe-clays. The paper considers only those made of shale, as they have proved the most satisfactory and the writer's experience has been mainly along that line.

The raw material having been ground and thoroughly pugged, the bricks are formed in the usual manner. After having been thoroughly burned, they have to be cooled slowly, so as to be tempered to the maximum degree of hardness. The entire process, from the shale pit to the railroad car, occupies about 16 days for a kiln of brick.

In vitrified brick, the engineer finds just what he is looking for. The combined silica, alumina and iron give a resultant material that is harder than steel. It is the only substance that will successfully resist the calks and heels of the horse's shoe. When the brick wear, it will be uniform so that the pavement will present a smooth surface even when the brick are worn half away. Of course if a poor or improper foundation is put under any pavement, it will not stand the traffic.

Vitrified brick, being non-absorbent and uniform in size, when laid,

ROASTING PREVIOUS TO CYANIDING.

Written for the Engineering and Mining Journal by Wallace Macgregor.

The statement has often been made that it was not necessary to calcine ores before treatment with cyanide of potassium. This may be true for some oxidized ores and tailings. Most ores that are amenable to cyanide treatment, however, can be extracted to a higher percentage of the gold contents by roasting previous to cyaniding. In fact, this method of working has passed beyond the experimental stage and notable cases could be pointed out where roasting has greatly increased the values saved.

The method finds its most useful field in the treatment of ores which carry their gold value in iron pyrites, scattered through quartz or other vein rock.

Among the important changes brought about are, first, keeping the cyanide solution freer from soluble salts than when raw ores are treated; second, making a very high percentage of gold in sulphide ores, easily extracted by cyanide solution in subsequent treatment; third, an equal or less consumption of cyanide, with a greater extraction of gold over that obtained on raw ore; fourth, the ability to treat low-grade, silicious ores, carrying the gold value in iron pyrites, without previous concentration; fifth, causing clayey ores to lose the water of hydration and thereby rendering them porous and making the filtration of solution much more rapid.

It may be well at this point to state that those who want to try experiments on roasting and cyaniding must obtain dead roasted ore before attempting to extract the gold. Those starting with laboratory experi-



FIG. 3.—ENTRANCE TO DRIFT IN DECOMPOSED SCHIST.



FIG. 4.—DECOMPOSED SCHISTS, CLAY COUNTY, ALABAMA.

present an absolutely water-tight pavement, which is easily cleaned by washing or sweeping, thus affording the best sanitary pavement yet discovered.

Brick pavings can be easily repaired. They are comparatively noiseless and less slippery than either granite or asphalt. They have been in successful use in Holland for 100 years, and in this country, at Charleston, W. Va., without any repairs, for 25 years; in Columbus, O.; Galenburgh, Ill.; Omaha, and other cities, for 10 to 15 years, and are now the standard pavement for Chicago, Cincinnati, Cleveland, St. Louis, New Orleans, Atlanta, and Montgomery, Ala. Many other cities North and South are adopting vitrified brick for paving their streets.

There are several interesting and instructive tests for determining the value of a brick for paving purposes; especially the rattler or abrasion test, the compression test, the absorption test.

In the abrasion test the bricks are put in a foundry rattler, together with 300 lbs. of scrap iron, and revolved for 2,000 revolutions. They are weighed before and after taking. The percentage of loss is said to equal 25 years' wear in the street. In such tests, Alabama brick lost 10%, granite 8%; other brick lost 12 to 15%. In the compression test, Alabama brick stood 265,000 lbs. before breaking. In the absorption test, after immersion for seven days, Alabama brick absorbed 22% of its weight. The average common brick will absorb 10 to 15% of its weight.

Acetylene for Underground Lighting.—Mr. H. Hooke, Inspector of Mines in New South Wales, while visiting the Hillgrove field took the opportunity of testing the virtues of acetylene for underground work. Mr. Hooke has improvised an apparatus including a tank for holding the water, a cage for the carbide, a receiver for the gas generated, a jet to deal it out and a universal jointed reflector to throw the light in any desired direction.

ments will soon find that by roasting with a very low heat, and a short time in the muffle, they can extract a very high percentage of gold from the ore by cyanide. They should not lose sight of the fact that they are doing so at the expense of the cyanide. The most important condition for good extractions and low consumption of cyanide on a large scale is to have dead roasted ore. Partially roasted ore, originally sulphide ore, contains sulphates of iron which act with cyanide to form compounds, which consume large amounts of cyanide, besides putting the circulating solution of the plant in very bad shape for further usefulness. When ferrous sulphate exists in the ore, it requires two parts of cyanide of potassium to one part of ferrous sulphate to form the ferrous cyanide. In the presence of an excess of potassium cyanide, which condition is always present in regular working, the ferrous cyanide takes up four parts of potassium cyanide to form potassium ferro-cyanide. Probably other and more complicated reactions take place, but these are of minor consideration so far as the consumption of cyanide is concerned. Sulphide ores, containing from 2% to 10% of pyrites, which will not give more than 20% extraction of its gold, in the raw state, will often give 85% to 98% after a dead roast and treatment with cyanide. In mines where the oxidized and sulphide ores are mixed, especially from the surface workings, it is often the case that these ores are acid, and it is economy to roast the mixed ores, thereby putting the gold in the sulphide ores in condition to be easily extracted and often saving a higher percentage of gold from the part that was originally oxidized; besides destroying the acid quality the ores originally had before roasting.

This latter change of condition is important, because one has not to use any lime or soda ash as neutralizers, thus doing away with the trouble lime often causes in percolation and in the zinc boxes where the gold is deposited.

With "dead" roasted ore the consumption of cyanide is from 25% to

50% less than when the ore is treated raw. Of course with some ores the consumption may be about the same roasted or raw, but these same ores may give from 20% to 75% better extractions of the gold after roasting than in the raw state. Hence the consumption of cyanide being about the same may not enter into the question of economy of treatment by roasting.

Ores containing much clayey and talcy matter are very difficult to leach in the raw state. Any one who has had clayey ores to leach understands how easy it is for mechanical difficulties of filtration to outweigh any chemical problem that may come up. Roasting causes these ores to lose the water of hydration, making them porous and easily penetrated by the cyanide solution; hence they can be readily filtered and washed free from cyanide solution containing the dissolved gold. Percolation becomes so much more rapid that it may in some instances be economy to calcine the ores to enable one to overcome the mechanical difficulties attendant upon slow filtering material. Among the many furnaces the Brown Horse Shoe and Straight Line offer many advantages for large capacity.

The quickest and most satisfactory working test to determine if ore is dead roasted and suitable for treatment with cyanide I have found to be as follows: Take samples of the roasted ore at discharge end of furnace,



FIG. 5.—FOOT WALL OF DECOMPOSED SCHIST, CLAY COUNTY, ALABAMA.

cool, take from 100 to 250 g., place in a beaker with some 200 c.c. of water; stir this by shaking for about a minute, then filter into a beaker or flask and to the filtrate in the beaker add a small quantity of cyanide solution made up to the same strength as that used in the regular work of the plant. It is best to add the cyanide solution slowly, and carefully, noting the result. If no cloudiness at all appears, the ore is dead roasted or at least well fitted for treatment by cyanide solution, and the consumption of cyanide will be normal.

If a brown coloration takes place there are still some soluble salts of iron left in the ore which will cause a somewhat higher consumption of cyanide and may lead to a precipitation of compounds of ferro-cyanide in the zinc boxes. If on addition of cyanide to the filtrate, a blue coloration, soon becoming a greenish blue precipitate, is formed, then the ore is very badly roasted and one may look for a high consumption of cyanide, and the circulating solution will be made foul.

As to the economy of roasting ores, that must be determined for each individual case. There are oxidized ores and tailings from stamp mills which pay a fair profit by direct treatment with cyanide. These ores and tailings may be so low-grade that roasting would be out of the question, although if used it would increase the extraction of the gold on subsequent treatment with cyanide by probably 10% or more. There are cases of heavy sulphureted ores and concentrates where roasting interferes with the extraction of the gold and causes a very heavy consumption of cyanide.

The advisability of roasting ores previous to cyaniding should be carefully determined in each case, both by laboratory experiments and small plant tests, where 1 to 10 tons of dead roasted ore could be worked.

DREDGING FOR GOLD IN NEW ZEALAND.

The successful operations of some of the principal dredges on the Kawarau and Clutha rivers make it evident that this form of mining has become the safest and most profitable in Otago, according to the *New Zealand Mining Journal*. The small initiatory outlay required to equip a claim and place it in working order has also made it the most popular. The bed of the Clutha River is still the favorite dredging ground of the Colony; but, during the past two years, dredges have been erected in many other parts of the Province. Before many years are over, nearly every stream which, on account of its volume, the digger in the early days failed to turn, will become the scene of dredging operations; and the same may be said of all those old alluvial fields upon which it is possible to bring sufficient water to float the pontoons and to wash the gravel. Dredging is the cheapest method of mining brought into use up to the present time. A yield of 1.23 grains of gold per yard (30 cwt. to the yard) of gravel—equal to one part of gold in 19,000,000 parts of earth—has been made to pay handsome dividends in Otago. These results were obtained with a dredge driven by steam, and using brown coal, costing 25s. 6d. per ton, as fuel. If this is a record, it is not likely to

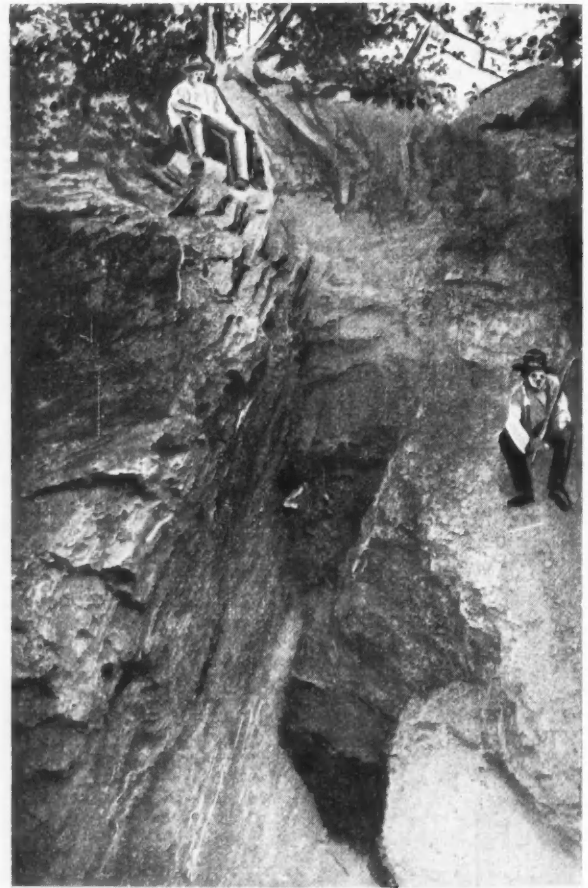


FIG. 6.—THE BIG DRIFT AT THE HORN MINE, ALABAMA.

remain as such. Each new dredge completed is fitted with improved machinery, and many of these improvements are in the direction of more efficient gold-saving appliances. The Molyneux Hydraulic Company's new dredge is supplied with two parallel revolving cylinder screens, instead of one as hitherto. This ensures a more rapid and complete separation of the coarser gravels from the finer gold bearing sands. A dredge now under construction is being fitted with endless, traveling, self-washing, concentrating tables, somewhat upon the principle of the true vanner, though made of different fabric. This adaptation in itself will effect a great saving in labor. When it is remembered that several of the dredges now working have a lifting capacity of 90 tons of material per hour, and that this material varies in size and weight from boulders exceeding 100 lbs. to gold in an almost palpable condition, the necessity for having the machinery as nearly perfect as possible becomes apparent. Improvements in construction and equipment have been effected during the past 10 years to such an extent that ground worked at a loss by primitive appliances of a decade ago, and abandoned, can now be worked with a certainty of profit. A modern dredge can, by means of its elevator, stack its tailings 40 ft. above the water line—a great consideration when working where accumulated tailings are likely to impede operations. Nearly all the principal dredges are driven by steam power; there is one exception in Otago, where electrical power generated from a neighboring stream is used, but sooner or later there is sure to be a greater application of natural power for the purpose. A few of the earlier dredges were operated by current wheels, and it is quite possible that this plan of obtaining motive power will be resorted to again in the future on account of economy.

KAOLIN IN VERMONT.

Written for the Engineering and Mining Journal by J. Nelson Nevius.

During the past few months the Troy & New York Mining Company has been developing a property at South Wallingford, in Rutland County, Vt., for a low grade of manganese ore and for paint stuffs. The work has been carried on entirely by means of a tunnel, 6 x 3 1/2 ft. in section, which slopes gently toward the entrance to drain off the water and to facilitate running out the cars. The main adit is about 1,800 ft. long and passes through about 500 ft. of glacial drift and clay, which lie along the base of the Green Mountains; then turning to the left it cuts diagonally through 150 ft. of siliceous limestone tilted at about 40°, and in the center of which are a few feet of ocher and decomposed limestone. Inside of this wall of siliceous limestone is a mass of ochers, which enclose numerous bodies of manganese and iron ores. These ore bodies are not uniform in character, but vary from a rich manganese ore carrying but little iron (48% Mn and 12% Fe), through a medium grade carrying about 25% to 30% each of manganese and iron, to a fair quality of limonite carrying 4% of manganese. The ochers also are diverse in character. There are immense quantities of two shades of yellow ocher that are very uniform in color and contain but a small amount of grit, chiefly fine quartz fragments. There are also large deposits of a rich

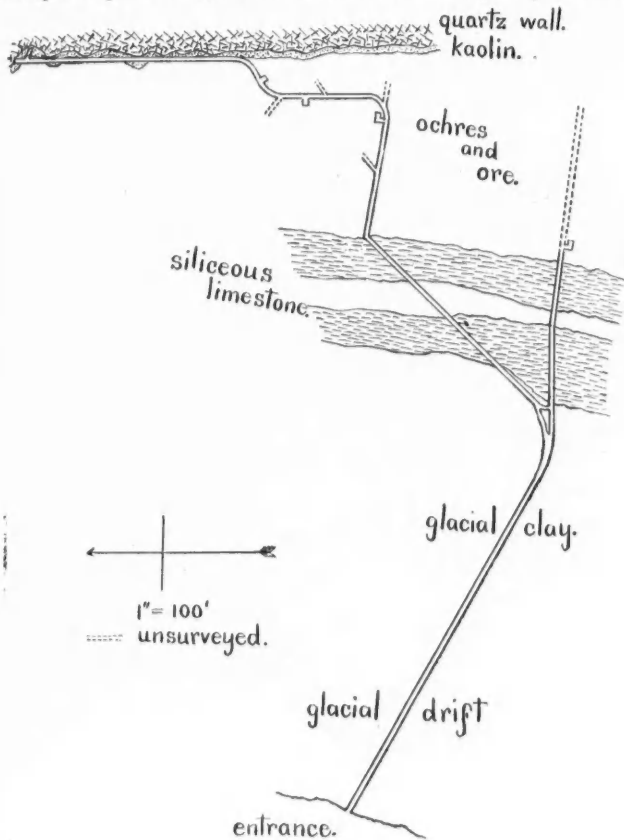


FIG. 1.

chocolate brown ocher, or umber, that lie next to the manganese ores and derive their color from oxides of that metal. At some points a half-dozen shades and colors of ochers are blended together on a square yard of surface.

This deposit of ochers and ores (the ore channel of the mine) is limited on the farther side by a white quartz wall, the inner surface of which is crushed and broken. It is along this quartz wall that the kaolin is found, as shown in Figs. 1 and 2.

It will be noticed by referring to the plan of the mine, Fig. 1, that the main drift follows along this quartz wall for a considerable distance, and that it cuts the wall at a few points. There are seven exposures of kaolin along the drift, the largest extending for a distance of 38 ft. on one side of the drift and 28 ft. on the other side, the drift cutting through a solid mass of snow-white kaolin, absolutely free from the slightest trace of iron or other stain. At the ends of this exposure the white color blends rather abruptly into the predominant yellow ocher, which seems to indicate that the iron stain is gradually contaminating the kaolin through the influence of percolating water. Samples of kaolin taken at equal distances in both directions from the center of this exposure contain an equal amount of grit, in the form of very fine particles of free quartz. The richest parts of the kaolin contain about 5% of this grit. Samples from nearer the center of the exposure contain a gradually increasing amount of grit, increasing both in quantity and in size of the particles, and at the center the fractured quartz ledge is encountered, the interstices being filled with kaolin of the same fine quality.

Five of the other exposures of kaolin, which vary from 12 to 25 ft. in extent, exhibit characteristics identical with those of the larger exposure; the contact of the kaolin with the ocher being generally a gradual mingling of the two, the pure white kaolin being separated from the yellow ocher by a distance of 3 or 4 ft., or even less, through which the two are blending, though at some points a sharp contact line separates the two materials. The kaolin at the center of each exposure contains a greater amount of grit than that nearer the extremities, the amount of grit de-

creasing as the distance from the quartz wall increases; and at no point is the interior of the mass of kaolin contaminated by any coloring matter.

The breast of the main drift is against the quartz wall, and the kaolin exposed before the quartz is reached is the same as at the other points, but the mingling of the kaolin with the quartz is more pronounced here, as the drift runs deeper into the quartz wall, and gives a better exposure. A branch drift was extended from here along the edge of the kaolin for a distance of 15 ft., then upward and back over the main drift to a height of 25 ft., the kaolin being traced throughout this distance without a break, and the top of the deposit was not reached.

A fresh specimen of the quartz wall shows innumerable small crystals of a light-colored feldspar (probably orthoclase) scattered through it, while one taken from near the face of the wall is pitted with cavities from which the feldspar has been removed. The kaolin has been derived from the decomposition of this feldspar, under the influence of percolating water, to which the fractured condition of the quartz gives access. The water has transported the kaolin and the quartz fragments and deposited them along the face of the wall, sorting the material by depositing the coarser near the wall, and the fine kaolin, almost free from quartz, beyond the coarse material, thus producing the grading noticed at each of the exposures.

The thickness of the kaolin deposit is variable, but judging from the exposures where the thickness can be estimated it averages about 8 ft. The depth has never been ascertained (except that the uplift mentioned traced it for 25 ft. without reaching the limit), but it is considerable. The quartz wall can be traced for a considerable distance on the surface by the low escarpment which it forms. A drift cut just in front of this escarpment at a distance of some 1,800 ft. from the mine, and about 100 feet above the level of the kaolin exposures in the mine, also encountered kaolin of the same quality and associations.

The color and quality of this kaolin are superior not only to the best

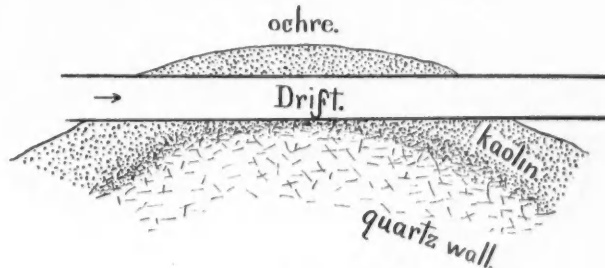


FIG. 2.

American material, but to the imported paper clays as well, and the company will soon arrange to make a thorough investigation of the extent of the deposit.

Verona Earth.—A large amount of Terra di Verona is now exported from that city in Italy for use as a pigment. It is known also as green earth and Veronese earth.

New Zealand Sulphur.—The high price of brimstone has led to the reopening of the New Zealand deposits, and a good deal is now being shipped from them to Australian acid makers.

Mining in the Arctic Regions.—The *Montan Zeitung* states that Nansen, the Arctic explorer, is at present in St. Petersburg, with the object of forming an international company, with a capital of 50,000,000 roubles for developing the mineral resources of the far north. Iron and nickel ore beds of extraordinary richness were discovered by Nansen, and the object of the company is to work these ores.

Lignite Mines of Prussia.—At the recent meeting of the Society of German Engineers, at Aix-la Chapelle, Mr. Kaerster read a paper on mining brown coal in the Rhine provinces. Four varieties are there met: Coal with distinct woody texture; common brown coal with a conchoidal fracture; earthy brown coal, and bog coal. The mining industry is of considerable antiquity, but up to 1870 workings were conducted in a wasteful manner and there were but few well-planned open works. At the present time there are only a few underground workings, most of the deposits being worked by open cuts. The coal is usually brought up inclines by endless chains. Since 1876 compressed brown coal briquettes have been sold, and form a valuable household and industrial fuel. The magnitude of the Prussian brown coal industry will be seen from the fact that in 1895 there were 20,114,877 metric tons mined, and 30,432 men were employed.

Mineral Imports and Exports of Spain.—For the five months ending May 31st, the imports of fuel into Spain, according to the *Revista Minera*, were 791,872 metric tons coal and 116,346 tons of coke. Imports of iron and steel included 865 tons of pig iron, 6,509 tons of wrought iron, 10,559 tons of steel, and 908 tons of tin-plates. Exports of minerals for the five months were, in metric tons:

	1896.	1897.
Iron ore.....	2,798,484	2,900,833
Copper ore.....	270,277	317,285
Zinc ore.....	14,648	15,368
Lead ore.....	3,458	2,851
Salt.....	130,182	103,242

Exports of metals included 18,512 tons of iron, a gain of 10,602 tons over 1896; 16,946 tons of copper, an increase of 5,295 tons, and 71,110 tons of lead, an increase of 5,545 tons.

THE CYANIDE PATENTS IN AUSTRALIA.

A reserved decision of great importance to the mining interest has been delivered by Mr. de Verdon, Commissioner of Patents of Victoria, says the *Australian Mining Standard*. The holder of the MacArthur-Forrest patent for the treatment of auriferous ores by means of cyanides is, so far as Victoria is concerned, the Australian Gold Recovery Company, Limited. The patent of this company is framed in general terms for the use of cyanide solutions without specifying their strength. As the great merit of the invention is alleged to be the use of extremely dilute solutions of cyanide, the terms of the Victorian patent have been considered too vague to prevent the public from using the process without let or hindrance. Two efforts have accordingly been made by the patentees to amend their patent by limiting their claim to the use of the dilute solution. Last year the late commissioner, Mr. A. P. Akehurst, decided against the proposed amendment. Recently the patentees have renewed the application in a somewhat different form, and upon somewhat different materials, before Mr. de Verdon. After a protracted hearing, lasting over 10 days, he has decided to refuse the amendment, with costs against the patentees. The objectors to the amendment in this case are Messrs. Duncan, Gray and Walker, who have been interested in the use of cyanide in the treatment of tailings from gold mines for some years past. Messrs. Coldham & Cussen (instructed by Mr. E. Waters, patent agent) appeared for the patentees; and Mr. W. E. Johnston (instructed by Messrs. Ellison & Simpson) appeared for the objectors in opposition to the proposed amendment.

The sequel of a similar case has recently claimed attention in New Zealand. As in Victoria the Registrar of Patents refused the application to amend, and the applicants, the Cassell Gold Extracting Company, appealed to the Supreme Court against his decision. Mr. Justice Edwards after reviewing the case, said it was not contended that appellants were bound to limit their claim to the use of free cyanogen to the exclusion of the direct application of cyanogen-producing substances. Appellants claimed the use of free cyanogen in solution and the use of cyanogen-producing substances to the extent necessary to produce cyanogen. If this was so, the only question for consideration with reference to the claim for the use of cyanogen-producing substances was whether appellants ought to have set out in their specifications the proportions of such substances which formed the chemical equivalent as to each substance of the cyanogen. In his opinion it was neither incumbent upon appellants to set the chemical equivalents of each cyanogen-producing substance, nor, in fact, possible for them to do so. As he had stated, the case was argued on the part of the Attorney-General as though the claim was for the exclusive use of cyanide of potassium in solutions of all degrees of strength up to saturation point; the reason being that commercially the value of the invention had been found to be mainly in the use of a weak solution of cyanide of potassium. But the claim was not limited, nor did he think that it was necessary to limit it, to the use of cyanide of potassium as a cyanogen-producing substance. It extended to the use of other cyanides and cyanogen-producing substances. It would have been plainly impossible to set out the chemical equivalent of all such substances, whether mentioned separately or not, nor could he think that it was necessary to make the attempt to do so. It was competent for appellants in their specification to claim, as in fact they had claimed, the use of cyanogen whether in its free state or by the direct application of any cyanogen-yielding substance, and it was no more necessary for them to set out in their specification the chemical equivalent of each such cyanogen-yielding substance than it was necessary to set out the processes by which free cyanogen can be produced. A specification of this kind must, it seemed to him, be read as addressed to those who had the knowledge necessary to enable them to understand chemical matters, and still necessary to enable them to carry into practice by all recognized chemical methods the process described. Appellants, he said, only asked to be allowed to limit their claim to "dilute solutions containing eight parts or less of cyanogen, or what is equivalent thereto, for every 1,000 parts of water," and they had made no attempt to alter their specification in the particular in which it was alleged they had—viz., the omission to specify the proportion in which cyanide of potassium directly applied should be used. The remaining question was whether the proposed amendment claimed an invention substantially larger than, or substantially different from, the invention claimed by the specification as it stood. The court did not think it did. As to the contention that the amendment ought not to be allowed because the effect would be to cut down the claim so as to turn a claim bad as being too wide into a good claim, and that this really had the effect of enlarging the specification and making the claim substantially different from the claim made by the specification, there were many cases in which amendments had been allowed, limiting claims which were bad as being too wide. The court continued: It was not for him now to express an opinion on the validity or invalidity of the appellants' patent, either as the specification at present stands or as it will stand after amendment; but the argument addressed to him by counsel for the Attorney-General had rendered it necessary for him to examine the specifications sufficiently to come to an opinion as to whether or not it was, as had been contended, so clearly bad as to render it improper to allow an amendment. He had been unable to arrive at that conclusion, and he thought that the amendment was one proper to be made, and must be allowed.

The decision as above is viewed with much concern in New Zealand, and at a recent meeting of the Auckland Chamber of Mines and representatives of the English mining companies it was resolved to urge the government to appeal against it. The opinion was expressed that if an amendment of the patent were allowed it would have an injurious effect on the mining industry of the colony.

Referring to the Victorian decision first mentioned, Messrs. Edward Waters & Sons, on behalf of the Australian Gold Recovery Company, naturally suggest that it also may be reversed on appeal to the Supreme Court, and they claim that Mr. de Verdon's award does not leave anyone at liberty to use the cyanide process, but that, on the contrary, if they do so it, they are infringing the rights of the holders of the MacArthur-Forrest patent, and are liable to an action at any time for so doing. They believe it is true that no such action is contemplated at present, but say

that in the event of the Supreme Court reversing the decision of Mr. de Verdon, as the New Zealand Supreme Court reversed the decision of its Registrar of Patents, they will doubtless be called to account for their infringement.

THE WITWATERSRAND GOLD-FIELD AND ITS WORKING—VIII.*

MINING EXPLOSIVES IN THE TRANSVAAL.

WRITTEN FOR THE ENGINEERING AND MINING JOURNAL BY W. Y. CAMPBELL.

The consumption of explosives in the Transvaal is broadly 200,000 cases per annum. A case is supposed to contain 50 lbs. net. The consumption grows daily with the growth of the industry. In the infancy of the gold industry, less than 10 years back, a monopoly was granted by the Pretoria government to a shrewd man from Hamburg. The object of the government was incidentally to sell local explosives to the mines, but principally to manufacture locally gunpowder and cartridges for its use and to be independent of imports through British ports. The object of the concessionaire was to make money. The result has been that he has become a millionaire by virtue of his shrewdly worded and shrewdly worked concession, but neither the government nor the industry has ever had a single pound of powder or of dynamite produced locally. At one time the concession was canceled, but a new concession, differently worded, was obtained, and this industry, which has some 11 years to run, embodies a monopoly in the manufacture of explosives and a monopoly of handling and selling.

At the present time the prices of explosives are as follows:

PRICES, 1896-97.			
Trade name.	Nitro glyc. %	Price per case	Sales %
No. 2 dynamite.....	65	80 s. (\$19.20)	.15
No. 1 dynamite.....	75	85 s. (\$20.40)	
Gelignite.....	80	85 s. (\$20.40)	.85
No. 1 A gelatine dynamite...	85	98/6 (\$23.64)	
Blasting gelatine.....	100	107/6 (\$25.80)	

These prices are net at depot; freight, and therefore, total cost, varies with the distance of consumers from depot. Blasting gelatine forms 60% of the total consumption.

The Transvaal is the finest market in the world for mining explosives, therefore, and all the world's manufacturers have been eager to compete, but in vain, as the Nobel group is in possession under the government grant and fixes prices its own way. The mine owners have repeatedly proved that with free trade their explosives would not cost much more than \$11.40 a case against the present average cost of \$24.

The costs per ton mined vary from 25c. to 75c., while in other parts of the world isolated mines show 10c. to 25c.; 10c. is the Alaska-Treadwell figure, and that is an isolated mine in remote Alaska. The special levy made by this monopoly on the industry here probably reached a total of \$6,250,000 up to the end of 1896. The charge for 1897 will be \$2,500,000 more than it would be with free competition, subject only to police and safety regulations.

The consumption of dynamite, of course, varies per foot driven or sunk, or per ton raised, in the various mines with the various rocks dealt with. The cost of explosives per ton mined varies from 32c. to 84c. in the gold mines and from 40c. to 30c. in the coal mines. Gunpowder for the coal mines and other explosives for gold and coal mines are also barred entry into the State; and scientific advances and improvements in mining explosives are not allowed to benefit these mining ventures, unless the monopolists introduce them.

The above is the mine owners' view and experience, but the monopolists claim that there is no such thing as "free trade in mining explosives," outside the United States.

They say that the Alaska-Treadwell figures are useless, for they are for a low-grade explosive that would not work in the Rand quartzites. They have spent \$4,500,000 cash in building a new factory in the Transvaal, and for that risk and expenditure they claim a right to a monopoly. The mine owners retort that they want to buy all mining materials in the best and freest markets and they are prepared for cancellation of the contract under fair compensation and taking it over as a mines factory on a co-operative system, selling at cost price. The fight is 10 years old and no end in sight. Doubtless, owing to the very intensity of the economic evil, a remedy will ensue soon; probably the government will buy out the concessionaires and content itself with police supervision of explosives. Then the mines can have a co-operative factory or buy in the cheapest and best market.

The following figures of dynamite costs for the year 1896 in one of the best-managed deep-level mines are of interest. During 1896, 833,392 cu. ft. of rock were blasted; 64,100 tons of rock were removed, and 10,885 lin. ft. of driving and sinking completed. Dynamite cost per cubic foot blasted, 8-8c.; per ton of rock removed, \$1.15; per foot lineal, \$6.85. The work done was the development usual in getting at ore and exposing it by levels.

Coal Mining in Victoria.—The annual report of the Secretary for Mines for Victoria states that the output of black coal during the year 1896 was 226,562 tons, as against 194,226 tons in 1895. A decrease in the average price per ton is noted from \$2.92 for 1895 to \$2.38 for 1896. The collieries yielding the bulk of the output in 1896 were the Outtrim Howitt, 126,011 tons; Coal Creek Proprietary, 35,366 tons; Jumbunna, 34,103 tons, and Korumburra, 20,817 tons. The dividends distributed amounted to £11,551, of which the Outtrim Howitt Company paid £8,739. The following shows the total output of coal in Victoria up to December 31st, 1896, was 785,451 tons. Brown coal to the extent of 4,675 tons was raised by the Great Morwell Company, Morwell; in addition 1,140 tons of lignite were got at Lal Lal. Coal mining was responsible for nine accidents, in which four persons were killed and five were injured. This is an increase over the numbers for 1895 of one killed and two injured.

