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It seems that new records are established every season in carrying iron ore on Lake Superior. The latest big cargo reported was taken down by the steamer "Maricopa" and two barges for the Minnesota Iron Company. The barges were towed by the steamer, and the three vessels together carried 22,635 tons of iron ore, which is claimed to be the greatest quantity ever moved on Lake Superior by a single engine. The average speed made by the tow was 11 miles an hour, and the crews numbered 41 men, of whom 25 were on the steamer and 8 on each barge. At the season contract rates this great cargo would bring the vessels \$27,956 for the trip. It would certainly be difficult to exceed this in the way of transportation.

Some of our French contemporaries have called attention to the fact that British exhibitors of coal at the Paris Exposition did not receive a single award of any kind; not even an honorable mention. This seems strange, as several British collieries had large and carefully arranged exhibits of their products. It is suggested that there was an accidental mistake or omission, but this seems hardly possible. The jealousy of the French companies has also been suggested as a cause, but such a feeling would hardly be likely to control the action of the juries of award. Whatever the cause may have been, the fact that no notice was taken of prominent British exhibitors is very remarkable, and not altogether creditable.

The want of success thus far in dredging for gold on the Snake River, in Idaho, where the conditions for that class of work have seemed very favorable, is explained in the interesting article in another column, in which the plans adopted to meet some of the worst difficulties are also explained. The article also shows that while dredging is a cheap, and, in some cases, highly successful method of gold recovery from placer deposits, it should not be adopted without careful study of all the conditions to be met. The risk of failure is very great, if this is not done, as is shown in the Snake River experiments. With the improvements which experience has suggested in Idaho, something is now being done on the Snake; but it took a long time and much money to find out how to do it.

The consolidation of nearly all the companies mining coal for sale in the Pittsburg District was effected some time ago. One of these concerns—the Monongahela River Consolidated Coal and Coke Company—included all the river mines, that is those which ship their coal down the Monongahela and the Ohio; while the other—the Pittsburg Consolidated Coal Company—included the railroad mines, which ship by rail. It was supposed that the new consolidations covered the trade of the district completely, and that no further competition was to be expected. This has not proved to be the case, however, for new companies are already coming up, two or three of them being of considerable importance, and others are to follow. There is too much coal land in Western Pennsylvania for one or two companies to control it all. The region is too large and the trade too extensive to permit a monopoly; and this the trust organizers are now finding out.

The reduction in price of steel rails of heavy sections from \$35 to \$26 a ton by the associated rail mills does not seem to meet the views of the railroads, and though there are "inquiries," no business of any importance has been closed at the reduction. The railroad people urge, and with justice, that the difference between the new price of rails and the present selling price of steel billets is far too great. The rail of large section is one of the simplest of finished products and requires less labor and expense than other forms which are now selling at prices as low or lower. There are two theories as to the \$26 price for rails; one is that it is merely a feeler to see how far the railroads are willing to go; while the other is that a comparatively high price was fixed for the purpose of steadying the market and producing, if possible, an upward reaction. On either theory the price does not seem to have satisfied anyone. It has done nothing, and a further reduction seems to be the next thing in order.

The price of silver has been rising steadily for some time past, and is now about 64 cents in New York, the highest point it has touched since February, 1897. The advance has been about 4½ cents an ounce since the opening of the year. It does not appear to be in any way a speculative movement, but is rather the result of a steady demand for the metal. We have heretofore referred to the large shipments to the East this year, and we find that the quantity sent to China has not decreased in consequence of the troubles there, but has rather increased. The foreign forces in China are making payments of some amount, and in the ports which are open the Chinese merchants prefer silver to goods in trade. In India the Government has been a large purchaser, the necessities of trade having compelled it to coin sil-

ver rupees for circulation. Outside of the Eastern demand the sales in Europe, chiefly for industrial purposes, have been good. The large consumption of the metal has naturally tended to support prices, and a further moderate rise is probable.

The letter of M. Demenge, an extract of which is given in another column, is intended to supplement the papers read at the International Congress of Mines and Metallurgy in Paris. The author, who speaks with the authority of long experience and close observation and who is well known in France and Belgium, thinks that attention at the Congress was confined too closely to theory, and that something on practical and mechanical progress is needed to complete the work. He has sought to do this in his letter, and presents an interesting account of the work accomplished within the last 10 years in European mills. It will be seen that progress there has been on very much the same lines as in the United States, and we may note that American inventions and methods have had much influence, and have been largely adopted on the other side of the water. The points on which European practice has run ahead of our own are in the utilization of by-products, and recently in the introduction of the gas engine, operated by the waste gases of the blast furnace. We have reason to believe, however, that the coming year will see important developments in this direction in America, and that our ironmakers are not unmindful of the examples set them at Hoerde and Seraing.

#### COAL EXPORTS.

A novel situation is now presenting itself to American coal operators. For the first time in our history we find a considerable demand for American coal abroad. Large orders are reported from various European countries, especially Russia and the Mediterranean States, and shipments are being made on a scale heretofore unknown. The situation is an interesting one, and deserves careful consideration.

The coal exports of the United States, notwithstanding our large production, have been heretofore limited to our neighbors, Canada and Mexico, with comparatively small quantities to South America. With Europe we have had practically no trade, so that the opportunity now presented is to establish an entirely new trade. The present situation in Europe is due to a period of unusual trade activity, combined with the conservatism of European operators, which has prevented them from taking such measures to meet the demand and increased production as would naturally suggest themselves to Americans. To this is added in France and Belgium the impossibility of increasing production to any considerable extent; and in Germany the close control of the coal trade by syndicates, which have adopted the short-sighted policy of exacting a large immediate profit from the necessities of manufacturers in preference to preparing for larger trade in the future. For the time the difficulty is a pressing one, though probably the alarm is greater—or at least noisier—than is really warranted.

If we are to cultivate foreign trade it is well to examine the ground carefully, and thus avoid wasting effort. Thus we do not believe that there is any probability of the establishment of a large coal trade with Great Britain; or, indeed, of anything more than a few special and exceptional shipments. The coal output of Great Britain last year was 220,085,303 long tons, of which 43,108,568 tons, or 19.5 per cent., were exported. If the home consumption is to increase in greater proportion than the exports, the demand will be met by reducing the latter rather than by bringing coal from abroad. No large export business to that country is to be expected until the consumption exceeds the output; and that is still a remote contingency. Our opportunity is rather to take the foreign customers of Great Britain, the buyers of coal whose demands, apparently, have not been met satisfactorily this year, so that they are looking for other supplies.

The total exports of coal and coke from Great Britain for the eight months ending with August this year were 30,217,726 long tons, an increase of 1,474,373 tons, or 5.1 per cent., over the corresponding period of last year. It is interesting to note the distribution of these exports, and we find it given this year as follows:

	Tons.	P. c.		Tons.	P. c.		Tons.	P. c.
Russia	2,308,687	7.6	France	5,624,547	18.6	Brazil	537,659	1.8
Sweden	1,972,687	6.5	Portugal	475,966	1.6	Gibraltar	211,693	0.7
Norway	898,987	3.0	Spain	1,668,562	5.5	Malta	293,962	1.0
Denmark	1,322,417	4.4	Italy	3,576,684	11.8	East Indies	388,102	1.3
Germany	3,851,809	12.7	Turkey	241,585	0.8	Other countries	4,322,140	14.3
Holland	1,260,868	4.2	Egypt	1,262,071	4.2			

In addition to the coal thus exported, we find that the coal shipped for the use of steamers engaged in the foreign trade was 7,728,318 tons, which would bring the total up to 37,946,044 tons. In our own returns the quantity of bunker coal for steamers is not given; it has been estimated by various authorities at from 5,000,000 to 7,500,000 tons, and probably exceeds 6,000,000 tons. It has been for years the practice with foreign steamers to fill their bunkers on this side of the water, both price and quality of coal being better than they can secure in Europe.

Outside of Great Britain there is a considerable export of coal from several European countries. The following table shows the exports and imports of the leading nations on the Continent of Europe for the first half of the years given; the discrepancies between the figures here given and those in the table above are due to the shorter period covered by the second table:

	—Imports.—		—Exports.—	
	1899.	1900.	1899.	1900.
Germany	2,217,673	2,651,250	5,543,999	6,483,976
Holland	1,893,116	2,347,759	169,674	402,429
France	5,698,040	7,036,830	645,561	639,170
Belgium	1,236,335	1,675,353	2,068,258	2,468,590
Italy	2,294,639	2,079,483	.....	.....
Spain	768,083	723,954	.....	.....
Austria-Hungary	2,106,248	2,728,163	2,728,163	215,130

On investigating the trade of these countries, however, we find that the coal exports are almost entirely to contiguous countries, and very much in the nature of local trade. Thus Germany exports to Holland, Belgium and Russia; Belgium to France and Germany; Austria to Germany; and so on. None of them ships any considerable quantity beyond seas. Imports are, of course, very largely from contiguous countries, except in the case of France and Italy, whose imports are chiefly from Great Britain. The German imports of English coal are mainly at Hamburg and Bremen, and are not large enough to have a national influence on its coal trade.

We see, therefore, that the main reliance of Europe for any supplies of coal needed beyond what each country could draw from its own mines, or those of its immediate neighbors, has been upon Great Britain. Heretofore that country has had an abundant surplus to sell them, but now its own demand is increasing faster than the capacity of its mines. The opportunity is therefore afforded to replace the British supplies by American coal, which we can afford to sell at a lower price than the English operator can, because we can mine it and place it at the seaboard at a lower cost. The main question on which, at present, the development of this trade rests, is that of ocean freights. Just now the condition of the shipping market is rather discouraging to exporters. The absorption of a very large number of vessels as military transports, by the British to South Africa, by several European nations to China, and by the United States to the Philippines, has removed from competition most of that floating element which is usually hunting for tonnage and keeps down rates. There has not been time to enlarge the number of vessels to any great extent, and it promises to be a long time before any considerable number of the transports are released for general trade. This state of things will pass away in time, however; vessels will be available and rates lower. If we are to build up a permanent trade, however, there should, and probably will, be a corresponding fleet of vessels to carry it; and it is quite possible that in a few years we may see lines of ocean steam colliers owned by the Pennsylvania, the Baltimore & Ohio, the Norfolk & Western, the Chesapeake & Ohio, and other important lines which deliver coal at the Atlantic ports. If we wisely apply the lessons we have learned on the Great Lakes, adapting them to the varying conditions of the Atlantic, we ought to be able to carry coal at rates far below those now prevailing, and low enough to leave a good profit to the mine operator on his foreign sales.

The present prices at which good bituminous coal can be had for export range from \$2.10 to \$2.35 f. o. b. Philadelphia, Baltimore, Norfolk or Newport News. Recent charters of vessels have been made at \$5.10 to \$5.30 to Mediterranean ports, and 50 to 75 cents lower to English Channel ports. At these rates good steam coal could be placed, say at Marseilles, for about \$7.50, or nearly \$1 less than Welsh coal now costs there.

In entering upon this trade we must remember that the present industrial pressure is going to slacken after a time—indeed has already begun to do so. Demand will lessen, and prices will decline. Whatever trade we secure now can be held in future only by furnishing good coal and selling it at a lower price than it can be had elsewhere. In countries such as Germany, which are themselves large coal producers, foreign coal can only be sold in very small quantities, when trade is slack and demand at a low ebb. In countries such as Spain, Italy and Holland, which produce little or no coal, or like France, where the production is normally less than the consumption, there will be always a chance to sell coal, but in the face of much keener competition than at present, and, consequently, much lower prices.

We have spoken here only of the European trade, because that is at present the most important. With the countries on this side of the Atlantic—the West Indies, Mexico and South America—we have already an established business, which is sure to increase; and it requires only ordinary trade sagacity to give us the advantage of our rivals. We do not think there is much opportunity for coal trade with the East, since the Eastern countries are already supplying themselves with coal to a large extent, and with the industrial development which is already well advanced in Australia, in Japan and its dependencies; which is started in the Dutch East Indies and Eastern Siberia; and



which will come in time even in China; the East will be well able to take care of itself.

There is another view of the coal question to which space will permit us to refer very briefly now. The industrial power of a modern nation depends very largely on its supplies of cheap fuel. Other things being even, the nation which has the cheapest coal has a long start in the commercial race. When to this fuel supply is added, as in the United States, an abundance of raw materials of almost every kind, and a population industrious and intelligent enough to take full advantage of its opportunities, can there be any doubt where the industrial and commercial supremacy of the world will rest?

#### NEW PUBLICATIONS.

"Modern International Law." By George E. Chipman. Upper Alton, Ill.: John Leverett. Pages, 48. Price, 25 cents.

The author of this little manual, who is Professor of Political Science in Shurtleff College, makes only modest claims for his book. It is intended as an introduction to the study of the subject for the use of students who expect to follow it up by the reading of more elaborate manuals. It will have, we think, a more extended use than this, since it presents in concise form those general principles of what is called international law, a knowledge of which is very serviceable to almost every reader in these days of complicated and intimate relations of governments. Prof. Chipman has based his work on the highest authorities—such as Wheaton, Woolsey, Snow and Lawrence—and has given a clear and compact statement of those general rules established by precedent and general consent, which are supposed to regulate the intercourse among nations and generally receive theoretical—though not always practical—respect. Almost every reader will find this little book interesting and convenient for reference in connection with the news of the day.

"Souvenir of the Victoria Jubilee Bridge." Montreal: Compiled for and presented by the Grand Trunk Railway Company. Illustrated.

This very handsome book, with its chased metal covers, fine engravings beautifully printed letter press, constitutes a souvenir which will doubtless be carefully preserved by those who are fortunate enough to receive a copy. It commemorates the completion of the new steel bridge over the St. Lawrence at Montreal for the Grand Trunk Railway which has been named the "Victoria Jubilee Bridge." This replaces the Victoria tubular girder bridge, which represented at the time of its erection in 1854-59, the greatest progress achieved in bridge design and construction. It served its purpose well for many years, but has now given way to the new structure, which in its turn shows the progress made in the art of bridge-building up to date. Fifty years ago the St. Lawrence & Atlantic Railroad, the first beginning of the Grand Trunk, began to run trains from Longueuil, on the south side of the St. Lawrence, connecting with Montreal by ferry; and the first illustration shows the little train shed and ferry landing which were then sufficient for its business. Other engravings show the Victoria Bridge, the new Jubilee Bridge and other scenes illustrating the progress of the Grand Trunk Railway. The good taste shown in the design and the good work in the execution of this book must be highly praised.

"Supplement to the Directory of the Iron and Steel Works of the United States." Second Edition. Prepared under the direction of James M. Swank. Philadelphia: The American Iron and Steel Association. Pages, 80. Price, \$2.

In March last the American Iron and Steel Association presented a descriptive list of the consolidations of iron and steel companies which had taken place in the United States since January 1st, 1898, 23 in all. It now presents a more complete list of iron and steel consolidations, embracing those organized since March, as well as those previously described, numbering 30 in all, the information relating to each consolidated company being revised and verified down to August 15th. In preparing this edition the list of consolidations has been confined to those which embrace the ownership of blast furnaces, rolling mills, steel works, tinplate works, and auxiliary industries, including shipbuilding and bridgebuilding works. Only companies that have been consolidated since January 1st, 1898, are described in this volume, which is a supplement to the last edition of the "Directory of the Iron and Steel Works of the United States." No new edition of the "Directory" will be printed this year.

The present edition of the "Supplement" comprises 78 well printed pages and contains an authorized description of the organization of each of the 30 consolidations mentioned, giving its capitalization, list of officers, general office address and address in most instances of the district offices, and a list of properties owned or operated by it, with the names of previous owners of iron and steel works. The name and the character of every plant are fully stated. For detailed information concerning the plants mentioned and their products reference is given to the page or pages in the "Directory" in which they are fully described. Iron ore mines, coal mines, coke ovens, railroads, and lake vessels owned by the consolidated companies are also given in sufficient detail. The "Supplement" is printed and bound in uniform style with the "Directory," and brings that work practically up to date. The value of these publications is realized by all who are connected with the trade.

"History of the Prudential Insurance Company of America (Industrial Insurance). 1875-1900." By Frederick L. Hoffman. Newark, N. J.: the Prudential Press. Pages, 340; illustrated.

This work was prepared originally at the request of the United States Commission to the Paris Exposition, and while the title calls it a history of the Prudential Company, it is in fact a history of industrial insurance in the United States. Of this the Prudential was the real pioneer; efforts in that direction were made earlier, but they all failed through

mismanagement, or rather through ignorance or neglect of the fundamental principles of life insurance.

The book is divided into 16 chapters, the first being introductory, while the second, third and fourth treat of early attempts to organize workingmen's insurance in America and of the conditions up to and in 1874. Chapters 4-15, inclusive, give the history of the Prudential Company, while Chapter 16 is a summary of conclusions and results. Mr. Hoffman, who is a master of his subject and an actuary and statistician of marked ability, has covered the ground as well as possible in the space allowed him. The history of the Prudential is well told, and in addition the whole subject of industrial insurance—or insurance for people of limited means—is thoroughly considered. The size of the book required a good deal of condensation and permitted only brief references to many matters of interest; but we hope to see these more fully treated in a larger and more nearly complete work, for which Mr. Hoffman has already collected much material.

The Prudential Company has been carefully and ably managed and the magnitude of its business can be estimated from the statement that it has issued in all over 14,000,000 policies, has paid its policy-holders nearly \$43,000,000, and has at present assets amounting to nearly \$34,000,000. Its business has grown, at first slowly but steadily, in later years very rapidly, and it is now by far the most prominent company of its class in America, or in the world. Its history is interesting also as a chapter in economics. Mr. Hoffman has included some valuable statistical tables in his book, and it must not be regarded as an attempt to magnify his company in any way, but simply as the record of a modern movement, of which that company is the leading representative.

#### 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.

"Outlines of Modern International Law." By George E. Chipman. Upper Alton, Ill.: John Leverett. Pages, 48. Price, 25 cents.

"Supplement to the Directory of the Iron and Steel Works of the United States." Corrected to August, 1900. Compiled and published by the American Iron and Steel Association, Philadelphia. Pages, 80. Price, \$2.

"Power Generation: Comparative Cost by the Steam Engine, Water Turbine and Gas Engine." By John B. C. Kershaw. Paper read before the British Association at the Bradford Meeting, September, 1900. London: published for the Author. Pages, 16.

#### 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 Elmore Concentrating Process.

Sir: In your issue of August 18th, 1900, you gave a description of the Britannia Copper Mine in British Columbia. I have lately seen some samples of ore from this mine which seem to consist of finely divided iron and copper pyrites which will be found difficult to treat by any system of concentration. It is stated that in some tests made for this purpose, only 55 per cent. was recovered. On the sample of ore sent here for test by the Elmore oil concentration process, a recovery of 99 per cent. was shown on laboratory tests. The ore seems particularly adapted to this process, owing to the difficulty of smelting profitably by water concentration, and the impossibility of smelting profitably the whole mass of silicious rock with a comparatively small percentage of mineral distributed through it. It would be quite useless to treat such ore in a jig, as the whole rock requires fine crushing to free the mineral; and in this respect it closely resembles the ore of the Glasdir Mine, which is now being practically treated on a scale of 50 tons per day in this country, after failure of water concentration. Some other samples of copper ore from British Columbia have also been received by the Elmore Syndicate. I understand also that similar ores are found in Washington and Oregon. The Elmore Syndicate would like to receive samples of these ores, or of any ores found difficult to concentrate by existing methods.

I may add that the syndicate does not claim anything revolutionary for the Elmore process, but simply that it may be found applicable in some cases where existing methods do not give satisfactory results.

London, Sept. 21st, 1900.

W.

#### Some Practical Notes on Mine Pumping.

Sir: Draining mines is usually made more difficult and expensive by the grit and mineral contained in the water; also by the fact that the power is transmitted to the pump or generated on the surface and transformed at the pump. In deep mines station pumping is adopted with advantage. There are only 3 different types of pumps to be considered:

1. Power pumps (Jackhead, Cornish and Belt pumps).
2. Steam pumps (steam head pumps).
3. Jet pumps (injectors and inspirators).

For preliminary work there is also a distinct type which may also be mentioned. The most powerful known for its size and cost, the simple smooth-cased whirlpool pump, as it has an efficiency of 65 to 70 per cent. and when set with back pressure on the cylinder will raise water 60 to 80 ft.; at lower lifts can be speeded to give the water column a velocity of 50 ft. per second.

The best triplex belt pump has an efficiency of 75 per cent., and when driven by steam engine requires 2 to 4 lbs. of coal per horse-power-hour. Standard steam pumps, proportioned for duty, if such be possible, require 12 to 14 lbs. of coal per horse-power-hour.

Inspirators and injectors require as high as 100 lbs. of coal per horse-power-hour. It is not to be inferred from this that injectors are wasteful under all conditions, for when used as a boiler feeder all the steam is condensed and as latent heat is returned to the boiler. The high efficiency thus attained and universal use has misled mine operators into using them as mine pumps; it would be as appropriate to use a water heater to drain a mine.

Steam pumps are used principally in the West for draining mines. The condensation in the steam pipe as it descends is enormous and has only to be pumped out again. The most serious defect is the direct coupling of a water piston to a steam piston, the disadvantages of which are readily seen.

There came directly under my notice in practice a case where a prospector sank as deep as he could, taking the water out by means of a hoisting engine; he then installed a standard steam-pump proportioned for duty, only to find that the boiler must be increased in size four times.

I had occasion to run a 5-in. plunger duplex sinker at the Anchoria Leland mine, Cripple Creek, Colo.; it was used as a station supply pump, being set near a 30-H.-P. boiler, the lift being 500 ft. When the steam pressure was 160 lbs. the pump would start at ordinary speed and soon slow down. I am now running a 5-in. plunger triplex pump at full speed, with a lift of 250 ft., through 1,600 ft. of pipe, using 6½ horse-power. The cylinders and valves are set under a back pressure of 1 lb. In these two instances the question of transmission of power does not enter.

We are at present pumping out a 60-ft. shaft with a 5-in. geared double-acting pump.

The cylinder is set in the bottom of the shaft and the crank-rod is produced down and transmits the power down from the gearing on the surface. To run up to the full speed 2 H. P. is used. Is it not time for some manufacturer to obtain the design from the proper quarter and build a mining pump?

What we mean by this is one adapted to the work, and which will give a better efficiency than 1 : 4, as compared to belt pumps.

What we wish to show is that all pumps must be geared down, as all economical engines, whether steam, compressed air, electric motor or any economic transmission, run too fast for the pump piston.

Walking-beams are rather cumbersome. The manner of transmitting the power is not the best. The water column is large and the flow is alternating. Jackhead pumps are little better. There should be 2 or 3 cylinders with overhanging solid plungers, thus preventing grit from packing; the triplex plungers being operated by crank pins set at 120°, giving a continuous flow of water, permitting the use of a small discharge pipe.

The power should be transmitted by simple mechanical means, and not generated or transformed at the pump, as there is no place on a mining pump to set a transformer or generator, except in rare cases where a station pump is used.

By this I am not condemning any special pattern or make, but showing the requirements and wants of the common miner whose interests it is my aim to help. While doing some preliminary prospecting in Montana my party was in need of a sinking pump; the lift was 30 ft., 300 gal. per minute. After making application to the different manufacturers it was found there was nothing in the market suitable, so we designed and had built in part at Daly's machine shops, Hamilton, Mont., a sinking power pump which weighed 150 lbs. The power was transmitted by vertical shafting, making 1,000 revolutions per minute, having an efficiency of 65 per cent.

We are now confronted by the same difficulty when deeper pumping is contemplated, if any regard is paid to economy, efficiency and correct mechanical principles; but the ordinary miner is not in a position to do costly experimenting and original designing.

W. I. Fleck.

Gold Hill, Oregon, Sept. 20th, 1900.

#### CHARLES EDWIN BEDELL.

The sudden death of this young engineer, whose personal virtues and professional progress had been exhibited under my own observation, touches me with a peculiar sense of loss, but lays upon me, at the same time, a special obligation of testimony to be borne, both in grief and in gratitude.

Charles Edwin Bedell was born at Montclair, N. J., May 19th, 1863, and died September 28th, 1900. He was the son of Mr. Edwin F. Bedell, of the firm of Cooper, Hewitt & Co., of New York. Educated first in the excellent public schools of Montclair, he was matriculated at Yale in 1880, at the age of 17, "without conditions," and was graduated with high honors in 1884. Entering the works of the New Jersey Steel and Iron Company, belonging to the firm above named, and then under the skillful management of Frederick J. Slade, he soon won recognition and confidence, and was advanced to a responsible position as one of the engineers of the company. This result was all the more remarkable, because he had taken at Yale not the technical engineering course, but the old-fashioned one—literary, classical and mathematical. His rapid progress as an engineer was a striking instance of the value of a trained mind, competent to acquire and assimilate special knowledge, and of a character conspicuous for absolute integrity, thorough loyalty, intelligent appreciation of the problems of work, and fidelity beyond suspicion. These qualities Mr. Slade was not the man to ignore or undervalue; accordingly he regarded Mr. Bedell as one on whom he could rely; and this estimate gave to the young employee the opportunity of which he was not slow to avail himself. No doubt there was also in him a special capacity for his work, which opportunity soon developed. His brother, Dr. Frederick Bedell, younger by five years than he, is already famous as Professor of Physics at Cornell University, one of the editors of the "Physical Review," published there, and author of important contributions to some abstruse branches of physical science. It is natural to infer that taste and fitness for such studies ran in the blood, and expressed itself in the two brothers in the two spheres of practice and theory.

Charles Bedell retained his position with the New Jersey Steel and Iron Works until his death. During the years of his service he supervised the erection of many important structures, among which may be mentioned sections of the Brooklyn Elevated Railroad and the Park Avenue viaduct, as well as many bridges, buildings, etc. At the time of his death, he was the engineer in charge of the Brooklyn towers and land-span of the new East River Bridge. He lost his life by falling from a height of 90 ft. in that structure, receiving injuries from which he died almost immediately.

The thought of this sudden and premature close of a stainless and promising professional career cannot be wholly suppressed by any consoling reflections. It is a tragedy. But it is not a tragedy which makes virtue go down in failure and disgrace, or calls for tears only, from helpless and hopeless spectators. Death in the midst of duty found him not unprepared; and to those who knew him, the memory of his blameless, honorable life presents, not a pitiful fragment, but a complete, full-rounded, shining example.

R. W. Raymond.

#### THE SUDBURY COPPER-NICKEL DISTRICT, CANADA.

By Our Special Correspondent.

The Sudbury copper-nickel district is not getting the attention it deserves in the mining press of either Canada or the United States. Of course readers know of the Canadian-Orford Company, but that is all. With the advent of several other companies, notably the Mond (English), the Great Lakes (Boston and Duluth), the Fischer-Neumann (Chicago), and the Nickel Copper (Hamilton and United States), all of which have optioned and purchased large tracts of mineral lands, this section is becoming more generally known.

The Canadian-Orford people are opening several new mines on the lands purchased by Mr. S. J. Ritchie, for the company, back in the eighties. Of these the Clara Bell is said to be quite promising, while the Frood and Lady McDonald are somewhat doubtful. This company is also erecting buildings for a complete refining plant at Copper Cliff, their smelting site and town. They now have six stacks in commission smelting about 800 tons of ore and turning out about 100 tons of copper-nickel matte per day.

The Mond Company is at work opening its mines in Denison township, and erecting a smelting and Bessemerizing plant at Victoria station on the Canadian Pacific Railway about 22 miles west of Sudbury. It is understood that it is the intention of the company to concentrate the ores up to an 80 per cent. matte for shipment to their refineries in England. Just how this company expects to arrange to escape paying export duties when such are imposed by the Government is a matter of the future. But a majority of our people are coming to the conclusion that the export duty will never become a fact. The Mond Company has taken an option upon the well-known Levack mines of Stobie, Tough and others on the basis of \$120,000 in money and 25c. per ton royalty on ores until the owners shall have received the sum of \$350,000. The ores are of low grade, but are said to be found in very large bodies and at shallow depths.

The Algoma Commercial Company (the Clergue-Pitcairn syndicate) is also getting into this field.

Since about all of the copper-nickel lands of known value have been picked up by the companies named above, the prospectors are turning their attention to the Wahnapiet gold belt, which extends along the south and east shores of Lake Wahnapiet; and to opening some copper mines (chalcocopyrite in quartz) along the Soo Branch railroad between Sudbury and Sault Ste. Marie. They are also exploring for iron in the country northwest along the main line of the Canadian Pacific Railroad.

**WIRELESS TELEPHONY.**—At the meeting of the British Association Sir William Preece announced to Section A, Pure Physics, that he had succeeded in transmitting speech without wires, with ordinary telephonic apparatus, between the Isle of Anglesey and the Skerries Rocks, a distance of 2.8 miles, and also between Rathlin Island and the north coast of Ireland, a distance of 8 miles.

**COST OF MECHANICAL AND CHIMNEY DRAFT.**—In a recent paper on Mechanical Draft read before the New England Cotton Manufacturers' Association, Walter B. Snow states that from a comparison of a considerable number of plants it appears that under ordinary conditions: "A single forced-draft fan with direct-connected engine and short stack can be installed for less than 20 per cent. of the cost of a brick chimney. A single induced-draft fan with direct-connected engine and short stack will cost less than 30 per cent. of a chimney; and that a duplex induced-draft apparatus consisting of two fans with direct-connected engines, inlet and outlet connections and short stack will cost but little more than 40 per cent. of the cost of a chimney. The latter arrangement is only employed where, as in the case of an electric lighting plant, it is the practice to introduce relay units."

**PRICES OF DIAMONDS FOR BORING.**—At the recent Congress of Boring Engineers in Frankfort, M. Jacques Baszanger read a paper on the great rise in prices of diamonds for industrial purposes. After referring to the practical "cornering" of the Brazilian supply by one firm, he went on to predict that directly things in the Transvaal have quieted down and regular work in the Rand gold mines has recommenced, the price of carbon will experience a further rise. The direct cause of the rise of the bort price has been the Boer invasion of the diamond district round Kimberley, through which the De Beers Company had been compelled to stop work at their mines for fully six months. A further cause of the rise of bort is the fact that a great many boring engineers have tried to replace the carbon which has become so expensive with bort. This has also augmented the demand for drilling bort to such an extent that buyers almost fight for the small quantities that are being put into the market.



## GOLD DREDGING ON SNAKE RIVER IN IDAHO.

Written for the Engineering and Mining Journal by F. Powell.

The history of gold dredging on Snake River in Idaho is in many respects a repetition of the story of the first New Zealand dredges. Experiments and repeated failures under somewhat different conditions are found in both cases. The same period of evolution seems to have been necessary in both cases. It might seem at first sight that having been started so much earlier in New Zealand and so much progress having been made there before any attempts were made here, the process of evolution should have been very much more rapid in the latter case than it has been. The indications are different, however, and much of the New Zealand practice seems to be inapplicable, particularly the methods of saving the gold.

The bars of the Snake have appeared to be a very promising field for the gold dredge. A stream with a moderate current of 3 miles per hour and no dangerous floods; a climate permitting operation for 9 or 10 months in the year; oceans of gravel from which "prospects" of 50c. to \$5 per yard can be shown with a pan or shovel; boulders generally absent; pay dirt from the top down, apparently, so that deep dredging and cleaning bedrock are unnecessary; all these seem to make the ideal ground for the gold dredge, and gold dredging the simplest matter imaginable. It has proved otherwise.

