

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. LXX. SEPTEMBER 22, 1900. No. 12.

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SUBSCRIPTIONS ARE PAYABLE IN ADVANCE. For the United States, Mexico and Canada, \$5 per annum; all other countries in the Postal Union, \$7. REMITTANCES should be made by bank drafts, post-office orders or express money orders on New York, payable to the Scientific Publishing Co.

Main Office: 253 Broadway (P. O. Box 1833), NEW YORK.

Telephone Number, 3,065 Cortlandt. New York Cable Address—"ROTHWELL." (Use McNeill's or A B C 4th Edition Code. London Cable Address—"PULCINETTO."

Branch Offices: Chicago, Ill 737 Monadnock Building, Phone 73 Harrison. Denver, Colo., Boston Building, Room 206. Salt Lake City, Utah, Atlas Building. San Francisco, Cal., Third Floor, Mills Building.

Vancouver, B. C., Office, Molson's Bank Bldg. Wm. M. Brewer, Manager. London, Eng., Office, 20 Bucklersbury, 368. 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. 2d. to the dollar, net.

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Our local correspondent in another column reports many purchases of coal lands in the southwestern section of Pennsylvania, especially in the districts adjacent to the Connellsville Region, which are supposed to contain coking coal.

Science, as expounded in the Sunday newspapers and popular magazines is a fearful and wonderful thing, but does very little harm, as a rule, beyond giving many people false ideas; but these ideas are never reduced to practice.

The description of the Columbia Gold Mine in Georgia, given on another page, illustrates the changes now in progress in Southern mining. Old methods are being dropped and in several cases the exploitation of the mines has been undertaken with new machinery and with the most approved processes and methods.

Our Connellsville correspondent, in another column, calls attention to the possible exhaustion of the coking coal of the Connellsville Region, and asks what substitute for coke will be adopted.

We have from time to time referred to the activity of the gold dredging industry in New Zealand, and the success with which mining operations of this class have met there.

A very full account of dredging methods in New Zealand and the class of machines used appeared in the "Engineering and Mining Journal" August 4th, 11th and 18th last.

The latest advices from the Nome District in Alaska are still unfavorable, and the main point noted is that a very large number of people want to get away. The majority of these cannot leave, some because they cannot find room in the vessels sailing, and more because they cannot pay for their passage.

The fact is that the rush to Nome was enormously overdone, and many times the number of people who could possibly do well in the district made their way there. When the population has been sifted out, the

floating element has gone and the country left to a comparatively small number of steady and intelligent workers, it is quite possible that good returns may come from it, for a time at least.

The question of freight rates on iron and steel is now agitating the trade and an active discussion is in progress. Last year, when the iron trade was booming and prices everywhere going up, the railroads made general advances in rates on iron and steel, claiming that they were entitled to some share in the gains which had succeeded a long period of depression. Under the circumstances these advances were accepted with little remark; but now that demand and prices are falling off, the iron men want a corresponding reduction in freight charges. The railroad managers naturally want to keep what they have gained, and thus far have declined to make the desired changes. The pressure upon them is strong, however, and it is quite possible that some concessions may be secured. The situation is particularly trying for the Alabama iron-makers, who claim that current rates practically shut them out from the Northern markets, unless they are willing to sell at a loss.

In this connection we may note a report that the Carnegie Steel Company is considering a plan for building a railroad from Pittsburg to tidewater under its own control. It is quite possible that such a project may be entertained, though the company does not yet admit the fact. Its railroad from Lake Erie to its works—the Pittsburg, Bessemer & Lake Erie—has been a success, and has done work which far surpasses any results previously obtained in the way of large train-loads and low cost of haulage. A line built and worked on the same plan to tidewater might be made a success, though its first cost would be large. It would probably be built to one of the ports where terminal facilities could be had at a much lower cost than at New York and Philadelphia, and from which deliveries could be made by water to points on the seaboard, and export trade could be cheaply handled. We must consider the report as indicating a possibility, which is hardly yet a probability.

As we have heretofore had occasion to remark, the production of copper increases in a moderate way only. The statement of Mr. John Stanton, who acts as the statistician for the companies, shows that for the eight months ending with August this year the total output of copper in the United States was 178,756 long tons, the increase over the corresponding period of last year being only 10,250 tons, or 6.1 per cent. Of this increase only 1,150 tons came from the reporting mines, which include those of all the larger companies. The balance of 9,100 tons was from the outside sources, which include some of the smaller mines and the smelters which treat ores carrying the precious metals, in which copper is a product of minor value. The gain shown is not a large one, if we consider the number of new companies started last year, and the inducements to large output offered by the strong demand and high prices. It looks very much as if many of the larger mines had rather forced their production last year and could not increase it this year to any considerable extent. Hardly any of the new mines are in a position to market much metal this year, though some of them may make a much better showing in 1901.

Meantime the demand for the metal continues very large in Europe, as well as at home. The exports from the United States have reached a very high figure, the total for the eight months being 115,726 tons, an increase of 41,084 tons, or 55.1 per cent. over last year. The copper shipped abroad was no less than 64.7 per cent. of our total production. This large quantity was readily absorbed, as appears by the fact that purchases for foreign account continue to be made here in large quantities.

#### NEW MINING DEVELOPMENTS IN GREAT BRITAIN.

An interesting feature in the present revival of metalliferous mining in Great Britain is that Continental companies are taking over the working of some of the mines that have not been particularly successful under home management. For instance, the *Vieille Montagne* Company a few years ago acquired the lead and zinc mines on the borders of Cumberland and Northumberland, formerly worked by the *Nentheat & Tynedale* Company. A similar phenomenon is to be seen in Wales, near Aberystwith, where the *Societe Anonyme Miniere of Liege*, Belgium, has acquired the *Frongoch* mines. In the latter case it is amusing to notice that the new management has imported its own workmen and there is quite a foreign colony among the Welsh hills.

On the other hand, it may be mentioned that two important developments in Wales are being conducted by noted English companies. One of these is *Brunner Mond & Company*, who are now working zinc and lead mines in Flintshire, and the other is the *English Crown Spelter Company*, of Swansea, which has just acquired some extensive zinc mines in Carnarvonshire. This latter enterprise is of considerable interest, as the power required is to be obtained entirely from the natural

water supply. It is a curious fact that the *Snowden Range* of mountains in Carnarvonshire contains quite a number of comparatively large lakes that are never visited by tourists and their existence little known. These lakes are in the heads of side valleys and their level is from 500 to 1,000 feet above the main valleys that form the highways for tourists. The utilization of such lakes can therefore be effected without interfering with farmers, sightseers and artists, and the ground landlords will be glad to grant every facility in developing property that is at present practically valueless.

#### THE PENNSYLVANIA ANTHRACITE MINERS' STRIKE.

All attempts to avert the threatened strike of the anthracite miners in Pennsylvania proved futile; the men began to stop work last week and the strike became general on Monday, September 17th. So far, there has been no violence, and the men have obeyed the orders of the labor leaders to avoid making disturbances; but fire and bloodshed are by no means impossible. There seems to be a wide-spread feeling in the essential justness of the miners' cause, and public sympathy is toward them, so that the leaders will doubtless seek to avoid riot.

So far over 100,000 men have stopped work. Mining in the great basin of the Wyoming Valley is almost wholly suspended. There is no work going on north of Pittston, and the whole of the Wyoming and Lackawanna regions is closed down tight, with the exception of the West End Mine at Mocanaqua, and a few washeries, notably these which supply public buildings, electric-light plants, etc., at Scranton. In the Lehigh Region work is largely suspended. The total number of men out there is not known exactly, but the strikers, since Monday, have succeeded in stopping work at a number of collieries which started to run, and are making steady gains. In the Schuylkill Region, where the Reading Coal and Iron Company is the principal operator, the leaders of the strike have been less successful, and a large majority of that company's collieries are at work. This failure of the men to go out is probably due to two causes. The Reading Company does not charge a high price for powder, nor does it maintain company stores, and in the second place, the Schuylkill miners suffered most in the last great coal strike in the coal region, when the miners in the Wyoming and Lackawanna fields continued to work.

As regards the outcome of this regrettable struggle, there is much room for conjecture, but little prospect of the men getting their demands. The miners have claimed that they were oppressed by an excessive price for powder, by being compelled to buy at company stores and pay company doctors, and by the system of mining and paying for coal, under which the miner is paid, not for the coal mixed with dirt and slate, which he sends to the breaker, but for the clean, prepared coal, which the company sells. The miners also claim that the system of docking or charging for improperly loaded cars, or coal containing too large a proportion of slate is oppressive, and demand the payment of wages under the same system that prevails in the bituminous regions, also a general advance in wages.

In our issue of August 25th we discussed at some length the disadvantages with which the anthracite industry is now burdened, showing that higher fixed charges, increasing cost with depth, an irregular market and a productive capacity far in excess of ordinary demand had not only brought about hard conditions but had virtually taken away all profit, so that for many years some of the largest mining companies have run at an actual loss. Under such circumstances, a general increase of wages or the adoption of mining methods entirely unsuited to the conditions governing the industry are wholly out of the question. These basal facts cannot be altered by specious appeals to public sympathy, or by demagogic rant about "coal barons." On the other hand, it seems as if some of the complaints of the miners might be remedied.

The company store has always been a fruitful source of evil wherever it exists and should be abolished. Practically, all the larger anthracite mining companies have done away with such stores, and the others should follow their example. It is the individual operators who are the greatest sinners in this respect, and the large mining companies should not be condemned for the misdeeds of the small fry, nor should appeals for sympathy be based on the hardships of a few. Moreover, even now the anthracite miners do not suffer nearly as much from company stores as miners in the bituminous regions, particularly in West Virginia.

The price of powder has been the chief reliance of labor agitators in this strike, so far as the Wyoming Valley is concerned. The price, \$2.75 per keg, has been for many years a standing grievance of the miners. It was established by agreement of the Delaware & Hudson, the Delaware, Lackawanna & Western, and several other companies twenty-five years ago, as one of the items in a general wage-scale that still is in force. Prices have fallen since then, and the miner fails to see why he should be charged \$2.75 for powder which he can buy outside of the

mine for \$1.25; but it must be remembered that it is to the interest of the miner himself that the supply of powder taken into the mine should be closely regulated, and that no more than actually enough should be used, since the anthracite mines are very gassy, and any misuse of powder may cause a disastrous explosion. The company, it is true, makes a profit on the powder, but this profit is charged to the general mining account, and offsets lower prices for coal and increased fixed charges for mining. The Delaware & Hudson Company about 1880 offered to lower the price of powder to its employees if they would submit to a corresponding reduction in the price per ton for mining coal, but the miners rejected the offer by a three-to-one majority. Still the average miner fails to see the point, and it would probably be well for the companies affected to bring down the price of powder, and if necessary make a corresponding reduction in wages.

As to the size of the ton, of which the miners complain, or mining  $2\frac{1}{2}$  tons of coal, for which they receive but the price for 2 tons, and the system of "dockage" or deducting for improper loading, there is something to be said on either side. Where miners are paid according to the mine car this car may contain from 75 to 90 cubic feet. There is no uniform rule, and cannot be, owing to differences in the size of shafts and gangways at different mines. It is needless to say that the company does not suffer by any irregularity. The docking boss who inspects the coal as it comes from the mine, is more likely to favor the operator than the miner. On the other hand, the preparation of anthracite coal is such a complicated process and such a large proportion of the coal mined is lost, that the methods prevailing in the bituminous region for weighing coal as mined are not suited to the anthracite district, and a mining scale based solely on the width of seams seems absurd since some seams are free coal while others contain a very large proportion of slate or "bone." It is also right that the miner who is careless and loads his car improperly should not be paid as much as the miner who is careful. Still it might be worth while to mitigate grievances about dockage and try the appointment of a check-dockage boss at the breaker, selected and paid by the miners.

The real power behind the present strike is the United Mine Workers. This organization started in the bituminous region, particularly in Illinois, Indiana and Ohio. It does not control some of the bituminous fields, those in West Virginia and Maryland, and has made its chief gains in Pennsylvania within a very few years. The mine operators see in this organization the work of bituminous coal miners and operators who will profit by any temporary increase in demand for soft coal, while the anthracite strike is on, and also by the permanent openings made for soft coal in the anthracite territory, it being often said that soft coal is restricting the use of anthracite more and more each year. Again, the anthracite operators have not forgotten the general reign of terror instigated by the Mollie McGuires in the early seventies, nor the manner in which the old Miners' Benevolent Association arbitrarily broke contracts and disturbed trade generally. That organization was one of the most powerful ever built up by miners in this country, yet it was completely broken by the long strike of 1877. The operators probably see, in the present situation, another attempt at control by men ignorant of the larger relations of the trade, who, if temporarily successful, will again impose upon the industry the same uncertainty which made the rule of the old organization at last utterly unbearable.

#### NEW PUBLICATIONS.

"Descriptive Catalogue of a Collection of the Economic Minerals of Canada. Prepared for the Paris International Exposition, 1900." Ottawa: published by direction of the Canadian Commission for the Exposition. Pages, 218.

This annotated catalogue of the economic minerals of Canada was compiled by members of the staff of the Geological Survey of Canada, to accompany the collection displayed in the Canadian Pavilion at the Paris International Exhibition of 1900. The collection was brought together and arranged under the auspices of the Geological Survey of Canada, in co-operation with the several provincial mining bureaus and with the assistance also of a number of firms and private individuals.

The specimens were primarily arranged in natural groups according to composition and the purposes for which the several ores and other minerals are employed. The secondary arrangement was a geographical one, the enumeration, under each group, being as nearly as possible from west to east, by provinces and districts, as follows: Yukon Territory, British Columbia, Northwest Territories, except Yukon, Manitoba, Ontario, Quebec, Northeast Territory, New Brunswick, Prince Edward Island, Nova Scotia. The name and address of the exhibitor of each specimen, or that of the owner or operator of the property or mine from which it is derived, was generally given, even when the exhibit had been collected by the Geological Survey or a provincial mining bureau. In compiling the catalogue, reference was made to that previously prepared for the Colonial and Indian Exhibition of 1886, to various reports of the Geological Survey and to the provincial reports. Information was obtained directly from many of the exhibitors and from other sources. The length of the explanatory notices is not to be accepted as indicative of the relative importance of the deposits to which they refer, as the catalogue had to be prepared in a limited time and the facts at

hand, in some instances, were not so complete as might have been desired.

The total number of specimens exhibited from the Dominion was 1,191. In the catalogue and its descriptions the classification adopted was: 1. Metals and their Ores. 2. Materials used in the Production of Light and Heat. 3. Minerals Applicable to Certain Chemical Manufactures and Chemical Fertilizers. 4. Mineral Pigments. 5. Salt and Brines. 6. Refractory Materials and Materials Applied to the Manufacture of Pottery, Chinaware, etc. 7. Materials for Grinding and Polishing. 8. Minerals Applicable to Fine Arts and Jewelry. 9. Materials Applicable to Common and Decorative Construction.

The collection seems to have been a fairly full and representative one. The catalogue gives a pretty comprehensive account—of course in condensed form—of the varied mineral resources of Canada. Its completeness and the evident care with which it has been prepared do much credit to Dr. George M. Dawson, director of the Geological Survey, and his staff, to whom fell most of the work of preparation and arrangement.

"Mercury or Quicksilver in New South Wales." Prepared by J. E. Carne, under direction of the Geological Survey. Sidney, N. S. W.: Government Printer. Pages, 36; illustrated.

This pamphlet gives some interesting data about the cinnabar deposits which have been located in New South Wales and some of the other Australasian Colonies. A number of these are known to exist, though they have been worked only to a very small extent, and such operations as have been carried on have not proved profitable. In view of the large demand for quicksilver there is much inducement to produce it locally, if possible, and this monograph should prove useful.

"Mining Engineers' Report Book." By Edwin R. Field. London: Charles Griffin & Company, Limited, and Philadelphia: The J. B. Lippincott Company. Pocketbook form; pages, 40. Price, \$1.50.

This pocketbook contains a list of questions to which a mining engineer should furnish answers when examining a property. There are also a few tables which may be convenient for immediate reference, and blank pages for memoranda. While it has some points of usefulness, it will not supersede MacDonald's and some other more comprehensive forms of mining reports. The addition of metric measures would have added very much to its value, but the compiler seems to have studiously avoided anything that looked new.

#### BOOKS RECEIVED.

In sending books for notices, 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.

"Mining Law of the United States of Mexico." Revised Edition. City of Mexico: F. P. Hoeck & Company. Pages, 120.

"The Mexican Custom House Tariff." Revised and translated by J. P. Taylor. City of Mexico: F. P. Hoeck & Company. Pages, 184.

"Diamond Drilling for Gold and Other Minerals." By G. A. Denny. London, England: Crosby Lockwood & Son. Pages, 160; illustrated.

"United States Commission of Fish and Fisheries. Bulletins 442, 443, 444, 445, 446, 447, 448 and 449." Washington: Government Printing Office. Illustrated.

"The Copper Mines of Butte and the Amalgamated Copper Company." By George L. Walker. Boston: "The Financial News." Pamphlet; pages, 32. Price, 25 cents.

"The Rubber Industry in the British South Africa Company's Territories." By P. Lyttleton Gill. Salisbury, Rhodesia: Issued by the Department of Agriculture. Pages, 28.

"The Mineral Resources of New Caledonia." By Frederick Danvers Power. London, England: Published by the Institution of Mining and Metallurgy. Pages, 40; illustrated.

"Report of the Bureau of Mines of Department of Internal Affairs of Pennsylvania, 1899." James E. Roderick, Chief of Bureau. Harrisburg, Pa.: State Printer. Pages, 353; illustrated.

"Transactions of the Australasian Institute of Mining Engineers." Volume VI. Edited by A. S. Kenyon, Secretary. Melbourne, Victoria: Published by the Institute. Pages, 248; illustrated.

"Journal and Proceedings of the Royal Society of New South Wales." Volume XXXIII., 1899. Edited by the Honorary Secretaries. Sydney, N. S. W.: Published by the Society. Pages, 294; 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 will only 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 Frasch Electrolytic Nickel Process.

I have read with interest the article published in your paper September 8th giving an enthusiastic account of the Frasch process of treating the Canadian nickel-copper mattes, and I doubt not that the promised detailed description is being awaited with the greatest interest by the electro-chemical fraternity. As a considerable amount of experimental and practical work has been done in this same direction, a few remarks on the subject may not be without interest to some of your readers.

Mr. Frasch dissolves the matte in the anode compartment of a divided cell, using the energy so created for the economic production of a useful by-product, caustic alkali, in the cathode compartment. The elec-

trolyte being an alkaline chlorine (soft) is of course procurable at a very low cost.

There are several technical difficulties in such a process, which is extremely simply in theory; for instance, failure of electric connection at the anode through the particles of matte becoming coated with sulphur, which will remain predominant and as the metallic contents are dissolved, diffusion of the liquids, etc., etc. If Mr. Frasch has overcome these and other difficulties he is certainly deserving of the highest credit. The result of this first operation is a solution of the chlorine compounds of Ni, Cu, Fe, etc., of which the Ni and Cu are to be separated and to be reduced to the metallic state. Now this part of the process is disposed of in your article with: "Eventually the metals in the solution are recovered by electrolytic deposition." It is at this point that the difficulties are becoming thickest and I would like to ask, Would it not be much simpler to deposit refined copper instead of producing caustic soda solution on the cathode with or without the use of a divided cell? In this case one of the metals, Cu, will be separated at a cost of about ½c. per pound, leaving only the Ni and Fe to be taken care of.

To deposit copper from the solution without the introduction of additional energy, such as soluble anodes, would bring the cost up to about 3½c. to 4c. per pound of Cu deposited, steam power taken as a basis. In the case of Ni the cost must be many times that of depositing the Cu, when it is taken into consideration that even with crude Ni anodes the electro-deposition of pure nickel consumes about ten times the watts used in electro-deposition of copper from Cu anodes on account of the very high resistance of the necessarily neutral electrolyte in the case of nickel.

The high cost of depositing nickel electrolytically from its solutions has been the drawback in treating the so-called Bessemerized Sudbury Cu-Ni mattes. These mattes, when used as anodes in the form of slabs, yield up their copper in beautiful form on the cathode, leaving all the Ni and Fe and very little of the Cu in the electrolyte. I therefore believe that the subsequent economic extraction of the nickel from its solutions is the only problem which needs to be solved to make the electrolytic separation of Ni and Cu a commercial success.

Cheap power, such as can be had at Niagara Falls, and the use of proper depolarizers will no doubt turn the balance in favor of electrolytic separation, especially as the pure electro-nickel is a revelation to metallurgists and physicists, who are used to the old smelted product with its contamination of carbon, silicon, sulphur, etc., from which harmful ingredients the electro-nickel is perfectly free. Wm. Thum.  
Newark, N. J., Sept. 14, 1900.

#### Utilizing the Heat of Molten Slag.

Sir: If accident had not prevented me until lately from seeing Mr. Bretherton's able and courteous communication on this subject in the "Engineering and Mining Journal" of May 26th, last, I should certainly have trespassed on your space with a few words of apology and explanation, which I feel that I owe to the gentleman and likewise to your readers: to Mr. Bretherton for any injury I may have done either to his business prospects or his feelings; and to your readers if I have indiscreetly ventured on a public criticism of an invention without first having informed myself sufficiently about it to be lucid and instructive. I am exceedingly gratified that Mr. Bretherton has consented to divulge those fundamental facts relating to his invention which give it a scientific standing, second, I may say, to no similar device. I do not see how anybody with a spark of candor about him can deny the convincing nature of the gentleman's deductions, or even the perfectly logical form in which they are stated. Mr. Bretherton says: "My calculations were based on the fact that I obtained 300° of heat shown by a new \$25 pyrometer, with a small heating box set over the matte settler, and there is nothing to prevent me from having two or three times the heating surface (of slag) saving that much additional heat . . ."

Quite indisputably so; and as we cannot help carrying out the logical process a step or two farther, let us suppose that we increase the surface not twice only, getting "about 500° or 600°," but 10 times, giving by the Brethertonian theory "about 3,000° to 3,600°." Cannot even the least attentive reader see the enormous possibilities that underlie this form of smelting? Here we have a temperature which enables us to smelt not only without fuel, but without a furnace. For we only need to feed the ore direct into the "large and well-proportioned settler" which Mr. Bretherton's ingenuity and foresight have already provided, when the intense heat so graphically described by him will do the rest. Surely this is better than bothering with effete and disappointing apparatus for merely heating wind for use in blast-furnace smelting; apparatus which Mr. B.'s brilliant conception is destined to relegate to the scrap heap in short order.

Nor is this all. The sphere of usefulness of this new principle does not end here. If, by merely doubling the area of a radiating surface, we can double the temperature of an absorbing medium, what a vast expanse of utility is opened to our gaze? What multifarious applications are destined to be made. Now, as cold weather approaches, and the family mush becomes an object of solicitude, how do I see the faithful cook, cognizant of the new calorific principle, calmly doubling the area of her kettle and setting it on the floor to boil! But I will follow the subject no farther, or some keen-witted reader will see in it only a "reductio ad absurdum"—a thing that need not trouble Mr. Bretherton any more than merely scientific deductions do.

I am not a little surprised and pained to learn that my humble experiments in air heating had the unfortunate effect, as Mr. Bretherton asserts, of "delaying the introduction of hot blast for years." I should be very sorry if this were entirely true, and I sincerely hope that he exaggerates. Undoubtedly this must have caused the gentleman intense agony, only alleviated by the fact, which he modestly acknowledges, that the wheels of metallurgical progress were again started into activity by his own experiments and inventions. While apologizing for my shortcomings, I have pleasure in congratulating the gentleman on his success, and in thanking him for alleviating the sadness of a situation

which my ignorance and inexcusable lack of skill precipitated. But, while humbly confessing my fault in thus blocking the wheels of progress while I mistakenly thought I was merely conducting some very interesting experiments proper to the time and place, I want to ask Mr. Bretherton if it is not funny that people who are supposed to know enough to come in when it rains can be deterred from using the pyritic process because somebody's experiment in heating air failed to eventuate just right? As Mr. B. rightfully observes, there are several different methods of heating the blast; but he does not add, which is the truth, that they are all, save his, subject to improvement.

The story of these metallurgical misadventures must have fallen with crushing weight upon the sage of Silver City to evoke from him so severe a reproof; and I can fancy the depth and seriousness of his sorrow and regrets. For his consolation I will repeat a passage which, with singular prescience, I penned several years since. This choice morceau reads substantially as follows: "Now that the pyritic process has become an established fact, it is natural that it will be seized upon by many persons unqualified by education or reasoning powers as a means of making money. A good many patent process men, seeking gulls to whom to sell spurious machinery, and ignorant and often designing creatures hunting for occupation, will seize upon the new process with avidity, setting themselves up as prophets of the new cult."

All this is as good now as when I wrote it, and the only change I would make is to add that these "new lights" of metallurgy quite overtop in their own estimation the gentlemen who made pyritic smelting feasible, at which Mr. Bretherton, as a founder of the cult, can afford to laugh.

There are a good many other points in connection with Mr. Bretherton's invention about which I would like to speak, but space in a paper like the "Engineering and Mining Journal" ought not to be sacrificed to the mere object of commendatory writing. I appreciate fully the advantages, for example, of passing the heat first up to the air and then down to the settler; of using it twice or more times while in transit; of skilfully combining the effects of the settler and the pyrometer; and many like conditions and corollaries, wherein you have your cake, as one may say, and eat it, too. Only the most intimate study will bring out all the relations and advantages of this remarkable device, so capable of indefinite expansion. I fully expect to find the inventor building settlers of an acre in extent, which a hasty computation assures me will give out 18,000,000° of heat, according to the Bretherton formula. Imagine the infinite possibilities of this temperature when applied to ore smelting!

In taking leave of the subject I beg to assure Mr. Bretherton of my full appreciation and respect, while expressing the hope that he will meet the fullest measure of success in introducing his inventions to the industrial world, which is already much his debtor.

Herbert Lang.

New York, Sept. 18, 1900.

**CALCIUM CARBIDE IN RUSSIA.**—There are at present four works for the manufacture of carbide in course of construction in Russia, two in Western Russia, one in Finland (at the Incatsu Falls), and one in the Coneg District. The works in question will confine themselves to selling of the carbide and the erection of the necessary acetylene installations, the plan of also selling the gas in a compressed state having been abandoned.

**MINERALS IN HAITI.**—In a recent report United States Minister W. F. Powell refers to the working of mines in Haiti in colonial times and the closing of the mines after the first revolution. He adds that during the past few years some of the old mines have been found, and an effort is being made to work them. Copper ore has been located in the northwest, south of Port de Paix and north of Gonaives. This region is also rich in iron ore, containing from 68 to 70 per cent. of that metal. East of this district, beds of coal have recently been discovered; here can also be found marble, kaolin, tin and antimony. In the southern section of the Republic, or the Hotte Mountains, copper and magnetic iron ore are found. To the north of Jacmel gold has been discovered in paying quantities. Within the past year the Government has given concessions to develop these mineral resources, several of which are held by Americans. The principal one—the opening of the coal belt—has been granted to Mr. Anton Jaegerhuber, an American citizen, the head of one of the leading commercial houses in Port au Prince. This gentleman also holds the concession to construct two lines of railway.

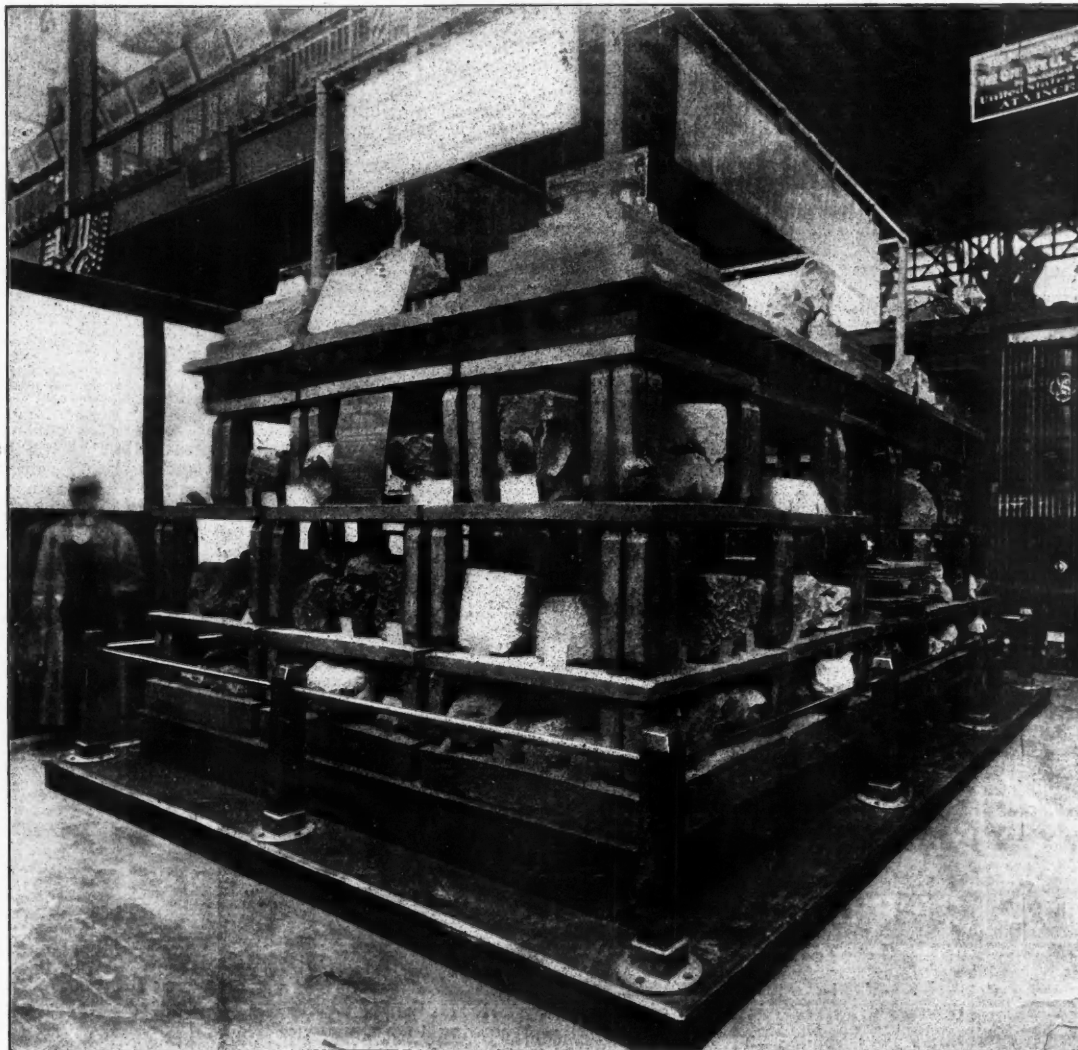
**MINING PARTNERSHIPS IN CALIFORNIA.**—The law of California (Civil Code, section 2,511), provides that a mining partnership exists between two or more parties who own or acquire a mining claim for the purpose of working it and actually engage in working it. Section 2,395 defines a partnership to be the association of two or more persons to carry on business together and divide the profits. Certain parties furnished another with funds to go to Alaska to locate mining claims. The latter agreed that former should have an undivided one-half of all mining claims located, together with one-half net proceeds of all minerals mined from same after the first year. It was also agreed that, in case the latter discovered any valuable claims he should notify the others, and they should at once go to the place where the claims had been located and assist in working them, they to furnish one-half the labor and expense of same; and they should become the one-half owners of any claims so located, and to have one-half the minerals mined from same. They brought suit alleging that they furnished such party with a grub-stake to enable him to go to Alaska, under agreement stated above, that he did go, and acquired certain valuable claims, but not that he had acquired them with the grub-stake furnished by them, which would be a necessary allegation in order to enable them to have any interest in same. Though the contract may have contemplated a partnership, it did not constitute a partnership which commenced on the starting of such party for Alaska, so as to entitle the others to an accounting where he had refused to let them work the claims discovered by him.—Prince vs. Lamb (60 Pacific Reporter, 689); Supreme Court of California.

## AN ARIZONA COPPER EXHIBIT AT PARIS.

The accompanying photograph, for which we are indebted to the courtesy of Dr. James Douglas, shows the exhibit made at the Paris Exposition by the mines and smelting works controlled by Phelps, Dodge & Company, of New York. These are the Copper Queen Consolidated, at Bisbee; the Detroit, at Morenci, and the United Globe, at Globe. The description prepared for the Exposition is so concise and yet complete, that we reproduce it below in great part:

The Copper Queen Consolidated.—The most prominent of the three is the Bisbee Group. There the ore occurs in irregular masses in carboniferous limestone. The profitable ores, as yet discovered, are confined to a series of beds which do not exceed 600 ft. in thickness. The ore masses are not only very variable in size but follow no appreciable order in their deposition. Oxidation has converted all the surface ores into oxidized compounds. In parts of the mine alteration from sulphides

without preliminary calcination of the ores. This is the grade of matte which, considering the local cost of converter lining, can be most economically concentrated in the Bessemer converter. The matte from each of the four cupola furnaces is collected in large tilting wells, placed in series of two to each furnace, from which it is poured into a ladle operated by an electric crane. This transfers the still molten matte from any one of the four furnaces to any one of the four Bessemer converters. The charge of matte is blown under a pressure of 8 lbs. to the inch to metallic copper of about 99 per cent. The operation is conducted in two stages. During the first the matte is concentrated to white metal of about 78 per cent. through the oxidation of the iron and part of the sulphur. The converter is then tilted; the blast is turned off, the slag, formed from the oxidation of the iron and the silicious lining, is skimmed; the blast is turned on, the converter is restored to position, and the charge is rapidly and completely reduced to metal. The lining material for the converter, usually available, is valueless; but Mexico



THE EXHIBIT OF THE COPPER QUEEN, THE DETROIT AND THE UNITED GLOBE MINES AT PARIS.

to oxidized compounds has taken place to a depth of nearly 600 ft.; but in other sections heavy unaltered sulphides of iron and copper are met with at 200 ft. from the surface.