* No. I. of this series appeared in the *Engineering and Mining Journal* for June 19th, page 631; No. II., June 26th, page 659; No. III., July 10th, page 36; No. IV., July 17th, page 67; No. V., July 24th, page 96; No. VI., July 31st, page 130; No. VII., August 7th, page 160.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

LOCATION AND ACQUISITION OF MINERAL CLAIMS ON PUBLIC LANDS.—Under the act of Congress (Rev. St. SS. 2,319-2,324), a lode claim cannot exceed 1,500 ft. in length by 600 ft. in width, and should be in the form of a parallelogram having its side lines equidistant from the center of the lode, with end lines parallel to each other. A lode is a zone, belt or body of quartz or other rock lodged in the earth's crust, and presenting two essential and inherent characteristics, viz.: (1) it must be held in place within or by the adjoining rock; and (2) it must be impregnated with some of the minerals or valuable deposits mentioned in the statute. The finding of such a lode is a discovery, within the meaning of the statute, and will authorize the location of a lode claim. In locating a lode claim all that the statute requires is that the location shall be distinctly marked on the ground so that its boundaries can be readily traced. Whether any markings have been made, and whether they are such that the boundaries of the location can be readily traced, are questions of fact, to be determined by the jury. The statute does not require any record of the location, but when one is made it prescribes what it shall contain, viz.: the name of the locator, the date of location, and such description of the claim by proper references as will identify the claim. The principal object of the record is the identification of the claim; and if, considering everything it contains—the name of locator, date and description by reference to some natural object or permanent monument—the claim can be identified, the

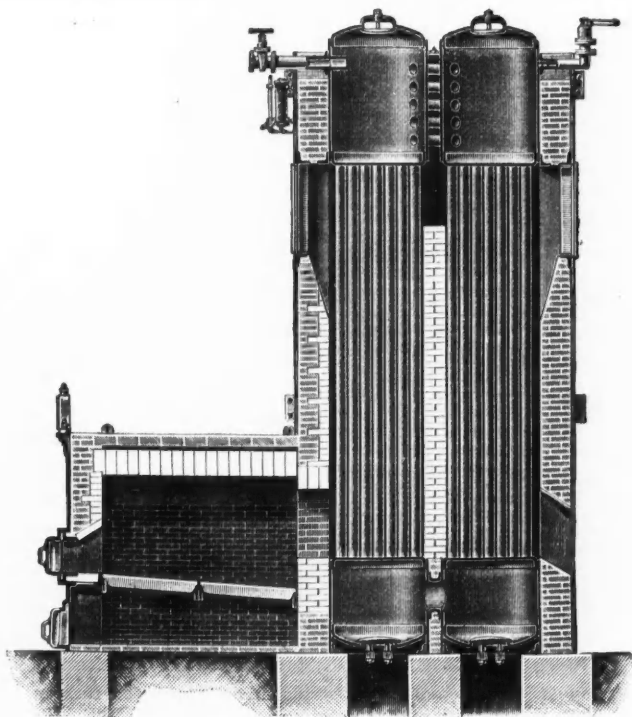


FIG. 1.—SECTION;

THE PHILADELPHIA WATER-TUBE BOILER.

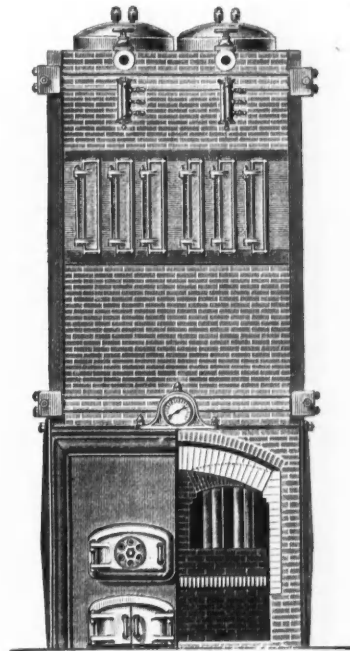


FIG. 2.—FRONT VIEW.

The accompanying illustration shows an improved form of water-tube boiler recently introduced by the Philadelphia Engineering Works, which seems to have some special advantages. One of the chief points of novelty is the use of a firebox or furnace entirely exterior to the boiler itself, as shown in the accompanying section.

In a single setting (the smallest type of complete boiler) there are two steam and two mud drums joined by straight vertical tubes. The steam drum and mud drum with their connecting tubes next the furnace is termed the front set, and those toward the chimney the rear set. Each of these sets is surrounded by walls, forming two square chambers. The combustion chamber is external to these walls. The gases from it pass through brick arches up the first set, over the center wall, and down the rear set to the chimney. Connecting tubes join the two steam drums and the two mud drums, providing ample area for circulation, and for the equalization of the steam pressure under all conditions. The vertical tubes are set in rows, extending from front to rear, the space between these rows being greater than the outside diameter of the tubes. Opposite each space in the front and rear walls, openings, closed with doors, are provided to steam-sweep the tubes, and through these tubes may be passed when replacing is required. No doors are provided or required in the side walls, nor are any wasteful spaces between batteries allowed. A setting may be built with its side walls hard up to any wall or partition. Double, treble or any multiple setting is built with common dividing walls, as in return tubular practice. Much space is thus saved, and the outside radiating surface reduced. No castings are subjected to heat and steam pressure. The domes are circular, and made of the best steel plate, of ample thickness. The heads are crowned to a radius of the diameter

record is sufficient. No notice of location is required by the statute, but when the same is posted on the ground it must be considered as a marking to aid in tracing the boundaries. When such notice contains a description of the claim and is recorded, it operates as constructive notice that the locator claims the ground described. The description as shown by the record will ordinarily bind the locator as to the locus of the claim; but where the distances and courses set out in the description vary from the monuments or markings made on the ground, the latter prevail, and will determine the locus of the claim. The effect of a valid location is to segregate from the public lands the ground located, and the prior location gives the prior and better right. A valid location vests in the locator the exclusive right of possession and enjoyment of the ground located, together with all the lodes therein. The maxim that the plaintiff must recover on the strength of his own title does not apply in the case of a naked trespasser or intruder, although the party in possession may have a defective location; in such case the latter's possession alone is sufficient to maintain ejectment.—Mydenbauer vs. Stevens (United States District Court); 78 Federal Reporter, 787.

RESERVATION IN MINING LEASE.—Reservation in a mining lease of a lien on "all ore mined" for royalties is not waived by a provision in the lease contemplating that the ore will be shipped to market before payment of royalty, which is to be made every three months and based on the weights as determined by the railroad transporting the ore from the mine. A lessor who reserves such a lien may recover in an action for conversion against the lessee who not only fails to pay royalties, but sells the ore without preserving the lien.—Iron Duke Mine vs. Braastad (70 Northwestern Reporter, 414); Supreme Court of Michigan.

of the drums. The tube heads are especially thick and well stayed where not sustained by the tubes. The walls are heavy angle bars at each corner, held firmly by through bolts. In multiple settings these angles are replaced by tees at each dividing wall. A heavy ornamental front, with fire and ash-hole doors, faces the combustion chamber. This is stayed to the brick wall by horizontal angle bars, from which is sprung the double arch cover of the combustion chamber.

It is claimed for this form of boiler that the gases, practically perfectly consumed and clean, pass from the furnace at a high temperature among the tubes just above the mud drum, where the tubes are supplied with water unmixed with steam. In this condition they will absorb the maximum of heat with the least elevation of temperature, injury or deterioration. They absorb heat and keep cool, which is getting heat into the water while maintaining themselves. The gases then rise among the first set and pass down the second set, enveloping all tubes alike. There is no passage of least resistance.

The water level is preferably one-fourth way up the steam drum. The most heat is received by the front set of tubes expanding that column of water more than the column in the rear set, and circulation is commenced almost with the starting of the fire. Steam will be formed in the front set first, increasing the circulation. The feed-water is introduced into the rear steam drum, and mingling with the water forms part of the downward current and assists the circulation. Before reaching the rear mud drum it has attained the full temperature of the water and precipitates its mineral impurities, depositing them in that drum, from which they may be blown out or removed. This drum is so situated that it receives no heat from the furnace. The purified water passes into the front drum and up the first set of tubes. The front set of tubes are then internally clean and full of water unmixed with steam when first presented to the action of the flame.

PERSONAL.

MR. B. McDONNELL, a mining man of Sonora, has gone to San Francisco.

PROFESSOR HERMAN, geologist of McGill University, Montreal, is examining the Rainy Lake gold district.

MR. EDWARD WARMINGTON, of Osceola, Mich., has been appointed mine captain for the Isle Royale Consolidated Mining Company.

MR. PERCY L. SCHUMAN, of Chicago, who is interested in mines in California, has gone to that State to look after his investments.

AUDITOR THERON GEDDES, of the Rio Grande Western, manager of the Swansea mine, has returned to Utah from his Alaskan trip.

MESSRS. T. A. BENNETT and CHARLES M. ROLKER are examining a Nevada gold proposition which may be taken in by English capitalists.

MR. RALPH C. BISHOP, whose wide mining experience is well known, is to have charge of the new Banner-Gold Bug mill at Florence, Idaho.

SENATOR JOHN BOYCE, of California, is temporarily in Sitka, on a recreation tour. He visited the Basin mines and was much pleased with them.

MR. J. W. YOUNG, after an outing of several weeks in Montana, is again in Salt Lake. He has lately installed a 20-stamp mill for the Galena mine, near Pony, Mont.

MESSRS. WILLIAM A. FARISH, M. FITZGERALD and WILLIAM LAWRENCE, prominent mining men of Denver, have been in Central California looking into a number of mining investments.

MR. JOHN COLLOM, the inventor of the Collom jig, has become a resident of Denver. Mr. Collom first put his jigs into the Huron Copper Mining Company's mills at Houghton, Lake Superior.

MR. JOHN E. ROTHWELL has severed his connection with the Delano Mining and Milling Company, of Boulder, Colo., and for the present can be consulted on the mining and metallurgy of gold at 206 Boston Building, Denver, Colo.

MR. HORACE F. BROWN, of Chicago, Ill., in company with MR. H. A. COHEN, manager of the De Lamar Mining Company, has gone East to inspect gas producers to be used in connection with the Brown roasting furnace plant, to be erected at Mercur, Utah.

MR. W. WESTON, mining engineer of Cripple Creek and Colorado Springs, has just returned from the San Juan region in South-west Colorado, where he went to make a report on the gold and silver veins of the Poughkeepsie district for a Paris syndicate.

MR. R. HENRY JEFFREY, who has been assistant to the general manager of the Arminius mines in Louisa County, Virginia, for the past two years, left August 1st, to take charge of the milling plant at the Pinos Altos mines, 350 miles west of Chihuahua, Mexico.

MR. JOHN B. FARISH, the well-known mining engineer, sailed August 7th for Europe on his way to Transylvania, where he will examine mining properties for an English syndicate. He is accompanied by MR. W. G. MIDDLETON, mining engineer, of Denver, who will assist him in his work.

SEÑORES DON FERNANDO DE LOS VILLARES and DON ROMAN ORIOL, professors of the Madrid School of Mines, have been instructed by the Spanish Minister of the Interior to study the progress made in mining education in other countries, and also to visit the mining exhibition at Stockholm.

MR. WALTON F. STEWART, who has been investigating the Lake of the Woods region, has left for the East to report upon properties he has been examining for Toronto people. He will return to the West in about a month. His report will include the Olive mine and the Bud Vermilion Lake syndicate lands.

PROF. N. S. SHALER, of Harvard University, has been in Caribou, Nova Scotia, for a number of weeks engaged in examining the low-grade gold ores. With him are a number of Harvard men, who are taking advantage of the opportunity to learn something about the mineralogy of that province.

MR. FERDINAND GAUTIER, a mine owner of Ofuro, Bolivia, accompanied by his son, EDMOND GAUTIER, arrived in Denver August 3d. He intends to purchase the mining machinery for smelting his ores from the Colorado manufacturers of machinery who are making so good a record with their products in that line.

PROF. W. W. ROGERS, of the Pennsylvania Smelting and Refining Company, has sailed on the *Cleveland* from Seattle, for Dawson City, N. W. T. His mission is to attempt the location of quartz ledges. Should he be successful machinery will be installed to work them.

CAPTAIN CHYNOWETH, of the Tamarack, Jr., has tendered his resignation in order to devote his entire time to the Centennial Mine, of which he has been superintendent since work was resumed in February last. He is succeeded at the Tamarack,

Jr., by CAPT. WILLIAM DANIEL, who has had charge of the work at Tamarack shaft No. 5, while he, in turn, is succeeded by CAPTAIN GRIBBLE, who resigned his position at the Tamarack early this spring.

MR. MORRIS WILLIAMS, of Shamokin, Pa., has been promoted to the position of general manager of the Pennsylvania Railroad's coal properties, the Susquehanna Coal Company, the Lykens Valley Coal Company, the Summit Branch Railroad and the Mineral Railroad and Mining Company, vice MAJOR IRVING A. STEARNS, who has gone to Coxe Brothers & Company. Mr. Williams has been for some time superintendent of the Mineral Railroad and Mining Company. Mr. Williams' headquarters will be in Wilkes-Barre.

SOCIETIES AND TECHNICAL SCHOOLS.

MANUFACTURERS' AND WHOLESALE GRANITE DEALERS' PROTECTIVE ASSOCIATION OF NEW ENGLAND.—This association was formally dissolved July 1st. A new association will be formed immediately which will be practically confined to the granite manufacturers and will aim to include all in the United States. The old association was composed principally of the manufacturers of Quincy, Mass., and Barre, Vt., and the Boston Wholesale Association.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—A very interesting meeting of this society has been in progress all this week at Detroit, Mich. On Monday, August 9th, Vice-President White delivered an address upon "The Pittsburgh Coal Bed." On August 10th and 11th papers were read before the Geological Society of America. On August 12th and 13th several most interesting topics were touched upon. A short paper by Dr. F. D. Smith and H. P. Parmelee, Charlevoix, Mich., on "The Ores and Minerals of Cripple Creek, Colo.," was especially well received.

MONTANA SOCIETY OF ENGINEERS.—The regular monthly meeting of the society was held in Helena July 10th. Mr. F. L. Sizer was elected chairman for the evening. The President announced the following-named gentlemen elected members: Professors Frank Beach and W. H. Williams, of the State Agricultural College at Bozeman; Mr. S. H. Crooks, County Surveyor of Park County; Mr. A. L. Dean, Superintendent of the United Smelting and Refining Company, and Mr. Edward C. Kinney, residing at Manhattan, Mont. Resolutions were passed that the members just elected and others that may be elected during the latter half of the present year be required to pay only semi-annual dues, in addition to the usual entrance fee of \$5, and that they receive the *Journal* of the association for only the latter half of the year at the society's expense. The society, through the courtesy of Mr. John F. Davies, Librarian of the Butte Free Public Library, is the recipient of a special index containing a list of books pertaining to engineering and architecture on file in said library. This list shows 689 volumes of books upon engineering. Members of the society in Butte were consulted and assisted in making the selection. The library doubtless has as choice and valuable selection of technical books upon this subject as any library in the West. Mr. Titus Ulke, of the United States Geological and Topographical Survey, gave a brief description of the work commenced and what is to be done during the present season in his department. The secretary was directed to make arrangements for an address by Mr. Louis Miller and an exhibition of his current water wheel, a recent invention, which is attracting considerable attention. Members are urgently requested to forward to the secretary to be placed on file all articles pertaining to county surveyors or road legislation, or other engineering matters which may appear in the newspapers of the State, thus calling attention to matters which may be of importance and which otherwise would be frequently overlooked.

ENGINEERS' CLUB OF ST. LOUIS.—On the afternoon of Saturday, July 17th, 1897, the Engineers' Club of St. Louis through the kindness of Mr. J. A. Ockerson was invited to an excursion down the river to inspect the new government dredgeboats now being tested at the lower end of the city. The steamer *Mississippi* with about 75 members of the club on board left her wharf shortly after 12 o'clock and proceeded down stream toward the point where the dredgeboats were operating. Immediately after leaving, a delightful lunch was served. A stop was first made at the dredges *Alpha* and *Beta*, which are now undergoing repairs on the west bank of the river. The general principal on which all of these dredges operate is that of the centrifugal pump. The sand in front of the boats is first stirred up by water jets, scrapers or cutters into a sludge, and then pumped by a centrifugal pump through the boat and into a pipe leading from the rear end of boat. This pipe is floated between pontoons and may be adjusted to deliver the discharge at any desired point. The principle of the centrifugal pump is the essential one in all of the dredges, although they differ quite widely as to details of the machinery. The *Alpha* was the first of these boats to be built. The *Beta* was the second and is the largest dredgeboat ever constructed. It was guaranteed by the builders to have a capacity to handle 2,400 cu. yds. of sand per

hour, but on test it handled 7,400 cu. yds. in this time. After these dredges had been inspected the *Mississippi* steamed to the other side of the river, where the *Gamma* and *Delta* are now making their endurance test. Here the practical operation of the dredges was illustrated. The suction pipe was raised, the methods of handling the different machines and the plans for anchoring the boat and for feeding the suction pipe forward were shown. One of these boats uses jets of water for stirring up the sand and the other uses a revolving scraper. A stop was next made at the snagboats *Macomb* and *Wright*, where methods for removing snags from the river bed were illustrated. The members thoroughly enjoyed the excursion. A vote of thanks to Mr. J. A. Ockerson, the host, was carried unanimously.

INDUSTRIAL NOTES.

J. D. McGilvray & Company, of Denver, are now excavating the site of the new mint of that city. The contract is \$3,945.

The Chester Pipe and Tube Mills, Chester, Pa., have received a large order from the Standard Oil Company for 18-inch pipe.

The Pennsylvania Bridge Company, of Beaver Falls, Pa., has contracts for the erection of government stores, warehouses and shop at Seattle, to cost \$67,975.

The Ashland Steel Company, of Kentucky, recently filed an amendment to its articles of incorporation reducing its capital stock from \$1,000,000 to \$160,000.

Work is being pushed rapidly on the reconstruction of the Rosena Furnace, at New Castle, Pa. The steel shell is in position, and by working a double shift good time is being made.

The certificate of incorporation of the Summit Foundry Company has been filed with the Secretary of State at Albany. Capital, \$35,000, and directors, William Reid, Roger Hogan and Joseph F. Quay, of Geneva.

The Carnegie Steel Company, Limited, has adopted the three turn system of eight hours each, for the men employed as rail straighteners at the Duquesne Steel Works. The change was requested by the men.

The town of Sheffield, Ala., has offered a cash bonus of \$5,000 and 35 acres of land to Messrs. T. F. Johnston and J. D. Hemphill if they will transfer their rolling mills and nail plants from Hollidaysburg, Pa., and Roanoke, Va., to that city.

The Rhenish-Westphalian Explosive Company, of Germany, which recently acquired a tract of 600 acres between the villages of Spotswood and Helmetta, N. J., has filed a contract for the erection of 13 buildings at New Brunswick, N. J., to cost \$20,000.

The Jackson & Sharp Company, Wilmington, Del., has signed a contract with the Waterloo Underground Railway, of London, for 22 closed electric cars, to be used on the railway in London. The first consignment of cars will be shipped about September 1st.

The H. Wetter Manufacturing Company, of Memphis, Tenn., is erecting a new foundry. The officers of the company are as follows: President, A. G. Ryley; vice-president, J. W. Wynne; manager, C. C. Huntington and secretary and treasurer, J. J. Sohm.

The Phoenix Bridge Company, Phoenixville, Pa., has secured the contract for a large seven-span steel bridge for the Ottawa & New York Railroad. It will span the St. Lawrence River, near Montreal, and will contain 7,000,000 lbs. of structural steel. The cost will be about \$1,000,000.

During the week ending July 26th the Colorado Iron Works supplied the following: To Sunnyside Mine, Eureka, Colo., one carload tramway material; to Arkansas Valley Smelting Company, Leadville, Colo., one carload of water jackets for smelter; also two large elliptical bowl slag trucks.

Mary Furnace, at Lowellville, O., is being thoroughly repaired. The Meehan Boiler and Construction Company, Lowellville, is doing the boiler work. The latter concern has increased its working force materially in the past few weeks and has orders that will occupy it for weeks to come.

The Central Steel and Iron Company, Brazil, Ind., is putting up a new steel spike mill, 60x100 ft. It is also making extensive repairs in all departments while waiting to get coal to run, expecting later to run every department to its fullest capacity. The spike mill and turn-buckle shop have started up.

The Baltimore (Md.) Malleable Iron and Steel Castings Company (Patrick Kennedy, proprietor) has completed its new foundry and has it ready for operations. The new addition to the plant is a brick and iron building, with slate roof, 80x200 ft. in size, and 300 more men will be given employment.

The George Sweet Manufacturing Company, Dansville, N. Y., will soon begin to erect new shops to replace those burned June 1st. A foundry 56x40 ft., machine shop 64x36 ft., a wood-working shop 36x80 ft. and a boiler-house 36x16 ft. will be

erected. Machinery will be installed early in October.

Fraser & Chalmers are installing a model 75-ton concentrating plant near Libby, Mont., for G. L. Tracy, of Helena, to be finished this month. It consists of a Blake crusher, two sets of rolls, revolving screens, elevators, five Hartz two-compartment jigs, two round slime tables, steam power. There is also a 700-ft. gravity tram.

The new plant of the Braeburn Steel Company, at Braeburn, Pa., on the Allegheny Valley Railway, about 20 miles from Pittsburg, is practically completed, and the company will be in the market in a short time with high grades of tool steel. William Metcalf, who is prominently identified with this new concern, was for many years a member of the firm of Miller, Metcalf & Parkin, later the Crescent Steel Company.

The Westinghouse Air Brake Works, of Wilmerding, Pa., which practically closed down in all departments through lack of orders June 1st, have again resumed work to a considerable extent. When the works closed down, it is stated, there was over \$1,000,000 worth of stock on hand. Meantime the surplus stock has been reduced to such an extent that resumption was necessary. It is expected that ultimately 4,000 men will be at work again.

At Carnegie, Pa., work has commenced on the erection of a plant for the manufacture of nickel steel by a new method, for bicycle parts. A site, covering nearly two acres, has been purchased in East Carnegie, and a sidetrack laid from the Pittsburg, Chartiers & Youghiogeny Railroad. The old boiler plant building will be utilized, necessary machinery has been ordered and the work will be pushed by the company. Joseph H. Shinn, of Pittsburg, is prominently identified with the new company.

Bids have been opened for the erection of a large cement plant at Castalia, Erie County, O. The plant will be constructed of steel, the main building to be 180 ft. long and 75 ft. wide. The steam plant will also be constructed for in a few days, this to be of about 500 H. P. capacity. Powdered coal will be used as fuel. The plant is designed with a view of eliminating, as far as possible, manual labor in the process of manufacture. The raw material will be burned in rotary kilns.

A voluntary assignment has been made in the County Court by the Chicago Combination Machine Company to Roscoe W. Fulghum as assignee. The concern has carried on business at 28 West Washington street about three years, dealing in and manufacturing bicycle supplies. Assets are placed at \$10,000 and liabilities \$15,000. The failure is attributed to poor collections. The officers of the company are A. W. Wilson, president; and Roscoe W. Fulghum, secretary.

The quarries at the Pochneck granite quarry, near Middletown, N. Y., have struck to compel the employees of the Empire State Granite Works, at Goshen, to adopt the eight-hour system. The Middletown men have been working at good wages for eight hours a day, but the Goshen quarries have been working nine hours a day willingly. Both quarries are owned by the Hinchliffe Brothers, of New York. It is expected that the stone cutters' union will act in the matter, as headquarters in Baltimore have been notified of the strike.

The Ashpoo Fertilizer Company, of Charlestown, S. C., recently organized, having purchased the business of the Ashpoo Phosphate Company of that city, will conduct the phosphate and fertilizer business, practically under the old management. The affairs of the Ashpoo Phosphate Company will be liquidated under the personal management of its president and treasurer, Maj. J. R. Robertson, and all new business will be conducted in the name of the Ashpoo Fertilizer Company, under the general management of its vice-president, Mr. Frank E. Taylor.

Capt. J. R. De Lamar has awarded a contract to Horace F. Brown, of Chicago, for six straight mechanical roasting furnaces for the new Golden Gate mill at Mercur, Utah. Two of these furnaces will be used as driers, and four for roasting ore, having a capacity of 500 tons a day. Fuel gas will be used and a complete regenerating system for pre-heating the air from the waste heat of the furnaces will be employed, giving the greatest possible economy of fuel. It will require about 450,000 lbs. structural iron and machinery, 250,000 red brick and about 150 tons of firebrick and fireclay material for the roasting plant, and no expense will be spared to make it the model plant of the world.

Nearly all contracts for equipping the new tin mill of Messrs. Hamilton & Company at West Newton, Pa., have been awarded. The steam plant will consist of a 36 x 60 Allis engine, two 18 x 72 tubular boilers furnished by Wm. B. Pollock & Company, of Youngstown, O., while the pump has not yet been purchased, says the *American Manufacturer*. The mill machinery will be furnished by the Frank-Kueciand Machine Company, of Pittsburg, and the necessary firebrick by the Dunbar (Pa.) Fire Brick Company. A Mesta patent pickling machine made by the Leechburg Foundry and Machine Company will be used. The erection of the buildings, furnaces, foundations, etc., is being done by Ed. E. Erikson, of Pittsburg.

TRADE CATALOGUES.

Those interested in the study of crystals should write to Roy Hopping, mineral dealer, 5 and 7 Dey street, New York City. We have recently been favored with a copy of his new catalogue and find it very complete. "Much has been said and written lately concerning protective coverings for iron structural work. The growing tendency among those who have given the matter careful consideration is to add some form of carbon to the red lead used, or to discard red lead altogether. This has caused the red lead manufacturers to issue pamphlets condemning the use of carbon—especially graphite. The statements of the red lead people have been so wide of the facts that we have made reply by issuing this pamphlet. It is well worth your reading." This statement by the Joseph Dixon Crucible Company explains the appearance of their pamphlet on "The Merits of Lead Paints and Dixon's Silicate-Graphite Paint Compared." Those interested in the controversy should certainly make a point of seeing this brochure.

NEW PATENTS.

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 AUGUST 3D, 1897.

- 587,303. ALLOY. Frederick A. Ellis, London, England. The composition of an aluminum bronze of which the essentials are that about five-sixths of the compound by weight is composed of pure grain tin and pure aluminum in the proportion of their atomic weights and the remaining part of about one-sixth is made up of copper and spelter.
- 587,313. ELECTRIC FURNACE. George S. Strong, New York, N. Y. The improvement in the art of electric smelting consists in forming electrodes of a mass of material including a material which will bind the mass together under pressure and simultaneously agglomerating, forming and feeding the mixture forward to a furnace by pressure.
- 587,390. ORE STAMP-MILL. William W. Edwards, Rockford, Ill. The combination of a stamp-stem, a stamp supported thereby, a coiled spring surrounding the stem and having one end stationary and its other end connected to a collar loosely mounted upon the stem, and having its lower face serrated, a collar secured to the stem, and having its upper face serrated, the serrations of the collars lying in contact.
- 587,393. ROLLING-MACHINE FOR FINISHING SHAFTS OR RODS OF METAL. John Hingworth, Newark, N. J. The combination with a bed-plate and suitable driving mechanism, of a pair of reducing rolls arranged on axes inclined to the line of movement of the rod to give to the rod or shaft a longitudinal movement in addition to its rotary movement, and grinding-wheels arranged in close proximity to the reducing-rolls and receiving the rotating rod therefrom to polish the same.
- 587,408. METHOD OF RECOVERING PRECIOUS METALS FROM THEIR SOLUTIONS. Henry L. Sulman, London, England. The process consists in imparting to the liquor an upward flow through a mass of finely-divided precipitant within a vessel, and gradually reducing the rate of such flow by uniformly increasing the area of the liquid as the height of the column increases.
- 587,412. LATCH FOR MINE CAR DOORS. John M. Wesley, Peale, Pa. The combination with a mine car provided with a hinged door adapted to open outwardly, and a chain connected with the car body, of a latch mounted on the door and provided with a gravity-lever engaging the chain and maintaining the door closed while the car body is in a horizontal position, and adapted to swing outward and release the chain automatically when the car is dumped.
- 587,437. APPARATUS FOR MANUFACTURING CHLORATE OF POTASH BY ELECTROLYSIS. Ferdinand Hurter, Liverpool, England, Assignor to the United Alkali Company, Limited, same place. Patented in England, August 12th, 1893, No. 15,396. The apparatus consists of a metallic vessel having a porous protective lining.
- 587,453. EXTENSION MINING POST. John J. Sullivan, Red Jacket, Mich. The combination of a standard having a base with a series of radial lugs thereon and a central recess, a movable section mounted in the standard and having grooves in the opposite side of the same, a sleeve on the movable section, a collar surrounding the upper part of the standard, the standard, collar and sleeve having inwardly extending tongues to engage the opposite grooves of the movable section, a screw extending upwardly through the base of the standard into the movable section, and a key having an arm and adapted to be fitted over the head of the screw and lock the same against movement.
- 587,501. ROTARY PULVERIZING MILL. Charles M. Day, Brooklyn, N. Y. A cylindrical shell, having spiral or helically-curved ribs projecting inward therefrom, with their working faces inclined toward the inlet end of the mill, in combination with the rotary shaft, radial arms secured thereto and blades connected to the arms, with their outer edges adjacent to the ribs, and their working faces at an angle toward the working faces of the ribs which are inclined backward toward the inlet end of the mill, whereby the blades will exert a shearing action, and work against the ribs to convey the heavier and larger particles backward and repeatedly subject them to the pulverizing and shearing action.
- 587,509. PROCESS OF AND APPARATUS FOR MAKING METALLIC CARBIDES. Isaiah L. Roberts, Brooklyn, N. Y. The process consists in moving beneath a horizontal electric arc and in direct contact therewith the metallic compound and carbon to be converted, and in continuously removing the converted compound.
- 587,522. BLAST-FURNACE. Frederick H. Foote, Chicago, Ill. The combination of a bell and hopper, and means

for raising and lowering the bell in the usual manner together with guiding apparatus for the bell and associated parts whereby the same are permitted a bodily upward movement upon the accumulation of an abnormal pressure of gas in the furnace to uncover the top of the furnace and also re-set the parts automatically in proper relative position when the pressure is reduced to a normal condition.