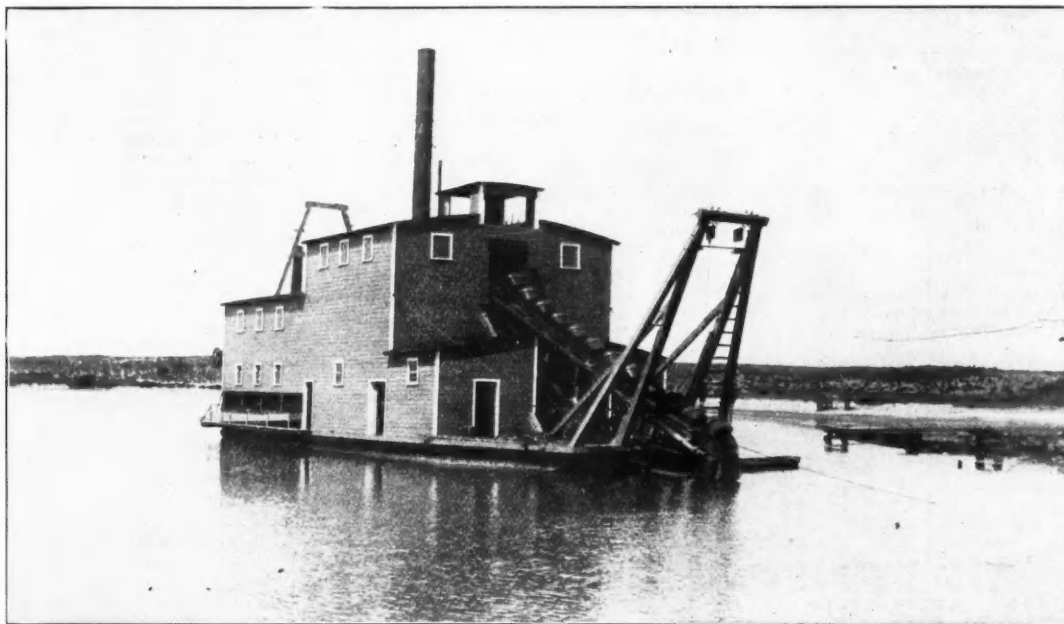
The reasons for the numerous failures to realize the success promised by so many favorable conditions are chiefly two. The first is the character of the deposits with respect to the distribution of the values. In

will be seen at once to be very considerable. The difficulties involved in arranging and caring for the copper plates or amalgamators for 400 to 500 tons per day in the limited space of a dredge make this method impracticable.

The only practically successful method of saving the gold is known locally as the burlap system. This involves screening to  $\frac{1}{8}$  in. to remove the coarser portion, and the sluicing of the finer portion in broad shallow sluices or tables covered with burlap or similar material. The sand is made to flow over these tables in a thin stream, and almost as much skill is required for good work as if they were copper plates.

The first dredges were all of the suction or centrifugal pump style, and until recently one dredge of this kind, owned by the Sweetzer-Burroughs Mining Company of Minidoka, was the only one that had been continuously successful. This dredge has been worked on a part of the river where the pay gravel is finer and looser than the average, and by confining operation to material of this kind it has been able to handle sufficient quantities to make a profit, in spite of the excessive power required, and the large amount of wear and tear on the pump, as well as other parts of the machinery.

This dredge is itself a product of evolution. The first two or three years were spent in experimenting, and under the management of a man less qualified for the work than Mr. Burroughs or with insufficient means to carry it on through a period of financial losses in spite of the most economical business methods, the enterprise would have met the usual fate and added one more to the list of failures on Snake River. The owners have realized, however, that the field for profitable work with this type of dredge is limited even on Snake River, the gravel of



GOLD DREDGE ON SNAKE RIVER, IDAHO.

most cases the pay is confined to a few inches of gravel at the surface of the bar. This pay streak is usually more compact than the gravel immediately below, and a glance will suffice to show the experienced miner its limits when exposed in the face of a cut. The loose, light gravel below will seldom show more than a few scattering colors, while the top streak may run several dollars to the cubic yard. The bars between the banks of the present stream are nearly all of this character. They are simply a re-deposit of the material contained in the older bars found all over the Snake River Valley, sometimes at or near the level of the present stream and sometimes many feet higher. In some cases these older bars have a pay streak 2 or 3 ft. thick, and in rarer instances the values extend 5 or 6 ft. down, gradually diminishing with depth, instead of increasing. In all cases the gravel bars are richer on top than anywhere else, and a sample taken from the first few inches is no indication at all of the average value for any considerable depth. In dredging it is necessary to excavate to a depth of at least 4 ft. below water level, and if the banks are worked, it is necessary to handle all the material above water level as well, so that the work involves handling a good many yards of barren material to get one yard of pay gravel. This cuts down the average value per yard handled in the same proportion, and the result in practical work is values ranging from 5c. to 15c. per cubic yard.

The second reason for failure is the difficulty in saving the small values contained in this great volume of material. The gold is very fine, averaging about 1,000 colors to the cent, and always associated with magnetic iron sand, from which it is separated with some difficulty, owing to the minute size of the particles and their shape. The larger particles are flat scales, sometimes cup-shaped, and are more easily lost than the very fine ones, which are more in the shape of grains.

Screening and direct amalgamation have been tried, and while successful in a small way, have never proved satisfactory on a large scale because of the large capacity required in the amalgamators. In order to make a profit on 10c. gravel it is necessary to handle at least 1,000 yards, equivalent to about 1,700 tons, a day. As 25 to 30 per cent. of this will pass a screen with  $\frac{1}{8}$ -in. openings, the amount of copper plate surface required (or equivalent capacity in other forms of amalgamators)

the richer bars being coarser with occasional boulders of lava, and in extending their operations they have adopted the bucket or elevator system. Their new dredge, built by the Hammond Manufacturing Company of Portland, Oregon, for the Yale Dredging Company, shown in the accompanying illustration, is of this type.

One dredge of a different type had a meteoric career about two years ago. It was equipped with an "orange peel" bucket for raising the gravel. The screening and gold saving appliances were complicated and unsatisfactory from beginning to end. One difficulty encountered by other dredges, the proper distribution and treatment of the sand, was overcome in a very effective way by the action of the bucket. This never closed perfectly tight. Very often a stone would be caught in the joint and hold the lips apart 1 in. or more. The result was the sand mostly washed out of the gravel as the bucket came up and was left in the bottom of the river. Of course the gold went with the sand and the clean-up was small.

The Yale Dredging Company's new dredge differs materially from others previously built by the Hammond Manufacturing Company in the screening and arrangement of the burlap sluices. The Cariboo riffles used on previous dredges in the main sluices are replaced by a grizzly 22 ft. long placed 6 in. above the bottom of the sluice, which is 4 ft. wide and has a grade of 1 in 12. No effort is made to save anything in this sluice, the object being simply screening. The gravel is discharged by the sluice on to a shaking screen 5 ft. wide by 30 ft. long, made in two sections, where the screening is finished. The shaking screen delivers the gravel free from sand and water to the stacker or tailings elevator. Under the shaking screen is the sand-box and between them a distributor which distributes the sand equally throughout the length of each of the four compartments of the box. From the sand-box the sand and water are drawn off directly on to the burlap sluices arranged in two banks on each side. There are 8 of these sluices in each lower bank and 7 in the upper, making 30 in all, with a total area of about 1,300 sq. ft. One of each lower bank is thus always exposed, and by changing the position of the upper sluices one at a time the lower sluices are exposed one after the other for cleaning up. The uniform distribution of sand and water and nice adjustment of grade of the sluices are essential to a close saving. The distribution is ob-

tained by the arrangement described, and the sluices are provided with means for quickly changing the grade so as to adapt them to the varying proportion of sand contained in the gravel handled from day to day.

The dredge is 90 ft. in length and 30 ft. wide, and has a nominal capacity of 180 cubic yards per hour. In actual work 130 to 140 yds. are handled per hour, or about 2,500 yds. per day, allowing for occasional stops to reset the lines. Power is furnished by a boiler of 80 H. P., and one horizontal automatic engine which operates all the machinery on the boat, including the winches and the dynamo used for lighting the plant at night. This arrangement of machinery driven by a single engine is very economical in fuel, only about 2½ tons of coal being required for 24 hours. The greater part of the power is required to drive the 10-in. centrifugal pump which discharges 3,000 gallons of water per minute into the head of the sluice.

One feature of this dredge deserves special mention. It is known that considerable values are lost by the occasional spill of gravel in front of the hopper, which gravel falls back into the water under the ladder. Besides this loss there is always more or less material adhering to the inside of the buckets, and where the gold is very fine, as it is on Snake River, the particles have a tendency to adhere to the sides and corners of the buckets even when they appear to dump clean. To recover this loss a small auxiliary pump is provided, which throws two jets of water up into the inverted buckets as they descend, and all material thus washed out, as well as the spill before mentioned, falls on an inclined screen, at the rear end of the ladder way. The fine portion falls into the well immediately below from which the large pump draws its water. All this valuable material otherwise lost is raised by the centrifugal pump and delivered into the sluices.

The power for each separate portion of the machinery is transmitted through a friction clutch operated by a lever in the pilot house. Every part of the machinery, including the 7 winches or drums, is thus under immediate control of the operator.

Besides the suction dredge above mentioned and three ladder dredges built by the Hammond Company, there is one ladder dredge using machinery built by the Jeffrey Company in operation with some degree of success. These five are the survivors of a large number, all the others having been abandoned.

It is probable that with the success achieved by these, gold dredging on the Snake will take a new start. The actual possible results and the means and methods necessary to obtain them having been worked out through years of experiment and many failures, there is no good reason why future enterprises of the kind should not be uniformly successful. Careful selection of the ground to be worked, good machinery properly handled, and strict business management are all necessary.

The cost of operation of the ladder dredges is about as follows per day:

Two and one-half tons of coal at \$6.....	\$15.00
One engineer.....	5.00
One engineer and fireman, night shift.....	3.50
One fireman.....	2.50
Two lever men, at \$4.....	8.00
Three burlap men, at \$2.50.....	7.50
One roustabout.....	2.00
One superintendent.....	5.00
Oil and waste.....	1.50
Repairs.....	10.00
<b>Total.....</b>	<b>\$60.00</b>

Office expenses, team and salaries must be added to this. The cost of operating the centrifugal pump dredge is said to be about \$100 per day. The difference is in fuel consumed and cost of repairs. Allowing \$15 for salaries and office expenses there is an apparent difference in favor of the ladder dredge of \$25 per day.

#### MINING IN NEW SOUTH WALES.

The recently published annual report of the New South Wales Mining Department shows that the progress of the mineral industry in that colony during the past year has been greater than was indicated by the preliminary returns. The estimated aggregate value of the mineral products of the colony to the end of 1899 was £134,064,712. The value of such products for the year 1899 was £6,157,557, being £1,290,559 in excess of the year preceding. The largest increases were in gold, silver-lead and silver, and in copper; but noticeable increases were also shown in the output values of opal, coal, tin, lead and zinc. The total decrease in the output of those products which show a decrease amounted only to some £14,000, and nearly four-fifths of this sum was accounted for by the reduced values of the outputs of alunite and limestone flux. For some years past the coal-mining and opal-mining industries of the colony have each shown a steady advance. Tin showed an increase of £37,828 in value, though there was actually a decrease in the quantity shown as the year's product—an apparent falling off attributed to the circumstance that the tin refined in the colony from imported ores during 1899 was not included.

The total value of gold raised in the colony since the discoveries in 1851, up to the end of 1899, was £47,546,012. The output of gold for 1899 was 155,703 oz. in excess of that for the previous year, and was larger than that of any year since 1863. This increase is evidence of the steady development of the gold-fields of the colony, and of the successful working and treatment of the low-grade and complex ore deposits. The returns for 1900 will be increased by the gold obtained by dredging auriferous rivers. The total number of miners employed in gold mining during the year was 19,348, of whom 811 were Chinese employed in alluvial gold winning. The area of auriferous ground worked was 8,787 square miles, and the approximate value of machinery at the gold mines was £861,828.

The total net value of silver, silver-lead and ore produced in the colony to the end of 1899 was £27,822,997. The output value for 1899 was £2,070,657, which has only been exceeded by the years 1890-94 inclusive. The value for the year would have been greater but for the transfer of smelting operations from Broken Hill to Port Pirie, South Australia. In the silver-lead mining industry 7,893 miners were employed, as compared with 6,396 so occupied during 1898.

The advanced prices of copper and of tin gave considerable impetus during 1899 to these branches of the mining industry, and there were 2,369 copper miners and 1,489 tin miners employed, as compared with 1,976 and 1,083 so occupied respectively during the previous year. There were 5,978 tons of copper (ingots, matte and ore) valued at £399,841 and 827 tons of tin (ingots and ore) valued at £98,428, exported during 1899 as compared with 5,832 tons of copper, valued at £280,887, and 895 tons of tin, valued at £60,600 exported during 1898. Copper and tin obtained from imported ores were not included in the returns for 1899, a departure from the practice of former years.

Much difficulty is experienced in obtaining information respecting the diamond output, but it has been ascertained that at least 25,874 carats of diamonds were won, the estimated value of which is set down at £10,350. This is the largest yield in quantity that has yet been officially recorded for any one year, and nearly the whole of it was derived from the Boggy Camp Field, situated near Tingha. With a plentiful supply of water available there can be little doubt the diamond output will become materially increased.

The annual yield from the White Cliffs opal field has been constantly increasing for some years past, and the value of its output for last year was estimated at £135,000, as compared with £80,000 for 1898.

The year's outputs of antimony, chromium, cobalt, wolfram and scheelite all show increases. Of scheelite during the last quarter of the year about 76 tons were raised from several small claims in the Hillgrove District.

#### RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

**DIVERSITY OF OWNERSHIP OF LAND AND MINERALS.**—The surface of mineral lands may be owned by one person and the mineral underneath by another, each with an indefeasible title. When so owned they constitute separate corporeal hereditaments, with all the incidents of separate ownership, and the surface land may be partitioned the same as where there is no mineral under it.—*Smith vs. Jones* (60 Pacific Reporter, 1,104); Supreme Court of Utah.

**LAWS OF MISSOURI AS TO CROSSCUTS IN MINES.**—The laws of Missouri (Laws of 1895, page 227) requiring crosscuts between the parallel entries in coal mines, shows the object of such crosscuts is circulation of air in the mines, and not for passways or places of rest, and a mine-owner is not required to make them safe for such purpose.—*Lenk vs. Kansas and Texas Coal Company* (80 Missouri Appellate Court Reporter, 374); Appellate Court of Missouri.

**CONSTRUCTION OF GAS LEASE.**—Under an oil and gas lease providing for a certain annual rental payable quarterly for the product of each well, and reserving a right to the lessee to terminate the lease by a reconveyance, the liability to pay for the gas used off the premises was not limited to the time when the gas was actually used, but when the year commenced and gas was used, the whole amount for the year became due and payable, though the gas was not used during the whole year.—*Coulter vs. Conemaugh Gas Company* (Pittsburg Legal Journal, 281); Court of Common Pleas of Pennsylvania.

**COMPETENT EVIDENCE IN MINING SUIT.**—Where one in an action to quiet title to mineral land claimed exclusive adverse possession from the date of his location, and the evidence showed that the other had purchased an interest from prior locators, and had continued in possession with them until they leased it to a third party for a term of years, which expired after the entry of claimant, the lease is competent evidence to show that such other party was in possession by his lessee at the time when the one bringing suit claimed exclusive possession.—*Simmons vs. McCarthy* (60 Pacific Reporter, 1,037); Supreme Court of California.

**COVENANT OF QUIET POSSESSION NOT BROKEN BY SECOND LEASE.**—The covenant of quiet enjoyment in a gas or oil lease is not broken by the mere fact alone that the lessor makes another lease during the term for the same premises, whether the first lessee be in possession or not; but it is broken by any act excluding the first lessor from taking possession of so much of the premises as is required for his operations in connection with same. In such a lease there is always an implied covenant of right of entry and quiet enjoyment for the purposes of the lease.—*Knotts vs. McGregor* (335 Southeastern Reporter, 899); Supreme Court of West Virginia.

**RELEASE OF DAMAGE TO SURFACE IN SALE OF THE LAND.**—The grantees under a conveyance reserving to the grantor, "his heirs and assigns, all coals and minerals beneath the surface of said land, with the sole and exclusive right to mine and remove same by any subterranean process, without . . . any liability for injury caused or damage done to the surface of said land, or to the buildings or improvements which now are or hereafter may be erected on same," cannot recover for injury to the surface land resulting from mining operations thereunder.—*McDade vs. Spencer* (6 Lackawanna Legal News Reporter, 84); Court of Common Pleas of Pennsylvania.

**LIMITED PERSONAL CONTRACT NOT A COVENANT RUNNING WITH LAND.**—A contract by one to sell, and by another's predecessors to buy certain mining property, which contract is personal, and does not in terms run to the heirs and assigns, and under which the prospective grantees, although given possession, could neither sell nor assign, without grantor's consent, until they had become entitled to a deed by performance of certain conditions, one of which was to pay grantor a certain sum out of the property, is a mere option to purchase, with a license to extract ore, and not a covenant running with the land.—*Smith vs. Jones* (60 Pacific Reporter, 1,105); Supreme Court of Utah.



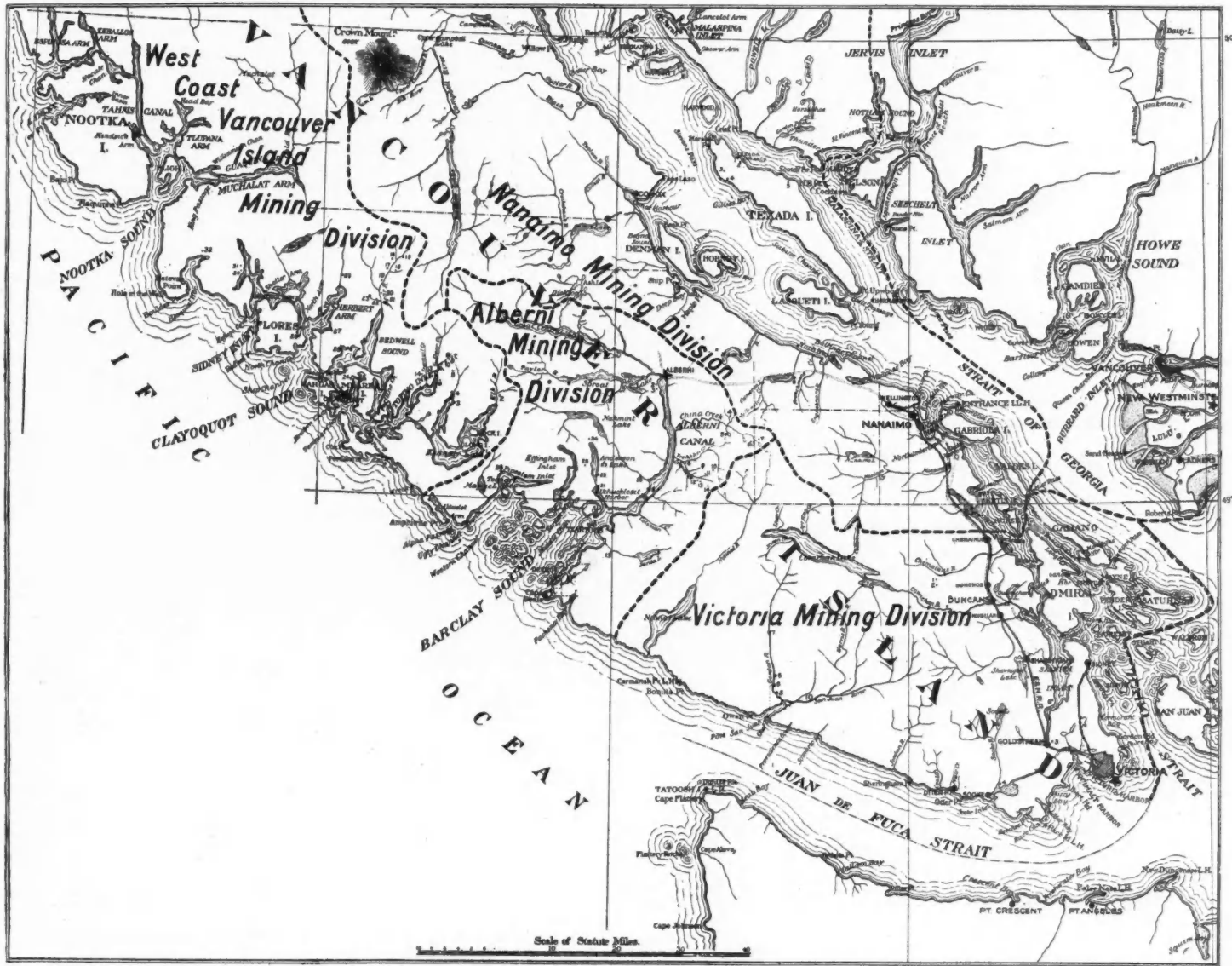
BRITISH COLUMBIA—VANCOUVER ISLAND.

Special Report of W. M. Brewer, Traveling Correspondent.

The mining districts on Vancouver Island are progressing as rapidly and prospering as much in proportion as the mining districts on the Mainland of British Columbia. Of course this prosperity reflects on the city of Victoria, because the supplies for the mining districts are purchased there, and the pay rolls in the various mining camps are principally spent in Victoria. Owing to the excellent steamboat service between the various mining camps on the west coast of the Island and Victoria, together with the attractions in that city, there has been but little effort made to build towns in the mining districts. Consequently, whenever a miner lays off for a holiday, or for any other reason, he almost invariably takes the first steamboat for Victoria, where he can, amidst the many attractions, spend his money according to his own notions, besides finding a better market for his labor when he is ready to return to work. Nearly all the operators of metaliferous mines on Vancouver Island have their headquarters in Vic-

olumbia, with a population of about 25,000; Nanaimo, on the east coast, one of the centers of coal mining operations, with a population of some 10,000 or 12,000; Wellington, North Field and Ladysmith, all in the near vicinity of Nanaimo, and all centers of coal mining operations, while toward the north end on the east coast there are the towns of Cumberland, Union and Comox, the populations of which are also supported by the coal mining and coke manufacturing operations, which are carried on in the vicinity of Comox Harbor; besides these towns on the east coast there are a number of villages along the line of the Esquimalt & Nanaimo Railroad, which have been built up by either the lumber interests or as resorts for the fisherman and sportsman. On the west coast there is only one town, that of Alberni, which is located at the head of Alberni Canal, and is supported by the lumbering, mining and fishing industries.

Comparatively little is yet known of this section, yet, through the efforts of the "Engineering and Mining Journal" during the past two years, it has been brought so prominently before all interested in the mining industry that numerous inquiries are being made almost daily, from syndicates and capitalists, especially in the United States and



MAP OF VANCOUVER ISLAND, BRITISH COLUMBIA.

toria, and when miners or laborers are needed at the workings a requisition is made by the foreman on the head office for such labor as he requires.

Lode mining on Vancouver Island has not yet outgrown its infancy. Coal mining has been the leading industry on the east coast of the island, at Nanaimo, Wellington and Union, for several years past, and its importance is easily recognized when the fact is considered that during the year 1899 the total output of coal was 1,203,200 tons, of which 769,091 tons were exported. The total number of employees in the collieries during 1899 was 3,317, of which 2,499 were employed underground and 868 above ground. The principal foreign markets for Vancouver Island coal are San Francisco, the southern ports of California, Hawaiian Islands and ports in Alaska.

Although the writer has written several articles published in the "Engineering and Mining Journal" at various times during the past two years, relative to the mineral resources of Vancouver Island, yet he has only scratched the surface, as it were, in these descriptive articles. It is but little more than 30 years back when this island was merely recognized as a fur and game reserve for the Hudson Bay Company. To-day one finds within its boundaries Victoria, the capital of British

foreign countries, relative to the possibilities of British Columbia as a whole, and Vancouver Island as an important section of it.

Until the discovery of lodes and deposits carrying the precious and base metals, the city of Victoria had depended for its support chiefly on the sealing, lumbering and fur trading industries, which, together with the expenditures made by the Imperial Government in the defenses along the coast and in Esquimalt Harbor, furnished a very substantial support for the population which had settled there. The discovery of placer gold on Leech and Sooke rivers brought mining men and prospectors into the community, and as these came from nearly every quarter of the globe, it naturally followed that Victoria soon took on a more cosmopolitan appearance. Gradually, too, the natural attractions possessed by that city as a summer resort, and especially the climatic conditions, became known along the coast and in less favored sections. This has resulted in its increased popularity year by year, until to-day it is deservedly recognized as one of the most beautiful and picturesque of pleasure resorts or places of residence on the Pacific Coast.

Although many mineral claims were staked in the early '90s, and some even before then, yet the actual development of them was lim-

ited in extent; not a single metalliferous mine, in the proper acceptance of that term, existed on the island a few years ago. The one weak feature in the mining laws of the province had been taken advantage of, and there were vast areas tied up, the possibilities of which were very promising, but because of the lack of work and the extravagant prices asked, no capitalist could be persuaded to make investments. The defect referred to is the indirect permission by the law to restake ground, instead of performing actual development work, in order to hold title. Many men, who in other walks in life are successful business men, become impressed with the idea that a large acreage of fairly good surface showing was all that was necessary to attract capital and secure big prices for the mineral claims. Consequently many started out prospecting and loaded themselves up with a large number of locations, many of which were not worth recording, and none of which would command prices asked because no work has been done to prove values.

It was not until the Klondike excitement that men experienced in lode mining, and who had a distinct knowledge of the conditions which capitalists demanded should exist, before investing their money in that industry, turned their steps toward the city, and commenced to investigate the mineral resources of the western portion of the island. They found a large number of already staked mineral claims on many of which the surface showings were remarkable in values of the ore, and extent. During the summer of 1897 a good many prospects were bonded to outsiders, who expended considerable sums of money for development work. It was during the summer of 1898, though, that the most progress was made in developing mines.

The accompanying map, which was published in the Minister of Mines' Report for 1899, shows the southern end of Vancouver Island, the boundaries of the mining divisions, and the locations of the principal mineral claims which are in that portion of the island south and west of a line drawn from Oyster Harbor to Crown Mountain, and include that portion of the Nanaimo Mining Division, surrounding Nanaimo Lake, Cameron Lake and Horn Lake.

All the mineral claims already located are in close proximity to the shores of the inland waters; in fact, the only section of the island where any attempt has been made to exploit the interior has been around Goldstream, about 12 miles from Victoria; around Duncans, some 40 miles from Victoria on the Esquimalt & Nanaimo Railway; and Nanaimo Lake, Cameron Lake and Horn Lake. The fact that China Creek, Granite Creek and Franklin Creek, which empty into the Alberni Canal on the east side, yielded placer gold, has been the reason for more extensive prospecting, and consequently the location of more mineral claims than in any of the other districts. The lack of roads and trails has prevented prospectors from exploring the interior.

Alberni Mining Division, on account of the early find of placer gold and the settlement round Alberni of a large number of ranchers, is better provided with roads and trails than any other portion of the west coast. There is an excellent stage road from Wellington to Alberni, by Cameron Lake, a good wagon road from Alberni to China Creek and trails from the main road to the Golden Eagle mineral claim, designated by the number "7" on the map. A fair pack trail has been constructed up Franklin and Granite creeks, and a wagon road built from Alberni toward Great Central Lake, some 34 miles in length. Besides these there are short trails which have been cut by the prospectors themselves, connecting their claims with the main or trunk roads. On the West Coast Mining Division, a wagon road is being constructed up Ucluelet Arm, on the peninsula which has its termination in Templar Channel, and a good pack trail was constructed up Bear River during 1898, from the head of Bedwell Sound, for a distance of 8 miles.

The present government, in the estimates for public works and improvements to be made during the present year, includes an appropriation for a wagon road from Duncans to the Tyee and Lenora mineral claims, designated on the map in the Victoria Mining Division, as Nos. 1 and 2; also for a wagon road along the shore of Ucluelet Arm to Wreck Bay. The construction of a railroad from Wellington to the north end of Vancouver Island has been under consideration for some time, and the Dominion Government was petitioned at the last session of Parliament to grant a bonus for the building of such a road. This railroad would open up and make easy of access the extensive territory lying in the northern part of the Nanaimo Mining Division, as well as the center of the island.

Besides the mineral claims numbered on the map, many other locations have been made and recorded, on some of which regular assessment work has been performed. Many of those locations include groups of from two to seven or even eight claims.

The fact that development work on the Three Jays or Hayes properties on the Alberni Canal; on the Lubbe-Phair and Ralph claim near Goldstream; on the Tyee and Lenora near Duncans; on the Monitor Group, near Uchucklesit Harbor on the Alberni Canal, have resulted in proving that these properties are entitled to be considered as mines, should prove encouraging to owners of other properties, and to prospectors.

**ONTARIO GEOLOGICAL EXPLORATIONS.**—Reports are being received by the Bureau of Mines from the ten exploratory survey parties sent out by the Crown Lands Department to gather information regarding the timber, farming, fishing and mineral resources. (See "Engineering and Mining Journal," June 23d, 1900, page 738.) These reports go to prove that portions of the districts traversed are well-wooded, considerable arable land being found in large tracts, showing that the northern parts of Ontario possess latent resources which are probably as valuable as those under development and will add to the future wealth of the Province. A few minerals of economic value have so far been discovered, but the extent of the deposits have not been thoroughly determined owing to the immense tracts to be surveyed and the short time at the disposal of the explorers.

## THE PRESENT CONDITION OF THE METALLURGY OF IRON IN EUROPE.\*

By Emile Demenge.

All the improvements in iron metallurgy made during the last 10 years have naturally been directed to reducing the cost of production by simultaneously securing fuel economy, labor-saving, and increase of output. The magnetic separation of ores is connected with the wider question of their preliminary treatment, their concentration, the utility of roasting (not only for decarbonizing but also for exerting an influence on the degree of oxidation), improvements in roasting ovens as regards fuel economy, the use of fine ores, etc. Studies of the new coke-ovens with by-product recovery, and the use of compressed coke, are important.

**Pig Iron.**—For increasing the output of the blast-furnace its dimensions, especially the height, have been increased, the hearth and boshes enlarged, and the blast raised to a higher temperature with greater pressure. It became necessary with a more intense working to preserve the lower portion of the furnace profile by arresting corrosion, which has been effected by the use of graphite bricks, external cooling by water and other means. To close the tap-hole there are now, at well-equipped works, steam or compressed-air cylinders, hung from a crane, for mechanically forcing in the clay plug. Double charging appliances, for preventing loss of gas when the charge is lowered, are numerous; and their utility, already considerable with gas-fired boilers, since they permit of continuous firing, is greatly increased now that the gas is utilized directly in motors.

Greater attention is now naturally bestowed on purifying the gases; and appliances for arresting dust are made larger, so that the necessity for cleaning boilers or hot-air stoves has become less frequent; and the stoves can be arranged round the furnace so as to equalize the variable temperatures of the blast. Nearly perfect combustion of the gases on entering the stoves or boilers is now obtained; and the internal circulation of the air and gas is arranged more methodically. The metal is run continuously from the blast-furnaces, thanks to traversing appliances like those of Laughlin and Uehling, which supersede the cumbersome pig-beds, and afford a pig-iron free from sand, and consequently much in request for puddling and for basic-lined furnaces, while mechanical pig-breakers take the place of hand labor.

For conveying away the slag, tipping ladles of 4 to 6 cubic meters capacity, with fire-clay lining, are employed; or, if there is plenty of water, the slag is granulated and made into bricks or cement. The vertical or horizontal blowing engines are compound, running at a speed that is being continually increased, and delivering a volume of blast commensurate with the large output demanded, until the time when they will all be superseded by gas motors, as the work at Seraing and elsewhere leads us to expect.

A subject of capital interest to ironmasters is the improvement in furnace hoists, and the great extension lately given to plant for unloading ore, brought by vessels or by railroad cars, on to stages or into hoppers, that permit furnace cars to be filled without hand labor. For discharging vessels conveyors are traversed on rails along the quay wall, and automatically tip their loads at the desired point, the quantity discharged attaining 250 tons per hour. For charging the furnace, instead of the ordinary vertical lift, there is now an inclined and automatic conveyor-distributor, which raises, with 1 man and in less than 1 minute, a car containing 2 tons of material to the mouth of the furnace 24 m. high, discharging the car and letting it down again.

**Puddle-bars.**—In connection with the finished iron manufacture the only improvement to be mentioned is the direct puddling of molten metal, practised at the iron works at Hourpes, near Charleroi, France, and as to which more and precise information would be interesting.