The oxidized ores, in the only large outcrop, which revealed the hidden wealth of the mine, were associated with calcite; but the deeper oxides of copper are generally associated with limonite, and occur sporadically in very large masses of ferruginous clay, itself a product of alteration, known as ledge matter. The richest malachite and azurite are found directly in contact with or near the limestone. The intermediate product, between unaltered sulphide and oxidized ore, is a black oxy-sulphide. This occurs in large quantities as a shell, surrounding extensive masses of almost pure sulphide of iron and copper. But, some smaller bodies in which alteration is still progressing, are wholly converted into it.

The suite of ores exhibited on the second stage of the trophy illustrates the association of the oxidized copper with the oxides of iron and manganese and with clay and calcite, and shows the progress of alteration from pure sulphides of iron and copper, through black oxy-sulphides, to completely oxidized compounds.

The ores which supply the furnaces with 700 tons daily, and yield 40,000,000 lbs. of copper annually, are drawn from over 20 claims and from a subterranean area of about 1 mile by  $\frac{3}{4}$  of a mile. The ores by judicious selection yield a self-fluxing furnace charge, which by rough sorting, is brought up to 8 per cent. of copper; though the average run of the ore in the mine is less than 5 per cent.

By mixing in proper proportion oxidized and sulphide ores, a matte of about 50 per cent. of copper can be obtained from the cupola furnaces

supplies a certain amount of auriferous and argentiferous ore, with the requisite proportions of silica and alumina.

The samples on the third platform of the trophy exhibit the valuable and waste products of these metallurgical changes; and the analyses on the cards explain the progress of elimination of some of the metals, and the concentration of others at the critical periods of the blow. The coarse copper as it comes from the converter contains about 99 per cent. of copper, 12 oz. of silver and \$5 in gold value. The precious metals are recovered during the refining of the copper by electrolysis. The quantity of copper, and of gold and silver, recovered from 15 tons of ore, concentrated into 1 ton of copper, are shown in the niches, in the center of the trophy.

The wire-bars and cakes, out of which the trophy is built, were refined by the Nichols Chemical Company. The purity and high conductivity of the copper thus refined are shown in the wire, tubes and other articles made from it by the Ansonia Copper Company, which are exhibited in cases in the gallery.

The Detroit Copper Company.—For some years the supply of copper from the Clifton District of Arizona, in which the mines of the Detroit Copper Company are situated, was derived from oxidized ores in or in contact with the limestones; which were intercalated between beds of feldspathic rock. But these rich ores were long ago exhausted, and today the produce of the district, drawn from the mines of the Arizona Copper Company and the Detroit Copper Company, amounting to about 40,000,000 lbs. of copper annually, is mined from extensive beds of feldspathic rock. Some of these beds, the rock of which is itself decayed where they carry valuable ore, contains copper ores of an average of

5 per cent. The copper in these ores exists in small quantities, as carbonates, but in large quantities as black axysulphides. Where the ore is segregated into masses in the decomposed porphyry, it is separated by hand as first-class ore and passed directly to the furnaces; but most of the ore occurs disseminated in small particles through the rock, and must be subjected to mechanical concentration preliminary to its fusion into matte.

Samples are exhibited of the carbonates, suboxides and rich oxy-sulphides, which are passed directly to the furnaces; and also of the lean oxysulphide ores, which must be submitted to preliminary concentration. It will be observed that in these the mineral is scattered in such minute particles through the rock as to involve extremely fine crushing to ensure its separation. All the jig tailings are, therefore, recrushed and reconcentrated on vanners. Hence, as the samples show, the only tailings which go to waste are the extremely fine tailings from the vanners. The ores being acid, barren limestone and barren iron oxides must be added to the furnace charge, and the resulting slag is made as acid as economy will allow. Roasting is not needed to prepare the furnace mixture to yield a 50 per cent. matte for the Bessemer converter. Lining for the converter is found in an ore containing 54 per cent. of silica, 20 per cent. of alumina, and 7 per cent. of copper, which makes a sufficiently tenacious material for that purpose. About 300 tons per month of such ore are consumed per converter stand. The gold and silver contents of the copper are too low to be always economically extracted, but the Bessemer bars when refined by the ordinary furnace method, yield a copper of high grade, suitable for rolling. The new cathedral at Berlin is roofed with sheet copper made from these ores. The unaltered sulphide ores commence to occur at a depth from surface of from 400 to 600 ft., and are generally too lean in copper to be profitably treated for that metal, but they are used by the Arizona Copper Company for the manufacture of sulphuric acid.

The United Globe Mines.—The ores throughout the Globe District, though rich in copper, are so acid, and profitable flux is so scarce, that smelting is conducted under greater disadvantages than at Bisbee or Clifton and Morenci. It is the only district of importance in Arizona where the furnaces still yield black copper of 96 per cent. directly from the ores by a single fusion. The slags from the cupola furnaces are therefore acid; and like all slags made from furnaces, which produce metallic copper directly from the ore, are much richer in copper than those made from the matting furnaces. The Globe slag runs about 2 per cent. in copper. Those made in the Bisbee and Detroit furnaces run about 0.4 per cent. This great saving in copper compensates to a large extent for the extra expense of conducting the pneumatic process. The absence of sulphide ores in Globe, in any large quantity, forbids its application there.

General Statistics.—The present annual production of the Copper Queen Mines is approximately 40,000,000 lbs. of copper; of the Detroit Mine, 16,000,000 lbs., of the United Globe Mines, 6,000,000 lbs. The number of employees in the three group of mines is 2,500. The coal consumed in generating power is 25,000 tons, and the coke used in the furnaces 60,000 tons. Both coal and coke come from the mines of the Colorado Fuel and Iron Company. At the Detroit gas engines of the Otto-Crossley and the Westinghouse types are replacing steam engines.

The matting furnaces are water-jacketed cupolas of 120 ins. by 42 ins. at the tuyeres. The converters are of the barrel type, 8 ft. long by 5 ft. 6 in. in diameter. There are 4 matting furnaces, and 4 converter stands, with three shells to a stand, at the Copper Queen, 4 matting furnaces and 3 converter stands at the Morenci, and 1 furnace at the United Globe. At the Morenci there is a concentrating mill of a capacity of 400 tons a day.

The Copper Queen Company built and owns the Arizona & Southeastern Railroad, a standard gauge road of 62 miles in length connecting the mines with the Southern Pacific Railroad at Benson. The Detroit Company owns the Morenci Southern Railroad, a road of 36-in. gauge, and 20 miles in length, connecting its mines with the Arizona & New Mexico Railroad at Guthrie.

The Copper Queen and Detroit companies have mercantile departments and stores at their mines. All three companies support free libraries and reading rooms for their employees. A medical staff and well-equipped hospitals exist at all the establishments, the men contributing monthly from their wages for medical and hospital services.

#### COKE MAKING AT A FRENCH COLLIERY.\*

The coal raised at the various shafts of the Dourges Colliery is at once screened and classed into different sizes, being loaded up in railway wagons to be sent, either in execution of orders by the Nord Railway or the Haute-Deule Canal, or the washing floors and coke ovens; and for effecting this distribution the company has 2,887 m. of railway that joins the Nord system at Henin-Lietard station. The washery, put up 6 years ago by Schuchtermann & Kremer, of Dortmund, is capable of dealing with 600 tons of coal in 12 hours. On arrival, the wagons are discharged mechanically into a large hopper, whence the small coal is taken by a bucket-chain to the top of the building, where it is classed by two tables the movement of which describes an ellipse, into the following sizes: Dust from 0 to 2 mm., fines from 2 to 10 mm., grains from 10 to 25 mm., and braiseettes from 25 to 40 mm. The dust is not washed, so as to keep down the proportion of slime, but is used directly for coke-making. The fines are treated in two sets of fieldsparg boxes, and the grains and braiseettes in piston washers. After being washed, all these sizes are led to towers, whence, after draining, they are loaded onto wagons; and the slime is recovered in decantation tanks without any loss being incurred.

The production of coke has greatly increased during the last few years, having been 110,146 tons last year, while it is expected to attain 140,000 tons during the present, owing to a new bank of ovens having been added. The total number of ovens now in operation is 142, comprising 82 Coppee and 60 Semet-Solvay with by-product recovery. The

charging of the ovens is ensured by two "doseurs-melangeurs" (mixer-measurers) and three Carr disintegrators, each driven by its own steam engine; and, in addition, three other superposed appliances effect a double grinding of the special coals for making foundry coke of exceptional hardness and density. The Coppee ovens of the new bank are 65 cm. wide in the middle, 2.1 m. high to the crown of the arch, and 9 m. long. The coal is coked in 48 hours; and the out-turn of each Coppee oven is 6 tons of large coke, while a Semet-Solvay oven will turn out 1,200 tons of coke per annum.

The plant for treating the gases from the 60 Semet-Solvay ovens comprises three Beale extractors, each with its motor; eight condensers in which the gases and cold water circulate in opposite directions; three ammonia scrubbers; two columns for recovering the light oils; four elevators for the tars and ammoniacal liquors; one receiver for the latter; one tar receiver and two receivers for the heavy oils. The ammoniacal liquor is treated by sulphuric acid; and the resulting ammonia sulphate is sold, chiefly as fertilizer. The benzols are extracted in a separate building, where 90 per cent. of the benzol and 50 per cent. of the solvents are recovered.

The waste gases also serve to fire 16 boilers capable of yielding 1,100 to 1,200 H. P., more than half of which is required for the washery and the grinders, the recovery plant and electric lighting. To utilize the 450 H. P. still available a central station for the electric transmission of power is being erected near the ovens; and this power will be sent to the workshops, while it will also work the various appliances for loading coal on to the canal boats. The water which has served for refrigeration is returned either to the purifiers for feeding the boilers or to the washery; and that used for quenching the coke is returned to the supply wells after being decanted.

Last year the five shafts of the Dourges Company put out together 1,044,240 tons of coal, against 840,000 tons in 1898; and the number of men employed is 4,380, showing an average production of 239 tons yearly per man employed.

PETROLEUM IN TUNIS AND ALGERIA.—M. Hebre, in the "Petroleum Review," says that the first attempt to explore for oil in North Africa was in 1873, when a spring called Ain-Zept was shown by Arabians to a European fisherman who collected some of the oil and in a very primitive way prepared from it an oil of a bad quality and unpleasant sulphurous odor. In 1892 an Englishman visited the place and put down borings. The first bore struck oil at a depth of 420 ft. and at 680 ft. a strong disengagement of gases occurred, and at 975 ft. the well was abandoned. Two other bores put down were also abandoned, one at 810 ft. and the other at 710 ft. In 1895 the management was taken up by a Mr. Armitage, who put down a fourth bore hole, with important results. At a depth of 1,348 ft. oil was struck, the yield amounting to 7,000 liters per day, which, after three years' exploitation, has diminished to 1,600 liters. Another bore gave similar results, but, unfortunately, the whole enterprise was soon abandoned.

Mr. Armitage, however, undertook a geological investigation and discovered a petroliferous line from Tunis. This continued through the provinces Constantine, Clairfontaine and Oran, extended to Morocco, and then reappears under the sea at Gibraltar. Through the whole course of this line petroleum and bituminous tar are to be found, and a company for exploiting these has found oil in six bore holes which were made in two different places. The deepest of these was 1,179 ft., while geological conditions of the country necessitate a depth between 1,950 and 2,300 ft. at least. In 1898 a second petroliferous line was discovered 40 km. further south, at a place called El Naher (Fire Mountain). Nineteen superficial bores struck oil of a superior quality. The country has since been geologically studied by Dr. Dunikovski, of Lemberg University, who expressed the opinion that Algeria would soon be proved to possess rich petroliferous lands.

MINERAL RESOURCES OF THE RUSSIAN TRANS-CASPIAN.—According to Dr. F. Theiss, salt occurs all over the Trans-Caspian in the form of rock-salt deposits, brine-springs and salt-lakes. It is worked industrially in the districts of Krasnovodsk and Mangishlak alone, being elsewhere used by the inhabitants for their personal consumption. The principal deposits are those of Cheleken and Balla Ishem. The principal salt lakes are those of Mulla-Kara, Kuli which covers an area of 70,300 acres, Kukurt Ata, Kara Baba, Kara Kul, etc. The Trans-Caspian output of salt in 1895 amounted to 22,000 tons, nearly four-fifths of which was from the Cheleken deposits. The salt is conveyed thence by way of Usum-Ada to the harbors on the Caspian or is exported to Persia.

The existence of naphtha springs had been ascertained long before the Russians seized upon the country. The mountain ranges on the eastern shore of the Caspian are regarded as a continuation of the Caucasus, and it is thought that the naphtha springs on either shore of that sea are the outlets of an enormous subterranean reservoir which stretches right away from the Caucasus.

The annual output of petroleum in Trans-Caspia appears to have steadily diminished from 4,669 tons in 1890 to 1,393 tons in 1895. Nevertheless, the author predicts a great future for the industry in that province. Ozokerite occurs on the Cheleken Peninsula, in the Naphtha Dagh.

Sulphur is found at Damba and Shiik, near Geok-Tepe, on the road of Askhabad (Kara-Kum), at Kukurtlinsk, between the railway stations of Balla Ishem and Mulla-Kara, at the Usum-Ada, and in places along the shores of the Caspian. In the Kara-Kum region about 4,915 tons of sulphur have been got in the years 1890 to 1895. Red and white gypsum is worked on the Krasnovodsk peninsula, the output in 1895 amounting to 1,245 metric tons.

Salt-peter has been discovered at Annao, galena at Kara-Kala, potters' clay and porphyry at the Techen; it is said, moreover, that iron ores, copper ores and coal seams occur, but exact information as to these finds is not yet forthcoming.

\*Abstract from article in the London "Colliery Guardian," September 7th, 1900.

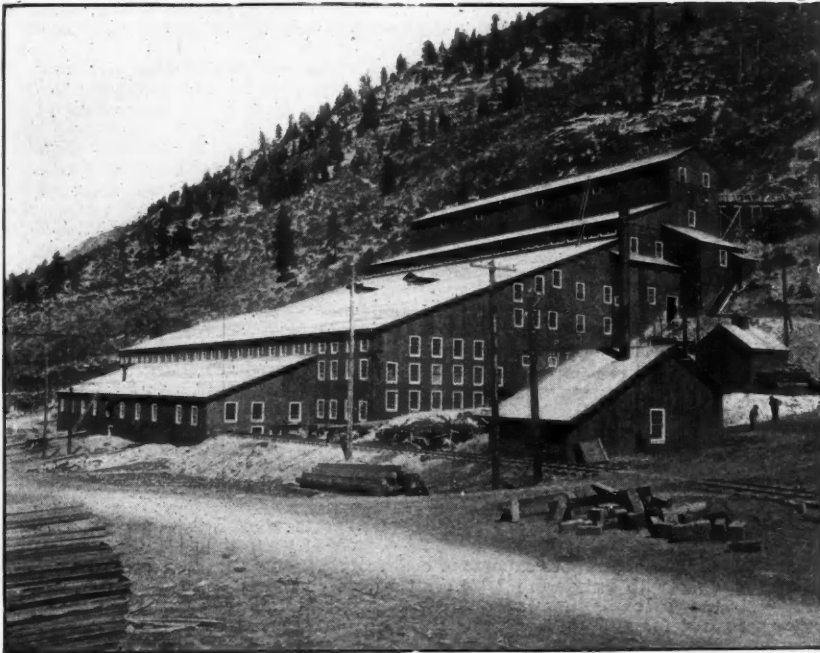
THE CYANIDE WORKS OF THE LIBERTY BELL GOLD MINING COMPANY, COLORADO.

Written for the Engineering and Mining Journal by F. L. Bosqui.

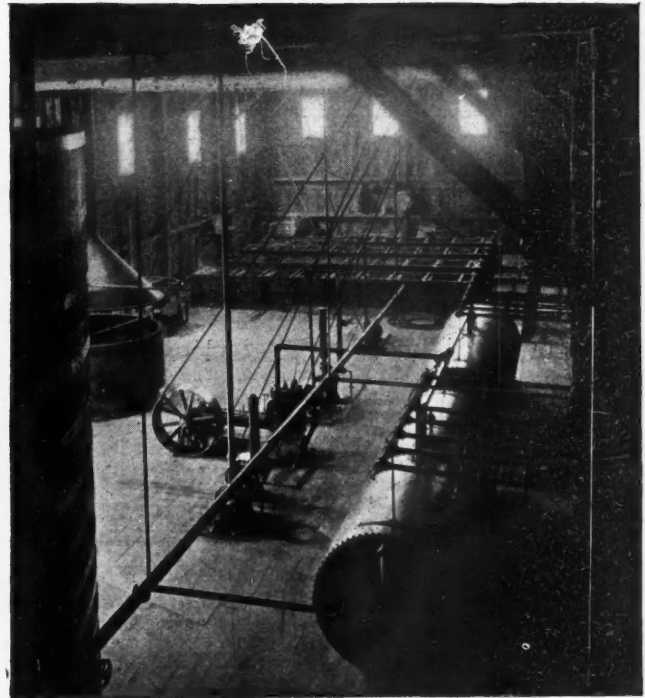
The ore treatment and milling methods practiced at the Liberty Bell Mining Company's mill near Telluride, Colo., were described by Mr. Arthur Winslow in a paper read before the American Institute of Mining Engineers at the New York meeting, 1899. The difficulties met with in the treatment of the Liberty Bell ore were mentioned

with arsenic. Laboratory tests were followed by experiments on direct treatment with an 8-ton plant, from which the results were so promising as to justify the erection of suitable works.

In the winter of 1899-1900 the 40-stamp mill was prepared for the installation of 40 additional stamps. At the same time a cyanide plant with a capacity of 240 tons per day was designed to treat the sands directly from the Wilfley tables. The cyanide plant was annexed to the mill on a lower level, so that the tailings could flow by gravity



LIBERTY BELL 80-STAMP MILL AND CYANIDE PLANT.

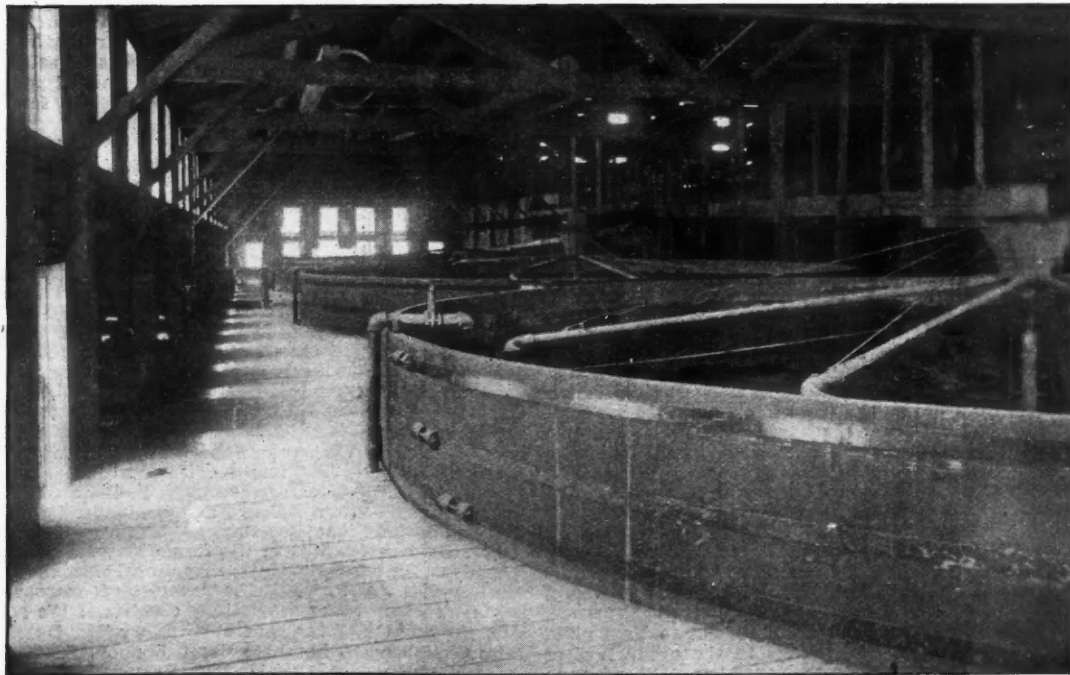


PRECIPITATION ROOM, LIBERTY BELL MILL.

by that writer, and a discussion of the problem by members of the Institute was frankly solicited. The unsatisfactory extraction was referred chiefly to the silver which existed in a form not easily amalgamable. The best silver values appeared to be carried by the slimy constituent of the ore, of which there was an unusually large proportion; and it was only after many months of experimentation with various forms of concentrating machines that the mill practice finally crystallized into plate amalgamation on wide, short copper plates, and

to the leaching vats. The launders leading to the vats radiate from a common center on grades ranging from 2.2 to 4 per cent. The limitations of ground space and fall permitted a vertical height of only 34 ft. between the lowest level of the cyanide plant and the concentrator floor—a condition which called for a design varying somewhat from the conventional arrangement.

The entire plant, which covers a ground space of about 12,000 ft., is inclosed by a tight, steam-heated building to insure continuous



UPPER TIER LEACHING VATS, LIBERTY BELL CYANIDE MILL.

the concentration of the plate product on Wilfley tables. This treatment, however, was far from satisfactory, resulting in a saving of only about 50 per cent. of the combined values. The low-grade tailings were then tested by the cyanide process.

The difficulties in the way of cyanidation were the very slimy character of these tailings, their comparatively high silver value, and the presence of the silver in combination with antimony and probably

operation through the rigorous winter. The structure is divided into two floors or levels—the leaching room and the precipitating room; the latter also contains the storage tanks. The leaching room is 190 by 44 ft., and the precipitating department 135 by 30 ft. The former contains a double tier of leaching vats, five in each tier. These vats are 33 ft. inside diameter, 8 ft. deep, and hold 275 tons of tailings. The upper or collecting vat in each series is supported by an arrange-

ment of steel I-beams carried by cylindrical hollow columns. The whole superstructure rests upon stone piers, of which there are 37 under each series of vats.

The tailings are distributed into the upper vats by revolving pipe distributors, and the slimes are carried off by means of overflow gates, four in each vat, so arranged that the level of slimy water may be raised in accordance with the proportion of fine material which the operator finds it practicable to retain in the vat. By this means a product is retained of which about 45 per cent. will pass a 100-mesh screen; and, although 25 per cent. of the total material crushed escapes as a slime, less than 1 per cent. of this waste is coarse enough to be retained on a 150-mesh screen.

The tailings are discharged from the upper to the lower vats through four circular bottom-discharge doors. Five men can shovel down the contents of a vat in ten hours. This costs 6c. per ton at the prevailing price of labor. From the bottom vat, after treatment, the residues are sluiced out through four circular openings, so arranged that they can be operated from above by means of a wheel and rod.

The lower floor contains 2 storage tanks, 20 ft. in diameter and 15 ft. deep; 4 zinc precipitation boxes; 2 vacuum cylinders connected with a 7 by 10 Stilwell-Bierce & Smith-Vaile vacuum pump, and 2 Gould rotary pumps for raising solution. There is also a clean-up apparatus consisting of a 2 ft. by 7 ft. redwood acid tank, a double plunger Johnson pump, and a 12-compartment, 19-in. Johnson filter press. Beneath the filter-press are two sump tanks, each 15½ ft. in diameter and 6 ft. deep.

The tailings treated in this plant range in value between 0.07 and 0.10 oz. gold, and 2 and 2½ oz. silver. The itemized cost of treatment per ton during the three months of operation is as follows:

	May.	June.	July.
Labor .....	\$0.318	\$0.235	\$0.255
*Chemicals .....	0.973	0.390	0.371
Assaying .....	0.044	0.030	0.043
Electric lights .....	.....	0.004	0.006
Shipping bullion .....	0.009	0.001	0.001
Taxes, insurance and depreciation .....	0.212	0.101	0.135
Miscellaneous .....	0.018	.....	0.002
Totals .....	\$1.574	\$0.761	\$0.813

\*Includes cyanide, lime, sulphuric acid and zinc.

It is estimated that when the plant is worked at full capacity, the cost of treatment can be brought down to 55c. per ton.

#### NEW BLAST FURNACES IN THE UNITED STATES.

In a recent number the "Bulletin" of the American Iron and Steel Association noted the erection of four large blast furnaces—two at South Chicago, by the Illinois Steel Company; one at Thomas, Alabama, by the Pioneer Mining and Manufacturing Company; and one at La Follette, Tennessee, by the La Follette Coal, Iron and Railway Company. In its latest issue the "Bulletin" says that in addition to the above the Carnegie Steel Company is building two large furnaces at Rankin Station; the Buffalo Charcoal Iron Company has about completed a charcoal furnace at Buffalo, New York; Joseph Wharton is building a new furnace at Port Oram, New Jersey; the Warwick Iron and Steel Company is building a new furnace at Pottstown, Pa.; the American Steel and Wire Company is building a new furnace at Neville Island, near Pittsburg, Pa., and is erecting an additional stack at its Central Furnaces at Cleveland, Ohio; Jones & Laughlins, Limited, are adding a new furnace to their Eliza plant, at Pittsburg; the National Steel Company is erecting three new furnaces, one at New Castle, Pa., one in Mingo Junction, Ohio, and one at Youngstown, Ohio, and is also building another stack at Mingo Junction to replace one of its old furnaces now in use; the Sharon Steel Company is erecting a new furnace at Sharon, Pa.; the Roane Iron Company is erecting a new furnace at Rockwood, Tennessee; the Columbus Iron and Steel Company has about completed the erection of two furnaces at Columbus, Ohio; the Globe Iron Company is erecting a new furnace at Jackson, Ohio; the Iroquois Iron Company is erecting a new furnace at Chicago, Illinois; and the Colorado Fuel and Iron Company is erecting a new furnace at Pueblo, Colorado. This is a total of 23 new blast furnaces under construction.

#### IRON PRODUCTION IN CANADA.

The production of pig iron in the Dominion of Canada in the first half of 1900, according to reports which have been received by the American Iron and Steel Association from every manufacturer of pig iron in the Dominion, amounted to 45,234 gross tons. The total production in the whole of 1899 amounted to 94,077 tons, against 68,755 tons in the whole of 1898. Of the production in the first half of 1900 about one-sixth was made with charcoal as fuel, the remainder being produced with coke alone.

In the first half of 1900 Canada produced both Bessemer and basic pig iron, two companies manufacturing Bessemer pig iron and one company manufacturing basic pig iron. The production of Bessemer pig iron was about one-third of the production of basic pig iron.

Neither spiegeleisen nor ferromanganese was produced in Canada during the first half of 1900, the Mineral Products Company, of Hillsboro, New Brunswick, having given up its lease of the Bridgeville Furnace, at Bridgeville, Nova Scotia. The furnace was blown out in November, 1899. This company will confine its operations to the production of manganese ore. The furnace was idle from November, 1899, to June 30th, 1900.

The unsold stocks of pig iron in Canada on June 30th, 1900, in the hands of manufacturers or their agents, none of which was intended for consumption by the manufacturers, and all of which was for sale, amounted to 13,672 gross tons, against 9,932 tons on December 31st, 1899.

The number of completed blast furnaces in Canada on June 30th, 1900, was 9, of which 4 were in blast and 5 were out of blast. On December 31st, 1899, there were also 4 furnaces in blast and 5 out of blast. Of the total number of furnaces in Canada 4 use coke as fuel, 4 use charcoal, and one used charcoal and coke when last running.

The "Bulletin" of the Association gives also particulars of the work of the Canadian ironmakers. The Dominion Iron and Steel Company, Limited, of Sydney, Cape Breton, expects to have its No. 1 blast furnace completed and ready to blow in about November 1st. No. 2 furnace will be ready for operations early in 1901. It is not likely that its Nos. 3 and 4 furnaces will be completed and blown in before March 1st and May 1st, 1901, respectively. The open-hearth steel furnaces of the company are expected to be completed and ready for operations by July 1st, 1901.

Messrs. John McDougall & Co., of Montreal, had 1 of their 2 furnaces at Drummondville in operation for a short time during the first six months of the present year. Both furnaces were idle on June 30th. The firm may blow in one of its stacks soon after the opening of the new year.

The Canada Iron Furnace Company, Limited, expects to have its new furnace at Midland, Ontario, completed and in operation about October 1st. The furnace will have a daily capacity of about 150 gross tons of foundry iron. Coke will be used for fuel.

The charcoal furnace of the Canada Iron Furnace Company, at Radnor Forges, in the Province of Quebec, was operated for about 17 weeks during the first six months of 1900. The furnace was in operation on June 30th last.

Hamilton Furnace, at Hamilton, Ontario, is now owned by the Hamilton Steel and Iron Company, Limited. The furnace was running during the whole of the first six months of the present year and was in operation on June 30th.

The two blast furnaces of the Londonderry Iron Company, Limited, of Londonderry, Nova Scotia, were idle during the whole of the first half of 1900.

The Deseronto Iron Company, Limited, Deseronto, Ontario, had its charcoal furnace in blast for 23 weeks during the first half of the present year.

The blast furnace of the Nova Scotia Steel Company, Limited, at Ferrona, Nova Scotia, was in operation for 26 weeks during the first six months of 1900.

**BELGIAN COAL EXPORTS.**—The exports of coal from Belgium in July amounted to 457,187 tons, as compared with 426,016 tons in July, 1899. The aggregate exports of coal from Belgium for the seven months ending with July were 2,926,777 tons, as compared with 2,514,274 tons in the corresponding period of 1899. In these totals the exports to France figured for 2,159,975 tons, and 1,791,567 tons respectively.

**IRON IN NEW SOUTH WALES.**—Mr. J. B. Jaquet, the Government geological surveyor of New South Wales, reports the existence of an enormous bed of iron ore near Bathurst, assaying 50 to 65 per cent. of the metal. It is suggested that blast furnaces should be erected at Lithgow, some 88 miles distant by rail, a locality where coal can be obtained in any quantity at from \$1 to \$1.25 per ton; while excellent limestone is also obtainable in the immediate neighborhood.

**SUBSIDENCE OF SHOP FOUNDATIONS.**—According to the "Railway Review," of Chicago, the shops of the Baltimore & Ohio Railroad at Connellsville, Pa., had a peculiar accident on August 24th, when an area of about 100 ft. square of the ground upon which the shops are built suddenly sank 8 ft., bringing down with it a portion of the erecting shop in which two locomotives were under course of repair. The building, machinery, shafting, locomotives and tracks all settled so gently that no damage was done and everything was deposited plumb. No injury was done to the machinery save the breaking of a few bolts and shafting thrown out of line. No damage to the engines occurred; they remaining where they stood until their repairs were completed, when they were hauled out by means of a 2-in. switch rope. During the following week everything was adjusted, shafting lined up and machinery started working, tracks into shops graded and repaired, and the settled shops are now running as if nothing had occurred.

The presence of old coal workings below would probably account for the sinking.

**THE INTERNATIONAL PETROLEUM CONGRESS.**—Papers on the origin of petroleum and on the oil industry of Roumania, Canada and California were read at the International Petroleum Congress held in connection with the Paris Exposition, and which was brought to a close on August 28th. At the Exhibition the members examined the Russian Pavilion, where the Baku oil industry is represented, and also the special exhibit of the Standard Oil Company. On August 22d the members visited the Vincennes Annexe of the Exhibition, where there are several petroleum exhibits by Russian and Roumanian companies. Thanks to the general secretary, M. Paul Dvorkovitz, the first Petroleum Congress was a success, and Bucharest is chosen as the seat of the next international meeting.

The congress resulted in the formation of a permanent international committee for arranging future meetings, obtaining papers and forming local bodies to forward the interest of petroleum throughout the world. The permanent committee consists of the gentlemen named below; the address of the general secretary, Mr. Dvorkovitz, is 16 Devonshire Chambers, Bishopsgate street, London, E. C., England. The committee includes, for Austria, MM. Roman Zaloziński and Hans Hofer; Belgium, M. Fribourg; Canada, John D. Noble; France, MM. Lippmann, Lesueur, Marot, Hugon and H. Neuburger; Germany, Herr P. Sorge and Herr Berg; Great Britain, Dr. P. Dvorkovitz; Holland, Col. Van Zeylen; Italy, Signor Muggia; Japan, M. Hyashin; Roumania, MM. Coucou, Alimanestiano and Edeleano; Russia, MM. Ivanoff and Braun; United States, Dr. David T. Day and Mr. Marais. The executive committee is composed as follows: President, M. Edward Lippmann; vice-president, Col. van Zeylen; honorary secretaries, MM. Henry Neuburger and Marot; members, MM. N. Coucou, St. Georges Lesueur, Braun, Hugon, Fribourg and P. Dvorkovitz.



## THE NEW GREENE COUNTY COAL-FIELD IN PENNSYLVANIA.

Written for the Engineering and Mining Journal by Wm. Gilbert Irwin.