- 587,533. ACETYLENE GAS GENERATING APPARATUS. John J. McGrane, Long Island City, N. Y. The combination of a water tank and gasometer therein, a carbide chamber or gas generator, and mechanism communicating between the chamber and the tank whereby water is supplied from the tank to the chamber, and means for regulating the flow of water by the rise and fall of the gasometer.
- 587,568. ELECTROLYTIC HEATING APPARATUS. George D. Burton, Boston, Mass. A tank provided with an electrode adapted to contact with the contents of the tank, in combination with a second electrode, adjacent to the tank, an adjustable rest adjacent to the second electrode.
- 587,575. ROCK-DRILL ENGINE. Joseph Grandmison, Lynn, Mass. Assignor to Frederick D. Mayo, same place. The combination of a cylinder, a piston working therein, an internal exhaust-chamber formed on the piston, a steam-chest, suitable steam-passages connecting the steam-chest with the cylinder and internal exhaust-chamber, a valve working in the steam-chest comprising a stem carrying pistons located substantially at its center and at its opposite ends and forming two steam-chambers on the valve, and annular steam-grooves formed in the pistons at opposite ends of the valve, arranged to take live steam at all positions of the valve, and communicating with opposite ends of the valve-chest.
- 587,622. SMELTING AND REFINING FURNACE. Matilda L. Trapp, Tacoma, Wash. Assignor to the Hydro-Smelting and Refining Company, same place. The combination of two sets of flues and superheating chambers above the same filled with lattice-work of refractory material and in communication with the furnace-hearth, the combination therewith of a flue connecting each set of flues and in communication with the smokestack, the connecting-flue being provided with lattice-work of refractory material opposite to the fuel-gas flue and below the refractory material chamber, gates and valves for reversing the air-supply, and reversing gear with pipe connections to supply steam and oil alternately to one or the other side of the furnace, the steam connections opening into the connecting flue containing the refractory lattice-work to superheat the steam before combining with the oil, and the oil connections opening into the superheating chamber containing the refractory lattice-work to vaporize the oil preparatory to the superheated steam combining therewith.
- 587,630. CONCENTRATING OR SEPARATING MACHINE FOR TREATMENT OF PYRITES. Walter P. Wynne and Thomas Iregurtha, Ballarat, Victoria. The combination of a pan or vat having a discharge outlet at the top and provided with an imperforate vertically-movable false bottom, a hydraulic cylinder provided with a piston to carry the false bottom, rotatable stirrers mounted in the vat above the false bottom, and a chute for feeding material into the vat, the false bottom being capable of lowering automatically with accumulations of material thereon.
- REISSUE 11,624. COATING METALS BY ELECTROLYSIS. Hans Alexander, Berlin, Germany, Assignor to Louis Potthoff, Long Island City, N. Y. An electrolytic bath composed of a solution of from 5 to 8 parts of commercial chloride of aluminum containing free acid in 100 parts of water and of so much of reguline coating metal as will dissolve therein, while the bath is heated to the boiling point, and from two-tenths to three-tenths of a part of chloride of the coating metal.

GREAT BRITAIN.

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

WEEK ENDING JULY 17TH, 1897.

- 11,076 of 1896. E. A. Ashcroft, Melbourne, Victoria. Method of producing zinc by electrolysis.
- 16,108 of 1896. C. D. Jenkins, Boston, U. S. A. Machine for pulverizing ores.
- 17,299 of 1896. E. F. Turner, Adelaide, South Australia. Method of treating zinc-lead sulphides.
- 24,657 of 1896. R. F. Strong, London. Use of pyroligneous acid as a binding agent for friable ores.
- 12,517 of 1897. R. Von Steinacker, Laubau, Silesia, Germany. Roller screens for screening coal.

WEEK ENDING JULY 24TH, 1897.

- 14,493 of 1896. J. Garnier, Paris, France. Apparatus for simultaneously classifying, concentrating and amalgamating gold ores.
- 15,506 of 1896. J. U. Askham, Sheffield. Improvements in grinding and pulverizing apparatus.
- 16,276 of 1896. A. Guensohn, London. Apparatus for making oxide of lead by blowing air enriched with oxygen through molten lead heated to redness.
- 17,198 of 1896. B. Grau, Stettin, Germany. Making the bricks used in coke ovens in such a shape that the flues shall be as thin as possible.
- 3,795 of 1897. T. Huntington and F. Heberlein, Pertusola, Italy. Roasting galena with lime to produce oxide of lead.
- 9,862 of 1897. E. Parry and S. Milner, Barneley. Improvements in wedges for breaking down coal.
- 12,286 of 1897. J. K. Clark, Butte, Montana, U. S. A. Machine for pulverizing ores.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the *Engineering and Mining Journal* of what he needs he will be put in communication with the best manufacturers of the same. We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line. All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the *Engineering and Mining Journal* are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GENERAL MINING NEWS.

ALABAMA.

JEFFERSON COUNTY.

BLUE CREEK.—The wage trouble between the Tennessee Coal and Iron Company and the Blue Creek miners has been adjusted, and work will be resumed to-day. The basis of the settlement is that the men shall receive 28c. per ton with an increase of 2½c. with every 50c. raise in the price of the class of iron known as No. 1 foundry. Eight hundred men have resumed work.

LAUDERDALE COUNTY.

FLORENCE LAND AND MINING COMPANY.—Judge W. J. Wood, assignee, has sold at Florence, Ala., to the highest bidder the properties of the Florence Land, Mining and Manufacturing Company and the Florence Educational and Development Company, the latter being the outgrowth and practically the property of the former company. The purchaser was N. C. Elting; the price paid was \$60,000. Mr. Elting acted as agent for the creditors. The properties of the two companies will probably be consolidated by the purchasers into one holding and a new company will be organized.

ALASKA.

As far as any thorough prospecting is concerned, says the *Juneau Miner*, the basin of the Yukon has hardly been entered. The main river winds through a distance of 3,000 miles, and its tributaries vary in length from 60 to 300 miles. That there are possibilities of discoveries of much more wealth cannot be doubted, but to the prospector it is a most inhospitable region, not only on account of the dangers and hardships, but because the ground is covered with Arctic moss and frozen, making the discovery of quartz extremely difficult.

No additional arrivals having been reported from the Yukon country, there is no reliable data on which to build. Notwithstanding some enterprising journals continue to give specials from the Klondike, quite overlooking the fact that the last authentic dispatches were dated early in June.

The blockade at the Dyea and White passes is even worse than was predicted. Hundreds of tons of freight are piled at those points awaiting transportation. The Canadian mounted police will not allow anyone to enter the country unless he is in possession of a good outfit and this has caused many to be sent back to the coast and will doubtless save the lives of some who are more daring than wise.

Of the extreme richness of the Klondike placers there would seem no reasonable doubt, but the public does not appear to recognize the vastness of the territory that is believed to carry the gold. Dr. Dawson estimates the auriferous country at 500,000 square miles. It will take years to explore, and there is not the slightest need for people to rush in at the beginning of an Arctic winter; they will have a far better chance in the spring. All the gold-bearing claims within 125 miles of Dawson City have, of course, been staked off long ago, but on a map drawn to scale this territory would be but a speck upon the mighty wastes of Alaska and the Yukon.

The Canadian mining laws cannot be said to err on the side of liberality, though it must be understood that they press just as hard upon the British subject as upon the American citizen. Not content with reserving every alternate claim for the Crown and demanding a heavy royalty, it has now been decided that in the future all claims shall not extend to more than 100 ft. along the stream. Heretofore they have been 500 ft. in length. It is probable that these restrictions will have a very decided effect upon the outgoing crowds. Many will now seek for gold on the American side of the 141st meridian instead of going, as they perhaps originally intended doing, to the banks of the Klondike.

BERNERS BAY.—The Berners Bay Company is running its 40-stamp mill on full time, with plenty of ore in sight. If the present condition continues this company will be short of men. No less than 18 went down on the last steamer from the Bay, and the *Rustler* yet to hear from. The boys are all off to the Yukon. They have been unable to withstand the accounts of dumps worth \$100,000 each gathered together in a few weeks of winter working, and the letters from their friends in the interior have only tended to hasten their departure.

KETCHIKAN.—Prospectors report good finds of copper. Ledges run from 4 to 7 ft. wide.

SHEEP CREEK.—The individual owners of claims in this district, who have been opening them up the past winter are now, many of them, in negotiation to sell. There may be an extensive expenditure of capital on these mines before long, as it is said the locality is a good one, and there is no reason why there should not be a number of mines in actual operation there. It requires capital and patience, and the returns should then be rich.

SITKA.—According to the *Alaskan*, the main coast to the northwest has never been prospected until this year. A number of men have gone out with the intention of making a general examination of the formation. For years past good specimens of ore have been obtained from this district, but as a trip necessitated the outfitting of a good boat it has been rather beyond the means of the average prospector. We may, however, get some information about this coast before the season is over which may throw considerable light upon its possibilities as a mining area. There has been some gold found in the ruby sand about Yakutat Bay,

but no important quartz discovery has yet been made.

Rock from the Bi-metallic ledge in Old Sitka is the best mineralized that has been brought in this season. The ledge is very large. The rock from this ledge as well as Printer's Delight is being assayed.

ARIZONA.

COCHISE COUNTY.

PEARCE.—It is rumored that John Brockman, formerly of Tombstone, has sold his interest in the Pearce mine, near Wilcox, for \$1,000,000 spot cash. It is generally understood that Mr. Brockman owned one-fifth interest in the property. At this price the mine would have a cash value of \$5,000,000.

PIMA COUNTY.

(From Our Special Correspondent.)

DUQUESNE MINE.—Another Washington Camp property is being operated by The Westernhouse people of Pittsburg, Pa. Mr. Geo. Troop is superintendent. They are down some 300 ft. and have a large amount of ore blocked out. An experimental plant has been erected in Pittsburg, Pa., for a trial treatment of the ore.

EMPIRE SMELTING COMPANY.—This company, of Crittenden, Ariz., went into blast in July. Mr. Richard Eames, Jr., of Salisbury, N. C., is general manager, and L. S. Austin, of Denver, Colo., metallurgist. They are smelting some 75 tons of silver-lead ore per day from mines owned by the company.

HOLLAND MINE.—These people, at Washington Camp, are operating their concentrators on copper ore that carries zinc blende, galena, and copper pyrites. They have valuable deposits and plenty of ore. The difficulty is to find a method for the treatment of such complex ores. Mr. G. W. Crowe, of Washington Camp, is superintendent.

R. R. R.—This is the name given to the new discovery of copper ore made by R. R. Richardson, of Crittenden. The prospect is that he has a valuable mine, judging from the character and quantity of ore being taken out. Assays range well in copper.

PINAL COUNTY.

(From an Occasional Correspondent.)

MAMMOTH MINE.—This property is located northerly from Tucson 55 miles, in a small quartzite range of hills that runs along southwesterly, parallel with the San Pedro River and about three miles distant from it. The mine was first bought by a man named Fletcher, of Boston, who placed 20 stamps at the river and hauled the ore three miles to mill it. The mill was afterward increased to 50 stamps and some Englishmen taken into the concern. The property was operated until about in 1893 or 1894 with Captain Johnston as superintendent, but was afterward shut down, and Mr. G. K. Barnhardt, who was assayer and superintendent of the mill, placed in charge. Johnston, Barnhardt and a mill man named Collins secured a lease upon the adjoining group and also leased the Mammoth mill. They organized themselves into a company, proceeded to work the Collins group ore and milled something like 40,000 or 46,000 tons at a profit. The ore body was large, 20 to 40 ft. wide, and they mined it by stoping and letting the ore pile up to the roof of slope near enough for the miners to work, drawing off at the bottom until the slope was finished, when they drew off all the ore and left a big chamber without timbers, the intention being to let it cave in and then sink the shaft down and come up on the ore from the next level the same. The new company which now owns the Mammoth expects to acquire the Collins group, move the mill up to the mines, increase the capacity to 100 stamps and pump water up from the river. Wood has been pretty well cut in the vicinity and will have to be hauled quite a distance at a heavy cost. The Mammoth ores contained some vanadate of lead and attempts were made to concentrate this and find a market for it, but the demand for vanadic acid, or the salts of vanadium, being small, no success was attained. Various attempts have been made to make a better saving of the ore, as the tailings run from \$2 to \$6. Near the Mammoth is the Mohawk group, running a 30-stamp mill on similar ore and pumping water up from the river.

YAVAPAI COUNTY.

MAYER.—Preparations are being made for the development on a large scale of the onyx deposits at Mayer. The property was sold a few months ago to a party of Eastern capitalists, among them Congressman Fowler of New Jersey, for \$150,000. Six new quarries, in addition to several now in operation, will be opened as soon as the outfit for mining can be made ready, and the force of men will be correspondingly increased. Eighty tons of machinery are now on the ground, including two double-lever channeling machines.

The company has a contract to furnish 100 tons of onyx to Eastern parties, and this shipment will be made as soon as possible. The onyx deposit is 200 acres in extent, lying in circular form, and in continuous strata, and including an infinite variety of colorings.

CALIFORNIA.

AMADOR COUNTY.

(From Our Special Correspondent.)

ARGONAUT.—At this mine one mile north of Jack-

son, a third run of 850 tons of ore has been put through the Zeile mill. The clean-up is reported to have netted \$28,000. The 40-stamp mill ordered for this mine has been shipped from San Francisco, and the foundation has already been finished.

BUTTE COUNTY.

(From Our Special Correspondent.)

Mining on the Feather River has been greatly facilitated by the introduction of new machinery, consisting of improved elevators and steel derricks. At the River mine, since the beginning of March, the water has been pumped out, the elevator sunk to bed rock, and about 200 ft. of bedrock washed, as much as is usually accomplished in a whole season by the old methods.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

BENSON.—This mine, in Latimer Gulch, four miles west of San Andreas, has been sold to White & Van Meter, of Stockton, who have been developing the property under bond for the past six months. Their intention is to put a large force of men at work and develop the property on a large scale.

ELDORADO CONSOLIDATED GOLD MINING COMPANY.—This company has been incorporated with a capital of 200,000 shares of a par value \$100 each. The property owned by the company is known as the Bisbee Mine, on Smith's Flat, 1½ miles west of Angels. Considerable development work has been done. The plant consists of a steam hoist and pump and a five-stamp mill. Besides free gold the ore contains pyrite and copper glance rich in gold.

GOLDEN HILL.—At this mine, 2½ miles west of San Andreas, which is being worked by the California Exploration Company, the shaft is down 240 ft. on a 7-ft. ledge. Assays are very high. There are five other veins on this property which have not been developed.

ORCHARD.—This mine, located just west of Mokolune Hill, has been bonded to Byron Jennings. A hoist has been erected on the old shaft and the water pumped out. The shaft is sunk at the junction of two old river channels and will be put down to the 100-ft. level, when drifting will be commenced to the east and the west to cut both channels. The gravel is said to be high grade.

KERN COUNTY.

(From Our Special Correspondent.)

KINYON.—This mine, at Randsburg, is reported to have produced 56 tons of ore which milled \$8,445. The tailings were sold for \$600 more.

SAN JOAQUIN VALLEY GYPSUM AND LAND COMPANY.—This company has been incorporated with a capital of \$50,000, of which \$40,000 was paid up. The incorporators are D. Samuels, Charles Benson, M. V. Samuels, M. Curtis and J. M. Willard. The company will work gypsum deposits in this county.

SACRAMENTO COUNTY.

(From Our Special Correspondent.)

FOLSOM MINING DISTRICT.—At Milgate Ranch, about 6 miles from Folsom, where some parties have been mining on percentage, a pocket containing 32 oz. of gold was struck. Several years ago over \$6,000 was taken from this ranch.

SAN DIEGO COUNTY.

PICACHO CLAIMS.—Stephen W. Dorsey and Samuel B. Morgan, of Colorado, have bought 23 claims, 480 acres, at Picacho, 20 miles above Yuma. They have spent some \$60,000 in development work, and have had the property examined by a number of prominent mining engineers, among them W. A. Farish, who made the report on which the mines at Deadwood, S. Dak. (Black Hills), were bought in 1877. Reports just received say that Mr. Dorsey has been able to place half of this property on the London market, and a 100-stamp mill will be built on the Colorado River, with a narrow-gauge road, four miles long, to bring the ore to wood and water. These mines are on the same belt as the Gold Cross, 14 miles east and south.

TARANTULA.—The Tarantula group of mines has nine full claims, represented by Frank C. Wright, of Yuma. The average of 30 assays from these mines was \$7.85; one assay made from the last sample went \$124.

(From Our Special Correspondent.)

GOLDEN CROSS MINING AND MILLING COMPANY.—The attorneys of this company have procured a postponement of the application for a vacation of judgment based on a disputed stipulation which gave the mines of the company to James Spiers. In the suit of the company against James Spiers, these mines were awarded to the defendant by a stipulation depending on certain conditions. The company has now employed new attorneys, who are applying for a vacation of judgment on the ground that the former attorneys granted the stipulation without sufficient instructions of authority.

RANCHITA.—This mine, a little over a mile south-east of Banner, is again being worked with a force of 12 men, the injunction having been removed.

SONOMA COUNTY.

(From Our Special Correspondent.)

HERALDSBURG ONYX COMPANY.—This company, with a capital of \$100,000, will develop the ledge located on Austin Creek, 10 miles from Heraldsburg. Ten thousand dollars will be expended in preliminary work. The rock is a beautifully marked serpentine, found in a conical shaped mountain 300 ft.

high, running back into the Coast Range a distance of 1,500 ft. A road is to be built to the ledge and improved machinery put in. Experts pronounce samples taken from this mine to be equal to the best Grecian onyx.

TRINITY COUNTY.

ALTOONA QUICKSILVER MINE.—All the surplus water of this heavy mineral producer has at last been removed. Shortly after midnight on April 2d last, several miners working in the lower tunnel struck their picks through a wall into a water vein from which the water gushed so rapidly that the men barely escaped from drowning and were compelled to leave all their tools behind. The water arose several hundred feet in the shaft and was fed by a seemingly inexhaustible supply from some large subterranean cavity. The pumping machinery was set to work and a new equipment was added. For nearly four months this machinery was kept working night and day removing water at the rate of over 700 gallons per minute. It is estimated that this experience has cost the Cinnabar Mining Company over \$40,000.

On the night of July 12th, after the mine had been pumped dry, the pumping machinery was forced to suspend, owing to a break-down and the mine rapidly commenced to refill with water. The break was quickly repaired, however, and the mine is now again in condition for work, which will be resumed at once.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

GAGNERE.—This mine, at Tuttle town, has developed a continuous chute of ore over 1,400 ft. in length. Levels are being run south at the 150 and 300 ft. levels, from the Maryatt shaft; these are both over 8 ft. of fine ore.

GRIZZLY.—At this mine, one quarter of a mile north of Priests, work on the new shaft is being pushed rapidly. The developments show a strong vein 8 ft. in width, which mills on an average \$10 per ton. The management intend to sink to the 400-ft. level past the old workings.

YUBA COUNTY.

(From Our Special Correspondent.)

GOOD TITLE.—This mine is located 14 miles southwest of Camptonville, at Dobbin's Ranch. Superintendent J. J. Dailey has resigned in favor of H. Pengelly, who for several years has been superintendent of the Mt. George mine. The vein in the Good Title varies from 16 in. to 13 ft. in width. The sulphurets are very high grade.

COLORADO.

DOLORES COUNTY.

(From Our Special Correspondent.)

BULL TUNNEL SITE.—F. A. W. Day et al., who are pushing this tunnel, have broken into what is supposed to be the famous Bull vein, at a distance of 800 ft. from the mouth of the tunnel. The ore is of low grade yet, but is apparently increasing in value.

DAYTON & HOPE CROSS.—Wakeman & Barlow are steadily pushing operations on this group and shipped a carload of very good ore to the Durango smelter August 1st.

ENTERPRISE.—The lease on this property, owned by McNeill et al., has been extended to February 8th, 1898, and shipments will be resumed in a few days. The record of shipments from this property has been lately one of the best in the district. The ore averages 7 oz. gold and 400 oz. silver per ton.

EUREKA.—Ransom et al. recently began their annual assessment work and struck ore of such value that a contract has been let to sink the shaft to a depth of 150 ft., where it is expected the principal chute will be uncovered.

July shipments from this district were as follows: Swansea, 4 carloads; Blackhawk, 9 carloads; Princeton, 8 carloads; Enterprise, 15 carloads; Rico, Aspen, 1 carload; Emma, 2 carloads; Logan, 5 carloads; Hope-Cross, 1 carload; Grand Duke, 3 carloads; total, 48 carloads.

LOGAN.—Louis Haberman, who is operating this claim, has lately been shipping 68 carloads per month of high-grade carbonates.

NEBRASKA.—J. D. Adams has been working steadily with a large force since last fall on the Nebraska mine on Newman Hill. Work has been principally confined to drifting on the contact. A small streak of very rich ore was recently struck and one man is engaged in sacking about 30 lbs. daily.

PRINCETON.—Kinnear & Poindexter are doing considerable development work on this property on C. H. C. Hill, and are shipping an average of two carloads per week of high-grade ore.

RAINBOW PLACER.—J. M. Hall et al. will shortly sink the shaft, now 24 ft. deep, to bedrock, and, should pay dirt be encountered, will begin the construction of an extensive system of flumes and ditches.

EL PASO COUNTY.

(From Our Special Correspondent.)

BUFFALO & CRIPPLE CREEK GOLD MINING COMPANY.—Work on the Newell tunnel of this company is being pushed by three shifts of men with the assistance of power drills. The tunnel enters Grouse Mt. near the mouth of Aequa Gulch, and runs in a southeasterly direction. It is $6\frac{1}{2}$ ft. \times 7 ft., and is now in, about 500 ft. About 20 men are

employed in all. The company holds leases on a number of blocks on school section No. 36, upon which the tunnel starts, and through which it passes. The company also owns a number of lode claims in the vicinity. The progress of this tunnel will be watched with interest, as it is the largest attempt yet made to prove up Grouse Mt. from which no ore has yet been shipped. The management states that a number of veins have already been cut and some good ore found.

CALEDONIA MINING COMPANY.—Some work is being done on the Caledonia mine of this company. A Leyner air compressor forms part of the machinery of the mine and one air drill is being used. No ore is being shipped. It is rumored that the company intends to build a mill to treat its own ore. The mine is situated on the southwest spur of Gold Hill near Mound City. Considerable ore has been taken from this mine in the past.

CHICAGO & CRIPPLE CREEK TUNNEL.—Lessee Nolan, who has been working on an upraise in this tunnel, has completed the connection with the surface on the Lella claim. Some ore has been shipped from this lease.

FANNIE B. MINING AND MILLING COMPANY.—The Bryan claim, a fraction adjoining the Fannie B. claim, on the south side, has been purchased by this company, the consideration being given out as \$4,000. This gives the company about 500 ft. of the vein. It now owns two claims, the Fannie B. and the Bryan.

KILTON ORE PURCHASING COMPANY.—Work is being pushed on this company's new sampler, near Goldfields. The company will also at once erect a large reduction plant at Florence.

MARY MCKINNIE MINING COMPANY.—Considerable ore is being shipped from the Bell tunnel on the Republic lode, belonging to this company. This lease has been a steady shipper for some time past. Some ore is also being shipped from other leases on this company's property.

VICTOR GOLD MINING COMPANY.—Sinking has been resumed in the shaft of the Victor mine of this company. The shaft is now down a little over 500 ft. About 120 men are employed.

WORLD'S FAIR.—A new hoisting plant is being put up on this claim. It is situated on Globe Hill and belongs to the Plymouth Rock group.

(From Our Special Correspondent.)

CHAMPION.—A large cash offer has been made for this property by Posey Jones, and work has been suspended pending its conclusion.

DUBOIS TUNNEL MINING AND MILLING COMPANY.—W. S. Chenoweth, of Davenport, Ia., is in town superintending operations at the above named tunnel. The group of claims owned by this company shows numerous fine veins at or near the surface, and it is designed to cut them at a depth of several hundred feet.

GUNNISON.—Several hundred pounds of ore were taken from the Gunnison mine to Denver, August 1st, the object being to determine the nature of treatment necessary for that class of ore. Several capitalists are interested in the result, and it is quite probable that cyanide tanks will be put in before the end of the season.

TAYLOR PARK COMPANY.—This company, operating several large placer mines in Taylor Park employs 70 men and is operating 2,700 ft. of flume.

VULCAN MINING AND TOWNSITE COMPANY.—This company was organized August 1st by J. A. Hein, baugh and J. R. Davidson, with a capital of \$50,000.

LAKE COUNTY.

BANGKOK-CORA BELL MINING COMPANY.—At the annual meeting of the stockholders of this Leadville company, held at its office in the City of Denver on Thursday, August 5th, the following Board of Directors was elected: James H. Crandell, Louis H. Jackson, Percy Wilson, Alex. C. Foster, William Toovey, N. Q. Tanquary and Louis Wagner, all of Denver.

(From Our Special Correspondent.)

BIG SIX.—The lessees on this combination are doing very good work with encouraging results. The Nettie Morgan property is shipping about 25 tons a day of a fair-grade gold ore. Shipments are to be increased. It is also learned that on the new shaft of the Big Six some very good results have been met with.

CARBONATE LEASE.—This lease, on the Adams ground, is shipping 20 tons daily of oxidized ore. The lease is worked through the Wolfone, which is shipping 50 tons daily of lead sulphides.

CRUCIFIXION.—This property, lying near the old Alps Consolidation at the head of Big Evans Gulch, is being actively operated by lessees. Work is being pushed from the second new shaft, which is down 112 ft., and from which drifting is being carried on. The drifts are being run on contact between the lime and the porphyry, and it is expected to open up a gold ore chute.

DOWNTOWN MINES.—Just what effect the fall in the price of silver will have in the starting up of the downtown pumps cannot be stated, but there is a delay in getting the pumps started for some reason or other. They are not yet in position, and for the past 10 days nothing has been done. The management have had but little to say about the matter; but it is stated that the probabilities are that preparatory work will be resumed early next week,

and that the management will then give out the cause of the delay.

FANNY RAWLINGS.—This property, operated by lessees from Aspen, comes to the front this week with a rich strike. It appears that the lessees have spent some \$30,000 in carrying on development work for the past 18 months for the Johnny Hill ore chutes. They have now opened up 15 in. of ore which will average \$100 per ton. The strike assays from 1 to 10 oz. gold, 14% lead and 55% iron.

G. M. FAVORITE.—This property is well located on the gold belt between the Lillian and the Rex mines. After a long idleness it has been started up. It is being operated by two different sets of lessees, both of whom are taking some little ore, and at the same time conducting exploration work which may result in the opening up of rich ore bodies.

IBEX MINING COMPANY.—These people, operating the celebrated Little Johnny mine, are doing a vast amount of work and are shipping a great deal of ore. The No. 4 shaft, which is to be sunk 1,500 ft. to work the immense bodies of gold copper sulphides which were explored by the diamond drill, is now down over 600 ft. The shaft is to be fitted out with a magnificent plant of machinery and will be but another valuable addition to the big Ibez combination.

M. N. MINE.—This property, located in Idaho Park, is operating its shaft near the Ibez line, and the shaft is now going down through a body of pay ore. Some mineral is being hoisted which assays a good average in gold.

NEW DEVELOPMENT.—It is known that there are several big enterprises on foot to develop virgin territory both in the silver and gold territory. It is feared, however, that some of the deals on foot relative to silver mining will not be handled at the present time nor until it is known to what figure the white metal is likely to fall. There are several new companies to be incorporated in the near future that are to operate in the gold belt territory, and it would appear that considerable new work is likely to be started.

NILES-AUGUSTA.—Lessees are to resume work at an early day. Preparations to start up are in progress.

PENNSYLVANIA.—This property is well located on the gold belt below the Nettie Morgan, and some very good indications have been met with near the surface.

RATTLING JACK.—Shipments are now regular from this property, where a good strike was made a short time ago. The ore comes within 50 ft. of the surface and is of a fair grade. Lessees are conducting operations on this property.

SPOT CASH.—The new lessees who took hold of this property a few weeks ago have stopped sinking on the old shaft and are now drifting in the hopes of encountering the gold ore chute known to exist in that ground.

WARD MINE.—This property, owned by the Lillian Mining Company, and worked through the Lillian tunnel, is producing a large amount of lead ore. Shipments are regular and the stuff runs 11 oz. silver, one-tenth ounce gold and 58% lead. The ore body is opening up well and shipments are to be increased in the near future.

WILLIAM WALLACE.—Two shifts are working on this property and regular daily shipments are in order. The ore shipped is a good iron, and a nice new body of this stuff is said to be opening up.

SAN JUAN COUNTY.

(From Our Special Correspondent.)

ARIADNE.—A new tunnel 600 ft. in length is to be run this fall, which will open up the vein to a depth of 1,000 feet. The ore from the third level now being shipped is principally copper; that in the second level, recently uncovered, is 3 ft. in width and almost solid lead.

ESMERALDA.—In the upper tunnel a vein 18 in. wide of very good ore has been uncovered, and in the lower tunnel the ore pays a profit of \$100 for every running foot. Another carload is to be shipped August 10th to the San Juan smelter.

EVENING STAR.—A large streak of iron and copper ore was recently opened up, from which a carload was shipped August 5th. It gave a handsome profit.

GEORGE III.—A carload of ore has been shipped to the Silverton smelter, the first for several months, which gave returns of 13 oz. gold, 300 oz. silver and 17% copper per ton. The ore is now being hoisted through the old shaft, pending the completion of the new tunnel, which is now in 480 ft. and will strike the vein at the 160-ft. level. Fourteen men are employed. The property is being operated by James N. Hull, of St. Louis, and W. H. Wigglesworth.

GOLDEN HORN MINING COMPANY.—This company has lately been shipping its first-class ore without milling, and the result has been highly satisfactory.

HARD SCRABBLE.—Three men have been added to the force, and are engaged in breaking good ore. The property is located on King Solomon mountain, and is owned by C. E. Pratt, who last year declined to accept the proposition of an eastern company, that offered to put in a mill for a half interest in the mine.

KING.—The new Bleichert tramway at this property was completed on August 1st, and made its trial trip on Monday. Fourteen tons of ore were moved from the mine to the mill in three hours. The mill is making 7 tons of concentrates daily from 15 tons of ore. A new 10-stamp battery has been ordered and will be in working order by September 1st. Other machinery is to be added, which will increase the capacity to 100 tons daily, in order to successfully treat the output from the mine.

PORCUPINE.—The 125-ft. crosscut was completed August 3d, having opened up a fine large body of pay ore. Arrangements are being made to begin shipping, which will occur in a few days.

RIDGWAY.—Another big strike is reported from the lower level of this property, which promises to become a bonanza with development. The ore is free milling.

ROYAL TIGER.—A new tram, one half mile in length, is to be laid to the upper terminal of the Iowa tram. Recent discoveries prompt this action; the latest being a discovery of 4 ft. of solid lead and gray copper in the stopes. A new boarding house, ore house and stable are being built.

SCOTIA.—The work of opening up the ground in this property has just been completed, and shipments will soon be resumed. A large force of men is to be put to work on the ore bodies.

SILVER WING.—Sixteen men were added to the force August 1st. The ore is being hauled from the mine directly to the smelter by teams, this method of transportation being considerably cheaper than shipments by railroad.

SOUND DEMOCRAT.—John James has secured a bond and lease on this mine, and recently struck a fine streak of white quartz in the lower level, which shows considerable free gold.

ST. JACOBS.—This property is soon to resume operations, and will give employment to a large force of men. The last shipment, previous to its suspension, consisted of 130 carloads of ore which averaged \$120 per ton.

ZUNI.—A contract has been let for driving a 145-ft. upraise which will be commenced as soon as apparatus can be put in to rid the workings of foul air.

SAN MIGUEL COUNTY.

(From Our Special Correspondent.)