**Steel Ingots.**—In steelmaking, several new methods have made their appearance; but, unfortunately, not one of the papers at the Congress dealt with them. The Bessemer process appears difficult to improve in its main lines; but several matters of detail are susceptible of improvement, such as the use of pig-iron mixers which increase the uniformity of the metal to be refined, coming as it generally does from several blast-furnaces, while at the same time it contributes to desulphurization, thanks to the contained manganese; a superseding of the method of swinging the ingot molds against a hard substance for removing the ingots, which often causes fracture, by a Keiser or an Evans appliance; casting the ingot molds from a better mixture; the method of recarburizing by carbon indicated by Darby; an arrangement of converters more favorable for a large output, and also more accessible for cleaning, by placing them in line, surrounding them with a platform, and serving them with a ladle running on rails, for leading the molten steel to a single and rectangular pit, the ingot-molds being carried on trucks. A great deal of attention has been bestowed upon the purification of pig iron, and especially its desulphurization, with a view to treatment in the open-hearth furnace. Side by side with the Massenez and Hilgenstock process, which consists in adding molten spiegel to the liquid pig, and the Rollet method, which treats the pig dephosphorized in the cupola in the presence of flux, must be mentioned the Saniter formula based on the use of lime mixed with calcium chloride.

Refining on the hearth has received many improvements; and the furnace production has been increased, thanks to the Wellman or Lauchhammer electric methods, which permit of charging 48 tons of raw materials in less than an hour. Great saving in fuel and bricks must be attributed to the laying down of regenerators with successive and independent checker-work. The maintenance of changing valves has been greatly favored since they have been provided with water circulation; and an attempt has been made to facilitate both charging and casting by making the furnaces movable, either travelling along a line of rails or turning on rollers round a central axis.

The ore process has been more and more employed; and great efforts

\*Abstract of communication to the "Revue Generale des Sciences," of Paris.



have been made to avoid the violent reactions that attack the lining caused by contact between the ore and the molten pig iron. It is thus that with the Talbot method of continuous working, in a Campbell furnace with basic lining and of 75 tons capacity, 20 tons of metal are brought out every 4 hours; and in the Wellman method the difficulty is got over by employing an intermediate mixer, on leaving which the metal is run into a great many small molds, the pieces thus produced being charged with nearly all their heat into the refinery furnace. In another order of ideas—that of Bertrand & Thiel—the metal is passed successively into two furnaces, in which the cylinder is not maintained in the same state of basicity, so as to permit of treating phosphiferous pig-irons too poor in phosphorus for the converter. There has not been much alteration in gas-producers; but reference should be made to the probable revival of water-gas with the Delwik generator, which possesses great advantages over its predecessors as regards yield.

Finished Iron and Steel.—Rolling-mill engines have gradually become more powerful, and they are made either reversing with two or three cylinders or of the tandem type with fly-wheel; and the Kieselbach double-tandem reversing engine has considerable advantages. Preference for the ordinary or for the three-high mill chiefly depends upon the nature of the works and the weight of the ingots to be rolled. The three-high mill, with its continuous working, does not require so strong an engine; but on the other hand it necessitates cumbersome and complicated methods of feeding up and raising the ingots. Thanks to the high speed now employed and to the arrangement (generally in line) adopted, billets 100 to 120 m. long, and beams of 60 m. are now rolled with a single heat; and labor is economized as much as possible by improving the feed arrangement and providing automatic means of transport between the trains, which are generally driven electrically.

Plates are now rolled up to 4 m. wide; and the subdivision of such masses requires shears of gigantic proportions worked by steam or hydraulic power. The plates are brought up to them on rollers at a convenient height for handling, and are removed after shearing by the attraction of an electro-magnet suspended from an electric crane. Continuous trains comprising a certain number of carriers, arranged one after the other and the rolls of which are made to revolve at variable and increasing speeds, transform blooms into billets or billets into wire rods at a single pass. Other special rolling-mills, like that of Bicheroux for wide-flange rails, and that of Grey for beams, constitute efficient means for producing rolled products.

Besides the Gjers soaking pits, the furnaces for reheating blooms and billets are generally continuous and fired by gas, while they are often provided with mechanical charging apparatus. Among new types of special furnaces lately brought out may be mentioned the Hollis, in which the heat is regenerated across the walls; the Immel furnace, with several superposed soles, or floors, and the continuous rotary Douglas-Vickers furnace, the sole of which moves round a vertical axis. In this case also the question of rapidly and economically transporting the rolled products is daily assuming greater importance; and overhead travelling cranes with spans of 100 m. are gradually making their way into daily practice.

The forging press is becoming more and more used instead of the steam hammer; and the new methods of physically examining a metal justify the preference shown by consumers for parts forged without shock. Electric travelling cranes and heating or annealing furnaces fired by gas and provided with either movable soles or movable domes, are now used in iron and steel works. More importance is attached to the form of ingots for preventing cracks than to precautions in the way of gradual heating in intermediate furnaces for avoiding the danger of internal defects; and, instead of a number of men hanging on to the tail of an ingot while it is being forged, there are now counterweight appliances. With the present tendency to employ hollow forged parts, for lightening the weight and preventing defects in the central portion, forging on the mandril is more employed; and the Whitworth method of compressing ingots is still practised. Lastly, hydraulic pressure is resorted to for piercing solid steel blocks to be formed into hollow cylinders, constituting the first stage in the manufacture of weldless tubes, and also for giving the desired shape to plates of greater or less thickness.

**EMERSON'S METHOD OF PRODUCING ELECTROLYTIC COPPER WIREBARS.**

The accompanying sketches illustrate a method of making electrolytic copper wirebars devised by Mr. Elisha Emerson, of Providence, R. I., and covered by United States patent No. 638,917, dated December 12th, 1899.

The object of the invention is to produce bars adapted to be drawn into wire directly from the unrefined metal by electrolysis. The invention consists in the method whereby a spiral strip of metal is produced by electro-deposition on a cathode, removed from the cathode and wound spirally on a cage suspended in a depositing-tank, so as to expose all the surfaces of the strip of metal, and increasing the sectional area of the strip by electro-deposition of the copper on the strip until a bar of sufficient size is produced, which may be rolled or drawn into wire, as will be more fully set forth hereinafter.

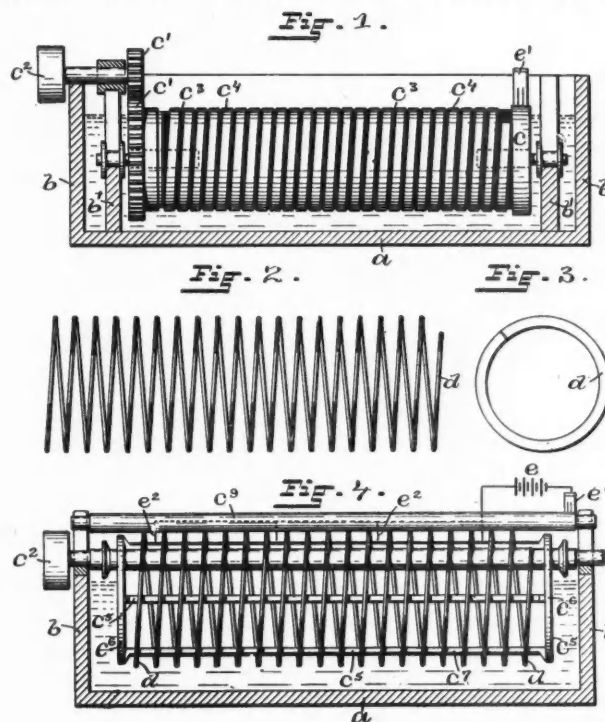
Fig. 1 is a longitudinal sectional view of a tank provided with a cylindrical cathode adapted to produce a spiral strip of metal by electro-deposition. Fig. 2 is a side view of a strip of metal wound spirally. Fig. 3 is an end view of the same. Fig. 4 is a longitudinal sectional view of a tank provided with a rotatable shaft supporting a cage on which the spirally wound wire shown in Fig. 2 is placed and showing the electric connection from the dynamo to the shaft and to the anodes in the tank.

In the drawings, a indicates the bottom of the tank; b b, the ends of the tank; b' b', the bearing-blocks on which the cathode c' is journaled; c' c', gears for rotating the cathode c; c<sup>2</sup> a pulley connected by a shaft with one of the gears c', by which the cathode may be rotated from some prime motor; c<sup>3</sup> c', spirally placed insulating material pre-

erably inserted into a groove formed spirally on the cylindrical surface of the cathode, and c<sup>4</sup> a spiral strip of metal deposited on the cylindrical surface of the cathode.

The exposed cylindrical surface of the cathode is prepared in the usual manner by coating the surface with a solution of iodine in turpentine or by first silvering the surface of the cathode and then treating the same with a solution of iodine in alcohol before the metal is deposited, so that the strip c<sup>4</sup> may be removed. In the construction described, the insulating material c<sup>3</sup> is shown flush with the cylindrical surface of the cathode, because in practice it is found that on depositing the strip c<sup>4</sup> the edges of the same are built up, slightly rounded in cross-section, by the electro-deposition of the metal. This makes the strip c<sup>4</sup> somewhat wider than it would be if formed between projecting insulating material. As soon as a spiral strip of sufficient thickness to be safely handled is formed on the cathode the strip c<sup>4</sup> is removed from the cathode and wound spirally with the flat surface at right angles to the axis of the spiral, as shown in Figs. 2 and 3, in which the edges of the strip extend along the inner side and the outer side of the spiral.

The cage c<sup>5</sup> is preferably formed of wood coated with an acid-proof material, but may be formed of rubber or even of metal covered with rubber or other acid-proof and non-conducting material. The edgewise spirally wound strip d is placed upon the cage c<sup>5</sup>, having circular rings c<sup>6</sup> at the opposite ends connected by lengthwise-extending bars c<sup>7</sup>. As shown in Fig. 4, the cage c<sup>5</sup> is supported on the shaft c<sup>8</sup>, journaled in the ends b b of the tank and provided with a pulley by which it can be rotated. The dynamo e or other source of electric energy is con-



EMERSON ELECTROLYTIC PROCESS.

nected with the brush e', which is in contact with the rod c<sup>8</sup>, supported by the strip d and revolved by it, and the dynamo is also connected by wires e<sup>2</sup> with the series of anodes in the tank. The spirally wound strip d now becomes the cathode. All parts of its surface are exposed and all parts receive additions of metal by electro-deposition. The contact of the rod c<sup>8</sup> with the spiral strip d completes the connection with the source of electric energy. As the shaft c<sup>8</sup> revolves the cage c<sup>5</sup> revolves at practically the surface speed of the shaft, and as the strip d passes through the liquid in the tank the electro-deposition of the metal proceeds.

In practice it is found that the electro-deposition of the metal on the spiral strip d is greater near the outer edge of the spiral on the opposite sides of the flat strip d than it is near the inner edge, so that the bar d' produced is oval or egg-shaped in cross-section. The bar may be rolled or drawn out in the usual manner.

**CARBON MONOXIDE POISONING.**—There have been several instances in steel works, says London "Engineering," of workmen being poisoned by water gas, which consists largely of carbon monoxide. The only remedy hitherto known has, we believe, been the transfusion of blood, but another is now announced by M. A. Mosso in a note to the Comptes Rendus of the Paris Academie des Sciences. Unfortunately, the remedy is not an easy one to apply, as it consists in putting the victim in an atmosphere rich in oxygen and under pressure.

**SHIPBUILDING IN THE UNITED STATES.**—The quarterly statement of the Commissioner of Navigation shows that 308 vessels of 88,790 gross tons were built in the United States, and officially numbered during the quarter ended September 30th, 1900. Of the vessels constructed of wood 160 were sail and 127 steam. Of the steel vessels 4 were sail and 17 steam. Of the whole number 190 were built on the Atlantic and Gulf Coasts, 28 on the Pacific, 32 on the Great Lakes, and 58 on the Western rivers. The largest tonnage, 37,057, was on the Great Lakes, and the next largest on the Atlantic and Gulf Coasts.

## MINING IN THE PHILIPPINES.

Written for the Engineering and Mining Journal by George D. Rice.

The writer has just returned from another tour of the mining districts of the southern portion of the Philippine Archipelago and found that there were a great many more miners at work this time than on any previous expedition. Evidently there are some foreign firms sending representatives for the purpose of locating rich ores and reporting the chances for working. In some cases I observed that the natives were beginning to take a hand at the prospecting. For two or three generations many of the natives have been occupying bamboo shacks within a few miles of rich deposits of gold, silver, lead, copper and other metals without knowing it. I remember that on one occasion a paying silver mine was discovered almost within the yard of a native who had worked the soil all his life but never suspected the presence of the valuable metal. Then the soldiers have taken a hand at prospecting. When I made the trip before the soldiers were too busy fighting insurgents, ladrones and guerrillas to pay much attention to the resources of the country. Now that there is not so much fighting to do, the soldiers are given short furloughs, as they formerly had in the United States, and it is on these that some of the enterprising men have joined expeditions for the hills, and in some cases have returned to their comrades with rich and rare specimens of the mining products of the country.

During the past few weeks some miners operating in the Island of Leyte have discovered deposits of quicksilver. A mining concern which has been looking into the quicksilver products of the country also reports that the metal has been found in paying quantities on the island of Panay. Panay is quite thoroughly prospected at the present time and several metals have been located; preparations are under way for getting the products on a large scale.

The richest lead deposits have been located in the Camarines where several foreign concerns have had prospecting parties working for a number of months. There have also been private parties operating there. The natives are also getting the mining fever to a greater extent than ever before, and the indications are that some of them will share the finds when the proper time comes for the development of the mines. In many cases the natives are used as guides and instructed to point out mines which were worked when the Spanish were here and deserted. I know of one deserted Spanish mine on Panay island which some of the Tennessee soldiers are working. They employ three sets of native hands. This is a scheme which all who undertake to mine in the Philippines should imitate. Heretofore a number of the mining operations failed because of the transient methods of the native miners. They will work only for a stated period, or until they earn enough money to last them a few months, and then they will cease work completely. The Tennessee ex-soldiers have available three times as many natives as required, so that as one gang departs after pay-day another may step in and work for a period, until pay-day for example, when the natives follow the first gang, to be replaced by gang number three. Before gang number three is paid off and ready for a two months' period of idleness the first gang will have returned and will go to work.

I went to the island of Marinduque on a Government transport because I had been informed that lead in vast quantities had been found there. I failed to see indications of large deposits, but lead ore veins have been discovered by the soldiers, but worked only for the gold that they contain. On this island there are deposits of argentiferous galena in paying quantities and no doubt some day capitalists will take up the matter and enrich themselves. The United States Government sent representatives to this island a few months ago. I found that the roads were very bad on this island. In fact, there are no roads at all, except in the large towns and barrios, the others being trails that have been formed by passing traffic and no grading has been done. In the hills where the mines are found, travel is exceeding difficult and it will be quite a problem to get the necessary machinery to the mines from the sea coast. There are natives here who possess animals that are capable of taking heavy loads on drag sleds over trails that the white man has trouble in following.

Your correspondent visited Cebu and Caraballo and was shown good specimens of iron ores and the chances are that the iron mines of these islands will be worked in course of time. There is an abundant opportunity for the establishment of iron foundries. Some representatives of American machine builders have proposed to ship to the Philippines that portion of the mechanism that is difficult to make and light in weight, and cast the framework, heavy gears, rolls, cylinders, etc., here.

The new samples of copper which have been taken from the mines on the islands of Benguet and Lepanto are good. There is evidence that copper exists in large quantities on the two islands mentioned and in limited quantities on Luzon and the Camarines. There is also a little copper mined in Panay and the writer has seen natives take out much of it for small uses, such as for bands for sheaths, ornaments and for fixings for the crude wagons they use in this country.

For a long time the Spanish and Filipinos have been getting supplies of copper from Mount Data, and the products of this mountain have quite a reputation in the Philippines and in the metal markets of Spain. But the Spanish never could do much in this copper region, rich as the deposits were. They could not get any machinery there; or, if they succeeded in getting a slim equipment on the property, the chances were that the freebooters of the island would capture or destroy it. Enterprising firms of Spaniards have gone into these mines in the past and, after working them for a period, the ladrones have descended upon the party, killed them all and stolen the proceeds of several months' hard labor. Assays of ores of Mount Data show an average of about 16 per cent. copper, chiefly tetrahedrite and allied ore. Most of the gangue is quartz.

Although gold exists in nearly all of the southern islands of the Philippine Archipelago, there is no direct evidence that it has as yet paid for mining to any such extent as copper and other ores. The trouble, I believe, is that most of the gold is stolen by the native help.

Gold mining during the Spanish administration of the islands was a failure, though the fraudulent methods by which the grants of claims were made out and the cheating indulged in by both the foremen of the mines and the native workers. Each cheated the other as much as possible, and all cheated the owners of the mines, so that, as a rule, the gold mine of old ceased to live after a short experience.

There is a great demand for coal in the Philippines, and the price of it is exorbitant. Extensive mining operations are soon to be begun in the coal-fields of Negros and Cebu. Negros is only a day's journey from Panay and your correspondent went there a short while ago to investigate the reported discoveries of coal deposits. Heretofore most of the reported coal mines have turned out failures due to the poor quality of the coal. The coal mines of Negros, however, are different and the samples of coal, although not of a superior quality, are better than some of the coal which has been sent into Manila and Iloilo during the past year. On the small island of Bataan some very excellent grades of coals have been found and are now in effective service by some of the engineers of the ice-making plants of Iloilo and in some of the shops. The coal is stated by experts to be of a Tertiary age. It is highly carbonized lignite. Both the Spanish and the Filipinos have known of the existence of the beds of coal on Negros and Cebu islands, for they have records showing that these mines were worked as far back as 1828. Since that time the mines have been periodically worked and a mining company would take out coal until some disaster was met with, when all operations would cease for a few years until some other company was formed to work the mines. What is known as the best paying mine on Cebu is called the Uling, and at present no one appears to control this mine. The coal taken from Uling and, in fact, from nearly all of the mines on Cebu and Negros, is as good, if not superior in quality to, the Australian and Shanghai coals which are now arriving at the ports in these islands.

There is considerable mining machinery being shipped to these islands for sale through the machinery agencies in Manila and Iloilo mines, and this will serve to stimulate the mining business. The roads are being put into better condition all through those portions of the islands in which American troops have taken stations, wrecked bridges have been rebuilt, flooded places graded and arrangements made to cross rivers by rafts and ferries.

The United States Government has established a mining bureau at Manila with branches at Iloilo and others of the important cities in which miners usually conduct business. The duties of the officers and others connected with this bureau consist in looking up the old Spanish records and laws related to mining in these islands for the past 200 or 300 years. All papers and claims will be marked and assorted, so that when a party makes a purchase he may apply to the bureau to see just how he stands concerning previous ownership. New laws are being framed by the bureau. All claims will be settled through it and this bureau will prove to be an important institution.

**COAL EXPORTS OF GREAT BRITAIN.**—The exports of coal, coke and briquettes from Great Britain for August and the eight months ending August 31st were, in long tons:

	1899.	1900.	Increase.
August .....	3,758,781	4,173,499	414,718
Year .....	28,743,353	30,217,726	1,474,373

The average declared value of the coal shipped was \$3.89 per ton, against \$2.49 last year. Coal shipped for the use of steamers engaged in the foreign trade amounted to 966,736 tons during August, making the total for the eight months 7,728,318 tons, or about 300,000 tons less than in the corresponding period of 1899.

**ONTARIO GOVERNMENT ASSAY OFFICE.**—The report of the laboratory of the Ontario Government Assay Office conducted by the Bureau of Mines as an aid to the discovery and development of the mineral resources of Ontario, shows a total receipt of 166 samples sent in for examination during the month of August. Of these, 162 were received for assay or analysis, on which 213 determinations were made, each checked off by a duplicate in order to avoid errors before issuing certificates. The determinations consisted of 139 for gold, 32 for silver, 12 for copper, 7 nickel, 1 lead, 19 determinations on iron ores and 3 miscellaneous. Fourteen iron ore samples were received for partial or complete analysis as to smelting quality from all parts of Ontario.

The samples were sent in from all parts of Ontario, most of the gold ores coming from the Wabigoon and Seine River districts, while the nickel and copper ores were sent in from the Sudbury and Parry Sound districts.

**EXTENDING THE TRANS-CASPIAN RAILROAD.**—According to London "Engineering," Russian engineers are engaged upon plans for extensions of the Trans-Caspian Railroad, which will make a new direct line of communication overland between China and Russia. It is proposed to build a line from Samarkand to Hankow by Chodschen, Margitan and through one of the Pamirs. It will be necessary to drive a tunnel through the Koshgor Mountains. From Koshgor, which is the center of the transit trade between East Turkestan and Russian Central Asia, the railway will either pass through the broad Tarim Valley or go in a southeastern direction to Chatan, on to Tschortschen and Tschorjolyk at the Lobnor Lake. From there the line will have to be carried through one of the passes in the Altyn Mountains to the Tsoi-dam Plateau, along the Semenov Mountains, past the Kuku-Nor Lake to the Hoangho Valley and the town of Lau-tschow, which is the capital of the Province of Kamsu, which has a population of 11,000,000. From Lau-tschow it is proposed to carry the railway through the towns of Fenghsiang, Hsi-hsiang and Hsing-an to the Province of Shensi, with 9,000,000 inhabitants. From this province the railway is to proceed through the Hankiang Valley to Hankow, a center for inland Chinese trade. The Russian Government is understood to be greatly interested in the scheme.



## GEORGIA GOLD MINING DEVELOPMENTS.

Written for the Engineering and Mining Journal by Wilber Colvin.

The first gold mining in the United States was in the Georgia belt. Over sixty years ago the gold development here was such that in 1833 the first branch of the United States Mint established was located at Dahlonega. But with the outbreak of the war in 1861 the Mint was closed, and after the war the building and grounds were given by the Federal Government to the State of Georgia for the North Georgia Agricultural College. The Mint building was used as a college for a number of years until it was destroyed by fire; but upon the same massive foundations was erected the present fine main building of the college.

The Appalachian Division of the gold-fields of the United States comprise numerous auriferous deposits, forming a belt more or less continuous from Maine into Alabama, and varying in width from 10 to 75 miles, lying for the most part in the foot-hills of the Blue Ridge Mountains. The gold-bearing rocks are largely metamorphic, and apparently of an early geologic age. The gold is found chiefly in quartz veins of considerable size, though it occurs also in many places in the schists. Much of the gold is in the form of auriferous pyrite, locally known as sulphurets. The numerous streams intersecting these

have some capital. The construction of the ditch alone to convey the water for the Hand Mill and mine, which was operated for many years near Dahlonega, cost over \$300,000. It is now owned and used by the Dahlonega Consolidated Gold Mining Company.

This milling, as practiced in earlier days, was very wasteful of the gold. It is estimated that from 50 to 90 per cent. of the gold in the ore escaped over the plates in the primitive processes used, and helped to make up the sand banks of the stream below. In fact, dredge-boats have successfully worked these river sands for gold. Another difficulty was discovered. As soon as the decomposed rocks near the surface, locally known as saprolite, was worked out to usually at a depth of not exceeding 100 ft. from the surface, and in all cases with rock below the water level, the gold was largely found in auriferous pyrite, called hard ore, and could not be saved by amalgamation. To the old-time miner this ore was worse than nothing; and as the most accessible surface ore became skimmed off, mining interests lagged.

The mining in Georgia, therefore, has been entirely surface work. But the companies now at work are beginning to go deeper. The veins are generally nearly vertical. In many cases they increase in size and richness with depth. They are of all thicknesses, from a few inches to 50 ft., and some are masses of ore with only thin partitions of non-auriferous rock.



PLACER MINING ON TANYARD BRANCH, NEAR DAHLONEGA, GEORGIA.

belts flow over beds of auriferous gravel, the result of the disintegration and washing of ages. Of this division only the southern part, traversing Virginia, the Carolinas, Georgia and extending about 50 miles into Alabama, has attained any economic importance.

Gold was first discovered in Georgia in 1829. Duke's Creek, then in Habersham County, now in White County, and the Calhoun property near Dahlonega, Lumpkin County, are rival claimants for precedent as to the exact time of the first discovery. But the Dahlonega belt has far surpassed all other places in abundance and richness of gold deposits. The Indians knew of these gold deposits long before the white man did. The name Dahlonega is a corruption of the Indian word Tau-lau-ne-ka, meaning yellow money.

North Georgia soon became the place of chief interest to the gold hunter, and in a few months after the first discoveries, hundreds of miners were busily engaged along the streams searching for the coveted metal. Dahlonega sprang up as a mining center, and in 1833 became an incorporated town, and it is still the seat of more gold mining industry than any other place east of the Rocky Mountains.

In the earlier mining days much free gold was found and placer mining was in vogue. Even yet considerable profitable placer mining is carried on, and some good-sized nuggets are occasionally found.

Hydraulic mining was early introduced where water could be had. But most of the values were found to be in the rock. Stamp mills were erected, ditches to supply the water were made, sluices were constructed to convey the rock and earth washed out down to the mill, usually located at the foot of a hill. Many mills, having from 5 to 40 stamps, were erected and operated.

The sole capital of the placer miner in many cases was a pan, a pick and a spade. But the hydraulic miner and stamp mill operator must

The principal rocks of this region are gneisses and schists, mica-schists and hornblende. They have been generally referred to the Archaean age. In the valleys they are detritus washed from the hillsides. Many of the mica-schists are garnetiferous; and in the gold districts, the garnets often contain gold. The schists themselves sometimes contain gold.

Interlaced among the gneisses and mica-schists are sheared belts of hornblende that appear to be remains of ancient dikes introduced before the action which produced the shearing and changed many of the rocks. Frequently these hornblende dikes are the walls of veins of auriferous rock. There are also a few granite dikes observable.

The most expert geological opinions affirm that these veins are true fissure veins. No limit downward has ever been found, and no diminution in the size or richness of the veins has been found so far.

A large number of samples taken at random from ore dumps of the Dahlonega Consolidated Gold Mining Company showed an average of \$7.27 per ton. The average assay of 25 samples taken from as many points in another group of mines is \$7.66 per ton. The State Geologist of Georgia reports the average assay of samples taken by him from five veins of another large mine to be \$22.12 per ton of ore. These are fair averages of worked properties.

Experiment seems to have proved that by the chlorination or cyanide processes 95 to 97 per cent. of the gold can be saved.

The largest of the new plants built in Georgia is that of the Dahlonega Consolidated Gold Mining Company which we expect soon to describe. The Standard Gold Mining Company has begun the erection of a 120-stamp mill with concentrating tables, just on the Yahoola River in Dahlonega. Its capital stock is \$5,000,000. Both of these companies will use chlorination plants. The Standard Company owns about 5,000

acres of land. Within five miles of Dahlenega it owns also beds of magnetic iron ore carrying 55 to 69 per cent. of pure iron, practically free from phosphorus.

The Crown Mountain Gold Mining and Milling Company, capital stock \$2,000,000, has begun the erection of a large plant at the foot of Crown Mountain, and also within the corporate limits of Dahlenega. It owns a large tract of land. Its plant will consist of a mill of about 60 stamps and 8 6-ft. Huntington mills, sufficient concentrating tables, and also a plant for treating the concentrates, probably by the cyanide process. The power for running both the Standard and Crown Mountain plants will be electricity generated at water falls about 7 and 10 miles away. These will each have a capacity of 500 to 600 tons of ore per day.

Two other companies, recently organized, are operating three or four miles from Dahlenega; the Dahlenega Gold Mining and Milling Company and the Chicago New South Gold Mining Company. Their combined capital stock is \$3,000,000. Both are operating small mills, but which they intend soon to replace with new plants.

Out of several smaller concerns successfully operating in the vicinity may be mentioned the Lumpkin Gold Mining Company, with a 10-stamp mill located 1½ miles from Dahlenega, capacity 50 tons of ore per day; W. A. Danforth & Company's plant, 15 miles from Dahlenega and near Cleveland, Ga., having a Huntington mill and Wilfley concentrator, capacity 35 tons of ore per day. Both of these concerns are new, they have an abundance of ore and expect in the near future to much enlarge and improve their plants.

The Cherokee Mining Company, situated near Canton, Cherokee County, Ga., about 30 miles from Dahlenega, has 40 stamps with a capacity for about 200 tons of ore per day, and is just completing a small cyanide plant for treating the concentrates.

#### ABSTRACTS OF OFFICIAL REPORTS.

##### Asbestos and Asbestic Company, Quebec.

This company owns asbestos mines and factories near Danville, in Quebec. The report issued from the London office shows that for the year ending March 31st, 1900, the total profits on mining and manufacturing were £7,206, while expenses in Canada and London were £7,865, showing a loss of £659 for the year.

The directors' report says: "The result of the trading, after providing for directors' remuneration, expenses in London and Danville, is a loss of £659, which amount, deducted from balance of profit brought forward from the previous year, leaves a balance of £1,323 standing at the credit of profit and loss account. The amount due to the directors for remuneration on March 31st last was £5,166. The directors have not drawn their remuneration since August 31st, 1897, and do not propose to draw same until the circumstances of the company shall have improved. The principal feature in connection with last year's trading has been the fact that—in the matter of asbestic—the quantity produced has been very small, the demand not justifying the continued production in large quantities. The directors have explained from time to time that until a large demand for asbestic has been created, the company cannot show a satisfactory result; because the out-turn of asbestos is regulated by the out-turn of asbestic, and the heavy cost of producing asbestic which is not wanted, for the sake of obtaining asbestos, would render the operation profitless. In the year under review, sales have been small, and the gross profit has amounted to only £7,131; in the face of this it is satisfactory to note that expenses in Danville have been very considerably reduced; they are, in fact, less than half of the amount expended in the previous year. As a result of the economies, the smaller business has been conducted with but little loss.

"The directors had begun to feel more hopeful; for, the demand for asbestic, though very slow, is certainly improving; when, to their dismay, the disastrous fire occurred at Danville in March, caused by the overheating of a flue, and this has seriously interfered with business operations, the output of asbestos being entirely stopped pending rebuilding. The property destroyed was, in a large measure, covered by insurance, and your directors believe that the amount recovered from the insurers will prove sufficient to enable them to reinstate machinery and plant sufficient to meet present requirements. The H. W. Johns Company, of New York, has signified its intention to continue the contract for asbestos for a further term of five years, as from April 1st last, in accordance with power reserved to them in the contract. The demand for short fiber has continued to improve, and the directors expect in the current year to be able to sell readily all they will be able to produce. It is with the deepest regret that the directors have still to ask shareholders to be patient. The company's success, as has been said, depends upon a large consumption of asbestic, and the great advantages of this material, as the finest known wall plaster are still undisputed."

##### Central Chile Copper Company, Chile.

The report of this company—formerly the Panulcillo Copper Company—for 1899, as issued from the London office, shows net profits of £18,083, and general expenses of £9,685, leaving a balance of £8,398.

The report of the directors says: "The directors point with satisfaction to the evidence of considerable improvement in the company's mines at Panulcillo. Their development has been steadily progressing, and several new workings are now in full operation. The total output of ore in the past two and a half years is as follows: 1898, 9,200 tons; 1899, 16,770 tons; and for the first six months of the year, about 12,000 tons. According to the reports from our general manager the estimated ores in reserve are: Despintes (sulphurets), 200,000 tons 4 per cent. copper; colored ores (carbonates), 120,000 tons 7 per cent. copper.

"The profit realized in the past year from the mines and smelting works amounted to £11,198. This profit would have been considerably larger if the smelting works had been able to treat all the residues simultaneously with the ordinary work of blast smelting. Arrangements have now been made by which a great part of the copper contained in these residues will be gradually recovered, and will help to swell future

profits. The directors have recently ordered important improvements to be effected in the smelting, productive of a quicker and more complete realization of the copper contained in the ores. The usual amount for depreciation on machinery and buildings has been written off. All outlays for keeping machinery and buildings in a state of efficient repair, as well as the amounts spent during the year on mine development have been treated as working expenses. A dividend of 2½ per cent. for the past year has been paid.

"In order to facilitate the settlement of a larger number of miners at Panulcillo, and thus increase the output, the general manager has been authorized to spend a certain amount on the erection of additional houses for workmen. The company, which is the owner of the Inagotable Mine, situated about 10 miles from Panulcillo, instructed the general manager toward the end of last year to push the development of this promising property with all energy. In his report of April 27th, the general manager says: 'I fully believe this mine will equal Panulcillo in a year or so. I estimate the output for April at 120 tons of 7 per cent. ore; this will be doubled as soon as transport is available.'