One of the most promising new coal areas of the Pittsburg District is that of Greene County, in the extreme southwestern corner of Pennsylvania. Owing to the lack of railroad facilities, this field had not been invaded by capitalists until recently, nor was there any occasion for touching the new field, in the face of the excellent supplies of gas and coking coal at points closer to Pittsburg and readily reached by rail and water.

Within the past two years Greene County has undergone a remarkable railroad development and excellent oil territory has also been located here. It was largely through the oil-well operations in this field that the excellent coal seam which is believed to be a continuation of the Pittsburg seam became known. As soon as a fair knowledge of the coal deposits here was obtained by the oil operators they attempted to depreciate the value of the coal in order to buy up the lands at a low figure, but in this they were forestalled.

Other capitalists interested began operations at different points and a vein which varies from 6 to 12 ft. in thickness has been found at a depth varying from 200 to 300 ft. below the surface in nearly every case. During the past two years thousands of acres of coal lands in this section have been bought at prices ranging from \$300 to \$1,000 per acre and the Pittsburg Coal Company is now a large owner in the new field. The Connellsville & Wheeling Railroad, with a capital of \$7,500,000, has been located through this new field, and the interests connected with the road have bought more than 250,000 acres of coal lands in Greene County. This road has been under way for some time and it will be completed within a year.

Those directly interested in the development of the new field claim that the coal is the finest in the Western Pennsylvania district. At the rate the purchasers of coal lands are anticipating the opening of new mines the tonnage on the Monongahela will be doubled next year. Excellent facilities have been arranged for shipment to the Atlantic seaboard and the product of this new field is intended to enter largely into the export trade.

## THE FUTURE OF THE CONNELLSVILLE COKE REGION.

By Our Special Correspondent.

The haste with which operators in the Connellsville region are buying up all the available coal land on all sides is causing considerable comment in the iron world. The question naturally comes up: What will take the place of coke when the Connellsville Region is merely a waste of ruined mines? It was thought that this question would be settled by the time the region was half worked out, but it is at that stage in its existence now and the solution of the problem is no nearer than it was in the early days of the coke trade. Coke men cannot help seeing the necessity for some substitute for the coke which is leaving the region at the rate of 11,000 cars a week.

Many of the plants that were in their prime in the first history of the coke regions are now idle. West Overton ovens are out because of the lack of coal. Hazlett Mine, near Scottsdale, once a great money-maker, is now nothing but a series of hollow pitfalls, and the ovens are burning coal from an adjoining pit. Uniondale, near Connellsville, has seen its finish. Two hundred ovens are out of blast at Morrell, because of the lack of fuel, and more will go out as the months go on. The old Fairchance Mine is abandoned and the ovens supplied with coal from Kyle. Frick Mine at Broad Ford is in the same state. Jackson Mine at Broad Ford has about one more year to run. Pennsville is close to exhaustion, and Bessemer Mine, near Mount Pleasant, has begun operations on the last block of coal. Five years at the most will see the end of all the mines on the Mount Pleasant Branch road. Another thing to remember is the fact that never in the history of the coke region has there been such an enormous output of coke as this year. There were many mines along the Mount Pleasant Branch that were idle for years, or they would have been exhausted before this. Their idleness saved them. The rate of production for 1898 and 1899 was almost double the average production of several years previous.

Twenty-five years is the limit usually given to the Connellsville Region until it can do no more for lack of fuel. Wise men are already looking to the future contingencies which are sure to arise. It is known that there is a second vein of coal below the Connellsville 9-ft. seam. A bore hole is now being drilled by the Connellsville Gas Coal Company, at Fayette Station, about a mile south of Connellsville. This company has not been in business for a number of years, having leased the plants to the Cambria Steel people, who take all the coke. This hole is expected to reach the second 5-ft. vein about 900 ft. below the surface. There may be a second revival in the Connellsville Region, if this vein is constant and available. The shafts in the region are from 80 to 550 ft. and these would have to be replaced by deeper ones of from 900 to 1,500 ft. It might be that the shafts which are now drilled could be extended downward and worked from the tipples and shaft frames standing, although this is merely a supposition. The test hole at Fayette is not the first attempt to locate the second vein of coal. One at Banning, on the Youghiogheny River below Connellsville, proved fruitless. The second vein is worked in many places in England and the increased demand for coke and consequent higher price will equalize the additional cost of extracting the coal from the deeper underground workings in this country.

Acres on acres of coke breeze are piled up in the coke region. This is pure coke, but has never been utilized because of its fineness. It is probable that as Connellsville coke is exhausted some effort will be made to use these immense piles. So much of this stuff has been dumped all along the Mount Pleasant Branch that the valley is contracted and the little creek sometimes choked up by the heaps. This coke breeze is, of course, cheaper than coal; some of it has been used at times under the boilers in the region, and there is a possibility that

it will come into general use. Several railroads in New England are now burning small coke in their locomotive boilers, and a few manufacturing firms have also adopted it. A forced draft is required with it and the grate bars must be close. Coke makes little or no flame when burning, and for this reason the firebox must be shallow, so as to have the hot coke as near the heating surface as possible.

The burning of coke, especially in locomotives, is becoming more general. Coke needs little attention, so that the door of the furnace does not need to be opened frequently, thus excluding rushes of cold air which cause a slight strain on boilers besides militating against the rapid generation of steam. Boiler tubes remain clean much longer under its heat, for coke is clear and clean. The hottest coke fire is not always made by the strongest draft, a medium blast being best. It makes a white heat without forcing all the heat up the flues. These are but a few of the ways in which coke is being consumed more rapidly, and all this tends to exhaust the coking fields and cause a demand for a substitute. The new fields that are being opened up in the southern end of Fayette County will help the situation for awhile, but they will not last longer than the old field and there is not enough of them to entirely replace the Connellsville Region in the coke market.

## SHAFT SINKING ON POTASSIUM SALT DEPOSITS.\*

Written for the Engineering and Mining Journal by E. Mackay-Heriot.

At the beginning of 1900 there were 17 companies, besides the Prussian State, bringing potassium salts to market; about 20 companies were sinking shafts on potassium deposits, and taken all together, there were about 180 potassium salt companies, most of which were prospecting with deep-boring apparatus. Of these 20 companies which are sinking, it is interesting to note what great difficulties they have had to contend with.

The Yessenitz Company in Mecklenburg started its shaft in 1886, that is, 14 years ago, and have at last managed to make their shaft waterproof in the rock-salt. The Yessenitz shaft reached the rock-salt at a depth of 261 m., but the potassium salts have not yet been reached.

The Kaiserode Company in Thuringen began to sink in 1895 on the site of its deep-boring No. 3. The shaft had to contend with great quantities of water. On September 2d, 1899, the rock-salt was reached at a depth of 204 m. On September 8th a new inrush of water took place, which has since been dammed up. Lately the shaft has been sunk to the potassium salts.

Let us now look at the shafts in the neighborhood of the town of Hannover, where the following companies are located: Hansa-Silberberg, Ronnenberg, Bente-Wallmont, and Mathias. The shaft of the Hansa was started in 1896. On September 25th, 1898, preparations were made for the Poetsch freezing process, and by August 1st, 1899, a start was made to sink in the frozen masses. In March, 1900, water broke again into the shaft and filled it up to the surface. More freezing pipes have since been put in.

The Ronnenberg Company's shaft is situated close to the Hansa. The former was begun on March, 1898, on the site of deep-boring No. 2. This deep-boring found the rock-salt at 140 m. and the potassium salts at 170 m. depth. The shaft has had great difficulties on account of the quantities of water it has had to contend with. At 19 m. depth 6.7 cu. m. of water per minute had to be pumped. At 21 m. depth it was found impossible to go on with the ordinary method of sinking, and at the end of July it was decided to work with a sinking-pit (senkshacht). After much loss of time the sinking-pit was sunk to 21 m. At this point a new obstacle arose, the sinking-pit with the whole wall above it got on the slant. This was caused by side pressure. By the aid of hydraulic presses the shaft was put straight again. At 33 m. depth the water had to be pumped with 8 pulsometers. Lately the Poetsch freezing method has been started. The shaft has not yet reached the rock-salt.

The shaft of the Bente-Wallmont Company was begun on April 12th, 1899. On October 17th rock-salt was struck at a depth of 162 m., the shaft having been sunk through clay, blocks of new red sandstone, new red sandstone clay and gypsum. The same day a tremendous inrush of salt water took place. On March 4th, 1900, the Kind-Chaudron shaft boring system was started, and by April 26th the shaft was bored into the rock-salt.

The Hansa, Ronnenberg and Wallmont companies are situated quite close to one another, but the Mathias is some distance off and near the town of Wunstorf. The latter company's shaft was begun on May 30th, 1898. In about one year it had reached a depth of 137 m., having been sunk in the new red sandstone formation—sandstone and clay alternately, with a dip of 80°. Here the difficulty lay not in the quantity of water, although 3 cu. m. per minute had to be pumped, but in the quality of the water, which contained as much as 22 per cent. salt. This solution would first eat into the stuffing boxes of the pumps and then into the valves. In fact, it acted like hydrochloric acid.

The Hildesia Company's shaft, near the town of Hildesheim, was begun on October, 1897, on the site of the deep-boring No. 3; it struck rock-salt at 311 m. and potassium salts at 600 m. depth. After 186 m. had been sunk the pump had to contend with overwhelming quantities of water, and although 11 cu. m. of water a minute were pumped, the shaft could only be kept dry to about 60 m. below the surface, so that it was decided to bore the shaft after the Kind-Chaudron method. In April, 1900, the shaft had reached a depth of 192 m.

The Alexanderhall Company's shaft, in Saxe-Weimar, is now being bored after the Kind-Chaudron method, also on account of water difficulties.

The writer has described, in short, the difficulties which 8 companies out of about 20, which are sinking shafts on potassium layers, have had to contend with. But their difficulties do not all end when the potassium salts have been reached. The main thing, as every salt

\* See previous article, "Engineering and Mining Journal," September 1st, 1900 Page 244

miner knows, is to have a good strong waterproof hanging wall to the salt formation, so that there may be no danger of water breaking into the mine later on. It will take time and experience to tell us if those shafts which have shut out the water in the rock-salt will be free from water in future; for we all know the solubility of rock-salt in water. The best hanging wall for a potassium deposit is the so-called "Salzthon." This, as its name denotes, is a clayey substance, and accompanies, as a rule, the Upper German Permian formation, in layers of variable thickness.

#### THE COLUMBIA MINING COMPANY, GEORGIA.

Written for The Engineering and Mining Journal by W. H. Fluker.

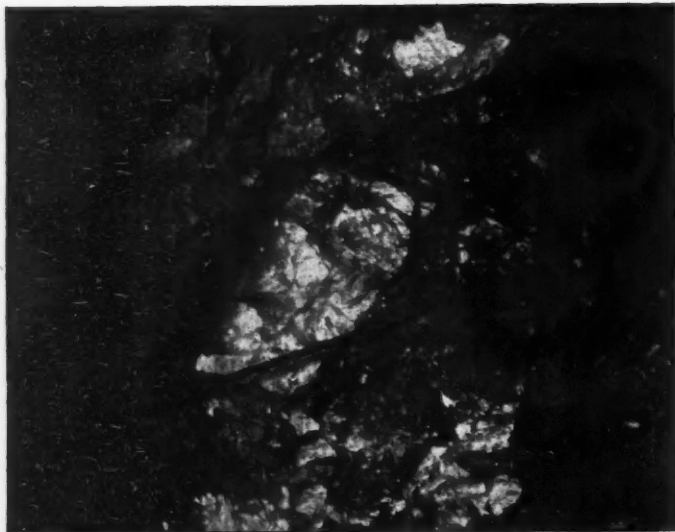
The Columbia Mining Company is the owner of about 1,200 acres of mineral land in the north end of McDuffie County, Georgia, about 35 miles west of Augusta, and 135 miles east of Atlanta. The nearest railroad station is Thomson, Ga., from which town the mines are 12 miles distant by good wagon road. The Seaboard Air Line Railroad has surveyed a line, running from Augusta to Athens, Ga., through this property, and construction work is starting.

The principal work done by this company has been on what is known as the Columbia Vein, on that part of the property known as the Forty-Acre Lot. This particular vein has been traced for 6 miles, and runs through the entire property of this company. In 1823 gold was discovered on the Forty-Acre Lot, and from that time until the beginning of the Civil War, the property was worked continuously by primitive methods—on a more or less extensive scale. Just preceding the War, 120 slaves were employed on this property in mining and milling 10 tons of ore per day. Prior to the War over \$2,000,000 were taken out of the

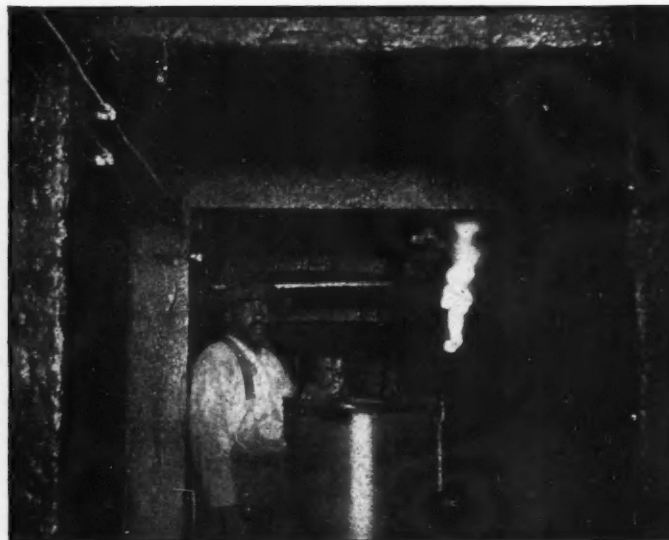
width of the entire vein varies from 2 to 15 ft., and mills from \$5 to \$100 per ton free gold. There are about 20,000 tons of ore in sight from this shaft, above the 140-ft. level. Shaft No. 6 is sunk on an incline with the vein, and is 500 ft. east of shaft No. 3. Having 175 ft. vertical depth, this shaft is now the deepest, and sinking is being continued; drifts will be run at the 180-ft. level. The vein here is about 2 ft. wide, and is very rich. Forty tons taken out while sinking yielded \$60 per ton, free gold, by amalgamation. Shaft No. 8, Bell shaft, sunk 140 ft. cross-cut 60 ft. at the 100-ft. level on two parallel veins; 700 ft. of drifts have been driven at the 100-ft. level, and about 300 tons of ore taken out, which averaged \$15 per ton in free milling. All told, it is estimated that there are now 50,000 tons of ore in sight, which will average \$10 per ton free milling. The above work has been done within the past 12 months, incidental to which has been the milling of 600 tons of ore, which yielded \$8,960 in free gold. A car of 20 tons of ore was sent to the smelter at Atlanta and yielded \$18 per ton.

This entire property lies within the well-known belt 50 to 100 miles in width, extending southwesterly from the Potomac River through Virginia, North and South Carolina, Georgia and a short distance into Alabama. Six other mines are being worked in Georgia on this belt, and several in South Carolina, including the Dorne and the Haile mines.

Mining in this section is cheaper than in the West, because of the following reasons: Perfect climate in which work can be prosecuted throughout the entire year; low freight rates; abundance of water and timber; low cost of fuel, and wood can be had, delivered at the mine, from 75c. to \$1 per cord; low cost of labor, average 80c. per day. The Southern Smelting Company has built a 300-ton plant at Atlanta. The freight rate from Thomson, Ga., to Atlanta is \$1.25 per ton, and it is probable that large quantities of ore will be shipped there for treatment. However, this ore is generally remarkable for its milling quali-



Starting a Stope, 150-ft. Level, Columbia Vein.



Cross-cut, 165-ft. Level, Vivian Shaft.

#### UNDERGROUND VIEWS IN COLUMBIA MINES, GEORGIA.

entire property, three-fourths of which was taken from the Columbia Vein on the Forty-Acre Lot. It is said that \$80,000 clear profit was made in one year by the primitive process of panning and rockers.

During the War, the machinery was confiscated by the Confederate Government, and was used by it in the manufacture of implements of war; and work on the property was abandoned. After the War this property reverted to four women, and, owing to their inability to agree among themselves, the property was idle for about 40 years.

The Forty-Acre Lot is almost square and is traversed by two main vein systems, the Columbia and the Bell, which run nearly parallel entirely across the property. The Columbia is the larger vein, and has a general strike of 10° north of west and south of east. This vein has been traced for 6 miles, as above stated, and is undoubtedly a fissure vein. It cuts the formation at an angle of 55° and dips north 50°. This vein has been worked at different times to a depth of 140 ft. There are now two open working shafts on this vein, one 165 ft. and the other 175 ft. deep. These shafts are connected by a drift 500 ft. long at the 140 level, revealing a vein running from 2 to 15 ft. wide, and varying in value from \$5 to \$100 per ton, free milling. It carries 1 to 5 per cent. sulphurets, worth about \$300 per ton.

The strike of the Bell Vein is due east and west; dips north 60°. This vein extends across the Forty-Acre Lot, and at the 100-ft. level averages 2 ft. in width and mills \$15 per ton free gold. This vein is 600 ft. north of the Columbia, and nearly parallel. The space between the two veins is traversed by numerous cross veins, varying from a few inches to 2 ft. wide, and carrying about the same value as the larger veins.

The present company has sunk 13 shafts on the Forty-Acre Lot, of which three are working shafts. Two of these are on the Columbia Vein and known as Shaft No. 3 and Shaft No. 6. Shaft No. 3 is the principal working shaft, and is straight down 165 ft., cross-cut 40 ft. south to the Columbia Vein. At the 140-ft. level there is a drift 500 ft. east, and connecting with Shaft No. 6 for air; also a drift 120 ft. west, on vein at the 140-ft. level. The vein here is now 15 ft. wide, and mills over \$10 per ton.

There is a 40-ft. drift at the 165-ft. level, going east. The vein at this point is 8 ft. wide, and mills \$10 per ton free gold. The vein has splendid walls throughout and shows no signs of pinching out either way. The

ties. The gold being coarse and often running above 900 fine, it amalgamates readily, while the absence of slimes makes concentration easy and practically simple.

**A NEW FRENCH COAL COMPANY.**—The Compagnie Charbonniere du Sud-Est de la France has been formed, with a capital of a million francs, to work three coal concessions in the Tarentaise basin of Savoy, the president of the conseil d'administration being M. Francis Laur; the consulting engineer, M. Dubar, of Mons, Belgium; and the general manager, M. Procureur, who has left a similar position at the Azincourt Colliery, in the Nord.

**MINERALS IN PERSIA.**—According to Dr. L. Henniecke, in Persia, the mines of turquoises, etc., are State property, but the Government does not work them. Mining leases are granted for periods too short to attract serious enterprise. In 1889 a British company, financed by the Imperial Bank of Persia, was started, to work the gold and other metaliferous mines, but the expectations then formed have not been fulfilled. Although the rich ore-deposits were struck, the necessary fuel for smelting the ores could not be obtained. Gold occurs in the Bulmus-Bash Mountains, and at Meshed in the Turkebeh Mountains; the placers are largely worked out, though in very primitive fashion. At Far-Daod, in the neighborhood of Bosmishk, are copper mines, now in part flooded, which are said to carry some gold.

In the Senshan District, veins of pyritiferous quartz are found in granite, carrying silver. Argentiferous-galena veins exist in mica-schist in the Arghun Mountains. The Arghun mines are worked by seven shafts, about 325 ft. deep. The annual output is very small.

Rich occurrences have been certified in many parts of Persia, of mercury, copper, tin and antimony ores, realger, native sulphur, brown iron ore, manganese and cobalt ores, kaolin, borax and alum. Workable coal is found in the Elburz Mountains, in the Sharud River basin, and along the banks of the Kevech, while brown coal occurs near Tabriz. Petroleum is characteristic of the Tertiary deposits on the southwestern border of the Persian Highlands; it is found, moreover, on the shores of the Persian Gulf, in the neighborhood of the Dalaki River, in the Darab Mountains, etc. Rock salt also occurs in large quantities.

ABSTRACTS OF OFFICIAL REPORTS.

American Smelting and Refining Company.

The brief statement issued by this company, which is the only report made by it, gives the following balance sheet, dated April 30th, 1900:

Real estate, plants and machinery.....	\$48,994,499
Inventories of stock on hand.....	11,773,923
Cash, accounts and bills receivable, stocks and bonds.....	3,028,975
Treasury stock.....	10,200,000
<b>Total assets.....</b>	<b>\$73,997,397</b>
Accounts and bills payable.....	\$4,764,489
Bonds outstanding.....	2,253,000
Capital stock.....	65,000,000
Surplus April 30th.....	1,979,908
	<b>\$73,997,397</b>

The capital stock is divided into equal amounts of preferred and common stock. Since April 30th the company has paid off \$1,005,000 of its bonds, leaving \$1,248,000 now outstanding.

The profits for the year ending April 30th are reported at \$3,524,961, of which \$1,228,943 were earned in the first half of the year and \$2,296,018 in the second half. The small amount reported for the first six months was probably due to the partial suspension of work caused by the long strike at the Colorado smelters.

Three dividends were paid on the outstanding preferred stock, the amount being \$1,545,053, leaving a surplus of \$1,979,908. The net earnings, after deducting 7 per cent. on the preferred stock, amounted to 3.8 per cent. on the common stock.

Norfolk & Western Railway Company.

The report of this company for the year ending June 30th last shows that the gross earnings were \$14,091,005; the working expenses \$8,501,096, leaving the net earnings \$5,589,909. Interest and other payments left a balance of \$3,388,312, from which \$1,500,000 was transferred to the betterment fund, and \$909,748 paid as dividends on preferred stock. The report is of interest to us chiefly on account of the importance of the coal traffic carried by the road. The statement of coal and coke business for the year is given below, in short tons:

<b>From:</b>	<b>Coal.</b>	<b>Coke.</b>	<b>Totals.</b>
Pocahontas.....	4,403,181	1,450,815	5,853,996
Clinch Valley.....	402,645	58,954	461,599
Kenova.....	450,200	.....	450,200
Other fields.....	18,129	.....	18,129
<b>Totals.....</b>	<b>5,274,155</b>	<b>1,509,769</b>	<b>6,783,924</b>
To local points.....	768,347	771,493	1,539,840
To connecting lines.....	1,512,445	661,644	2,174,089
To tidewater.....	2,151,616	72,070	2,223,686
For use of railroad.....	841,747	4,562	846,309
<b>Totals.....</b>	<b>5,274,155</b>	<b>1,509,769</b>	<b>6,783,924</b>

In addition to this tonnage originating on its own lines, the railroad carried 45,124 tons of bituminous coal, 7,189 tons coke and 57,504 tons anthracite coal received from connecting lines; making the total coal and coke moved 6,893,741 tons, or 78 per cent. of the freight moved.

It will be seen from the table that 40.8 per cent. of the coal carried was hauled to tidewater and 28.7 per cent. delivered to connecting lines; while 14.5 per cent. was delivered to local points on the company's lines, and 16.0 per cent. consumed by the railroad company. Of the coke only 5.1 per cent. was carried to tidewater, 43.8 per cent. being delivered to connecting lines, chiefly in the West, and 51.1 per cent. taken to points on the company's lines; the remainder—0.3 per cent.—being used for railroad purposes.

The averages for coal are not given separately, but we find the average earnings per ton-mile given at 0.434 cent; the cost at 0.264 cent, and the profit at 0.170 cent. The average rate on coal was below the figure given, not exceeding 0.25 cent for the earlier months of the year. The average haul on freight was 253.4 miles, and the average train-load 435 tons.

The report says that 91 per cent. of the total tonnage and 85 per cent. of the earnings from freight were derived from local business. Coal, coke, ore, and other products of the mines contributed 70 per cent. of the company's total ton-mileage. While the coal shipments show a considerable increase (471,903 tons or 11.6 per cent.), the revenue derived from this traffic during the year was not materially enhanced, because the bulk of the business was moved at very low rates under contracts made prior to the improvement in the coal trade. In fact, during last year, the rates on the company's tidewater bituminous coal business reached the lowest level in the history of the road. Since June 1st, 1900, better rates have been obtained for this traffic. There has been an increasing demand for coal for shipment to foreign countries, and this traffic shows considerable increase during the last six months of the fiscal year.

On June 30th, 1900, there were in operation on the line of the road 14 iron coke furnaces, with an estimated aggregate capacity of 2,055 tons of pig iron per day; and 5 furnaces, aggregating 635 tons of pig iron per day, were out of blast at that date.

Broken Hill Proprietary Company, New South Wales.

The report of this company for the half-year ending May 31st, 1900, shows total receipts from bullion sales, etc., amounting to £609,428. The payments were, for working expenses, £468,311; office expenses, etc., £14,718; depreciation, £33,385; total, £516,414; leaving a balance of £93,014. The dividends paid were £96,000, showing an excess of payments of £2,986, and reducing the balance on hand from £576,640 at the beginning, to £573,654 at the close of the year.

The production from the various plants was as follows:

	<b>Gold, oz.</b>	<b>Silver, oz.</b>	<b>Lead, tons.</b>	<b>Copper, tons.</b>
Port Pirie smelters, bullion.....	6,661	1,971,318	15,828	.....
Port Pirie smelters, matte.....	.....	129,981	.....	110
Leaching plants, bullion.....	96	178,710	179	.....
<b>Totals.....</b>	<b>6,757</b>	<b>2,290,009</b>	<b>16,007</b>	<b>110</b>

The refinery and parting plant treated 16,036 tons of silver-lead

bullion, producing 6,960 oz. fine gold, 2,320,172 oz. fine silver, 15,440 tons soft, or refined lead, and 297 tons hard, or antimonial, lead.

The General Manager's report says, in part: "The quantities of ore and waste removed from the open cuts during the six months were: Ore, 55,672 tons; waste, 231,255 cu. yds. Work underground continued without interruption or difficulty. The quantity of sulphide ore raised was considerably in excess of the previous half-year, and the cost of winning the ore has materially decreased. A new level is being opened out at the 650-ft. in order to keep the preparatory work well ahead of the extraction. The whole work of extracting the ore from underground is at present being carried out through Stewart Shaft, but, inasmuch as it is not considered advisable that the complete output from the underground workings should depend upon one shaft only, the sinking of an additional extraction shaft has been decided upon, and arrangements are being made to put the work in hand at once. The ore won has been disposed of as follows: Port Pirie smelters, 50,628; chloridizing plant, 17,866; concentrating plant, 163,993; total, 232,487 tons.

"Further improvements were introduced into the 5,000-ton concentrating plant, by means of which it was possible to pass through this plant during the half-year 132,165 tons, as against 117,996 tons during the previous half-year, at a much reduced cost, and an increased recovery of metallic contents. The extension of the mill was completed May 4th, since which date it has been in constant operation. As the necessary adjustments to the machinery are made the quantity of ore passed through will be gradually increased. Many labor-saving appliances have been introduced, and it is expected that this extension of the mill will work with great efficiency and economy. Experiments are still being carried on in connection with magnetic separation, but further improvements are necessary in the application of the principle before it could be considered advisable to expend any considerable sum of money in the erection of a plant on a large scale.

"During the half-year 18,035 tons of ore were treated by the chloridizing and leaching plants, the result being equal to an extraction of 11.86 oz. of silver per ton of ore. The decreased quantity of ore put through was due to the difficulty of providing ore from the open cut operations. Notwithstanding this, the cost per ton of treating the reduced quantity during the half-year was the same as that of treating the larger quantity during the previous half-year.

"A fuel economizer is now in course of erection at the central boiler plant, which will assist in reducing the coal consumption.

"An arrangement has been arrived at with the Broken Hill Water Supply, Limited, by which fresh water will be supplied on more reasonable terms.

"The smelting plant at Port Pirie ran steadily throughout the half-year. The fineness of the ore and the non-arrival of the briquetting machines caused a good deal of trouble, but toward the close of the half the two briquetting machines under order were delivered, one of which was put into operation during the month of May, and a great improvement was at once apparent in the work performed by the furnaces, and it is expected that, so soon as both the new machines are in operation, no further trouble will be experienced in this direction. The total material put through the smelters was 99,318 tons."

AMERICAN WIRE FOR FRANCE.—The Societe des Betons Armes of Paris, which makes structures of beton, or cement, built up on wire frames, has contracted for 5,000 tons of steel wire-rods from the American Steel and Wire Company.

WIRELESS TELEGRAPHY.—On Tuesday last, says the London "Engineer," communication by the Marconi wireless telegraph apparatus was opened up between Portsmouth and Portland, a distance across country of 60 miles. The achievement is the result of a series of experiments by Captain C. G. Robinson and the staff of the Vernon Torpedo School. This is the longest distance that has yet been attempted in the Navy across country, and the trial gave every satisfaction.

GERMAN COAL TRADE.—The imports and exports of fuel in Germany for the half-year ending June 30th are reported as below, in metric tons:

	—Imports.—		—Exports.—	
	1899.	1900.	1899.	1900.
Coal.....	2,789,736	3,310,900	6,676,734	7,597,177
Brown coal.....	4,232,805	3,037,905	11,002	35,969
Coke.....	214,220	276,541	1,060,968	1,045,271
Briquettes.....	36,135	63,173	188,007	267,069

Imports of coal are chiefly from Great Britain; of brown coal from Austria. Imports of coke are from Great Britain and Belgium.

ACETYLENE SAFETY LAMPS IN GERMANY.—In a locking arrangement for acetylene safety lamps, patented by Grumer & Grimberg, of Bochum, Westphalia, the closing cover of the calcium carbide container is so arranged that opening the chamber containing the flame is only possible after removal of this cover, and, therefore, after exposing the gas space and extinguishing the flame, says the London "Colliery Guardian." The cylindrical lamp-glass is kept pressed up against the lower part of the lamp, constituting the calcium carbide container, by a grooved ring at its top being drawn downward by the wires, or pillars, of the upper portion, because a screwed ring, at the bottom of which the wires are made fast, is pulled in this direction by a nut embracing the container. After this container, turned upside down, has been filled with calcium carbide, it is closed by a cover that comes downward in the normal position, the flange of which cover engages with the above-mentioned nut, so that exposing the space containing the flame is only possible after opening the gas chamber. Any turning between the nut and the container is opposed by the screw ring into which the pillars are fastened (one of the latter being hollow so as to permit a flow of water to the calcium carbide from a glass reservoir of annular section surrounding the chimney), and also by projecting stops fastened to a ring at the top of the container.

## LAKE SUPERIOR TRAFFIC.

The official reports give the total tonnage of freight passing through the Sault Ste. Marie Canal, this year, from the opening of navigation up to September 1st, at 16,490,020 short tons; of which 3,433,946 tons (20.8 per cent.) were west-bound, and 13,056,074 tons (79.2 per cent.) east-bound freight. The total compares with 14,418,477 tons last year and 12,613,639 tons in 1898. How important a share of this traffic is furnished by the mining industry is shown by the following table, which gives the items of mineral freight; the figures are in short tons, except salt, which is given in barrels:

	1898.	1899.	1900.
Anthracite coal .....	277,131	507,703	376,835
Bituminous coal .....	2,139,778	1,810,969	3,702,359
Total coal .....	2,416,909	2,318,672	4,079,195
Iron ore .....	7,714,003	9,062,580	10,818,663
Manufactured iron .....	170,197	114,588	90,221
Copper .....	75,567	63,859	77,198
Building stone .....	4,063	17,778	19,131
Salt (barrels) .....	178,365	189,932	176,734

The bituminous coal shipments show an extraordinary gain this year, while anthracite coal tonnage was below last year's, although greater than in 1898. The iron ore tonnage was greater by 1,756,083 tons than the extraordinary movement of last year. The coal this year formed 24.7 per cent. and the iron ore 65.6 per cent. of the total tonnage carried.

The number of vessel passages was 12,337 this year, against 11,856 last year and 11,029 in 1898. The average load carried was therefore 1,337 tons, 1,216 tons and 1,144 tons in the three years respectively.

## THE MANGANESE ORE TRADE OF RUSSIA.

Written for the Engineering and Mining Journal by Solon J. Vlasto.

In a score of years the manganese industry of Russia has grown to be a very important one, and to-day our steel manufacturers and other users of manganese ore find this field the largest source of their supply. In fact the production of the Caucasus mines by far surpasses those of Spain or any two of the other manganese mining countries.

The manganese ore industry in the Caucasus was, until 10 years ago, essentially a local trade. The deposits were said to have been discovered in 1848, but the first shipments were made only in 1879, when 871 tons of ore were exported. The mines are situated mostly in the Sharopan District, in the Province of Kutais, around, or rather to the southeast, of Tchiatura, a village on the Kurilli River, a tributary of the Rion, which enters the Black Sea near Poti. Tchiatura is distant about 110 miles from the port of Poti. Tchiatura stands at the head of a valley 26 miles in length, and is now connected by a narrow-gauge railway with the main line of the Trans-Caucasian Railroad at Sharopan, 25 miles to the southwest.

The mines cover an area of more than 60 square miles, are parcelled out into about 5,000 claims, and are held by a great variety of owners. About 3,750 of these claims are under the control of 14 persons, holding from 500 to 25 claims each. The remaining 1,250 claims are held by about 300 peasants and small merchants. According to the latest estimates, which are perhaps not very reliable, as no systematic mining has ever been carried on, and the surface ore alone is taken into calculation, the mines are said to contain 8,000,000 tons of ore. Some local authorities estimate the contents of these mines at a figure which I am afraid to put down in any business statement.