CAMP BIRD.—The extraordinary richness of this property, located in the Omogene basin, just over the range from the Tom Boy mine, has suddenly become known, notwithstanding the strict secrecy enjoined upon employees and that no visitors are allowed on the premises. Vigorous development was begun on the property last fall, and from that time until about two weeks ago nothing was known in regard to the value of the mineral it was producing, the size of the pay streak, etc.—in fact, it was not considered of sufficient importance to inquire into. Recently some interesting facts concerning the mine have in some way been made public, and as a consequence the people of the district are excited. The report is that since last fall Camp Bird has made a gross output of \$800,000 in gold and silver, and that the tonnage production is being gradually increased. The pay streak of the lead is from 4 to 5 ft. in width, a large portion of which runs 38 to 50 oz. gold and 1,000 oz. silver per ton. A train of 50 burros is regularly employed packing the product to Ironton, the nearest railway station, for shipment to smelters. The Camp Bird lead is large, strong and well defined, and the owners, Thomas F. Walsh, proprietor of the Walsh smelter, at Silverton, and his associates, have had it surveyed and located from the top of the divide to Ironton, a distance of about four miles. They have also made numerous locations on other veins running parallel and at right angles, and now own a group of 81 claims, including the Camp Bird, in Imogene basin. The news of the phenomenally rich ore the mine is producing has caused a ripple of excitement in Telluride, and a number of prospectors have rushed to the basin in the last few days. From all accounts the Camp Bird is one of the most valuable mines opened up in the San Juan country in recent years and is a property that will prove a substantial producer for many years to come.

JAPAN MINES COMPANY.—Walter Beam, manager of this company, is having new concentrating machinery, consisting of two Willey concentrators, three vanners and a number of incline tables covered with canvas, installed in the addition 24 x 42 ft. recently constructed to the Japan mill building, and as soon as it is ready for operation which will be in the next few days, the tonnage put through the mill will be increased from 50 to 100 tons. This is owing to the fact that the concentrating capacity of the mill has never been equal to its crushing and pulverizing capacity, which is 100 to 125 tons daily. The mill will then turn out from 90 to 100 carloads of concentrates per month, which will run \$100 per ton in gold, silver and lead, and, together with the high-grade ore shipped in its crude state, which nets from \$700 to \$1,000 per car, make the gross output of the property from \$75,000 to \$100,000 per month. Heavy development work is being prosecuted in the mine, and the Mikado tunnel, being driven at right angles from the main level of the Japan for a western extension of the Tom Boy vein, is going ahead. It is now in about 1,500 ft., with 200 more to drive to reach the objective point.

MOUNT WILSON GOLD MINING COMPANY.—This company, owning and operating the Silver Pick group of mines, on Mount Wilson, has recently appointed W. E. Hawley, of New York City, general manager. He will succeed J. P. Colp, who has been general superintendent for the past six years, and has already assumed his duties. It is understood that a sale of a portion of the property, pending since last fall, has been made to Eastern capitalists and that the Universal Trust Company, of New York, is among the purchasers. The company's 10-stamp concentrating plant is running at full capacity, and treating 40 to 45 tons of ore a day, which is afterward concentrated into 10 and 11 tons of concentrates netting from \$2,000 to \$3,000 in gold per carload at the smelters. The heavy development work inaugurated sometime ago for the opening up of immense areas of new stopping ground will be rushed to completion, and in a few more days there will be 150 men on the pay-roll.

NORTH AMERICAN EXPLORATION COMPANY.—This company is now transporting 75 tons of ore per day from the Nellie mine, Bear Creek, which it is operating under bond, down over a recently built Huson tramway, more than a mile in length, to the Telluride Power Transmission Company's 123-stamp mill for treatment. The output keeps 30 stamps dropping. The ore is yielding more than an ounce in gold per ton on the plates, and concentrates that run from \$75 to \$100 in gold per ton. The company is principally composed of French capitalists, although there is a well-known banking house in Wall street identified with it.

PULASKI MINING COMPANY.—George E. Harmon, of Chicago, president and general manager of this company, has been in the camp for sometime past superintending the construction of the new Pulaski mill, in Bridal Vein basin, in close proximity to the Pulaski group of mines. It is expected that it will be in operation in the course of the next two weeks, when the treatment of the large amount of gold ore that has been taken out during the past eight years while the property was undergoing development will be commenced.

SUFFOLK-GLOBE MINING AND MILLING COMPANY.—This company's large group of properties and 40-stamp mill, at Ophir, were sold in Telluride a few days ago at trustees' sale to Albert E. Pattison, of Denver, for \$57,190.29. It is understood that Mr. Pattison bought the property on behalf of some of the largest creditors who were the principal owners before the sale, consequently it does not change hands to any great extent.

SMUGGLER-UNION MINING COMPANY.—John Peterson, who has a lease on a block of ground between Nos. 5 and 8 levels of the Sheridan and Mendota mines, belonging to this company, is shipping from fifteen to twenty carloads of ore per month from his lease. The ore is of the same character as that of the Smuggler-Union, the Sheridan and Mendota, being on the same vein and adjoining, and the high grade runs from \$400 to \$500 per ton in gold and silver.

TOM BOY GOLD MINES COMPANY.—General-Superintendent Harry B. Adsit is having a new bunk-house 300 ft. long by 50 ft. wide erected at the mouth of the mill tunnel crosscut, near the Tom Boy. It will contain 250 rooms and accommodate 500 men.

FLORIDA.

FLORIDA KAOLIN AND MANUFACTURING COMPANY.—The stockholders of this company met recently for the purpose of effecting a permanent organization of the company. Edwin J. Houston, A. Arlington Hibbs, Howell Lloyd, Chas. S. Edgar, J. F. Richmond, G. C. Stevens and A. G. Hamlin were duly elected members of the board of directors. Immediately after the election of the board of directors, the officers of the company, who hold office for one year, were elected. They are as follows: Edwin J. Houston, president; A. Arlington Hibbs, vice-president; Howell Lloyd, secretary and treasurer, and Chas. S. Edgar, general manager. The board of directors notified the treasurer that all of the stock is paid up. The amount of stock provided by the charter is 30,000 shares, valued at \$100 per share. It is the intention of the new company to purchase the plant, machinery and works of the Palatka Kaolin Company, and large tracts of kaolin land in Lake and Putnam counties, Florida, and another tract in the county of Middlesex, N. J. The Edgar Plastic Clay Company, at Edgar, Putnam County, Florida, and at Metuchen, Middlesex County, New Jersey, and at other places will become a branch of the Florida Kaolin and Manufacturing Company.

GEORGIA.

LUMPKIN COUNTY.

SINGLETON.—The Appalachian Gold Mining Company, of Dahlonega, is said to have bought this property. The price mentioned is \$23,000.

IDAHO.

IDAHO COUNTY.

EDWIN D.—This mine, which made such a fine clean-up a few weeks ago, has several tons of rich ore on the dump. This new mine is one of the best in the basin. Its ledge is widening, and is certain to make a splendid property. Its owners are working hard to develop it and are greatly elated.

OZARK.—A five-stamp mill is working day and night on this property. It is just a mile from the town.

POORMAN.—A 10-stamp mill and other machinery for this mine are on the way. Crushing should begin this month.

TIPTOP.—The Tiptop has completed a 233-ft. tunnel and will soon let a contract for 100 more feet, which it is thought will strike the big ledge that showed up so promising on top of ground, and which will place it at the head of the best properties in the camp. It is impossible to learn the number of prospectors at work in the hills. Go where we will we find them digging holes. On the coming of the mails the town is crowded, and this gives an opportunity to form some idea of the large number of men engaged in prospecting.

(From Our Special Correspondent.)

BANNER-GOLD BUG.—A joint plant has just been erected at Florence by Fraser & Chalmers, of 20 to 25 tons' capacity to treat mineral from these adjoining properties, operated as one mine. It is a Huntington mill with copper plates, values being in free gold, so far as exploration has shown. The mines are situated at the head of Florence Basin, where in the 60's rich placers caused a stampede. Later quartz ledges above the old diggings have shown mineral in quantity carrying \$10 to \$60 gold, among which Banner stands about at the top. Development on this vein consists of over 1,200 ft., exposing an abundance of ore to keep a much larger mill steadily employed. On Gold Bug ground there are two veins opened, from one of which some rich gold rock has been taken. About 800 ft. of development was done in the past year, showing paying values throughout. The average ore is of the same worth as the Banner. It is anticipated that the capacity of the mill will soon be greatly enlarged. The Banner Gold Mining Company and the Gold Bug Mining and Milling Company each has 1,000,000 shares, par \$1, with their head office in Spokane, Wash. S. S. Glidden, of Spokane, is president, and F. R. Culbertson, of Burke, Idaho, secretary of both companies.

OWYHEE COUNTY.

DE LAMAR MINING COMPANY.—The official report for the month of June gives the following figures: Crushed in the Amalgamation Mill (wet) 3,820 tons, (dry) 3,438 tons; assay value of the pulp, gold, \$11.72; silver, \$2.70; assay value of the tailings, gold, \$3.76; silver, 52.1 percentage saved, 70.32%. Crushed in the Pelatan Process Mill 970 tons, (dry) 871.3 tons, assay value of pulp, gold, \$12.15; silver, \$3.02; assay value of tailings, gold, \$2.52; silver, 62c. Percentage saved according to assay of pulp and tailings, 80.62%; clean-up in bullion, 70.1%. The gold produced (at \$20) was \$16,523; the silver (at 60c.) \$408. The expenses amounted to \$36,428, and the estimated profit for June was \$8,273.

The manager's report says that the Pelatan-Clerici plant was started on June 6th and by the 10th was in full operation. It ran smoothly for the remainder of the month without accident or interruption. The plant is a very clean, simple one, and pleases all visiting engineers. The crushing machinery in the old mill is not quite adjusted to it yet, which has somewhat decreased its capacity and efficiency. The amount cleaned up in bullion June 30th was 70.1% of the value of the ore treated. Considering that this was the first clean-up, and allowing something for a gold and silver plating on the copper bottoms of the vats, and some of the precious metal solution as absorbed in the new wooden vat staves, the result is very satisfactory.

There is still in sight a considerable tonnage of ore of the present average grade. Stopping on two blocks of second-class ore shows it to be of higher grade than was anticipated.

KENTUCKY.

HARDIN COUNTY.

A gold discovery is reported from Summit, this county. A quartz lead showing \$33.07 gold and \$1.25 silver is said to have been uncovered by Messrs W. B. Cundiff and James D. Ferry. The report lacks confirmation.

MICHIGAN.

COPPER.

• **ARNOLD.**—Ground has been broken for the new shaft on this property at Eagle Harbor, about 1,200 ft. west of the present shaft. The excellent showing of the drift running west for the whole distance, nearly 800 ft., has proved that the faith of the explorers was well founded.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The weather during the past week was favorable for mining operations, but Joplin's sales were not up to the average. There was an increase of two cars of zinc ore in the district shipment, but a decrease of eight cars of lead ore compared with the preceding week; but there was a gain of 35 cars of zinc ore and two cars of lead ore compared with the same week of last year. Zinc ore generally sold at \$22 per ton, but at Joplin five cars sold at \$22.50 per ton and one car at \$23. The price advanced on all grades a half dollar per ton at Joplin, Webb City, Cartersville and Galena. The Oronogo, Alba, Stott City and Springfield ore sold at \$22 per ton.

Lead ore continues strong at \$23.25 per 1,000 lbs.

in the bins, the price generally paid by the agent of the Argentine Reduction Works, but several large piles of lead ore sold at \$23.50 per 1,000 lbs. The Picker Lead Company paid \$23.25 at their works in Joplin. The corresponding week of last year zinc ore sold at \$21, top price, while lead ore was only \$15, a gain of \$2 per ton on zinc and \$8 per 1,000 lbs. on lead ore.

Following are the individual sales so far as obtainable, the totals from other places and the entire shipment made so far this year:

Joplin zinc, 988,780 lbs.; lead, 278,820 lbs.; value, \$17,143. Cartersville zinc, 1,043,570 lbs.; lead, 169,550 lbs.; value, \$12,039. Webb City zinc, 513,580 lbs.; lead, 68,660 lbs.; value, \$6,749. Galena zinc, 2,850,000 lbs.; lead, 350,000 lbs.; value, \$33,700. Aurora zinc, 690,000 lbs.; lead, 25,000 lbs.; value, \$6,152. Oronogo zinc, 250,860 lbs.; lead, 2,610 lbs.; value, \$2,790. Stott City zinc, 182,790 lbs.; value, \$2,011. Alba zinc, 146,000 lbs.; value, \$1,606. Springfield zinc, 132,000 lbs.; lead, 2,090 lbs.; value, \$1,452. Belleville zinc, 19,480 lbs.; lead, 4,210 lbs.; value, \$301. District totals for last week: Zinc, 6,797,060 lbs.; lead, 893,850 lbs.; value, \$83,943. District totals for 32 weeks: Zinc, 201,693,420 lbs.; lead, 34,238,630 lbs.; value, \$2,569,571.

BARLETT, PICHER & COMPANY.—They are opening up the old Blendville lease of the Empire land; they are putting in large pumps to drain the ground and will have a good pay dirt to hoist as soon as the water is out.

BOHN, PATTON, MURPHY & COMPANY.—The company on the Snapp F. Warren lease at Tuckahoe have a very rich prospect at 137 ft. Drifting was started on a 16 ft. face of zinc ore, and in the first 8 ft. nine tons of zinc ore was taken out. It keeps getting rich the further they dirt; last Thursday they hoisted 40 tons of dirt that made 4½ tons of zinc ore. They have been offered \$10,000 for the mines.

FREE COINAGE MINING COMPANY.—Robt. Stickney, S. Crane, of Carthage; Mr. Rhinehart, of St. Louis, and the Free Coinage Mining Company, at Midway last Monday purchased 80 acres of land just south of the Free Coinage lease, of Doc McConey; consideration \$125 per acre. The Free Coinage Company have taken a 15-year lease on the land and have laid it out in mining lots to let to miners. This is an excellent piece of mining land and will, no doubt, in the near future, become a big producer. It will be known as the South Free Coinage lease.

IRENE S. MINING COMPANY.—The company have put in a pump, and last week they repaired their concentrating plant thoroughly, and will start up this coming week. They have a large face of zinc ore in hard ground with strong water.

JACK FORTY MINING COMPANY.—They have 40 acres leased from Timothy Ragan, of Springfield, near Webb City. There are three producing shafts on the lease, and one 8 in. lift pump keeps the ground drained and furnishes water to wash the ore. Conklin & Company on this lease are making large turn-ins of both lead and zinc ores from the 70-ft. level, while Ater & Company are working a shallow run of lead ore at 40 ft. Bunch & Groseman are making good turn-ins of lead and zinc ores from the 80-ft. level.

MANHATTAN MINING COMPANY.—The old Victor mines near Webb City, after being idle for over a year, are being worked by a new company called the Manhattan Company. The new firm bought the pumps and the fine large concentrating plant that was on the ground and secured the lease of 40 acres of the Connor land, and started up. Last week they made their first turn-ins of a carload of zinc ore. These mines have been large producers of ore, but under the old management did not pay during the last year they were worked. There has only been five acres of the 40 worked, and there are good paying mines on the three sides of the lease.

OLD ORCHARD MINING COMPANY.—They have a lease on an 80-acre tract of land near Central City. Parker & Anderson at the pump shaft are down 135 feet in rich zinc ore dirt, and will continue to sink, as they have rich ore in the bottom of the shaft. They first struck the ore at 118 ft. There are a large number of prospect shafts going down on the lease, as several drill holes showed up 30 ft. of rich dirt.

PORTER & STILLWELL.—At their mine, called the Yellow Dog, on the Rex land, they made 30,000 pounds of lead ore last week. They have been doing as well since they opened up the mine a month ago.

YALE & COOPER.—Last week they struck a rich lead prospect at a depth of 65 ft. on the Yale-O'Brien lease in Chitwood Hollow. This is the shallowest lead ore in the hollow.

MONTANA.

FLATHEAD COUNTY.

SNOWSHOE.—After several years of lethargy, caused not only by the prevailing hard times, but by difficulties in the way of title to the townsite, Libby seems to be awakening to a prosperous season. The people of this district were thoroughly discouraged in January, when the Snowshoe mine shut down, and the company, which was operating it, the Chicago & Montana Mining Company, failed. The company had built a 200-ton concentrator on the property, which was sold under execution to C. E. Conrad, of Kalispell, while the mining property, consisting of three adjoining claims, the Snowshoe, Porcupine and Rustler, reverted back to H. G. Longee, Bragg Parmenter, L. Abbott and J. Dun-

lap. The bond on it had been for \$125,000. The foreman of the mine, Mr. Bowers, and the foreman of the mill, Mr. Boardman, promptly took a lease on the property as soon as the legal difficulties were straightened out, and they have been running the property full blast for about six weeks, employing in the neighborhood of 100 men. Messrs. Bowers and Boardman are both practical miners and millmen who have had great experience in handling silver lead ores, and they are undoubtedly making the mine pay. In this they are helped greatly by the rise in the price of lead. As the concentrates of the Snowshoe go about 60% lead, this rise in price means an increase in value of \$20 or more on every ton shipped, which is practically the whole cost of mining, concentration and treatment. The mine is situated about 12 miles south of Libby. It is a true fissure vein, 5 to 7 ft. wide, and the mineralization is very uniform. The ore concentrates 6 to 8 into 1, and the concentrates run about 60% lead, 30 oz. of silver and \$4 in gold. The ore is concentrated at the mine, hauled to Libby in wagons at a cost of \$4 per ton and shipped to the Great Falls smelter via the Great Northern Railroad. The charge per ton for freight and treatment from Libby is \$16.50. The mine is developed entirely by tunnels. The mill produces about 20 tons of concentrates per day.

MADISON COUNTY.

(From Our Special Correspondent.)

This county is being well run over by prospectors, and while everybody concerned says "it is a good country," there have been no very important discoveries recorded this season.

CLIPPER GROUP.—This group, which is located 2½ miles from Pony, is keeping the 20-stamp mill running continuously on ore which is said to plate \$20 per ton, and to yield large quantities of high-grade concentrates. A cyanide plant has recently been added to treat the tailings from the mill, the operators, Messrs. Field & Morris, Jr., claim a saving of 85% of the assay value.

EASTON MINE.—This mine, located about 6 miles from Virginia City, is furnishing employment for some 30 men. The vein is from 3 ft. to 6 ft. wide; it carries a long chute of base silver gold ore, which is high grade in places. The medium-grade ores are treated by amalgamation and concentration and the low-grade ores are concentrated at the mine.

GALENA No. 1.—This mine, located about two miles from Sterling, operated under lease by Kennedy, Moore & Company, is producing a good grade of ore, the last shipment having yielded about \$100 in gold per ton and 8% copper. At present the streak is about 12 in. wide. The lessees have about 70 tons of ore ready to ship, from which they expect to make \$8,000 clear.

GARNET MINING COMPANY.—This company owns the Galena mine, located about three miles from Pony, where they have a vein from 10 to 16 ft. wide. It is said to assay about \$10 per ton in gold. A new 20-stamp Fraser & Chalmers mill is to be running before the end of August.

GOLD HILL.—This mine, located about a mile from Gaylord, is being developed by six men.

KELHER MINE.—This mine with others adjoining is operated by Mr. Samuel Newhouse and associates. It is considered a large low-grade milling proposition. About 45 men are employed in erecting a 20-stamp mill, sinking shaft, cutting water ditches, etc. The property is located four miles from Norris.

LETTER MINE.—Located about 8 miles from Sheridan. This mine furnishes employment for about 15 men developing the property.

LITTLE KID GOLD MINE.—This Bald Mountain mine, 18 miles from Norris, is shipping some ore to the smelters, but owing to the expense of hauling to the railroad, \$8 per ton, the managers are considering the advisability of installing a cyanide plant, as they have already tested their ore on a large scale, by amalgamation and concentration, and find a heavy loss of gold in the slimes: some of these assay \$8 per ton, while the tailings proper will only assay \$3.

MOHEGAN MINE.—This mine, out of which the pumps were taken last June, has a small force of men employed prospecting the surface workings. The mine is situated at Red Bluff.

MONITOR MINE.—At this mine, located at Richmond Flat, 25 men are employed. They produce 10 tons of \$100 ore daily. The mine is about 120 ft. deep and has no water nor machinery, the hoisting being done by horse whim.

PAULINE MINE.—This mine is located on Norwegian Creek about 6 miles from Pony. The mine is under lease and bond to S. H. Northey, of Butte, who expects to have machinery on the ground ready to sink by August 10th. The ore is small but high-grade, about \$200 per ton. Gold is the principal value, though the ore carries about 5% copper and 150 oz. silver.

OREGON.

JACKSON COUNTY.

SUMMIT.—This mine, situated near the Oregon and California line in the Siskiyou Mountains, is still crosscutting. They have 37 ft. of ore and have not got the footwall yet. Formation is black slate with greenstone casing for the hanging-wall. They have exposed 7,500 ft. of the vein. The ore is heavily sulphurated and easy to concentrate. One assay gave returns of \$5 in gold and 65c. in silver.

JOSEPHINE COUNTY.

OREGON BONANZA.—Messrs. King & Macomber offer this mine for sale, as they are going to Mexico to work a large concession. This mine has paid well in the past.

KLAMATH COUNTY.

HAPPY CAMP.—The hydraulic mine in the Klamath, 12 miles above this place, is paying big dividends.

TUCKER HYDRAULIC.—This mine, on the lower Illinois and Briggs Creek, has been sold to Sterling F. Haywood, of New York, for \$20,000. The ditch will be enlarged to carry 3,000 in. of water the year around. A saw mill will be built, and some large pipe laid. A No. 4 giant will be added and the mine put in first-class shape for future working. The property consists of 12 claims (240 acres), of which about three-fifths is good mining ground.

PENNSYLVANIA.

The new law, passed at the last session of the legislature and approved by the Governor on July 15th, establishes in the Department of Internal Affairs of Pennsylvania a bureau to be known as the Bureau of Mines, which shall be charged with a supervision of the execution of the mining laws of this Commonwealth and the care and publication of the annual reports of the inspectors of coal mines. The Chief of the Bureau of Mines shall be appointed by the Governor for four years and shall receive an annual salary of \$3,000 and traveling expenses. He must be a competent person, having had at least 10 years' practical experience in the working and ventilation of coal mines of the State and a practical and scientific knowledge of all noxious and dangerous gases found in such mines. The Chief of the Bureau must devote the whole of his time to the duties of his office and see that the mining laws of this State are faithfully executed, and for this purpose he is invested with the same power and authority as the mine inspectors to enter, inspect and examine any mine or colliery within the State and the works and machinery connected therewith. He shall have the power to suspend any mine inspector for any neglect of his duty; but such suspended mine inspector shall have the right to appeal to the Secretary of Internal Affairs, who shall be empowered to approve of such suspension or restore such suspended mine inspector to duty after investigating the causes which lead to such suspension. Should the Chief of the Bureau of Mines receive information by petition signed by 10 or more miners or one or more operators setting forth that any of the mine inspectors are neglectful of their duty or are incompetent to perform the duties of their office, or are guilty of malfeasance in office, he shall at once investigate the matter, and if he shall be satisfied that the charge or charges are well founded he shall then petition the Court of Common Pleas or the judge in chambers in any county within or partly within the inspection district of the said mine inspector, which court upon receipt of said petition and a report of the character of the charges and testimony produced, shall at once issue a citation in the name of the Commonwealth to the said inspector to appear on not less than 15 days' notice on a fixed day before said court, at which time the court shall proceed to inquire into the allegations of the petitioners. If the court shall find by said investigation that the said mine inspector is guilty, as charged, it shall certify the same to the Governor, who shall declare the office vacant and shall proceed to supply the vacancy as provided for by the mining laws of the State. It shall be the duty of the Chief of the Bureau of Mines to take charge of and preserve in his office the annual reports of the mine inspectors and transmit a copy of them, together with such other statistical data compiled therefrom and other matters relating to the work of the Bureau as may be of public interest to the Secretary of Internal Affairs for transmission to the Governor and the General Assembly on or before March 1st in each year. In addition to the annual reports the mine inspectors shall furnish to the Chief of the Bureau of Mines monthly reports and such special reports or information on any subject regarding mine accidents or other matters pertaining to mining interests or the safety of persons employed in mines as he at any time may require or may deem necessary. The Chief of the Bureau of Mines is authorized to make such examinations and investigations as may enable him to report upon the various systems of coal mining practised in the State, method of mining, ventilation, machinery employed, structure and character of the several coal seams operated, and of the associated strata, the circumstances and responsibility of mine accidents, economy of coal production, coal waste, area and exhaustion of coal territory and such other matters as may pertain to the general welfare of coal miners and others connected with coal mining and the interests of coal mine owners and operators in this Commonwealth. The staff of the office will include an assistant to the chief at a salary of \$1,400 per annum and a messenger at a salary of \$300 per annum. He can be removed by the Secretary of Internal Affairs for neglect of duty or failure to comply with the law. No person who is acting as a land agent or as manager, viewer or agent of any mine or colliery, or who is interested in operating any mine or colliery, shall at the same time serve as Chief of the Bureau of the Mines under the provisions of this act.

That the mine inspector of each district of this State shall within six months after the final pas-

sage and approval of this act deposit in the Bureau of Mines an accurate map or plan of such coal mine, which shall show the actual location of all openings, excavations, shafts, tunnels, slopes, planes, main headings, cross headings, and rooms or working places in each strata operated, pumps, fans or other ventilating apparatus, the entire course and direction of air currents, the relation and proximity of the workings of such coal mines to all other adjoining mines or coal lands, and the relative elevation of all tunnels and headings and of the face of working places near to or approaching boundary lines or adjacent mines; and on or before the close of each calendar year transmit to the Chief of the Bureau of Mines a supplemental map or plan showing all excavations, changes and additions made in such mine during the year, drawn to the scale as the first-mentioned map or plan. All such maps or plans to be and remain in the Bureau of Mines as a part of the records of that office.

ANTHRACITE COAL.

All passenger engines on the Reading road and branches are burning anthracite coal, which means the discarding of bituminous coal for the present at least. The order also applies to all locomotives employed in the coal and freight trade which have the wide fireboxes, and is general in character. All the passenger engines on most of the divisions have been using soft coal for some time.

Two large contracts have been awarded to Hazleton contractors. Price, Clark & Evans were given the contract to build a new breaker for A. Pardee & Company at Harwood. This mine was given up years ago by Linderman & Skeer as unprofitable. Pardee & Company have found such evidences of coal as to warrant the construction of a new breaker which will cost in the neighborhood of \$100,000.

Crawford & Dugan, coal stripping contractors, have been awarded the contract to excavate 200,000 cu. yds. of earth overlying a coal vein near St. Clair, in the mine of W. H. Taylor & Company.

The drainage of the Hazleton Coal Basin, in Pennsylvania, has been planned by the Lehigh Valley Coal Company, says the Hazleton *Sentinel*. Work was commenced 14 months ago, and a slope is now sunk on the Wharton vein, 1,100 ft. long. A steam pipe line leads down to two large chambers cut at the bottom of the slope, and in these two pumps are now being erected, with a capacity of 5,000,000 gals. daily each. Two lines of 16-in. pipe will carry the water up the slope. From the bottom of this slope a tunnel was driven 250 ft. into Hazleton No. 5; and a 1½-in. bore hole is now being driven to tap the old Diamond mine, which has been filled with water for more than 20 years. Other holes will follow. This plant can be utilized in draining all the collieries in that locality, as the mines are all connected underground.

BITUMINOUS COAL.

KEYSTONE COAL COMPANY.—This company has paid an additional 2 per cent. dividend. This makes 6 per cent., or \$30,000, paid since the beginning of the company's fiscal year.

DELAWARE COUNTY.

CENTRAL PLASTER BOARD COMPANY.—This company has leased the asbestos quarry above Media and will begin work at once. Asbestos is a material that is largely used in the manufacture of plaster boards and pipe coverings. Superintendent Turner, who has charge of the mill, will also have the management of the quarry. He intends to employ teams to haul the product to Chester and deliver it direct to the mill.

SLATE.

According to the Pen Argyl *Index* the slate quarries in the Pen Argyl, Bangor and Lehigh districts are showing almost as much activity as in 1891 and 1892, which were record years in the industry. All the quarries in the Pen Argyl District are working full time, while the West Albion and West Bangor quarries, which have been idle for several years, are to be re-opened. The Grand Central Slate Company is at present enjoying a greater demand for blackboards than at any time during its history. The Chapman Slate Company is making heavy shipments and probably will resume operations in its extensive quarries in the near future. The export trade in slate continues, the Carbon Slate Company, of Slatington, doing a heavy business in this direction. In the Peach Bottom District there has been a steady record of progress.

SOUTH DAKOTA.

LAWRENCE COUNTY.

EDGEMONT & UNION HILL SMELTING COMPANY.—This company, of Black Hills, proposes, according to its prospectus, to conduct its operations on the most approved principles, and to this end has fixed its capital stock at \$6,000,000, a limited amount of which is offered for subscription at \$50 a share, or one-half its par value. The company owns 1,932 acres of land near Deadwood, besides a controlling interest in 19 mines in other territory. The company includes Governor Pattison, of Pennsylvania, president; ex-Secretary of the Navy Tracy, vice-president, and among the directors are Messrs. Searles, of the Supply; Benjamin Butterworth, George A. Fletcher, Thomas Bradley and others.

POLO CREEK.—Claim jumpers have been busy in this neighborhood of late, but two of their number, Ernest Laventure and Marvin Hillock, came to grief last week, receiving a thorough thrashing at the hands of an indignant miner, and the practice is likely to fall into disrepute.

TENNESSEE.

KNOX COUNTY.

MARBLE CITY GOLD MINING COMPANY.—This Knoxville company has been granted a charter by the Secretary of State for the purpose of developing gold, silver, lead, copper, iron or other minerals. The incorporators are: Thos. J. Thomas, William S. Harris, Oscar Obaugh, Sherman R. Maples and J. J. Jones, and the capital stock is \$24,000. This company will operate in East Tennessee, Western North Carolina, Northern Georgia and Southwest Virginia, and will arrange to commence work soon.

UTAH.

(From Our Special Correspondent.)

Conditions have greatly changed in the past fortnight and not for the better, due to the ruling price of silver. In Park City, at Ontario and Daly, after the miners had accepted the wage reduction, with more or less grace, all are told they are no longer wanted. Rather than increasing the output and extending exploration with larger forces, the mines and mills are to be closed. At this time it is fruitless to conjecture whether this step would now be taken had the miners' union not offered any opposition to the cut. At Tintic, where it is an open secret that the Centennial-Eureka and other managements meditate a cessation of operations, but a little better state of affairs prevails. Bingham, perhaps, of all the old camps, puts on the best front, owing to the general high lead percentage in its shipping products. The same is true in a measure of Fish Springs, though the distance from rail connection is an offset to the advance in lead, and the tonnage will show a falling off while silver remains below 60c. A radical readjustment of the costs of mining, transportation and treatment must be effected before there can be any betterment in the silver camps under ruling conditions. While there is no dearth of ore, the profit in marketing nearly all mine products is about wiped out. Mercur, Utah's solitary and unique gold camp, is the only one of the State's notable producing regions showing a healthy improvement and one which is likely to continue.

During the week ending August 7th, there were shipped East: Thirty-six cars, or 1,343,140 lbs. lead-silver bullion; 25 cars, or 622½ tons lead-silver ore; one car, or 12 tons slag; one car, or 25 tons tailings.

HANAUER SMELTER.—On the last of July the plant was closed for the annual shut-down and everything is being put in trim for another campaign. Recently but two stacks were in blast, though when operations are resumed, about August 15th, three stacks, in all 120 tons daily, will probably be brought into use. While a small plant comparatively, it is fully up to date in all modern improvements. Hitherto water power was used altogether, but Superintendent Terhune says it is likely arrangements will be made with the Union Light and Power Company for 100 H. P., electric transmission as an auxiliary to the water power, in which event a new blower will be installed.