"We have also authorized the purchase on most advantageous terms of the Verde Mine, which adjoins the Inagotable. On this mine there are some very useful miners' houses and other mining buildings, as well as the extensions of several very promising lodes. The extension of the company's mining operations to the adjoining Combarbala District which has long been regarded as one of the richest copper districts in Chile, has now entered the practical stage, and of the several mining concessions there obtained direct from the Chilean Government, work on the Hermosa Valley Concession has been started. A general sample taken from the lode yielded 7.5 per cent. copper, besides traces of gold and silver."

##### Arizona Copper Company, Limited, Arizona.

The statement of this company for 1899, as made from the Edinburgh office, shows receipts from copper sold, etc., £555,715; Arizona & New Mexico Railroad, £115,539; miscellaneous, £1,559; total, £672,813. The payments were, for mine expenses, £311,727; railroad, £37,340; general, £7,734; interest, preferred dividends, etc., £121,517; reserve, £45,000; total, £523,317. This left a balance of £149,495, to which is to be added £16,670 brought forward from previous year, making a total of £166,165. From this dividends amounting to £119,646 (7s. 6d. a share on ordinary shares) were paid, leaving a balance of £46,519 to current year.

The superintendent's report says: "Experiments made during the past year have shown that it is possible to profitably treat the tailings from the sulphide concentrating mills. The leaching plant forms an admirable guard against losses which might and do occur in No. 2 Mill in concentrating oxide ores. Anything thus lost in No. 2 Mill is at once caught by the leacher. The sulphide concentrating mills have no such protection. The new concentrating plant is expected to do for No. 1 and No. 3 Mills what the leacher does for No. 2. Experiments have shown that, with a properly designed plant, an extraction of 500 tons of copper per annum may be depended upon. This extraction, it should be kept in mind, is not to be made from the raw ores, but from the waste rock known as tailings, which heretofore has been thrown into the river. It is proposed to grind these tailings, size and treat them on a separate plant, which I have specially designed for this purpose. The plant will have a capacity of 400 tons per day, and we calculate on an extraction of half of 1 per cent. I expect that copper from this plant will be produced at less than the average cost. The work of erection has already commenced. It will be pressed to an early conclusion. The plant will be furnished with power from a gasoline engine; it will cost about \$80,000.

"For the year the output of copper was expected to reach the high figure of 10,000 tons. While the production did not quite equal our expectations, it fell but little short of the estimate. The output is invariably checked during the rainy season. Anticipating a falling-off in output later on, production was forced in April and May, the prospective decrease in this way being, to a certain extent, discounted in advance. In June, however, the accumulation of slag and tailings in the river forced a partial shut-down of our smelting plant, and, at the same time, greatly increased working expenses; while in July the weather and other conditions were so difficult that the smelting plant was closed down for half of the month. In August the output held its own. In September, however, shortage of coke and coal, together with scarcity of acid, again sensibly checked the output. During all of the six months coal was so scarce that coke had to be used continuously for steam raising. Repeatedly portions of our plant had to be closed down on account of the coal famine. Extra supplies of coal, at high prices, were drawn from New Orleans, but even there coal was scarce and difficult to obtain. Coke was also scarce; and, on account of the scarcity of cars on the Southern Pacific, it was shipped irregularly—in bunches instead of in a regular, steady stream. At times we had too much; at other times none at all. The expenses on account of washouts on the Coronado Railroad were exceptionally high, and the interruptions to traffic came more frequently and were more formidable than during any previous year. An advance in cost was anticipated, but the advance was slightly greater than it would have been had it not been for the stoppages and difficulties referred to.

"So far as the mines are concerned, the situation at Metcalf and adjoining groups is without change; at Coronado the developments, so far, have been of small extent, but they have all, so far as they have gone, been successful in putting ore in sight. At the Longfellow and Detroit the ores are leaner and somewhat scarcer. In the Yavapai the position is stronger; and in the mines tributary to the Humboldt Tunnel the improvement is very marked. On the whole the mines show a distinct gain. Our gains, however, are nearly altogether in concentrating ores, and as such ores cannot be smelted direct, an increased output from them can only be obtained by an increase in concentrating plant. The time for that—and for all the other increases which that would involve—has not yet arrived."



## THE ROEBLING EXHIBIT AT PARIS.

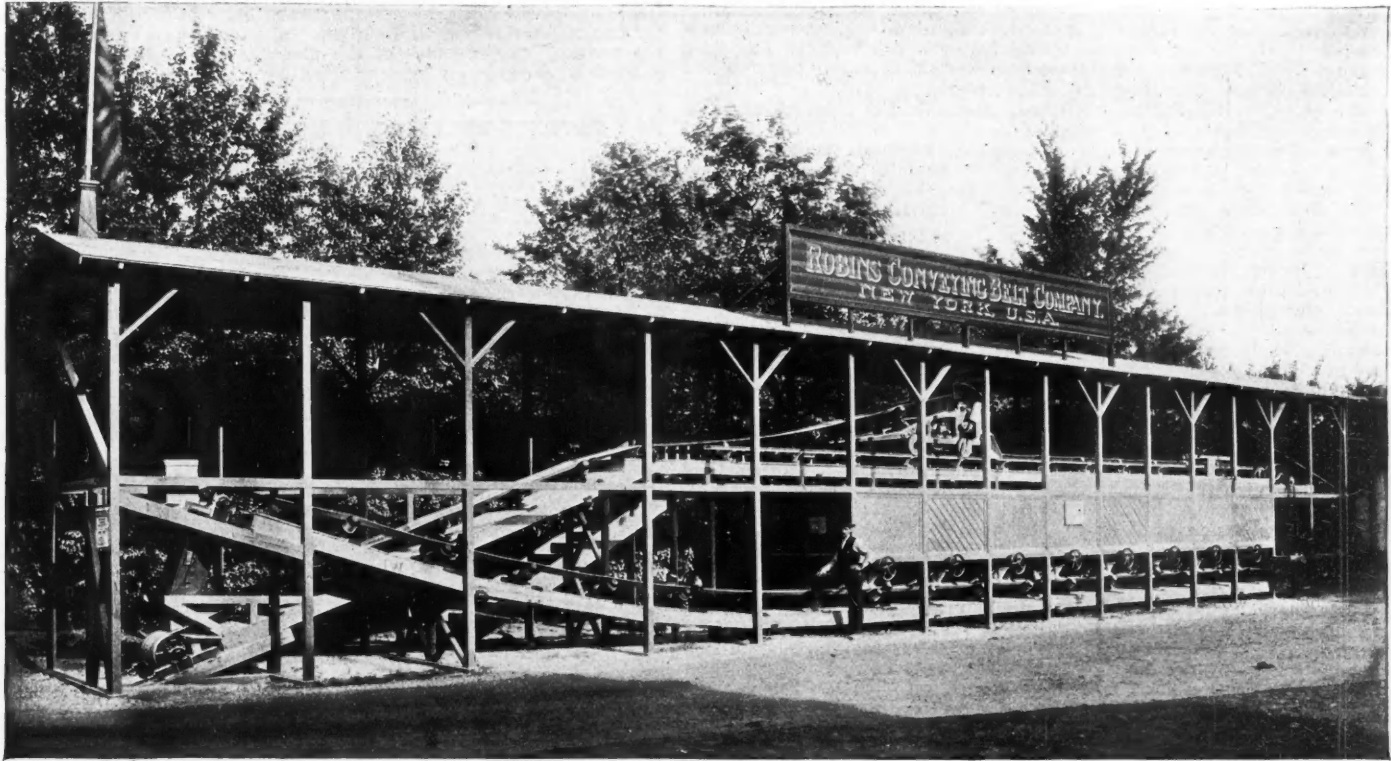
The John A. Roebling's Sons Company of Trenton, N. J., makes a display at the Paris Exposition consisting of two exhibits. One shows the product of the company's electrical department, and the principal feature of it is a full-size model of a section of underground trolley track, illustrating the communications with the conductive bars and the lead-encased cables which transmit the current to the cars by means of connections known as plows. The value of this exhibit rests on its showing the actual piece of underground trolley with the pavement cut away, and is very instructive, both to engineers and to the general public. All kinds of telephone wires and cables are also shown with the means of connecting up and mounting. Besides this there are very beautiful samples of every variety of wire used in electrical industries, all kinds of which are manufactured by the Roebling Company. The most recent developments in electrical cables for carrying currents of the highest tension or greatest number of volts are illustrated in full-size pieces. This exhibit met with such favor with the jury that it was awarded a "grand prize," the highest award conferred by the Exposition authorities.

The second exhibit is in the department of metallurgy, and gives a comprehensive view of all the products of the Roebling works with the exception of the electrical conductors. The United States Paris Exposition Commission approached the Roebling Company about a year

## THE ROBINS BELT CONVEYORS AT PARIS.

The photograph here reproduced shows the exhibit of the Robins Conveying Belt Company of New York City at the Vincennes Machinery Annex of the Paris Exposition, for which the company was awarded a "grand prix." It consists of a 20-in. Robins belt conveyor 90 ft. long, running level under a series of bins, after clearing which it takes a curved incline, elevating the material to a height of 7 ft., at which point it is delivered to a horizontal 20-in. conveyor which carries the material in the reverse direction. On the upper line of conveyor, a patent tripper operates, distributing the material into the bins, reversing automatically at each end of the bins and requiring no attendance. The capacity of the system is 200 tons per hour, and it is constantly in operation handling broken stone.

The company also makes two other exhibits, one in the Machinery and Electricity Building, consisting of two 20-in. conveyors 35 ft. long, and the other in the Mining Building consisting of a one-quarter size model, including the automatic tripper, of the Vincennes exhibit. These exhibits are also in constant operation. In addition to the machinery, there is a large collection of photographs of Robins belt conveyors showing installations in all the mining countries of the world. While some of the pictures were of interest to the Exposition crowds, it was the conveyors themselves that attracted the attention of all, especially those on which automatically reversing trippers were working. This



THE ROBINS BELT CONVEYOR AT THE PARIS EXPOSITION.

ago to sound it with reference to the installation of a striking feature in the nature of a trophy. The company consented to erect for the purpose a large model of the Brooklyn Bridge. This is an exact representation of the famous suspension bridge, and surmounts the exhibit proper. The first model of the bridge that was built for the Exposition was lost with the unfortunate "Paulliac," which was reported near her destination some six days after sailing and was never heard from afterward. The Roebling Company, however, built a second model in six weeks and had it in its place about a month after the Exposition opened. The bridge was entirely built at the Roebling plant.

Several cases with glass doors and shelves form a part of the exhibit, and contain samples of every variety of steel and copper wire, from the largest sizes made to wire with a diameter of 0.001 in. This latter is so fine that it is impossible to detect it between the fingers. It is half as thick as the finest human hair, and a mile of it weighs about a quarter of an ounce. It is drawn through diamond dies, and is a good example of the skill displayed by the workmen in the process of manufacture. This exhibit also received a "grand prize," making two of these awards for the company.

**COAL TRADE OF JAPAN.**—In 1899 the Japanese coal exports, including the quantities for ships' use, amounted to 2,487,614 tons, valued at £1,500,000, as against 2,186,790 tons in 1898. Of the amount shipped in 1899 the largest quantities were consigned to China. There were 14,418 tons shipped to California.

**COAL MINING IN NEW SOUTH WALES.**—In connection with the extension works of the Sydney Harbor collieries at Balmain, New South Wales, the deep shaft, which was commenced two years ago, has now reached a depth of 2,000 ft. It is expected that coal will be reached at a depth of 2,900 ft. in nine months. Vessels drawing 30 ft. of water will be able to berth alongside the mine. Over £100,000 have already been expended on the work. Experimental borings have shown that the coal measures extend under a considerable part of the harbor of Sydney.

invention had never been exhibited before in Europe and the smoothness and regularity of its operation, requiring no attention whatever, excited a great deal of curiosity and interest.

Special Exposition catalogues were attractively gotten up in French and English, with many illustrations, for distribution at each of the exhibits.

## 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.)

207.—Wulfenite.—From the Bennett-Stephenson Mine at Organ, N. M., W. H. Mackey, lessee, has recently taken some specimens of crystallized wulfenite that are considered superior to any ever taken from an American mine. The specimens were a pretty yellow in color and geode-like in form, the cavities being incrustated with a superb mass of yellow crystals. The Field Museum at Chicago is the fortunate possessor of one of these specimens and, though already owning several choice wulfenite specimens, its latest addition is far superior to all.

213.—Mohawkite.—In the "Engineering and Mining Journal" of April 7th, 1900, page 413, we referred at some length to this mineral, which had then recently been discovered in the Mohawk Mine in the Lake Superior Region. The company now informs us that it has not done much work recently on the vein in which the Mohawkite occurred, as it has not arranged for the treatment of the ore on a satisfactory basis. Although the vein where first struck was composed of the new mineral mohawkite, yet in drifting upon its course, the mineral contents changed, and there was found notable quantities of other arsenides of

copper—whitneyite, domeykite, etc.—and the proportion of copper, nickel and cobalt, changed materially in taking a shipping lot just as it came from the vein. A lot of some 60 tons delivered at the Orford Company's Works was sampled by Ledoux & Company, and their analysis gives, copper 60 per cent., nickel and cobalt 1.28 per cent., arsenic 17.50 per cent., silver 6 oz. per ton of 2,000 lbs., the remainder being gangue, analysis not given.

214.—Minerals Losing Color from Exposure to Light.—The mineral collector finds much difficulty in maintaining the beautiful colors of a number of minerals in his cabinet. Sunlight, or even the diffused light of a room changes many pretty colored minerals, and in order to avoid fading some of the most beautiful are kept in dark places, and the cabinet cannot show up to best advantage. Those who prefer to display minerals that fade in the light of day must necessarily replenish their collections of such specimens every year or so.

Beautiful crystallized realgar specimens, when kept in the light, gradually lose their deep translucent red color, turn to a light red, become opaque, and eventually crumble to pieces. As good crystallized specimens may cost from \$3 to \$20 or more, the displaying of such specimens is necessarily expensive to the average collector.

Orpiment, yellow sulphide of arsenic, is another mineral that loses its color, but the action of light on it is slower than on realgar. Orpiment specimens gradually turn to a sickly yellow, and then, like realgar, fall to pieces.

Wulfemite, the molybdate of lead, often changes in color, particularly the red crystallized specimens, which lose the bright color and soon become flat. Yellow wulfemite crystals appear to stand light action decidedly better than those of other colors.

The beautiful vanadinite specimens, especially the deep-red crystals, lose their brilliancy if kept long in the light.

Sphalerite specimens, usually translucent, gradually become opaque in the cabinet. Beautifully tarnished specimens of sphalerite, unless kept in the dark, retain their iridescent hues but a short time.

The fine silver minerals, proustite and pyrargyrite, soon lose their translucence and become very flat in color. The green and other colored specimens of pyromorphite are also susceptible to light, the green variety losing its beautiful color after considerable exposure.

Chalcanthite specimens quickly lose their bluish color, turn to a white, spongy mass, and fall to pieces.

The beautiful crystallized cuprite specimens through exposure to light soon lose their translucence, and most of their beauty dies with the loss of color.

Erythrite specimens are short-lived in strong light, and should find resting-place in a dark part of the cabinet.

Native silver specimens tarnish quickly, but are easily cleaned with acid.

Chalcopyrite specimens are very likely to tarnish, but often they assume a tarnish that adds to the attractiveness of the specimen.

Fluorite specimens, no matter what color, lose their brilliancy in time, but the action of light is slow on this mineral.

Crystallized rutile specimens, often subtransparent, usually of red color, after exposure to light lose their slight transparency and become dull.

The mineral collector needs to exercise great care, should he desire to keep his specimens from losing their brilliancy. No method has ever been suggested for maintaining the original colors in minerals, outside of keeping them in the dark, and this necessarily detracts largely from many mineral collections. One thing the collector should remember—he should never use varnish on minerals, for its action is often worse than light.

#### 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.)

**Arsenic in Copper Matte.**—Can arsenic be expelled from copper matte by roasting?—S. O. M.

Answer.—A paper published in the "School of Mines Quarterly" (November, 1899), by Mr. E. W. Scherr, Jr., gave the result of some experiments made to ascertain to what extent arsenic is expelled from previously well roasted copper matte by a subsequent reducing roast with addition of charcoal, the arsenic at the start being combined with iron as arseno-pyrite. Richard Pearce had formerly made a number of experiments on enargite, which contains arsenic in combination with copper, but as Henry M. Howe had pointed out that according to Platner arsenic could be eliminated as arsenious acid from ferric-arsenate, it was suggested that the arsenic from a copper matte containing iron could be eliminated through the decomposition of the iron arsenide. A copper matte containing 50.16 per cent. Cu, some silver and gold, and no arsenic, was ground through an 80-mesh screen with a quantity of arseno-pyrite. On careful sampling it was found that the mixture carried 4.56 per cent. As. For roasting, a gas-fired oven furnace was used and two samples, each weighing 3.75 kg., were roasted simultaneously, to approximately a dead roast. Then 10 per cent. by weight of pulverized charcoal was stirred into one lot and the roasting continued slowly until all the carbon was consumed. The two pans were sampled simultaneously every half hour as accurately as possible under the circumstances. The results obtained showed no practical difference in the percentage of arsenic found at various times in the samples with and without charcoal. The writer's conclusion is that, given a material containing, Fe, Cu, As, and S, no matter what the original combination of the arsenic, the resulting arseniate produced by roasting, will be mainly

arseniate of copper. Mr. Pearce used enargite while Mr. Scherr used arsenical pyrites, and in both cases carbon proved non-effective in expelling arsenic.

**Zinc Retorts.**—Can you tell me what kind of retorts are used at the works of the Vieille Montagne Zinc Company in Belgium?—S. P.

Answer.—"The Mineral Industry," Volume VIII., says: "The old forms of cylindrical retorts are no longer used in any of the Vieille Montagne furnaces, having been replaced by those of an elliptical cross section, which permits the charging of a larger quantity of material, while giving the heat the same facility of penetration. It is sought to diminish the thickness of the walls of the retort as much as possible, since the thinner they are the more easily they are traversed by the heat. The thickness that must be given them, however, depends upon the form of the retorts and their dimensions, especially their length, and varies also with the character of the clay from which they are made and the nature of the ore treated. No precise rule to determine the proper thickness of the retort walls can be given therefore, and it must be determined to meet the conditions of each individual work. The internal capacity of the retorts in the Vieille Montagne Works varies from 50 to 70 cubic decimeters. The dimensions are kept uniform, as much as possible, in each work, but the quality and richness of the ore charged varies according to the place the retorts occupy in the furnace, and the amount of heat they receive. Originally large muffles were employed for the treatment of the low grade calamines of Upper Silesia, and small retorts for the rich calamines of Belgium. This was entirely rational, but at the present time, because of the diversity of the ores available, it is possible to compose mixtures which differ but little in grade."

#### PATENTS RELATING TO MINING AND METALLURGY.

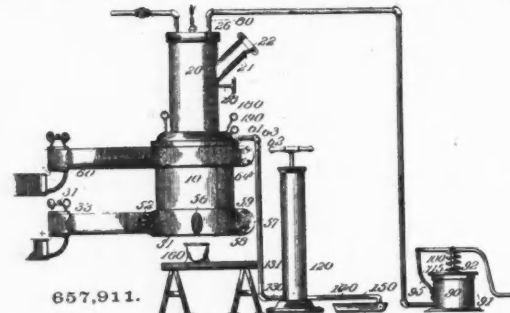
##### UNITED STATES.

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 18th, 1900.

657,907. **MACHINE FOR TREATING PEAT TO BE USED AS FUEL.** Joseph Ahrens, Berlin, Germany. The combination of a slide upon which the blocks of peat are fed, saws to trim off the blocks, a rotating drum with seats or molds to receive the trimmed blocks, and a boring device for perforating the blocks on the drum.

657,911. **APPARATUS FOR SEPARATING METALS FROM ORES BY ELECTRICITY.** George D. Burton, Boston, Mass. The combination of a reducing-chamber, the body of which is composed of



657,911.

electro-conductive resistance material and provided with an exterior flange, an electrode adapted for contact with said chamber near the top thereof under said flange and serving as a support for said chamber, and another electrode adapted for connection with said chamber at the lower part thereof.

657,922. **APPARATUS FOR REHEATING COMPRESSED AIR FOR INDUSTRIAL PURPOSES.** Thomas A. Edison, Llewellyn Park, N. J. An apparatus comprising a pipe supplying compressed air from a source of supply to a translating device, a reheater in said pipe for heating the air therein by radiation, a solid combustible in the reheater, a by-pass including the reheater for permitting a portion of the air to pass through the reheater to support combustion and to be heated directly, and means to permit a drop in the air-pressure between the inlet to said by-pass and the translating device to automatically cause air to flow through the by-pass in quantity depending upon the consumption at the translating device.

657,933. **CRUSHING AND PULVERIZING MACHINERY.** Thomas R. Goth, San Francisco, Cal. A superimposed crushing-muller and a cylinder or casing therefor, a train of balls to operate the muller rolling in a revoluble inclined raceway set eccentric to the axis of revolution and inclined to the plane of its orbit to produce a gyratory movement of the muller and apply an oblique force thereto.

657,937. **PROCESS OF MANUFACTURING NITROGEN COMPOUNDS.** Charles B. Jacobs, East Orange, N. J., assignor, by mesne assignments, to the Cyanide Company, of New Jersey. The process consists in subjecting a mixture of carbide and coarsely-ground coke to the action of heat in an electric furnace, whereby the carbide is caused to fuse and coat the particles of coke, allowing the mass to cool below the temperature of fusion of the carbide, and subjecting the porous mass at such lower temperature to the action of nitrogen.

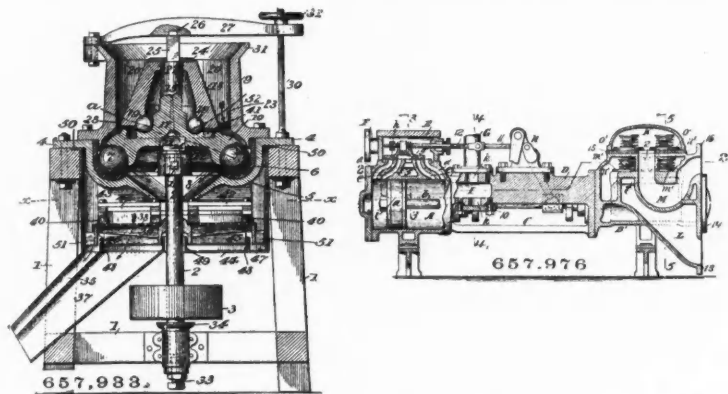
657,938. **PROCESS OF MANUFACTURING COMPOUNDS OF NITROGEN.** Charles B. Jacobs, East Orange, N. J., assignor to the Ampere Electro-Chemical Company, Ampere, N. J. The process of forming a cyanide, which consists in forming a mixture of coking-coal with an alkaline-earth compound, there being present in the mixture an amount of carbon in excess of that required for the formation of carbide, submitting said mixture to a coking heat to form a porous composition, consisting of coke having the alkaline-earth compound diffused through it, then subjecting the resulting material to the heat of an electric furnace, to cause formation of carbide and fusion of such carbide in and on the surface of the coke, forming a porous carbide composition, then allowing the mass to cool, and subjecting the mass to the action of nitrogen or nitrogen-bearing gases while at a temperature below the fusing-point of the carbide.

657,955. **PROCESS OF ENRICHING METALLIC SULPHIDES.** Hugo Petersen, Lazyhutte, Germany. The process of enriching metallic sul-



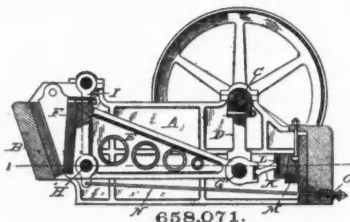
phides which are mixed with carbonates of the alkali-earth metals consists in dissolving out the carbonates with an aqueous solution of sulphurous acid.

- 657,958. **CRUSHING MACHINE.** Edwin Reynolds, Milwaukee, Wis. The combination of a fixed jaw, a pivotally-suspended crushing-jaw movable toward and from the fixed jaw in a substantially-horizontal line, toggles arranged to act on said movable jaw at or near its extremities with a differential throw and to impart a greater number of impulses to one end than to the other.
- 657,964. **MANUFACTURE OF RAILS.** Joseph S. Seaman, Pittsburg, Pa. The method consists in providing during the rolling operation an additional body of metal uniformly distributed or substantially so over the entire tread-surface of the rail, and beyond the final plane of finish, and then as a final finishing operation forcing such additional body into the head by the action of a rolling-surface and without any material enlargement of the head.
- 657,976. **PUMP.** Charles C. Worthington, Irvington, N. Y. A pump having two pump-cylinders arranged side by side with the force-chamber



above the pulsation-chambers and the force-passage extending downward centrally between the pulsation-chambers and suction-valves to a plane below the suction-valves and then upward and outward to open at the end of the pump above and in a plane between the cylinders.

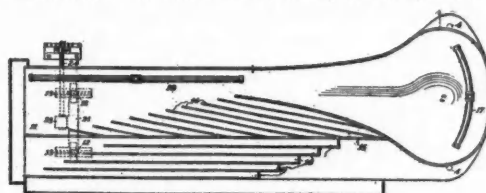
- 657,985. **TRAP-DOOR FOR MINES.** Alvin Hurford, Canton, Ohio. The combination with a roller and curtain, of a pinion on said roller a cylinder and piston, a rack operated by the piston, a supply-valve for said cylinder, and means for controlling said valve, comprising a lever pivotally secured upon one end of a rock-shaft mounted in proximity to the track-rail, a crank-arm on the opposite end of the shaft, and a spring located below said crank-arm and a pitman connecting said crank-arm to the valve-operating rod.
- 657,998. **SEPARATOR.** Milton F. Williams, St. Louis, Mo. The combination with a rotary pulverizer, of a separating-chamber, a spout leading from the pulverizer to said chamber through which the pulverized material is forced by the pulverizer to the separating-chamber, partitions dividing said chamber into a number of separate compartments, a pipe leading from the last compartment back to the eye of the pulverizer, an air-gate in said pipe, a trough communicating independently with each compartment, into which trough material falling into said compartments is discharged, a conveyor in said trough adapted to convey the material from each compartment back to the pulverizer, a second trough communicating with the first trough through openings arranged in advance of the communications between the first trough and compartments, gates for controlling said openings, and a conveyor in the second trough.
- 658,008. **MINING-MACHINE.** Henry J. Haley, Cardiff, Tenn. The combination with a non-rotary cylinder having a cup, a head rotarily connected therewith and carrying a chuck, a feed-screw through the chuck, and a drill carried thereby; of radial ears on said cup, a link pivoted at its inner end between said ears, a band-brake encircling the head, and a bolt passing pivotally through the ends of the band, and through the outer end of the link.
- 658,060. **ROCK-DRILL HEAD.** William A. Dudley, Petersburg, Va. A double, reversible drill-head provided with a circle of chisels on each end, the said chisels being V-shaped, with the cutting edges radial to a common center.
- 658,069. **METHOD OF FEEDING PULVERIZED FUEL.** Frederick H. Lewis, Philadelphia, Pa. The method consists in introducing powdered carbonaceous fuel and oxygen by the joint action of impinging blasts of air projected simultaneously in the same direction at different velocities, a forced blast of comparatively-low velocity and large volume carrying the powdered fuel in suspension, an inducing-blast of high velocity and small volume, and an induced blast for the main supply of oxygen.
- 658,071. **CRUSHING MACHINE.** Edwin Reynolds, Milwaukee, Wis. The combination of a frame, a jaw pivotally mounted therein and a



toggle-link arranged and designed to act on said jaw in such manner as to give to one end of said jaw twice the number of impulses as is imparted to the opposite end.

- 658,144. **WELL-BORING APPARATUS.** Albert Fauck and Albert Fauck, Jr., Mareinkowice, Austria-Hungary. The combination with a percussion-drill, intended to work within flushing-water, of a driving-shaft, carrying an eccentric, a pulley loosely mounted upon the eccentric, a walking-beam, a connecting-rod jointed to the walking-beam and carrying a rope loop surrounding the pulley, and a spring suspended from the power-arm of the walking-beam and adapted to be so put in tension as to balance the weight of the drill-rods.
- 658,190. **CONCENTRATOR.** Joseph W. Pinder, Groveland, Cal. A table having a rounded, concave head with a surrounding rim, an extension into which said head gradually merges, said extension being inclined from one side toward the other, and also inclined in the

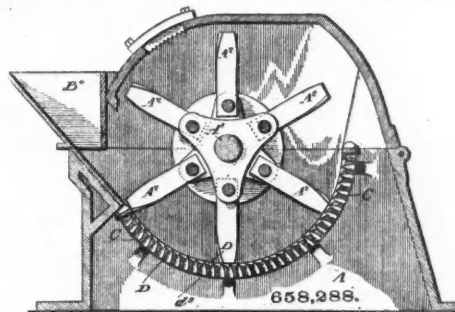
direction of its length, standards supporting the opposite sides of the head and capable of universal movement, a crank connection with the center of the head whereby a rotary movement is pro-



658,190.

duced, and rollers upon which the lower end of the table is supported whereby a longitudinal movement of this end of the table is produced, and riffles upon the lower side of the table.

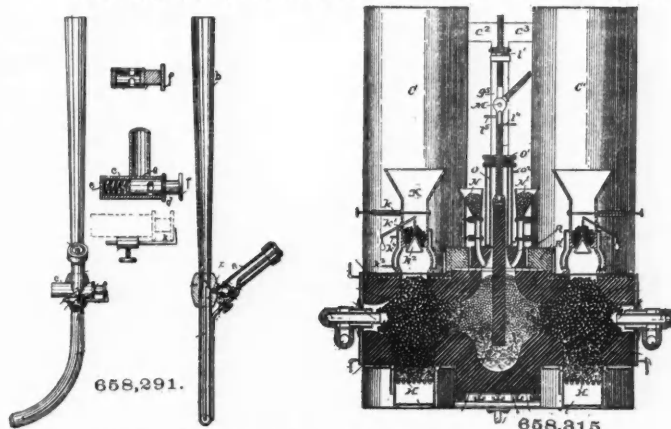
- 658,230. **PROCESS OF MAKING PHOSPHOR-TIN.** George Berthold, Great Falls, Mont. The process consists in subjecting layers of charcoal, tin and phosphorus to the action of heat under exclusion of air, to melt the tin and cause the latter to absorb a portion of the phosphorus.
- 658,281. **MACHINE FOR TREATING PEAT.** Adolf Rom, Lian, Norway. The combination of two endless belts, one having teeth of lenticular form in section blunted at their rear edge, and the other, teeth of ellipsoidal form in section working between said lenticular teeth, the teeth on both belts set to leave considerable space between them, and means for driving the co-operative portions of said belts in one and the same direction, the upper belt traveling at a greater speed than the lower one.
- 658,288. **CRUSHER AND PULVERIZER.** Thaxter Shaw and John C. Lee, Medford, Wis. A stationary frame arranged to be operated against by the beaters, said frame comprising a pair of curved



658,288.

members provided upon their inner opposite races with longitudinal grooves, and crossheads rigidly connecting their corresponding ends, a plurality of sectional knife-bars engaging at their ends in said slots, and a truss-rod engaging at its opposite ends in said crossheads and passing beneath said knife-bars upon the convex side of said frame.

- 658,291. **BLOWPIPE.** Frederick Speidel, Pforzheim, Germany. A gas-delivery pipe, a gas-inlet pipe having a transverse chamber communicating with the gas-delivery pipe, a sliding valve seated in said chamber to control the communication between the inlet and outlet pipes, a spring engaging the valve and normally tending to



force it to closed position, a sleeve mounted on the blow-pipe, a rod slidably supported in the sleeve, a head on the rod engaging the outer end of the valve, and a pinching-screw to lock the rod in the sleeve.