However, in the following table I give the exports of manganese ore from Tchiatura to Europe and the United States for each year since 1881, in long tons of 2,240 lbs., in order to show the growth of the industry.

1881 .....	11,048 1887 .....	53,680 1893 .....	167,526
1882 .....	12,498 1888 .....	29,857 1894 .....	180,243
1883 .....	15,971 1889 .....	69,504 1895 .....	160,277
1884 .....	20,688 1890 .....	171,467 1896 .....	193,641
1885 .....	59,636 1891 .....	100,344 1897 .....	231,868
1886 .....	69,486 1892 .....	168,950 1898 .....	296,000

The sales of manganese ore in 1899 are reported at 400,000 tons, and it is anticipated that in 1900 they will aggregate over 500,000 tons.

The Tchiatura ore, when thoroughly well prepared and dried at 212° F., contains from 51 to 53 per cent. metallic manganese, or 83 to 87 per cent. of peroxide, and is very low in phosphorus, 0.16 per cent. being the highest; the silica content is not over 8 per cent. This is the standard quality of Tchiatura manganese ore, but it is generally brought down to 47 to 48 per cent. metallic manganese. As the moisture and the average yield of metallic manganese seldom vary, a 50 per cent. ore is generally accepted as the standard when contracts are entered into with the consumer. This 50 per cent. ore is called in commerce "Caucasian manganese," and is often quoted as such.

The mines are worked in a very primitive way, hence it is difficult to arrive at the average cost of mining, tramming and cleaning the ore. At the commencement of the present year the ore was produced and delivered at the Tchiatura Railway station at 6.50 kopeks (about 3¼c.) per poond of 36.113 lbs. At this price it is the local opinion that sellers realized a profit of not less than 2.50 kopeks (about 1¼c.) per poond. Since then, however, the increasing export demand has raised the delivery price at Tchiatura station to 8 kopeks (4c.) a poond. Subsequently the price in the United Kingdom has been advanced from 10d. per unit to 12d., and in the United States to about 26c. With more systematic working of the mines and better transportation facilities this price of 8 kopeks at Tchiatura could be materially reduced, say not to exceed 5½ kopeks (2¼c.).

These manganese deposits are practically free from foreign competition, as the local conditions affecting them—particularly the enormous quantity of ore they contain, the large number of proprietors, the ease with which the ore can be produced, and the lack of other remunerative occupations for the inhabitants of that region—favor competition among the mines and an over-production which must naturally benefit the consumer. It is competition that keeps prices down to their present

level, affording those engaged in the industry only a meager income for their subsistence. Attempts to remedy this condition have been made from time to time, but apparently without success.

At the present time the ore is transported from the Tchiatura mines to Poti, the leading shipping port, as follows, and a little is also exported through Batum: The ore is loaded at the mines on pack animals, who draw it down the mountains to the Tchiatura railway station, a distance of 1 to 4 miles; then it is carried in baskets and loaded on 4-ton trucks on the narrow-gauge railway and shipped to Sharopan, a distance of 25 miles; from here it is taken in 10-ton box cars over the main line of the Trans-Caucasian Railroad to Poti, a distance of 82 miles, and the distance from the railway station to the pier where the ore is loaded on steamers is 1 1/3 miles. The narrow-gauge railway from Tchiatura to Sharopan has recently been extended into the mines to a place called Surmoot. This extension affords transportation from the mine workings largely over narrow trails which traverse in zig-zags the precipices and steep slopes of the mountains. Some of these trails are difficult and can only be traversed by the most sure-footed pack animals. Over other trails the primitive two-wheeled ox cart, known as an "arba," may be used. The peasants own the pack animals and carts and are paid for loading, unloading and transporting the ore in good weather from 60c. to 84c. per ton, according to the distance from the mines to the Tchiatura railway station. The cost of transportation in wet weather is extraordinarily high, owing to the dangerous nature of the steep mountain trails, which become almost impassable. Consequently in wet weather shipments of ore are greatly reduced. It would be perfectly feasible to utilize rope tramways as a means of transportation from the mine workings to the Tchiatura Railway. Another saving could be made in making the narrow-gauge road from Tchiatura to Sharopan standard gauge. At present the ore train when it arrives at Sharopan is run out on a trestle extending over a platform level with the floors of the standard-gauge railroad trucks at Poti. The narrow-gauge trucks are unloaded by shovels, and the ore, falling on the platform below, is transferred to the broad-gauge railway trucks by shoveling and by use of baskets. This break of gauge materially increases the expense of handling the ore.

The export trade is in the hands of a number of shippers at Poti, none of whom are proprietors of mines, and all of whom buy the ore from the mine owners at Tchiatura direct. The majority of these shippers are dependent upon the local banks for advances. Those who have little or no capital are hampered by the method pursued in running the railroad trucks from the mines to the port of Poti. The rolling stock of the railway is insufficient to meet the present demand, and it is the custom of the authorities to apportion the trucks to the several shippers in accordance with the quantity of mineral they carry in stock at Tchiatura. There is but one wealthy firm engaged in this traffic, and its stock at the station varies from 30,000 to 50,000 tons, representing, say, \$100,000 to \$150,000. Other shippers with working capital carry comparatively small stocks there, while those who have no capital, and depend upon the credits obtained for them by their agents in London against future shipments, purchase ore as orders come forward and seldom have any stock at Tchiatura. Consequently the wealthy firm above referred to commands the larger number of railway trucks, and what is perhaps more important, it controls a regular supply. On the other hand, the inadequacy of transportation facilities for the smaller shippers often disappoints their buyers, and checks competition between them and the larger shippers.

There is an export duty on manganese ore of ½ kopek per poond, or about 16½c. per long ton. This is levied for the maintenance and improvement of the port of Poti. Freight rates from Poti to the United States have advanced notably since January 1st, 1900, and to-day steamers to Philadelphia or Baltimore, where the bulk of the imports are made, command from 21 to 23s. and over, which compares with 14 and 16s. paid some time ago. Better facilities are offered at Philadelphia and Baltimore than at New York for discharging manganese ore.

Concerning the future of the manganese industry in Russia I venture to say that with improved transportation facilities from the mines to the shipping port in Russia, many of the distant claims will be worked, and it is likely that they may pass into the hands of some large company, which will operate them extensively and more systematically and successfully than is done at this time.

MINERAL IMPORTS AND EXPORTS OF SPAIN.—For the six months ending June 30th, Spain imported 986,161 metric tons coal and 117,411 tons coke. The imports of metals included 2,849 tons pig iron, 3,586 tons wrought iron, 31,019 tons steel and 1,612 tons tin-plate. The exports of minerals are given by the "Revista Minera" as below, in metric tons:

	1899.	1900.	Changes.
Iron ore .....	5,078,304	4,718,470	D. 359,834
Copper ore .....	538,929	637,629	I. 43,700
Zinc ore .....	54,568	34,957	D. 19,611
Lead ore .....	6,163	2,146	D. 4,017
Salt .....	217,062	127,247	D. 89,815

Exports of metals included 15,872 tons pig iron, 16,426 tons copper and 90,288 tons lead.

PIG IRON PRODUCTION IN GERMANY.—The output of the German blast furnaces in July was 695,213 metric tons, being 11,996 tons more than in June, and 9,779 tons more than in July, 1899. For the seven months ending July 31st the production was:

	1899.	1900.	Changes.
Foundry iron .....	832,818	849,763	I. 16,945
Forge iron .....	981,914	916,792	D. 65,122
Bessemer pig .....	306,330	272,868	D. 33,462
Thomas pig .....	2,564,796	2,707,347	I. 142,551
Totals .....	4,685,858	4,746,770	I. 60,912

The notable points are the increases in basic and foundry pig, and the falling off in forge iron and Bessemer pig. The total increase was 1.3 per cent. this year.

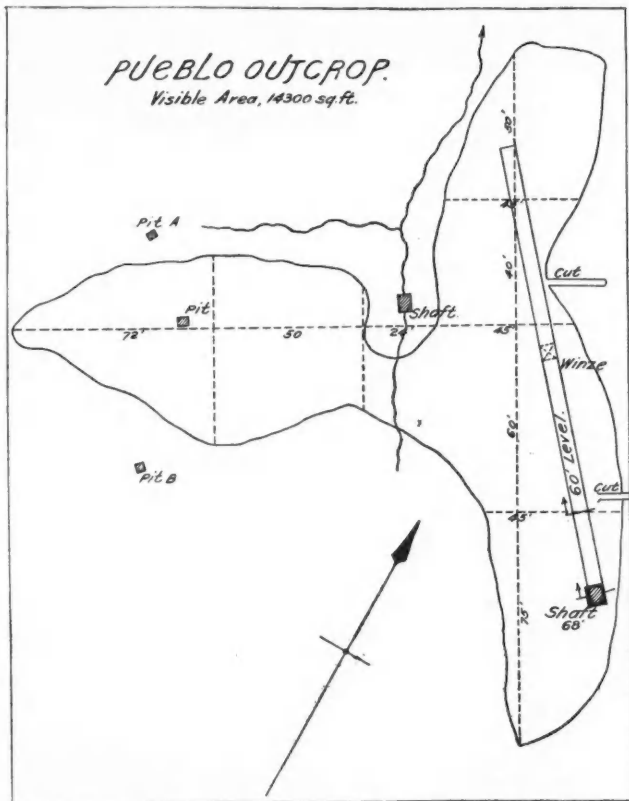
## RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

**WHEN SIDE LINES BECOME END LINES.**—Under the rule that where a lode mining claim is located across instead of along the vein, the original side lines become end lines, and the end lines side lines, the owner is entitled to all the rights with reference to the new side lines that he would have had if they had originally been located as such, including the right to follow the dip of a vein having its apex within the surface boundaries of his claim beyond the vertical plane passing through such lines.—*Empire Milling and Mining Company vs. Tombstone Milling and Mining Company* (100 Federal Reporter, 910); United States Circuit Court.

**CONSTRUCTION OF LIABILITY ON ABANDONED MINING LEASE.**—Where one leased a mine, agreeing to pay a royalty for all coal in the seam which could be reasonably worked, and at expiration of the lease to pay for all coal in the seam whether mined or not, on terminating the contract, in the absence of a stipulated safe mode for mining the coal, he was liable only for such coal remaining as could be mined by modes usually adopted in that locality with reasonable safety, and was not liable for coal rendered unmerchantable from causes which could not be prevented by prudent management.—*Gaines vs. Virginia & Alabama Coal Company* (27 Southern Reporter, 477); Supreme Court of Alabama.

**OPTION OF RENEWAL CANNOT BE ENFORCED IN EQUITY.**—Where a lease under which parties held a mine for 10 years provided for an extension at their option on giving the lessor notice in writing



20 days previous to the expiration of the lease, on failure to give the notice in due time, by reason of their own negligence, they are not entitled to relief in equity, there being no fraud or accident shown, the option for extension being purely a privilege without any corresponding right given to the lessor.—*Dikeman vs. Sunday Creek Coal Company* (Supreme Court of Illinois); 56 Northeastern Reporter, 864.

**NATURE OF ACTION ON BREACH OF CONDITION IN OIL LAND AGREEMENT.**—Where a party purchases from another oil lands under an agreement to bore for oil and complete a well within a year, and if oil is found in paying quantities to drill other wells, and deliver as royalty to the seller a certain part of the amount realized from the oil and gas produced from all such wells, the remedy for a violation of such conditions of sale is not by forfeiture of the right of the purchaser to bore for oil, but by action for damages occasioned by the breach.—*Ammons vs. South Penn Oil Company* (35 Southwestern Reporter, 1,004); Supreme Court of West Virginia.

**LABOR LIENS ON MINING PROPERTIES IN CALIFORNIA.**—Labor performed in breaking down and tearing away from the face of the drifts and mine the quartz and other substances in a mine is within the provisions of the laws of California (Code Civil Procedure, section 11,833) giving a lien for labor in the construction, alteration and repair of a mine. And where the executor purchases a mining property with funds of an estate in his individual name, and while the title so stands of record, laborers are employed by one, under the authority of such executor, to pump water out of the mine and to take out ore, for which they are not paid, upon the filing of their claims for liens the laborers become "encumbrancers for value" within the Code of Civil Procedure,

section 856, providing that no implied or resulting trust can prejudice the rights of a purchaser or incumbrancer of real property for value.—*Cahppius vs. Blankman* (60 Pacific Reporter, 925); Supreme Court of California.

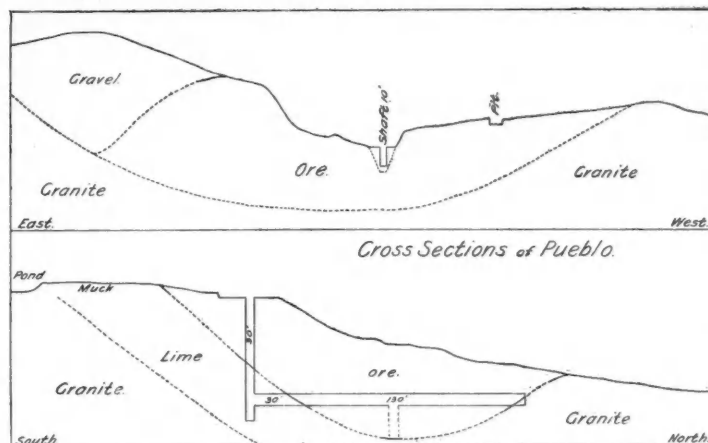
## THE WHITE HORSE COPPER BELT, YUKON TERRITORY.—II.

Written for the Engineering and Mining Journal by R. H. Stretch.

Since writing my former article I have had an opportunity to make a flying visit to a few of the more prominent mines, and see no reason to modify the views already expressed in any material particular. The Pueblo has put down a shaft 68 ft., starting near the southern end of the outcrop. At about 30 ft. down it passed through a footwall running southwest and northeast, into a body of lime and felsitic matter very much decomposed. Leaving a few feet for a sump a drift was run northwest on the major axis of the ore body, which passed into ore at about 30 ft., and again passed out of it in about 130 ft. before reaching a point vertically under the extreme northern edge of the surface showing. From the bottom of the drift a winze a few feet deep passed out of the ore, so that in combination with the rest of our information the fact that this deposit is a mass and not a vein may be considered as fairly established.

At the Copper King a shaft 16 ft. deep is still in ore associated with limestone, and the same is the case with a shallower one a short distance to the north, with some 40 tons of ore on the dumps. This is one of the larger of the limestone outliers, but as the granites crop all round it its extent is easily determinable, and the underlying granites cannot be far below.

At the Carlisle, the original discovery of bornite has been stripped



SKETCH MAPS, PUEBLO CLAIMS, YUKON TERRITORY.

and led to a well-defined crevice, on which a depth of 40 ft. or over has been attained. This seam runs northeast and southwest with a northerly dip, and has yielded in conjunction with the original discovery patch some 40 tons of ore. This work lies due east from the Copper King about 1,000 ft., there being three small seams of a similar character on the latter claim. The open broken surface with ore patches at the south end of the belt has been tested and abandoned, its pockety character having been apparently well proven.

The Anaconda has run 150 ft. of tunnel and cross-cutting, missing the ore altogether; through a want of knowledge of the structure of the country. As the ore above lies at the lime-granite contact the work in the tunnel should have been done to the west or right hand, in which direction the granites lie. As it is, the dump contains nothing but a mass of limestone of no value, leaving the contact to be reached and explored by more intelligent management.

Quite a number of other locations have been made during the season on ore outcrops, some of them, if report is true, on porphyry-quartzite contacts to the west of the original finds. These are chiefly near the north end of the district, where the limestones dip to the north and are capped by a schistose and quartzite series of sedimentaries.

Reports of free gold associated with copper ore at the south end of the belt are freely circulated. The ore is said, on competent authority, to occur as pockets in limestone near the granite contact. Chalcopyrite is found more freely than bornite, and it may be added that this mineral is coming in at the bottom of the Carlisle shaft.

**CALCIUM CARBIDE IN FOUNDRIES.**—A writer in the "Revue Generale des Sciences" suggests the employment of calcium carbide as a deoxydant in foundry practice, the reagent being added to the metal before pouring. The results are improved by the addition of a metallic chloride. Aluminum bronze can, it is stated, be produced by gently heating a mixture of alumina and chloride of copper in contact with carbide of calcium.

**REFINING PLATINUM IN RUSSIA.**—London "Engineering" says that the export of crude platinum from Russia is likely to cease altogether soon, inasmuch as the syndicate of foreign capitalists which has secured the platinum-working establishments of the Oural has erected two refineries at Ekaterinenburg. The syndicate has also secured the crude platinum held by Count P. P. Schuvalov and M. P. P. Demidov, so that the works will handle about 300 pounds of crude platinum annually. About 75 per cent. of the whole production goes to America, with which country the syndicate intends to enter into direct relations. It is expected that the business will prove a remunerative one.

## MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

(We shall be pleased to receive specimens of ores and minerals, and to describe and classify them, as far as possible. We shall be pleased to receive descriptions of minerals and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like, will be reproduced whenever possible. Specimens should be of moderate size and should be sent prepaid. We cannot undertake to return them. If analyses are wanted we will turn specimens over to a competent assayer, should our correspondent instruct us to do so and send the necessary money.—Editor E. & M. J.)

205.—Jamesonite.—Some very choice specimens of this antimony-lead mineral are being found in the Manhattan Quicksilver Mine in Napa County, Cal. Several pretty specimens were recently presented to the California State Mining Bureau by the company.

208.—The Largest Crystal.—Dr. Henry Montgomery in "Science," commenting on a notice which appeared in this column, of a spodumene crystal 29 ft. long, says that in the year 1885 while studying the tin ore of cassiterite localities of the Black Hills of Dakota he saw and measured, in the Etta tin mine near Harney's Peak, a spodumene crystal 38 ft. 6 in. in length, and 32 in. in thickness. This 38½ ft. crystal was almost perfect, and was situated within a few yards of the surface. Owing to its size and the difficulties of transportation at that time, the railway being 130 miles distant, he made no attempt to have the crystal removed, but he collected other crystals of spodumene in the vicinity, and some of them measured from 2 to 6 ft. in length. Subsequently, in a public lecture upon the Black Hills, given in the University of North Dakota in February, 1886, he announced the discovery of the gigantic crystal; but the discovery was not reported in the regular scientific journals.

209.—Aragonite.—A. G. Col, of San Jose, Cal., is working a quicksilver claim near that place, and it is stated has found a fine lot of aragonite specimens.

210.—Scheelite.—Martin Andrews of Scott Bar, Siskiyou County, Cal., has presented the California State Mining Bureau with a number of scheelite specimens.

211.—Graphite.—W. T. R.—The sample of disseminated graphite you send is not promising. Rock carrying as high a percentage of graphite is of common occurrence in the Adirondacks. The demand for graphite of good quality is excellent. As a commercial article graphite is sold under trade names, based on the locality where it was mined. You will find the wholesale New York prices for graphite each week in the "Engineering and Mining Journal." All the grades priced are crystalline, or, as you say, foliated, with the exception of the Rhode Island graphite which is amorphous.

212.—Sand.—A. M. C.—It is difficult to give any estimate of the value of a sample of sand or clay without making practical tests. The sand you send seems to be suitable for polishing metals, and may possibly be useful as filtering material. Its market value is probably not great. Transportation charges will be the chief hindrance in obtaining a market.

213.—Garnets.—E. D. L.—A rock containing 10 per cent. garnets situated in Arizona is not on its face a promising proposition. That the garnets are broken may be of little consequence, but there are large outcrops of granitiferous rock at places much nearer the industrial centers of this country than Yuma. The value of garnets for abrasive purposes cannot be determined by analysis or examination but only through actual tests. The mineral must be hard, brittle and have well-defined cleavage. The only deposits worked on any scale so far in this country are in the Adirondacks, at Chelsea, Pa., and in Roxbury, Conn. The output of the Adirondack mines could greatly be increased but the field for the abrasive is so limited that greater production would lower prices so that mining would not be profitable.

214.—Talc.—A. J.—The green mineral with pearly lustre is probably what is called indurated talc. It is harder than ordinary talc, is darker, has not such a greasy feel, but has a well-developed slaty cleavage. The market for talc is not very large. It is used as an adulterant for many powdery substances, as a filler for mineral paints and particularly as a filler for paper, for which purpose it has largely supplanted kaolin.

## QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.—Editor E. & M. J.)

Tin Ores.—Do you know of any place from which complex sulphide tin ores containing antimony, arsenic, silver and lead, or any of these, can be obtained in large quantities?—S. V.

Answer.—In addition to our previous answer to this question, which appeared in the "Engineering and Mining Journal," May 5th last, we are informed by a correspondent that a lode of tin ores such as are described in the question exists in the Perak State in the Malay Peninsula.

Gold and Iron from Sand.—I have seen in a popular magazine recently an account of a successful process for extracting gold and iron from black sand. Can you tell me if the statements there given are true?—C. R.

Answer.—The number of "processes" which have been announced for extracting gold and other values from so-called "black sand" is legion;

but none of them is in operation now. We do not believe that this latest affair is worth any more than its predecessors,

Mine Timbering.—Where can I find practical instruction on the subject of timbering mines?—M. M.

Answer.—All the standard text-books on mining have something to say on mine timbering; and in addition there is much scattered literature on the subject, in our own columns, in the papers read before the American Institute of Mining Engineers, and elsewhere. The most compact and complete monograph on the subject to which we can refer you is the paper by Wilbur E. Sanders in "The Mineral Industry," Volume VIII.

The Goldschmidt Process.—Will you tell me whether any ordinary crucible would answer for making a test of the Goldschmidt process, described in the "Engineering and Mining Journal" August 25th last? Where can aluminum powder be procured?—L. E. M.

Answer.—By referring to the description of the process you will see that the inventor uses "a slag-lined fireclay crucible." Undoubtedly such a crucible will stand the heat, at least long enough to be of practical service. Aluminum powder can be obtained from the Pittsburg Reduction Company, which has its office in Pittsburg, and branch offices or agencies in all the principal cities. You must remember, however, that the Goldschmidt process is protected by several patents in this country, and you will be liable for damages if you infringe them.

Southern Coal Mines and Slate Quarries.—Can you tell me where I can obtain a list of the coal mines which ship through or are served by ports in the Southern States? Also, of the slate quarries?—G. T.

Answer.—The coal mines shipping through ports in the Southern States are those of West Virginia, which find their seaboard outlet at Norfolk and Newport News; and those of Alabama, which ship through Savannah, Brunswick and Pensacola chiefly. The mines of Tennessee do not ship to the seaboard, their output being consumed locally. There is no complete list to be had of these mines; the best available is that given in Ruley's "Coal Statistics" (price, 50 cents).

The only slate quarry at present in operation in the South is in Georgia, and no exports are made from it, the production being used locally. Any slate that might be exported would go to Savannah.

Vanadium.—Where, in the United States or Europe, is vanadium separated from its ores? How much per ton would it cost to have ore treated that is known to contain a good percentage of vanadium, besides iron, copper, lead, silver and other metals? Could I find a market in the United States for such ores?—G. A. K.

Answer.—There is no demand—or an extremely small one—for metallic vanadium, and no one is engaged in separating the metal in that form. It is impossible to say what would be the cost of treating the ores you mention for vanadium. Certainly it would not pay to do so unless the vanadium could be saved as a by-product in the extraction of the other metals. There would be no market here for the ore as an ore of vanadium. That metal is sold and used almost entirely in the form of vanadic acid, which is used in dyeing. The present supply of this mineral is obtained from Creusot in France, where it is found in certain slags.

See "The Mineral Industry," Volumes VII. and VIII., for further information.

Open-Hearth Steel.—Can you tell me anything about the Monell process or patent for making open-hearth steel? I have seen frequent references to it, but have not found a description.—A. C.

Answer.—The Monell patent is for what might be called a continuous process for the manufacture of basic open-hearth steel, in which iron ore is used almost entirely in place of the steel scrap generally mixed with pig iron in this process. The claims of Mr. Monell's patent—which is No. 652,226, dated June 19th, 1900—are three in number, as follows:

"1. The method of making steel which consists of introducing into a basic open-hearth furnace iron oxide and lime and molten pig iron, substantially eliminating phosphorus from the iron while the iron is at a comparatively low temperature; withdrawing, at an early stage in the removal of carbon, the bulk of the slag containing the eliminated phosphorus and heating the bath of metal and oxidizing the carbon until the carbon has been reduced to the point at which the metal is to be tapped.

"2. The method of making steel which consists in introducing into a basic open-hearth furnace iron oxide and lime and molten pig iron, substantially eliminating phosphorus from the iron while the iron is at a comparatively low temperature; withdrawing, at an early stage in the removal of carbon, the bulk of the slag containing the eliminated phosphorus, without withdrawing the metal, then heating the bath of metal and oxidizing the carbon until the carbon has been reduced to the point at which the metal is to be tapped.

"3. The method of making steel, which consists in introducing into a basic open-hearth furnace iron oxide and lime, heating the same, then introducing molten pig iron, substantially eliminating phosphorus from the iron while the iron is at a comparatively low temperature; and withdrawing, at an early stage in the removal of carbon, the bulk of the slag containing the eliminated phosphorus, heating the bath of metal and oxidizing the carbon until the carbon has been reduced to the point at which the metal is to be tapped."

MINING MACHINERY IN CHILE.—According to a British consular report, during 1899 large quantities of machinery for working borax were imported into Tocopilla, and if the opening up of copper mines in Chile proceeds on the same scale as last year there should be an increased demand for all kinds of mining machinery.

BRICKS FROM WASTE SAND AND GLASS.—The "Chemical Trade Journal" of Manchester, England, says that Dr. Ormandy, of St. Helens,

has discovered how to make good serviceable bricks from the waste-heaps of the glass-works of that town. For years scientists and chemists have endeavored to discover a means of turning to account the immense heaps of spent sand and glass resulting from the operation of grinding plate glass. At one works alone 1,500,000 tons have accumulated, and about 1,200 tons are added every week. The new bricks have stood exceptionally severe tests, and the process of manufacture will soon be in full swing.

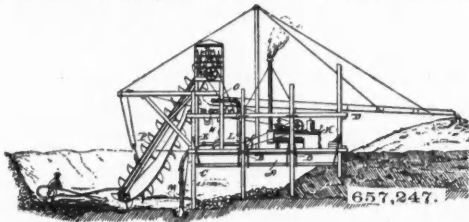
**PATENTS RELATING TO MINING AND METALLURGY.**

**UNITED STATES.**

The following is a list of the patents relating to mining and 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 September 4th, 1900.

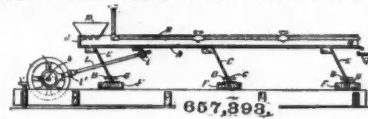
- 657,119. **PROCESS OF REFINING COPPER FROM SOLUTIONS CONTAINING ANTIMONY AS AN IMPURITY.** Frank Klepetko and John T. Morrow, Great Falls, Mont. A process of purifying copper from solutions containing copper with some antimony as an impurity, consisting in introducing wood-tea into the solution and then subjecting the solution to electrolysis and depositing the copper in a purified state.
- 657,181. **PROCESS OF SEPARATING PRECIOUS METALS FROM THEIR ORES.** Harald de Raasloff, New York, N. Y. A continuous process of treating ores of precious metals consisting in mixing the finely-divided ore with a suitable solvent for the precious metals, inducing the mixture to flow continuously from and back to the point of admixture, while so flowing introducing liquid oxygen or liquefied air into the mixture, then causing the mixture to flow with sudden variations of velocity to agitate it, then separating the solution from the base earthy mineral matter and sending it continuously through an electrodepositing bath, where the precious metal is deposited, and thus in continuous ordered succession.
- 657,184. **COAL WASHER.** Elwood A. Stewart, Cincinnati, Ohio. The combination in a coal washer of a vertically-reciprocating jig provided with a perforated bottom, metallic sliding joints on its sides, water tank with inclined bottom, perforated bucket elevator, tank, elevator, tank, centrifugal pump, tank, opening between tanks and valve to close opening.
- 657,192. **COMPRESSED AIR WATER ELEVATOR.** Thomas J. Demorest, Garfield, Wash. The combination with a vertically-movable tank, and means for intermittently supplying aeriform fluid thereto, of a liquid-education pipe, and a telescopic connection between said vent ports, one of said members being shiftable with the tank to alternately bring the vent ports into registration and disaligned relation.
- 657,202. **ELECTRIC FURNACE.** Henry C. McBrair, Middletown, N. Y. In an electrically-heated furnace the combination of two hinged parts, an electric heating circuit in each part, and insulated electric connections between said circuits, said connections consisting of contact parts which move on each other, when the hinged parts are operated and maintain a continuous electrical connection between said circuits.
- 657,205. **DRILL-JAR AND COUPLING.** Thomas SeEVERS, Oskaloosa, Iowa. The combination with a drill-rod having spaced lugs and additional lugs below and in line with the interspaces, of a tubular jar having striking lugs on its inner face, said striking lugs being adapted to pass between the first named lugs of the rod and engage the second lugs for movement by the latter to lie beneath the first lugs.
- 657,228. **BURNING PULVERIZED AND LIQUID HYDROCARBONS FOR FUEL AND HEATING.** Samuel M. Trapp, Tacoma, Wash., assignor of three-fourths to W. H. Remington, Chester Thorne and Amos E. Brown, same place. The combination with the fire pit, of a fuel flue leading from the front toward the rear of the fire pit and in communication with the fire pit for the intake of an igniting agent from the pit into the flue to ignite the fuel in the flue, and a deflector at the discharge end of the flue located to direct the flame from the flue toward the front of the pit.
- 657,247. **DREDGING APPARATUS.** Alexander McDougall, Duluth, Minn. Means for mining, comprising, in combination, a scow adapted to be used in a pit or excavation, means for supporting the scow above the bottom of the pit, a pump on the scow for draining the pit,



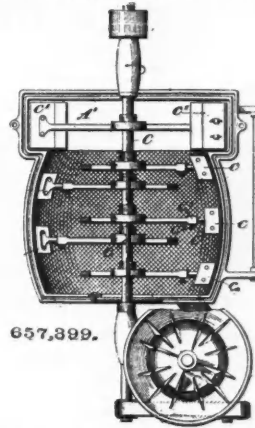
connection from said pump adapted to draw from a reservoir, a flume or chute connecting the reservoir and scow, a second pump on the scow, a flexible pipe or pipes connected to said second pump, by means of which the entire bottom of the pit may be washed, and the pit may be flooded and drained at will.

- 657,376. **GAS GENERATOR.** Grant Woods, Bakersfield, Cal., assignor to Mattie Trullinger, same place. The combination with a generator casing, inclined generator plates therein converging at their upper ends, and means for heating said plates, of means for delivering oil to said plates near their apex, and separate means for directing steam jet against the surface of the plates.
- 657,296. **METHOD OF MAKING ARTIFICIAL STONE.** Soren Schougaard, Copenhagen, Denmark. The method consists in dissolving animal glue, alum and gum-arabic in water in about the proportions stated, adding to this mixture so much double-burnt gypsum as to produce a pulpy mass of convenient consistency, mixing therewith a color soluble in water and molding the mass in the shapes in which it is to harden.
- 657,325. **METHOD OF MAKING OXYCHLORIDE OF MERCURY.** Rosario Torchia, New York, N. Y. The method consists in mixing at boiling temperature three parts of a saturated solution of potassium hydrate and fifteen parts of corrosive mercuric chloride and evaporating to dryness by boiling.
- 657,375. **LEAD WIRE FOR BLASTING.** William H. Williams, Concord, N. H. The combination with a winding drum of a plurality of conductors attached thereto and adapted to be wound thereon, said conductors being connected at intervals.
- 657,393. **APPARATUS FOR CONCENTRATING AND SEPARATING ORES, ETC.** Julius Buss, London, England. In combination, a table, resilient supports therefor arranged in pairs, independent devices carrying each pair of said supports vertically adjustable to tilt the table transversely, a support common to all of said devices

for vertically adjusting the same to tilt the table longitudinally, a feed hopper at the upper front corner of the table and a perforated pipe above the table arranged parallel with and in proximity to the upper side edge of the table.



- 657,398 and 657,399. **APPARATUS FOR PREPARING AND FEEDING FUEL.** Albert A. Day, New York, N. Y. The combination with the pulverizing chamber having the general form of an ellipse and pro-



- 657,414. **FUSE.** Rudolf Hundhausen, Wilmersdorf, Germany, assignor to the Siemens & Halske Electric Company of America, Chicago, Ill. The combination with a fuse portion, of a tension device adapted for separating the terminals of the said fuse portion upon rupture, a second fuse portion in secondary relation with the said fuse portion, and a support associated with the second fuse portion for receiving the tension due to the said tension device, the weakest portion of the said fuse portion being thereby relieved of tension.
- 657,452. **PROCESS OF MAKING MAGNESIA-ALUMINA.** Mathew E. Rothberg, Johnstown, Pa. The process consists in mixing lime chloride with a solution of alumina sulphate and subsequently adding to the alumina-chloride solution produced thereby, magnesian lime.
- 657,453. **PROCESS OF OBTAINING ALUMINA.** Mathew E. Rothberg, Johnstown, Pa. The process consists in mixing lime chloride with a solution of alumina sulphate, subsequently adding lime to the alumina-chloride solution produced thereby, and finally separating and heating the resultant precipitate.
- 657,461. **COMPOSITION OF MATTER.** James K. P. Shelton, Cuba, Ala. A fusible cement or composition of matter for the purpose herein described, comprising equal parts of coal, sand and resin, ground or powdered and combined, and adapted to be fused or melted.