BEAVER COUNTY.

(From Our Special Correspondent.)

GALENA MINING COMPANY.—Articles of incorporation were filed July 31st. Capital stock, \$50,000, in shares of 50c., or 100,000 shares, of which 25,000 shares are set aside for treasury purposes. Stock is assessable, but no one assessment can exceed 1c. a share; nor can an assessment be levied within 90 days of a previous assessment. Head office, Frisco, Beaver County; annual meeting first Monday in September. Officers and directors are: Andrew S. Anderson, president; Joseph W. Dunn, vice-president; Phil Bentz, secretary-treasurer; William H. Barrett, David James, all of Frisco, and Reuben W. Dotson and Melvyn C. Morris, of Salt Lake. This company should not be confounded with the one operating in Fish Springs District, Juab County, which is incorporated under the style of Galena Mine, without the customary terminal, company.

JUAB COUNTY.

(From Our Special Correspondent.)

LOWER MAMMOTH.—Main tunnel is in 600 ft. in which at 350 ft. from mouth a winze is down 138 ft.; the last 14 ft. cutting a chute of hard carbonates carrying 20 to 55% lead, and 18 to 89 oz. silver, forming one of the most promising finds of Mammoth Hollow. At present but seven men can be employed, though as soon as sufficient ground is opened, a larger force will be put on. There are four patented claims—Colconda, Lower Mammoth, Shelby and Hungarian; besides the Colconda and Indiana, in all about 70 acres west of and adjoining the Ajax, and south of Mammoth territory. The Lower Mammoth Mining Company has 150,000 shares, par value \$1; and 32,000 shares in treasury stock. J. F. Woodman is president, John Beck, vice-president; Josiah Barnett, treasurer; who, with J. W. Burton, Isadore Morris and Frank Azzalia, compose the directorate. S. J. Paul is secretary, but not a director. H. S. Joseph, the general manager, is the largest stockholder, and merits due credit for the important ore exposure which is just now attracting special attention to this corner of Tintic. A lot of lightweight, partly mineralized stuff, which was being thrown over the dump as waste, was last week found to carry 78 oz. silver and 5% lead.

BULLION-BECK.—A drift on 1,100 level has uncovered an 18-ft. ore body, which would be a fine shipping product under normal conditions. Mining

will continue, let silver drop as it may. This is by no means altogether a silver proposition, and in the past considerable gold has been mined.

TINTIC.—For the past week ending August 7th shipments were: Bullion-Beck, 20 cars; Centennial-Eureka, 3 cars; Gemini, 3 cars; Uncle Sam, 6 cars; Utah, 3 cars; Mammoth, 5 cars; Swansea, 5 cars; South Swansea, 8 cars; North Star, 3 cars; foregoing lots all ore; Eureka Hill, 12 cars, and Sionx Mill, 2 cars concentrates; Dragon Iron, 30 cars hematite, for fluxing.

SALT LAKE COUNTY.

(From Our Special Correspondent.)

BINGHAM SILVER AND LEAD MINING COMPANY.—Last week the new hoisting plant, consisting of a 30-H. P. boiler and 30-H. P. engine was installed. The ground owned by the company is made up of No 10 and 92 claims, the development of which has been spoken of in these columns. Some considerable mineral is exposed, and shipments will be made in August.

KLONDIKE MINING AND MILLING COMPANY.—Incorporation articles were filed August 2d: capital stock, \$100,000, in shares of 20c., or 500,000 shares, with 200,000 shares for treasury purposes; head office, Salt Lake; annual meeting, second Monday in October. The officers and directors are: C. L. Dignowity, president; P. S. Witcher, vice-president; C. E. Peyton, secretary-treasurer; William Morgan and Frank Roberts. Realty consists of Oriole, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, in West Mountain Mining District, about nine miles southwest of Murray.

The total of Bingham July shipments is 2,634 tons, about one-third of normal; of which Old Jordan and Galena is credited with 725, Old Telegraph 432, Petro 136, Fortune and Keystone 150, Spanish 100, North Last Chance 75, Northern Chief 53, Phoenix 40, Montezuma 40, York 40, Redwing 30, Greeley 20, Neptune 20.

MORNING STAR.—A month ago Andrew Peterson took a lease on this Bingham property, in Carr Fork, and now reports a body of mineral carrying 30% iron, 5% lead, 14 oz. silver, \$2.40 gold. The uncovering was made in an upraise from the tunnel. A second find at the surface is a 14-in. seam of carbonates, of 20% lead, 20 oz. silver. Between them he expects to make steady shipments in the near future.

SUMMIT COUNTY.

(From Our Special Correspondent.)

ANCHOR.—A series of tests with different concentrating devices are in progress to ascertain which will win the highest percentage of values on Anchor low grade. The Risdon people, of San Francisco, came forward with a Johnston concentrator; L. C. Trent & Company, of Salt Lake, tried their vanner; the Ellis concentrator appeared on the scene, and last week the Mine and Smelting Supply Company, of Denver, entered the list with the Wilfley table. Probably it will be another week or longer before the Anchor folk will make known their conclusion—which concentrating device gives the best results in handling their mineral.

ONTARIO AND DALY.—On Saturday Superintendent Chambers stated that he expected in two weeks the fires will be drawn from under the boilers and both properties closed, never to resume so long as silver rules below 60c., for there is no profitable margin in these mines at a lower figure. It should be remembered that Ontario and Daly are dry silver mines, i. e., lean in lead. Mr. Chambers continued: "I more than ever regret the necessity that compels the abandonment at this time, on account of the excellent showing in both properties. Neither has looked so well for more than a year and in the new lower levels the ore deposits are big and well exploited."

SILVER KING.—With Ontario and Daly idle, Silver King will be the main support of Park City. The management announces that mining will continue, as at present. Underground all is as well as can be desired, with ample reserves, which are steadily being added to. Here the ore carries good lead values; hence the profit is not far under that of a year ago.

TOOELE COUNTY.

(From Our Special Correspondent.)

GOLDEN GATE.—Contractors are well ahead of schedule time in preparatory work for the mammoth steel cyaniding mill. The 4,000 ft. of grading necessary to tie the plant to the Salt Lake & Mercur Railroad, much of it heavy rock work, was completed nine days prior to date specified in the contract, thus securing \$225 bonus to the contractor, T. B. Rhodes. A memorable blast was fired in excavation for foundation a few days since, when 300 holes, each about 20 ft. deep, extremes distant 300 ft., were first sprung by giant powder, and afterward the chambers so formed were filled with some 6,500 lbs. of black powder and exploded by electricity, throwing loose 5,000 cu. yds. of rock, a large part of which was dropped within a few feet of where wanted for the retaining wall. There is reason to believe the mill will be complete, ready for the first test run, on November 15th. At the mine Superintendent Duncan McVichie has assumed charge, and John McDonald, who worked under him in Wisconsin, is head foreman. The main shaft is being enlarged to 5½ x 14 ft. in the clear and is to have two compartments and a ladder-way. All told the underground force is increased 75 men and more will shortly be added.

MERCUR.—In spite of breaking the crusher 10 days since the mill has not closed down, though cyanide shipments were curtailed. The old crusher was available. The damage will soon be repaired.

MONO.—A contract has been let for a gravity 3-in. pipe line to convey water from Silver Springs, in Soldier Canyon, to this dry canyon mine. There were nine bidders, Rhodes Bros. securing the award.

UTAH COUNTY.

(From Our Special Correspondent.)

JORDAN RIVER ELECTRIC GENERATING COMPANY.—This company proposes to make economic use of the waters of Utah Lake and the fall at Jordan Narrows. The practicability of the scheme is favorably passed upon by R. M. Jones, also, it is said, by Irving Hale, each a prominent electrical engineer. Allan G. Lamson is the promoter of the enterprise, and has succeeded in securing a contract with the Boston & Mercur Company to supply needed power to La Cigale mine and mill from December 1st or, sooner. La Cigale is 22 miles from power station, and is the most distant point to be served, while Mercur town is 18 miles, and a contract for electric lights is about signed and negotiations are in progress to supply Mercur and other nearby mines.

VIRGINIA.

LOUISA COUNTY.

ARMINIUS CHEMICAL COMPANY.—This company has now booked orders for nearly 50,000 tons pyritic ores, for delivery within the coming 12 months. This fact emphasizes strongly the rapid increase in the manufacture of sulphuric acid throughout the Southern States, nearly this entire tonnage being sold to go south and west of Washington. New works for the manufacture of sulphuric acid are being erected at several points in the South by engineers of long practical experience, with modern ideas and large capital, thus guaranteeing to the American mines stable demands for large amounts of pyrites in the future. It may fairly be stated that throughout the South double the output of commercial fertilizers is assured for the next year over any year up to this time; and in this line of manufacture the South seems destined to lead all sections of our country.

WASHINGTON.

PIERCE COUNTY.

BOND.—Mr. A. Dunn has just left Pierce City, where he has been almost continually for the past year. He is one of the owners of the Bond mill, the pioneer quartz mill of the Oro Fino. The mill was moved from its original location last fall, since which it has been running steadily. It is owned by the Crescent Mining Company, which also owns five claims, all on the same lead. So far as the vein has been uncovered, it runs about 12 to 18 in. wide, the rock all being practically free milling. Where the mill was originally located the quartz was furnished from a tunnel. The lead had been exposed by placer miners 20 or 25 years ago, the gulch up which it ran having been worked out 200 yds. or more. It was near the top of the hill, and the tunnel did not give much depth, so when the mill was moved a shaft was sunk and the rock has been taken from it since. The Bond is the only mill in the Oro Fino District except Willis Sweet's five-stamp mill, recently completed. The syndicate of which Judge Sweet is the head shipped their mill in and bought the sawmill that was built near Pierce three years ago, moving the plant to their mine, where the engine is used to run both the saw and quartz mills. It started up about a month ago.

STEVENS COUNTY.

EUREKA CAMP.—There is quite a rush to this camp. On July 11th there were by actual count 33 tents in the camp. A count July 23d showed 85 tents, 9 log buildings, 11 shake structures and one frame building under construction for a hotel. It is two stories, 34 x 40 ft., with an ell for dining-room and kitchen. The difficulty of getting lumber, all of which has to be hauled from Cascade and Grand Forks, B. C., is a great drawback, but this will no doubt be soon overcome by the erection of a sawmill at the camp.

LONE PINE.—The crosscut tunnel is in 130 ft., and taps the ledge at 114 ft.—ledge 16 ft. wide, solid quartz.

NOB HILL.—W. H. Kells, manager of the Nob Hill, Sanspoel and other claims in the same group, has opened the Nob Hill from 39 to 40 ft., but has not yet found the walls, so that the width of the ledge is yet an unknown quantity. Many other claims are being developed, and all are showing up well.

REPUBLIC.—This mine, on a ledge of free-milling ore 30 ft. wide, has two shafts, one down 75 ft. and the other 40 ft., and a crosscut in 220 ft. taps the ledge under the deep shaft at 140 ft. depth. Every 30 ft. there is a cut, showing the ledge the full length of the claim, 1,500 ft. A 100-ton mill has been ordered for this mine.

SURPRISE.—This mine has a 12-ft. ledge running the full length of the claim, 1,500 ft., and through the Pearl.

WEST VIRGINIA.

JACKSON COUNTY.

JACKSON OIL COMPANY.—This company, located at Ravenswood, has been incorporated by W. E. Hoyt, W. S. McKay, J. M. Adams, J. W. Williamson, E. H. Nowell, J. V. Armstrong and M. O. Archer to operate for oil and gas.

PRESTON COUNTY.

BLUE RIDGE OIL AND DEVELOPMENT COMPANY.—This company has been organized at Kingwood to develop oil territory, with a subscribed capital of \$400,000 and an authorized capital of \$1,000,000. The incorporators are Marshall G. Hill and S. R. Mumford, Afton, N. Y.; C. H. Hill, A. H. Leet, E. E. Wilgin, J. H. Roberts and H. M. Smith, Jr., Binghamton, N. Y.; H. W. McKoon, Long Eddy, N. Y.; H. E. Tokey, Walton, N. Y.; G. W. Maraden, Albright, W. Va.

WETZEL COUNTY.

CENTRAL WEST VIRGINIA OIL COMPANY.—This company has been incorporated to develop oil territory by N. E. Whitaker, Col. Morris Horkheimer, Delegates A. E. Kearney, of Calhoun, and L. M. Stephens, of Wetzel, and George J. Lechner, of New Martinsville. The capital stock is \$100,000.

WYOMING.

ALBANY COUNTY.

CORNER MOUNTAIN.—Some important discoveries are now being made on Corner Mountain, near the North Fork of the Little Laramie River, some 30 miles west from Laramie. There is a series of ore bodies running through the entire mountain, on which locations have been made. These ore bodies are between well-defined walls and range from 2 to 8 ft. in thickness. The ore is sulphide in character, and at a depth of 10 ft. averages \$7 gold per ton. There is plenty of water and timber for all purposes and the district is reached by wagon roads of easy grades. While there is no boom over these discoveries, still there are quite a number of people going in.

CARBON COUNTY.

CHARTER OAK.—A cable from London advises that terms for the purchase of this mine have been accepted without further examination and that development work will begin at once. This property was discovered by Messrs. Jones & Williams, and over 100 ft. of work done on it by them. It is now an 8½-ft. vein at the bottom of the shaft; to this size it has steadily increased from a 2-ft. vein at the surface. Work will be commenced at once and pushed until October, when the London parties will come here to inspect the property.

FOREIGN MINING NEWS.

AUSTRALASIA.

NEW GUINEA.

The Australian miners who have been prospecting the rivers of New Guinea for gold with some success have recently suffered extremely from the climate and disease. The numbers of those who remained in the island have been greatly reduced by disease, fevers and dysentery prevailing among them. Recently the natives attacked a camp of white miners, to which a number had gone for safety, and after a short fight captured it, killing all the men whom they found there. The number is said to have been about 60 in all.

QUEENSLAND.

The Mines Department reports the total production of gold in the Colony for June at 61,829 oz., of which 59,697 oz. came from quartz mines and 2,132 oz. from placer workings. For the six months ending June 30th, the total output was 361,225 oz. gold, as against 298,992 oz. for the first half of 1896, showing the large increase of 62,233 oz., or 20.8% this year. This is, we believe, a much greater advance than any other of the Australasian colonies has shown.

VICTORIA.

The gold yield of Victoria for the half-year ending June 30, 1897, was as follows: Ararat, 12,300 oz.; Ballarat, 85,500 oz.; Beechworth, 54,900 oz.; Castlemaine, 27,900 oz.; Gippsland, 54,800 oz.; Maryborough, 28,600 oz.; Bendigo, 91,000 oz., while 4,400 oz. were obtained from unspecified districts, making a total of 359,400 oz.

CANADA.

BRITISH COLUMBIA.

Colonel Baker, Minister of Mines, has given notice of an amendment to the mineral act, which defines the meaning of the phrase "mineral in place." The Minister of Mines has accepted the interpretation of the full court in the Paris Bell case. The section reads: "Rock in place shall be deemed to mean and include minerals not necessarily in a vein or lode, that is when discovered in the same place or position in which it was originally formed or deposited, as distinguished from loose, fragmentary or broken rock or float, which by decomposition is found in wash gravel or sand. Valuable deposits of mineral shall mean and include mineral in place in appreciable quantity, having a present or prospective value sufficient to justify exploration."

(From Our Special Correspondent.)

BRITISH COLUMBIA BULLION EXTRACTING COMPANY.—The location of these reduction works on the south side of Little Sheep Creek, near Rossland, under the direction of Mr. L. H. Webber, is being carried out and the work of clearing the ground has commenced. The object of these works is to buy and great low-grade ores, now considered worthless.

The system which this company intends to use will be a modification of the cyanide process, com-

binning the use of weak solutions with electrolysis. The company has acquired the patent rights for British Columbia of the Pelatan-Clerici process for extracting gold. The class of ores which this custom plant will treat has not heretofore been touched in British Columbia by any process.

Although it has been found by exhaustive experiments that the Pelatan-Clerici process will successfully treat large quantities of certain ores in this camp it is also well known by the promoters of this company that there is a class of ores which it will not be able to handle, but the company will be prepared if necessary to treat other kinds of ore as well. In connection with these reduction works a large concentrator will also be erected.

ABE LINCOLN.—A shaft has been sunk and development work pushed. The main ledge is showing up well. The shaft is in ore, and crosscuts show veins of chalcopyrites, assaying well and increasing in width as depth is reached. The Abe Lincoln is incorporated under the laws of Washington. Its officers are Mr. A. A. Phillips, Olympia, president; Mr. A. E. Burret, Tacoma, vice-president; Mr. E. W. Andrews, treasurer, and Mr. W. F. Newall, secretary, Rossland, B. C.

BRITISH COLUMBIA—AINSWORTH DISTRICT.

(From Our Special Correspondent.)

PILOT BAY SMELTER.—The recent purchase of this property by Braden Bros., of Helena, Mont., acting as Western agents for the Omaha & Grant Smelting Company, of Denver, Colo., and Omaha, Neb., was the beginning of the renewed briskness in the smelting industry of the Kootenay district. The plant will be used for the treatment of Ainsworth, Slocan and Rossland ores. The Omaha & Grant Company have, in addition, acquired a title to the town site and also to the Blue Bell mine and considerable other mining property in the district. The consideration is stated to have been \$175,000, which represented the amount of the mortgage held against the property by the Bank of Montreal.

The previous owner of the properties was Dr. Hendryx, who it is asserted was not an experienced mining man, and hence the failure. The Pilot Bay Smelter was closed upward of a year ago. The plant, although a very good one, is to be enlarged and improved.

The old plant comprised two 80-ton stacks, with a complete concentrator with a capacity of 200 tons every 24 hours. There were also four reverberatory furnaces of 12 tons capacity, or 48 tons in every 24 hours, also a 100-ton blast furnace. With the improvements that are being made the plant will give employment to 200 men. A number of contracts for ore have already been made in the Trail Creek, Ainsworth, Slocan and Nelson Districts.

BRITISH COLUMBIA—WEST KOOTENAY.

WAX EAGLE.—Shipments of ore from this mine have not yet been resumed. It is not known what arrangements have been entered into by the company. The development of the mine continues as usual.

WESTERN CANADIAN MINING & DEVELOPMENT COMPANY.—This company was incorporated in British Columbia with a capital of \$1,200,000, full paid and non-assessable. Its head office is at Revelstoke, and it is operating in the Trout Lake silver mines of West Kootenay and in the Lake of the Woods Gold Fields. Six hundred thousand of the shares are in the treasury, and the proprietors' or promoters' stock is all pooled so that none of it can be sold until after a dividend is paid to the shareholders. The president of the company is Mr. Wm. A. Martel, now of Rat Portage; Mr. Orville D. Hoar, of Revelstoke, is vice-president, and H. A. Brown is secretary-treasurer.

(From an Occasional Correspondent.)

The output of the several months has been as follows: January, \$675,506; February, \$562,833; March, \$677,681; April, \$433,234; May, \$397,797; June, \$482,903.

Some correspondents appear to view the decrease in value per month during the early summer season with alarm. This decrease is not unexpected; it is usual. The Kaslo-Slocan, which has for the past two years produced more values than the rest of the West Kootenay put together, makes a very small output during the period of snow-slides. Nor is the summer season generally in West Kootenay the most favorable season for shipping ore. Each summer season sees more wagon roads and machinery going in, all of which helps to increase the output in the older mines, and to increase shipments from those mines that at present have only precarious trails.

The camp of Rossland is improving in the matter of production. There are now some five or six mines making regular shipments, among them being the Le Roi, with a record of 470 tons in one day. Among the other regular shippers are the War Eagle, Centre Star, Iron Mask and Kootenay-Columbia. The shares of the War Eagle on the Ottawa market are advancing. These things, together with recent heavy transfers to London syndicates, tend toward a firmer feeling in this celebrated camp. Of course there are plenty of "on paper" companies still at work, but whose treasury stock has not as yet succeeded in placing them on a shipping basis, but their failure is not extraordinary considering the surface indications.

In the Nelson division there has been wonderful activity during the past few months. The newly recorded locations of this one division amount to over 100 a week. Moreover, there is a distinct advance in the matter of development and shipment,

Heretofore the great and almost solitary mining feature of this division was the Hall mine and its smelter. Trail shipments are beginning to come in from the smaller properties with fair results, and the common silicious ores from this section are very acceptable to the local smelter, which is now refining its matte to a value of about 97% copper, with a total value of between \$500 and \$600 per ton. A shipment of this product amounting to 160 tons went to Swansea a short time ago.

There is also an increased activity in the pioneer camp Ainsworth. Not a "boom," but a producing and development activity. Owing partially to the closing down of the neighboring Pilot Bay smelter last year, the production of this camp fell behind its previous record. There seems to be very little chance of any further relapse.

The divisions of Nelson and Ainsworth adjoin that of Slocan. The mineral-bearing country is continuous without much partiality over the borders of each division, and the rich silver finds of the Kokanee and the gold of the Alpine are on the boundary lines of these divisions, along the summit between Kootenay and Slocan lakes.

Concerning the Slocan division it might be said that there was a slight tendency toward booming it during the late winter and spring. Prices have been paid which were much too high for legitimate mining. And a good deal of property changed hands while under the snow. The properties bonded at high figures have in a few cases been dropped. This has left a bad impression with outside investors. The Slocan will continue its course as aforesaid after this little adventure, packing out its rich ore in small lots and paying its way toward the time when wagon roads will become a necessity.

A great deal of interest is being taken in the Lardeau country, both from the east by way of Kootenay Lake and Duncan River, and also by way of Arrow Lake and Trout Lake from the west. This is certainly a country of great ore bodies, and must be a flourishing camp when transportation facilities are improved. The chief agents of development in this section are the Horne-Payne Syndicate, which is developing the Broadview, Silver Cup, True Fissure, Old Sonoma and Sunshine claims and constructing concentrators at the town of Ferguson, near the junction of the north and south forks of the Lardo.

In the Cariboo Creek section there is a fair amount of interest and some considerable amount of development going on. Prospectors are working through this range between Slocan and Arrow lakes, but without much result thus far.

Several of the old-time Slocan prospectors have returned from Fort Steele and the East Kootenay country, stating their preference for the more limited field at home. The ranks of the prospectors have grown very large this season. The whole province promises to be alive with them, but so far no new fields of especial merit have come into view. However, the rainy weather has almost totally blocked prospecting for the past few weeks.

(From Our Special Correspondent.)

CENTER STAR.—Small shipments from this mine continue. The ore is being carefully graded before shipment.

CLIFF.—Mr. D. R. Morrison, assayer at this mine, reports that this company continues its shipments of ore, though in small quantities.

DUNDEE.—This company continues to make good progress in development work, and recently two distinct strikes were made. The engineer who located the Dundee, Mr. J. L. Parker, has invariably maintained that the vein is a true fissure, and recent developments at the mine fully confirm his belief. The Dundee has had its machinery installed for some weeks, and a trial shipment of ore will shortly be made.

HALL MINES.—The first heat of the new large blast furnace in the Hall mines, at Nelson, took place on August 1st with very satisfactory results. Of 210 tons of ore heated 22 tons of matte were produced. Of this 48% was copper, 7,040 oz. were silver, and the balance lead. It is claimed that the new furnace effects a saving of 10% in fuel. This mine is now producing about 200 tons of ore daily. Besides heating its own ores the smelter is doing a large amount of custom work. It is stated by the management that there is a sufficient quantity of ore in sight to run for a very long period—variously estimated from 12 to 18 months.

IRON MASK.—This company continues its shipments without interruption. As a shipping mine it occupies third place in the list. The management is greatly increasing the facilities for shipment.

JOSIE MINING COMPANY.—A suit has been filed in the United States Court, Spokane, Wash., making sensational charges of fraud and dishonesty against F. C. Loring, G. T. Crane and F. E. Snodgrass, of the Josie Gold Mining Company. The company's mine is at Rossland, B. C. The plaintiffs are Eli J. Smith, R. N. Gage, William Knickel, John Wetzel, Jr., John Wetzel, John Loebis, Jacob Schlaefler, Mathias Schneider and Mrs. E. J. Smith, all citizens of Wisconsin. The complaint sets forth that the Josie Mining Company was organized at Neenah, Winnebago County, under the laws of the State of Wisconsin, and upon representations made by Loring, the plaintiffs bought a five-eighths interest in the mine for \$8,000. It is charged that the mine was worked under the supervision of Loring and Crane, who systematically depreciated the value of the property, spent large sums of money uselessly, and did not attempt to develop the property. The plaintiffs

ask for the appointment of a receiver and a restraining order taking entire control of the mine out of the hands of the present management. The value of the Josie mine is now estimated at about \$210,000.

JUMBO AND COXEY.—The Jumbo company has agreed with the Coxeys to install joint machinery.

MONTE CRISTO.—This company is pushing development work.

NEW YORK KOOTENAY MINING COMPANY.—This company owns a claim known as the "Bryan," situated on Deer Park Mountain, about 2½ miles from Rossland. The claim is intersected by the Spokane & Northern Railway (Red Mountain branch) and by the Northport road. Last fall while workmen were engaged on the railroad a blast uncovered a considerable ore body which was at once pronounced unusually rich. Assays varying from \$6 to \$100 have been made from the quartz, which contains gold and silver. The present company acquired possession shortly after discovery.

Work was begun late last fall, but it was not until the present season that the systematic development of the property commenced.

There is now a shaft 50 ft. deep, about 500 ft. to the north of the first discovery. This shaft is more or less of a tentative nature, as it does not appear to be on any well-defined lead, but on the ledge where the discovery was first made there is a cut of several feet which exposed the dip of the lead. This was followed for a short distance, when it was found that the lead went down vertically. This being ascertained, an upraise was made from this point to the surface. Water came in on this cut, but it is now the intention of the management to install a steam pump and hoist. The country rock is a quartz, diorite and calcite. Work is under the direction of Mr. J. P. Boyd, vice-president and manager of the company. The other officers are Mr. A. Murray, president; Mr. E. E. Gedney, treasurer, and Mr. J. C. Weston, secretary.

NICKEL PLATE.—Mr. Cunningham, superintendent of this mine, reports a discovery of some very rich sulphides.

NOVA SCOTIA.

BAKER.—One of the big returns is from T. N. Baker's mine, at Gold River. From 8½ tons were obtained 82 ozs. 14 dwts. and 2 grains of gold.

BLUE NOSE.—This Goldenville company cleared up for the first half of July 149 oz. of gold. The mine never looked as well as at present.

DUFFY.—Mr. A. K. McLean, of Lunenburg, has made an offer of \$8,000 for this property, at Pleasant River.

GOLDENVILLE.—Geo. A. Hirschfield, who has two areas leased from Messrs. Hardman & Stuart, obtained for the month of June 228 oz. from 172 tons of ore. His profits for the month were about \$3,000. This month he is erecting a small steam plant on the ground and will be able to mine but little. These handsome returns of Hirschfield's are from two of the many long-abandoned leads in this district.

MAYFLOWER BELT.—A hitch has taken place in the sale of the Hardman-Stuart consolidated areas to Major R. G. Leekie's Company, and they are now threatening action for the recovery of the deposit of \$10,000 paid, on the grounds that there was not the width of ore in the "Mayflower" belt, as represented by the sellers.

MOUNT UNIACKE.—A find of gold of considerable importance is reported from Lewis Lake. It was made some days ago by Peter Carrigan, who is well known in that vicinity by mining men.

NEW GLASGOW COMPANY.—This concern is erecting hoisting and pumping gear on the old meridian south belts of ore. The ore from the north lead never looked more promising; some rich stuff was raised from the deepest shaft last week.

TOUQUOY MINING COMPANY.—This company has made two unexpected finds during the past month. On July 9th John Reynolds struck a pocket of gold estimated to contain 10 oz. On the 20th he repeated the performance. The last pocket contained about 30 oz. of gold.

MEXICO.

SONORA COUNTY.

AJO MOUNTAIN.—A Cochise prospector, W. H. Randall, has located some rich copper and gold claims in the Ajo Mountains, Sonora. Assays of 8 ft. cropping show copper and gold, with a good strong ledge cropping out for several hundred feet. William C. Miller, of Brookline, is interested and is now completing the papers necessary to work the find.

SOUTH AMERICA.

COLOMBIA.

LA TETA GOLD MINING COMPANY.—Negotiations are pending for the sale of part of the stock of this company of Colombia. The capital of this company is \$1,000,000, and the par value of the shares \$5. There are said to be about 860,000 acres in all, about 12 days from New York. The elevation is 5,000 ft. above the level of the sea, and the temperature of the country is between 75° and 80°. There are five lodes which are said show an average of \$6.25 per ton. The ore is said to be free milling. The president of the company is Dr. William Brandreth; secretary, William L. Boyd, and manager, J. K. Turner. The company was incorporated under the laws of West Virginia, and the property is in the State of Cauca, Colombia.

COAL TRADE REVIEW.

New York, Friday Evening, August 13.
Statement of shipments of anthracite coal (approximate) in tons of 2,240 lbs., for the week ending August 6th, 1897, compared with the corresponding period last year:

	1897.		1896.
	Week.	Year.	
Pennsylvania Railroad.....	62,745	1,915,094	2,132,684

PRODUCTION OF BITUMINOUS COAL in tons of 2,000 lbs. for week ending August 6th, and for years from January 1st, 1897 and 1896:

	1897.		1896.
	Week.	Year.	
Shipped East and North:			
Allegheny, Pa.....	52,600	1,434,263	1,388,591
Barclay, Pa.....	608	26,645	26,671
Beech Creek, Pa.....	87,067	2,266,069	1,830,937
Broad Top, Pa.....	9,403	263,979	254,984
Clearfield, Pa.....	102,425	2,746,957	2,933,428
Cumberland, Md.....	91,358	2,271,335	2,292,188
Kanawha, W. Va.....	1123,919	1,828,600	2,036,511
Phila. & Erie.....	659	169,730	45,001
Pocahontas Flat Top.....	193,211	1,437,368	2,263,716
Totals.....	561,250	12,441,937	13,022,129

	1897.		1896.
	Week.	Year.	
Shipped West:			
Monongahela, Pa.....	2,361	742,511	616,711
Pittsburg, Pa.....	46,684	1,164,694	1,199,622
Westmoreland, Pa.....	67,389	1,236,838	1,183,045
Totals.....	116,384	3,144,043	2,999,378

Grand totals..... 677,634 15,588,980 16,021,507

Production of coke on line of Pennsylvania Railroad for the week ending August 6th, 1897, and year from January 1st, 1897, in tons of 2,000 lbs.: Week, 89,730 tons; year, 2,646,711; to corresponding date in 1896, 2,654,347 tons.

For week ending July 21st. For week ending July 17th.

Anthracite.

It was anticipated that there would be a shortage of bituminous coal through the strike, and that in consequence there would be a firmer tone in the smaller sizes of anthracite. Up to now, however, no great demand that can be traced to the strike in the bituminous regions has been noticed. There is no doubt a fairly good market for buckwheat and pea, but prices have not advanced as yet in consequence. Prices do not fluctuate, and the standard for the past month seems to have been unvaried.

It is anticipated that should the bituminous strike not be settled in the near future, the price of small sizes of anthracite must necessarily advance. In any case, with the promise of a return of business prosperity in the early autumn, there is likely to be a distinct hardening of prices, so that the present is an unusually favorable moment to lay in stocks. Meantime business is very quiet.