- 658,315. **ELECTRIC FURNACE.** Alfred H. Cowles, Cleveland, Ohio, assignor to the Electric Smelting and Aluminum Company, of Illinois. The combination of an electric smelting-chamber to be charged with the material to be reduced and having electrodes and electric-circuit connections therewith, two chambers to be charged with fuel, flues connecting the electric smelting-chamber intermediate with the fuel-chambers, and means for causing a reversing flow of an aeriform fluid through the fuel-chambers and the intermediate electric smelting-chamber.
- 658,322. **AID COMPRESSOR AND COOLER.** Oscar P. Ostergren, New York, N. Y. The combination with an air-compressor, of an aqueous-vapor separator consisting of the upright hollow cylinder receiving the compressed air at the top and containing injector devices consisting of two series of funnels, the funnels of one series having the nozzles coacting with each other for injecting effects and being arranged for free upward passage of the air around them and the funnels of the other series adapted to cause the upflowing air to converge over the upper ends of the funnels having the nozzles, to favor separation of the aqueous vapor, the respective funnels of each series being placed intermediately of the funnels of the other series.
- 658,327. **PROCESS OF OBTAINING MAGNESIUM SULPHATE FROM BRINE.** Gerhard N. Vis, Basle, Switzerland. The process for obtaining sulphate of magnesium from brine containing magnesium salts which consists in stirring the brine with caustic lime and a soluble sulphate, treating the precipitate obtained with a current of carbonic acid, and removing the magnesium sulphate formed.

## PERSONAL.

Mr. J. J. Morris is now superintendent of the Mt. Hood-Sunrise Company, Rawhide, Cal.

Mr. J. H. Currier, of Boston, has been looking after his mining interests in Gilpin County, Colo.

Prof. L. C. Glen of South Carolina College has been appointed professor of geology at Vanderbilt University.

Col. John D. Huhn has been elected president of the Ashbed Mining Company, vice Josiah Oakes, resigned.

Mr. Herman A. Keller has returned to Philadelphia from a year's professional work in Europe and in Chile.

Mr. J. B. Parks is now superintending the operations of the Pacific Dredging Company on the American River, Cal.

Mr. G. W. Kimble of Placerville, Cal., has been in Grant's Pass, Oregon, investigating mining property for San Francisco men.

Prof. J. LeConte, for many years professor of geology in the University of California, has gone to Europe on a year's leave of absence.

Mr. A. V. Corry has been appointed assayer for the Dexter Gold Mining Company, Tuscarora, Nev., vice Mr. William Magenau, resigned.

Mr. T. H. Oxnam has just returned from the Pierfite Lead and Zinc Mines in the south of France and is now on his way to Los Angeles, Cal.

Mr. Bernard MacDonald, general manager of the Le Roi Mine at Rossland, B. C., has gone to London on business connected with the interests of the corporation.

Messrs. Day and Light, of Boston, who are interested in mining in Gilpin and Clear Creek Counties, in Colorado, were visitors at Idaho Springs, Colo., last week.

Mr. Francis T. Freeland, of Aspen, is returning to Colorado after a trip abroad in which he attended the summer engineering conventions in London, Paris and Berlin.

Mr. John T. Elkins, son of the late John T. Elkins, well known in Colorado mining circles, has lately purchased the assay office of Messrs. Draper & McLeod at Denver, Colo.

Mr. Rafael Granja, consulting chemical engineer, who is a graduate of the Ecole Centrale des Arts et Manufactures of Paris, France, has opened up a laboratory at Kingston, N. Y.

Mr. George Beard, president of the West of Scotland Iron and Steel Institute, has been in New York City. He is to visit some of the leading steel plants in this country during his stay here.

Mr. Albert E. Smyser, late of the American Steel Casting Company of Sharon, Pa., is now assistant superintendent of the new open-hearth furnaces of the Carnegie Steel Company at Duquesne, Pa.

Mr. W. F. Aldrich, president of the Aldrich Mining Company at Aldrich, Ala., has declined a nomination to Congress for a third term from the Fourth Alabama district, and will devote his time to his industrial interests.

Mr. V. V. Clark, late superintendent of the cyanide department of the Cochiti Gold Mining Company, Albemarle, N. M., has gone to Alamos, Sonora, Mexico, as general manager for the Higuera Mining and Milling Company.

Prof. Goss, who has for a number of years been professor of mechanical engineering and director of the mechanical laboratory in Purdue University, Lafayette, Ind., has been made dean of the Engineering Schools of the University.

Mr. George Sumner, president of the Canadian Gold Fields, Mr. J. C. Hodgson, secretary, and Mr. R. K. Hope, director of the same corporation, are on a tour in British Columbia inspecting the properties in Moyie and other portions of the Kootenay District.

Mr. K. Shimamura was in Butte last week. He has been a year making a tour of the world to inspect European and American smelters and mines. He is a graduate of a Tokio school and a mining engineer associated with the Mytsu Bishi Company of Japan. He spent some time in Colorado and Utah.

Mr. J. H. Means, formerly manager of furnaces for the Sloss Iron and Steel Company, who went to Bristol, Tenn., in a like capacity with the Virginia Coal and Iron Company, has returned to the Birmingham District and is now furnace manager for the Sloss-Sheffield Steel and Iron Company at North Birmingham, succeeding Mr. J. H. McCune, who goes to Sheffield.

Information is wanted of Henry James Tenterman, formerly of Swansea, Wales, who left that place for New York in January, 1899, for the pur-

pose of disposing of a patent for extracting gold from the ore. He was last heard from in New York in May, 1899. Anyone knowing of his whereabouts, or having other information, will confer a favor upon his relatives by sending the information to this office.

Mr. T. H. Aldrich, who has been vice-president and general manager of the Mining Department of the Sloss-Sheffield Steel and Iron Company, and while former President Sol. Haas was ill, acted president, has resigned the position, effective October 1st. He will give his attention to his personal interests, being connected with the Southern Cahaba Mining Company, working large mines at Hargrove, and the Brilliant Coal Mining Company, in Marion County. He is also interested in gold mining experiments in East Alabama.

## OBITUARY.

A. M. Esler, a pioneer miner of the Northwest, who took part in developing the silver-lead deposits of the Coeur d'Alenes, died suddenly some weeks ago at Altyn, 50 miles northwest of Blackfoot, Mont. He built the first smelter in Montana, at Argenta, in 1866, and was connected with the mineral development of that State and Idaho.

William Vernon Wolcott, a dealer in mining stocks, was stricken with apoplexy on a "Big Four" train and died in Indianapolis, October 1st. He was the head of the firm of Wolcott & Company, New York City and Boston. Mr. Wolcott came of New England stock, originally settled near Windsor, Conn. William was born in Eton Rapids, Mich., in 1840. After being educated in the Methodist College, Albion, Mich., he went to Colorado, where he acquired some mining property. After selling out he went to Daventry, Ia., in 1868. Going to St. Louis, he became the proprietor of 2 newspapers, and, it is said, gave Eugene Field his first start. Later Mr. Wolcott sold his papers and started the St. Louis Car Coupler Manufacturing Company, in which he was successful. When the zinc mining boom started he became associated with the firm of Colley & Company, and in October, 1899, he started the firm of Wolcott & Company, the two members besides himself being his brother Charles and Daniel N. Gibbs. Mr. Wolcott was president of the New York Zinc Company and vice-president of the Missouri Zinc Fields Company.

## SOCIETIES AND TECHNICAL SCHOOLS.

New York University.—This institution in New York City opens its 65th year with nearly 2,000 students. Jesse E. Pope of the class of '95, University of Minnesota, has been appointed assistant professor of economics.

A chief mechanic has been appointed for the new workshops in mechanical and marine engineering at University Heights. The shops include machine, carpentering and pattern-making departments, and a blacksmith shop. Floor room is assigned in the old physical building for laying out the frames of ships. Prof. Carl C. Thomas, an engineer in the Maryland Steel Works of Baltimore, has accepted the professorship of marine engineering. Another new feature is the college dining hall in the basement of the gymnasium, where students will be boarded at cost price, not to exceed \$4 a week.

The Carnegie laboratory has been greatly improved during the summer.

## INDUSTRIAL NOTES.

The Sterling Chemical Company, Philadelphia, is building a 2-story chemical plant at Camden, N. J.

The Buffalo Forge Company of Buffalo, N. Y., through its New York office, has received an order from the Laffin-Rand Powder Company of Pompton Lakes, N. J., for 2 complete smokeless powder drying plants, to replace 2 which were destroyed by lightning some weeks ago.

J. Geo. Leyner of Denver, Colo., recently shipped a compound air compressor and several Leyner drills to Lake City, Colo., for the Scantic Gold Mining and Milling Company, and has sold a compressor and 4 air drills to the Blaine Mining and Exploration Company at Ridgeway, Colo.

The Sullivan Machinery Company, of Chicago, has moved its offices, 54-60 North Clinton Street, to the Merchants' Loan and Trust Building, 135 Adams Street. The store and shipping department will remain on Clinton Street. The officers of the company state they will be glad to see their friends at the new location.

The Jeffrey Manufacturing Company of Columbus, O., states that in addition to having received a gold medal at the Paris Exposition, the

company has been awarded a silver medal and a bronze medal. The medals cover the company's exhibits of chain-belt elevating and conveying machinery and coal mining machinery.

The Jeanesville Iron Works Company of Jeanesville, Pa., reports recent sales and shipments through its Denver office as follows: Diamond Mine, Leadville, Colo., two station pumps; No. 9 B sinker to Butte, Mont.; No. 9 B sinker to Independence, Colo.; No. 5 sinker and station pump to Central City, Colo.; station pump to Colorado & Southern Railroad, 1,000 gal. per minute.

Labor troubles have led to the General Electric Company abandoning its Siemens & Halske plant in Cicero, a suburb of Chicago. The company has decided to leave the place and remove the machinery and tools to its shops at Fort Wayne, Ind., and Schenectady, N. Y. The determination was arrived at 6 months since, when a strike occurred that occasioned a large loss to the company. Five hundred men are thrown out of employment.

An order has been received by the Baldwin Locomotive Works for 22 heavy freight locomotives for use on the government railroads of New Zealand. Another order, on which work has just begun, is for 6 locomotives for the Rio Tinto Mining Company of Huelva, Spain. The first American-made locomotives to be used in Ireland were shipped some weeks ago. They are 2 engines of the English type, for use on the Border & South Coast Railway.

The Pittsburg, Bessemer & Lake Erie Railroad is to put on cars carrying 110,000 lbs. each. The Bessemer Road's contract with the Pressed Steel Car Company calls for 800 of these cars to be built at a cost of about \$1,000,000. Some of them have already been delivered. They are of steel, and equipped with drop bottoms for dumping into pockets. The placing of the two largest locomotives in the world on the Bessemer recently makes it possible for large trains of these cars to be hauled.

The Alsen's American Portland Cement Works Company, formed in New Jersey last week, proposes to manufacture cement. It has a capital of \$2,200,000. The works and plant will be at West Camp, on the Hudson. The company will take the business heretofore carried on by the Alsen's Portland Cement Works Company, a concern controlled by a German corporation, and represented in New York City by Ebsen & Swinton, which carried on an importing business. The contract for the erection of the works is not placed. Of the incorporators, Henrich Wessel, W. Willins, Herman Basche and H. Wulff are members of the German corporation, while the others are the New York representatives of the selling agency.

## TRADE CATALOGUES.

The Crane Company of Chicago sends to its many friends an attractive metal sign neatly printed in colors. The sign shows a little child gazing in awe at one of the Crane Company's 18-in. extra heavy iron body gate valves with outside screw and yoke, and by-pass, which is one of those extensively used in the equipment of power plants. The border is meant to represent wrought-iron pipe connected by fittings of Crane malleable iron pattern drawn to scale.

Prices on Root's spiral rivetted pipe used for water mains, compressed air service, exhaust steam lines and other purposes are given in illustrated price-lists sent out by the Abendroth & Root Manufacturing Company, of New York, Chicago and London. Testimonials are given from such prominent concerns as the Pelton Water Wheel Company, of New York; the Laurentide Pulp Company, of Quebec; the Congress Gold Company, of Arizona, and the Lawrence Ore Banks, of Tennessee.

The Kilbourne & Jacobs Manufacturing Company, of Columbus, O., publish Catalogue 31, a 72-page pamphlet describing its steel mine, ore factory, foundry, coal and coke and contractor's cars. The company states that it has been in the small car business for many years; that it has completed a large new car shop, and is prepared to furnish any of the cars described in the catalogue or build special cars to order. Those who have occasion to handle large amounts of material over temporary or narrow gauge railroads will do well to look the catalogue over.

## 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.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the pro-



prietors of the "Engineering and Mining Journal" are not brokers or exporters, and have no pecuniary interest in buying and selling goods of any kind.

### GENERAL MINING NEWS.

#### ALASKA.

(From Our Special Correspondent.)

This summer in Southeast Alaska has been productive of much genuine development work and some construction. At Swettsnam, 35 miles south of Juneau, the Alaska Swettsnam Gold Mining Company is erecting a 20-stamp mill, which will be running in another 60 days. The ledge is low in values, but very large, running from tide water directly up the mountain side. The dock, mill, etc., have been built on the dump itself, at the mouth of the tunnel. It has abundant water power and should mark an advance in cheapness of handling. Foundations, power, etc., have been laid out with the idea of using 100 stamps, which can be added without trouble.

#### CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Oneida.—The 60 stamps at this mine are now dropping and a force of 50 men are employed. Water power is used for the present. The 3-compartment shaft is down 2,300 ft., showing a large amount of low-grade ore.

Calaveras County.

(From Our Special Correspondent.)

Ozark Mining Company.—This company is working a drift mine on Six Mile Creek near Murphy's and the bedrock has been reached at a depth of 25 ft. Ground will be breasted out as fast as possible. The gold is very coarse.

El Dorado County.

(From Our Special Correspondent.)

Kelsey Slate Quarry.—Sinking still continues on this property and large beds of good slate have been developed. Forty men are employed under Superintendent J. Winsboro. The quarry is 1 mile from Kelsey.

Kern County.

(From Our Special Correspondent.)

Randsburg District.—Fifty tons of high-grade ore from the Butte Mine are being milled at the Red Dog Mill. The clean-up at the same mill from ore from the Santa Ana Mine averaged almost \$50 per ton; 40 tons from the Annex Mine is also being milled at the Red Dog. From the Buckboard Mine 30 tons of medium-grade ore has been sent to the mill. The Val Verde people have sent 100 tons to the mill.

Mariposa County.

(From Our Special Correspondent.)

Mary Harrison.—Development work is going on at this mine, 2 miles southeast from Coulterville. The shaft, now down 200 ft., will be continued to the 700-ft. before running crosscuts and drifts.

Placer County.

(From Our Special Correspondent.)

Alaska Mining and Trading Company.—This company has cleaned out the Dewey Tunnel on the Planet Consolidated property and is working on a fine body of gravel which prospects well. Geo. W. West is superintendent.

Rocky Bar Gold Mining Company.—This company has 15 men employed, placing an undercurrent in a gorge in the American River below Rice's Bridge, at a cost of about \$4,000. A. M. Burnham is superintendent.

San Bernardino County.

(From Our Special Correspondent.)

Desert Prospecting, Exploration and Development Company.—This company has been incorporated with a capital stock of \$500,000. The officers are John Denair, president; W. J. Chapman, vice-president; N. E. Rich, treasurer, and L. V. Root, secretary. This company owns the Orange Blossom group of mines in the Hykorum District, near Bengal, which it intends to develop under the management of W. B. Combs.

Shasta County.

Mountain Copper Company.—An interim dividend of 9s. a share has been declared, payable at the London office October 10th. The directors report that 99,948 tons of ore were smelted at the Keswick works during the 6 months ended June 30th, the copper produced being sent to the company's works at New Jersey to be refined. The output of fine copper from the New Jersey works during the 6 months was 5,038 tons. The sales of finished copper for delivery during the period amounted to 4,962 tons.

(From Our Special Correspondent.)

Josephine.—A small ledge of very rich ore has been struck at this mine near the Mount Shasta Mine, between Shasta and Clear Creek. The property has been worked for several months. Assays are said to average over \$140 per ton. The property is owned by M. W. Herron, M. Leach and A. J. Wright.

Midas.—This mine is in successful operation. The plant consists of a mill, cyanide works, etc. The last shipment of bullion was \$35,000 in 2 gold bricks sent from Harrison Gulch to San Francisco.

Trinity County.

(From Our Special Correspondent.)

Coffee Creek District.—The Yellow Rose of Texas and the Lawrence mines are being developed with good results. At the Golden Jubilee a 30-ton cyanide plant has been erected and is in successful operation. The Headlight Mine is being worked under bond with a force of 10 men. At the bonanza a good pay shoot has been struck.

Last Chance.—The ditch at this hydraulic mine is completed and the mine equipped for work.

Las Perlas.—The tunnel on this claim, when in about 50 ft., cut a 3-ft. ledge of very rich free-milling ore. The property is on the South Fork of the Salmon River, between Big Flat and Summerville.

Maple Creek Mining Company.—The hydraulic mining property of this company near Dedrick is worked under bond and will be thoroughly developed.

Tuolumne County.

(From Our Special Correspondent.)

Big Oak Flat District.—Work in the shaft of the Mack Mine has been discontinued until the mill is completed. Sinking at the Longfellow continues and the mill runs steadily. Hoisting at the Nonpareil is done with a whim, but a new boiler has been put in for pumping.

Blue Bell.—On this claim, which is an extension of the Blue & White Star, on the North Fork, work goes on steadily. The vein has been cut by 4 open cuts exposing 8 ft. of quartz with a pay streak 15 in. in width assaying over \$50 per ton.

Golden West Mining and Milling Company.—This company is developing the Comstock Ranch property near Black Oak Mine. The ledge is 4 ft. wide. The site for a mill has been surveyed. S. S. Petrovitch is superintendent.

Grizzly.—The north drift on the 700-ft. level is in 285 ft. and will be continued until 2 ore shoots are reached. As soon as the station on the 800-ft. has been completed drifts will be run both north and south. The ledge carries very fair grade ore.

#### COLORADO.

Gilpin County.

(From Our Special Correspondent.)

Mining Deeds and Transfers.—Q. C. Snyder et al. to C. Sauer et al. 2/3 east 700 ft. U. S. M. lode; James Clayton to J. B. Phillips 1/2 Croesus and Croesus extension lodes; Alzin Belfrage to G. Von Mosh 1/2 golden Gate group, G. B. Walford to The Carr Mine & Colorado Company, Limited, westerly 667 ft. of Carr lode, consideration, \$50,000; L. P. Arrighi to R. Wilkinson et al. lease and bond on Dump lode; H. J. Hawley et al. to F. Mayhew et al. lease and bond on Boodle lode.

Ardmore Mining and Milling Company.—This company has taken hold of the Mint and other properties in the Quartz Valley District and is expected to carry on heavy developments. F. W. Cammann, 45 Jackson Building, Denver, is manager.

Running Lode.—A good strike has been made by The Gowers Mines Syndicate, Limited, in the 600-ft. levels of ore running from \$100 to \$250 per ton. T. Dunstone, Black Hawk, is superintendent.

Carr Mine & Colorado Company, Limited.—This company, which paid \$40,000 for the Carr Mine, has purchased the Katie and Humboldt Lodes, adjoining the main property. The main shaft is being retimbered, with intention of sinking it 500 ft. deeper. A new shaft building, 26 by 60 ft., will be erected, and an 80-H.-P. engine installed. Stephen Hoskin, Central City, is manager, and has received power of attorney from the Englishmen.

Central City.—It is reported that the Ross Gold Mining Company will soon resume operations. The company is considering erecting a concentrator, either on North or South Clear Creek.

Freedom.—An excellent strike has been made in the 600 east level. Daily shipments of a car of mill dirt run from 5 to 7 oz. gold per cord, and the smelting product, now about 4 cars per week, averages \$100 per ton in car-load lots. An 80-H.-P. boiler is to be installed and an addition of 14 by 60 ft. will be erected. Stephen Hoskin, Central City, is manager.

Galena.—This group, owned by the Alpha Mining Company, has been bought for an English syndicate by John Grant of Detroit, Mich. The purchasers will make other purchases and intend to operate on a large scale. Frank Kenzel, Central City, is manager.

Gilpin & Boston Mining Company.—Returns from a 7-cord lot of mill ore gave values of over 5 oz. gold per cord and 6 tons of tailings cleaned

up from above run sold for \$43 per ton. J. W. Holman, Central City, is manager.

Gunnell Gold Mining and Milling Company.—The annual stockholders' meeting has been called for October 23d at Central City, by M. M. Fitzpatrick, secretary pro tem.

Lotus.—A new 80-H. P. boiler will be installed by Sternberger Brothers, who are reported to have refused an offer of \$300,000 for the property. The shaft will be sunk 200 ft. deeper, making it 1,000 ft. Shipments of concentrating ore are being made. S. S. Johnson, Russell Gulch, is manager.

Gunnison County.

(From Our Special Correspondent.)

Chloride.—Experts have lately been inspecting this property, near Ohio City, and report a favorable outlook. Two veins cut the group, averaging 20 ft. in width. Near the surface silver predominates, while below the 150 ft. mark this gives place to gold and copper. A cross-cut is being driven from the shaft toward the principal vein about 350 ft. from the shaft. Thirty-five feet yet remain to be driven.

Crystal District.—Two experts are making an examination of the Harper Group in the interest of possible Eastern purchasers. The Burt Mine has begun shipments to the Elko Mill. W. H. Hoagland, of Colorado Springs, will immediately begin a big tunnel to cut the Bon Ton Vein. Horace Miller has struck fine ore in the Hard Cash on Galena Mountain. The Grand Republic is being developed on a small scale.

Forest Hill Consolidated Mining Company.—This Gunnison company, with the Canton & Pittsburg Mining Company, is developing a large number of claims on Forest Hill. These 2 companies own 31 claims, over 300 acres in all. A large force is on development work.

Jersey Blue Gold Mining and Milling Company.—This company has secured control of the Empire Mill near Gunnison from R. R. Williams and is remodeling it. Fourteen car-loads of machinery were ordered, 9 of which have been received. The old mill is being extended by an addition 32 by 98 ft. The company has secured a bond and lease on the Golden Islet from R. Heffner, and has also purchased the Sacramento dump.

Marble District.—Sams and Hunt have started claims with a small force of men and have some good ore. The new machinery for the Osgood Marble claims is ready and cutting will begin at once.

Pitkin District.—The Maid of Athens has opened a new body of ore at the 200-ft. level, which gives good returns. A 300-ft. tunnel is being driven on the Gold Brick group by T. S. Stanley with profitable results. The Jersey Blue Milling and Gold Mining Company are remodeling the Empire Mill and will start the plant within the next 3 days, with cyanide as the principal factor. Chas. Stiles recently sold the Porcupine group, consisting of the Idaho, I. X. L. and Nellie L. lodes, on Siegel Mountain, to Geo. H. Waterburg, of Denver, the consideration being \$4,000. The workings consist of a 1,100-ft. tunnel and a shaft 163 ft. deep. A leaching process is to be put in at once by the new owner.

Pittsburg-Gunnison Mining Company.—Thos. Stanley has given a lease and bond to this company on the Yukon lode near Gunnison, and a tunnel is now under way to cut the vein at greater depth. New buildings are being erected.

Sacramento.—Thos. Blade, of Ohio, recently purchased this mine from J. F. Pearson, of Pitkin, and has let a contract to drive a crosscut several hundred feet below the present workings.

St. John.—A 3-ft. vein of low-grade ore with a rich pay streak has been encountered by P. Stoller, lessee, in the new shaft, at a depth of 50 ft.

Lake County—Leadville.

Interest is felt locally in the work which has been in progress to test the extension of the gold district. The bore-hole has been put down 400 ft. through the overhanging porphyry and is now in very promising ground. The operators are trying to secure some additional capital to carry on the work. They hold a lease and option on a large tract of patented land.

(From Our Special Correspondent.)

Leadville Tonnage.—The month opens with increased production averaging about 2,200 tons per day. The sulphide output will be considerably increased soon by a number of properties that have been conducting development work.

Black Prince.—No. 2 shaft of this Breece Hill property has been leased to Eastern parties for some years. The shaft will be sunk deeper and enlarged. Mr. Briggs, the owner, intends to conduct work on No. 1 shaft personally in a short time.

Fanchon Mining Company.—This Sugar Loaf property has a good strike in its Fletcher Shaft. Over 3 ft. of \$30 ore has been opened. The shaft is being sunk on the famous Orinoco Vein, while

the management will sink still another shaft on the Dinero Vein.

**Highland Mining Company.**—Having levied its assessment and cleared up its old debts, this concern has begun active work on its Breece Hill property. A new shaft is to be sunk down 600 to 800 ft. to catch the Ibe ore deposits or something equally as good.

**Home Mining Company.**—The daily output is 225 tons per day and this will be increased by October 10th, when the ore will be hoisted from the new bodies opened up in the Penrose Shaft. The Starr and Bon Air shafts also continue to open up the same ore shoot.

**Little Alice.**—This Breece Hill property, leased and recently started up, reports a find of a streak of 3-oz. gold ore.

**Poverty Flat Mining Company.**—The outlook for the recent new strike is excellent. The drifts at the 400-ft. level are in a streak of iron from 3 to 7 ft. wide and indications are good. The find will greatly stimulate work in this section.

**Valentine Mining Company.**—No. 1 shaft has been drained and sinking resumed. The bottom of the shaft is now in soft stuff with considerable iron stain. About 50 ft. deeper drifts will be started. Nos. 2 and 3 shafts are nearing 100 ft., when machinery will be put in position.

#### Ouray County.

(From Our Special Correspondent.)

**Camp Bird Mines and Mills Company.**—The option on this company's properties at Ouray has been given a continuance of 2 months, upon request of Messrs. Hammond and Jennings, who visited the mines September 22d for final inspection before submitting a report to the London corporation which they represent. This request was made in order that the experts might investigate in a more thorough manner, and after some deliberation, was granted by Mr. J. W. Benson, the general manager in charge, representing Thos. F. Walsh, the owner. The price asked, according to reports here, was \$15,000,000, but in view of the extension of the option, has been raised to \$16,000,000. In the meantime an immense amount of improvements is being done and will continue all winter, providing the pending sale is not consummated. The old lead mill is being torn out and 20 additional stamps are being added to the mill proper. A large force of men is also employed across the gulch from the present mill, grading out the site for a new 40-stamp mill which will be erected immediately with the ultimate intention of increasing its capacity to 100 stamps next summer. A new cyanide mill of 100 tons capacity will be running within a few weeks. Another mill of like capacity will be added as rapidly as material and labor can be secured. A new compressor building is just completed at the new tunnel, and machinery for the air drills has been installed. Seventy-one air drills are now in use. Another large compressor is to be put in next summer.

**Loder Pyritic Smelter.**—A company of Denver and Colorado Springs men, headed by J. S. Loder, has purchased the old Badger Mill, 2 miles north of Ouray, and is converting it into a smelter for treating low-grade ores by the pyritic process. Two stacks will be put in.

**O & N.**—After 2 years idleness this Ouray property, adjoining the American Nettie, will shortly resume operations.

#### San Juan County.

(From Our Special Correspondent.)

**Almira Mining and Milling Company.**—The mill, near Silverton, owned by this company is now shipping a car-load of concentrates daily from the Silver Ledge Mine.

**Barston Mining and Milling Company.**—A big cave-in in the lower workings has necessitated the temporary cessation of shipments from this Silverton property.

**Hercules Consolidated Mining Company.**—The first car-load of concentrates was recently shipped from this company's new mill on Sultan Mountain and gave very satisfactory returns.

**Inter-Ocean Mining Company.**—This Silverton company has secured a lease and bond on the Frederica and is erecting new buildings. J. H. Moreland has been engaged as general superintendent.

**Joe & John.**—Langolf Brothers have a 10-in. streak of rich ore in the 100-ft. tunnel and are preparing for a first shipment.

**Kendrick-Gelder Smelting Company.**—The new plant is about completed and will be ready soon. The management is considering the advisability of enlarging its capacity to 300 tons daily at an early date.

#### Teller County—Cripple Creek.

(From Our Special Correspondent.)

**Carrie S. Gold Mining Company.**—The control of this company has passed into the hands of S. R. Bartlett, of Colorado Springs. The company owns about 70 acres on Carbonate, Globe and Mineral hills.

**Consolidated Gold Mines Company.**—This company, which owns the Wild Horse, Freeport, T. F. T. Bertha, and R. B., beside controlling the

property of several mining companies here, has just distributed a dividend of 1c. per share on its capitalization of 1,250,000 shares.

**Damon Gold Mining Company.**—This company, which owns about 20 acres of ground on Bull Hill, has granted a lease to Vickers and Sturtevant, of Colorado Springs, a lease on that portion of their property adjoining the Wild Horse. The lease runs for 18 months and calls for 18% royalties. There are 3 sets of lessees at work on the Damon.

**El Paso Mining and Milling Company.**—The new compressor and machine drills at the El Paso Mine are in operation. The shaft is down 500 ft., and it is estimated that it will require 2 or 3 months to sink to the 700-ft. level. Beacon Hill operators watch with much interest this exploration of ore bodies at great depths.

**Independence Consolidated Gold Mining Company.**—Development goes on energetically on the Hull City Placer. The shaft on the main workings is down 760 ft. and will continue to 1,000 ft.; meanwhile the output is good. The shaft on the King and Whiting Lease is down 750 ft. and cross-cutting has been started at the different levels.

**Papoose Gold Mining Company.**—The Guess claim is being worked by the Atahualpa Leasing Company. The shaft is now down about 380 ft., and 100 ft. below the level of the Squaw Mountain Tunnel, in which a station was cut; 100 ft. more of sinking will be done. It is understood that enough ore has been mined from the shaft to pay for the machinery, and nearly enough to pay all expenses. Two leases are worked on the Ray Claim.

**Stratton's Independence.**—A notice that the men would be required to strip and pass from one change room to another under the scrutiny of watchmen was signed by the following companies: Stratton's Independence, Limited, Gold Coin Mining and Leasing Company, Portland Gold Mining Company, Elkton Consolidated Mining and Milling Company, Mary McKinney Mining Company, Last Dollar Gold Mining Company and Vindicator Consolidated Gold Mining Company. A compromise was finally effected whereby the men, except those suspected of stealing, are allowed to retain their underclothing. Mr. H. A. Shipman, general manager, stated that from \$5,000 to \$15,000 worth of ore per month had been stolen from the mine.

**Work Gold Mining and Milling Company.**—The new pumps and a new boiler have been installed on the Morning Glory. The water will be drained in a few days. The Morning Glory is worked under lease by the Morning Glory Mining and Leasing Company, the officers of which are Warren Woods, H. E. Woods, F. M. Woods, J. M. Allen and W. D. Hatton, F. M. Woods being secretary and general manager. The Morning Glory shaft is down 600 ft. and has a first-class hoisting and compressor plant, beside the new pumping plant.

#### IDAHO.

##### Ada County.

**Checkmate.**—This company, on Willow Creek, is shipping 11 tons of ore and concentrates daily to Boise, keeping 17 teams busy. The new part of the mill is running smoothly, and a large amount of ore goes through. The water supply is a little short, owing to the dryness of the season. The mill will reduce 60 tons a day easily, but it does not quite reach that amount regularly. George H. Wyman is superintendent.

##### Owyhee County.

A narrow seam of high-grade gold ore was struck recently within the limits of Silver City, near the old Potosi claim.

**Carbon Center Camp.**—This camp is midway between Wallace and Delta. There are about 20 patented claims belonging to the Hill family of Minneapolis. Recently the Roy Mining Company was organized to work some of them, and a tunnel is to be run 300 ft.

##### Shoshone County.

**Hecla Mining Company.**—This company's new plant near Burke is about ready and work is to begin on the shaft and machine drills will be put into the mine where the work heretofore has been done by hand. The building which encloses the plant is 40 ft. higher than the mouth of the tunnel, which is just enough above the level of the creek to give room for the ore bins between the mine track and the railroad track. The plant consists of a hoist, machine shop, air compressor, and boiler room, all under one roof, the entire building being 294 ft. long, one-half of it 40 ft. wide and the remainder 36. The gallow frame will be 85 ft. high, built of red fir, the timbers being 24 by 32 in. Next to the hoist will be the machine shops, and adjoining it the 10-drill compressor. Four boilers are in position, each capable of generating 250-H. P. They will burn coal and each has an automatic stoke, the only ones yet installed in the Coeur d'Alenes. The man in charge of the air compressor can regulate the amount of coal fed. A high line will be built down from the creek from the Tiger-Poorman boiler house, over which the coal will be hauled.