**GREAT BRITAIN.**

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

Week Ending August 11th, 1900.

- 18,123 of 1899. **TREATING REFRACTORY GOLD ORES.** J. H. Lee, London. A method of freeing refractory gold ore from sulphur, arsenic, etc., by grinding fine, and forming into briquettes with carbonaceous matter, and roasting.
- 1,543 of 1900. **PURIFYING SEA-WATER.** G. N. Vis, Basle, Switzerland. Method for eliminating lime and magnesium salts from brine and sea water.
- 5,242 of 1900. **CARBORUNDUM MAKING.** F. A. J. Fitzgerald, Niagara Falls, U. S. A. Plant for compacting carborundum into solid and homogeneous blocks and also into special shapes.
- 5,506 of 1900. **OPEN-HEARTH STEEL MAKING.** A. Monell, Pittsburg, U. S. A. A modification of open-hearth steel process that will enable the furnace to work as rapidly with ore and pig as with scrap and pig.
- 8,485 of 1900. **CRUSHING PLANT.** T. A. Edison, New York. A crushing and re-screening plant for fine crushing, where the material will not clog in the screens.
- 10,295 of 1900. **ROASTING KILN.** H. Froehling, J. S. Fleming and J. G. Whitlock, Richmond, Virginia, U. S. A. An improved form of roasting kiln for obtaining sulphur from pyrites, by means of which a larger proportion of the sulphur contents is obtained.
- 10,843 of 1900. **BRIQUETTE MAKING.** A. W. Chase, Cuba. Method of forming briquettes of iron ores for smelting, utilizing different ores of iron.

Week Ending August 18th, 1900.

- 17,244 of 1899. **PAINT.** G. von Reinoltz, London. A pigment to be used as substitute for white lead, containing carbonate and sulphate of lead, zinc oxide, sulphate of lime and carbonate of lime.
- 18,575 of 1899. **COAL DRILL.** Lord Masham, Leeds. Improvements in the mechanism for drilling holes in coal to facilitate the operation of undercut coal cutters.
- 18,659 of 1899. **SILICON PRODUCTION.** B. Scheid, Frankfurt-on-Main, Germany. Method of producing crystalline silicon.
- 19,120 of 1899. **CATHODES FOR ELECTROLYTIC WORK.** P. Imhoff, J. Raschen and United Alkali Company, Liverpool. Use of nickel cathodes in electrolytic apparatus for producing chlorates.
- 19,773 of 1899. **MORTAR-BOX FOR STAMP MILLS.** C. S. Madan, Manchester. Improved method of introducing water into mortar boxes of stamp mills, and also for cleaning the stamp stems.
- 7,409 of 1900. **PULVERIZER.** Engineering and Powdered Fuel Company, New York. Improvements in ball pulverizers where the balls run horizontally round vertical axes and between grinding rings.
- 8,066 of 1900. **TITANIUM-IRON ALLOYS.** A. J. Rossi, J. MacNaughton and W. D. Edmunds, New York. Alloys of iron and titanium that contain less carbon than usual.
- 9,373 of 1900. **CUPOLA.** F. Hardert, Cincinnati, U. S. A. Improvements in cupolas used in foundries.
- 10,450 of 1900. **ZINC SHAVING CUTTER.** A. Holtzen and W. E. Hampton, San Francisco, U. S. A. Machinery for making zinc shavings.

## PERSONAL.

Mr. Marcus Daly of Butte, Mont., has been ill at the Hotel Netherlands in New York City.

Mr. S. S. Palmer, president of the New Jersey Zinc Company, has gone on a 3 months' business trip to Europe.

Mr. George B. McAuley, who has spent several months in England, has returned to Camp McKinney, B. C.

Mr. Mogensen, of Pueblo, Colo., has accepted the position of civil engineer at the Gugenheim smelter at Monterey, Mex.

Mr. Louis A. Wright has been appointed superintendent of the Sierra Mojada branch of the Campana Metallurgica of Mexico.

Mr. Walter Hovey Hill, general manager of the Idaho Little Giant Mining Company of Wardner, Idaho, is in Chicago for a few weeks.

Mr. D. W. Brunton, of the firm of Taylor & Brunton, returned to Denver with his family a few days ago, after a 3 months' trip through Europe.

Mr. Albert L. Waters has been appointed to the superintendency of mines and reduction works in Sonora, Mex. His address is Hermosillo, Sonora.

Mr. Terrence Conlin, formerly blast-furnace superintendent of the Federal Steel Company at Joliet, Ill., has accepted a similar position at Bridgeport, O.

Mr. Henry C. Brown is engaged in developing mining properties near Columbia, Yavapai County, Ariz., for the Sonora Gold Mining and Milling Company.

Dr. Adolf Sauer, associate professor at Heidelberg, has been elected professor of mineralogy and geology and director of the newly established geological bureau at Stuttgart.

The Earl of Minto, Governor-General of Canada, and other members of the vice-regal party who are making a tour through the western portion of Canada, were in Rossland September 11th.

Mr. J. W. Young, vice-president of the firm of Fraser & Chalmers, and Mr. W. H. Aldridge, superintendent of the Canadian Pacific Railway smelter at Trail, have been visiting the Boundary District of British Columbia and investigating conditions there.

Mr. J. H. Gross, superintendent of labor of the Homestead Steel Works of the Carnegie Company, has gone on a two months' tour of Europe as a guest of the company. Master Mechanic H. J. Davis, who went abroad at the expense of the company, has returned.

Mr. G. W. Wallace, for many years a mine superintendent in the employ of the Minnesota Iron Company, and for a year or more in charge of its Fayal Mine on the Mesabi Range, has resigned to become manager of all the iron mining interests of Corrigan, McKinney & Co., of Cleveland, O., in the Lake Superior Region.

Mr. T. C. Whipple and Mr. W. H. Davies, formerly of the Mountain Pride Mine, Breckenridge, Colo., are now connected with the Sonora Gold Mining and Milling Company at Columbia, Ariz. Mr. Whipple has charge of the engineering department and Mr. Davies is superintendent of the mine.

Mr. Sidney Williams has been appointed superintendent in charge of the operating department in Pennsylvania of the Pennsylvania Coal Company, with headquarters at Dunmore. Mr. S. Brinkerhoff Thorne is appointed comptroller in charge of the accounting department, to succeed Mr. Williams. The appointments take effect October 1st.

Mr. Joseph F. Champion has returned to San Francisco from Quong Si, China, having completed a 2-year engagement with a Chinese syndicate which owns extensive gold, silver and copper properties in that section. He superintended the development of the property and the erection and operation of a 20-ton smelting and refining plant, and a 14-ton barrel chlorination plant.

Mr. Andrew Moreland has resigned as director and secretary of the Carnegie Steel Company and Mr. William W. Blackburn has been elected to succeed him in both positions. Mr. Moreland continues as secretary and a director of the Carnegie Company, which operates all the Carnegie concerns. The resignation was to relieve him of much clerical labor. Mr. William C. McCausland, formerly cashier of Carnegie, Phipps & Company, Limited, and subsequently cashier of the Carnegie Steel Company, Limited, was appointed to succeed Mr. Blackburn as assistant treasurer of the Carnegie Steel Company. Mr. Frank A. McCune was appointed cashier of the Carnegie Steel Company to fill the vacancy caused by Mr. McCausland's promotion. The resignation of George Megrew as purchasing

agent of the Carnegie Steel Company has been accepted, but his successor is not appointed.

## OBITUARY.

Capt. James Cruse, head mining captain of the Tamarack, Jr., Mine, died at his residence near Tamarack, September 14th, aged 64 years. He was born in Callington, Cornwall, England, and came to this country in 1861, beginning work as a miner at the Old Star copper mine near Copper Harbor, Mich. Afterward he worked for the Copper Falls Mining Company. When the Calumet & Hecla was organized Capt. Cruse took a position there under the late Capt. Hoatson and was the first man to work on a drilling machine in that property. Later he became head mining captain at the Allouez Copper Mine. From the Allouez he went west to Lake City, Colo., where for 5 years he acted as superintendent for the Ute & Ulay mines in Hinsdale County. When he returned to Michigan Capt. Cruse took a position as mining captain at the Boston and from there went to the Tamarack, Jr., Mine when it was first opened up 12 years ago. He had charge of the underground work there from the start up to a short time ago. He was a typical hale and hearty Cornish mining captain and one of the best known men in the Lake Superior copper regions.

## SOCIETIES AND TECHNICAL SCHOOLS.

Montana School of Mines.—The State School of Mines opened on September 11th. So far 20 students are in attendance. It will take some weeks to get the school running smoothly. The various mining localities of the State are fairly represented in the students. The faculty is as follows: Nathan R. Leonard, acting president and professor of mathematics; William G. King, professor of chemistry and metallurgy; Alexander H. Winchell, professor of geology, mining and mineralogy; Charles H. Bowman, professor of mechanics and mining engineering.

Washington State School of Mines.—The department of mining in the State University at Seattle, which has been part of the department of mines, is to be placed under a separate head as a college of mines. Four courses will be offered, a course in mining engineering, a course in mining engineering with geological alternative, a course in metallurgical engineering and a short course in mining engineering. The mining engineering course with the geological alternative contains additional courses in geology and other sciences and is designed for students who wish to fit themselves for geological surveys or reporting upon the economic geology of mining districts.

The short course of mining engineering is designed for those who have had some experience in mining work.

Besides these there is offered a mining course for prospectors lasting about 3 months, from December to March. It is designed for mature persons who are interested in mining and who have not the time for a more extended course. It consists partly of lectures, but mostly of laboratory exercises, and is intended to be as practical as possible.

Prof. Dorsey A. Lyon is professor of mining and metallurgy at the university. The laboratories are stated to be good and will be supplemented by practical field work in some of the mines of the State. There are opportunities for the observation of coal mining in the immediate vicinity of Seattle and students in metallurgy can visit the smelters at Tacoma and Everett. This plan of combining practical work with the course of study is followed by the University of California.

## INDUSTRIAL NOTES.

The Baltimore Chrome Works, of Baltimore, Md., has given the contract for erecting its new plant to the Structural Iron and Steel Company of Baltimore.

A contract for 6,500 tons of 85-lb. steel rails, which the East India Railway Company tried to place in England, has been secured by the Pennsylvania Steel Company.

The American Bridge Company announces that Mr. August Ziesing has been appointed general western representative of the company, with headquarters at Chicago, Ill.

The Edward P. Allis Company, of Milwaukee, Wis., has discontinued its Butte, Mont., branch office and established a branch office at Spokane, Wash., in charge of H. V. Croll.

The Aultman Company, of Canton, O., manufacturer of elevating, conveying and power transmission machinery, states that it has arranged with the C. T. Patterson Company, of New Orleans, La., to represent it.

The Westinghouse interests at Pittsburg, Pa., have purchased the plant of the Pittsburg Automobile Company at Swissvale, near Pittsburg, comprising 3½ acres, with a large 3-story brick factory, never equipped with machinery.

Randolph Brandt, of New York City, has just furnished the United States Navy with 1,200 lbs. of Seden packing, of which he is the sole manufacturer. Mr. Brandt states that the sales of this packing have shown a steady increase during the past year.

The Babcock & Wilcox Company has recently sold through its Pittsburg office to the Crucible Steel Company of America, for the Anderson-Du Puy Works, 6 250-H. P. boilers and 6 chain grate stokers; Pittsburg Plate Glass Company, 33 boilers of 250 H. P. each and 50 chain grate stokers.

The American Engineering Works of Chicago has just closed a contract with the Black Warrior Copper Company, Amalgamated, for a concentrator for that company's mines in Arizona. The concentrator will be equipped with crusher, 36 by 16 and 27 by 14 rolls, system of elevators and screens, and 8 Bartlett tables.

At the recent annual meeting of the stockholders of the Dover Iron Company of Dover, N. J., Albert Richards was elected a director to succeed the late George Richards. All the other directors were re-elected. Mahlon Pitney, who was elected president shortly after Mr. Richards' death, was re-elected to that office.

The Washburn Wire Company, the \$1,500,000 concern formed by Worcester and Boston men, has purchased a controlling interest in the American Electrical Works, at Phillipsdale, R. I. The latter company was incorporated in 1882, and now employs about 800 hands, and in its last fiscal year did a business of over \$4,000,000. The company manufactures bare and insulated copper wire, and this business will be continued in connection with the manufacture of high-grade steel wire at the plant now being erected by the Washburn Wire Company.

The Park Steel Company has entered suit at Pittsburg, Pa., against the Pressed Steel Car Company to recover \$100,000, claiming that in September, 1899, the defendants agreed to purchase 5,000 tons of open-hearth basic rectangular plate steel, the defendant to furnish specifications monthly for 500 tons, and pay at the rate of ¾c. per pound monthly. The plaintiffs aver that they have shipped 1,461 tons of steel, but that the defendants since December have failed to furnish the necessary specifications, which has prevented the shipment of the contract amount.

Charles H. Besly & Company of Chicago state that they have been sending metal-working tools to India. The firm began by sending a few tools, and those small ones. The first machines sent had most of the boxes cut up in a few months. Last year the firm sent to Bombay a 20-in. lathe, that aroused much curiosity among native mechanics around Bombay on account of its size and the work it does. During the past month Messrs. Besly & Company have sold outfits for 3 shops to go to India. American tools are preferred, and the demand seems to be increasing.

At the recent annual meeting of the Thomas Iron Company at Easton, Pa., about 40,000 out of the 50,000 shares of the company were represented. The annual report showed the heaviest year's production of pig iron. Dividends aggregating 16% were paid on the capital of \$2,500,000. The old board was elected as follows: Samuel Thomas, W. H. Hulick, F. R. Drake, J. S. Krause, J. S. Rodenbough, W. T. Hardenbergh and B. F. Fackenthal, Jr. The officers re-elected are B. F. Fackenthal, Jr., president; W. H. Hulick, vice-president, and J. W. Weaver, secretary and treasurer.

The work at Steelton, Pa., on the new steel foundry of the Pennsylvania Steel Works is progressing, and the new engine at No. 3 blast furnace will soon be ready for operation. The repairs and improvements at the Bessemer department also will be completed before long. Heavy shipments of rails have been sent out recently; 15 car-loads of 30-ft. rails were sent to Elmira over the Pennsylvania Railroad, and during the week there were a number of cars of rails sent to Nashville, Tenn., and also a number of small shipments to Eastern points. The rail mill has a number of new orders which will be started soon, but few of them are of great size.

At the annual meeting of the Republic Iron and Steel Company the following directors were chosen: August Belmont, Grant B. Schley, George R. Sheldon, Randolph S. Warner, George D. Wick, John F. Taylor, Alexis W. Thompson, George M. Bard, G. Watson French, Harry Rubens, Lucius E. Cochran, Myron C. Wick, James C. Corns, Theodore A. Mysenburg, Peter L. Kimberly, William H. Hassinger, Archibald W. Houston, Wm. E. Taylor. Messrs. Llewellyn and Clark retired from the board some time ago and it was resolved to reduce the membership from 20 to 18. The new directors, Messrs. W. E. Taylor and A. W. Houston, succeed Messrs. Thomas and Caldwell.

The National Salt Company's balance sheet for the year ended July 31st, 1900, just received, is as follows: Assets, plant and construction account, \$8,525,276; investments, stock of constituent companies, etc., \$3,159,005; cash in banks, \$195,477; prepayments and advances, \$177,905; ac-



counts and bills receivable, \$281,494; accrued earnings of constituent companies, \$190,970; treasury stock, \$97,745; furniture and office fixtures, \$5,247; merchandise, salt and supplies on hand, at cost, \$1,080,283; total, \$13,713,403. Liabilities, capital stock \$12,000,000; deferred payments, securities purchased, \$300,000; accounts payable, \$256,238; bills payable, \$502,500; surplus, \$654,665; total, \$13,713,403.

### TRADE CATALOGUES.

The Sterling Emery Wheel Manufacturing Company, of Pittsburg, Pa., has just completed a large addition to its factory at Tiffin, O.

The Jeffrey Manufacturing Company, of Columbus, O., manufacturer of mill and mines supplies, conveying machinery, etc., state that its complete chain catalogue is now ready for distribution.

The Crane Company, of Chicago, Ill., is distributing an illustrated description of the new power plant of Armour & Company, at Chicago, for which the Crane Company furnished the piping. The company states that in the last 5 years it has furnished fully 250 complete piping equipments for power plants, these plants being in all quarters of the globe.

The Denver Engineering Works Company, of Denver, Colo., has sent out Bulletin No. 1003, describing the electric hoists it manufactures. These hoists are stated to be made in many sizes, 1, 2 and 3 H. P., for working in winzes, 5 to 6 H. P. for prospecting, 25 H. P. for small mines, and 50 to 300 H. P. for deeper mines. The 1-H. P. motor will hoist a load of 250 lbs. 125 ft. per minute. The pamphlet gives concise descriptions of the various sizes and also contains useful tables on wiring, formulae for hoisting, strength of wire rope, etc. The continually widening application of electricity to mining work gives this pamphlet particular value.

The Phosphor-Bronze Smelting Company, of Philadelphia, Pa., states that it has withdrawn all previous quotations for phosphor-bronze and has issued its revised price-list No. 17 on which it is prepared to quote discounts on detailed specifications or execute orders. The price-list is a well-bound, 20-page pamphlet giving prices on sheets, for slitting and cutting metal, for phosphor-bronze wire of different sections in coils, telegraph and telephone wire, circles, rods, screws, bolts, wire ropes for rigging or power transmission, ingots and castings, phosphor-bronze alloys, etc. The pamphlet also contains tables giving weights, tensile strengths, etc.

### MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" 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 of any kind, and shall be pleased to furnish them information, catalogues, etc.

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### GENERAL MINING NEWS.

#### ARIZONA.

##### Graham County.

Arizona Copper Company.—The directors report from the mines at Clifton is that the production for the month of August was 763 tons (of 2,000 lbs.) of copper.

#### CALIFORNIA.

##### Amador County.

(From Our Special Correspondent.)

Kirkwood.—The 2-compartment shaft at this mine, 2½ miles south of Jackson, is down 90 ft. and will be continued. A 50-H.-P. hoist with engine, boiler, etc., have recently been added. A 40-ft. galloways frame has also been erected. The rock and gangue averages about \$15 per ton.

Mokelumne Mining Company.—The large steam shovel constructed for this company for dredging the bed of the Mokelumne River at Lancha Plana, is now at Lodi on its way to the property.

Nugget.—This mine, near Ione, in Mountain Echo District, is still being developed, the shaft being down 110 ft. Sulphurets are shipped at a profit. The plant consists of a 3-stamp mill, 6 ft. concentrator and a 10-H.-P. hoist.

Peerless.—The shaft is down 425 ft. in this mine, 2½ miles south of Jackson; 15 men are employed.

Sargent.—A tunnel is being run to tap the vein to develop this property on the Mokelumne River, 2½ miles south of Jackson. The prospects are good, as paying rock has already been encountered.

#### Calaveras County.

(From Our Special Correspondent.)

Boulder.—Although the stamps have not been dropping at this mine since June on account of the scarcity of water, the development work has continued. The shifts have been working all summer blocking out ground and stopping out ore. Crushing will be resumed as soon as the fall rains set in.

Chippewa Mining Company.—Operations are being conducted on all 3 shafts and No. 3 is opening up a nice ore body from which steady gold ore shipments are made.

Ghost.—A good force of men is employed and the shaft is now down almost 1,100 ft. This property is located at the town limits of Angels. William Bravin is superintendent.

Maple Street Mining Company.—The new Maple Street shaft is down over 100 ft. and the little water encountered is handled by a small sinker.

Ritter.—The work in the tunnel at this mine 2 miles north from Mountain Ranch is being pushed rapidly on the 30-in. vein, and is now in 425 ft., at which point it is about 200 ft. below the surface. The tunnel will be extended to the old shaft. The ore taken from this tunnel is very rich and it is thought a small mill put in at once would pay the working expenses.

Rubie.—This Iron Hill property in Adelaide Park flat is sinking its shaft to nearly 1,000 ft., over 850 ft. of which has been attained. This will be the deepest shaft within a radius of a mile and if the lower contacts are successfully opened up will mean the other deep explorations in the neighborhood.

Valentine Mining Company.—At No. 1 shaft a station is being cut at 415 ft., where two duplex pumps are being installed to handle the water anticipated. At No. 2 shaft a good plant of machinery is being put in preparatory to sinking. At the other shafts work is yet being conducted with the windlass.

#### Nevada County.

At the annual election of the Grass Valley Miners' Union the following officers were elected: President, E. G. Swift; vice-president, John G. Terrill; financial secretary, M. M. Mitchell; recording secretary, Richard Gluyas; treasurer, W. H. Bawden; conductor, Ed. D. Jewell; warden, William Brockington; trustees, Frank Williams and Joseph Constantine; finance committee, Bert F. Paynter, W. P. Rogers, Albert Williams.

(From Our Special Correspondent.)

It is reported that an English syndicate has secured an option on the banks and bed of Shady Creek, between the San Juan road and Columbia Hill, and will build 2 large Postelwaite dredges to work the ground for gold.

#### Placer County.

(From Our Special Correspondent.)

Boston & South Dakota Mining Company.—This company is installing an electric plant at its gravel mine above Michigan Bluff. The work on the Dead Horse Ditch has been completed and the pole line cleared ready to put up the poles. The tunnel is almost ready for the trolley line and the entire plant will soon be on the ground. William Muir is superintendent.

Eureka Drift.—The main tunnel is now in 3,890 ft. at this mine, 3 miles north of Sunny South, on the Dick Channel. F. Cappelet, Jr., is superintendent.

#### San Diego County.

(From Our Special Correspondent.)

Owens.—This old quartz mine at Julian is reported to have been bonded to D. Clark for \$30,000. A great deal of development work has been done. A 10-stamp mill is on the ground.

#### Sierra County.

(From Our Special Correspondent.)

Saddle Back Gold Mining and Milling Company.—This company has organized with a capital stock of \$500,000 to develop the old Buttes Saddle quartz mine located 2 miles from Sierra City, at an elevation of 8,000 ft. The directors are P. M. Keefe, R. N. Graves, J. Armstrong, J. C. Bruner and G. E. Arrowsmith.

#### Siskiyou County.

(From Our Special Correspondent.)

Deep Bank.—Twenty men are employed on this property, on the South Fork of Salmon River 23 miles from Trinity Center building a flume and ditch which will have a capacity for 10,000 in. of water. This hydraulic property comprises 80 acres of gravel which is said to average 200 ft. in depth. Only a few acres have been worked.

#### Trinity County.

(From Our Special Correspondent.)

Riley & Company.—On Quimby Creek this firm has developed a wide ledge carrying a large percentage of copper and some gold and silver.

#### Tuolumne County.

(From Our Special Correspondent.)

Hard Times.—This claim and the Little Beauty and Handover, which are extensions, all at Ar-

rastraville, are being developed with good results. The former has a 3-ft. vein which mills from \$5 to \$20 per ton. Six men are at work on the Little Beauty taking out high-grade ore. The tunnel now gives 140 ft. of backs. The Handover vein only averages 12 in. at a depth of 100 ft. and mills from \$10 to \$40 per ton.

Prudhomme.—A Los Angeles syndicate is developing this property, at Arrastraville, with a force of 5 men. There are 2 veins which average 18 in. wide, assaying, it is said, from \$15 to \$20 per ton. A new hoist and mill will be put in soon.

Riverside.—This old mine on the South Fork of Stanislaus River, 11 miles north from Soulsbyville, is producing some fine rock which keeps the mill running steadily. An Oakland, Cal., company now owns the property. C. W. Knox is superintendent.

#### COLORADO.

##### Lake County.

(From Our Special Correspondent.)

A Y & Minnie.—Report has it that this old mine, now successfully worked by lessees, will be taken up by its owners, the Guggenheims and Mr. Graham of Philadelphia, and that an immense concentrating mill is to be erected. The lease expires in a few months.

Banker Mining Company.—Manager Guth reports a fine body of sulphide beginning to show at the 800-ft. workings, which it is believed will make into a good ore body. Above this level in the oxidized zone a large body of very low grade ore has been opened.

Doris Mining Company.—The shaft is entirely unwatered and several new prospecting drifts have been started. Most of the ore shipped came from the 180-ft. workings and amounted to about \$50,000.

Down Town Mining Company.—This new company, headed by W. G. Reed and other prominent Boston men, is buying mineral rights of 40 acres west of Harrison Avenue, paying \$300 for each lot, \$20 down and \$280 in 30 days. The company is to go after extensions of the ore shoots under the residence portion of the city. The location of the shaft is not determined.

First National.—A 60-H. P. boiler and No. 7 Cameron pump are now in position, while fine surface buildings are nearing completion. Boston parties are back of this enterprise. A sulphide ore containing gold values to the amount of \$10 to the ton was opened in past operations.

Galesburg.—Sinking on this Long & Derry Hill property has begun. The property is owned by Knoxville, Tenn., parties, who are at the head of the enterprise.

Greenback.—The big pump station at the 900 ft. level is completed and a large pump is being installed.

Home Mining Company.—Shipments of 200 tons a day will soon be largely increased by the additional tonnage from the new workings of the Penrose. A station is being cut at the bottom level and very rich ore has been cut which promises to develop into a big body.

New Monarch Mining Company.—As soon as the railroad is completed to the Lida Shaft shipments will be largely increased. The Winnie Shaft is producing 60 tons daily of good copper sulphides.

Rialto Leasing and Mining Company.—The new pump station in the Pyrennes at a depth of 1,000 ft. is completed. The pump is to be one of the largest in the camp. The station is 65 ft. long and a large amount of new work has been laid out.

Spot Cash.—Leadville parties have secured a lease on this Breece Hill claim and are putting in a surface plant. The shaft is 420 ft. deep and it will be sunk several hundred feet deeper. The property is located in the heart of the Ibez group.

Triumph.—Lessees under the direction of Geo. F. Campion have opened up good grade ore and shipments are 15 tons a day.

Weldon Mining Company.—The damage done to shaft No. 1 by the recent burning of the entire surface plant is being repaired. The fire necessitated retimbering the shaft for a distance of 50 ft.

#### Mineral County.

Sunnyside Mining and Development Company.—This company is at work near Creede in the Sunnyside District, on McKenzie Mountain. F. Thoman is president of the company, and has associated with him a number of capitalists who propose to drive a tunnel to cut the main vein of the Little Treasure claim. The company owns 6 claims and last fall began the tunnel on the Rat Creek side, which has now been driven 600 ft. The principal vein of the group passes through the Little Treasure and Potomac claims.

#### Ouray County.

Camp Bird.—John F. Walsh, owner of this mine at Ouray, is reported to have given the Venture syndicate, which floated Stratton's Independence at Cripple Creek, an option on the property for \$7,000,000. The Camp Bird is considered one of the best mines in Colorado; the

property comprising 103 claims covering 941 acres. The closing of the option depends upon the report made by John Hays Hammond, who is now at Ouray. The firm of Wernher Beit & Company is interested in the deal. According to a London paper the purchase price is payable in 3 equal instalments at the end of September, and at the end of October and November. The subscribers take 6% debentures at par for the amount of their subscription. If the deal comes off a share capital of £1,100,000 is to be created, which will be pooled. It is intended to introduce the shares later on in London at a minimum price of between £2 10s. to £3, and to sell about 400,000 shares, which, in addition to the profits expected from the first year's working, are deemed sufficient to repay the entire debenture issue. Of the balance of about 700,000 shares or its proceeds, the Venture Corporation is to receive a certain agreed percentage for introducing the business, doing all the preliminary work at their own expense and bringing the combination about; the subscribers of the £1,400,000 debentures to receive the surplus pro rata of their subscription.

Teller County—Cripple Creek.  
(From Our Special Correspondent.)

Cripple Creek Output.—The output of the Cripple Creek District for August was as follows: Smelting ore, \$9,150 tons at \$70 per ton, \$640,500; milling ore, 27,485 tons at \$25 per ton, \$687,125; total; 36,635 tons, valued at \$1,327,625.

Cripple Creek Home Mining Company.—This company is installing an electric hoist at its shaft, which is now down about 60 ft.

Elkton Consolidated Mining and Milling Company.—A vein which is supposed to be entirely different from the one in the upper levels has been cut in the 800-ft. level of the Elkton. No stoping is being done, work being confined to exploring the veins at different points and to the installation of the new machinery.

El Paso Gold Mining and Milling Company.—This company has begun building a new shaft house, the completion of which will require some months. The El Paso is one of the most promising mines in the district, having produced considerable good ore, while the workings steadily show up better. The main shaft is down about 350 ft., with over 3,000 ft. of drifting. The company owns the Orizaba Nos. 1 and 2, the Fannie B., the Vulcan and the Bryan, in all about 25 acres of patented ground on Beacon Hill. The new compressor has just arrived.

Gold Coin Mining and Leasing Company.—The vein has again been cut in the 850-ft. level of the Gold Coin Mine. The workings have now attained a depth of 1,025 ft.

Isabella Gold Mining Company.—This company has declared a quarterly dividend of 1c. per share instead of 3c., as formerly. The official declaration states that this action is in view of the report of the general manager, and his recommendations, and in view of the fact that the cash on hand has been depleted more than one-half during the past 8 months in payment of dividends and in the purchase of machinery and in development work.

Los Angeles Gold Mining Company.—A meeting of the stockholders to devise some means of preventing the property being foreclosed for debt has been held in Denver. Mr. B. Clark Wheeler, who has a lease on the property offered to assume the indebtedness, retaining the royalties until he was repaid. This offer was gladly accepted, and Mr. Wheeler made a director.

Matoa Gold Mining Company.—A special meeting of the stockholders was held in Colorado Springs on September 13th to consider plans for the future. It was decided that the best policy would be to close down the property until some arrangement could be made for leasing, and to meet the company's debts.

Moon-Anchor Gold Mining Company.—All work has stopped in the Moon Anchor Mine, which employs about 35 men until after the meeting on September 24th, which is to decide whether or not the capitalization of the company is to be increased.

Zenobia.—W. S. Stratton has purchased this claim for \$100,000. It will be added to the large acreage on Bull Hill known as the American Eagle group.

Mr. Stratton was in camp a few days ago looking over his interests. A large amount of work has been outlined. Plants of new machinery are being installed on the John A. Logan and American Eagle on Bull Hill and on the Abe Lincoln and May Queen in Poverty Gulch. Work in the latter 2 properties ceased some time ago on account of a flow of water. Since then the mines have been drained by the Standard and Ophelia Tunnels, so that difficulty is not likely to be encountered again.

The Zoolite and Bloomington claims on Battle Mountain have been leased for 2 years to C. A. Dingman and Thomas McNeil.

IDAHO.  
Blaine County.

Elkhorn.—Returns from a car-load lot of ore

recently shipped from this group, near Harley, are reported to go 141 oz. silver, 53% lead and \$4.84 gold per ton. There are said to be from 200 to 300 tons second-class ore on the dump. LITTLETON Price is to make an examination of the mine for the management.

Shoshone County.

Sunset Peak.—On this property of W. A. Clark's a vein of galena ore 8 to 10 ft. wide is reported cut.

KANSAS.  
Labette County.

(From Our Special Correspondent.)

The Lyon & Leddy Company, of Joplin, that has been drilling at Oswego, Kan., for natural gas, struck a big flow at 558 ft. from the surface, and indications point to its developing into one of the greatest gas wells in Kansas. The company has a lease on 1,700 acres of gas lands close to Oswego and a franchise to pipe the town.

MICHIGAN.  
Copper.

Arcadian.—At the company's operations upon the St. Mary's property 2 3-compartment shafts are going down. The first started is 100 ft. from the old shaft, which was pumped out and deepened by the Arcadian. The old shaft was upon the epidote. The rock from which has twice been given a mill test with results which determined the Arcadian Company to start regular mining, the old shaft being abandoned because too crooked. Both of the shafts are down over 100 feet. A Sullivan diamond drill has been started near the old pond between the Arcadian Mine proper and the new shafts sinking on the St. Mary property. It will be used to prospect the various lodes on the Arcadian property.

Baltic.—At No. 1 or the original shaft, stoping and drifting are going on. No. 2 shaft is down 250 ft. and is being supplied with a skip road. At the bottom of the third level the south drift is being driven. No. 3 shaft is down to the fifth level. The drifts and stopes are worked in this shaft, and further sinking will be done. No. 4 shaft is down to the fifth level. The work of timbering up No. 5 shaft has progressed nicely. Men are now employed in excavating for a new compressor house, 32 by 52 ft. inside. The building is to be of stone with an iron roof. The compressor will have a capacity of 45 drills. This new building and its machinery will begin the permanent equipment of the mine. At No. 5 shaft a temporary rock house will be built to contain a small crusher and steam hammer to crush the rock before sending it to the mill. Hereafter the rock will be loaded into cars, as will the rock from No. 4 shaft. Permanent shaft and rock houses will probably be built at Nos. 4 and 5 shafts next spring.

Victoria.—This Ontonagon County property is 4 miles west of Rockland. Capt. Hooper has charge. Since work started a year ago last spring the old workings have been pumped out, the shaft enlarged and straightened and sunk to about 600 ft., a great deal of drifting has been done on the vein, and over 1,000 ft. of cross-cutting on the fourth level. Besides the mine, the company owns a large water power on the Ontonagon River, 1/2 mile south of the mine.

Copper—Houghton County.  
(From Our Special Correspondent.)

Atlantic.—Bad weather of the last week has delayed the concrete work at the Redridge dam.