Prices of anthracite coal remain as follows: Broken, \$4; egg and chestnut, \$4.25; stove, \$4.50 per ton f. o. b. New York.

Bituminous.

The Atlantic Seaboard soft coal trade has been in a fairly active condition, demand being generally distributed through all the consuming territory. Indeed, there is a more healthy tone to the market just now than has been apparent for some time. It has not affected prices, however, in the least, but the demand seems to be a genuine and a healthy one, though there are stimulants at work that are not usual to the trade, such as the strike and the ocean freight market, which is abnormally high; and, moreover, the summer is certainly the time for getting forward the heavy shipments upon contracts taken.

It is difficult to itemize the conditions of the different consuming localities one by one. The far East is taking a good supply of coal, and the territory west of Cape Cod is also calling for a considerable amount of coal. New York harbor trade is excellent, and there is a fair amount of coal being called for at points local to the shipping ports.

South American business is very quiet, as is usual at this time of the year, the principal shipments there being during winter.

All rail trade is active. Transportation to tide is not quite up to the mark, though there is not much complaint regarding it, and there seems to be plenty of coal on hand to take care of things, there not being the need at this time for coal on the way except in a few cases.

Car supply is poor over and above the rolling stock controlled or owned by each individual concern.

The coastwise vessel market is weaker, and the supply of vessels is slightly in excess of the demand. There have been several charters under the prevailing rates, and it looks now as if that would be the usual thing. This will bring into play the limited price orders, and may keep rates from falling to some extent, or to the usual summer figures.

We quote: Freight from Philadelphia to Boston, Salem, Portland and Gardner, 65c. and towages; Providence, New Bedford and Sound ports, 60c.; Wareham and Portsmouth, 70c.; Lynn and Newburyport, 75c.; Dover, 90c. and towages; Saco, 80c. and towages; Bath and Bangor 55c. 70c. Five cents above these rates are demanded for further lower ports.

NOTES OF THE WEEK.

Coal receipts at San Francisco in July were 116,614 tons. For the seven months ending July 31st

they were: Eastern anthracite and Cumberland, 6,758 tons; Oregon and Washington, 237,346 tons; Alaska, 1,000 tons; British Columbia, 282,136 tons; Japan, 160 tons; Great Britain, 42,535 tons; total, 822,137 tons, showing an increase of 71,233 tons over the corresponding period in 1896.

Cleveland. Aug. 11.

(From Our Special Correspondent.)

The announcement made to-day by the general freight agent of the Baltimore & Ohio Railroad Company, that the regular rate on coal will prevail between Cleveland and the Pittsburg and West Virginia coal-fields, will, it is believed, have the effect of reducing the price of steam coal in this city. Up to the present there has been a fair supply of coal for manufacturing purposes, and it was asserted to-day by operators in the Pittsburg district that the supply would continue to be equal to the demand.

The lake shippers are experiencing little, if any, difficulty in filling their season contracts, but in every instance they have been compelled to pay advanced prices. Since the freight rate has been reduced by the Baltimore & Ohio, however, the shippers believe they will be able to supply their customers for less money.

Pittsburg. Aug. 12.

(From Our Special Correspondent.)

Coal.—The situation is so mixed up that facts are very difficult to obtain; the daily papers all seem to have a different way of furnishing the movements of the miners. There is no shortage of coal nor has there been any advance in prices during the week. There are many million bushels of coal in the pools and in the harbor that are for sale. A great effort is being made on De Armit's plants. The coke miners of the Connellsville District still refuse to join the strikers; they have a good thing and appear to know it. Among the new mines to be opened on the Monongahela river, De Armit will open one, for which the surveys are being made. He has purchased 2,000 acres of coal, which will be opened on the Dunlevy farm, one mile above Bellvernon. At the present time a good buyer can purchase the best run of mine coal for 60¢ at mine, although a 75¢ rate is quoted to the average buyer. Another feature of the strike is the effect which it has exercised upon the coal trade along the south shore of Lake Erie. Just after the strike began, coal advanced in Cleveland from \$1.65 to \$2.25@2.50; now coal can be bought at \$1.40@1.50.

Connellsville Coke.—The trade suffered a slight falling off in the demand as well as in production. The detailed production shows 18,399 ovens in the region; 11,695 active and 6,704 idle; the estimated output for the week being 1211.11 tons. There were no changes in the list of active ovens with the exception of the blowing out of 84 ovens at Atlas for repairs, but the working time of all the plants was increased. The general trade East was light and shipments to Johnstown were considerably lighter. Western shipments were a little light last week, owing principally to the fact that a couple of large furnaces have been overstocked with coke. These variations occur occasionally and while of considerable importance last week, are expected to pass over in a few days. The trade is in good condition, and the outlook is favorable. In the running order of the ovens in blast 4,901 ovens made six days; 6,326 ovens, five days; 403 ovens, four days and 50—Solvay plant—seven days; an average of 5.41 days. Shipments from the region for the week amounted to 6,445 cars, distributed as follows: To Pittsburg, 2,955 cars; shipped West, 2,460 cars; sent East, 1,040 cars; total, 6,455 cars. Prices are nominal. Furnace coke is \$1.25@1.40.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Aug. 13, 1897.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From Jan., '96.	From Jan., '97.
	Aug. 14, 1896.	Aug. 13, 1897.		
Anthracite.	39	24,100	23	12,750
Coke.	130	155,950	107	150,359
Charcoal.	23	6,600	15	3,250
Total.	192	186,650	145	166,359
				6,176,128
				5,415,856

There is a more confident feeling in the iron trade, as shown by a marked increase in the number of inquiries for material, but it cannot be said to have resulted in any actual increase in the volume of business done. Nor is it yet sufficient to produce any increase in prices, which continue everywhere extremely low, but not so low as to prevent some shading when a good contract is to be secured. The fact is that the pressure for business is very great, and any demand is sure to be met by offers from numerous bidders.

Perhaps the most encouraging feature is a reported increase in the volume of small orders. These are at the foundation of business, and are certainly an indication that there is more work going on or in sight than for two years past. Besides this it is evident that the larger manufacturers have been putting in stocks of raw materials more freely than for some time past.

Better reports come from the railroads, which are looking for an increase in business from the large grain traffic expected this fall. Many of

them have been run almost as closely as is at all possible, and will be in the market for a great deal of material as soon as their financial condition will permit.

We mentioned last week a rumor current in Philadelphia to the effect that a Pittsburg concern had taken recently very large orders for rails to go to England and Russia. This has been since denied on behalf of the company mentioned, and it is stated that no orders of the kind have been placed. It is true, however, that a contract for steel rails for export to England has been taken by a Cleveland company. As to future export business, inquiries for bridge material for Japan and for some railroad material for China are now on the market.

The total exports of pig iron from the United States, as reported by the Bureau of Statistics, for the fiscal year ending June 30th, amounted to 168,890 tons, while the rail exports were 107,891 tons. Both figures will probably be increased during the current year.

NOTES OF THE WEEK.

The American Pig Iron Storage Warrant Company reports that its receipts of pig iron during the month of July were 14,600 tons, and deliveries 3,700 tons. For the seven months ending July 31st the receipts were 59,200 tons and the deliveries 27,400 tons. The stock of iron on hand in yards on August 1st was 232,500 tons.

John E. Searles and others, of New York, have leased from the Orinoco Company of Faribault, Minn., the deposits of iron ore in its concessions on the Orinoco River in Venezuela. These concessions are part of the grant made by the Venezuelan government in the Minnesota concern two years ago, and which that company has since been exploring. By the terms of the lease the lessees are compelled to mine at least 500,000 tons annually and to pay a royalty of 12½¢ a ton. Active mining must begin by July, 1898. The company proposes to mine not less than 3,000,000 tons a year after two years. Mr. James E. Yorke, who is to be the manager, has just returned from a trip of investigation to Santa Catalina, where the mines are located.

The Commercial Club, of Birmingham, Ala., has appointed a committee to lay before the Secretary of the Navy the advantages of Birmingham as a location for a government armor-plate factory. The members of the committee are Rufus N. Rhodes, chairman; Sol Haas, president of the Sloss Iron Company; A. M. Shook, vice-president of the Tennessee Coal, Iron and Railway Company; Jas. G. Caldwell, president of the Birmingham Rolling Mill Company and Steel Works; W. T. Underwood, president of the Mary Pratt Furnace Company; T. H. Aldrich, late member of Congress from the Birmingham District, and Dr. Wm. B. Phillips, metallurgical chemist. This committee proposes to lay before the Board the following propositions:

1. The cheapest pig iron in the United States is made in the Birmingham District.
2. The railroad facilities for the transportation of all kinds of material, whether to the furnaces or to the seaboard, are all that could be asked.
3. Steel of any quality can be made at Birmingham more cheaply than at any other point in the United States.
4. Armor plate of any desired quality can be made at Birmingham profitably for the price now named by the government, viz., \$300 per ton.
5. If the government decides to establish its own armor-plate works there is no place in the country where this can be done to better advantages as to cost than at Birmingham.

New York. Aug. 13.

Local sales-agents report an increased demand for all classes of iron with a marked stiffening in prices, although no actual advance has as yet occurred. Orders are mostly for small lots for speedy delivery, and although most of the large concerns are running full time the smaller firms have not as yet received enough business to warrant any advance in prices.

The high ocean freight rates which have ruled recently have still further advanced from 1s. to 3s. per ton during the past week, which has seriously handicapped the export trade especially in old material, orders for quantities of which have been canceled.

Pig iron still continues to be exported in quantities, shipments of one of the prominent dealers amounting to about 2,000 tons during the past few days.

Pig Iron.—The market for pig iron has strengthened considerably during the past week, with a firmer tone in prices. Southern iron is quiet, with prices unchanged, with the exception of No. 2 soft, which we quote at 25¢ less than last week, although it is very scarce in this market.

Quotations are: Northern No. 1 X Foundry, \$11.50@12 per ton; No. 2 X Foundry, \$10@11; No. 2 plain, \$10@10.50; gray forge, \$9.50@10; Southern No. 1 Foundry, \$10.50@10.75 per ton; No. 2, \$10@10.25; No. 1 soft, \$10.50@10.75; No. 2 soft, \$10.00@10.25; gray forge, \$9.50@9.75; Basic, \$10.50@10.75. All prices are for tidewater delivery.

Cast-Iron Pipe.—The trade is at a standstill except for small lots, with prices showing a firmer tone.

Spiegeleisen and Ferro-Manganese.—Local trade continues quiet, with most of the business confined to domestic ferro, there being little

foreign material in the market. Quotations are: Spiegeleisen, 20%, \$19@19.50; ferro-manganese, 80% foreign, \$46, delivered at buyer's mill.

Steel Billets and Rods.—Trade in billets has increased during the past week, with prices a trifle higher than our last quotations. Wire rods continue quiet, with prices unchanged. Quotations are \$16.25@16.50 for billets at tidewater and \$20, nominal, for rods at mill.

Merchant Iron and Steel.—Trade continues nominal, with prices unchanged, although, as a prominent dealer stated in an interview, "There is an undercurrent of good business which has made itself felt, although it remains hidden." Quotations are: Common bar, 1@1.05¢; refined, 1.10@1.15¢; soft steel bars, 1@1.10¢; steel hoops, 1.25@1.35¢; steel axles, 1.50@1.60¢; tire steel, 1.05@1.10¢; spring steel, 1.40¢, base; links and pins, 1.50@1.60¢; cotton ties, 60¢ per bbl. at mill.

Plates.—Transactions in plates have showed a marked increase during the past week with prices stationary, with the exception of firebox, which has receded a little since our last quotation. We quote for universal mill plates 1.10@1.15¢. For steel plates prices are: Tank, 1.10@1.15¢; boiler shell, 1.20@1.30¢; flange, 1.35@1.40¢; firebox, 1.50@1.60¢, and 2.25@2.50¢ for locomotive firebox, according to quality. Charcoal iron plates are 2.25¢ for shell, 2.75 for best flange and 3.25 for firebox. Rivets are 2.25@2.50¢ for iron and 1.75@1.85¢ for steel. Prices are for tidewater delivery in large quantities.

Structural Iron and Steel.—There is a general improved outlook noticed in structural material, notwithstanding that no large orders were placed during the week. Prices are unchanged but buoyant. We quote for angles, 1.10@1.15¢; tees, 1.25@1.35¢; channels, 1.15@1.25¢. The price of beams, New York delivery, is 1.15¢ for ordinary sizes, 1.20¢ for 20-in., and 1.25¢ for 24-in., carload lots.

Steel Rails and Rail Fastenings.—The business done during the past week has been small, with a better tone in prices, which have remained steady. Quotations for steel rails are \$18.50@19 per ton for standard sections and \$23 for girder rails. Lighter rails are figured on by a reliable concern as follows: 12-lb. rails, \$26 per ton at mill; 16-lb., \$24, 20 lb., 25-lb. and 30-lb., \$22 per ton.

Trade in rail fastenings has brightened up, with prices for angle bars and spikes advancing. Tidewater quotations are: Angle bars, 1.20@1.25¢; spikes, 1.50@1.60¢; bolts, 1.75@1.85¢; square nuts, 1.80@1.85¢; hexagon nuts, 1.90@1.95¢.

Wrought-Iron Pipe.—Business remains fair although the export trade has suffered from the advance in ocean freight rates. Discounts are as follows: For plain pipe, out of store: 1½ in. and over, 67, 10, 10, 10 and 10%; 1¼ in. and under, 57, 10, 10, 10 and 10%. Galvanized pipe, 1½ in. and over, 55, 10, 10, 10 and 10%; 1¼ in. and under, 50, 10, 10, 10 and 10%. For fair-sized orders these discounts are made with an additional 5% for less than carload lots. For carload lots this additional discount is 7½% to 10%.

Nails.—Trade in nails is the exception to the general bright outlook in the iron market. Prices are weaker, with but little inquiry. For carload lots on dock here \$1.40 is quoted, while smaller quantities bring \$1.50@1.60 per keg. In cut nails there is slightly more business doing, and prices are \$1.20 per keg for carload lots at mill and \$1.30 on dock, New York. Smaller quantities are being sold at \$1.40.

Old Material.—Although high ocean freight rates continue to hurt export trade the domestic market has been firm during the past week with prices stronger. Quotations are: Iron T rails, \$12.25@12.50 per ton; steel rails, \$9@10; No. 1 wrought scrap iron, \$10.50@12; hammered car axles, \$15.50@17.50 all f. o. b. cars; car wheels, \$9@10 per ton, delivered at buyer's works; machinery scrap, \$9@10; wrought pipe and tubes, \$7@8, delivered, New York; wrought turnings, \$8@9; cast borings, \$6@7; burnt iron, \$5@6 per ton, delivered at mill.

Buffalo. Aug. 11.

(Special Report of Rogers, Brown & Co.)

A steady run of small business in amounts of 100 and 200 ton lots, with a few reported sales of 1,000 tons each, make up the week's business in this territory. The smaller orders are mostly for prompt shipment. Owing to this and to the call for shipment on orders placed some time ago, the stocks at furnaces in this district continue to decrease. There is sharp competition over every order placed. The general feeling is that foundrymen have a little more work and are hopeful of a gradual improvement in business from now on. We quote below on the cash basis f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$10.50; No. 2 strong foundry coke iron, Lake Superior ore, \$10; Ohio strong softener No. 1, \$10.50; Ohio strong softener No. 2, \$10; Jackson County silvery No. 1, \$14; Southern soft No. 1, \$10.75; Southern soft No. 2, \$10.50; Niagara malleable, \$10.50.

Cleveland. Aug. 11.

(From Our Special Correspondent.)

Iron Ore.—That the entire volume of ore transactions this year will slightly exceed those of 1896 is the belief of the dealers of this city. While the market is very quiet now as compared with earlier in the season, the sales made last week compared favorably with those of the preceding week. Small lots of both Bessemer and non-Bessemer were sold.

Considerable ore is being brought down from the head of the Lakes, and it is said that the movement will be much heavier later in the season. The Lake freight rates remain unchanged, 50c. from Lake Superior ports and 40c. from Escanaba. Following are the prices of ores: Specular and magnetic, Bessemer quality, \$3@3.75; specular and magnetic, non-Bessemer quality, \$2.50@2.75; hematites, Bessemer quality, \$2.50@3; hematites, non-Bessemer quality, \$2@2.50.

Pig Iron.—A few sales of foundry irons are reported, but none of them were large. Some Bessemer has changed hands, but the other varieties are not lively. As the market is not strong enough for any advances in prices and as lower prices are hardly possible without loss, the quotations are the same this week as they have been for a month past. They follow: Lake Superior charcoal, \$13.25; Bessemer, \$9.75@10; No. 1 foundry, \$10.25@10.50; No. 2 foundry, \$9.75@10; No. 1 Ohio Scotch, \$10.40; No. 2 Ohio Scotch, \$9.90; gray forge, \$8.50@8.75.

Philadelphia. Aug. 13.
(From Our Special Correspondent.)

Pig Iron.—The consumption of iron is increasing enough to warrant makers in withdrawing some remarkably low quotations made within two weeks on ordinary brands. The larger sales, however, are too few in number to encourage any advance. Makers are too anxious to sell and in fact consumers are being solicited to a degree and in a manner which makes them feel quite indifferent about buying more than is needed for current requirements. We hear talk about big business in other markets, but the market here is rather quiet. Higher prices are confidently predicted, but there is nothing to count on at present. Quotations continue at \$11.75@12.50 for No. 1 X Foundry and \$10.75@11.25 for No. 2 X Foundry; plain is \$10.50; standard mill iron is \$10@10.50 and ordinary, \$9.50; Basic is \$10.50; low phosphorus, \$14.50; Bessemer can be had at \$11.

Billets.—A very large transaction in billets took place last week because of the upward tendency. Manufacturers are giving it out that large orders are being quickly and quietly placed at Western mills. To-day's asking figures are \$16.50@16.75. Must users are in need of stocks.

Merchant Bar.—Our city and near-by mills have picked up a quite a lot of business within a few days. Reports received from country mills are more encouraging, but the volume of business is considerably under capacity. Refined bars are 1'05@1'15c.; steel bars, 1'10@1'20c.

Sheet Iron.—A larger amount of sheet iron has been sold during the past week, but the sum total is not such as to harden prices. A good deal of common sheet stock is being called on at present.

Pipes and Tubes.—A fair demand exists for merchant boiler tubes.

Merchant Steel.—Work into which merchant steel enters is expanding, but prices do not change.

Plate and Tank.—To say there is an abundance of plate mill work would be putting it too strong, but the fact is, a good many small buyers have taken alarm apparently and are hurrying in their orders for autumn work. On large orders tank plate is quoted at 1'12½c., but better is done. Orders for universals were sent to mill at 1'10c. Flange is quoted 1'30c., but better figures can be made.

Structural Material.—This week's business was mostly for small bridge work for quick delivery. Angles are 1'10c., beams and channel, 1'25c.

Rails.—The same characteristics continue. The market is quiet and prices are firm. Repairing requirements are more urgent for New England and some South Atlantic coast lines.

Old Rails.—Old iron rails are \$11.50 and old steel rails \$10.50.

Scrap.—Heavy steel scrap is wanted and yardmen find no difficulty in selling it at \$10@11. Choice railroad scrap continues at \$11@12; No. 1 scrap, \$10; machinery, \$9@10; boiler and tank clipping, \$10.

Pittsburg. Aug. 12.
(From Our Special Correspondent.)

Iron and Steel Trade.—Business has been more active in most departments; dealers are evidently making preparations for a heavy fall and winter trade. Iron dealers without exception report a large inquiry for leading products. At the same time extensive preparations continue to be made to meet the increasing requirements of the trade. These conditions and the knowledge that stocks in the hands of consumers are light, and that for some time retrenchment and economy have cleared the way for an expansion of consumptive requirements, have induced dealers to enter upon the work of preparation for the fall trade with a degree of confidence and hopefulness greater than that which marked the outset of any season for several years past. The rising tide of business activity is shown by increased bank clearances and railroad earnings and expanded bank loans, etc. A very encouraging feature of the market for iron and steel is the improved feeling which is being manifested in finished material. After so long a period of irregularity in demand and weakness in prices, the firmness of a particular branch of trade is certainly encouraging. While most of the large plants throughout the country have more orders on their books than has been the case for a long time and the demand for the finished forms of material is in-

creasing from day to day, there is still room for improvement.

For sheet bars: The demand is active and prices fully maintained. The July sales aggregated 25,150 tons. In steel rails there was a fair local demand, with contracts signed for regular shipments by river when the stage of water will permit; the rails are loaded on barges at the works on the Monongahela and towed to their destination. Contracts have been made for large shipments to New Orleans and St. Louis at rates considerably below railroad rates.

For steel wire rods: Prices improving; sales made at \$20.50 cash. Wrought iron and steel pipe is in moderate demand; the plants in Pittsburg and vicinity are all busy.

For wire nails: The market is active and an improvement is looked for in the near future; prices normal, \$1.25@1.27.

The volume of business has been steadily maintained; holders of No. 1 grades of iron are firm, and some dealers are asking more money. There seems to be a better feeling generally, the undertone of the market is stronger, and there is no talk of concessions. Producers have set the figures which buyers have to pay. There is a continued active demand for sheet bars; sales aggregate 10,000 tons at about last week's prices.

COKE, SMELTED, LAKE AND NATIVE ORE.		SHEET BARS.	
Tons.	Cash.	Tons.	Cash.
10,000 B. S. to Jan. V.	\$9.25	6,000 Delivered, Pitts.	\$16.80
5,000 B. A. to D. Pitts.	9.90	3,000 Delivered, Pitts.	16.95
5,000 B. S. O. N. P.	9.41	1,000 Delivered, Pitts.	16.75
3,000 M. I. A. S. O. P.	8.60	SKELE IRON.	
3,000 B. S. O. Pitts.	9.60	800 Sheared, Pitts.	\$1.25 4 m.
2,000 M. I. A. S. Pitts.	8.75	600 W. G., Pitts.	1.10 4 m.
2,000 M. I., all ore, P.	8.75	500 N. G., Pitts.	1.10 4 m.
1,500 M. I. S. O., Val.	9.20	SKELE STEEL.	
1,000 Bess., S. O. P.	9.30	800 N. G., Pitts.	\$0.95 4 m.
1,000 Bess., S. O. Pitts.	9.60	500 W. G., Pitts.	0.95 4 m.
1,000 Bess., prompt, V.	9.00	500 Sheared, Pitts.	1.10 4 m.
1,000 B. S. O., Val.	9.25	MUCK BAR.	
500 Mill Iron, S. P.	8.75	250 Neutral, Pitts.	\$17.50
200 No. 1 Fdy., Pitts.	10.50	STEEL WIRE RODS.	
75 No. 2 Fdy., Pitts.	9.50	800 Delivered, Pitts.	\$20.50
50 No. 1 Silvery, P.	13.25	FERRO-MANGANESE.	
50 No. 2 Silvery, P.	11.90	50 80%, Pitts.	\$46.00
CHARCOAL.			
50 Cold Blast, Pitts.	22.00	OLD RAILS.	
50 No. 2 Fdy., Pitts.	15.30	500 I. R., gr., Pitts.	\$11.50
25 Cold Blast, Pitts.	21.00	500 S. R., gr., Pitts.	9.45
25 Cold Blast, Pitts.	21.50	300 I. R., gr., Pitts.	11.50
25 No. 2 Fdy., Pitts.	15.30	300 S. R., gr., Pitts.	9.50
BLOOMS, BILLETS, SLABS.			
Tons.	Cash.	SCRAP IRON.	
7,500 Bill., A., D., mill.	\$14.50	350 Cast Sc., gr., Pitts.	\$8.50
2,900 Bill., A., S., mill.	14.50	300 No. 1 W. R., gr., Pitts.	11.00
2,900 Bill., A., mill.	14.00	300 No. 1 W. R., net, Pitts.	10.00
2,000 Bill., A., S., mill.	14.40	100 W. trns., net, Pitts.	6.00
800 Bill., A., O., mill.	14.65	100 Bus. Sc., net, Pitts.	8.25
750 Bill., A., S., mill.	14.65		
500 Bill., A., mill.	14.25		
500 Bill., prompt, mill.	14.90		
300 Bill., prompt, mill.	14.25		

METAL MARKET.

NEW YORK, Friday Evening, August 13, 1897.

Gold and Silver.

Price of Silver per Ounce Troy.

August.	August.				August.	August.			
	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.		St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
7	4 86¼	26	56¾	.436	11	4 85½	25¾	55½	.429
8	4 86¼	25½	56¾	.435	12	4 85¼	25¾	55¾	.431
10	4 85¾	25¾	55¾	.428	13	4 85½	25¾	55¾	.431

The silver market continues very sensitive, with rapid fluctuations in quotations. While there are some reactions, the general tendency seems downward. Lack of buying strength in the London market is more the cause of weakness than any unusual selling by America, and the talk of speculative liquidation is claimed to be without foundation. Eastern exchanges continue unfavorable.

The United States Assay Office in New York reports the total receipts of silver at 131,000 oz. for the week.

Average Monthly Prices of Silver

In New York and London, per ounce Troy, from January 1st, 1897, and for the years 1896 and 1895.

Month.	1897.		1896.		1895.	
	London Pence.	New York Cents.	London Pence.	New York Cents.	London Pence.	New York Cents.
January	29.74	61.79	30.69	67.13	27.36	59.69
February	29.68	64.67	31.04	67.67	27.47	59.90
March	28.96	63.96	31.34	68.40	28.33	61.98
April	28.36	61.85	31.10	67.92	30.39	63.61
May	27.86	60.42	31.08	67.88	30.61	66.75
June	27.58	60.10	31.46	68.69	30.47	66.61
July	27.36	59.61	31.45	68.75	30.48	66.75
August			30.93	67.34	30.40	66.61
September			30.19	65.68	30.54	66.90
October			29.68	65.05	30.89	67.64
November			29.46	64.98	30.79	67.42
December			29.70	65.24	31.40	66.47
Year			30.67	67.06	29.53	65.28

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

Gold and Silver Exports and Imports At all United States ports, June, 1897, and years from January 1st, 1897 and 1896:

	Coin and bullion.		In ores.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
GOLD					
June.	\$7,623,878	\$650,343	\$130	\$410,640	E. \$6,533,005
1897.	25,000,717	3,715,240	93,188	2,220,314	E. 19,158,551
1896.	42,935,551	25,183,431	100,811	717,635	E. 17,129,296
SILVER					
June.	5,056,663	954,882		2,014,013	E. 2,977,568
1897.	27,894,900	4,419,889	259,150	10,460,481	E. 13,133,660
1896.	29,977,239	5,943,743	685,284	8,527,814	E. 16,144,965

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York For the week ending August 13th, 1897, and for years from January 1st, 1897, 1896, 1895, 1894:

Week	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
1897.	\$28,045,116	2,784,412	25,143,154	1,296,771	E. 49,107,667
1896.	40,361,918	17,601,657	23,963,525	1,738,145	E. 44,968,671
1895.	39,410,082	24,969,262	25,668,198	1,135,768	E. 39,673,890
1894.	81,281,935	11,890,409	22,954,325	1,988,122	E. 91,257,739

Of the silver exported \$30,662 went to South America, \$320 to Germany and the remainder to London. The gold and silver imported came chiefly from Central and South America.

FINANCIAL NOTES OF THE WEEK.

Several circumstances have combined to bring about a more hopeful feeling, and the general tone of business is decidedly better, though the result is shown as yet only to a very limited extent in actual business transactions. The main factor this week is the high price of wheat, which on Thursday reached 90¢ per bushel for September and 80¢ for December, while the present light stocks led to offers as high as 91½¢ for cash wheat. It is almost certain now that the crop will be large and will command a high price, and this is giving all business a considerable impetus. Securities of all kinds are higher in price and a tendency to speculate for a rise is shown to an extent which has not been seen for many months. The general hopeful feeling will certainly have an excellent effect.

The prospect of heavy grain exports, with some purchasing for present account, has kept down sterling exchange, which is almost down to the point where gold imports might be expected. They will hardly come just yet, however, since there are some heavy purchases of securities abroad for American account still to be settled for.

The British Government has notified the Commission that the proposition for a new monetary conference submitted at the recent meeting in London is under consideration, but that no answer will be given before October.

The statement of the United States Treasury, on Thursday, August 12th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	Aug. 5.	Aug. 12.	Changes.
Gold	\$140,173,373	\$141,150,724	I. \$977,351
Silver	33,047,504	31,091,811	D. 1,955,693
Legal tenders	31,982,480	30,339,417	D. 1,643,063
Treasury notes, etc.	31,842,314	31,454,889	D. 387,425

Totals..... \$236,315,401 \$234,040,232 D. \$2,275,169
Treasury deposits with national banks amounted to \$17,468,658, an increase of \$465,306 during the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending August 7th gives the following totals, comparisons being made with the corresponding weeks in 1896 and 1895:

	1895.	1896.	1897.
Loans and discounts	\$510,976,109	\$468,037,600	\$549,562,410
Deposits	573,677,300	477,164,500	626,232,300
Circulation	13,173,000	14,963,200	13,384,700
Reserve:			
Specie	65,480,500	46,545,800	92,129,800
Legal tenders	116,879,600	86,560,900	105,430,400
Total reserve	\$182,360,100	\$133,106,700	\$197,560,200
Legal requirement	143,419,422	119,291,125	156,538,675

Surplus reserve.... \$11,950,678 \$13,815,575 \$41,021,525
Changes for the week this year were increases of \$6,566,200 in loans, \$632,400 in specie, and \$3,187,200 in deposits; decreases of \$4,718,025 in surplus reserve, \$4,553,300 in legal tenders, and \$46,400 in circulation.

Shipments of silver from London to the East for the year up to July 29th are reported by Messrs. Pixley & Abell's circular as below:

	1896.	1897.	Changes.
India	£1,990,578	£3,060,600	I. £1,070,022
China	574,413	124,025	D. 450,388
The Straits	517,532	129,405	D. 388,127
Totals	£3,082,523	£3,314,030	I. £231,507

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: Banks, Gold, Silver, 1896, Gold, Silver, 1897.

The return for the Associated Banks of New York is of date August 7th; all the others are of August 10th, except the Bank of Italy, June 20th, and the Bank of Russia, July 1st-13th.

Arrivals for the week ending July 29th were £194,000 from New York and £68,000 from Chile, all bar silver.

Indian exchange continues at a high level, notwithstanding the fall in silver. The price has been supported by the pending rupee loan, for which bids are now being sent in.

The estimate of the United States Treasury gives the amount of money in the country on Aug. 1st as below:

Table with columns: Kind, In circulation, In Treasury, Totals.

This shows an increase of \$442,893 in the amount in circulation during July, and an increase of \$131,567,967 as compared with Aug. 1st, 1896.

The coinage executed at the Mints of the United States during July and the seven months of 1897 is reported by the Treasury Department as below:

Table with columns: Denominations, July, Seven months.

The July work of the Mints was very light, owing to some stoppages for the usual yearly repairs.

The total value of the foreign trade of Japan for the year 1896 was 289,517,234 yen, exceeding that of the previous year by 24,144,000 yen.

The United States took more of the exports than any other nation, the amount being 31,552,341 yen.

The report of the British Mint for 1896 states that the total value of the light gold coinage that had been withdrawn under the Act of 1891 amounted up to the end of last year to £32,263,000.