**Coeur d'Alene Mining Company.**—This company has men working on its water rights at the head of Prichard Creek getting things in shape to save more water. At its lowest stage Prichard Creek barely furnishes enough water now to keep the hydraulic elevator running to its full capacity. Surveyor Anderson is running a flue line from Big and Lost creeks and the company has about 40 men in addition to the regular crew of the hydraulic elevator, which is being run steadily. No bedrock has yet been cleaned, all of it yet touched being that in the immediate vicinity of the sump at the foot of the elevator.

#### MICHIGAN.

##### Copper—Houghton County.

**Atlantic.**—The September output was 281½ tons; for 9 months 2,461½ tons. These compare with 275 1-3 tons and 2,170½ in 1899.

**Franklin.**—The September output of mineral was 191 tons, compared with 210½ tons in August. An accident on the Mineral Range Railroad stopped stamping 2 days, a loss of nearly 70 tons of mineral.

**Osceola Consolidated.**—At No. 3 shaft, North Kearsarge, a new shaft house has been built and boiler and engine houses are building. This 3-compartment shaft is down to the 17th level and is 1,500 ft. north of No. 2, or the main working shaft. As soon as the equipment has been provided at No. 3 it will become the main hoisting shaft. No. 2 is down to the 24th level. At the South Kearsarge 2 new shafts are being sunk, each down about 400 ft. Four levels have been laid out in each shaft. A large rock house has been erected at No. 1 shaft to do all the crushing for the mine, and a trestle from No. 2 shaft is being erected for the purpose of conveying the rock to the rock house. The new hoisting plant is a duplicate of the one at the Isle Royale, with a winding capacity of 6,500 ft.

**Wolverine.**—The output of the Wolverine copper mine in the month of September was 231 tons and 200 pounds of mineral. This compares with 230 tons and 700 pounds in August, and 230 tons and 400 pounds in July.

(From Our Special Correspondent.)

**Atlantic.**—Some exploratory work in the way of trenching is being done in a search for a new lode that is supposed to exist. The work is about 800 ft. from the old workings.

The concrete work on the Redridge dam is being hurried while the weather is favorable.

**Calumet & Hecla.**—J. C. Van Truen has arrived from Philadelphia with a few car-loads of machinery from the I. P. Morris Company. Among the lot is a part of the pump "Arcadian," which is being erected at the stamp mills at Lake Linden. The mine has been troubled with an exceptionally large amount of water lately. For the past 4 weeks it has been found necessary to run 2 lines of pumps, the electric pumps being put into commission also. At the Calumet branch the amount of water has been largest. Ground has been broken for the 6th shaft on the Osceola amygdaloid lode.

**Osceola Consolidated.**—No. 6 shaft is now down to the 36th level and the rock encountered is promising.

#### MISSOURI.

##### Jasper County.

(From an Occasional Correspondent.)

**Joplin Ore Market.**—There was a very strong demand for zinc ore last week and prices were unchanged, the fine ore from the Eagle Mine at Belleville and other choice lots selling at \$27.50 per ton, while lead sold at \$23 per 1,000 lbs., as for several weeks past. There was not as much high-grade ore sold last week as the week previous, but what was produced was eagerly sought. The firmness of the spelter market led to a heavy production which will be still further increased should ore advance as now seems probable. Following is the turn-in by camps of the Joplin District for the week ending September 29th:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	2,400,890	412,940	\$40,827
Galena-Empire	1,319,080	149,561	19,269
Carterville	1,671,390	313,410	26,264
Aurora	69,040	21,350	6,950
Duenweg	414,170	27,110	5,065
Webb City	918,810	37,050	11,830
Spring City	83,420	25,190	1,497
South Jackson	98,540	11,230	1,416
Central City	111,300		1,257
Oronogo	868,420	6,830	10,816
Zincite	709,440	10,580	9,466
Granby	229,060	37,600	4,379
Aba	193,460		2,554
Beck City	108,130		1,460
Stotts City	63,450		843
Seneca	65,240		456
Cave Springs	18,120	6,500	377
Carthage	183,270		2,380
Carl Junction	148,100		1,925
Sourgeon	53,210	2,700	755
Wentworth	44,580		446
Springfield	42,680		576
District total	10,542,770	1,064,050	\$150,811
Total 39 weeks	365,336,250	42,844,160	\$6,116,603

Last year, during the same week, fancy grade



zinc ore sold at \$4.50 per ton and lead at \$27 per 1,000 lbs. The zinc sales were less than this week by 947,930 lbs., the lead sales greater by 127,530 lbs., and the value greater by \$56,179. For the corresponding 39 weeks last year the lead sales were less by 6,498,032 lbs., the zinc sales greater by 26,978,680 lbs., and the value greater by \$2,504,659. As compared with the previous week the lead sales were less by 221,240 lbs., but the zinc sales greater by 1,903,650 lbs. and the value greater by \$11,630.

## MINNESOTA.

(From Our Special Correspondent.)

Ore shipments from Two Harbors up to October 1st were 3,000,000 tons, more than any previous year up to date, but less than was expected. There will be 1,000,000 tons more shipped to the end of the season.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Myers Brothers, of Duluth, have an option on the Scott interest in the w ½ of the se ¼ of section 22, T. 58, R. 20, which has been explored of late by the Chandler Iron Company.

The Rahilly tract, that has been under option to the Chandler Iron Company for the past 6 months and has been called a very remarkable find, has been dropped by the company. It is now said that the ore, though rich, is in narrow seams, almost in veins, and that the formation is different from the Mesabi in general.

The Jeffrey tract, under lease to Hartley and others, and on which they have spent some \$15,000, has been dropped, the ore not apparently being of a grade suitable to market now. There is a large ore body thereabouts.

Fayal.—This mine has been shipping some time and the water is slowly being lowered. There is still considerable water in No. 3 pit. There were 46,000,000 gal. in this mine.

Minnesota Iron Company.—The explorations near Mesaba Station, east end of the range, on which the company has been at work some months, are said not to be turning out as well as expected, though a considerable tonnage of ore is showing up.

Mountain Iron.—This mine is sufficiently unwatered to permit mining and is now shipping very heavily from the upper levels, 2 shovels being in ore. The third shovel is still in the water. The mine will be pushed to the end of the season.

Snively Tract.—The Lake Superior Consolidated Mines has purchased the fee title to the Snively tract, adjoining the Mountain Iron Mine on the east, for \$37,500. About 1,750,000 tons of good ore are said to be there. Miller & Brown explored the land lately. It was explored by many holes in the early days of the range, but dropped by Mr. Snively.

## MONTANA.

Deer Lodge County.

(From Our Special Correspondent.)

French Gulch Dredge.—W. R. Allen is in Anacoda receiving the last of the machinery for this dredge. He expects to have it in operation within a week. It is of the bucket type and is expected to handle 2,000 yd. each 24 hours.

Hidden Hand.—At this property at Emery the inclined shaft is down 350 ft. Shipments of ore are going forward to the smelter. Dr. Peter Musigbrod is the principal owner. Joe Henderson is superintendent. A good tonnage of shipping ore is blocked out.

Gallatin County.

(From Our Special Correspondent.)

West Gallatin Coal Measures.—Prospecting has gone steadily forward for several months over an area of 10 square miles, the results of which have proved the existence of 3 separate beds of a semi-anthracite coal 6 ft., 4 ft. and 5 ft. thick respectively. Mr. O. P. Chisom, of Bozeman, has secured a bond on whole for \$90,000.

Jefferson County.

(From Our Special Correspondent.)

Abe.—This property, 4 miles from Wickes, owned by Picot, Scharf and McNeill, of Boulder, is to be worked under a bond and lease by Geo. W. Winter and others.

Ada.—What has the appearance of being an important strike is reported from this property, situated 10 miles from Basin on Cataract Creek. The property is owned by Downey and Axe, who are shipping a car a week, which is being taken out in sinking the shaft.

Evening Star.—J. O. Brisco has brought suit against the receiver of the First National Bank to quiet title to this property.

Minah.—Judge Knowles, in the United States District Court, ordered the deed conveying this property to John O. Brisco cancelled. The mine with other property was sold about 2 years ago by Judge H. N. Blake as master in chancery. The United States Court of Appeals subsequently reversed the decree of Judge Blake, which was declared void. The sale itself was therefore void and the court granted the motion to cancel the deed.

Madison County.

Queen of the Hills.—Charles W. Clark is chief owner of this mine, in the Vipond District, for which \$75,000 was paid. About 50 men are busy and have finished a 10-stamp mill now in operation. It is equipped with Wilfley tables. The shaft is down 170 ft., and sinking will continue. The ledge is perpendicular, and at the bottom of the shaft is a gold lead which gives, it is said, \$40 to the ton. It is 7 ft. wide. South of it there is a copper ledge which assays 7% on the surface.

(From Our Special Correspondent.)

Gravelly Range.—B. F. Fine, of Virginia City, has under his control some 3,000 acres of this range on the Upper Ruby, the supposed course of the gold found in Alder Gulch. Mr. Fine has been prospecting what has proved to be an ancient river channel, using a Keystone drilling outfit. Several holes have been drilled to bedrock which was found to be from 80 to 120 ft. deep. More or less gold is found all through this top stuff with good pay on bed rock. A flume will bring water on the ground from the Cottonwood on the Ruby side of the Range. Monitors and giants of large size will be used for hydraulic mining, it being the intention to move 20,000 cu. yd. of dirt each 24 hours. The amount of gravel to be handled is estimated at something like 60,000,000 cu. yd. W. F. Rumley is engineer in charge. The workings are about 24 miles above Virginia City.

Madisonian.—Capt. E. H. Trerise, general manager, is at Mercur, Utah, investigating the cyanide process as used in the Golden Gate Mill, with a view of adopting that method at the Madisonian if found suitable. A strike of 10 ft. of good ore has been made on the 400-ft. level.

Noble.—At this property, situated at the head of Wisconsin Creek, the contractors have finished retrimbering the old tunnel, which is about 2,000 ft. long. The property is owned in St. Louis and some years ago was worked quite extensively. It has been operated for a few years by tributaries. The old company will open it again.

Missoula County.

DeBorgia Mining District.—This district is about 90 miles from Missoula, on the Coeur d'Alene branch of the Northern Pacific. On the Rock Island claims a crew of men is sinking a shaft. Fifteen men are employed at present. A New York company also has men at work on its claims, which are beginning to make a showing. The new roads from DeBorgia are being built to the mines, one to the Rock Island properties and the other to the New York properties. The road to the Rock Island claims is 6 miles long and is about half finished. The other road to the New York claims from DeBorgia is about 10 miles long.

Park County.

(From Our Special Correspondent.)

Bear Gulch Mining Company.—This property at Jardine is putting through the 20-stamp mill 100 tons each 24 hours, the ore being oxidized and very soft. Four Johnson tables are used back of the plates on which are caught the coarse concentrates. The slimes pass over Frue vanners after the Johnson tables. It is the intention of the management to put in 2 Huntington mills to regrind the tailings from the plates and pass them over the plates again. Bruckner roasters will probably be installed to calcine the iron pyrites, which will then be cyanided, according to present plans.

Silver Bow County.

(From Our Special Correspondent.)

Belle of Butte.—This silver property at Walkerville, owned by the Butte & Boston Copper Company, is worked by tributaries. The ore is siliceous and is shipped to the smelter at Tacoma.

Smokehouse.—The shaft on this property in Butte is down about 300 ft. Sinking will continue until the 500-ft. is reached.

Speculator.—Superintendent Wishon is sinking to the 1,200-ft. level from the 1,000 station. A certain tonnage of ore is shipped daily to the Deadwood smelter. The Butte & Boston smelter at Butte is getting the balance. Eighteen ft. of first-class shipping ore is reported on the 1,000-ft. level.

NEVADA.

Storey County—Comstock Lode.

Gould & Curry Mining Company.—The new mill is the first plant to be introduced on the Comstock under the system of progressive operations. The patent crushers and concentrators and line shafting are installed at this mill, and the electrical motors for operating it are ready. The structure has 7 stories or platforms from foundation to roof and is over 120 ft. high. The ore is run directly from the mine to the mill, dumped into a bin connected with the rock breaker, the fine ore passing through a grizzly into the automatic feeders of the crushers and the coarse falling into the breaker, after which it also drops into the first tier of 5 crushers on the floor below the ore dump. The pulp from the crushers flows over 5 concentrators, from which it passes downward into the next tier of 4 crush-

ers, thence to the next floor to the second series of 4 concentrators and finally flows over a third series of concentrating tables on the lower floor. The process from dumping the ore to the third or final series of concentrators is continuous. The sulphurets from the first tier of crushers contain the bulk of the battery sample assay value of the ore. The entire length of the tunnel connecting with the 425 level of the Gould and Curry workings will be let with incandescent electric lights when the current from the Floriston power plant is turned on.

NEW MEXICO.

Grant County.

Colorado Fuel and Iron Company.—This company is working its property east of the Anson S. Mine on Union Hill, in the Fierro District, and is shipping 4 car-loads of ore daily. The Shanley Tunnel, being run from the gulch level to tap the ore deposits on Iron Hill, is making slow headway on account of close air. A blower is in constant use.

Emma.—This mine, at Fierro, which recently changed hands, has been thoroughly overhauled and cleaned out. The shaft has been enlarged to a 2-compartment, and re-timbered, a new galloways frame erected, and the entire surface appearance improved. Two shifts are employed.

Mineral Point Zinc Company.—This company of Mineral Point, Wis., has quite a group of zinc claims in this county, is doing considerable surface work, and is shipping several car-loads of ore to its works in Wisconsin.

Three H's.—This group of claims, near Steeple Rock, owned by J. A. Harlan, E. H. Hinkle and William Horstman, is reported sold to A. W. Tennant for \$50,000. The property contains gold and silver and will be symmetrically developed by the new owners. New machinery has already been shipped.

Santa Fe County.

Cochiti Gold Mining Company.—This company has been employing a large number of experienced miners and mill men for the plant at Albemarle. About 30 men from Mercur, Utah, were recently employed. The company intends to sink the shaft in the Albemarle to the 1,000 ft. level, and from the bottom drive levels and drifts on the vein. The mill is running at its full capacity and treats about 250 tons of ore daily.

Cochiti Reduction and Improvement Company.—W. C. Wynkoop, general manager of this company, whose new reduction plant at Woodbury, 6 miles down Pino Canyon from Bland, was burned down some time ago, is at Woodbury to take charge of rebuilding the mill. The plant will have a reduction capacity of at least 100 tons per day. The cyanide process, including the use of compressed air for agitating the pulp, will be employed.

Sierra County.

El Oro.—This mine at Andrews has a shaft now down 170 ft. and the pay streak is reported getting better.

PENNSYLVANIA.

Anthracite Coal.

Miners' Strike.—The third week of the great strike has seen steady gains on the part of the miners. The largest gains have been made in the Schuylkill Region, where colliery after colliery belonging to the Reading Coal and Iron Company has been forced to close down. It is now reported that the Reading has only 4 out of its 39 collieries at work. The only one of its collieries running in the North Schuylkill Region is the North Franklin at Trevorton. In the Lehigh Region the strikers have made gains also, but not as great as in the Schuylkill. The Panther Creek Valley collieries of the Lehigh Coal and Navigation Company are reported running with full forces. The collieries of Marple & Company are running with a small number of men. The Hazelton District is now almost completely tied up. In the Wyoming Region the shut-down continues. Fully 125,000 men are now idle.

The strikers have been orderly and there have been few acts of violence. Several large mining and transportation companies having lines to tide water have posted notices offering their men a 10% advance in wages and a reduction in the price of powder to \$1.50 per keg. The Reading has offered to arbitrate all differences with its men. This offer gives the men virtually all they wanted before the strike was called, but the offer has apparently encouraged the officials of the United Mine Workers to hold out for further concessions, including a recognition of the union and a uniform mining rate for the whole field. It is safe to say that the operators will wait a long time before recognizing the union, for they feel that they would simply put themselves under the control of men knowing nothing of anthracite mining and would have to submit to exactions more arbitrary and foolish than those imposed by the old Workingmen's Benevolent Association. As for a uniform scale, the wide differences in anthracite seams makes such a scale an absurd proposition, and goes far to sustain the operators' contention that officials

of the United Mine Workers know nothing of anthracite mining or willfully ignore facts.

Bituminous Coal.

(From Our Special Correspondent.)

The dry weather is hailed with delight by those plants whose water supply is good and that have wet mines, as a dry spell gives the men a better chance to work.

The last of the coal in South Huntington Township, Westmoreland County, has been sold to a syndicate represented by E. C. Mitchell of Philadelphia; 324 acres of coal land south of West Newton, on Sewickley Creek, were sold by William J. Savage and Charles C. Savage for \$8,000. Mitchell represents a Philadelphia firm that recently purchased a large block of coal land in the same vicinity.

Adelaide.—About 250 ft. of archwork is being put in the bottom of this mine of the H. C. Frick Coke Company.

Fayette Coke Company.—This company, one of a number of new companies that have rushed work in the southern end of Fayette County, will be able to place coal and coke on the market November 1st from its mines and 100 ovens. The tract adjoins that of the Eureka Fuel Company, the fuel end of the American Steel and Wire Company, and consists of 400 acres of good coal land. A little hamlet of 32 houses will be built. A branch of the Pennsylvania Railroad reaches the works. The company is composed of E. C. Fitzgerald and A. H. Reeder of Uniontown, the former being president and the latter vice-president.

H. C. Frick Coke Company.—This company has been making extensive improvements at its Calumet plant; 35 new ovens are built, giving the plant a total of 260. At the shaft a new head frame was put in and self-dumping cages on the tipples. Also an endless-rope haulage, 3 miles long, in the mines. This is the first endless-rope system in the coke region, though they are common in the mines along the Monongahela River and the Pittsburg Railroad combine district. A dinkey engine is now used at Calumet instead of mules for charging the ovens. Another improvement is a large air compressor.

Pittsburg Coal Company.—This company will make strong efforts to export coal to Europe this winter and next spring. The trial cargoes that have been sent to England and other countries have proved satisfactory.

#### SOUTH DAKOTA.

Fennington County.

(From Our Special Correspondent.)

Big Hit Mining Company.—This company has encountered a new vein of better ore in the Bismarck Mine. The company is experimenting on a treatment process.

Chilcoat.—At 100 ft., ore is being taken from this mine that gives good values. The mine is bonded to members of the Big Hit Company, of Milwaukee.

Copper Cliff Mining Company.—This company, recently organized, has let a contract for a 300-ft. tunnel on property on Little Rapid Creek, near Rochford. The officers of the company, from Michigan, are here. They are: A. D. Chamberlain, president; E. F. Braze, vice-president; and Dr. Kelly, treasurer. The president resides at Ironwood, Mich.

Gopher.—This mine, worked by W. E. Haskell and associates, of Minneapolis, employs 12 men. At the bottom of a 100-ft. shaft a drift is being run on a wide vertical of free milling ore. Ed Manion, formerly manager of the Wasp No. 2, in Lawrence County, is superintendent. The mine is 3 miles north of Hill City.

Holy Terror Mining Company.—Ten stamps of the Keystone 20-stamp mill and the 10-stamp Holy Terror mill, at Keystone, are working on ore from the Holy Terror Mine. Experiments are still being made at the Keystone cyanide plant on the raw ore from the Keystone, and on the concentrates from the Holy Terror, and the company still has hopes of treating the ore raw successfully.

Hornblende District.—A steam hoisting plant is being erected at the Yellow Bird Mine, on a vertical of free milling ore. Iowa people are running a long tunnel, on the Blair Group. The Black Hills Copper Company, in which Benton Harbor, Mich., people are interested, has begun a deep shaft. The British-American Company, of Detroit, is sawing lumber for a large camp north of the Black Hills Copper Company. A tunnel is being run to tap a vein of copper and gold ore.

#### UTAH.

(From Our Special Correspondent.)

Argentine Branch Closed.—On September 28th the last lot of cyanide product was sampled and settled for at the Argentine Branch of the American Smelting and Refining Company, and the Salt Lake quarters are now out of commission.

Bullion and Ore Shipments.—During the week ending September 29th there were sent forward

from the several smelters 27 cars, or 1,141,195 lbs. lead-silver bullion; 3 cars, or 163,665 lbs., copper bullion. In the same week there were shipped from different camps 87 cars, or 4,306,630 lbs. lead, silver and gold ore and concentrate products and 9 cars, or 457,205 lbs., copper ore consigned to smelters outside the State.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—For the week ending September 28th there were shipped from the 3 railroad points of the district 1 bar of bullion, 101 cars of ore and 7 cars of concentrates, contributed as follows: Centennial-Eureka, 40 cars; Gemini, 15 cars; Mammoth, 1 bar bullion, 11 cars ore, 2 cars concentrates; Grand Central, 10 cars ore; Humbug & Uncle Sam, 5 cars; Star Consolidated, 5 cars; Ajax, 4 cars; Carissa, 3 cars; Swansea, 3 cars; Godiva, 2 cars; Brooks Bros., 1 car; May Day, 1 car; Undine, 1 car. Eureka Hill sent out 5 cars of concentrates.

Grand Central vs. Mammoth.—It is expected that this suit will come on for trial in November, a month later than announced.

May Day.—It is said the debt is reduced to \$8,000. The past week 3 cars of ore were marketed which realized \$2,000 over freight and treatment costs.

Star Consolidated.—The ore shoot found on 200 and 300 levels is cut on 400. This is a large and profitable ore body. The ore as mined runs \$50 to \$80 gold, besides the usual silver content. A month ago the company was \$50,000 in debt.

Utah.—This Fish Springs property is marketing some high-grade lead-silver ore, such as made the mine famous. On September 22d a car-load returned 49.6% lead, 166 oz. silver. Were it not for the long wagon haul the tonnage would be far greater.

Salt Lake County.

(From Our Special Correspondent.)

Bingham Copper and Gold.—A party of Rio Grande Western engineers is surveying line for railroad grade up Bingham Canyon and it is said a spur is contemplated for Bingham Copper and Gold ores.

Dalton & Lark.—At special stockholders' meeting September 27th authority was given to transfer all or any part of the company's realty. It is said that by October 1st it will be known positively whether the Farnsworth option is to be carried out.

Red Wing Extension.—The ore find made 10 days ago holds out well.

Utah Consolidated.—September copper production was 481,000 lbs., the yield from about 7,000 tons of ore carrying approximately \$5 in gold and silver per ton.

All the material for alterations in tram, necessitated by making No. 7 level the main working artery and doubling production, is arriving. The enlarged smelter plant will consist of 3 Wethey and 8 McDougall roasting furnaces and 7 reverberatories. All the betterments at mine and smeltery will be finished by January 1st.

Summit County.

(From Our Special Correspondent.)

Park City Shipments.—For the 2 weeks ending September 29th there were marketed through the Mackintosh sampler 6,087,560 lbs. of smelter products, which were contributed as follows: Silver King, crude, 2,497,126 lbs., concentrates, 309,560 lbs.; Daly-West, crude, 1,455,780 lbs., concentrates, 1,010,360 lbs.; Anchor, concentrates, 415,240 lbs.; Ontario, crude, 294,460 lbs.; California lease, concentrates, 55,550 lbs.; Barnes lease, concentrates, 39,410 lbs.

Daly.—Exploration on 1,200-ft. level gives favorable showings. Superintendent Chambers anticipates that the mine will be able to pay its way.

Daly-West.—A share owner writes: "Is Daly-West actually worth as much more than a year ago, as indicated by market quotations?" From the most reliable sources there appears no doubt that the ore reserves are double those of 12 months ago, and other conditions have improved.

Daly-West vs. Anchor.—On October 4th, at Coalville, the trespass suit comes on for trial. It is affirmed that \$200,000 worth of ore was mined by Anchor in Daly-West territory. The attorneys are: For plaintiff, Bennett, Harkness, Howat, Sutherland & Van Cott and W. I. Snyder; for the defendant, Dickson, Ellis & Ellis.

Tooele County.

(From Our Special Correspondent.)

Consolidated Mercur.—President-Manager Cohn states that by October 15th all the needed dead work, to connect the 2 mines for economic operations, will be completed and that thereafter a production of 1,100 tons a day will be regularly maintained. When Captain De La Mar was last here he said that Superintendent Edwards had reported to him that he could keep up an \$8 battery and that he did not expect it would fall much below that figure. In less than 2 weeks it dropped to \$6.50 and it is reasonable to infer that this is about the best that can be expected day in and day out. This

allows a handsome profit, but detracts from the worth of the shares.

Northern Light.—The mill is once more in commission, but judging from the past it is likely to be idle before November.

Overland.—Manager Duncan states that before the end of the year the equipment will be in form to treat 500 tons every 24 hours. He anticipates to return a reasonable profit on \$2.50 and \$3 ore.

Washington County.

(From Our Special Correspondent.)

St. George Copper Mining Company.—Production of the Dixie Mine, operated by this company under lease and bond, for September is 38,000 lbs. pig copper and 4,000 lbs. of 70% matte, representing a smelter run of 6 days. It is not the intent to put the smelter in commission again for 2 months. Meanwhile the horse whim is discarded and a 24-H.-P. gasolene hoist is being installed. There were delays in getting the new machinery freighted from the railroad to the mine, but it is now all on the ground and the plant should be in commission October 1st.

WASHINGTON.

Okanogan County.

(From Our Special Correspondent.)

Okanogan Gold Mines, Limited.—The directors have issued a circular signed by Edward Baillo, secretary-treasurer, stating that, owing to circumstances over which they had no control, they have been compelled to suspend work in the mine. Only \$10,566 was realized from the first assessment and \$6,740 from the second. The sum of \$9,108 has been applied to the reduction of the old company's liabilities, the balance of the assessments received having been expended in development work. The directors state that a S. Thornton Langley, a creditor of the company, and to whom they are indebted on a promissory note for \$1,161, has commenced legal proceedings for the recovery of the amount, which the directors admit they owe him. Mr. Langley has secured an attachment against the property and the mine is closed down.

According to Mr. Langley, he was never a director of the present corporation, but he was in the former company, from which he resigned as director in November, 1899. Mr. Langley alleges mismanagement on the part of the new directors. The company's property is situated in Washington and the proceedings are under the laws of the State, though most of the directors reside in Rossland and a very large portion of the shares are held in Ontario. The capital of the former company was \$80,000—or 1,600,000 shares of the par value of 5c. each. The capital of the present company is 2,000,000 shares of the par value of 10c. each, with 400,000 shares reserved in the treasury.

WYOMING.

Carbon County.

Ferris-Haggerty Mining Company.—Work on the new hoisting plant is about completed; shipments have been temporarily reduced during the progress of the work. Plans for an electric light plant to be run by water power are under consideration; also a project to use part of the water power for a rope tramway to carry the ore to the top of the divide. The company is putting in a new 80-H.-P. boiler. I. C. Miller of Encampment is president and manager of the company.

#### FOREIGN MINING NEWS.

CANADA.

British Columbia—East Kootenay District.

(From Our Special Correspondent.)

North Star.—For the last 2 months the shipments of argentiferous lead ores have averaged 100 tons daily.

St. Eugene.—The August payroll amounted to \$27,323, the greatest yet recorded. About 260 men are at work.

British Columbia—West Kootenay District.

(From Our Special Correspondent.)

Rossland Ore Shipments.—The weekly ore shipments average about 7,000 tons. The output of these mines for the 8 months and 27 days up to September 27th amounted to about 141,000 tons valued at \$2,256,000 gross. Ore shipments from the Le Roi dumps to the Trail Smelter have been temporarily discontinued.

Le Roi Mineral Tax.—An investigation is being held before Gold Commissioner Kirkup at Rossland with regard to the returns sent in for the quarter ending June 30th, 1900. The government tax required up to that time was 1%, since then it has been 2%. Mr. Kirkup refused to accept the returns for the quarter mentioned on the grounds that they were not correct and should be signed by the general manager or some other person equally responsible. The returns in question were signed by Mr. Curry, the bookkeeper. Mr. Gordon Hunter, of Victoria, appeared for the Provincial Government and T. Mayne Daly for the Le Roi Company. The returns sent in showed only a net of 62c. per ton. The Commis-



sioner assessed the ore at \$13.50 per ton less \$5.75 for freight and treatment equal to \$7.75 net on which the 1% duty should be paid.

A number of interesting facts have been elicited. The present company operating the smelter is known as the Northport Smelting Company and among the local directors are Bernard MacDonald, C. R. Hamilton and E. Durant, of Rosland. A contract was made with Mr. Breen of the old company in 1898, stipulating a smelter rate of \$10 per ton with \$2 rebate. The contract with the railway company was for 75c. per ton and this was to last 5 years. The Breen contract is in force at present. The quantity of ore returned for the quarter ending June 30th was 38,635 dry tons. The returns furnished the commissioner were made up from the smelter statements which were produced, but a check in favor of the government the Commissioner refused. The returns showed that the smelter was paying 95% of the gold at \$20 per oz., the same for silver and from 15 to 18c. per lb. for copper. To obtain marketable value the ore must not only be smelted but refined, 50c. per ton being allowed for dross. The value of the gold was \$20.56 per oz., 1,000 fine market value .999. The matte was shipped to Perth Amboy, N. J.

According to the evidence of Mr. Thomson, assistant manager, the assay value was the basis of settlement on which the smelter was called upon to pay for the metal in the ore, the rate of freight and that of treatment being deducted. The government tax is based on the metallic contents of the ore according to the smelter returns, smelter and freight rates being deducted.

Granby Smelter.—Jay P. Graves, general manager of this smelter, states that the returns of the first shipments of matte from the smelter have been received from New York. They include subsidiary values in gold and silver and are considered satisfactory, but the exact figures have not been furnished. The company intends to install a copper converter next year and ship metallic copper.

Le Roi No. 2.—Rapid progress is being made with the foundation work of the new 40-drill compressor house situated about 500 ft. south-east of the new bunkers on the grounds of the Old Nickel Plate. About 15 men are at work.

Wakefield.—Operations have been suspended at this Slocan mine, awaiting the arrival of the new management.

**COAL TRADE REVIEW.**

**New York.**  
**Anthracite.**

Oct. 5.

Warm weather and rumors that the striking miners were to go back to work soon cooled the feverish tendency of the market. Consumers have lost their fears of a famine and will probably buy as sparingly as possible in hopes of a settlement of the strike before cold weather sets in for good. Speculative holders of coal are just a trifle nervous at the outlook. Altogether, prices are not likely to go any higher immediately. In the West dealers have found that they have coal enough on hand, if dealt out with care, to last some time. This is particularly true of Chicago coal men. The movement from the docks at Duluth and Superior has been very heavy, but this movement, is lessening and though receipts of coal are behind those of this date last year, the prospects of a coal famine this winter are not so bad as at first imagined.

As to the strike, its duration is still problematical. The banking house that holds the largest interest in anthracite railroad stocks is said to have sent the mining companies peremptory orders to end the strike. The miners have received offers of a 10% advance and lower powder. The grievances they complained of are not general and the price of supplies was the most important. Having shown their power and secured better pay, it is quite possible that they will return to work before long. Mr. Mitchell, in consideration of what has been done, may waive any claim for open recognition of the union. The strike may be called off any day. It may last for several weeks.

Retail prices for coal have fluctuated violently during the week. At New York Harbor jobbers sold stove coal as high as \$6. It fell to \$5.50 within 2 days. In general it may be said that prices at wholesale are about \$1 above those prevailing 1 month ago. Regular quotations, however, cannot be given, as prices are a matter of bargaining.

The Schuylkill Exchange states that the average drawn to return price of the prepared sizes of coal sold in September was \$2.67 and the rate of wages to be paid for the last half of September and first half of October is consequently 6% above the \$2.50 basis.