Isle Royale Consolidated.—Construction work on the surface is being pushed energetically. Many important improvements are under way. The underground work is revealing some very good rock.

Copper—Keweenaw County.  
(From Our Special Correspondent.)

There is some possibility that a lode of manganese at Copper Harbor will be worked this winter. An attempt was made to work this lode a number of years ago, but the manganese was found to be useless for the purpose for which it was wanted, from the presence of copper.

Iron—Marquette Range.

Queen.—About 250 men, mostly miners, have been laid off at this group of mines at Negaunee, owing to the inaction of the iron market.

Iron—Menominee Range.

Cuff.—Work has begun again at this mine, 66 men shipping the ore in stock. As soon as this is cleared up it is thought that mining will be resumed. George C. Lawton is in charge for the American Mining Company.

MINNESOTA.  
(From Our Special Correspondent.)

Changes have taken place in the management of a number of the mines of the Minnesota Iron Company, in consequence of the resignation of G. W. Wallace, formerly of the Fayal. Edwin Ball, manager of the Minnesota mines, at Soudan, becomes general manager of the Fayal, Genoa and Auburn, but will continue to reside at Tower, and to be manager of the Minnesota mines at Soudan. G. C. Brown, man-

ager of the Genoa, becomes assistant manager of the Fayal. A. H. Abbe, of the Minnesota, becomes assistant manager; F. E. Keese, mining captain at the Genoa, becomes assistant manager there. All these changes were made September 17th. Superintendent J. H. Pearce, of the Commodore Mine, is succeeded by Capt. W. H. Richards, late of the Fayal.

Shipments from the Mesabi Range have been kept down by floods and have been light. They must continue light for some time. A number of train crews have been laid off.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Chisholm Iron Company.—This company has found a large body of ore in its explorations in section 28, T. 58, R. 20. The find is high-grade ore and is probably quite large. This company has just been incorporated with \$300,000 capital, by A. Chisholm, J. R. Mitchell, and M. L. Fay. The property will be opened the coming year.

Corsica Iron Company.—This company has begun a shaft to open its lease in section 18, T. 56, R. 16, where a large body of ore is known. The company is a subordinate concern of the Minnesota Iron Company and the land adjoins that company's Elba Mine.

Fayal Iron Company.—The mine is partly pumped out and shipments have begun again in a small way. The mine cannot possibly make the shipments expected for the year, and will not do much over 1,000,000 tons.

Oliver Iron Mining Company.—This company at its Mountain Iron Mine is in bad shape, on account of water. There is a large pond in the open pit, where 2 steam shovels are partly covered and a third is entirely submerged. The company is digging a deeper launder, and is rigging pumps with a capacity for 9,000 gal. a minute. The present pumping plant is entirely drowned out. It is estimated that it will be nearly a month before the mine is in shape for heavy production. A stream through the hills on the other side of a gully from the mine broke through its banks about 2 o'clock in the morning, and nothing could be done to stop the flow. Rain fell in sheets and the gauges showed more than 4 in. in a few hours.

The Oliver Mine at Virginia is shipping this year quite heavily, though now troubled by water. Its total shipments this season to date have been 90,000 tons, not including the Lone Jack portion. The same company is now shipping steadily from the Ohio, and all these mines will probably be worked quite heavily until the Mountain Iron is in shape again.

Wyoming Iron Company.—The 40 acres in the first addition to Virginia have been leased to H. Roberts for a term of years. On this land 9 holes were some time ago sunk in ore, proving a large deposit. The property will be an underground mine, there being about 100 ft. of surface and sinking will begin soon. In opening the mine many buildings will be moved the coming winter and spring.

MISSOURI.  
Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—There has been another large output of both lead and zinc ore and the price for fancy grade zinc ore was reduced 50c., 60% ore selling at \$27.50 per ton. The only sales at this price were from the Pelican and King Jack Mines on the land of the United Zinc Company in Chitwood Hollow at Joplin, where 6 cars brought this figure. Outside of these sales the bulk of the top grade zinc sold at \$27 per ton at Joplin, Oronogo, Carthage, Stotts City, Belleville and Springfield. Lead was unchanged selling all the week at \$23 per 1,000 lbs. Following is the turn-in by camps of the Joplin district for the week ending September 15th:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	2,130,040	374,950	\$36,857
Galena-Empire	1,607,360	222,421	24,412
Carterville	2,023,210	242,360	30,465
Belleville	389,790	2,980	5,131
Webb City	459,350	38,010	6,278
Aurora	90,510	33,110	9,756
Oronogo	913,110	20,120	11,732
Roaring Springs	78,680	9,790	1,169
Cave Springs	132,840	14,920	2,010
Spurgeon	45,700	3,000	528
Spring City	51,230	48,910	1,739
Central City	173,230	5,570	2,120
Carthage	295,900	.....	3,555
Neck City	193,440	14,980	1,687
Carl Junction	172,120	.....	2,238
Stotts City	79,730	.....	1,076
Granby	315,090	24,040	3,700
Springfield	52,380	.....	707
Wintworth	29,250	.....	366
Ozark	.....	33,240	832
District total	9,940,860	1,138,400	\$146,763
Total 37 weeks	346,154,360	40,494,820	\$5,826,611

During the corresponding week last year top grade zinc ore sold for \$43 per ton and lead for \$27 per 1,000 lbs. The sales were less than this year by 2,106,140 lbs. of zinc and 150,350 lbs. of lead, but the value was greater than this year by \$150,217. For the corresponding 37 weeks last year the sales of lead were less than this year by 6,357,482 lbs., but the zinc sales were greater by 21,867,140 lbs. and the value was greater by

\$2,396,762. As compared with the preceding week, the sales show an increase of 182,340 lbs. of zinc and 100,090 lbs. of lead, and the value was greater by \$2,949.

**New Incorporations.**—Marion Mining Company, Joplin, capital \$50,000, incorporators J. W. Allen, R. C. Graham, J. A. Campbell and William Campbell, all of Joplin, and W. K. Turner, of Philadelphia. Union Zinc and Lead Company, of New York, incorporated under the laws of New Jersey by E. B. Schermerhorn of Galena, Kan., with \$500,000 capital. The Diamond Zinc Mining Company, of Joplin, incorporated by H. Stark, with \$100,000 capital. Doctor Mining Company, offices Joplin, capital \$150,000, incorporators Dr. W. H. Jallings and Dr. J. E. McGrew, Omaha, Neb.; D. G. and N. H. Doane, Joplin; Charles Cleland and Charles D. Lincoln, Omaha, Neb., and F. J. Hollis, Kansas City, Mo. Granite Mining Company, Webb City, Mo., capital \$50,000, incorporators James McRoberts, Webb City, Mo., and F. W. Best and A. M. Wagner, St. Louis.

**Mining Land Sales.**—Mark T. Cox, of New York, has purchased of Gilbert Barbee, of Joplin, 30,000 acres of land in McDonald County for \$75,000. This is the last of what is known as the Scott Company's land. The tract has never been prospected for mineral, but the surface indications are those common to mineral bearing land in the Missouri-Kansas district and it is supposed that the purchase was for a large company.

#### MONTANA.

##### Granite County.

**Sunrise Mining Company.**—Another suit growing out of the complicated affairs of this company has been filed in the United States Court. Alvin K. Godfrey, a resident of Minneapolis, and owner of 1,900 shares of the stock of the Sunrise Company, is the plaintiff, and defendants named are O. J. McConnell, administrator of the estate of William Thompson, deceased; Henry Williams, James L. Hamilton and J. H. Harper of Butte; Angus A. McDonald, Malcolm L. McDonald, Frank M. Durfee and David M. Durfee of Phillipsburg, and the Sunrise Mining and Milling Company. Mr. Godfrey, in his voluminous complaint, states that he brings the suit on behalf of himself and other stockholders, and alleges intent to defraud on the part of the defendants, and asks for a decree assessing against the defendants all damages which the Sunrise Company has sustained. The properties of the company consist of 24 quartz lode claims in Granite County, a mill site, 20-stamp mill, with all equipments, the whole valued at over \$600,000. The actual value of the shares was \$1.20, and the value of the shares owned by the complainant, \$2,040.

##### Lewis & Clarke County.

(From Our Special Correspondent.)

**Bald Butte.**—The strike of rich ore made some weeks ago continues to improve with further exploration. It has caused a larger output of doree bars from the mill, owing to the increased value of the crude ore. Wm. Shovel is underground superintendent of the mine and McIntyre has charge of the 40-stamp mill. The property is at Bald Butte.

**Golden Treasure Mining Company.**—The property of this company comprises 8 claims situated about 2 miles from Marysville. United States Deputy Surveyor M. L. McDonald, of Butte, has just completed a survey for a patent. The contact on the tunnel is going ahead and arrangements are being made to put up a mill in the spring. The officers of the company are located in Butte, with M. F. Kennedy, president; Geo. E. Sherman, vice-president; E. M. Crumrine, secretary. The company has expended about \$11,000 up to date.

**Piegan.**—The Marion Mining Company, which owns this property at Marysville, has given an option to purchase to Thomas Weir, of Salt Lake. The terms are not known. Development work from the winze which is sunk at a point 800 ft. in the tunnel and is down 100 ft. is showing up well, being all in ore of good milling value.

##### Madison County.

**Stoney Creek.**—This copper property is being developed by Chicago men, represented by D. E. Bell and E. J. Soper. The shaft is down 170 ft.

##### Park County.

(From Our Special Correspondent.)

**Revenue Mining Company.**—The assets of the H. Bush interest in this Bear Gulch property have been taken over by the First National Bank of Butte, which has made a payment of \$60,000. Mr. M. F. Kennedy is in Jardine, in charge of the bank's interests. The property is equipped with a modern 20-stamp mill, the building of which was partly responsible for Mr. Bush's financial difficulties.

##### Silver Bow County.

**Copper King.**—Some Butte men have leased this group in Keating Gulch.

**Hesperus.**—George H. Casey and others recently sold the mineral and mineral rights of a por-

tion of this claim to Martin B. Burris of Delaware for \$30,000.

(From Our Special Correspondent.)

**Goldsmith.**—Geo. H. Tong, the owner of this property, is making arrangements to open it up again after several years of idleness.

**Minnie Healy.**—E. H. Wilson, receiver of this property, is putting in a large hoist.

**Nipper.**—The new shaft is now in working order. It is an incline, 800 ft. deep. The 2-drum hoist just installed has engines 20 by 60 in., and was formerly used by the New Elkhorn Company at Elkhorn, Idaho. It was built in 1887 by Fraser & Chalmers and is good for 2,000 ft.

**Ophir.**—This silver property, located on what is known as the Black Chief Lode, south of the copper belt, and within the city limits of Butte, is about to be bonded to Kansas City parties at \$150,000.

**Parrot.**—Work of putting the old Diamond hoist in place of the machinery destroyed by the fire goes on. In the meantime the water is kept out of the mine by the Neversweat.

**Plymouth.**—The multiplicity of suits between this property and the Silver King bids fair to equal some of the Boston & Montana-Heinze cases. Several have just been filed with the Silver King people as plaintiffs.

#### NEVADA.

##### Lyon County.

The Silver City Miners' Union has elected the following officers: President, Thomas Williams; vice-president, Florine Windich; secretary, T. C. Wogan; treasurer, F. C. Armstrong; warden and conductor, H. J. Lauritzen; finance committee, Thomas Williams, H. J. Lauritzen and Florine Windich.

##### Storey County.

At the semi-annual election of the Virginia Miners' Union there was no opposition to the regular ticket, which was unanimously elected, as follows: President, W. A. Burns; vice-president, Martin Haas; recording and financial secretary, John F. McDonell; treasurer, John L. Finnegan; conductor, Ed. Klaus; warden, E. A. Holmes; finance committee, D. A. McDonell, W. J. Feily, Joseph E. Eckley; board of trustees, W. C. Graham, Michael James, W. A. O'Leary, Thomas F. Short, James M. Heslin.

#### NEW MEXICO.

##### Rio Arriba County.

**Admiral Gold and Copper Mining Company.**—This company has been incorporated by Kansas City men with a capital stock of \$500,000. It is to work claims at Abiquin.

#### PENNSYLVANIA.

##### Anthracite Coal.

**Miners' Strike.**—The strike ordered by President Mitchell of the United Mine Workers was to go into effect Monday, September 17th, but as soon as the order became public miners in the Wyoming Valley began to stop work, so that on September 17th mining practically stopped in that region and by Wednesday the only colliery running from Shickashiny to Carbondale was the West End at Mocanaqua, with a few washeries at Scranton. Efforts to get the men at Mocanaqua to go out have so far proved of little avail. The total number of men and boys employed about the mines of the Wyoming-Lackawanna field is perhaps 50,000. Estimates of the total number out vary slightly, as a certain number of employees, pumpmen, firemen, etc., continue at work to prevent the collieries from being flooded, but it is safe to say 45,000 men and boys have stopped work. In the Lehigh field, where the miners have not the grievances of which the Wyoming men complain most, the order to strike was not obeyed so readily, but a large proportion of them went out and by threats and entreaties others have been induced to follow. But few collieries are running and the number of men and boys idle will reach probably 30,000.

In the Schuylkill region more men remained at work than in the two other districts. At the mines of the Pennsylvania Railroad and other companies about Shamokin work has largely ceased, but the Reading Coal and Iron Company of all the large anthracite mining concerns has been little troubled by the strike. The Reading employees have even fewer grievances than those in the Lehigh District, and the company has discouraged the employment of union labor ever since the long strike of its employees that finally broke the power of the old Miners' Benevolent Association as a result, up to date the efforts of the United Mine Workers to organize Reading employees have met with little success. So far probably less than 20% of the men have been induced to quit work. The total number of men and boys idle in all districts is probably over 100,000. The representative of one company admits that there are over 90,000 out, while officials of the United Mine Workers claim 126,000.

The prospects are now that the strike will last some weeks. The miners have had this year the best 8 months in over 25 years. They are therefore much better provided with money

than ordinarily at this season and a majority can probably stay out for a couple of months without suffering or becoming dependent on the Union for aid. The struggle has been shown to be really for the recognition by all operators of the United Mine Workers. It is very doubtful if such recognition will be given, but the union has recently had a bad set-back in Maryland, and failure in this strike is likely to break its power in the East. Hence the struggle is likely to be protracted, and some of the followers of the union, ignorant Slavs, Italians and Huns, are likely to commit deeds of violence that will necessitate stern measures to protect life and property.

##### Bituminous Coal.

**Pennsylvania Railroad Company.**—This company, it is stated, has purchased the largest contiguous block of coal land on record in Western Pennsylvania, consisting of over 40,000 acres, from A. B. Copeland of Parnassus, who has had the land under lease for several years. The selling price was \$50 an acre, of which the farmers from whom the land was purchased will receive an average of \$30 an acre. The land lies east of the Allegheny River, and mainly between Plum Creek on the south and Puckety Creek on the north. Adjoining the land is a tract of 25,000 acres held by a Pittsburg firm, which is being negotiated for by an English syndicate, as is also a 10,000 acre lease held by Harry S. Paul of Verona. These tracts include practically all the desirable undeveloped coal land in that section.

**W. J. Rainey Coal and Coke Company.**—This company has ordered 200 new coal cars from the Baltimore Car Company.

(From Our Special Correspondent.)

By several deals just completed, the most extensive fields of coal in Indiana County will be developed in the course of a few months. The territory, which includes 28,500 acres of land, lies within 8 miles of Johnstown. A Canadian company, represented by John Paterson, of Hamilton, Canada, has bought 25,000 acres of this tract from Judge A. V. Barker, of Ebensburg. This company will begin work at once, and the development of the new field means much to Johnstown. McGee & Company, of Clearfield, are the other purchasers. They bought 3,500 acres, just across the river from New Florence, and this will probably be worked before the larger tract.

The American Steel Hoop Company's coke workers at Cokeville have struck against a reduction of 15% in wages.

**Greenwich Coal and Coke Company.**—This company has been chartered, with \$200,000 capital stock. The directors are John W. McFadyen, C. J. Donnelly, Martin Maxton, and F. B. Hargrave, of Latrobe, and Murray Forbes, of Greensburg.

**Leith.**—A new air shaft frame and brick fan building is being erected at this plant of the H. C. Frick Coke Company, to replace the old one. The fan will be removed to the north side of the shaft and a new boiler house built.

**Montell.**—F. Mertens' Sons, of Cumberland, have reopened this old mine near Vale Summit, and will erect coke ovens.

#### SOUTH DAKOTA.

##### Lawrence County.

(From Our Special Correspondent.)

The Burlington Railway Company has started its through service from Denver to Deadwood. Trains leave Deadwood at 7.45 a. m. and reach Denver at 11.30 p. m. of the same day. Mining men of many Colorado points are planning an excursion to Deadwood and business clubs of Lead and Deadwood are making preparations to banquet the visitors.

**Cheyenne.**—Otto Grantz, Deadwood, has purchased at sheriff's sale the old Cheyenne group of claims, northwest of his own group of claims on North Lead Hill. Grantz has had charge for George C. Maevin, of New York City.

**Dakota Mining Company.**—This company has closed its 20-ton cyanide plant at Central City to increase the capacity.

**Deadbroke.**—R. M. Maloney, of Deadwood, is developing very extensively the Deadbroke Mine in Blacktail Gulch. He has a cement bed 300 ft. wide and 4 ft. thick, which is traceable several thousand feet. Next spring he contemplates enlarging his cyanide plant to 200 tons. The payroll of the mine is now about \$1,500 per month. The ore becomes more refractory as depth under the mountain is attained, but it cyanides well.

**Deadwood & Bear Gulch Company.**—This company has been reorganized, a number of men from Peoria, Ill., who have purchased the interests of most of the heavy stockholders. The company will continue sinking to quartzite.

**Gold Coin Mining Company.**—This company has been organized in Deadwood with a capitalization of \$500,000. Incorporators: A. J. Johnston, Spearfish; P. E. Coster, Aurora, Ill.; G. E. Oster, Stevens Point, Wis.; E. S. Gardner, Des Moines, Ia.; L. E. Tomblin, Deadwood. The company will develop a group of claims joining

the Deadwood & Bear Gulch Company's property in Bear Gulch District.

Horseshoe Mining Company.—The new shaft in Bald Mountain District to reach a new shoot of ore discovered recently is down 100 ft.

Homestake Mining Company.—This company, it is reported, has ordered heavy machinery for a new hoisting plant at the Father DeSmet Mine, at Central City. This old mill and the Caledonia, located at Terraville, higher up the hill, are both being repaired. They, with the Deadwood-Terra, will give a total of 340 stamps for the north side of the hill and there are now 540 stamps in operation on the Lead side, making a total of 880 stamps that the company will have working before the close of this year. It is stated further that the company intends to erect another cyanide plant on the Terraville side of the hill, about half the capacity of the large plant nearly completed at Lead. The three mills on the north side of the hill will treat about 1,500 tons of ore daily and the tailings, it is said, will be cyanide. The tunnel from the De Smet Mine to the Deadwood-Terra, thence into the Caledonia, is being retimbered and all of the underground workings are being put in shape. The company has the cyanide plant at Lead nearly enclosed. The plant is about 1,000 ft. down the creek from the stamp mills, the tailings being conducted through a 12-in. steel pipe.

Iron Hill.—W. A. Remer, of Deadwood, has a lease on this mine. A new vertical of good ore is reported opened. Small samples have run several thousand ounces of silver to the ton. A drift is being run to it from the lower workings.

Titanic Mining Company.—This company has erected a hoist at its shaft in Carbonate Camp. The company has patented its mining ground. Work on the shaft will begin soon.

Ulster.—G. H. Nettekoven, of Lead, has leased this old mine, at Ragged Top, and a tunnel is being run to strike a new shoot of ore. This mine has been the greatest producer of very rich ore in the Black Hills.

#### UTAH.

(From Our Special Correspondent.)

Bullion and Ore Shipments.—During the week ending September 15th there were sent forward from the different smelteries 26 cars, or 1,222,186 lbs., lead-silver bullion; 3 cars, or 163,550 lbs., copper bullion. In the same week there were shipped from the different camps to smelteries outside of the State 110 cars, or 5,094,720 lbs., lead, gold and silver ore and concentrate products and 4 cars, or 246,900 lbs., copper ore.

#### Juab County.

Centennial-Eureka.—At the meeting of directors in Boston, September 18th, Robert D. Evans was elected president, succeeding Albert F. Holden. Mr. Holden will continue to act as managing director and has gone to Salt Lake.

(From Our Special Correspondent.)

Tintic Shipments.—In the week of September 15th there were sent from the 3 railroad points of the district 84 cars of ore and 3 cars of concentrates, made up as follows: Centennial-Eureka, 34 cars; Mammoth, 13 cars ore, 3 cars concentrates; South Swansea, 6 cars; Star Consolidated, 6 cars; Uncle Sam & Humburg, 6 cars; Gemini, 3 cars; Swansea, 5 cars; Carissa, 3 cars; Godiva, 3 cars; May Day, 2 cars; Eagle & Blue Bell, 1 car.

Centennial-Eureka.—Report from Boston of the building of a smelter is confirmed at this end, though nothing is said of its being a joint partnership affair with the United States. Under ruling conditions it would seem probable that these 2 companies may be consolidated into an united company, as they are now under one management.

#### Plute County.

(From Our Special Correspondent.)

The Rio Grande Western is completed to Marysvale. It is expected this will prove an incentive for several mines to ship.

Dalton.—Considerable high-grade ore is sacked for shipment.

Bully Boy & Webster.—Considerable milling ore is ready for treatment. Shortage of water for power has necessitated installing an engine and the mill is about to go in commission.

Wedge.—The tunnel is going ahead. It is said that when the vein is cut a shoot of high-grade ore will be exposed, judging from the appearance of the bottom of the shaft.

#### Salt Lake County.

(From Our Special Correspondent.)

Eagle Bird.—Drifting is progressing on 300-level, opening milling ore. This is one of the Butterfield Company's properties.

Fortune.—The Keystone branch of the Dalton & Lark tram is completed, which will save 70c. per ton in shipping ore and concentrates. Mill is operating satisfactorily.

Mount Aetna Gold and Copper.—Manager Joseph Kauffman has ordered lumber for boarding-house and blacksmith shop and is preparing

for an active fall and winter campaign. The realty is composed of a group of 12 claims, at head of Spring Gulch, joining Last Chance ground, on which there are good ore showings.

Red Wing.—September 11th the Markham Mill belonging to the Red Wing Company was completely destroyed by fire; origin not known. Loss is about \$10,000. It is a misfortune to the camp, as there is sufficient ore to keep it in operation.

Royal.—For past 6 months this group, owned by McLaren & Haywood, has been worked under lease. Leasers recently made a shipment that is said to have returned 4 oz. gold and 62 oz. silver.

Shawmut.—The first shipment of concentrates has gone out. It is expected that the mill will turn out a car-load of concentrates daily.

Utah Consolidated.—Again the report is wafted from the East that the Standard Oil crowd sold their holdings when the shares were above \$50. This is moonshine, though it is probable they are no longer in control. The smelter is turning out about 500,000 lbs. copper per month, treating 7,000 tons of ore. The gold and silver averages about \$5 per ton ore, or a gross yield of about \$110,000 monthly. This is expected to be doubled when the enlarged smeltery is in commission.

#### Summit County.

(From Our Special Correspondent.)

Park City Shipments.—In the week of September 15th there were marketed through the Mackintosh sampler 3,299,300 lbs. smelter products, which includes all ores and concentrates shipped from this point. These consignments were made up as follows: Silver King, crude, 1,416,380 lbs., concentrates 300,070 lbs.; Daly-West, crude 767,520 lbs., concentrates 382,590 lbs.; Anchor, concentrates, 399,510 lbs.; Barnes lease, concentrates 33,230 lbs.

#### Tooele County.

(From Our Special Correspondent.)

Cygnat.—This company, working the Hercules at Stockton, has just paid its first dividend. The amount is not given out, as practically there are only 4 shareholders—Thomas H. Benton, I. A. Benton, H. S. Zerbe and Arthur Gibson. A force of 18 is employed, of whom only 3 are working on ore. Other dividends are pretty sure to follow in regular order.

Daisy.—A mild surprise is occasioned by several men appearing at work, apparently preparing to resume active mining and milling. There is scant likelihood of anything coming of it and the shares have been manipulated so often that buyers are everlastingly stampeded.

Consolidated Mercur.—Gold production for the first month of the new company is just made known. Gross value is \$182,446.46 and net \$95,661.24. There were 30,485 tons mined and milled at a cost of \$1.46 for mining and \$1.36 for milling—the mining cost includes exploration and all charges pertaining to the mine proper. Net profit per ton was \$3.16.

#### WASHINGTON.

##### Ferry County—Republic.

(From Our Special Correspondent.)

Development at Republic.—Since the incorporations of the city of Republic last May, many substantial business and residence buildings have gone up. Yet the camp has been dull, owing probably to the influence of the South African wars on Canadian capital, the slow delivery of machinery and delay in getting the mills running. Work on uncertain mining prospects is discontinued, but the principal mines have all been developed enough to enable the owners to figure on dividends, provided that the treatment processes will prove successful. The Mountain Lion mill has so far done well, and the company is preparing to increase its capacity. The Republic Reduction Company completed its mill some time ago, according to the original plans, and the process was tested on a commercial scale. The managers announced that the results were satisfactory, but the crushing capacity was insufficient. Orders were placed for the extra machinery required, but, for some reason, delivery has been delayed. The Republic Exploration and Cyaniding Company expects to have its mill running about October 1st, for custom ore, and the productive mines will then be immediately under more active development.

A charter has been granted by the British Columbian Parliament to build a railroad from Grand Forks, B. C., to the international boundary line, and the Republic & Kettle River Railway Company has been incorporated to construct and operate a railroad in connection with it to Republic. It is generally understood that the Great Northern Railway Company will control both these roads and begin construction with least delay. The advantages to accrue to Republic are in the cheap transportation of supplies to the camp and low rates on certain ores to the Grand Forks smelters which cannot be treated at home.

Ben Hur.—This mine has been prospected to 230 ft., but is closed until the mills receive cus-

tom ore. There are from 200 to 300 tons of high grade ore on the dump.

Lone Pine-Surprise.—The continuation of the Black Tail vein has been found and the cropping carries \$4.88 in gold per ton. This is considered good enough to justify further exploration.

Nob Hill.—The south drift on the vein is still in good quartz 4 to 5 ft. wide. A new tunnel, in 39 ft., is to crosscut the vein and give an outlet to a convenient road.

Republic Exploration and Cyaniding Company.—The sampling mill will be ready to run by September 20th. All of the delayed machinery is in transit consisting of the rotary dryers, pulleys, a large screen, wheels for carriages of the Jackling roasting furnaces and fittings for the refinery. The foundation for the refinery is finished, and the walls will be up by September 20th. The Jackling furnaces are completed, the big smokestack is up and the tanks, engines and boilers are installed. A 5-mile flume has been built to convey wood for fuel from the head of Granite Creek to the mill. The company has a franchise from the City Council to construct a pole line and lay water mains to supply the city. They have also secured a franchise to build a tramroad to carry passengers and ore from the mines up Eureka Creek to the mill.

San Juan.—A steam hoist is in transit. The shaft is to be sunk an additional 100 ft.

#### King County.

Leary.—About 150 miners employed at this colliery of the Seattle-San Francisco Railway and Navigation Company at Leary, on the Palmer cut-off of the Northern Pacific Railroad, have struck because the company refused a demand of 10c. per car of coal for the regular miners and 25c. a day more for outside or common laborers. Since the mine opened, less than a year ago, the regular miners have been paid from 75c. to 85c. per ton, enabling them to earn from \$3 to \$3.25 for 9 hours work. In August the average a day was a fraction less than \$3.50. The common laborers have been receiving \$2.25 per day, their demand being for a flat rate of \$2.50. W. E. Guerin is president of the company.

#### FOREIGN MINING NEWS.

##### AFRICA.

##### Rhodesia.

The gold output of all the mines in Rhodesia in July is given by the statement of the Chamber of Mines at 5,738 oz. crude. For the seven months ending July 31st the total was 41,694 oz., against 42,238 oz. last year; a decrease of 544 oz., or 1.3%. At the usual value of Rhodesian gold the output this year was equal to 35,440 oz. fine gold, or \$732,544.

##### ASIA.

##### India—Mysore.

Colar Gold-field.—The total output of gold from the mines of the Colar District in August is reported at 42,763 oz. crude, the highest point ever reached. For the eight months ending August 31st the total was 325,979 oz., against 285,805 oz., last year, showing an increase of 40,174 oz., or 14.1%. The total this year was equal to 293,381 oz. fine gold, or \$6,064,185.

##### AUSTRALASIA.

##### Queensland.

The Miners Department reports the gold production for July at 77,645 oz. from quartz mines and 2,123 oz. from placers, a total of 79,768 oz. crude. This shows an increase of 2,138 oz., or 2.8%, over July, 1899. The output this year was equal to 52,571 oz. fine gold, or \$1,086,642.

##### Tasmania.

Mount Lyell.—This company reports for the four weeks ending August 22d a total of 20,752 tons smelted, the yield being 694 tons copper, 48,692 oz. silver and 1,476 oz. gold; an average of 3.34% copper, 2.35 oz. silver and 0.07 oz. gold to the ton.

The directors announce a dividend of 2s. per share, payable in October, as against one of 5s. in July. The payment of the smaller amount is, however, entirely due to the sum of £45,000 being required for the purchase of the South Thar-sis Mine.

##### CANADA.

##### British Columbia—West Kootenay District.

(From Our Special Correspondent.)

Rossland Ore Shipments.—The ore shipments from Rossland mines for the 8 months and 13 days ending September 13th amounted to 127,000 tons, valued at \$2,032,000 gross.

Brandon & Golden Crown.—W. L. Orde, secretary and treasurer of this company, gives the result of 30 returns from the Canadian Pacific Railway Company's smelter at Trail, given of ore treated from May 26th to September 4th this year. The net ore returned by the smelter was 1,645 tons, valued at \$10,043, which, after deducting \$7 per ton freight and smelter charges, netted \$6.10 to the company. The smelter allows 95% on the gold and silver values and 70% of the

copper contents. A saving of about \$2.50 per ton is expected when the ore is heated at the Granby Smelter at Grand Forks.

The officers of the Brandon & Golden Crown are: Hon. T. Mayne Daly, president; W. J. Porter, vice-president, and W. L. Orde, secretary.

**British Columbia Copper Company.**—The 250-ton smelter of this New York corporation, owning the Mother Lode Mine in Deadwood Camp, will be completed in November. It is located at Greenwood, less than 3 miles from the mine with which it is connected by rail.

**Center Star.**—The shipments to the Trail smelter amount to 300 tons daily.

**Grant.**—This Rossland mine is making occasional shipments.

**Iron Mask vs. Center Star.**—An agreement has been arrived at to settle this case out of court. The case regularly came up for trial in Rossland, April 17th, 1899, before Justice Walkem of the Supreme Court, and the proceedings lasted until May 3rd following, when an adjournment was had on the application of the plaintiff company. As the Iron Mask management has resumed operations more or less in the disputed territory it is believed that the case is virtually settled, though the terms have not yet been made public.

**Josie.**—This Rossland mine is making occasional shipments, averaging about 2 cars weekly.

**Le Roi.**—The ore shipments from this Rossland mine now average 600 tons daily in addition to 120 tons sent daily to the Trail smelter.

**Mabou & Ohio.**—This group of claims, near Nelson, is reported bonded to J. Frank Cullom for \$65,000. The owners are R. L. Kirkwood, Frank Wells, A. Tunks and George Williamson, of New Denver; Duncan Grant, of Silverton, and Mrs. C. E. Smitheringale, of Slocan. The papers are held in the Bank of Montreal in Nelson. The group is situated immediately above the Enterprise and Neepawa.

EUROPE.

Russia.

The following important alterations in the regulations as to leasing petroliferous land in Russia are noted by the "Petroleum Review." These alterations are of a temporary nature, and will be in force until July, 1903. The Minister of Agriculture and Domains will fix a time limit (in no case more than 3 years) for the commencement of work on each plot located, and the depth to which wells are to be sunk in a given period. In the event of these conditions not being complied with, or if work is stopped for more than one year, the plot reverts to the Government, the lessee being compelled to leave the casing in such wells as the local mining official shall decide to be suitable for further exploitation. Payment of royalty is to be made at the end of each half year. When the twelfth minimum annual payment for royalty has been made, subsequent payments will depend on the oil actually produced on the plot. Petroleum plots may be leased by auction in consideration of payment of a certain portion of the production, either in kind or at a valuation based on the existing market price, on the same conditions as lands leased on payment of a royalty. The producer is to store the oil belonging to the Government, and also to deliver it to places and at times as fixed by the Government. Payment of part of production in cash is to be made half yearly at the average market price for the half year. The amount of deposit and caution money, when land is leased in consideration of payment of part be in force until July, 1903. The Minister of Agriculture and Domains. Lessees of Government petroleum plots, at the auction held in September, 1896, April, 1898, and February, 1899, and also those who have received such plots in consideration of payment of royalty, otherwise than by auction, are to have the right to make such payment at dates and under conditions fixed in part of section 4 of the regulations then in force. The Minister of Agriculture and State Domains will be asked to consider the question of leasing Government petroleum lands for fixed periods, and to discontinue granting leases for the same for indefinite periods.

SOUTH AMERICA.

Colombia.

(From Our Special Correspondent.)