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The Austrian Finance Department has published an account of the quantity of gold which has been coined for the new currency in the mints of Vienna and Kremnitz since the beginning of the currency

reform in 1892. In Austria the total value of 20-crown pieces coined was 243,723,180 florins, in Hungary, 123,518,470 florins, being a total of 367,241,650 florins.

Prices of Foreign Coins.

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

Table with columns: Bid, Asked, and various foreign coins like Mexican dollars, Peruvian sole, etc.

Other Metals.

Copper.—While dull at the beginning of the week, the market has developed a great deal of strength and activity during the last two days.

The foreign market has improved materially, less

as the result of speculation than a reluctance on the part of producers here to supply the demand at the lower prices which Europe attempted to establish.

Tin has been irregular, but on the whole, somewhat firmer than last week. There is a constant good demand, which absorbs the arrivals as soon as they come in.

The London market, as the outcome of increased consumption on this side as well as an improvement in the price of silver, has advanced from £61 2s. 6d. to £62 10s. for three months prompt.

Lead.—The improvement in the demand and the limited supply of offerings have given the market a very strong aspect. While at the end of last week the metal was freely offered at 3/70c.

The foreign market remains strong at £12 11s. 3d. for Spanish and £12 13s. 9d. for English lead.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is dull, but firm.

Spelter is somewhat easier, the price for Western being 4/05@4/07 1/2c. at East St. Louis, and 4/25@4/27 1/2c. at New York.

The foreign market is again a little firmer, the quotation for good ordinary brands being £17 1s. 3d., and for specials £17 3s. 9d.

Antimony.—The quotations remain unchanged at 8c. for Cookson's; 7 1/2c. for Hallett's; 7 1/4c. for U. S. Star, and 7 1/2c. for Japanese.

Nickel.—Business continues quiet, and no change in prices can be reported. We quote for ton lots 33 1/2@34c. per lb., and for smaller orders 35 1/2@36c.

Platinum.—Prices are firm at \$14@15 per oz. New York. The London quotation is 55s.@56s. per oz.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams, for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams.

Quicksilver.—The New York quotation is unchanged at \$39 per flask. The London price is £7 5s. per flask, with £7 2s. 6d. quoted from second hands.

The Minor Metals.—Quotations are given below or New York delivery:

Table with columns: Aluminum, Bismuth, Phosphorus, Tungsten, etc.

Variations in price depend chiefly on the size of the order.

Average Monthly Prices of Metals

In New York, for the years 1897 and 1896; in cents per pound.

Table with columns: Month, COPPER, TIN, LEAD, SPELTER, 1897, 1896.

CHEMICALS AND MINERALS.

(For current prices of chemicals, minerals and rare elements see page 180.)

New York. Aug. 13.

Heavy Chemicals.—There are absolutely no changes in prices since last week, but there is rather more inquiry, and decidedly more business doing.

*New York Metal Exchange returns. †From our Special Correspondent. ‡Week ending Aug. 5. §Week ending Aug. 12.

A firmer feeling prevails. All the principal importers have large stocks yet to dispose of, and unless an unexpected demand should arise will not order more than is necessary, as ocean freights are up.

Quotations generally are about as follows: Caustic soda, 60%, \$2.22½@2.42½; 70@76%, \$2@2.25 per 100 lbs. Alkali, domestic, 58%, 60c. for 50-ton lots and over, and 70@80c. for smaller quantities; 48%, \$1@1.20 for jobbing lots. Carbonated soda ash, 48%, 90@95c. per 100 lbs.; 58%, 75@80c. per 100 lbs. Bleaching powder, prime brands, \$1.87½@2.2; Continental F brand, \$1.85@1.90; other brands, \$1.80@2 per 100 lbs. Bicarb. soda, English, 1.75@2c. per lb.; American, bulk, \$1.50@1.55 per 100 lbs., according to brand. Sal-soda, English, 67½@70c. per 100 lbs.; American, 65@70c. per 100 lbs. Chlorate of potash, \$9.50@10 per 100 lbs.

Acids.—The acid market is stagnant. Many mills are closed down, some in consequence of the coal strike, and the demand for acids is consequently light. There is a firm tendency, however, in all potassium products, and there is a sharp demand for lead acetate and nitrate, as well as for coppers.

Our quotations show little change. They are per 100 lbs. in New York and vicinity in lots of 50 carboys or over as follows: Acetic acid, commercial No. 8 (in barrels), \$1.40@1.50; in carboys, \$1.50@1.65; redistilled, 28%, in bbls., \$1.70@1.80; in carboys, \$1.90@2.05. Muriatic acid, 18°, 75@85c.; 20°, 85@95c.; 22°, \$1.15@1.25, according to make and quantity. Nitric acid, 36°, \$3.50@4; 40°, \$4@4.50; 42°, \$4.50@5.50. Oxalic acid, \$7 ex-dock and \$7.25 ex-store. Mixed acids, according to mixture. Sulphuric acid, 66°, 85c.@1 in carload lots, 10@15c. higher for small quantities. Chamber acid, 86@86.50 per ton at factory. Blue vitriol, \$3.75@4, according to grade and order.

Tritaric, cryst. 30½@32c.; coppers, 52½@65c.; lead acetate, white cryst., 7½@8c.; lead nitrate, commercial, 12½c.

Brimstone.—The market is somewhat easier, but still continues very low. The small demand is thought to be owing to the coal strike, which has caused Western manufacturers to close down on account of lack of coal. Spot sulphur is quoted at \$20½ for best unmixed seconds. Thirds are quoted at \$19.50.

Fertilizing Chemicals.—The outlook is very bright and a big fall trade seems assured. The demand is now good all through the country. All late changes have been for the better.

Sulphate of ammonia, gas liquor, \$2.10 for shipment, and \$2.20 for spot; bone, \$2@2.05 per 100 lbs. Dried blood, high grade Western, \$1.80@1.85 per unit New York; \$1.55@1.60 per unit f. o. b. Chicago. Azotine, \$1.70@1.75 basis New York. Concentrated phosphate (30% available phosphoric acid), 57½c. per unit. Acid phosphate, 13%@15%, av. P₂O₅, 54@65c. per unit at sellers' works in bulk. Dissolved bone black, 17%@18% P₂O₅, 80c. per unit. Acidulated fish scrap, \$9.50@10, and dried scrap \$18@18.50, f. o. b. fish factory tankage, high grade, \$14.50@15 per ton; concentrated, \$1.35@1.40 per unit, f. o. b. Chicago; New York, \$18.50; low grade, \$13@13.50. Bone tankage, \$19@20; ground bone, \$21@23. Bonemeal, \$19.50@22.50.

Sulphate of Potash: 90%, New York and Boston, \$1.90½; Philadelphia, Baltimore and Norfolk, \$2.01; Southern ports, \$2.03.

Double Manure-Salt: Quotations for 48@49%, less than 2½% chlorate, are 1.01@1.01½c., to arrive, and 1.02@1.03c. on spot: basis of 48%. High grade, 90@95% sulphate of potash, 1.96½@2.00½c. to arrive; basis of 90%. In bulk 24@36%, 36½@37½c. per unit O. P.

Muriate of Potash: We quote New York and Boston, 1.75@1.78c. Philadelphia and Norfolk, 1.76@1.79½c.; Charleston, Savannah, Wilmington and New Orleans, for 80@85% basis of 80%, 1.78½@1.81c. in lots of 50 tons and upward.

Kainit.—Invoice weights, as taken at port of shipment, per ton of 2,240 lbs., testing 12.4% actual potash, equivalent to 23½ sulphate of potash, \$8.80@8.90.

Nitrate of Soda.—Demand has been weak of late, and prices have fallen somewhat. Deliveries continue to be light, while the stock on hand goes heavier. Prices are likely to fall still further. The ruling quotation to-day is \$1.65 per 100-bag lots.

NOTES OF THE WEEK.

Mount Pleasant, Tenn., shipped 3,570 tons of phosphate rock in June, 1897.

Our exports of fertilizers in June, 1897, were valued at \$540,418, against \$273,986 in 1896; an increase of \$266,432.

Phosphate shipments from Tebessa, Algeria, amounted to 19,519 metric tons in May, 1897, against 13,440 tons in 1896, and 18,000 tons for the preceding month in 1897.

We are credited with having received from the United Kingdom in May, 1897, 230,597 cwts. of alkali, which is an increase of 61,696 cwts. over 1896. Other bleaching materials aggregating 52,424 cwts. in the same month, this year, against 50,922 cwts. in 1896, are also noted.

Liverpool. Aug. 4.

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

As usual at this season of the year, trade is very quiet and the demand for chemicals is on a limited scale.

Soda ash is steady, but without special feature.

Quotations vary according to export market, and spot range for tierces may be called out as follows: Leblanc ash, 45%, \$4 5s @ \$4 10s. per ton; 58%, \$4 10s. @ \$4 15s. per ton net cash; ammonia ash, 48%, \$3 7s. 6d. @ \$4 per ton; 58%, \$3 12s. 6d. @ \$4 5s. per ton, net cash. Bags are 5s. per ton under price for tierces. Special terms for American business. Soda crystals are moving off and \$2 7s. 6d. @ \$2 17s. 6d. per ton, less 5% for barrels, is nearest range, according to market, while bags are 7s. less. Special quotations furnished for American inquiries.

Caustic soda is rather dearer for some markets, although range is about unaltered as follows: 60%, \$6 2s. 6d. @ \$6 5s. per ton; 70%, \$7 2s. 6d. @ \$7 5s. per ton net cash; 74%, \$8 2s. 6d. @ \$8 5s. per ton; 76%, \$8 15s. @ \$9 per ton, net cash.

Bleaching powder slow of sale and dull at about \$4 12s. 6d. @ \$6 17s. 6d. per ton net cash, for hard-wood packages, as to destination.

Chlorate of potash is only wanted to a limited extent, and 3¼@4d. per lb. is about nominal spot value.

Bicarb. soda is without change, and held for \$6 15s. per ton, less 2¼% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia quiet, at \$7 15s. @ \$8 per ton, less 2¼% for good gray 24@25% in double bags f. o. b. here, as to quality.

Nitrate of soda in retail demand, at \$7 17s. 6d. @ \$8 per ton, less 2¼%, for double bags f. o. b. here, as to quantity and quality.

Carb. ammonia, lump, 2¼@3d. per lb.; powdered, 3@3¼d. per lb., less 2¼%.

MINING STOCKS.

Complete quotations will be found on pages 206, 207 and 208 of mining stocks listed and dealt in at:

Aspen.	Helena.	London.
Baltimore.	Los Angeles.	Mexico.
Boston.	New York.	Paris.
Butte.	Philadelphia.	Rossland.
Cleveland.	Pittsburg.	Shanghai.
Colo. Springs.	Salt Lake.	Valparaiso.
Denver.	San Francisco.	

New York. Aug. 13

The local mining stock market was the recipient of part of the speculative movement which has set in, and in consequence there has been a better demand for stocks during the present week than has been the case for a considerable time past, although the recent drop in silver has lowered the price of that class of securities, which has acted as a sort of damper on speculation.

On the Consolidated Stock and Petroleum Exchange the market for the Comstocks seems to have disappeared and the flurry caused by the strike made in the Sierra Nevada property recently has faded away. Sales were made of the following stocks: Best & Belcher, Comstock Tunnel, Comstock Tunnel Bonds, Consolidated California & Virginia, Mexican, Ophir, Savage, Sierra Nevada and Utah Consolidated.

Of the California stocks, of which a number appear on the board this week for the first time in quite a while, Brunswick Consolidated commanded most attention, 16,300 shares changing hands at 19@22c., the latter being the closing figure; this shows a net gain during the week of 2c. over the highest point reached last week. Among other stocks dealt in during the week we note sales of Plymouth Consolidated at 20c.; Quicksilver common at \$2.50@3, and Quicksilver preferred at \$10@10.50. Standard Consolidated record—the sale of 500 shares at \$1.75 while of Syndicate 1,100 shares changed hands at 6c.

Kingston & Pemberton, of Ontario, appears on the list this week, with sales of 100 shares at 28c.

Fortuna, of Southern California, displayed considerable activity during the week, with sales of 5,000 shares at 10¼@10½c.

On the Mining Exchange business continues along in the same manner as it has been doing for some time past, with every now and then a little excitement caused by an advance in one of the stocks dealt in. This week it fell to Cannon Ball to enliven the proceedings, which it succeeded in doing, as can be noted from the amount of shares traded in, 33,500 being sold at 9@13c.

Arnette and Miami, which have been prominently before the board for some time, still continue to attract a good share of attention, with the former selling at 45½c. and the latter at 37c.

An addition was made to the list of the stocks dealt in by the introduction of the stock of the Gold Magnet Mining, Leasing and Milling Company, which was listed on August 10th, opening at 6c., from which it has advanced, and to-day is selling at 8c. The company was formed under the laws of the State of Colorado with a capital stock of \$1,250,000, with shares of the par value of \$1 each. The property is composed of seven claims situated in Cripple Creek. One hundred and fifty thousand shares are to be sold to secure working capital. It is the intention of the company to erect a mill of from 25 to 50 tons per day capacity.

Interest in the Klondike continues unabated, and as a natural consequence mining and exploration companies are springing up like toad-stools, and it would be well for investors to examine thoroughly before investing.

Boston. Aug. 12.

(From Our Special Correspondent.)

The market this week has shown greater activity in copper stocks, and prices have improved all through the list. Boston & Montana, which closed

last week at \$134, has sold up to \$141½ and closed at about the highest price. Butte & Boston has been subjected to manipulation, an effort being made on the part of the bears to depress the stocks, which was only partially successful, the lowest price touched being \$23¼, from which a sharp rally to \$27½ followed; over 70,000 shares were traded in.

Calumet & Hecla has broken the record this week. An order to sell about 400 shares has been on the market for some time and the last of it was finally sold on August 10th, leaving the market bare of stocks. Orders for small lots at market carried the price up to \$418, since which it has sold at \$410.

Quincy advanced to \$116 and closed there. Tamarack has been strong all the week, advancing from \$130 to \$136½ to-day. Osceola has also been in good demand and advanced from \$38 to \$38½, with only slight reaction. Atlantic advanced on good orders from \$22 to \$24½, closing firm. Kearsarge was also strong, selling up from \$17½ to \$19. There was more demand for Franklin, which touched \$1½, a gain of \$1 for the week. Old Dominion reached \$20 and was in demand at that. Tamarack, Jr., advanced from \$18 to \$20. Tecumseh sold at \$2½ and Arnold at \$3. Centennial advanced from \$6½ to \$6, which was the closing price. Wolverine advanced from \$11½ to \$12 and was very firm.

The gold stocks have been only fairly active. Gold Coins has held steady at \$3¼@3½, closing at \$3½. Pioneer declined from \$5 to \$4½, but recovered to \$5. Santa Ysabel advanced \$¼ to \$14. Merced declined from \$6½ to \$4, recovering to 5½.

3 p. m.—The market this afternoon was fairly strong with the exception of Butte & Boston, which declined to \$26½. Centennial advanced ½ to \$8½. Boston & Montana was off ¼ to \$141½. Old Dominion strong at \$20. Wolverine sold at \$12½ and Calumet & Hecla at \$415 for one share. Osceola declined to \$37½ and Pioneer to \$4½.

Cleveland. Aug. 11.

(From Our Special Correspondent.)

The mining stock market is somewhat stronger this week. Lake Superior stock has advanced in value \$2 per share in the opinion of the owners, and those who desire to invest in Minnesota are required to pay \$1 more this week.

Los Angeles, Cal. Aug. 7.

Business on the Exchange this week has been marked by the first real bear raid we have had since the Exchange opened and also a spirited upward turn early in the week. In fact it has been the best trader's market of any week in the Exchange's history. On Monday Rand Mountain under spirited bidding advanced ¼c. in a very short time, selling as high as 3½c. Everybody was in on the rise; as is usual in such cases all the balance of the stock on the list felt this upward movement and the trading was spirited throughout the entire call, 97,000 shares changing hands. Tuesday the market held up well, but was not quite as strong. On Wednesday the bears saw their opportunity, raided everything on the list and have held their own. Since then, with the exception of Magganetta, everything shows a decline since the first of the week, but the prices are higher on the average this Saturday than they were last Saturday. The reported strike in the Little Butte property, at Handsburg, turns out to be much better than was at first credited, and this stock immediately rose from 25 to 35c. and closes with none offered at less than 40c. Pacific Consolidation has been steady and active, but shows no decided movement either way.

The board of directors, at their regular monthly meeting held Thursday, passed the following resolutions:

"Whereas, It is a known fact that certain unscrupulous persons, principally non-residents of California, are offering for sale valueless mining stocks, and,

"Whereas, It has been the policy of this Exchange since its organization in 1896, to expose such frauds when possible, and to offer full protection to the patrons of its members, now therefore, be it

Resolved, That the directors of the Mining Stock Exchange of Los Angeles hereby advise the public to be cautious in the purchase of mining stocks unless the mines and their management are known, or the stocks listed on this or some other reputable or long-established exchange with strict listing rules, and be it further

"Resolved, That copies of these resolutions be furnished to the press of the country, and their publication is requested."

Salt Lake City. Aug. 7.

(From Our Special Correspondent.)

The depths to which silver fell in the week resulted in a greater shrinkage in Utah silver shares than was ever before experienced, not excepting the panic period following the close of the Indian mints in June, 1893. The straight silvers are naturally the worst sufferers, but a scaling down of from 30% to 50% is effected on the silver-leads and the silver golds. The decline affects nearly every class of mining securities, except golds, and these are shaded. Of the straight silvers there are but three, Daly, Daly-West and Ontario, all at Park City, and in the enforced closing down of these there is more of industrial than of financial disaster. A bright feature of the market is that the speculative shares are scarcely affected and the other fact is prominent that while the immediate valuation of the silver-leads is reduced, the earning capacity of these stocks is, on the average, greater than last year, on account of the better price for

lead. Aside from Park City there is no cessation of activity in mining; the mineral tonnage is on the increase.

Investors are indifferent to Ajax, reduction of working force and uncertainty as to the rumored reorganization being sufficient cause. Anchor is regularly offered at graduated price, but is without takers. In Bullion-Beck the silver decline has not affected the stock, which advanced until little is in sight under \$6. The directors will meet on the 10th, and decide the question of an August dividend.

Centennial-Eureka did some little business at low figures. Dalton & Lark is unaffected, the mines being capable of a heavy production of lead ore carrying little silver.

Low-water mark was reached by Daly when the stock was offered at \$1.25, a decline of 70% in three weeks.

Daly-West has been offered as low as \$4, but no sales are reported. Dexter, the Nevada gold stock, broke slightly under a free offering of a small lot.

Emerald shows another slight advance, and some trading was done at good figures. Galena is affected by prevailing conditions, and while offerings are limited, the stock is depressed.

Geysers-Marion has been the subject of much local interest in the past eight days. First on account of a weakening in the face of the regular dividend, paid July 3rd, and later when it was learned that the entire Marion side of last April's consolidation, one-third of the entire stock, was unloading rapidly. On Friday 30,000 shares went out under \$1.10, and on Saturday 10,000 shares at \$1.16 1/2; at the same time numerous transfers of small lots were in progress, bringing \$1.20 to \$1.21 1/2.

Mammoth is on the decline for reasons that are not altogether apparent. Less than 20% of the total mineral value is silver, 3% is copper, and the remainder is gold, so that the condition of the silver market has but slight bearing on its earning capacity. Mercur is slightly shaded, but averages its usual good price. Northern Light has not been active.

Ontario is offered lower than at any time in 25 years. Each day the working force at the mine is being reduced, and in two weeks the fires will be drawn from the hoists and mills. The great mine is entering on a period of inaction that will not be interrupted, the management says, as long as silver is below 60c. per ounce.

Sacramento shows but little strength. Swansea, a silver-lead, is down in price, but has declared its usual monthly dividend of 5c., payable August 10th. South Swansea, its neighbor, is still producing liberally. The stock is, however, very weak in the market.

San Francisco. Aug. 7.

(From Our Special Correspondent.)

A dull opening this week was followed by a short period of activity, Sierra Nevada being the chief feature in the market, as reports continued of the value of the new find in the mine. Later, however, the new favorite gave way a little, and all the other Comstocks were weaker in consequence. Toward the close there was something like a break, and the prospects are for a period of lower prices next week again.

Some closing prices are: Consolidated California & Virginia, \$1.20@1.25; Sierra Nevada, 83@94c; Best & Belcher, 71@73c; Ophir, 65@67c; Chollar, 70@75c; Confidence, 97c; Gould & Curry, 44@47c; Yellow Jacket, 38@42c; Potosi, 35@37c; Mexican, 28@30c; Savage, 31c. Outside of the Comstocks the only business done was in Standard Consolidated, which sold up to \$1.75.

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

	1896.	1897.
January, shares.....	296,415	274,280
February.....	153,790	166,695
March.....	216,105	188,745
April.....	264,775	237,765
May.....	818,610	189,385
June.....	479,135	196,600
July.....	311,590	211,450
Total.....	2,610,370	1,460,930

The business this year shows a falling off of over 40% as compared with 1896.

The time for filing the decree in the case of the Union Mill and Mining Company vs. the Carson River ranchers, in the water suit at Carson, has been extended on stipulation until September 1st. Judge Murphy, of Carson, has been substituted for Thomas Coffin in the case, and has been instructed to prepare the final decree.

The Ridson Iron and Locomotive Works Company has re-elected the old directors for 1897, with William H. Taylor as president, Robert S. Moore, vice-president and superintendent, and L. R. Mead, secretary.

For the month of July the mining and other corporations of the Comstock paid a total of \$67,985 for labor, or \$5,000 more than for the previous month. The disbursements were as follows: Andes, \$900; Consolidated California & Virginia, \$10,056; Ophir, \$1,991; Mexican, \$1,951; Best & Belcher, \$2,266; Gould & Curry, \$906; Alta (estimated), \$1,100; Utah, \$433; Occidental, \$1,715; Brunswick Exploration Company, \$6,989; Crown Point, \$1,219; Belcher, \$729; Yellow Jacket, \$1,671; Confidence, \$387; Challege, \$243; Imperial, \$341; Savage, \$3,089; Chollar, \$7,413; Potosi, \$1,832; Union Shaft, \$2,340; Sierra Nevada, \$733; Alpha, \$727; Overman (estimated), \$1,000; Caledonia (estimated), \$500; Nevada mill (estimated), \$880; electric light (estimated), \$500;

water company (estimated), \$3,000; quartz mills (estimated), \$5,000.

The Orleans Mining Company, of Nevada County, has levied an assessment of 10c. per share, delinquent September 2d.

The Occidental Consolidated Mining Company has levied an assessment of 10c. per share, delinquent September 7th.

The Consolidated California & Virginia Mining Company has levied an assessment of 25c. per share, delinquent September 8th.

London. Aug. 4.

(From Our Special Correspondent.)

The Klondike boom is attracting the attention of promoters to a much greater degree than one might have expected. Plenty of information about the district has been disseminated through the press, so that the public are fully aware of the immense difficulties in the way. Nevertheless quite a number of influential promoters are coming forward with prospectuses of new companies formed to send expeditions to Klondike. For instance, the Klondike & Columbian Goldfields, Limited, with a capital of £100,000, has been formed by Mr. Joseph Boscowitz, a merchant from Victoria, B. C. He has Mr. Turner, Premier of British Columbia, on his board, and a miscellaneous collection of nobodies on the English board. Another is the Klondike Pioneer Syndicate, Limited, with a capital of £25,000, formed by Mr. H. N. Coleman, of Chicago, in co-operation with the circle of promoters who formed the Cripple Creek Pioneers, Limited. A third is the Klondike-Yukon Exploring Syndicate, Limited, with a capital of £250,000, formed by Mr. W. J. Patterson, of London, and his colleagues, to send out Mr. John James to prospect. Mr. Patterson is a director of a company called Gilpin Gold, Limited, a company which when formed two years ago announced that it was an immediate dividend payer, but which has never been heard of since. Fourthly, there is the Klondike Mining, Trading and Transport Corporation, Limited, with a capital of £250,000, formed by the New Goldfields of British Columbia, Limited. This company says it has as representative on the spot a gentleman who has resided for three years on the Yukon gold-fields. The directors of this company include Sir Charles Tupper and Mr. C. Ashworth. Fifthly, there is the Yukon gold-fields mentioned by me last week. I am informed by several promoters that they intend to bring out companies almost immediately, but the public warnings that it is too late to think about an expedition this year may deter them.

The Yukon boom may be attracting most public attention, but on the Stock Exchange the chief item of interest is the revival in South Africans of all kinds. Mr. Chamberlain's speech a week ago has had an excellent effect in chartered shares, and on shares of all companies dealing with Rhodesia. It is said that in addition to the extension of the Bechuanaland Railway to Bulawayo, it intended shortly to form a new company to build the railway from Bulawayo to the terminus of the Beira Railway. The concessions by the Transvaal government detailed in my last letter have had an excellent effect on the market and the shares of all gold mines, especially those where the margin of profit has hitherto been very small or nothing at all, have been inquired for generally. Chartered shares now stand at £4 1/2, an increase of £1 1/2, as compared with a week ago. Several of the deep level mines that have been in a doubtful position for some time past are now issuing more shares to provide working capital for further developments.

In the West Australian market there has been considerable activity following on the flotation of Mr. B. Tomley's Market Trust. Indians have been firmer on the return of the chief supporter to the market. New Zealanders have been very quiet.

The fall in silver has had very little effect in London, for the Broken Hill mines are practically the only silver mines that are on the market. These shares have fallen somewhat, but the announcement that the company is expanding in its general metallurgical practice, so as to treat West Australian gold ores, has counteracted the fall to some extent.

Paris. Aug. 1.

(From Our Special Correspondent.)

I have again to report to you a week entirely devoid of startling events. There have been some fluctuations in our market, but for the most part they are not of an unexpected character and, moreover, attention has been diverted from the mining market by the fluctuations in some of the international shares, such as Spanish bonds, in which many people here are interested.

Perhaps the main feature has been the strength of the South African gold stocks, which have continued to advance on the strength of the announcement that the Transvaal Commission has agreed to recommend important reforms in the railroad rates and the termination of the dynamite monopoly. The better prospects have in great part stopped the selling movement which I have mentioned from time to time during the past year, and our people are more inclined to hold their investments than they have been at any time since the troubles commenced.

There has been more movement in the copper stocks, perhaps, than in any other part of the market. It was reported that the Berlin clique was selling Rio Tintos for a fall, but for my part I fail to find any evidence of it. The demand for copper continues strong and there has been a manifest failure of the concerted efforts here and in Lon-

don to break down prices. Some of our dealers are beginning to ask themselves whether, if business revives with you as some of your authorities think it will, there may not be a considerable falling off in the surplus you have for export. In such case there may be a scarcity of copper and higher prices.

The stocks of the Russian group have found plenty of buyers. Apart from the natural interest which we feel here, there is a growing conviction that for the next few years—perhaps the next 20 years—Russia is going to be the great field for investment. Certainly it is the only European country that has room for expansion without embarking in distant and troublesome colonial enterprises.

Rossland, B. C.

(From Our Special Correspondent.)

A decided advance in the smelter branch of the mineral industry of this district must be noted. It has infused new life into the entire business of this section; much had remained in abeyance because the smelter question was not in a satisfactory condition for mine owners. On this account shipments of ore were deferred, and there were not a few persons who readily believed that mine owners had made the want of smelting facilities an excuse, that it was really the want of ore and not the want of smelting facilities which was retarding the camp. The mine owners have carried their point. In the Upper Country the Omaha & Grant Company are putting the Pilot Bay smelter into a condition which will fully meet all requirements. At Northport the Le Roi Company's smelter is already making progress and the British Columbia Bullion Extracting Company has begun initial work on its reduction works, situated about 3 1/2 miles from Rossland. The capital which is wanted on these enterprises is American chiefly. The construction of the Red Mountain Railway a year ago was attended by considerable activity, but, of course, it more or less ended with the completion of the railroad. The building of two reduction works and the enlargement of a third to double its former capacity for the treatment of Kootena ores is certainly a subject entitled to special mention. The capital which is being invested will amount to \$1,000,000.

LATE NEWS.

The Dubois tunnel, Colorado, is now in 525 ft. and the rock seems to be somewhat softer of late. A streak of micaceous schist is coming in from the east and the formation is heavily mineralized on the breast. This tunnel is to be carried forward 1,000 ft. in order to cut several important cross-veins.

The Manchester is the latest mine to claim a strike. In driving a crosscut from the 150-ft. level south of the shaft they have opened up a nice pay streak of smelting ore, showing mostly yellow copper and iron. The crosscut is being driven ahead with night and day shifts and the operators expect to open up their find in big shape when they reach the other wall. This property is being operated by the Red Cross Gold Mining Company of Gilpin County, Colorado.

Messrs. Scott, Clow & Converse are just now the recipients of congratulations over the condition of their Nancy Hanks Cripple Creek property. It is bored by a tunnel in over 300 ft. The breast of the tunnel shows from 12 to 13 in. of a pay streak. Some of the best-known mining men in the camp have visited the tunnel, and all express their opinion that the operators will undoubtedly soon have one of the biggest propositions in the district.

At the Plateau mine on Colorado Hill, Cripple Creek, development work consists in running the 150 and 246-ft. west levels and stoping is being carried on in the 150-ft. east level. Ore is being piled up for shipment and the manager expects to be able to ship steadily before the middle of August. The 246-ft. level is showing up splendidly, there being 10 to 12 in. of pay streak carrying an average value of \$67 per ton, besides a like width of second-class ore lying right alongside of the richer streak.

We are informed that the item published in our issue of July 31st respecting the Cleopatra Mining & Milling Company, of Ouray County, was somewhat incorrect. President H. W. Fowler writes: "On May 3d last we commenced the erection of our works, 120 ton matte furnaces, with modern and complete appointments throughout. July 1st we put the furnace in blast as a trial, but without ore charge. The heat disclosed a defect in the wooden stack, which was situated some distance from the building, and was merely for the purpose of carrying off fumes. This stack taking fire at the trial, we shut down. On July 7th, having replaced the wooden stack with an iron one, we blew the furnace in with ore charges. Since then we have run about one-third of the time, night and day, with most satisfactory results, proving the superiority of the plant in all particulars, our slags showing a loss in the ore treated of less than 3% per ton in treatment of the ores. Until about the present time we have been short, in a proper proportion, of iron sulphide ores, but now have an ample supply near at hand, and there is already surplus of over 600 tons of ore in our bins. We think that such a record for the first 28 days of the business could hardly be classed as a failure. Of course we do not know your source of information, but in this particular case it seems to us to have been inadequate. We value your excellent paper most highly, and we are sure that you desire only the most trustworthy information."

STOCK QUOTATIONS.

NEW YORK.

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

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stock quotations, listing company names, locations, par values, and prices.

*Official quotations. New York Stock Exchange, mining, 2,150 shares; other stocks, 166,574 shares; Consolidated Stock and Petroleum Exchange, mining, 61,101 shares; Mining Exchange, 55,240 shares. Total shares sold, 283,024. * Bid and ask quotations.

PHILADELPHIA, PA.

Table of stock quotations for Philadelphia, PA, listing company names, locations, par values, and prices.

* Official quotations Philadelphia Stock Exchange. * Bid and asked quotations. 1 Ex-div. Total sales, 11,944

PITTSBURG, PA.

Week ending Aug. 4.

Table of stock quotations for Pittsburgh, PA, listing company names, locations, par values, and prices.