**Bituminous.**

There is a large demand for coal in the Atlantic seaboard bituminous trade, particularly for the better grades, and producers have trouble in keeping up with the orders that come in from their contractors. Complaints of car shortage

continue, but the supply doled out at the collieries by the railroads is decidedly better than it has been. The supply now amounts to 75 or 80% of the total number wanted. There are rumors and even outright statements that this doling out of cars is the policy of the railroads and that the supply is to be cut down to all except favored concerns. It is also said that the roads will pursue this policy, giving a preference in transportation to classes of freight that pay better than coal. The railroads claim that there is no reason for a shortage, but their promises of better results do not bear fruit.

Trade in the far East is large. Some urgent orders are received by shippers, but not nearly as many as last year at this time. Along the Sound there is a scarcity of the better grades of coal, and the poorer grades are not in as good supply as they might be. New York Harbor trade shows a large demand. Producers are having trouble to keep up the amount usually considered as apportioned to this territory. The all-rail trade has at length become very heavy, and some producers have been obliged to cut down slightly on shipments to their contractors in order to supply demands elsewhere. Export trade shows a continued demand and steady shipments. In another column we comment on the possibilities of exporting coal and point out the likelihood of the Pennsylvania road running its own colliers. We learn that the Atlantic Transportation Company's coal fleet is actually controlled by the Pennsylvania and is to be the nucleus of that fleet of larger craft which is to supply many European ports.

Car supply is better. Transportation from mines to tide is good and about up to schedule. At New York Harbor boats are in much better supply and charges for harbor transportation are getting back to normal after being 100% above normal 2 weeks ago. In the coastwise vessel market vessels are plenty and coal scarce, so ocean freight rates are weak. We quote current rates from Philadelphia as follows: Providence, New Bedford and the Sound, 70c.; Boston, Salem, Wareham and Portland, 75@80c.; Portsmouth and Bath, 85c.; Newburyport, 95c.; Lynn, 90c.; Bangor, \$1; Gardiner, \$1 and towages; Saco, \$1.05 and towages.

The poorer grades of coal are selling at \$2.55@ \$2.85 f. o. b. New York Harbor ports. There is no current price on the better grades.

**Birmingham, Ala.** Oct. 1.

(From Our Special Correspondent.)

There is an active demand for coal and the mines are working hard. The Underwood Mining Company's mines in Blount County are now ready and the laying of rails to that place will be completed soon. The Blocton-Cahaba Coal Mining Company in Bibb County announces it will shortly be in the market with an excellent quality of coal. At the only mines near Birmingham, owned and operated by the Republic Iron and Steel Company, the company is erecting a fine coal washer which will be completed soon. As soon as the washer is in working order the mines will resume. The company has mines at Warner, in the western part of the county, but as 2 rolling mills have just started there is demand for all the coal that can be secured.

The Mississippi River trade is keeping up. Operators are selling considerably ahead, it being stated that some of the smaller operators have sold their production ahead for the balance of the year and have offers until May 1st. The miners in this State are seemingly satisfied. Outside of minor troubles the miners are working smoothly and getting out all the coal they can.

**Chicago.** Oct. 2.

(From Our Special Correspondent.)

Anthracite coal is in urgent demand, the demand being far larger than the supply. Inquiry for hard coal is very large, and, as a usual thing, answers as made by the wholesalers are that only a part of the coal can be had, and that they do not care to take further orders for early delivery, nor for the immediate future, because of the uncertainty. The retailers of hard coal about town have been doing an immense business for the past couple of weeks, the small consumer having had to pay \$7 a ton for his coal. Circular prices on anthracite are, for grate, \$6.25; egg, stove and nut, \$6.25.

Bituminous coal continues in large demand. The near approach of winter and the fact that there is a scarcity of hard coal has driven many to buy soft coal, particularly the better grades, in some of which there is a shortage in supply. The stocks of soft coal here have been greatly reduced and shipments now coming in are quickly absorbed. Prices are higher. Brazil block Indiana is quoted \$2.80; Island nut \$2, Hocking Valley, \$3; Wilmington, \$2.50; Pocahontas, Maryland and New River, \$4; Raymond, \$3.50; Montana, \$3.50.

**Cleveland, O.** Oct. 3.

(From Our Special Correspondent.)

The week opened with a spurt of coal to the upper lake ports. During the last three days of last week the receipts of coal from the mines were rather light, not enough being received to give the boats already under charter their car-

goes. This week opened with the supply decidedly better, all of the tonnage that presented itself being taken care of by the shippers. From now on to the end of the season of navigation it will be a fight between the lake lines and the local consumers who gets the coal. Anticipating a good deal of competition on this score, the shippers are sending up the lakes now all the coal they can get boats to carry and docks up above to receive. The increased demand for coal in the northwest has freed the docks to a large extent and the boats rushing to Lake Michigan for grain give the shippers all the tonnage they can take care of. The mine operators seeing the big demand in both commercial and lake coal, have increased their output to some extent, so that the lake interests are not likely to be hampered soon again. The lake shippers are getting their year's business well in hand. Some of them have announced that they are about 1,000,000 tons ahead of what they were at this time a year ago, and that they have 90% of their coal at the head of Lake Superior and 85% of it to Lake Michigan ports. With two months of the season to run, it is likely that all coal will be at the head of the lakes before December, insuring, therefore, an early closing of the lake coal business.

**Pittsburg.** Oct. 3.

(From Our Special Correspondent.)

Coal.—The scarcity of cars is the feature of the coal trade this week. Instead of an improvement the conditions are more unsatisfactory than at any time this year. It was found necessary for the Pittsburg Coal Company to cut off some of its shipments to the Northwestern market to supply urgent demands. The starting of many mills that have been idle for three months has increased the already heavy demand. The car shortage has seriously handicapped the railroad coal combination in its deliveries. In addition to this about 1,000 miners went on a strike on Monday over a dispute on one of the provisions of the wage scale. The trouble was adjusted to-day and the men are all back at work. Contrary to expectations the Pittsburg Coal Company announces that there will be no advance in prices this fall.

Connellsville Coke.—Both the production and shipment of Connellsville coke fell off last week. Standard Connellsville coke is still quoted at \$2 @ \$2.25 for furnace and \$2.25@ \$2.50 for foundry, but the prices for furnace coke was shaded during the week. One leading producer, in bidding on a large contract, quoted \$1.65 a ton. An outside operator bid \$1.50 on the same order. There are 13,963 active ovens in the region and 6,499 ovens are idle. The production for the week was 148,916 tons, a decrease of 956 tons. The shipments aggregated 7,449 cars, distributed as follows: To Pittsburg and river tipples, 2,816 cars; to points west of Pittsburg, 3,433 cars; to points east of Connellsville, 1,200 cars. This was a decrease of 128 cars, compared with the shipments of the previous week.

**Shanghai, China.** Aug. 22.

(Special Report of Wheelock & Co.)

Coal.—Good kinds of Japan coal are scarce and in demand. A considerable quantity of Cardiff has changed hands at high rates, and as the stocks are in few hands, prices are not likely to fall. Wollongong is still very quiet. Arrivals of all kinds of coal during the fortnight were 17,525 tons. Quotations per ton are: American anthracite, 20.50 taels (no stock); Welsh Cardiff, 22 taels; Australian Wollongong, cargo, 13 taels; and other sorts, 6.50@7 taels; Chinese Kaiping, lump, 7.50@8.50 taels; dust, 5 taels, and mixed, 5.50@6 taels; Japan all contracted for.

Kerosene Oil.—Only a retail business is being done, and prices are weak and uncertain. Quotations per case are as follows: American Devoe's, 1.93 taels; Russian Batum, Anchor Chop, 1.80½ taels, all other Chops, 1.79 taels; and bulk oil, 1.72½ taels; Sumatra Langkat, 1.72½ taels. Stocks are: American, 1,045,700 caes; Russian, 570,000 cases, and Sumatra, 24,500 cases; total, 1,640,200 cases.

**Foreign Coal Markets.**

The English coal trade is steady. There is no change in prices. 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.

It has just been announced in Cardiff that the Cambrian Collieries Company has contracted to supply the Western Railroad of France with 72,000 tons small steam coal, deliveries to extend from May, 1901, to May, 1903, and to be made at Havre and Dieppe. The price is \$4.80 a ton, and as freights from Cardiff are about \$1.32, this would net the company \$3.48 f. o. b. Cardiff. The same company will deliver 36,000 tons of lump steam coal at \$7.20, netting it \$5.88 f. o. b. Cardiff. Another contract for large steam coal, running over 1901, has been placed at \$5.52, f. o. b. Cardiff.

In France there is little change. Current quotations in the Nord and the Pas-de-Calais 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 the consumption is chiefly of English coal.

In Germany the trade is in rather an excited condition, and complaints of short supplies continue. The reduction in freights on the railroads gives no satisfaction.

A sale of 500,000 tons for English account, reported from Chicago, seems to be a contingent contract, which may or may not result in actual shipments, according to circumstances.

**SLATE TRADE REVIEW.**

**New York.** Oct. 5.

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'ville.	Bangor.	Bangor Ribbon.	Alb'n. or Bangor.	Chap'n Keys ne.	Peach Bottom.	Sea Gr'n.	Unad' 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	4.09	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		3.09		5.25	2.90	3.50	
18 x 11	7.00						2.90	3.75	
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	2.90	4.25	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			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	7.40	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.

Business continues generally quiet, and prices are still unsettled.

The shipments from Slatington and Walnutport, Pa., in the week ending September 27th were 4,571 squares roofing slate, 693 cases school slates and 851 crates of blackboards.

The Northfield, Vt., slate deposits are to be worked more systematically, and in Tennessee a new company will work slate quarries.

The exports of slate from the United States in the 8 months ending August 31st amounted in value to \$561,917, against \$894,114 in the same time in 1899; a decrease of \$332,197, or 38%. The roofing slate exported in 1900 amounted to 88,780 squares, against 177,088 squares in the corresponding period last year, showing a falling off in 1900 of 88,308 squares. The exports of mill stock in the 8 months of 1900 were valued at \$96,390, against \$100,822 last year; a decrease of \$4,432.

**IRON MARKET REVIEW.**

**NEW YORK, Oct. 5, 1900.**

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

Fuel used	Week ending		From Jan., '99.	From Jan., '00.
	Oct. 6, 1899.	Oct. 5, 1900.		
An'racite & Coke.	F'ces. 241	Tons. 277,700	197	225,425
Charcoal.	25	6,450	31	8,225
Totals..	266	284,150	228	233,650

The iron market is gradually extending, though prices are again lower. Bessemer pig has sold down to \$13.75 and \$13.60 in Pittsburg. In foundry iron there has been more activity, though Pennsylvania furnacemen complain that the reduction of 50c. in freights on Southern iron has unsettled the market. The Alabama people, however, do not find fault.

Finished materials show rather a variable market. The bridge-builders are again buying largely, and the shipyards have not quite filled their requirements. Car-builders will probably be on the market again before long.

There is much interest in the steel rail market. Plenty of inquiries are reported, but not much actual business at the \$26 rate. There is talk of some heavy contracts to be closed very soon, but parties concerned refuse to say whether prices are maintained on these, and it is general report that any contracts made now has a clause assuring the buyer of whatever reduction may be made later.

**Birmingham, Ala.** Oct. 1.

(From Our Special Correspondent.)

The pig iron market in this section of the country is no better to-day than it was 30 days

since. The fact that the rolling mills of the Republic Iron and Steel Company have resumed operations will stimulate the local market some and will tend to lessen the accumulation of pig iron in the yards. There is still considerable pig iron going out for export, but furnace men say that the shipments being made are on orders accepted some months since and that there is but little business transpiring now. Quotations are not improved and it is denied that sales of any importance are being made at prices lower than those publicly given. The reduction in freight rates in the domestic market of 50c., effective this week, will, it is believed, help the market. There are no indications that more furnaces are to be put in blast in the near future. There are some furnaces almost ready for the torch and which could be put in operation on very short notice.

The general condition of the iron companies' plants in this section is good. The furnaces as a whole are in fairly good condition and the repairs that are being made on some of them are of a substantial nature. Talladega furnace will be ready for a resumption of work within the next 40 days. The fifth furnace at Ensley is waiting the word from the office of the Tennessee Company to start up, while the fourth furnace at the same place is being repaired rapidly. The Sloss-Sheffield Steel and Iron Company is rushing the work of repairing one of the city furnaces. One of the furnaces at North Birmingham will shortly need some repairing, but as long as a good output is obtained the furnace will be kept in operation. The Alabama Consolidated Coal and Iron Company is working on two of the furnaces and will be ready this winter to extend production if occasion requires it. The Republic Iron and Steel Company has only one furnace in blast at Thomas, work being done on the second one. The third new furnace will hardly be completed before next spring.

The following quotations are given: No. 1 foundry, \$12@12.50; No. 2, \$11.50@12; No. 3, \$10.50@11; No. 4, \$10; gray forge, \$9.50@10; No. 1 soft, \$12@12.50; No. 2, \$11.50@12.

**Buffalo.** Oct. 3.

(Special Report of Rogers, Brown & Co.)

There is very little to add to recent reports upon the condition of the iron market in this vicinity. There has been a reduction of 50c. per ton in freights from the South to this section, but this concession has been expected and therefore discounted for some little time past, so it has not affected prices. It is becoming more and more evident that very little Lake Superior charcoal iron will be stored here this winter. Shipments of foundry iron continue heavy, but sales are confined to small lots for early consumption. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$16.50; No. 2, \$16; Southern soft No. 1, \$16.50; No. 2, \$16; Lake Superior charcoal, \$19; coke malleable, \$15.50.

**Cleveland, O.** Oct. 3.

(From Our Special Correspondent.)

Iron Ore.—As an evidence of the light movement of wild ore from the head of the lakes the past week has seen some of the regular ore tonnage of the larger sort going to Chicago for grain instead of trying to get ore cargoes. This is taken to indicate a slack movement of wild ore from now on. The shippers report that most of their wild material has been moved down the lakes, all that remains being odd lots and the clearing up of the docks for the fall. There is still a little bickering over the rates, the larger vessels being content with the 65c. rate that is being offered, but the moderate-sized tonnage holding for 70c. and some of them getting it. The movement is too light from Marquette and Escanaba to make a different rate possible, so the freights from the head of the lakes apply from those ports as well. Some little talk is being indulged in as to the prices of ore for next year, but so far no business has been done. In its absence the association prices are being quoted, although all know that were there any sales these would be materially reduced. The basing prices of the Ore Association are \$5.50 for Bessemer and \$4.25 for non-Bessemer and range ores, while the prices vary on the Mesabi ores, the quotation on Biwabik being used for basing purposes. This is \$4.25.

Pig Iron.—The only change noted during the week was a slight increase in the sales. The buyers are covering their needs for the latter part of the year, but not beyond that. The prices are steady at \$15@15.50 on No. 1 foundry and \$14.50@15. Valley furnace, on No. 2. The market for Bessemer is quiet, no business having developed as yet.

Finished Material.—The quotation of \$26 on steel rails brought out a large inquiry for material, larger, in fact, than had been counted upon when the reduction was made. Few sales have been made, but a large tonnage is in prospect. There is a nominal business in soft steel billets, with sales in moderate-sized quantities at \$17, but some being made as low as \$16.50, although the higher price is closer to the market. The price on plates is weak, the market holding nominally for 1.10@1.15c. on medium-sized orders,

although 1.05c. is possible on a large-sized order. Some rates have been named as low as 1c., but no sales have been made at that figure, as far as known. There is a fair demand for shapes at the old prices of 1.50c. on beams and channels and 1.40c. on angles. The tonnage disposed of at these figures has been large.

Old Iron.—Since some of the mills in this vicinity have started there is an increased demand for scrap. The dealers and the buyers find themselves widely at variance as to the possible price. Not enough actual business has been done of late to warrant a quotation.

**Philadelphia, Pa.** Oct. 4.

(From Our Special Correspondent.)

Pig Iron.—The unexpected quiet this week was caused by the desire of buyers to see the outcome of the 50c. reduction in freight rates to tidewater points. This is a sort of blow to Pennsylvania pig iron makers who feel that quotations heretofore prevailing were as low as they should be, considering cost of production. The condition of foundry yards call for stocks, but as far as inquiries can reach foundrymen are in no haste to buy. The new factor will soon be adjusted and some business will be done. Quotations may be safely given as follows: No. 1 X foundry, \$16.25@17. No. 2, \$15.25@16; No. 2 plain, \$14.75@15; gray forge, \$13.75@14.25.

Billets.—Our consumers are determined not to buy largely for some weeks to come.

Sheets.—The sheet mills are gathering an accumulation of business slowly. Both light and heavy sheets are selling well, but there are no orders for remote delivery.

Bars.—There are more prospects of trouble over the reduction of wages. Some puddles in the Schuylkill Valley have accepted a 25c. drop, but manufacturers quietly say this is not the end, especially if the Republic mills overstock the Western markets, as they are likely to, and then empty their surplus on the East. The present demand is fair, but buyers are warned on all sides to proceed cautiously. Refined bars are 1.30c., but can be shaded.

Skelp.—The orders recently booked show a slight drop, but the capacity is such as to force it.

Plates.—Plates are quiet, Western competition is felt and manufacturers are disposed to meet customers with concessions. Plates are 1.25@1.30c. base. Boiler-makers hereabouts are picking up a good deal of local business.

Structural Material.—The rumor that there is to be a drop in structural material cannot be traced beyond our offices. A very large amount of business has been placed this fall and those familiar with the situation say there will be a steady demand for bridge material. Beams and channels are 1.60c.

Steel Rails.—The rail market is quiet, although the Reading has awarded the Lackawanna Steel Company a contract for 12,500 tons at \$26 and the Pennsylvania Steel Company a contract for 12,500 tons. The Pennsylvania is about closing for 155,000 tons.

**Pittsburg.** Oct. 3.

(From Our Special Correspondent.)

Contrary to expectations a further drop in Bessemer pig iron prices occurred during the week and some large sales were made. The lowest point reached was \$13.60 a ton delivered in Pittsburg. Most of the sales, however, were at \$13.75. The iron sold is in stock, as no furnaces were put in blast and several were blown out during the week. The sales made this week are for shipment extending through the last quarter of the year. The demand for foundry iron continues and the market is firmer. There were no sales of any consequence of Bessemer steel billets this week and it is believed that active buying will not commence until after the election. The price quoted remains at \$17, but it is said that manufacturers are not particularly anxious to sell at that figure. Furnace E of the Edgar Thomson group of blast furnaces at Braddock was blown out this week and will be rebuilt. It will be made 25 ft. higher and will be equipped with an electric automatic charging device. The improvements will cost from \$75,000 to \$100,000. The National Steel Company and the Republic Iron and Steel Company closed the big blast furnaces at Sharon, Pa., on Monday. The furnaces are to be overhauled and will likely be put in blast in about two months. The National Tube Company put its rolling mill in Frankstown, this city, in operation yesterday, and also started its puddling furnaces at the Republic Works on the South Side. A report was extensively circulated here during the week to the effect that prices had not been fixed for 1901 by the steel rail pool, as was announced, and that the market is an open one. It was said that orders had been taken as low as \$22 while the pool price was \$26. This report was emphatically denied by the Carnegie Steel Company. From present indications the tonnage of steel rails for next year will be greatly in excess of 1900. The Carnegie Steel Company, under the agreement with its 15,000 employees, has given notice



of a desire to terminate the wage contract on December 31st. The posting of these notices at the various plants of the company caused considerable uneasiness among the men who anticipate a cut in wages. The usual notice, however, does not necessarily mean a reduction, as on one occasion the company granted the men an increase.

Pig Iron.—Sales of Bessemer pig iron were made this week aggregating 10,000 tons, the heaviest amount of business done in one week for several months. The price was low, \$13.60 being the rate on some lots of over 500 tons, but the bulk of the orders were taken at \$13.75, Pittsburgh. This iron is for delivery during the last quarter. Foundry iron prices are firm and the demand is good. No. 2 is quoted this week at \$14@14.75.

Steel.—A few small sales of Bessemer steel billets were made this week at \$17. Open-hearth billets are quoted at \$19 a ton. The demand for steel bars continues, but the price remains at 1.15@1.25c. Plates are quoted at 1.05@1.10c.

Sheets.—Black sheets are a trifle lower this week, sales of No. 28 having been made at 2.90@2.95c and No. 27 at 2.85@2.90c. Galvanized sheets are still quoted at 75% off, with the usual 15c. freight allowance.

Ferro-manganese.—The price quoted for 80% domestic is \$85, but it is believed that a lower rate could be obtained.

New York. Oct. 5.

Pig Iron.—The reduction in freight rates brings Southern irons into the market again. There is but little business, however, and the market shows no strength. We quote for Northern irons, tidewater delivery: No. 1 X foundry, \$16@17; No. 2 X, \$15.25@15.75; No. 1 plain, \$16@17; No. 2 plain, \$14.75@15.25; gray forge, \$14@14.50. For Southern irons on dock, New York, No. 1 foundry, \$15.50@16; No. 2, \$14.75@15.25; No. 3, \$13.50@14; No. 4, \$13@13.50; No. 1 soft, \$15.50@16; No. 2, \$14.75@15.25.

Bar Iron and Steel.—The market shows improvement. We quote common bars at 1.20@1.25c. for large lots on dock; refined bars, 1.35c.; soft steel bars, 1.20c.

Plates.—There is a lack of small orders, though some large orders are about to be placed. Prices are weaker. We quote for large lots at tidewater: Tank, 1/4-in. and heavier, \$1.20@1.35; water; Tank, 1/4-in. and heavier, 1.20@1.30c.; marine, 1.50c.; universals, 1.30c.

Steel Rails and Rail Fastenings.—It seems altogether likely that concessions are to be made from the announced price of \$26. The nominal price on present sales continues somewhere around \$30 at Eastern mill. Light rails are selling between \$25@35. Splice bars are 1.40@1.50c.; spikes, 1.70c.; fish plates, 1.35c.; bolts, 2.30@2.40c.

Structural Materials.—The demand is but fair and few large contracts are reported. We continue to quote large lots at tidewater: Beams, 1.65c.; channels, 1.65c.; angles, 1.30c.; tees, 1.70c.; zebs, 1.65c.

Nails.—The demand is for small lots. Wire nails in large lots on dock are quoted at \$2.50; cut nails, \$2.15.

METAL MARKET.

New York. Oct. 5. Gold and Silver.

Gold and Silver Exports and Imports At all United States ports in August and year.

Table with columns for Metal, August 1899, August 1900, Year 1899, Year 1900. Rows include Gold Exports, Gold Imports, Silver Exports, Silver Imports, and Excess.

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

Gold and Silver Exports and Imports, New York For the week ending October 4th, 1900, and for years from January 1st, 1900, 1899, 1898, 1897.

Table with columns for Period, Gold Exports, Gold Imports, Silver Exports, Silver Imports, Total Excess or Imp. Rows for Week, 1900, 1899, 1898, 1897.

Exports and imports of gold were chiefly to and from the West Indies. Exports of silver were to London, chiefly; imports were from Mexico and the West Indies.

The United States Assay Office in New York

reports the total receipts of silver at 73,000 oz. for the week. Total since January 1st, 3,790,000 oz.

Average Prices of Silver per oz. Troy.

Table with columns for Month, 1900, 1899, 1898. Rows for January through December and Year.

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

Average Prices of Metals per lb., New York

Table with columns for Month, COPPER, TIN, LEAD, SPALTER. Rows for Jan through Dec and Year.

Commencing with March 17th, the prices given in the table for copper are the averages for electrolytic copper; this is the case for both 1899 and 1900. The average price for Lake copper for the year 1899 was 17.61c. For January, 1900, the average price of Lake copper was 16c.; for February, 16.08c.; for March, 16.55c.; for April, 16.94c.; for May, 16.55c.; for June, 16c.; for July, 16.16c.; for August, 16.38c.; for September, 16.63c.

Prices of Foreign Coins.

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

Financial Notes of the Week.

There is no special change in business, which continues quiet. There is some talk of gold imports from London, but they do not seem probable unless conditions change materially.

Silver is strong, with rising tendency. Advance seems to be occasioned by good India buying, while supplies have not been sufficient to meet the needs. It is reported there are also some speculative purchases.

The statement of the United States Treasury on Wednesday, October 3d, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week:

Table with columns for Sept. 25, Oct. 3, Changes. Rows for Gold, Silver, Legal tenders, Treas. notes, etc., and Totals.

Treasury deposits with national banks amounted to \$97,479,391, showing an increase of \$206,484 for the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House for the week ending September 29th—gives the following totals, comparison being made with the corresponding weeks in 1899 and 1898:

Table with columns for 1898, 1899, 1900. Rows for Loans and discounts, Deposits, Circulation, Reserve, Specie, Legal tenders.

Total reserve \$190,859,200; Total legal requirements \$175,327,050; Balance surplus \$15,332,150.

Changes for the week this year, were an increase of \$203,300 in circulation and decreases of \$5,668,400 in loans and discounts, \$12,764,700 in deposits, \$4,642,400 in specie, \$2,158,500 in legal tenders and \$3,609,625 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:

Table with columns for Banks, Gold, Silver, 1899, 1900. Rows for N.Y. Ass'n, England, France, Germany, Spain, Aus-Hun, Neth'lds, Belgium, Italy, Russia.

The returns of the Associated Banks of New York are of date September 29th, and the others

Imports and Exports of Metals.

Large table with columns for Port, Week, Oct. 3, Year 1900. Rows for New York (Aluminum, Antimony, Chrome, Copper, Lead, Manganese, Nails, Nickel, etc.) and Baltimore (Chrome, Copper, Iron, Manganese, etc.).

Total United States.

Table with columns for Articles, August 1900, Year 1900. Rows for Antimony, Copper, Iron, Lead, Manganese, Nickel, Nails, Quicksilver, Steel, Tin, Zinc.

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, 3/4c. a lb. Lead, 1/4c. a lb. on lead in ores; 2 1/2c. per lb. on pigs, bars, etc.; 2 1/2c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb. Quicksilver, 7c. per lb. Spelter or zinc, 1 1/4c. per lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

are of date September 28th, 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.

Shipments of silver from London to the East for the year up to September 20th, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Change.
India.....	£3,693,700	£4,280,907	I. £587,207
China.....	948,953	1,598,966	I. 649,813
The Straits.....	203,008	581,866	I. 378,858

Totals..... £4,845,661 £6,461,539 I. £1,615,878  
Arrivals for the week, this year, were £149,000 in bar silver from New York, £21,000 from the West Indies, £6,000 from Chile and £4,000 from Australia; total, £180,000. Shipments were £252,000 to Bombay.

Indian exchange has been stronger, with a large demand for Council bills in London. The average rate is 15.94d. per rupee. There is still some buying of silver in London for Indian account.

The United States Treasury statements for September show that the cash balance is \$135,062,372, exclusive of the gold reserve of \$150,000,000, and there has been a surplus of receipts over ordinary expenditures during September of \$5,699,326. The net surplus for the fiscal year beginning July 1st has thus far reached only \$863,391, as compared with \$3,245,204 for the same days a year ago. Receipts thus far have been \$144,448,242, which is about \$2,220,000 larger than for the same period of 1899, but expenditures have been \$143,584,581, which is an increase of about \$4,570,000 over the same period of 1899. The gold stock reached \$438,803,154 on September 29th, of which \$230,211,245 was the property of the Government and the remainder was held against outstanding gold certificates. This is one of the largest gold funds in the world.

Imports of specie by water at San Francisco for the eight months ending August 31st were:

	Gold.	Silver.	Totals.
Coin.....	\$10,501,277	\$388,937	\$10,890,214
Bullion.....	198,665	1,439,862	1,638,527

Totals..... \$10,699,942 \$1,828,749 \$12,528,741

The imports were from the following sources: Mexico, \$1,938,645; British Columbia, \$83,221; Central America, \$29,116; Australia, \$5,895,430; China, \$4,845; Japan, \$4,239,591; South America, \$1,280; Hawaiian Islands, \$336,613.

The Treasury Department makes the following statement, showing the estimated amount of money in the United States on October 1st:

	General Stock.	In Treasury.	In Circulation.
Gold coin (inc. bullion in Treas.)	\$1,059,288,820	\$230,131,162	\$620,047,309
Gold Certificates.....	.....	.....	209,110,349
Silver Dollars.....	498,349,343	6,907,342	71,176,265
Silver Certif. ....	.....	.....	420,265,735
Subsid. Sil.....	86,000,748	5,568,555	79,432,193
Treas. Nts of 1890.....	67,714,000	113,812	67,600,188
U. S. Notes.....	346,681,016	20,354,702	324,506,314
Currency Certif. ....	.....	.....	1,820,000
Nat. Bank Notes.....	328,416,428	9,079,798	319,336,630

Totals..... \$2,386,450,955 \$273,155,372 \$2,113,294,983

For redemption of outstanding certificates an exact equivalent in amount of the appropriate kinds of money is held in the Treasury, and is not included in the account of money held as assets of the Government. The statement of money held in the Treasury as assets of the Government does not include deposits of public money in national bank depositaries to the credit of the Treasurer of the United States, and amounting to \$90,151,643. The total circulation shows an increase of \$16,611,941 over September 1st, and of \$164,591,797 over October 1st, 1899. The estimated circulation is \$27.01 per capita.

The coinage executed at the Mints of the United States in September and the 9 months of this year is reported by the Bureau of Statistics, Treasury Department, as below:

Denominations.	September.		Nine Months.	
	Pieces.	Value.	Pieces.	Value.
Double eagles.....	24,008	\$480,160	3,261,542	\$65,230,840.00
Eagles.....	7	70	374,918	3,749,180.00
Half eagles.....	362,609	1,813,045	1,468,677	7,203,295.00
Quar. eagles.....	24	60	27,136	67,840.00

Total gold..... 386,648 \$2,293,335 5,132,273 \$76,251,155.00  
Dollars..... 3,500,100 3,500,100 17,598,612 17,598,612.00  
Half-dollars..... 539,100 275,050 7,056,612 3,528,306.60  
Quar.-dollars..... 421,100 106,725 11,823,197 2,955,799.25  
Dimes..... 510,100 51,010 20,338,882 2,053,888.20

Total silver 4,984,400 \$3,932,185 57,017,303 \$26,136,605.45  
Five c. nickels 3,222,300 161,115 16,757,195 837,859.75  
One c. bronze..... 5,430,300 54,303 42,121,964 421,219.64

Total minor..... 8,652,600 215,418 28,879,199 \$1,259,079.39

Total Coinage..... 14,023,648 \$6,440,938 121,028,735 \$103,646,539.81

Total, 1899..... 16,391,834 \$9,506,794 80,865,377 \$109,182,128.19

So far this year the total coinage shows a falling off of \$5,535,289, or 5%, as compared with 1899.

Other Metals.

Daily Prices of Metals in New York.

Sept. 1st.	Sterling Exchange.	Silver.		Copper.				Spelter.		
		Fine oz. Cts.	Pence.	Lake, cts. @ lb.	Electrolytic, @ lb.	London, @ lb.	Tin, cts. @ lb.	Lead, cts. @ lb.	N. Y. cts. @ lb.	St. L. cts. @ lb.
29	1.85 3/4	63 3/4	29 1/4	16 3/4	16 3/4	.....	28 1/2	4.32 1/2	4.10	3.95
1	1.85 3/4	63 3/4	29 1/4	16 3/4	16 3/4	72 1/2	29	4.32 1/2	4.10	3.95
2	1.85 3/4	63 3/4	29 1/4	16 3/4	16 3/4	72 1/2	29 1/4	4.32 1/2	4.10	3.95
3	1.85	63 3/4	29 1/4	16 3/4	16 3/4	72 1/2	29 3/4	4.32 1/2	4.10	3.95
4	1.84 3/4	64	29 1/2	16 3/4	16 3/4	72 3/4	29 3/4	4.32 1/2	4.10	3.95
5	1.84 3/4	64 3/4	29 3/4	16 3/4	16 3/4	72 3/4	29 1/4	4.32 1/2	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 has ruled rather quiet throughout the week and transactions have been few and far between. However, there is quite a firm undertone to the market and consumption continues very satisfactory at all centers. Pending the development of the political situation abroad and the outcome of the elections in this country, manufacturers are inclined to go slow on new purchases, but it is quite likely that when once the demand sets in the scarcity of copper for early delivery will be keenly felt. We quote lake copper, 16 3/4 @ 16 3/4 c.; electrolytic in cakes, bars or ingots, 16 3/4 @ 16 3/4 c.; cathodes, 16 3/4 @ 16 3/4 c.; and casting copper, 16 3/4 c.