Mining in the department of Antioquia is very much disturbed by the present movement of the revolutionists in that department (which is a rich mineral district). When a force from either party, liberal or conservative, arrives in the River Nechi and along the Force, where the mines are located, they seize all the men possible for military services. Most of the miners are hidden in the mountains, but still some mines continue to work.

The Santa Barbara Gold Placer Company of New York, the Frontino Bolivia Company, of England; the French Company and the Segobia are running to a limited extent, probably sufficient to pay expenses.

According to the late news here (Zaragoza) the revolution will not last any longer than December, when all mines will resume full blast,

as many of the United States and foreign companies have secured ground which they intend to work when the revolution is finished. Exchange now is at the rate of 14 Colombian dollars to 1 American.

COAL TRADE REVIEW.

New York.  
Anthracite.

Sept 21.

The strike long threatened is at last a reality and those dealers or consumers who neglected to take advantage of low ocean freights and cheap coal in July have no one to blame but themselves if they now find that they are likely to be put on short rations. It is very clear that the strike is more widespread than the operators expected it to be no longer than two weeks ago; it is also evident that it is hardly as widespread as the officials of the United Mine Workers expected. One guess as to its duration is as good as another, but the critical period will come in a week or so. If the Schuylkill men refuse to go out it is to be expected that those men in the other districts who were making good wages with steady work in prospect until spring will not be anxious to stay out long. Many of them were unwilling to strike, and any setback to the progress of the strike is likely to see a lot of miners wanting to go back.

The officials of the Delaware Valley & Kingston Valley road seem happy at the decision giving them the right to go ahead with construction in New York and talk about beginning work at once, but there are a few little matters to be straightened out in Pennsylvania yet, also the prospect of a fight over some details concerning the right of way.

Trade all over the country has been affected by the strike and in all anthracite consuming territory there are stories appearing in the daily press concerning a hard coal famine. This is not the time for the average consumer to get excited, however, for the average retailer is not in the coal business for his health and may be expected to charge the consumer all that the latter is willing to pay. It is impossible to give current prices. Coal is selling at New York at \$6.50 a ton at retail; another advance may come to-morrow. New York sales agents of the large companies say that they will not charge more than the July 1st prices, but at the same time say they have no coal to sell at those figures. Prices therefore are nominal. The price paid often depends on how badly the buyer is frightened.

Notes of the Week.

The statement of the Philadelphia & Reading Coal and Iron Company for July, the first month of its fiscal year, is as follows:

	1899.	1900.
Earnings .....	\$2,300,068	\$2,097,001
Expenses .....	2,125,299	2,123,159

Net, or deficit..... N. \$174,769 D. \$26,158

The earnings showed a decrease this year of \$203,067, while the expenses decreased only \$2,140, showing a loss of \$200,927 in the net result.

Bituminous.

The demand for coal in the Atlantic seaboard soft coal trade is greater than the available current supply, particularly as regards the better grades, and prices are advancing. The mines are busy, but short car supply curtails the amount that can be forwarded. Some people in the trade contend that the main line roads are showing poor judgment just now in not furnishing more cars. The excuse usually given for the shortage is the great volume of general business. The collieries are receiving about 40% of their total needs.

Prices for coal are advancing and there is a prospect of speculative dealings later on, the present situation showing many resemblances to the conditions that prevailed last fall. It is thought, however, that the railroads have a better hold on the market this year and that any speculative movement which may come is not likely to equal that of last year.

Trade in the far East is brisk and shippers have large orders on their books from that territory. Along the Sound consumers are apparently in great need of coal of the better grades and show symptoms of distress. New York Harbor trade shows a large demand. All-rail trade is increasing, but as yet is not up to what it was earlier in the year.

Transportation shows but little improvement. The railroads are getting a lot of long-side-tracked cars down to tidewater, but shippers cannot apparently expect to see coal come through in less than a week or 10 days. Car supply is very poor and irregular. The press of general business, the threatened anthracite strike have been given as excuses; this week there seems to be no particular excuse.

In the coastwise vessel market vessels are in good supply. Ocean freight rates are steady at 85c. to Boston and 75c. to Sound ports from Philadelphia.

The speculative prices for coal range, according to grade, from \$2.55 to \$3, f. o. b. New York Harbor ports.

Birmingham, Ala. Sept. 17.

(From Our Special Correspondent.)

The coal business is good, prices are firm and the market practically all that could be desired. The coal-fields of the district are being developed rapidly, especially in Walker County, where several new branch railroads are being run. Some complaints of scarcity of cars are heard from coal mine operators, as are also some from the iron men.

Chicago. Sept. 18.

(From Our Special Correspondent.)

**Anthracite Coal.**—There has been much excitement created in this market through the trouble in the anthracite districts. Talk of largely increased prices and a possible shortage is heard. The strike has doubtless helped the coal trade here, the scare having already driven many to buying coal, the retail trade profiting considerably. Dealers, however, are holding off, awaiting further events. Buying has not particularly improved, though there is a noticeably larger demand than there was a few weeks ago. There has been no official increase in circular prices as yet, \$5.50 still being asked for the domestic sizes.

Bituminous coal has not gained during the week, buying still being small and inquiry light. A little cold weather appeared during the week and in consequence there appeared a larger demand for soft coal, but this increased business amounted to nothing when the quantity of soft coal in this city is taken into account. Prices are made to sell coal and may be considered ragged for the time being.

Coke sales are improving, inquiry being large, and demand is better than for weeks. Prices are about the same, being soft if anything.

Cleveland, O. Sept. 19.

(From Our Special Correspondent.)

The coal men are face to face with one of the most peculiar situations they have encountered for a number of years. The reports by the Lake statistical associations and the records kept by the shippers themselves show that the general movement of bituminous coal to the upper Lake ports is far ahead of what it was a year ago at this time, and some of the shippers show by their own records that they have shipped as much coal to the head of the lakes to date as was moved during the entire season of 1899. Last year the opening of the season saw almost all of the docks in the upper Lake Region empty and the railroads rushing coal in there to supply the demand. The outlook is for even a larger consumption of coal than a year ago, assuring, therefore, that, although the shippers are far ahead of the demands just now, they still have a task on their hands to fulfill to supply the demands of that section, shipped by the lake route. The shippers are now being hampered by a lack of dock space at the head of the lakes and each shipper is sending coal to the docks where he has receiving room. This is allowing a limited amount of tonnage to move to each of the receiving ports, assuring therefore that the business will be fairly good for the remainder of the season.

Pittsburg. Sept. 19.

(From Our Special Correspondent.)

**Coal.**—It is not believed here that the anthracite coal strike will affect the Pittsburg District in any way. But little hard coal comes to this market and most of the consumers have already received their winter supply. The officials of the Pittsburg Coal Company, the railroad coal combination, say that concern will not be affected, as it will be impossible to take care of additional contracts for Eastern shipment. All the mines are in full operation and the combine has all the business it can handle. A scarcity of cars this week is retarding shipment somewhat. It is believed that all contracts for the Northwest will be filled this season. Last year lake navigation closed before all the coal contracted for had been shipped. The total tonnage for the Northwest contracted for this year, one of the officials estimates, will aggregate 4,000,000 tons, an increase of about 500,000 tons over last year. Despite the fact that many mills are closed, the railroad coal combination is crowded with orders. The price remains the same—\$1.45 a ton at the mines for 1 1/4-in. coal and \$1.35 a ton for 3/4-in. coal. A stiff advance is confidently looked for and in view of the strike in the Eastern part of the State conditions seem favorable for an increase. There is no change in the situation at the river mines. The Monongahela River Consolidated Coal and Coke Company, the river coal combination, has over 25,000,000 bu. loaded and ready for shipment, but no one can predict when it will get out. Most of the empty boats and barges here have been loaded and fully one-half of the mines in the river district are idle for want of empties.

**Connellsville Coke.**—The demand for coke has increased, the prices are firmer, and last week there was an increase in both production and shipment. Standard Connellsville furnace coke is quoted this week at \$2 a ton and foundry at \$2.25@2.50. Outside producers are still quoting furnace coke at \$1.50 and foundry at \$1.75@2. If the demand holds out indications point to an advance within the next two weeks. The pro-

duction last week was 154,748 tons, an increase over the previous week of 11,600 tons. There are 20,433 ovens in the region, of which 13,511 were active, an increase in the active list of 304 ovens. The shipments aggregated 7,598 cars, distributed as follows: To Pittsburg and river tipple, 2,867 cars; to points west of Pittsburg, 3,368 cars; to points east of Connellsville, 1,363 cars. This was an increase of 64 cars, compared with the shipments of the previous week.

**Foreign Coal Markets.**

The English coal trade is quieter, the settlement of the Taff Vale strike and other troubles having removed present apprehensions of a scarcity of coal. However, prices continue about the same. Welsh steam coal on dock at shipping port is quoted at \$7.20 for lump, down to \$5.04 for steam coal. Good average bunker coal for steamers is \$6 per long ton on wharf. In Northern ports the quotation for Northumbrian steam coal is \$5.28@5.76, f. o. b. Tyne port. Bunker coal ranges about the highest price.

In France there is little change. Current quotations in the Nord and the Pas-de-Calais—the chief coal producing districts—are for lump, steam coal, \$6.80 per metric ton; nut, \$6.50; washed, \$7; run-of-mine, \$4.60. Lower class coal can be had for \$4. To these prices from \$1 to \$1.50 must be added for freight to Channel ports, and from \$2 to \$2.75 to Mediterranean ports.

In the Southern ports, such as Marseilles, where English coal is largely used for both local and steamer purposes, the freight from Cardiff and other coal ports is high. The present rate from Cardiff to Marseilles is \$2.45@2.50 per ton.

There is no change to report in Atlantic freights. The rates for full cargoes run about \$5 per ton from Norfolk, or \$5.25 or \$5.50 from Baltimore or Philadelphia to Mediterranean ports; with 50@75c. less to English Channel ports.

Freights are so high and vessels so scarce that it is reported that the United States Navy Department is negotiating for a considerable quantity of Japanese coal for the supply of the station at Manila.

**SLATE TRADE REVIEW.**

**New York.** Sept. 21.

The list of prices per square for No. 1 slate standard brand f. o. b. at quarries in car-load lots, is given below:

Size, inches	Monson or Br. v. ville.	Banqor.	Bangor Ribbon.	Alb'n or Jackson Bangor.	Chap'n Keys'ne.	Peach Bottom.	Sea Gr'n.	Unf'dg Green.	Red.
24 x 14	6.50	3.50	3.00	3.00		5.10	2.90		
24 x 12	6.60	3.50	3.00	3.00	3.80	5.25	2.90	3.75	
22 x 12	6.60	3.50	3.25	3.00		5.25	2.90	3.75	
22 x 11	6.50	3.75	3.25	3.00	4.00	5.25	2.90	4.00	
20 x 12	6.90	3.75		3.00		5.25	2.90	3.75	
20 x 11	6.80			3.25		5.25	2.90		
20 x 10	6.80	4.25	3.50	3.25	4.00	5.35	2.90	4.25	10.50
18 x 12	6.80	3.75		3.00		5.25	2.90	3.50	
18 x 11	7.00			3.25		5.25	2.90	3.75	
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	2.90	4.00	10.50
18 x 9	7.00	4.50	3.50	3.25	4.00	5.35	2.90	4.25	10.50
16 x 12	6.80	3.75		3.00		5.25	2.85	3.50	
16 x 10	7.00	4.25	3.50	3.25	4.00	5.25	2.85	4.00	10.50
16 x 9	7.00	4.25	3.50	3.25	4.00	5.35	2.85	4.25	10.50
16 x 8	7.00	4.50	3.50	3.25	4.25	5.35	2.85	4.25	10.50
14 x 10	6.60	3.75	3.25	3.00		5.25	2.70	3.75	10.50
14 x 9	6.50						2.70	3.75	10.50
14 x 8	6.60	3.75	3.25	3.00	4.00	5.10	2.70	4.25	10.50
14 x 7	6.40	3.75	3.25	3.00	3.75	5.10	2.50	4.25	10.50
12 x 10	5.75						2.50	3.25	
12 x 9	5.60						2.50	3.25	
12 x 8	5.50	3.50		2.85		4.85	2.50	3.50	9.00
12 x 7	5.00	3.25		2.85	3.25	4.85	2.25	3.50	9.00
12 x 6	4.80	3.25		2.85	3.25	4.75	2.25	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof.

A few more orders for roofing slate are reported, but trade generally is very quiet, and prices continue unsettled. Manufactured slate such as blackboards, school slates, etc., is in limited request, showing few new large orders. Export trade in August through the port of New York was valued at \$33,725, as against \$68,100 last year, showing a falling off of \$34,375. The movement of roofing slate during August, 1900, aggregated 5,400 squares, which compares with 9,079 squares in the same month in 1899, being a decrease of 3,679 squares. Only a comparatively small amount of mill stock was exported this year. Freight rates are very high and prevent shipments on many of the orders already in hand.

**IRON MARKET REVIEW.**

**NEW YORK, Sept. 21, 1900**

**Pig Iron Production and Furnaces in Blast.**

Fuel used	Week ending		From Jan., '00.	From Jan., '00.
	Sept. 22, 1899.	Sept. 21, 1900.		
	F'ces.	Tons.	F'ces.	Tons.
An'racite & Coke.	233	266,300	197	225,425
Charcoal.	24	5,750	31	8,225
Totals..	257	272,050	228	233,650

The iron market this week shows a wider de-

mand and increased movement of both raw and finished material. Buyers are satisfied that prices will not go much lower, or else they find themselves forced to lay in stocks. Both causes are doubtless working to increase demand. An encouraging point is that materials of construction in common use—nails, bars, wire and the like—show good sales.

The uncertain point just now is found in the question of wages, about which debate is still going on. It is not likely that reductions will be accepted without a good deal of friction; yet they seem inevitable with the present scale of prices. Railroad rates are another cause of much discussion. The railroad people have so far refused to make any of the concessions which have been asked for.

The steel rail makers are holding a conference this week to decide on prices for next year's contracts. There is little doubt that a considerable reduction will be made.

**Birmingham, Ala.** Sept. 17.

(From Our Special Correspondent.)

The iron market now seems a little livelier and the prospects brighter. Mr. Nat. Baxter, president of the Tennessee Coal, Iron and Railroad Company, said that while the domestic business was about the same as for some weeks past, a few more orders were coming in. His company had sold no iron on a basis of less than \$11 for No. 2. His opinion was that the outlook was brighter because the export business was looming up so nicely now. He said that his company had booked a number of very good orders during the past several weeks, and that export business was developing to such an extent as would insure stability by affording a market for our surplus iron, thus allowing the domestic market time to regain its normal condition.

Another prominent iron manufacturer, in speaking of the situation, was inclined to take a less happy view. He said that because freight rates to Northern, Eastern and Western points were higher than formerly, Birmingham iron was practically shut out of these markets. He cited the fact that the freight to Chicago was now \$4.35 per ton, \$1.25 higher than formerly, and taking into consideration the fact that iron was quoted in Chicago at \$15 per ton for No. 2, this meant that it would have to be sold here at about \$10.50 per ton or less.

It may be stated as a fact that considerable export business has recently been booked by Birmingham concerns, and some business is also being done in places north of the Ohio. Reliable estimates place the amount of export iron orders booked by various companies of the district at approximately 100,000 tons of pig iron. The statistics show that the exports for August exceeded those of the previous year by 7,724 tons and export shipments this month so far have been heavy.

The present quotations are: No. 1 foundry and soft, \$12@12.50; No. 2 foundry and soft, \$11@11.50; No. 3 foundry, \$10.50@11; No. 4, \$10@10.75; gray forge, \$9.75@10.25; mottled, \$9.75@10.25.

The foundries and machine shops here are all working steadily and are pretty busy, mostly with repair work; however, not a little sugar mill machinery is being turned out.

**Buffalo.** Sept. 19.

(Special Report of Rogers, Brown & Co.)

There isn't very much new to report this week. Shipments continue heavy and prices firm, although on Bessemer and malleable lower prices have been accepted, but in general we have no change to note over last week's report. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$18.25; No. 2, \$17.25; Southern soft No. 1, \$18.25; No. 2, \$18.50; Lake Superior charcoal, \$19; coke malleable, \$17.

**Cleveland, O.** Sept. 19.

(From Our Special Correspondent.)

Iron Ore.—An increased interest has been taken this week in the movement of iron ore from the fact that several charters have been made from the head of the lakes, showing that for the first time in several weeks wild ore is moving. The business brought with it a cut in the rates, which was hardly expected. Recently two charters were made from the head of the lakes at 65c. This week others have been made from both Duluth and Ashland at that figure. No boats have been placed at Two Harbors. This business has led some to believe that the closing weeks of the season of navigation is to see any amount of wild ore brought down the lake, although such an idea is not to be indulged in too extensively. The prospects are, however, for more or less wild chartering the latter part of the season, which means a few sales of ore. Very little ore has been sold during the year, but the shippers have been expecting to dispose of small quantities after October 1st. The association prices will be adhered to on these, the basing prices for Old Range ores being \$5.50 on Bessemer and

\$4.15 on non-Bessemer. On the Mesabi ores there is no agreement as to prices, hence as near as the basing price as can be quoted is \$4.25 on Biwabik and \$4.85 on Adams. The sales for this year will be light.

Pig Iron.—There is a better demand for pig iron, both for immediate and for future delivery. The latter probably leads the business, as the latter part of the season promises good things. Not much will be done until November. The prices are better now than they were a week ago, a quotation of \$15@14.50, Valley furnace, being about as nearly accurate as it could be quoted on Foundry No. 1 and No. 2. This is an advance of 50c. and is brought about by the desire of the buyers to cover their needs for the latter quarter of the year. Some few inquiries are being made for the first quarter of next year, but the buyers are cautious, not being anxious to buy heavily, being hindered by the status of the prices and the possibilities of a business upheaval as a result of the election.

Finished Material.—The finished material market shows increased signs of strength. Ship-plates, which have been the principal feature of the market, are now yielding to other grades. The market now stands at 1.20 as a minimum on plates, with most of the sales being made at 1.25 or 1.30c. Bars also are showing up strong, and the sales of them are heavier. This week the rock-bottom price is 1.15c., Pittsburg, with most of the concerns holding out for 1.20c. or upward. The price of shapes holds at the association figure, no disposition being manifest to break them. If anything, the non-association mills are as anxious as the others to uphold the prices, seeing that they have a fighting chance of getting them or even better. Although there is a fair demand for shapes, not much building is being done, the material contracted for.

**Philadelphia.** Sept. 20.

(From Our Special Correspondent.)

Pig Iron.—More pig iron has sold since Monday than the same time for several weeks, but the purchases were for immediate melting. The outlook improved rather suddenly, but there is no rush. The demand for forge iron is more likely to improve, as mills have very little material. Quotations to-day are: No. 1 X foundry, \$17@17.50; No. 2 X, \$15.50@16.50; No. 2 plain, \$15@15.25; forge, \$14@14.50; ordinary, \$13.50@14; basic, \$14.50; Bessemer, \$15@15.50; low phosphorus, \$24@25.

Billets.—The supply of billets is light, but there is no desire to load up heavily even at the latest quotations of \$14 at mill. Makers have given it out that this is bottom price, but buyers do not accept the view.

Bar Iron.—The bar iron demand has picked up a good deal and the Schuylkill Valley and city mill have a fine assortment of orders. The situation in the West is helping us some. The present refined iron quotation is 1.30c., common 1.20c.

Nails.—The retail distribution of nails has been most satisfactory.

Skelp.—Large skelp iron requirements are on the way of being sent to mills. The market is strong and it is probable that more skelp will be made during the winter than during the spring.

Merchant Steel.—Prices have been marked up on several kinds of merchant steel from August. There are quite a number of large Eastern consumers who are figuring with the mill people for supplies for the winter. We heard of large orders being placed by Western agricultural implement people.

Plate.—The condition of plate is satisfactory. Prices are at bottom and big buyers are taking advantage of it. Some big orders were booked this morning. The present rush is quite a surprise. Bridge builders want to have their supplies secured. Quarter-inch plate is 1.30c.

Structural Material.—The makers of structural material have a good account to give. Orders are now being figured on which it is said will result in sending 20,000 tons, or close to it, to the mills within two or three weeks. Angles are 1.30@1.40c.; beams and channels, 1.60@1.65c.

Old Rails.—A leading dealer in old rails has secured options on three or four lots of considerable size.

Scrap.—The scrap market promises to be active this fall, but prices will hardly hold their own, except for No. 1 Railroad, which is all taken as fast as it can be had.

**Pittsburg.** Sept. 19.

(From Our Special Correspondent.)

While prices in all lines of finished products continue firm, Bessemer pig iron is weak, but mill iron has advanced in price. On orders for immediate shipment there is an advance of 50c. a ton within a week. There has been no change in the operation of the blast furnaces since the



Prices of Foreign Coins.

	Bid.	Asked.
Mexican dollars.....	\$ 49½	\$ 50½
Peruvian soles and Chilean pesos ..	.45	.46½
Victoria sovereigns.....	4.85	4.88
Twenty francs.....	3.85	3.88
Twenty marks.....	4.74	4.80
Spanish 25 pesetas.....	4.78	4.82

Financial Notes of the Week.

The condition of general business continues the same, and no general revival is looked for before November. The speculative markets are practically dead, and promise to remain dull for a time. The special event of the week has been the subscription for 20,000,000 marks, or about \$5,000,000, to the new German Government loan. Money in New York continues abundant, carrying low rates. The influence of the usual September demand for currency to "move the crops" has been apparent thus far only to a very small extent.

The silver market receded this week on the completion of English Mint order to 28¾d., but at the lower figure India came in as a buyer, and the market closes firmer at 28 13/16d.

The statement of the United States Treasury on Wednesday, September 19th, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week:

	Sept. 12.	Sept. 19.	Changes.
Gold.....	\$72,454,447	\$75,495,574	I. \$3,041,127
Silver.....	11,171,255	9,492,589	D. 1,678,666
Legal tenders.....	25,207,850	24,224,384	D. 983,261
Treas. notes, etc.....	572,355	438,934	D. 133,421

Totals..... \$109,405,707 \$109,651,181 I. \$245,474

Treasury deposits with national banks amounted to \$96,819,665, showing an increase of \$312,032 for the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending September 15th, gives the following totals, comparison being made with the corresponding weeks in 1899 and 1898:

	1898.	1899.	1900.
Loans and discounts.....	\$653,264,700	\$739,791,900	\$825,830,600
Deposits.....	712,067,600	819,383,400	907,344,900
Circulation.....	14,466,600	14,825,700	29,478,400
Reserve:			
Specie.....	128,899,800	156,022,600	176,600,800
Legal tenders.....	53,357,500	49,098,700	71,071,600
Total reserve.....	\$182,257,300	\$205,121,300	\$247,672,400
Legal requirements.....	178,013,900	201,845,850	226,836,225
Balance, surplus.....	\$ 4,240,400	\$275,450	\$20,836,175

Changes for the week, this year, were increases of \$7,022,600 in loans and discounts, \$1,063,500 in deposits and \$372,000 in circulation; decreases were \$690,100 in specie, \$2,253,100 in legal tenders and \$5,120,075 in surplus reserve.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding date last year:

Banks.	1899.		1900.	
	Gold.	Silver.	Gold.	Silver.
N.Y. Ass'n.....	\$156,022,600	.....	\$176,600,800	.....
England.....	178,063,835	.....	182,083,560	.....
France.....	384,473,815	\$238,174,535	448,982,155	\$226,022,580
Germany.....	134,275,000	69,170,000	138,920,000	71,565,000
Spain.....	65,065,000	68,000,000	68,445,000	84,020,000
Aus.-Hun.....	152,815,000	52,840,000	189,455,000	48,725,000
Neth'lds.....	13,705,000	29,820,000	24,345,000	28,225,000
Belgium.....	14,985,000	7,490,000	14,440,000	7,220,000
Italy.....	77,715,000	6,925,000	77,230,000	8,325,000
Russia.....	418,255,000	26,090,000	389,575,000	37,225,000

The returns of the Associated Banks of New York are of date September 15th and the others are of date September 14th, as reported by the Commercial and Financial Chronicle cable. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports gold only.

Indian exchange has been steady at 15.94d. per rupee, with an increased demand for Council bills in London. The silver situation is unchanged so far as India is concerned.

Shipments of silver from London to the East for the year up to September 6th, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
India.....	£3,421,700	£3,831,407	I. £409,707
China.....	904,453	1,578,066	I. 673,613
The Straits.....	165,277	401,766	I. 236,489

Totals..... \$4,491,430 \$5,811,239 I. £1,319,809  
Arrivals for the week, this year, were £220,000 in bar silver from New York. Shipments were £67,500 to Bombay and £25,000 to Shanghai; total, £92,500, all in bar silver.

Other Metals.

Daily Prices of Metals in New York.

September.	Sterling Exchange.	Silver.		Copper.				Spelter.		
		Fine oz. Cts.	London. Pence.	Lake, cts. @ lb.	Electro. lb.	London. @ ton.	Tin, cts. @ lb.	Lead cts. @ lb.	N. Y. cts. @ lb.	St. L. cts. @ lb.
15	4.86½	62½	28 11/16	16½	16½	.....	30	4.32½	4.10	3.95
17	4.86½	62½	28 7/8	16½	16½	73¼	29½	4.32½	4.10	3.95
18	4.86½	62½	28¾	16½	16½	73¼	28½	4.32½	4.10	3.95
19	4.87	62½	28¾	16½	16½	73	28½	4.32½	4.10	3.95
20	4.87	62½	28 11/16	16½	16½	73¼	28½	4.32½	4.10	3.95
21	4.87½	62½	28 11/16	16½	16½	73¼	28½	4.32½	4.10	3.95

London quotations are per long ton (2,240 lbs.) standard copper, which is now the equivalent of the former g. m. b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The market is unchanged. Consumption continues very large and the demand for both early and future shipment is heavy. Spot copper continues to be scarce, in this country as well as in Europe. Production on this side, as shown by our figures of last week, was 2,000 tons less during the month of August than during the previous month, and, with the present rate of consumption continuing, this, of course, tends to still further strengthen the position of the article. We quote Lake Copper at 16½@16¾c.; electrolytic in cakes, wirebars and ingots, at 16½@16¾c., in cathodes at 16½@16¾c.; casting copper at 16¾c.

The London market for speculative sorts has fluctuated within a very narrow range. It closed last week at £73 10s. for spot, £74 2s. 6d. for three months and opened at the same figures. The middle of the week it declined to £73 for spot, £73 12s. 6d. for three months, and closes at £73 2s. 6d. for spot, £73 15s. for three months.

Statistics for the first half of September show a decrease of 1,000 tons. Refined and manufactured sorts we quote: English tough, £76 10s. @£77 10s.; best selected, £78 15s. @£79 5s.; strong sheets, £84 @£85; India sheets, £83; yellow metal, 6½d.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the producing companies, was as follows for August and the eight months ending August 31st, stated in long tons (2,240 lbs.) of fine copper:

	August.		8 months.	
	1899.	1900.	1899.	1900.
U. S., reporting mines.....	19,886	17,767	150,406	151,556
U. S., outside sources,.....	2,800	3,400	18,100	27,200

Total, U. S..... 22,686 21,167 168,506 178,756  
Foreign, reporting mines..... 7,292 7,535 58,311 59,031

Totals..... 29,978 28,702 226,817 237,787  
Exports, U. S..... 10,920 13,861 74,612 115,726

The United States output for August was 1,519 tons less than in August, 1899, but for the eight months there was an increase of 10,250 tons or 6.1%; of which 1,150 tons only was from the reporting mines, and 9,100 tons from the outside sources. The foreign reporting mines show an increase of 720 tons, or 1.3%, only. United States exports for this eight months show an increase of 41,084 tons, or 55.1%, and were this year 64.7% of the production.

The imports of copper into Germany for the seven months ending July 31st are reported at 52,571 metric tons, while the exports were 6,607 tons. The apparent consumption of foreign copper in Germany was therefore 45,964 tons, which compares with 35,725 tons last year; showing an increase of 10,239 tons, or 28.7% this year.

Tin.—The market has this week experienced a sudden and violent decline, in sympathy with the heavy drop in London. Demand is very small, and in view of the larger arrivals, values here were very readily affected. While tin sold last week at 30¼c., this week as low as 28¼c. was accepted. At the close we quote 28¼c. for spot.

The London market fluctuated very violently, declining £8 in one day. It closed last week at £134 15s. for spot, £132 for three months, and opened on Monday at £134 5s. for spot, £130 15s. for three months. On Tuesday spot declined almost £8, and three months almost £7, spot being quoted at £126 and three months at £124. On Wednesday and Thursday the market recovered to £127 10s. for spot, £124 15s. for three months, and closes at £126 for spot, £124 5s. for three months.

Lead.—The market remains unchanged. We quote New York at 4.32½@4.37½; St. Louis, 4.27½ @4.32½c.

The European market is strong, prompt delivery continuing to be scarce. Spanish lead is quoted at £17 12s. 6d., English lead 5s. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is unchanged and prices look to be a fixture at

4.32½c. for both desilverized and Missouri. Trading is fairly active at these rates.

Spanish Lead Market.—Messrs. Barrington & Holt write from Cartagena, Spain, under date of September 5th, as follows: The average price of silver during the past month has been 14.50 reales per ounce. The average price of lead has been 93.50 reales per quintal on wharf, equivalent to a price of £16 4s. 9d. per ton of 2,240 lbs. 1. o. b. Cartagena on an average exchange of \$2.29 pesetas to £1. The export of pig lead during August has been 1,472,588 kgs. to London; 1,087 kgs. to Marseilles; 939,995 kgs. to Coueron; total, 3,471,670 kgs. There was an export of 1,247 kgs. silver bars to Marseilles.

Spelter.—More business is reported this week, but prices have not changed. We quote New York 4.10c., St. Louis 3.95c.

The foreign market is higher, good ordinaries being quoted at £19 2s. 6d., specials 5s. more. We hear of various inquiries for American spelter from abroad.

Spanish Zinc Ore Market.—Messrs. Barrington & Holt write from Cartagena, Spain: Owing to the stagnation in the demand for blende, the production of the mines is almost at a standstill. Exports from Cartagena in August were: 400 metric tons calamine and 1,800 tons blende to Antwerp; 300 tons calamine to Hamburg; 450 tons calamine to Bristol.

Antimony.—We quote Cookson's, 10c.; Hallitt's, 9¼c.; U. S. Star, 9¼c.

Nickel.—The price continues firm at 50@60c. per lb., according to size and terms of order.

Platinum.—Consumption continues good and prices are strong. For ingot platinum in large quantities \$18.20 per Troy oz. is quoted in New York.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 72c. per gram, showing an increase of 1½c.

Quicksilver.—The New York quotation continues unchanged at \$51 per flask for large lots, with \$52.50@54 asked for small quantities. San Francisco prices firmer, \$49@50 being named on local deliveries, and \$44.50@45 on export orders. The London price is now £9 2s. 6d. per flask, with the same price named from second hands.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

	Per lb.	Per lb.
Aluminum.....	.....	.....
No. 1, 99% ingots.....	35@37c.	Ferro-Titanium (20%)..... \$1.00
No. 2, 90% ingots.....	31@34c.	Ferro-Tungsten (37%)..... 35c.
Rolled sheets.....	42c. up	Magnesium..... \$2.75@3.50
Alum-bronze.....	20@23c.	Manganese (over 99%)..... \$1.05
Nickel-alum.....	33@39c.	Manganese Cop. (20% Mn) 32c.
Bismuth.....	\$2.25	Manganese Cop. (30% Mn) 32c.
Chromium (over 99%).....	1.00	Molybdenum (Best)..... \$1.45
Copper, red oxide.....	55c.	Phosphorus..... 50c.
Ferro-Molyb'dum (50%).....	\$1.00	American..... 70c.
Ferro-Titanium (10%).....	90c.	Tungsten (Best)..... 52c.

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

LATE NEWS.

The New York conference of the steel rail makers has not, up to the time of writing, resulted in any definite action as to prices, but there is little doubt that reduction in prices will be made.

The Amalgamated Copper Company has declared a regular quarterly dividend of 1½% and an extra of ½%, making a total distribution of \$1,500,000. In the present year the company paid \$6,000,000 in dividends, and \$7,500,000 since its incorporation, or 10% on its total capital stock of \$75,000,000.

Southern furnace operators and the leading officials of Southern railroads held a conference in Atlanta, Ga., September 20th. After discussion of the points at issue an agreement was reached whereby a reduction of 50c. per ton will be made on all furnace products to Ohio and Mississippi River points and beyond, to South Atlantic and Virginia and Eastern ports. These rates are domestic and the export rates are not affected. This leaves the rates still about \$1 higher than a year ago.

The Montana Mining Company, of Montana, reports that the total output for August was: Gold, 1,500 oz., and silver, 11,400 oz., obtained from 12,720 tons of tailings from the dams brought under treatment. The estimated realizable value of the return is \$36,600. The expenditures were: General maintenance, \$3,900; insurance, \$1,800; outlay on developments, \$9,600; treatment of 12,720 tons of tailings, \$12,948; redemption of cost of tailings plant, \$4,452; total, \$32,700; leaving the estimated net profit \$3,900. The tailings plant was in operation for 31 days. The mills are not in operation at present. Regarding the exploratory work on the Nine Hour Vein in the vicinity of No. 3 shaft, the directors learn from Mr. Burrell's report of August 24th that the winze at that date was 45 ft. below the 1,200 ft. level in good-looking quartz, but of a variable nature.