* Official quotations Pittsburgh Stock Exchange.

BOSTON, MASS.

Table of stock quotations for Boston, Mass., listing company names, locations, par values, and prices.

* Official quotations Boston Stock Exchange. * Bid and ask quotations. Total sales, 121,235. 1 Ex-dividend.

BALTIMORE, MD.

Week ending Aug. 12.

Table of stock quotations for Baltimore, MD, listing company names, locations, par values, and prices.

* Official quotations Baltimore Stock Exchange.

CLEVELAND O.

Table of stock quotations for Cleveland, O, listing company names, par values, and prices.

* From our special correspondent.

ASPEN, COLO.

Aug. 6.

Table of stock quotations for Aspen, Colo., listing company names, locations, capitalizations, par values, and prices.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo., listing company names, par values, and prices.

* Official quotations Colo. Springs Mfg. Stock Assoc. Total shares sold, listed, 624,302; unlisted, 430,755.

STOCK QUOTATIONS.

DENVER, COLO.

Table of stock quotations for Denver, Colorado, listing various companies and their stock prices from August 2 to August 14, 1897.

Official quotations Colorado Mining Stock Exchange. *Bid and ask quotations. Total shares sold, 651,457.

BUTTE, MONT.

July 16.

Table of stock quotations for Butte, Montana, listing various companies and their stock prices as of July 16, 1897.

HELENA, MONT.

Week ending Aug. 4.

Table of stock quotations for Helena, Montana, listing various companies and their stock prices for the week ending August 4, 1897.

*Special Report of Samuel K. Davis. Total shares sold, 5,900.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing various companies and their stock prices from August 6 to August 14, 1897.

Official telegraphic quotations, San Francisco Stock Exchange.

LOS ANGELES, CAL.

Table of stock quotations for Los Angeles, California, listing various companies and their stock prices from August 2 to August 7, 1897.

Official quotations, Los Angeles Mining and Stock Exchange. * Bid and ask quotations. Total sales, 208,430 shares.

SALT LAKE CITY, UTAH.

Week ending Aug. 7.

Table of stock quotations for Salt Lake City, Utah, listing various companies and their stock prices for the week ending August 7, 1897.

*From Our Special Correspondent. †Utah companies. ‡Mines in Vanderbilt, Cal. §Mines in Tuscarora, Nev.

ROSSLAND, BRITISH COLUMBIA.

Aug. 4.

Table of stock quotations for Rossland, British Columbia, listing various companies and their stock prices as of August 4, 1897.

*From Our Special Correspondent.

MEXICO.

Week ending Aug. 4.

Table of stock quotations for Mexico, listing various companies and their stock prices for the week ending August 4, 1897.

Note:—In most of the older Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Many newer companies have a nominal par value, usually \$50 or \$100. Prices are in Mexican dollars.

STOCK QUOTATIONS.

LONDON. July 30. Table with columns: NAME OF COMPANY, Country, Authoriz'd capital, Par value, Last dividend, Quotations. Lists various mining companies like Alaska-Mexican, British Col., etc.

PARIS. Week ending July 29. Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Divs. last year, Prices. Lists companies like Acleries de Crenset, Buly Grenay, etc.

*From our special correspondent.

VALPARAISO, CHILE. July 3. Table with columns: NAME OF COMPANY, Location, Capital paid, Sh. Val. paid, Last Dividend, Prices. Lists companies like Arturo Prat, Caracoles, etc.

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

SHANGHAI, CHINA. July 9. Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price. Lists companies like Jelebu Mg. & Trad., etc.

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

DIVIDENDS.

Table with columns: NAME OF COMPANY, Current Dividends, Paid since Jan. 1, 1897, Total to date, NAME OF COMPANY, Current Dividends, Paid since Jan. 1, 1897, Total to date. Lists companies like Aetna Con. Q., Alaska-Mexican, etc.

Note.—This table does not give all the dividends paid by mining companies, as it is impossible to obtain a complete list of dividends declared. Many companies are close corporations and refuse to give the information. Readers of the Engineering and Mining Journal will confer a favor on the publishers if they will notify the Journal of any errors or omissions in the above table. * July dividend paid.

ASSESSMENTS.

Table with columns: NAME OF COMPANY, Location, No. Dlnq, Sals, Am. Lists companies like Alpha Con., Benton Con., etc.

* New assessment.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Name and Location of Company, Capital Stock, Shares, Assessments. Lists 121 mining companies with their respective financial details.

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 \$31,330,000 in dividends and the Cons. Virginia \$42,390,000. [Bodie, Bulwer and Mono transferred to Standard Cons., January, 1897. * Dividends have not been paid in several years. - This table is corrected up to August 1. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.

RARE ELEMENTS, CHEMICALS AND MINERALS—CURRENT PRICES.

NOTE.—This table is revised up to August 12th. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable.

CHEMICALS AND MINERALS.

These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts.

Table listing various chemicals and minerals such as Abrasives, Acids, Alumina, Ammonia, Antimony, Argols, Arsenic, Asbestos, Asphaltum, Barium, Barytes, Bismuth, Bitumen, Bone Ash, Borax, Bromine, Cadmium, Calcium, etc., with their respective units and prices.

Table listing various minerals and oils such as Cement, China Clay, Chrome Ore, Cobalt, Copper, Fuller's Earth, Gypsum, Iodine, Iron, Lead, Lime, Magnesia, Manganese, Marble, Mercury, Mineral Wool, Nickel, Oils, Mineral, etc., with their respective units and prices.

Table listing various oils and minerals such as Oils, Mineral, Ozokerite, Paints and Colors, Pyrites, etc., with their respective units and prices.

Table listing various pyrites and rare elements such as Pyrites, Strontium, Sulfur, Tellurium, Tin, Uranium, Zinc, Zirconium, and a section titled 'THE RARE ELEMENTS' listing elements like Argon, Barium, Beryllium, Boron, Calcium, Cerium, Chromium, Cobalt, Cesium, Germanium, Gallium, Gadolinium, Gold, Helium, Indium, Iridium, Lanthanum, Lithium, Molybdenum, Niobium, Osmium, Rubidium, Rutherfordium, Selenium, Strontium, Tantalum, Thallium, Thorium, Vanadium, Yttrium, Zirconium, etc., with their respective units and prices.

ALPHABETICAL INDEX TO ADVERTISERS.

(-) Indicates every other week or monthly advertisements.

Table with columns A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. Each column lists advertiser names and their corresponding page numbers.

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 (See Diamond Drills.)

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 (See Machinery.)

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 (See Engineering Instruments.)

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 (See Wire Rope Tramway and Machinery.)

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 New York Belting & Packing Co., Ltd.

Engineers, Chemists, Metallurgists.
 See Directory Pages 4, 5 and 6.

Engineers' Instruments and Supplies.
 Braudi, F. E. Sons & Co.
 Buff & Berger.
 Bullock & Crenshaw.
 Fauth & Co.
 Gurley, W. & L. E.
 Heer, Peter.
 Riddon Iron Works.
 Stillwell-Bierce & Smith-Valle Co.
 Tod, William & Co.
 Union Iron Works.
 Union Gas Engine Co.
 Webster, Camp & Lane.
 Works, Ltd.
 (See Machinery.)

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

Fire-Brick and Clay.
 Chur, Walter.
 Denver Fire Clay Co.
 Garden City Sand Co.
 Standard Fire Brick Co.

Furnaces.
 Fuert Bros. & Co.
 Hoskins, Wm.
 Moore, S. L., & Son Co.
 Pollock, Wm. B. & Co.
 Sargent & Co., E. H.
 (See Machinery.)

Fuses.
 Ingersoll-Sergeant Drill Co.
 Macbeth & Co.

Gas Engines.
 Hercules Gas Engine Works.
 Union Gas Engine Co.

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

Gauges, Recording, Etc.
 Bristol Co.

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

Grease, Graphite, Etc.
 Best, Chas. H., & Co. | Fuert Bros. & Co.

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

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

Hydraulic Rams.
 Power Specialty Co.

Injectors.
 Jenkins Bros.
 Lunkenheimer Co.

Insulated Wires and Cables.
 Okonite Co., Ltd.

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

Iron Ore.
 Spanish-American Iron Co.

Lead Burners.
 Vollmer & Beaton.

Lead Linings for Chlorination Tubs.
 Raymond Lead Co.

Link Belting. (See Belting)

Locomotives.
 General Electric Co.
 Hunt, C. W., Co.
 Porter, H. K., & Co.

Lubricators.
 Detroit Lubricator Co.
 Lunkenheimer Co.

Machinery.
Dealers in Mining, Milling and Other Machinery.
 Allis, Edw. P., & Co.
 American Diamond Rock Drill Co.
 Bacon, E. C.
 Billin, Chas. E. & Co.
 Blake, T. A.
 Bradley Pulverizer Co.
 Bullock, M. C., Mfg. Co.
 Caldwell, H. W., & Co.
 Colorado Iron Works.
 Cuninghame & Co.
 Denver Eng. Wks. Co.
 Fairbanks, Morse & Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Gillette-Herzog Mfg. Co.
 Hammond, Mfg. Co.
 Hendrie & Bolthoff Mfg. Co.
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Jessop, W. & Sons, Ltd.
 Lambert Hoisting Engine Co.
 Lagerwood Mfg. Co.
 Krupp, F.
 McCully, R.
 Mecklenburg Ir. Wks.
 Mine Smelter Supply Co.
 Westinghouse Elec. Mfg. Co.
 Williams Mfg. Co.

Manganese Steel.
 Taylor Iron & Steel Co.

Metal Dealers.
 American Metal Co.
 Am. Zinc-Lead Co.
 Baker & Co.
 Bath, H., & Son.
 Best, Chas. H., & Co.
 Bridgeport Copper Co.
 Elliott's Metal Co., Ltd.
 Eureka Co.
 James & Snapspeare.
 Johnson, Matthey & Co.
 Lambert's Wharf Co.
 Lewisohn Bros.
 Mathison Sm'ling Co.
 Metallurgical Works and Ore Processing.
 Amor, Zinc Lead Co.
 Baker & Co.
 Balbach Sm. & Ref. Co.
 Baltimore Copper Wks.
 Bridgeport Copper Co.
 Cannon Copper Co.
 Colorado Iron Wks. Co.
 Con. Kas. City S. & R. Co.
 Denver Eng. Wks. Co.
 Elliott's Metal Co., Ltd.

Mine Cars.
 Colorado Iron Works Co.
 Denver Eng. Wks. Co.
 Fairbanks, Morse & Co.
 Hendrie & Bolthoff Mfg. Co.
 Hunt, C. W., Co.
 Nelsonville Foundry & Machine Co.
 (See Machinery.)

Mine, Mill and Smelters' Supplies.
 Cuninghame & Co.
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Roessler & Hasslacher Chemical Co.
 (See Machinery.)

Miners and Land Concessions.
 American Dev. & Mg. Co.
 Kureka Co.
 Isabella Gold Mfg. Co.
 Rio Tinto Copper Co.
 Smuggler-Union Mfg. Co.

Nickel.
 Canadian Copper Co.
 Hartford Copper Co.

Ore Cars.
 Colorado Iron Works Co.
 Gillett & Herzog.

Ore Monsters.
 Brown, Horace F.
 Colorado Iron Works Co.
 Cummer, F. T., & Sons Co.
 Dunbar, R., & Son.

Ore Testing Works.
 Colorado Iron Wks. Co.
 Hunt, F. E.
 Montana Ore Purchasing Co.
 Packing and Pipe Coverings.
 New York Belting & Packing Co., Ltd.
 Power Specialty Co.
 Wyckoff & Son, A.

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 Atchison, R., Perf. Metal Co.
 Fraser & Chalmers.
 Harrington & King Perforating Co.

Peroxide of Sodium.
 Roessler & Hasslacher Chemical Co.

Phosphor-Bronze.
 Phosphor-Bronze Smelting Co.

File Drivers.
 Bucyrus Steam Shovel and Dredge Co.
 Ingersoll-Sergeant Drill Co.

Pipes.
 Billin, Chas. E. & Co.
 Fairbanks, Morse & Co.
 Poconoc, Wm. B. & Co.
 Power Specialty Co.
 Wyckoff, A., & Sons.

Platinum.
 Baker & Co.
 Johnson, Matthey & Co.

Piambage (See Graphite.)

Powder.
 Atlantic Dynamite Co.
 Ingersoll-Sergeant Drill Co.

Publishations.
 American Fertilizer.
 Australian Stand.
 British Columbia Mining Journal.
 Scientific Pub. Co.

Denver Republican.
 El Minero Mexicano.
 Eastern Engineer.
 Fraser & Chalmers.
 Billin, Chas. E. & Co.
 Cameron, A. S., Steam Pump Works.
 Clayton Air Com. Wks.
 Denver Eng. Wks. Co.
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So. Africa. Mg. Jour.
 Zeitschrift fur Praktische Geologie.
 Fraser & Chalmers.
 Jeanesville Iron Wks.
 Snow Steam Pump Co.
 Stillwell-Bierce
 Smith-Valle Co.
 Tod, Wm., & Co.
 Worthington, H. R.

Pyrites.
 Fuert Bros. & Co.

Quarrying Machines.
 Ingersoll-Sergeant Drill Co.
 Rand Drill Co.
 Sullivan Machinery Co.

Quicksilver.
 Sureka Co.

Railroads.
 Atchison, Topeka & Santa Fe Ry.
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 C. H. & Quincy R. R.
 C. C. & St. L.
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 Illinois Central R. R.
 Midland R. of Kentucky.
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Refrigerating Supplies and Equipment.
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 Porter, H. K., & Co.
 (See Machinery.)

Regulators, Damper, Heat, Etc.
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 Colorado Iron Works Co.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Harrington & King Perforating Co.
 Link Belt Machinery Co.
 Ludlow-Saylor Wire Co. (See Machinery)
 Tyler, W. S., Wire Works Co.

Second Hand Machinery.
 McArthur Bros.
 Robertson, J. L., & Son.

Shoes and Dies.
 Chester Steel Cast. Co.
 Carome Steel Works.
 Colorado Iron Wks. Co.
 Frater & Chalmers.
 Gates Iron Works.

Shovel (See Machinery.)
 Bucyrus Co.
 Marion Steam Shovel Co.

Smelting and Refining Works.
 Balbach & Ref. Co.
 Baltimore Cop'r Wks.
 Bridgeport Copper Co.
 Con. Kas. City S. & R. Co.
 Elliott's Metal Co., Ltd.
 Gillette-Herzog Mfg. Co.
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 Detroit Sprocket Chain Co.

See Rails, Castings, Rolls, Drill Steel.
 Bethlehem Iron Co.
 Chester Steel Cast. Co.
 Cronks Steel Works.
 Jessop Wm. & Son Ltd.
 (See Metal Dealers.)

Sulphur Apparatus.
 White, Edward F.

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 Denver Eng. Wks. Co.
 Fairbanks, Morse & Co.
 Gates Iron Works.
 Williams Mfg. Co.

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 Okonite Co., Ltd.

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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.

1536 WANTED—AN ASSAYER AND Chemist for the City of Mexico; preferably one having had experience in Western smelter practice. Salary \$150 Mexican currency per month. Address, stating age, experience and references, PUENTE, ENGINEERING AND MINING JOURNAL.

1537 WANTED—A MINING ENGINEER experienced in silver mining and graduate of a technical school, to go to Peru; must have best references as to competency and reliability, and good knowledge of Spanish language. Address, stating salary expected, etc. LIMA, ENGINEERING AND MINING JOURNAL.

1538 WANTED.—A FIRST-CLASS SUR-veyor; also a chemist and assayer for a large mill and cyaniding plant. State qualifications, recommendations and salary expected. Address C., ENGINEERING AND MINING JOURNAL.

1539 WANTED—COMPETENT ASSAYER and Refiner for Jewelry Factory at Seattle, Washington. One who is ready to go without delay for good pay. Address SEATTLE, ENGINEERING AND MINING JOURNAL.

1540 WANTED—MINING SUPERIN-tendent for coal mines. Must be energetic, reliable, good manager of men and have practical knowledge of the most economic methods and management. Address giving references and stating experience and salary expected, WEST VIRGINIA, ENGINEERING AND MINING JOURNAL.

1541 WANTED—A FIRST-CLASS BITU-minous coal mining engineer for mine. Capacity, one to five thousand tons per day; located West Virginia; must be thorough in all branches of the business. Address, with references, JUNO, ENGINEERING AND MINING JOURNAL.

1542 WANTED—A COMPETENT PARI- for the position of General Manager for a first class bituminous coal company. Capacity of mines, from one to five thousand tons per day; location, West Virginia. Must be able to manage the business and dispose of the product. Address, with references, salary, etc., CYNTHIA, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

CHEMIST—LEHIGH UNIVERSITY GRADU-ate wants position as Chemist. Some experience. Best of references furnished. Address A. C., ENGINEERING AND MINING JOURNAL. No. 18,069, Aug. 21.

CHEMIST, THOROUGHLY COMPETENT and practical experience in analytical, electrolytical and experimental work, wants position; best references furnished; salary moderate. Address O. K., ENGINEERING AND MINING JOURNAL. No. 18,062, Aug. 21.

WANTED—POSITION WITH MINING COM-pany, by graduate engineer, B. E., with university gold medal, 1893; M. C. E., 1895, having held fellowship for two years; knowledge of geology and chemistry; gained geology scholarship at University; two years' engineering experience; highest references. Apply W. H. L., ENGINEERING AND MINING JOURNAL. No. 18,065, Aug. 28.

WANTED—POSITION AS MINING ENGI-neer; have been employed as engineer of mines for past five years in Columbia, South America; best references. Address H. L. E., ENGINEERING AND MINING JOURNAL. No. 18,066, Sept. 4.

A MAN, 27 YEARS OLD, WITH TECH-nical education, previously assistant chemist at a large smelter and now with a consulting engineer, desires a position in the fall with a milling, smelting or refining company. Good references. Address C. D., ENGINEERING AND MINING JOURNAL. No. 18,067, Oct. 9.

WANTED—POSITION BY COMPETENT Assayer with practical experience; excellent references. Address "EDNA," ENGINEERING AND MINING JOURNAL. No. 18,021, Aug. 28.

ENGINEER, GERMAN, QUICK DRAUGHTS-man, 26½, with 10 years' experience in general engineering, wants employment temporarily, steadily or at home. Address F. LANDSBERGER, 158 Seventh St., 3d floor, New York. No. 18,064, Aug. 21.

MINING ENGINEER AND METALLUR-gist, who is a first-class Chemist and Assayer, desires engagement. Is an Associate of the Royal School of Mines, London, and a Fellow of the Chemical Society. Good references. Address F. C. S., ENGINEERING AND MINING JOURNAL. No. 18,069, Sept. 4.

METALLURGIST, SPEAKING ENGLISH, French and German, with wide experience in refining by electrolysis and smelting copper, silver and gold, extraction of gold and silver from tailings and ore, construction of plants therefor and their management, desires position at \$500 per month. C. H. P. 11, ENGINEERING AND MINING JOURNAL. No. 18,068, Sept. 11.

\$7,800 GIVEN AWAY TO PERSONS making the greatest number of words out of the phrase "Patent Attorney Wedgerburn." For full particulars write the National Recorder, Washington, D. C., for sample copy containing same.

CONTRACTS OPEN.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., August 16th, 1897.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 15th day of September, 1897, and opened immediately thereafter, for furnishing all the labor and materials and fixing the place complete, low-pressure, return-circulation, steam heating and ventilating apparatus required for the U. S. Court House and Post Office building at Savannah, Georgia, in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Savannah, Ga. 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. C. E. KEMPER, Acting Supervising Architect. Orig.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., August 14th, 1897.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 1st day of September, 1897, and opened immediately thereafter, for the removal and purchase of debris at the U. S. Immigration Station, Ellis Island, N. Y. Harbor, in accordance with the specification, copies of which may be had at this office and the office of the Superintendent of Repairs U. S. Court House and Post Office, New York, N. Y. Each bid must be accompanied by a certified check for the sum of one hundred dollars (\$100.00). 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. C. E. KEMPER, Acting Supervising Architect. Orig.

DREDGING.—U. S. Engineer Office, Rock Island, Ill.—Sealed proposals, in duplicate, will be received here until 11 a. m., September 7th, 1897, and then publicly opened, for dredging in Galena River. Information furnished on application.

DREDGING PLANT.—United States Engineer Office, Chattanooga, Tenn.—Sealed proposals for hire of dredging plant will be received here until noon, Tuesday, August 31st, 1897, and then publicly opened. Information furnished on application.

PUMPING ENGINE—Sealed proposals will be received by the Department of Public Works, City of Chicago, until 11 a. m., Monday, September 6th, 1897, for furnishing and erecting on the foundations to be constructed at the Sixty-eighth street pumping station in the city of Chicago, one horizontal compound condensing pumping engine of fourteen (14) million gallons capacity per 24 hours, with a total lift of one hundred and fifty (150) feet, together with necessary boilers and all accessories and appurtenances, according to plans and specifications on file in the office of the Department of Public Works of said city.

Proposals must be made out upon blanks furnished at said office and be addressed to said Department, endorsed "Proposals for New Pumping Engine for Sixty-Eighth Street Pumping Station," and be accompanied with five thousand (\$5,000) dollars in money or a certified check for the same amount on some responsible bank doing business in the city of Chicago, and made payable to the order of the Commissioner of Public Works. The Commissioner of Public Works reserves the right to reject any or all bids. Due consideration will be given to general merits of design, durability of construction, economy of operation and maintenance, facility for repairs and proved performance and record of similar works in actual service elsewhere. No proposal will be considered unless the party offering it shall furnish evidence satisfactory to the Commissioner of Public Works of his ability, and that he has the necessary facilities, together with sufficient pecuniary resources to fulfill the conditions of the contract and specifications provided such contract should be awarded to him. Companies or firms bidding will give the individual names as well as the name of the firm with their address.

SUBWAY.—Sealed bids for building Section 11 of the Subway will be received at the office of the Transit Commission, 20 Beacon street, Boston, Mass., till 12 o'clock m. of Thursday, September 2d, 1897. Each bid must be accompanied by a certified check for the sum of \$2,500. The section is under and near the site of the old Boston & Maine station at Haymarket Square. A portion of the subway will be an open incline, and the remaining portion will be covered. The structure will consist of a combination of steel and masonry. Some of the items are estimated to be as follows: 19,300 cu. yds. earth excavation; 330 tons iron and steel, furnished by the Commission to be set in place; 7,000 cu. yds. concrete and brick masonry; 22,000 lin. ft. of piles in place. Plans can be seen and specifications and forms of contract can be obtained at 20 Beacon street, fifth floor. A bond will be required for the faithful performance of the contract in a sum of 2% of the amount. The Commission reserves the right to reject any and all bids and reserves the right to award the contract as it deems for the best interest of the city of Boston.

STEEL WATER-TOWER.—Sealed bids will be received by the Board of Trustees for the water-works and improvement bonds of the city of Jacksonville, Fla., until 3 p. m., Tuesday, September 7th, 1897, for furnishing all materials and erecting complete on foundations a steel water-tower. Tower to be 100 ft. in height above foundations; the tank on tower to be 30 ft. in diameter and 45 ft. in height, with conical bottom and roof. With bid must be submitted a certified bank check, in the sum of one thousand dollars, payable to the chairman of the Board. Specifications can be had and plans seen at the office of the Board. For further information apply to R. N. ELLIS, C. E., Superintendent. The Board reserves the right to reject any or all bids. Informal bids will not be received.

WATER-WORKS.—Sealed bids will be received at the office of the Secretary of the Committee on Improvement of the Water-Works of the city of Newbern, Tenn., until 2 o'clock p. m., on Monday the 23d day of August, 1897, to furnish the necessary material, etc., and to erect and install the following: 1,300 ft. (approx.) of 8 in. cast-iron water pipe; 1,300 ft. (approx.) of 6 in. cast-iron water pipe; 2½ tons of hub and spigot special castings; half ton of flanged special castings; two 8 in. gates; two 6 in. gates; eight 4 in. gates; 12 gate boxes; 22 fire hydrants; one 8 in. tubular well; one 65,000-gal. steel tank, and 50-ft. steel tower. All in accordance with the plans and specifications on file in my office. Each bid must be accompanied with a certified check for \$250. The Committee reserves the right to reject any and all bids.

OIL ENGINES, ROTARY TRANSFORMERS and Storage Batteries.—U. S. Engineer Office, Willets Point, N. Y.—Separate sealed proposals for furnishing and delivering at New York City oil engines, rotary transformers and storage batteries will be received here until 12 m., September 6th, 1897, and then publicly opened. Information furnished on application. JOHN G. D. KNIGHT, Major, Engrs.

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1/2 Column.	33	1 7/8	11	19	50	86	117	149
	36	1 7/8	12	20	54	93	126	161
	39	1 7/8	13	21	58	99	135	172
	42	1 7/8	14	23	61	106	143	183
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	48	1 7/8	16	25	68	118	160	204
	51	1 7/8	17	26	71	124	170	224
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	78	1 7/8	26	35	98	171	255	382
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	84	1 7/8	28	37	104	181	273	416
	87	1 7/8	29	38	107	186	282	433
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DIVIDENDS.

SABELLA GOLD MINING COMPANY,
COLORADO SPRINGS, COLO., June 10, 1897.
DIVIDEND NO. 11.

A dividend of ONE-HALF CENT PER SHARE (\$11.25) has been declared, payable June 25th, 1897, to stockholders of record June 15th, 1897. The stock transfer books will be closed June 15th, 1897, at 3 o'clock p. m., and will be reopened on the morning of June 26th, 1897.

PERCY HAGERMAN,
Vice-President and Treasurer.

HOMESTEAK MINING COMPANY,
MILLS BUILDING, 15 BROAD STREET,
NEW YORK, August 17, 1897.

DIVIDEND NO. 229.

The regular monthly dividend, TWENTY-FIVE (25) CENTS PER SHARE, has been declared for July, payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 25th inst. Transfer books close on the 29th inst.

LOUNSBERY & CO., Transfer Agents.

ASSESSMENTS.

CONSOLIDATED CALIFORNIA AND VIRGINIA MINING COMPANY.—Location of principal place of business, San Francisco, Cal.; location of works, Virginia Mining District, Storey County, Nevada.

Notice is hereby given that at a meeting of the Board of Directors, held on the 3d day of August, 1897, an assessment (No. 39) of TWENTY-FIVE CENTS (25c.) per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, room 29, Nevada block, No. 309 Montgomery street, San Francisco, Cal. Any stock upon which this assessment shall remain unpaid on the 8th day of September, 1897, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Wednesday, the 29th day of September, 1897, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors,
A. W. HAVENS, Secretary.
Office: Room 29, Nevada block, 309 Montgomery street, San Francisco, Cal.

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MORTGAGE SALE.

Under and by virtue of the powers contained in a certain mortgage made the 6th day of April, 1882, by the Canada Consolidated Gold Mining Company in favor of Robert Richardson, of the City of Belleville, as Trustee, which said mortgage will be produced at the time of sale, there will be offered for sale by PUBLIC AUCTION by C. J. Townsend & Co., at No. 22 King Street West, in the City of Toronto, Ont., on Saturday, the 18th day of September, 1897, at the hour of 12 o'clock noon, the following property (including the property formerly operated by the said company for gold mining purposes):

1. Lot No. 10 in the 8th Concession of the Township of Marmora, in the County of Hastings and Province of Ontario, Can., less five acres thereof, said to belong to W. J. Gatling.
2. The west half of Lot No. 10 in the 9th Concession of the said Township.
3. The east half of Lot No. 9 in the 8th Concession of the said Township.
4. A portion of the northeast quarter of Lot No. 8 in the 8th Concession of the said Township.

On the property are two shafts sunk for the purpose of mining gold-bearing arsenical ore, with drifts and extensions; a mill building formerly used for treating the ore; brick office building and commodious brick residences; a number of workman's cottages and other buildings and erections used in connection with the working of the mines. For terms and conditions of sale apply to **DEWART & RANEY, Solicitors for the present Trustee under the said mortgage, 26 King Street East, Toronto, Ontario.** Dated the 9th day of July, A. D. 1897.

CONTRACTS OPEN.

Continued from Page 20.

SEWER SYSTEM.—Sealed proposals will be received by the Board of Sewer Commissioners of the village of Oneida, N. Y., until 1 o'clock p. m., on Aug. 31st, 1897, for the construction of sewers in the village of Oneida, consisting of about three and one-half miles of pipe sewers with their manholes, lampoles and other accessories, including all materials, tools and labor necessary to complete the same. Bids will be received for the whole work. Plans can be seen and specifications obtained from the Clerk of the Board after August 20. The Board hereby reserves the right to reject any or all bids, or to accept any that, in the judgment of the Board, will be for the best interest of the village. Bids satisfactory to the Board in amount and sureties will be required of those to whom the contract may be awarded. The sureties shall be residents of the State of New York, or a surety company organized under the laws and doing business in the State of New York—the latter preferred. Each bidder will be required to state in his proposal the names and addresses of his proposed bondsmen. Cash or a certified check made payable to the President of the Board of Sewer Commissioners of Oneida, N. Y., to the amount of \$500, must be deposited by each bidder and accompany his bid as a guarantee that in case the contract is awarded him, he will, within seven days after notification of award, execute said contract. Bids must be sealed and addressed to E. K. Boden, Clerk, Oneida, N. Y., and marked on the outside of the envelopes enclosing them, "Proposals for Oneida Sewers."

BOILERS.—Sealed proposals for furnishing materials and labor for boilers, piping, etc., at Ward's Island, N. Y.; for plumbing for kitchen building at Central Islip; plumbing, heating, etc., and for electric conduit system for pier building foot of East 116th street, New York City, may be sent by mail or delivered in person up to 4 p. m., August 24th, 1897, to Henry E. Howland, Esq., president of the board of managers, Manhattan State Hospital, No. 1 Madison avenue, New York City, where the board will open proposals. Separate proposals must be made for each section of the work to be done. Drawings and specifications may be seen and forms of proposals obtained at the office of I. G. Perry, Architect, in the Capitol at Albany, N. Y., and at the office of the board of managers, No. 1 Madison avenue, New York City. The board of managers reserve the right to reject any or all bids as they may deem for the best interest of the State.

BRIDGE PIERS.—Sealed proposals will be received until September 1st, 1897, for the construction of bridge piers along the line of the Peoria, Decatur & Evansville Railway, at Evansville, Ind.; Grayville, Ill., and Newton, Ill. The work will require about 1,600 cu. yds. first-class masonry in the piers, and about 4,000 lin. ft. of piling in the foundations. The right to reject any or all bids is reserved. For plans, specifications, etc., call on or address **A. J. DAVIS, Engineer, Mattoon, Ill.**

BREAKWATER.—U. S. Engineer's Office, Duluth, Minn.—Sealed proposals for building two breakwater piers, each some 2,700 ft. long, at Lake Superior entrance to Portage Lake Ship Canal, Mich., will be received here until noon, September 10th, 1897, and then publicly opened. Information furnished on application.

RIP RAP WALL.—United States Engineer Office, Army Building, New York.—Sealed proposals, in triplicate, for construction of riprap wall on eastern beach of Sandy Hook, N. J., will be received here until 12 m., August 25th, 1897, and then publicly opened. Information furnished on application.

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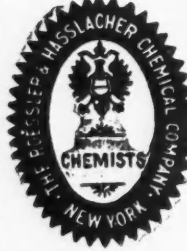
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