CHEMICALS AND MINERALS

(For further prices of chemicals, minerals and rare elements, see page 360.)

New York. Sept. 21.

The Galveston disaster has greatly increased the demand for disinfectants, including carbolic acid and copperas, and already large quantities of these two substances have been shipped to Texas. In fact, the spot supply in New York of carbolic acid and copperas has become very small, hence prices have stiffened.

Heavy Chemicals.—This market is firmer, and outside of the regular immediate contract deliveries, some sales of next fire high test alkali have been made at 80c. per 100 lbs. f. o. b. works. The Laramie, Wyo., alkali works, which were started up last year, were destroyed by fire early this month, and, it is reported, they will not be rebuilt. In domestic high test caustic soda the bulk of new business is for 1901 delivery at \$1.80 and up per 100 lbs. f. o. b. works. An improved export demand is noted for bicarb. soda. Sal soda for shipment is also in better request. Bleaching powder on spot has been well cleaned up by orders from Texas. Revised quotations for prime English bleach are \$1.75@2.25 per 100 lbs.; German, \$1.62½@1.87½ and Belgian and French \$1.50@1.75. We understand the Ackerman Process Company's works at Niagara Falls, N. Y., are in full operation, and that a small quantity of their bleaching powder has been received in iron drums in New York City. Sellers are not ready to quote on this bleach, as the production is yet too small to enter into competition with other makes. Chlorate of potash domestic is still weak and sales of both crystals and powdered are reported at 88¢ per 100 lbs. We quote per 100 lbs. as follows: Domestic soda ash in bulk is worth 2½c. per 100 lbs. less than quotations below:

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York.	In New York.
Alkali, 58%.	75@80	.....	90@95
48%.	80@85	.....	\$1.00@1.05
Caustic Soda, high test.	\$1.85@1.90	.....	2.40@2.55
60%.	.....	3.00@3.25	.....
70@74%.	.....	3.25@3.50	.....
98%.	.....	3.50@4.00	3.75@4.00
Sol Soda "conc."	70@80.	.....	7½
"conc."	1.45@1.75	.....	1.75
Bicarb. Soda, "extra"	1.25@1.37½	.....	1.75@2.25
Bleach Pdr., Eng. prime.	3.25@3.50	.....	.....
other brnds.	.....	.....	1.75@2.00
Chl. Pot. cryst. powd.	.....	8.62½@8.75	9.50@9.75
	.....	8.62½@8.75	9.75@10.00

Acids.—Shipments are better, owing to improved requests on contracts. Higher prices for oxalic acid are talked of, hence buying is more active. Blue vitriol for export moves in a better way, but the high ocean freights prevent heavy shipments.

Quotations as below are for large lots delivered in New York and vicinity, per 100 lbs. unless otherwise specified.

Acetic, No 8 in lbs.	\$1.62½	Nitric, 36°	\$3.87½
Blue Vitriol	5.00@5.25	Nitric, 38°	4.12½
Aqua Fortis, 36°	3.62½	Nitric, 40°	4.37
Aqua Fortis, 38°	3.87½	Nitric, 42°	4.75d
Aqua Fortis, 40°	4.12½	Oxalic	5.75@5.87½
Aqua Fortis, 42°	4.50	Sulphuric, 66°	1.20
Muriatic, 16°	1.20	Sulphuric, 60°	1.05
Muriatic, 20°	1.35	" bulk 50° ton	14.00
Muriatic 22°	1.50		

Brimstone.—About October 1st river navigation on the other side closes, hence shipments of brimstone from Sicily are active just now. The imports at New York this week aggregated \$5,900 tons, some of which sold at \$22.50@22.75 per ton. Now spot best unmixed seconds are quoted \$23 per ton, and a few sellers seek higher prices. Shipments are worth \$21.75 per ton. Best thirds are about \$2 per ton less than unmixed seconds. The formation of the American Sulphur Company with \$5,000,000 capitalization is understood to mean that the brimstone deposits in the Tabor Mountains, forming the boundary line between Peru and Chile, are to be worked. In 1899 Chile exported 1,986 tons of brimstone. Negotiations have been pending for some time between some capitalists and property owners and only recently has the deal been consummated. The trouble has been inadequate transportation facilities for shipping the brimstone.

Pyrites.—Comparatively few charters are taken from Spain to America, as steamers are scarce and freight rates high. The prevailing rate to Atlantic ports is 12s. 6d., and in some cases more is asked. The Pennsylvania Salt Manufacturing Company imported 4,018 metric tons copper pyrites at New York this week. Iron pyrites deposits are to be developed at Graham's Forge, Va. We quote: Mineral City, Va., dump ore (basis 42%), \$4.75 per long ton and fines \$4.40. Charlemon, Mass., lump, \$5.50, and fines \$5. Spanish pyrites, 12@14c. as to percentage of sulphur contents, delivery ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46%@51% of sulphur; American, 42@44%.

Fertilizing Chemicals.—The South is buying somewhat, but as yet dealings are only moder-

ate. The rise in Western freight rates last Saturday has increased prices of the leading ammoniates shipped to the East. The fertilizer trade of Savannah during the season ended September 1st was very satisfactory, owing principally to the higher prices paid for cotton. The consumption of fertilizers this season increased 64,970 tons, the total consumption being 407,839 tons, against 342,869 tons in 1898-99. This was the best season's consumption on record.

Sulphate of ammonia gas liquor for shipment is held at \$2.70@2.75, while spot is worth \$2.77½@2.80 per lbs. Other quotations are as follows: High grade Western blood, \$2.25@2.30 per unit in New York, and City soft blood \$2.05@2.10; high grade Western tankage, \$18.50@19 per ton, f. o. b. Chicago; crushed tankage, 9@20%, \$17@17½, and 6½@25%, \$13.50 per ton, f. o. b. Chicago; Calculta bone-meal, \$23@25 per ton; domestic steamed ground bone, \$21@22 dried fish scrap, \$23 per ton f. o. b. factory; acid phosphate, 14@16%, 65@67½c. per unit, bone-black, spent, 14½@16 per ton; azotine, \$1.90@2 per unit. Variations in prices are according to port of delivery.

Potash salts are quoted in large lots as follows: Muriate of potash, \$1.83@1.86½ per 100 lbs.; sulphate of potash, 90@98%, \$2.05½@2.08½; double manure salt, 48@53%, \$1.06@1.08½; Kainit (25% sulphate of potash), \$9.05@9.55 per long ton; sylvinit (35@37% potash), 38½@41½c. per unit.

Nitrate of Soda.—The market continues quiet, with spot quoted at \$1.75@1.77½ per 100 lbs., and futures \$1.77½@1.80, according to position. Only small sales have been made, as the large consumers still refuse to purchase at present prices, anticipating a lower market in the near future. The situation on the coast is unchanged, owing to the national holiday in Chile this week. The European market is quiet. The production of nitrate of soda in Chile in August is cabled at 2,750,000 qtls. The estimated shipments for September are 2,200,000 qtls. for Europe, and 425,000 qtls. to the United States; total, 2,625,000 qtls. Loadings on October 1st will be 1,600,000 qtls. for Europe and 125,000 qtls. for the United States; total, 1,725,000 qtls. The "Rowena" arrived in New York this week with 20,115 bags. The British steamer "Bellisla," of 2,459 tons, has been chartered from the West Coast of South America to New York, Philadelphia, or Boston, at 32s. 6d., November sailing, and the "Juanita North," 2,233 tons from Iquique to Philadelphia, at 39s. 6d.

Phosphates.—In Florida some of the hard-rock plants will close down October 1st, while others are resuming as they receive large enough orders. In the Bone Valley region all the plants are in operation. The Alachua County deposits are controlled by a few people, so the mines will not work actively until they receive higher prices for their product. The Prairie pebble plant, one of the best equipped of its kind, is finished and is being operated by electricity. During September it is estimated at least 15,000 tons of phosphate will be shipped through Fernandina. The Florida rock shipments through Savannah in the year ended August 31st amounted to 125,634 long tons, against 72,270 tons in 1898-99, showing an increase in 1899-90 of 53,364 tons.

Charters noted are 1,657 tons from Savannah to Stettin at 25s. below bridges, October sailing, 670 tons from Tampa to Melbourne, Australia, at 33s. 3d., October sailing, and 879 tons from Pensacola to St. Pierre and (or) to Fort de France (two trips), \$3.75 and lighterage, for one port, or \$4 to both ports.

The demand for Algerian rock has improved and a considerable business is reported in Great Britain at 6½d. per unit, or \$7.80 per long ton. An advance in this price is looked for by sellers.

Phosphates.	Per Ton F. o. b.	C i f U n' d Kingdom or European Ports.	
		Unit.	Long ton.
*Fla. hard rock (77@80)	\$7.50@8.00	7¼@8¼d	\$12.09@12.87
*Fla. land pebble (68@73)	4.35	7@7¼d	9.80@10.15
*Fla. Peace River (58@63)	3.00@3.50	7@7¼d	8.40@8.70
†Tenn. rock 78% export.	4.00	7¼@7½d	11.31@11.70
†Tenn. .... 78% domestic.	3.30@3.50	.....	.....
†Tenn. .... 75%	3.00@3.25	.....	.....
†Tenn. .... 72%	2.65@2.75	.....	.....
So. Car. rock, crude	4.00	.....	.....
So. Car. rock, dried	4.50	6¼d	7.80
Algerian, rock. (63@70)	.....	7@7¼d	9.38@10.05
Algerian, rock. (58@63)	.....	6¼@7¼d	8.10@8.70

\* Fernandina. † Mt. Pleasant. ‡ At mines. § On vessels, Ashley River.

Liverpool. Sept 12. (Special Report of Joseph P. Brunner & Co.)

There is a large inquiry for caustic soda, but other lines of heavy chemicals are quiet and without special feature. Up to the present manufacturers have been declining to quote for 1901 deliveries, but it is expected that in a few days they will be ready to entertain business. The following are particulars of the Board of Trade returns of exports of alkali and bleaching powder for the month ending August 31 last: Total exports to all quarters, cwts., alkali, 261,678; bleaching powder, 84,739; exports to United

States alone, cwts., alkali, 34,894; bleaching powder, 59,986. Compared with the corresponding month of last year, these figures show a considerable decrease. Taking the eight months to August 31st, however, the shipments are still much in excess of the exports during the same period of 1899.

Soda ash is in fair demand at late rates. We quote spot range for tierces about as follows: Leblanc ash, 48%, £5@£5 5s.; 58%, £5 10s.@£5 15s. per ton, net cash; ammonia ash, 48%, £4 5s.@£4 10s.; 58%, £4 10s.@£4 15s. per ton, net cash; bags, 5s. per ton under prices for tierces. Soda crystals are in request and firm at £3 2s. 6d. per ton, less 5% for barrels, or 7s. less for bags, with special terms for a few favored markets. Caustic soda is strong and there are large inquiries in the market from the Continent and orders being refused by dealers for that quarter, there being no unbarred makes obtainable. We quote spot prices as follows: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s.@£10 17s. 6d.; 76%, £11 5s.@£11 10s. per ton, net cash.

Bleaching powder continues slow of sale and prices are nominal at about £6@£6 10s. per ton, net cash, for hardwood as to market.

Chlorate of potash is in limited request and 3¼@4d. per pound is about nominal range, as to quantity.

Bicarb. soda is without change and selling at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages; also special quotations for certain favored markets.

Sulphate of ammonia is dull at £11 per ton, less 2½% for good gray 24@25% in double bags f. o. b. here.

Nitrate of soda is quiet but steady at £8 7s. 6d.@£8 12s. 6d. per ton, less 2½% for double bags f. o. b. here, as to quality.

MINING STOCKS.

Complete quotations will be found on pages 357 and 358 of mining stocks listed and dealt in at:

Boston.	Philadelphia.	Montreal.
Colo. Springs.	Salt Lake.	London.
Denver.	San Francisco.	Mexico.
New York.	Spokane.	Paris.
	Toronto.	

New York. Sept. 21.

The market has softened, and the copper shares have been especially weak. Amalgamated receded from \$88½ to \$87 on sales; Anaconda from \$44½ to \$43, and Union of North Carolina from \$3½ to \$2½. A sale of 50 shares of Arizona Copper Smelting was reported at \$9.50 per share on the Consolidated Exchange.

In the Colorado section Elkton, of Cripple Creek, sold at \$1.70, while Isabella fell to 97c., owing to the decreased cash on hand, which is said to be about one-half of the \$476,796 held January 1st last. Mt. Rosa lost 5c. at 55c., Mollie Gibson 3c. at 24c., Argentum-Juniata 1c. at 26c., Cripple Creek Consolidated ½c. at 13c. Sales of Golden Fleece are noted at 25c., Anaconda Gold at 49c., Alamo 12½c., Pharmacist, 14c. and Leadville 6c.

California sales were Brunswick at 26@27c., Plymouth at 10c. and Syndicate 6c.

Father De Smet, of South Dakota, made sales at 40@42c., against 45c. last week. Horn Silver, of Utah, lost 3c. at \$1.22. Kingston & Pembroke, of Ontario, held at 20c.

Of the Comstock shares, sales were reported of Consolidated California & Virginia at \$1.20, Savage 18c., and Utah 6c. Ophir has come forward with another 20c. assessment; the stock brought 50c.

Auction sales were \$2,000 Tennessee Coal, Iron and Railroad Company consolidated first mortgage 6% gold bonds, due 1917, at 103%, and \$1,000 Big Muddy Coal and Iron Company first mortgage registered 6% bonds, 1923, at 75.

Boston. Sept. 20.

(From Our Special Correspondent.)

The sensation of this week, coming on a dull market with inside trading only, was a sharp rise in Tamarack. This was due to the movements of a single operator who set out to bid the stock up and succeeded in carrying it to \$239 to-day. Some say that under this leading it will go to \$300. Possibly, but the only effect is to give us a little needed excitement.

The other high-priced coppers were dull, with a little rise to-day and yesterday. Upon the whole, it has been a narrow market. Calumet & Hecla sold at \$740; Boston & Montana, \$310@315; Osceola, \$65; Wolverine, \$39½@40.

Not much was done in the low-priced coppers, and most of them seem to be shelved until another boom comes.

The gold stocks were very quiet and no demand seems to exist just now. Centennial-Eureka was quoted at \$18½@19.

The continued raid on New England Gas and Coke forced the price down to \$11 this week, while Dominion Coal was lower in sympathy, selling at \$38½. I have frequently referred to the people who are behind this movement. I do not think that their tactics will much disturb the parties controlling the companies. The present raid looks like an ugly case of spite-work.

**Colorado Springs.** Sept. 8.

(From Our Special Correspondent.)

The week closes to-day with market conditions in better shape than has been the case for several weeks past, though the whole week has been about as unsatisfactory as could be imagined. There was a general slump which affected every stock on the list and the force of this did not expend itself until to-day, when naturally a healthy reaction set in. The slump was occasioned by the violent decline in Isabella shares from \$1.06½ to 86c. This had a weakening effect upon the whole list and all stocks acted in sympathy. Bed rock appears to have been reached, and Isabella changed front and advanced to 91c. to-day.

Elkton fell from \$1.87 to \$1.73 and rallied to \$1.90 to-day. The balance of the market was without especial interest. The sales upon the Mining Exchange in this city this week were 3,490,231 shares, representing a cash value of \$716,097. The weekly bank clearings were the largest this week for several weeks past and were \$1,151,000.

**Salt Lake City.** Sept. 15.  
(From Our Special Correspondent.)

It is difficult to say whether there is any genuine improvement in Utah mining share trading or not. Some of the former favorites have refused to put on new life, in spite of careful fondling and nursing, while others have put on a bolder front. Total sales as reported for the week are 104,782 shares, which sold for \$38,398. The noteworthy advances were in Northern Light, Mercur, Star Consolidated, Sacramento and Yankee Consolidated, each of which is higher than on last Saturday, though, with the exception of Mercur, all have softened from the high point of the week.

Consolidated Mercur made its first appearance on call Thursday, a few odd small lots selling at \$3.80@3.85. A move was made to take Mercur off the list, but this was resisted. Quite a number refuse to have their shares exchanged for the new stock till the final dividend is paid and the old company placed entirely out of commission. The new shares were regularly called for the first time to-day, but did no business, the bid being \$3.92½, and asked \$4.02½. This is the event of the week.

Centennial-Eureka took a header in Boston which astonished the faithful at this end. All sorts of yarns are afloat. Daly holds above \$2. Daly-West is softer. The \$37,500 dividend was paid to-day. Grand Central is a shade lower. Report has it that the Grand Central-Mammoth suit will come on for trial next month. May Day is again sport for the bears.

**San Francisco.** Sept. 15.  
(From Our Special Correspondent.)

The Admission Day holiday on Monday and Tuesday added to the dullness of the market. The brokers came back on Wednesday apparently indisposed to work. Stocks were only in small demand and at lower prices.

Some quotations noted are: Consolidated California & Virginia, \$1.15@1.20; Confidence 80c.; Ophir, 45c.; Gould & Curry, 35c.; Silver Hill 36c.; Sierra Nevada, 31@32c. Hale & Norcross, 22c. Outside of the Comstocks, Standard Consolidated was \$3.90 bid, with no sales.

According to the sworn statements filed this week the following companies report having had cash on hand September 1st, 1900, with expenses paid to that date unless otherwise stated below: Alta, \$869; Andes, \$3,039; Alpha Consolidated, \$2,263; Best & Belcher, \$200, with August expenses at mine unpaid and an assessment being collected; Bullion, \$1,634; Caledonia (Gold Hill), \$6,231, with August expenses at mine unpaid; Consolidated California & Virginia, \$1,317 in cash, with bills paid to date and 8 car-loads of ore in process of settlement and 4 car-loads of ore in transit, the value of which is not yet known; Consolidated New York, \$711; Confidence, \$629, with August expenses at mine unpaid and an assessment being collected; Consolidated Imperial, \$2,451; Challenge Consolidated, \$1,257; Crown Point, \$2,111; Exchequer, \$741; Gould & Curry, \$8,390, with bills payable of \$4,000 and a balance of 3,475 to be collected on the pending assessment; Hale & Norcross, \$1,821, with an assessment being collected; Justice, \$552, with an assessment being collected; Mexican, \$7,403; Ophir, \$201, with an assessment being collected; Overman, \$38, with a balance of \$5,483 to be collected on the pending assessment, August expenses at mine unpaid and \$747 due the treasurer; Potosi, \$4,340 and an assessment being collected; Savage, \$84, with \$400 due the bank and an assessment being collected; Segregated Belcher, \$293; Sierra Nevada, \$5,182; Silver Hill, \$2,382; Standard Consolidated, \$172,498, with August clean-up of bullion to be received and expenses for that month to be paid; Syndicate, of Bodie, \$1,968; Union Consolidated, \$2,743; Utah Consolidated, \$204, with \$700 due the bank and an assessment being collected.

The Belcher Mining Company had an indebtedness of \$2,300 on September 1st, and is collecting an assessment. The Chollar Mining Company had an indebtedness of \$4,479, and is collecting an assessment.

Trading on the Oil Exchange was active, show-

ing a marked contrast to the condition in mining stocks. The demand for shares includes prospects as well as producing companies. Some quotations noted are: Home Oil, \$4.25; Twenty-eight, \$1.50@1.55; Sterling Oil and Development, \$1.40; California Standard, 35c. Prices were generally strong.

**London.** Sept. 4.  
(From Our Special Correspondent.)

The amount of business done in the mining market continues to be very small. There is nothing going on in South African shares, and only a trifling movement in West Australians and the Whitaker Wright British Columbian group. The West Australian market was somewhat ruffled by the fact that the output of West Australia for August was less than that during the same month last year, the figures being 131,485 oz., as compared with 145,397 oz. The production in August, 1899, was some 60,000 oz. greater than in August, 1898, and the summer of last year was conspicuous for "boom" outputs, so that the decrease this year is not to be wondered at, nor need the market take any notice of it.

In spite of the prospects of a long deferred resumption of work in the South African gold mines, the market has been rather more cheerful this week, owing to the publication of reports by the leading controlling houses, giving accounts of the present state of their mines and plant. In almost every case it has been found that little wilful damage has been done. The machinery all requires thorough overhauling, but the expense entailed does not seem likely to be excessive. The outcrop mines are mostly unwatered by now and pumping is going on continuously. But at the deep level mines very little pumping has been done so far and the intention is not to start until active operations can be resumed. These reports have had a good tonic effect on shareholders, as their worst fears have not been realized.

In the midst of the dull summer season the Millom & Askam Hematite Iron Company, Limited, is offering its new capital for subscription. This company has for many years carried on the business of ironmasters in Cumberland, and until recently has depended solely on its own local mines for their supply of Bessemer ore. Owing to the expansion of their business the company has been obliged to seek additional sources of ore and a few months ago acquired—in conjunction with the Coltness Company near Glasgow—some mines at Alquife, in the South of Spain. At the same time the company increased its capital to provide for the payment for these mines and for increased plant. Unlike most of the great iron producers, this company does not produce finished material, but stops short with the production of pig, and it is probably the largest producer of hematite pig in Great Britain for the open market. Its output averages 250,000 tons a year, but this will be now increased. The issue will without doubt be taken up readily, as all three divisions—ordinary shares, preference shares and debentures—are attractive investments that hold out a promise of appreciation in the future.

At the present time the iron companies receive much more notice among investors than has been the case for many years. Most of them show good results, but those which have not their own supply of coal are getting anxious for their future. Bolckow, Vaughan & Company have their own collieries, so are able to declare a dividend for the first six months of this year at the rate of 10% per annum. On the other hand, the Steel Company of Scotland, the great producer of open-hearth plates, has been much handicapped by the increased price of fuel, so that, though the output has been the greatest on record, the dividend for the financial year ending July, 1900, is not more than 5%. Both these companies are doing much better for their shareholders nowadays than formerly. For many years Bolckow, Vaughan & Company paid very small dividends and the Steel Company of Scotland often paid none at all.

One of the few companies working lead mines in England whose shares are on the financial market is the Weardale Lead Company, Limited, which has worked the Beaumont mines in County Durham for 17 years. The history of these mines has not been brilliant, for, though the ore exists in considerable quantities, the landlord and local considerations have always been hindrances to profitable operations. The land on which the mines are situated belong to the Church of England, and the rent exacted has been considerable. The company has not been able to pay a dividend for 10 years, and though a profit of £7,000 was made during the year ended June 30th last, the debit balance brought forward from the previous year has swamped it all, and leaves shareholders with nothing but hope for better things next year. The company is about to be reconstructed chiefly with a view to reduce the liability on the shares and also to bring the shares to the demonation of £1, which is the usual nominal price of shares nowadays. The rent and royalties are also being modified to a certain extent. The output of ore averages 2,400 tons. Last year 2,405 tons were smelted, with a yield of 1,738 tons

of pig lead. The sales during the year brought £28,254, or an average of £16 5s. per ton.

**Paris.** Sept. 9.  
(From Our Special Correspondent.)

The market for mining stock and, indeed, the Bourse generally, has been without special interest and speculation has not been active. Public attention is timed largely to the petition of the concessionaires at the Exposition, who represent that they have lost money all along, and that they will be practically ruined unless the Government remits some of the rents and royalties due. So far no disposition to grant this permission is shown. As nearly all the concessions were put into companies in which many people hold stock, the matter is of general interest.

The South African gold stocks have been quiet and their market, for the present, does not exist.

The continued high price of copper makes the copper stocks strong and rather interesting. Our prophets have been predicting a fall in copper, but we have a rise instead, and it looks as if it would last for some time. The copper companies have the best chance to make money they have had for many years.

It appears that no Russian loan is to be offered here after all. M. de Witte's visit was only to take a look at the Exposition. Of course it is tolerably sure that the bankers advised the minister that the time was not a good one for a new loan, and so the matter is postponed. One must accept what is told, however, and congratulate M. de Witte on his holiday, which gives him an opportunity to study the Exposition.

Azote.

**ANNUAL MEETINGS.**

Name of Co.	Locat'n.	Date.	Place of Meeting.
*Dalton & Lark...	Utah...	Sept. 27	Salt Lake City, Utah.
*Golden Star...	Utah...	Sept. 27	Salt Lake City, Utah.
Horn Silver...	Utah...	Oct. 2	Salt Lake City, Utah.
*Ludwig Copper...	Nev...	Nov. 7	Gold Hill, Nev.
*Magnoli...	Colo...	Sept. 29	Colo Springs, Colo.
*Moon Anchor...	Colo...	Sept. 24	Colo. Springs, Colo.
*New Zealand...	Colo...	Sept. 29	Colo. Springs, Colo.
Phoenix...	Utah...	Sept. 22	Salt Lake City, Utah.
Pleasant Valley Coal...	Utah...	Oct. 1	Salt Lake City, Utah.
*Sheep Rock...	Utah...	Sept. 24	Salt Lake City, Utah.

\*Special meeting.

**DIVIDENDS.**

NAME OF COMPANY.	Latest Dividend.			Total to date.
	Date.	Per share.	Total.	
\$Am. Agricul. Chem.	Oct. 1	3.00	510,000	1,514,840
†Am. Steel & Wire, com.	Oct. 2	1.75	875,000	2,625,000
†Am. Steel & Wire, pf.	Oct. 2	1.75	700,000	5,600,000
†Am. Sm. & Ref. pf.	Oct. 9	1.75	568,750	2,682,553
Arizona Copper, ord.	Sept. 30	.84	132,943	.....
*Bald. Butte, Mon.	Sept. 10	.06	15,000	852,148
*Buffalo Hump, Idaho	Oct. 1	.10	30,000	245,000
Calumet & Hecla...	Sept. 28	20.00	2,000,000	71,850,000
†Cambria Steel...	Oct. 1	1.00	.....	.....
Colorado Fuel & I., pf.	Oct. 10	8.00	160,000	.....
†Con. Gold Mines, Colo.	Sept. 25	.01	10,000	100,000
*Federal Steel, pf.	Oct. 1	1.50	92,007	6,657,654
*Gold Coin, Colo.	Sept. 25	.02	29,000	510,000
*Golden Cycle, Colo.	Sept. 25	.01	10,000	348,500
*Homestake, S. Dak.	Sept. 25	.50	105,000	9,088,750
*La Fortuna, Ariz.	Sept. 8	.05	12,500	870,000
†Mont Ore Purchas	Sept. 29	1.00	80,000	1,600,000
†National Steel, pf.	Sept. 29	1.75	.....	.....
†National Tube, pf.	Oct. 1	1.75	.....	.....
†Peena, Steel, pf.	Oct. 16	1.75	26,250	105,000
†Republic I. & S. pf.	Oct. 1	1.75	371,997	1,905,986
†Sloss Sheffield Steel & Iron, pf.	Oct. 2	1.75	.....	.....
†U. S. Oil	Oct. 1	.50	.....	.....
Wolverine, Mich.	Oct. 1	2.00	120,000	510,000

\* Monthly. † Quarterly. § Semi-annual.

**ASSESSMENTS.**

NAME OF COMPANY.	Loca-tion.	No	Delinq.	Sale.	Am't.
Alliance Expl. & Mg.	Cal.	3	Sept. 11	Oct. 2	.05
Belcher	Nev.	65	Sept. 14	Oct. 5	.10
Ben Butler	Utah	5	Sept. 10	Oct. 2	.004
Best & Belcher	Nev.	71	Sept. 7	Sept. 28	.15
Blue Gravel	Cal.	...	Sept. 27	.....	.05
Chollar	Nev.	52	Sept. 6	Sept. 27	.10
Clarissa	Utah	2	Oct. 1	Nov. 10	0.14
Confidence	Nev.	35	Sept. 17	Oct. 8	.20
Eureka-Swansea Ext.	Utah	2	Oct. 1	Nov. 1	.004
Eutonia	Cal	3	Sept. 29	Oct. 13	.004
Fish Springs	Utah	...	Oct. 15	Nov. 3	.01
Goleta	Nev.	2	Sept. 25	Oct. 25	.15
Gould & Curry	Nev.	91	Sept. 8	Oct. 1	.15
Hale & Norcross	Utah	5	Sept. 10	Sept. 25	.10
Joe Bowers	Utah	2	Sept. 18	Oct. 5	.01
Julia Con.	Nev.	30	Sept. 27	Oct. 18	.03
Justice	Nev.	69	Sept. 22	Oct. 15	.05
Kentuck Con.	Nev.	16	Sept. 26	Oct. 17	.03
Mammoth Garfield	Cal.	...	Aug. 4	Oct. 2	1.74
Mariposa Com'l & Mg.	Cal.	18	Oct. 19	Nov. 8	10.00
Mazepa	Cal.	1	June 28	Oct. 1	.03
Ophir	Nev.	79	Oct. 4	Oct. 24	.20
Overman	Nev.	5	Sept. 6	Sept. 27	.05
Park City & Midnight Sun	Utah	...	Oct. 1	.....	.004
Savage	Nev.	101	Sept. 18	Oct. 8	.10
Showor Con.	Utah	2	Oct. 1	Nov. 1	.02
Sonora	Cal.	...	Oct. 3	Nov. 13	.01
Sunbeam	Utah	...	Oct. 25	.....	.02
Utah Con.	Nev.	34	Oct. 9	Oct. 30	.95
West Park & Swansea	Utah	...	Oct. 8	Oct. 23	.004

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing company names, locations, par values, and prices for various dates from Sept. 14 to Sept. 20.

BOSTON, MASS.†

Table of stock quotations for Boston, Mass., listing company names, par values, and prices for various dates from Sept. 13 to Sept. 19.

† Official quotations Boston Stock Exchange. Total sales, 30,056. † Ex-dividend.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stock prices, listing companies like Am. Sm. & Ref., Am. S. & W. Con., and others with their respective prices.

Total sales, 192,708. † Ex dividend.

SALT LAKE CITY, UTAH.

Sept. 15.

Table of stock quotations for Salt Lake City, Utah, listing companies like Ajax, Allouez, and others with bid and asked prices.

PHILADELPHIA, PA.‡

Table of stock quotations for Philadelphia, Pa., listing companies like Am. Alkali, Am. Cement, and others with prices for various dates.

Total shares sold, 9,933. ‡ Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, Cal., listing companies like Belcher, Best & Belcher, and others with prices for various dates.

CALIFORNIA OIL STOCKS.\*

Table of California oil stock prices, listing companies like Blue Goose, Buckhorn, and others with prices for various dates.

\* California and Producers Oil Exchanges. Total sales, 4,950 shares. † Holiday.

TORONTO, ONT.

Table of stock quotations for Toronto, Ont., listing companies like Ontario, Golden Star, and others with prices for various dates.

Total shares sold, 148,238.

SPOKANE, WASH.

Table of stock quotations for Spokane, Wash., listing companies like Crystal, Deer Trail, and others with prices for various dates.

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo., listing companies like Acacia, Alamo, Am. Con., Anaconda, Anchor, etc., with columns for Par. val., Sept. 8-14, and Sales.

Colorado Springs Mining Stock Exchange. Total sales, 1,566,267 shares.

MONTREAL, CANADA.

Table of stock quotations for Montreal, Canada, listing companies like Big Three, California, Can. Gold Fields, etc., with columns for Par. val., Week, Sept. 13, and Sales.

Montreal Stock Exchange. Total sales, 61,560 shares.

MEXICO.

Table of stock quotations for Mexico, listing companies like Durango, Barradon y Cab., Candalaria de Pan., etc., with columns for No. of shares, Last div'd, Prices, and Sales.

DENVER, COLO.

Table of stock quotations for Denver, Colo., listing companies like Acacia, Anaconda, Arg. J., etc., with columns for Par. val., Sept. 8-14, and Sales.

Official Quotations Denver Stock Exchange. Total sales, 54,700 shares.

PARIS.

Aug. 30.

Table of stock quotations for Paris, listing companies like Acleries de Creusot, Boleo, Amzite, etc., with columns for Country, Product, Capital Stock, Par. value, Latest prices, and Closing prices.

LONDON.

Sept. 7

Table of stock quotations for London, listing companies like Alaska Goldfields, Alaska-Mexican, Alaska-Treadwell, etc., with columns for Country, Authorized capital, Par. value, Last dividend, and Quotations.

DIVIDEND-PAYING MINES.

Table with columns: Name and Location of Company, Authorized Capital Stock, Shares Issued, Dividends (Paid, Total to Date, Latest), Name and Location of Company, Authorized Capital Stock, Shares Issued, Dividends (Paid, Total to Date, Latest). The table lists 121 mining companies with their respective financial details and dividend information.

G., Gold. S., Silver. L., Lead. C., Copper. Z., Zinc. Q., Quicksilver. I., Iron. This table is corrected up to Sept. 17th. Correspondents are requested to forward changes or additions.

CHEMICALS, MINERALS, RARE ELEMENTS, ETC.—CURRENT PRICES.

Table with multiple columns listing various chemicals and minerals such as Abrasives, Borax, Magnesium, Silver, and others, along with their current prices and units.

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

Table listing rare elements such as Barium, Beryllium, Boron, Cadmium, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Germanium, Glucium, Indium, Iridium, Lanthanum, Lithium, Magnesium, Molybdenum, Niobium, Osmium, Potassium, Potassium, Rhodium, Rubidium, Ruthenium, Rutilium, Selenium, Silicon, Sodium, Strontium, Tantalum, Tellurium, Thallium, Thorium, Titanium, Uranium, Vanadium, and Zirconium, along with their prices.

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. This table is revised up to Aug. 27. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Reviews.