The market for standard copper on Monday opened unchanged from last week at £72 10s. and remained steady at about that figure throughout the week. The closing quotations are cabled at £72 15s. @ £72 17s. 6d. for spot, and 10s. higher for three months.

For 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, 6 3/4 d.

Statistics for the second half of September are unchanged from the showing for the first half of the month.

Tin.—The upward movement reported last week made further progress, but consumers are very apathetic and purchases are restricted to the covering of immediate wants. We quote Straits prompt at 29 1/4 c. and October at 29c.

The London market on Monday opened at an advance of about £1 over last week's close, went up further £3 on Tuesday, but toward the end of the week declined again. The closing quotations are cabled as £134 5s. @ £134 7s. 6d. for spot, three months being £6 10s. below those figures.

Statistics for the month of September show an increase in the visible supplies of 700 tons.

Imports of tin into the United States for the eight months ending August 31st were: East Indies, 21,137,904 lbs.; Great Britain, 22,593,280; Holland, 2,986,073; other countries, 708,684; total, 47,425,941 lbs. The total last year was 50,832,162 lbs., showing a decrease of 3,406,221 lbs., or 6.7%, this year.

The visible stocks of tin on October 1st were reported as below, in tons of 2,240 lbs.:

	Store.	Afloat.	Totals.
London.....	5,514	2,884	8,398
Holland.....	2,665	965	3,660
U. S. exc. Pac. ports.....	3,060	2,488	5,548

Totals..... 11,239 6,367 17,606

This shows an increase of 1,258 tons over September 1st, but a decrease of 1,264 tons as compared with October 1st, 1899.

Lead is quiet but steady, with a fair demand from consumers. We quote New York 4.32 1/2 @ 4.37 1/2 c. and St. Louis 4.25 @ 4.32 1/2 c.

The European market continues very strong, Spanish lead being quoted at £17 17s. 6d. @ £18 and English lead £18 @ £18 2s. 6d.

Imports of lead into the United States for the eight months ending August 31st and re-exports of foreign lead refined here, are reported by the Treasury Department as below, in pounds:

	1899.	1900.
Lead in ores and bullion.....	131,804,473	145,816,147
Lead, metallic.....	462,058	397,616

Total imports..... 132,266,531 146,213,763

Exports of foreign lead..... 105,784,712 125,312,258

Balance of imports..... 26,481,819 20,901,505

Of the imports this year, 118,667,891 lbs. (81.1%) came from Mexico, and 24,419,847 lbs. (16.7%) from Canada; the balance being from other countries.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is dull and presents no novelty. Argentiferous lead is firmly held at 4.32 1/2 c. Missouri is selling slightly at 4.27 1/2 c.

Spelter has been quite active and we hear of a number of transactions at full prices. We quote New York 4.10c. and St. Louis 3.95c.

The foreign market is steady, good ordinaries being quoted at 19 and specials at £19 5s.

Exports of spelter or metallic zinc from the United States for the eight months ending August 31st were 38,796,724 lbs., against 12,871,680 lbs. in 1899; an increase of 25,925,044 lbs., or 201.4%. The exports of zinc ore were 24,766 tons, against 16,794 tons in 1899, showing an increase of 9,972 tons, or 58.2%, this year.

Antimony.—No change. We quote Cookson's, 10c.; Hallett's, 9 1/4 c.; U. S. Star, 9 1/4 c.

Imports of antimony into the United States for the eight months ending August 31st included 2,253,571 lbs. metal or regulus, and 3,748,687 lbs. antimony ore.

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

Exports of nickel, nickel oxide and nickel matte from the United States for the eight months ending August 31st were 3,928,278 lbs., an increase of 626,161 lbs. over last year.

Platinum.—Consumption continues good and prices are strong. For ingot platinum in large quantities \$18.20 per Troy oz. is quoted in New York. In London a recent quotation gives 75s. per ounce, unmanufactured, and 77s. 6d. @ 80s. for crucibles, etc. This is very nearly on a parity with New York prices.

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

Imports of platinum into the United States for the eight months ending August 31st were 5,114 lbs.; an increase of 921 lbs. over last year.

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 are firm, \$49 @ \$50 being named on local deliveries, and \$44.50 @ \$45 on export orders. The London price is £9 2s. 6d. per flask, with the same price named from second hands.

Exports of quicksilver from all United States ports for the eight months ending August 31st were 552,453 lbs., against 961,336 lbs. last year; a decrease of 408,883 lbs., or 42.7%, this year.

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

Aluminum.	Per lb.	Ferro-Tungsten (20%)	Per lb.
No. 1 90% ingots.....	33 @ 37c.	Ferro-Tungsten (37%)	\$1.00
No. 2 90% ingots.....	31 @ 34c.	Magnesium.....	\$2.75 @ \$3
Rolled sheets.....	42c.	Manganese (over 99%)	\$1.05
Alum.-bronze.....	20 @ 23c.	Mangan'g Cop. (2% Mn)	32c.
Nickel-alum.....	33 @ 39c.	Mangan'g Cop. (3% Mn)	38c.
Bismuth.....	\$2.25	Molybdenum (Best).....	\$1.45
Chromium (over 99%)	1.00	Phosphorus.....	50c.
Copper, red oxide.....	55c.	American.....	70c.
Ferro-Molyb'dum (50%)	\$1.00	Tungsten (Best).....	52c.
Ferro-Titanium (10%)	\$9.00		

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

LATE NEWS.

The Tennessee Coal, Iron and Railroad Company has declared a dividend of 2% quarterly on the preferred stock, and also a dividend of 2% quarterly on the common stock. This is the same rate as was paid in May and August.

The Dominion Coal Company reports the shipments of coal from its mines in Cape Breton, Nova Scotia, in September at 183,300 tons. For the seven months of the fiscal year from March 1st to September 30th the shipments were 1,226,500 tons, which compares with 1,030,683 tons in 1899, and 838,642 tons in 1898.

Tooele County—Utah.

(From Our Special Correspondent.)

Consolidated Mercur.—Director John Heimrich states that the September tonnage will be less than August and would not exceed 27,000 tons. Improved connection with Mercur workings are about complete, which will facilitate supplying ore from that ground. It is expected that during October 1,000 tons a day will be mined and milled, and it is planned to maintain that production.

Elko County—Nevada.

(From Our Special Correspondent.)

Dexter-Tuscarora.—It is now conceded that a union of these 2 properties is soon to take place, as the terms are practically settled. The capital stock of the Dexter is to be increased to 500,000 shares, the Dexter stockholders to have 200,000 and the Tuscarora 200,000, with 100,000 shares for treasury stock. The complete program will be made known when President John Dern returns to Salt Lake City from his European trip. This proposition will avert all danger of an annoying lawsuit.

(From Our Special Correspondent.)

Pittsburg, October 5th.—A sale of 5,000 tons of Bessemer pig iron at \$13.25 a ton was reported on the streets yesterday, but I was unable to trace it to any reliable source. This is in addition to the 10,000 tons at \$13.60 @ \$13.75 mentioned in the market letter. The tinhouse men's wage scale was signed in New York last night. As a result most of the American Tin Plate Company's plants will be started next week and all will likely be in operation before October 15th.



CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 420.)

**New York.** Oct. 5.  
The imports and exports of chemicals, etc., at all United States ports in August were as below:

Articles.	August.		Year, 900.	
	Imports.	Exports.	Imports.	Exports.
Bleaching Powder, lbs....	7,697,457	.....	90,338,966	147,908
Caustic Soda, lbs....	315,073	71,445	5,321,626	705,488
Sal Soda, lbs....	24,720	.....	147,086	.....
Soda Ash, lbs....	3,421,803	.....	54,541,668	24,659
Chlorate of Potash, lbs....	115,272	29,760	981,970	336,320
Copper Sulphate, lbs....	.....	214,908	.....	41,147,342
Nitrate of Soda, tons....	21,462	314	113,043	2,368
Muriate of Potash, lbs....	8,472,386	.....	53,639,603	273,062
Phosphate Rock, tons....	9,191	37,207	63,156	430,825
Pyrites.....	22,532	.....	27,244	.....
Brimstone.....	2,912	.....	97,832	407
Salt peter, lbs....	563,030	.....	7,148,469	25,239

Decreases in imports in August are noted in bleaching powder, sal soda, chlorate of potash, brimstone and salt peter. In export increases are reported in caustic soda, chlorate of potash and nitrate of soda.

October opens with business generally quiet. Prices for immediate delivery orders show little change, while for future shipment sellers expect an advance in present quotations. The alkali plant of the Midland Chemical Company at Midland, Mich., will be abandoned, owing, it is said, to the demoralized condition of the buildings. Recently this company was combined with the Dow Chemical Company, also of Midland, Mich. In the yards of the Dow Company a new building is being erected to be occupied by the Midland chemical branch. The brine wells of the Midland Company will, of course, still be worked.

Heavy Chemicals.—For immediate shipment demand is comparatively light. For 1901 delivery further orders for domestic high-test alkali have been booked at 75¢@80¢ per 100 lbs. f. o. b. works, and for caustic soda at \$1.75@1.80 per 100 lbs. f. o. b. works. Sal soda for this month's delivery is in better request. Bleaching powder for next year's delivery will be dearer, owing to the firmness of the foreign market. In the 8 months ending August 31st the imports of bleaching powder into the United States were 30,174 long tons from Great Britain and 10,354 tons from Germany, Belgium and other continental countries, making a total of 40,528 tons, as against 35,811 tons last year, showing an increase of 4,717 tons in 1900. Domestic chlorate of potash is weak, while British is unchanged.

We quote per 100 lbs. as follows: Domestic soda ash in bulk is worth 2¼c. 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.....	\$1.75@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
Sal Soda.....	70¢@80	.....	67½
"conc.....	1.15@1.75	.....	1.75
Bicarb. Soda.....	1.25@1.37½	.....	1.75@2.25
Bleach, extra.....	3.25@3.50	.....	.....
Bleach, Eng. prime.....	.....	.....	1.75@2.00
other brnds.....	.....	.....	1.50@1.75
Chl. Pot. cryst. ....	.....	8.37½@8.50	9.75@10.10
"powd.....	.....	8.50@8.75	10.00@10.25

Acids.—September deliveries of muriatic acid have been good, and of sulphuric, fair. Oxalic acid is stronger, and \$6 per 100 lbs. is quoted generally, though we understand sales are still being made around \$5.75. In the 8 months ending August 31st the exports of domestic acids from the United States were valued at \$96,800, as against \$105,195 in the corresponding period last year; a decrease in 1900 of \$8,495. Blue vitriol export demand is less, while domestic consumption is easier just now. Speculators are selling at 25c. per 100 less than makers are quoting in car-load lots.

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°.....	3.82½	Nitric, 40°.....	4.37
Aqua Fortis, 38°.....	3.87½	Nitric, 42°.....	4.75
Aqua Fortis, 40°.....	4.12½	Oxalic.....	5.75@6.00
Aqua Fortis, 42°.....	4.50	Sulphuric, 66°.....	1.20
Muriatic, 15°.....	1.20	Sulphuric, 60°.....	1.05
Muriatic, 20°.....	1.35	" bulk 50° ton.....	14.00
Muriatic 22°.....	1.50		

Brimstone.—Spot market is firm, but for shipment prices abroad are 1s. easier. Best un-

mixed seconds ex-"Citta di Palermo" are quoted \$22.50@23 per long ton and future shipments at \$21@21.25. Best thirds are worth \$2 per ton less. The average price of spot best unmixed seconds in September was \$24.06 per ton, and shipments \$21.72, while the average for the 9 months were \$22.04 for spot, and \$21.18 for shipment.

Fertilizing Chemicals.—September was a comparatively quiet month for the leading ammoniates. October opens with a slightly better inquiry. Sulphate of ammonia, gas liquor, foreign, for shipment sold at \$2.72½ per 100 lbs., while domestic is obtainable at \$2.70 per 100 lbs., f. o. b. Everett, Mass. Other quotations are: High grade Western blood, fine ground, \$2.20@2.25 per unit; high grade New York blood, \$2.10@2.15; tankage, 19@20¢, \$1.75 and 10c. per unit, f. o. b. Chicago; azotine, \$1.90@2 per unit; fish scrap, dry, \$23@23½ per ton, f. o. b. factory; Calcutta bonemeal, \$23@24 per ton; domestic steamed bone, ground, \$20@22 per ton; bone black, spent, \$15@16 per ton.

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 "Cacique" arrived at New York with 20,963 bags this week. Importers are not desirous of selling at present prices, expecting higher prices later on, owing to the scarcity of refined nitrate of soda and high freight rates. Consumers, on the other hand, are holding off buying in anticipation of lower prices. It is not likely though that lower prices will prevail in the near future, as the first four months of next year is the customary buying season of fertilizer manufacturers. To-day spot nitrate of soda is quoted by first hands at \$1.77½ per 100 lbs., and futures at \$1.77½@1.80, according to position and quality.

The average price of spot nitrate of soda in New York in September was \$1.76 per 100 lbs., bringing the average for the 9 months to \$1.85, against \$1.62 in 1899.

As to the combination, it may be said that many of the oficinas in Chile have already agreed, but as long as prices in the primary market continue as high as they have been of late it will be difficult to form a permanent combination. It has been suggested that 28,000,000 qtls. be the maximum production in 1901, to be divided equally between the 35 British companies and the 46 other works, operated mostly by individuals. This allotment compares with 30,759,775 qtls. in 1899, of which 30,360,239 qtls. were exported.

The exports of nitrate of soda to Europe in August amounted to 99,423 long tons—the largest quantity reported for any month so far this year—bringing the total exports for the 8 months to 584,418 long tons. The actual imports so far this year were 795,190 tons, and the deliveries to consumers 945,530 tons. Loadings for Europe on September 1st were 72,571 tons, making the visible supply 368,966 tons.

Messrs Mortimer & Wisner, in their monthly statement of nitrate of soda, dated New York, October 1st, give the following statistics:

	1900.			1899.		
	Bags.	Bags.	Bags.	Bags.	Bags.	Bags.
Imp. into Atlantic ports from West Coast S. A., from Jan. 1, 1900, to date.....	831,695	690,027	672,503			
Imp. from Jan. 1 from Europe.....	2,963	.....	55,171			
Stock in store and afloat Oct. 1, 1900, in New York.....	32,216	65,601	70,527			
Boston.....	.....	.....	.....			
Philadelphia.....	13,000	.....	.....			
Baltimore.....	800	.....	500			
Norfolk, Va.....	.....	.....	.....			
Charleston.....	.....	.....	.....			
To arrive, due Jan. 15, 1901.....	406,586	370,000	285,000			
Vis. supply to Jan. 15, 1901.....	453,002	436,101	355,527			
Stock on hand Jan. 1, 1901.....	9,586	58,466	15,383			
Deliveries past month.....	77,351	102,535	99,417			
Deliveries since Jan. 1 to date.....	797,328	682,332	672,530			
Total yearly deliveries.....	.....	976,592	967,525			
Prices current, Oct. 1.....	\$1.77½	\$1.62½	\$1.47½			

Salt peter.—The imports into the United States in September were nil, as against 2,013 bags last year, and for the 9 months they were 42,324 bags, against 49,344 bags in 1899. Stocks at New York and Boston on September 30th were 7,250 bags and expected arrivals 4,743 bags, making the visible supply 11,993 bags, against 13,059 bags on September 30th, 1899. The deliveries in New York and Boston for the 9 months were 39,874 bags, against 44,844 bags in 1899. Prices current for crude are \$3.62½ per 100 lbs. for spot and \$3.35 for shipment.

Phosphates.—The exports from the United States thus far this year are fully 25% less than 1899, owing principally to the higher freight rates and scarcity of vessel room. A steamer of 1,394 tons recently chartered from Fernandina to Rotterdam carries a freight rate of 25s. (\$6). The shipments of pebble and rock phosphates from Florida in the 8 months ending August 31st are compiled by us as below, comparison being made with the corresponding period in 1899:

Domestic.....	1899.		1900.		Changes.
	Bags.	Tons.	Bags.	Tons.	
Foreign.....	423,500	.....	325,221	.....	D. 98,279
Total.....	492,223	.....	408,856	.....	D. 83,367

The decreased foreign shipments are credited to high-grade rock phosphates, and the increased domestic movement to land and river pebble phosphates. The high freight market curtailed exports.

The exports of Tennessee phosphates in August and the 8 months of this year were as below, comparison being made with 1899, in long tons:

August.....	1899.		1900.		Changes.
	Bags.	Tons.	Bags.	Tons.	
Eight months.....	102,175	.....	96,378	.....	D. 5,797

These shipments were made through the ports of Pensacola, Fla.; Norfolk, Va., and Charleston, S. C.

Stocks of phosphate rock in the Mt. Pleasant region amounted on September 1st to about 75,000 tons, of which over half is sold.

The shipments of phosphates from Bone, Algeria, in July amounted to 14,360 metric tons, making 141,230 tons for the 7 months of this year, as against 132,418 tons in 1899; an increase of 8,812 tons. The price of Algerian phosphates has been strengthened by the refusal of Mediterranean steamers to accept present freight rates on future deliveries.

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	8½@8½d	\$13.26@13.66
* Fla. land pebble (68@73%).....	4.35	7½@7½d	10.50@10.85
* Fla. Peace River (58@63%).....	3.00@3.50	7½@7½d	9.00@9.30
* Tenn. rock 78%, export.....	3.50@4.00	7½@7½d	11.70@12.09
* Tenn. .... 78% domestic.....	3.00@3.30	.....	.....
* Tenn. .... 75%.....	2.75@3.00	.....	.....
* Tenn. .... 72%.....	2.25@2.65	.....	.....
* So. Car. rock, crude.....	4.00	.....	.....
* So. Car. rock, dried.....	4.50	6½d	8.10
* Algerian, rock... (63@71%).....	.....	7@7½d	9.38@10.05
* Algerian, rock... (58@63%).....	.....	6¾@7½d	8.10@8.70

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

Liverpool. Sept. 26.

(Special Report of Joseph P. Brunner & Co.)  
For certain lines of chemicals there is a fairly active demand and in some cases prices have been advanced.

Soda ash is in steady demand and spot range for tierces is 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 are 5s. per ton under price for tierces. Soda crystals are dearer at £3 5s.@£3 7s. 6d. per ton, less 5% for barrels, or 7s. less for bags, with special terms for certain favored markets. Caustic soda is in good request and firm at the following prices: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s.@£10 17s. 6d.; 76%, £11 5s.@£11 10s. per ton. For certain Continental markets, which are on a special footing, quotations have been advanced both for spot and over 1901, but general quotations for 1901 delivery have not yet been announced.

Bleaching powder is meeting with more inquiry and is firmer at £6 5s.@£6 10s. per ton, net cash, for hardwood, prompt delivery.

Chlorate of potash is selling to a moderate extent at 3¼@4d. per lb., net, according to quantity and market. Quotations for 1901 are not yet fixed.

Bicarb. soda is selling at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages; also special terms for certain favored markets.

Sulphate of ammonia is dull and prices continue to favor buyers, £10 17s. 6d.@£11 per ton, less 2½%, being about nominal spot range for good gray 24@25% in double bags, f. o. b. here.

Nitrate of soda is moving off quietly at £8 7s. 6d.@£8 12s. 6d. per ton, less 2½% for double bags f. o. b. here, as to quality and quantity.

London. Sept. 25.

(From Our Special Correspondent.)

An important advance has taken place in the price of bleaching powder in England and the continent of Europe, and the price has advanced to £7 a ton in Lancashire. This sudden change is entirely due to a combine among the leading producers in England and Europe, and a similar advance is intended in soda. Chemical manufacturers have suffered considerably during the past year or so from the great rise in the price of coal, so that the agreement among producers to raise the prices of soda and bleach was much easier to arrange and will be more easily maintained than if its sole object was to inflate profits.

**MINING STOCKS.**

Complete quotations will be found on pages 417 and 418 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.** Oct. 5.

There has been some recovery in prices, but trading is still mainly of a professional nature. Amalgamated Copper sold, ex-dividend of \$2 per share at \$85 1/4 @ \$86 1/4, and Anaconda, with an equal dividend, sold at \$43 3/4 @ \$42, rising later to \$43. British Columbia Copper showed more activity at \$11 1/4 @ \$11 1/2, while Union, of North Carolina, was reported sold at \$2 7/8.

Some fairly large dealing in Phoenix, of Arizona, is reported this week at 11 @ 15c.

The California shares are neglected. In the Comstock section the customary exchange of stocks between brokers is noted, with sales of Consolidated California & Virginia at \$1.25, and Ophir at 55c.

Of the Colorado stocks Portland, of Cripple Creek, brought \$3.15, and Isabella, 90c. Further transactions in Hart are chronicled at 18c. Iron Silver is firmer at 68c.

Auction sales were 77 shares American Zinc Mining Company, of Kansas (hypothecated), at \$50 for the lot, and 2,000 shares Lady Helen Copper Mining Company, of Arizona, at 5 1/2 c. per share.

**Boston.** Oct. 4.

(From Our Special Correspondent.)

The much-heralded bull movement, carefully engineered as it was, proved a complete failure so far as attracting the public was concerned. Apparently the managers have decided to abandon the effort for the present, and the market is now a dull and narrow one, but without any special fall in prices.

Calumet & Hecla was quoted \$750; Boston & Montana, \$318; Tamarack, \$229; Isle Royale, \$29 1/2; Baltic, \$21; Old Dominion, \$18.

Very little was done outside of coppers. Centennial-Eureka and Cochiti were about the only stocks mentioned.

In the general list Dominion Coal closes about \$38 1/2 and New England Gas and Coke \$11 1/2 @ \$12, with few sales.

**Colorado Springs.** Sept. 29.

(From Our Special Correspondent.)

The week closed to-day with matters in a much better state than has been the case for a month past.

Elkton was sold heavily this week by the holders of old Raven and Tornado stock. These latter shares were absorbed last Jun. in a consolidation of the three mines under Elkton management. Raven and Tornado holders have handsome profits at the present price of Elkton and sold heavily this week. Elkton opened the week at \$1.71, slumped to \$1.64, and closed to-day at \$1.70. Isabella opened the week at 90c., declined to 85c., and recovered to 90c.

The Portland laid off 300 of its 450 miners to-day and rumor has it that this action was taken in order to permit Mr. Hammond to inspect the great property. The stock opened the week at \$3.25, declined to \$3.15 and revived to-day to \$3.25.

The sales for the week upon the Colorado Springs Mining Stock Exchange were 3,010,000 shares of a cash value of \$455,989. The weekly bank clearings fell off somewhat this week and were but \$976,339. The dull markets were the cause.

**Salt Lake City.** Sept. 29.

(From Our Special Correspondent.)

A better tone prevails in Utah mining share trading than for several months. During the latter half of the week the exchange assumed its old-time life and bustle. The chief cause for this improvement is the strong advance and activity in Star Consolidated. It opened Monday an offering at 70c. and steadily climbed, the top sale being at \$1.20, closing to-day at \$1.05 1/2 bid, \$1.06 1/4 asked, with apparent effort to crowd it down. This property was nearly sold to New York and London people, in the spring of 1899, on a basis of \$1.50 per share, and those having the control aver they will not sell to-day for \$2.

Total sales of the week are reported at 92,211 shares, which brought \$54,283. The boom in Star Consolidated has served to bring out several shares which have not been heard of for months.

Dexter is again nominally above the \$1 mark, due to the forthcoming consolidation with the Tuscarora. Eagle & Blue Bell is softer; an assessment is probable. Mercur has probably been called for the last time. Shareholders who held out the longest are anxious to make the transfer to the shares of the new company in time for the first dividend.

September dividend record is \$137,500. The mines that made up this total, and amount contributed by each, are: Silver King, \$75,000; Daly-West, \$37,500; Mammoth, \$20,000; Swansea, \$5,000.

**San Francisco.** Sept. 29.

(From Our Special Correspondent.)

There is nothing specially new to report about the market. The reports from the Comstock have contained no news, and transactions have been small.

Some quotations noted are: Consolidated California & Virginia, \$1.15; Ophir, 52c.; Caledonia, 43c.; Gould & Curry, 33c.; Best & Belcher, 30c.; Mexican, 32c.; Sierra Nevada, 31c.; Yellow Jacket, 20c.

On the Oil Exchange business has been active and sales large. Prices of producing companies' stocks were well supported, though prospects were a little weaker.

Some prices noted are: Hanford, \$72.50; Kern River, \$20; Blue Goose, \$10; San Joaquin Oil and Development, \$8.25; Home, \$4.50; Twenty-eight, \$1.90; El Dorado, \$1.65; Royal, \$1.10; Reed Crude, 50c.; California Standard, 39c.; Monarch, of Arizona, 35c.; Caribou, 25c.

**London, England.** Sept. 18.

(From Our Special Correspondent.)

The South African section has been rather more lively during the past week. The flight of Mr. Kruger and the general demoralization of the organized parties of Boers have served the purposes of speculators who desire an immediate rise, so that there have been several spurts and realizations. The public generally keep out of the market, and follow the advice of the controlling houses to sit quiet at present. The resumption of work on the gold-fields will probably be delayed until the war is so far over that the locally raised regiments can be disbanded.

Amid the troubles in other parts of South Africa, it has been pleasant to find that the production of gold in Rhodesia has been advancing lately, chiefly on account of the large output of the Globe & Phoenix Company. The figures for August were 10,137 oz., of which no less than 4,742 oz. came from the mine mentioned. The country still suffers greatly from the want of regular labor and of course the transport difficulties are considerable at present. There is practically no dealing in Rhodesian shares, with the exception of Chartered, which always receive more or less attention.

A few weeks ago I mentioned that the Venture Corporation, advised by Mr. T. A. Rickard, had secured an option on Mr. Walsh's Camp Bird Mines in Ouray County, Colorado. I understand that the time of the option has expired without the deal having been put through, but it is probable that negotiations will eventually be completed. Mr. John Hays Hammond has been delayed in his examination of the property, through indisposition, and his visit is postponed for the time. The firms working with the Venture Corporation in this deal are Wernher, Beirt & Company, J. B. Robinson, Marks, Bulteel & Company, all South African magnates, while the banking houses of Morgan, Baring and Hambro are also in it. The presence of the South African names in the list explains why Mr. John Hays Hammond's services were retained.

The West Australian section has been very much depressed this week, chiefly owing to adverse rumors with regard to Hannan's Brown-hill. This mine has always been to the fore among Kalgoolie properties, both as a producer and as an experimenter on the local ores. The shares stand at a very high premium and have even touched £14. During the last week or so, there has been much selling and the price has dropped to £7 and will probably go lower still. The company says the fall is due to a bear raid, while others allege that the mine is played out. The output for August was 6,620 oz. from 6,994 tons of ore and the estimated profit is £13,000, and there appear to be reserves in sight. I am informed that the veins are very broken and their value difficult to estimate, as is the case in other mines in the district—the Ivanhoe, for instance. At the present time the exploratory work at the Brownhill is not very promising on account of the main veins assuming a particularly irregular form.

**Paris.** Sept. 23.

(From Our Special Correspondent.)

The stock market has been almost without incident and mining shares have been in but little request. In fact we have come to the time when an active market should be looked for after the summer vacations; but it is very slow in making its appearance.

The copper stocks have had more attention than any others and their prices are strong in accordance with the continued demand for the metal. One does not know just when this demand will fall off, but there is no present indication of it.

The market for the Transvaal gold stocks has been firmer, and the flight of President Kruger has drawn general attention. It will hardly be believed, but some of our Anglophobe writers affect to regard this as a masterly strategic movement, which will result in British defeat shortly. However, the gold stocks are firmer, since holders see the resumption of work approaching.

The crisis in Germany which has resulted in a disastrous fall in the prices of coal, iron and manufacturing stocks, has drawn the attention of some capitalists here, and it is probable that there will be some larger investments made. At the present panic prices these ought to yield a large return after a time.

The Exposition is growing in favor as it nears the time of closing, and the number of visitors is greater now than at any previous time.

Azote.

**Mining Dividends.**

The distribution of dividends by metal mining companies reporting to the "Engineering and Mining Journal" in the third quarter of this year amounted to \$10,892,242, making a total for the nine months ending September 30th of \$33,763,838. The total dividend payments in the three quarters is but little less than the value of the entire silver production in the United States in 1899, and is equal to nearly one-half of the gold output in the same year. Of these dividends Montana contributed \$12,475,825, or 37%, Michigan, \$6,799,000, or 20%; Colorado, \$6,254,523, or 17%; Arizona, \$2,326,278, or 7%; Utah, \$1,737,500; California, \$1,297,775; South Dakota, \$960,000; Idaho, \$837,174; Missouri-Kansas, \$621,763; Alaska, \$349,000, and Washington, \$195,000. In all there were 89 gold, silver, copper, zinc and lead mining companies that paid these dividends. The largest dividends paid during the nine months were by the Calumet & Hecla Mining Company, of Michigan, amounting to \$5,000,000; Amalgamated Copper Company, \$4,500,000; Boston & Montana, \$4,200,000, and Anaconda Copper Company, also of Montana, \$2,400,000. These four copper companies thus paid \$16,100,000 in nine months, or 47.7% of the total copper payments by all companies reporting thus far this year. These four copper companies have paid since their incorporation a total of \$110,900,000 in dividends. Other large dividend-paying companies in 1900 were the United Verde Copper Company, of Arizona, with \$1,750,000; Stratton's Independence of Cripple Creek, Colo. (gold), with \$1,301,334; Parrot Silver and Copper Company, of Montana, with \$1,034,325, and the Homestake Mining Company, of South Dakota (gold), with \$945,000.

**DIVIDENDS.**

NAME OF COMPANY.	Latest Dividend.			Total to date.
	Date.	Per share.	Total.	
†Amalgamated C. ....	Oct. 29	2.00	1,500,000	7,500,000
†Am. Sm. & Ref. pf.	Oct. 9	1.75	568,150	2,682,553
†Am. Steel Hoop, pf.	Oct. 31	1.75	245,000	1,225,000
†Am. Tin Plate, pf.	Oct. 31	1.75	403,150	2,070,657
Anaconda Cop., Mont.	Oct. 27	2.00	2,400,000	16,950,000
*Bunk'r Hill & Sull., Id.	Oct. 4	.07	21,000	1,011,000
Colorado Fuel & I., pf	Oct. 10	8.00	160,000	1,040,000
*Empire State, Idaho.	Oct. 15	.30	23,534	613,579
†Federal Steel, pf.	Oct. 20	1.50	932,037	6,657,454
Helena & Livingston Sm. & H. Mont.	Sept. 25	.15	90,000	.....
§Mont. Coal & Coke, Mt	Nov. 1	.30	60,000	120,000
Mountain Copper, Cal.	Oct. 10	2.16	540,000	2,373,750
New Haven I. & St.	Oct. 15	.15	.....	.....
†N. Y. & H'duras Rosa'o	Oct. 13	20	30,000	1,342,000
*Parrot, Mont.	Oct. 29	1.50	344,775	4,393,825
†Peona. Steel, pf.	Oct. 16	1.75	26,250	105,000
†Portland, Colo.	Oct. 15	.06	180,000	3,307,080
†Swansea, Utah	Oct. 10	.05	5,000	261,500
†United Zinc, pf.	Oct. 15	.50	7,469	27,597

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

**ASSESSMENTS.**

NAME OF COMPANY.	Loca-tion.	No.	Delinq.	Sale. Amt.	
				Date.	Amt.
Clarissa .....	Utah	2	Oct. 1	Nov. 10	.07 1/2
Confidence .....	Nev.	35	Sept. 17	Oct. 8	.20
Eureka-Swansea Ext.	Utah	2	Oct. 1	Nov. 1	.00 1/2
Eutonia .....	Cal	3	Sept. 29	Oct. 13	.00 1/2
Fish Springs .....	Utah	1	Oct. 15	Nov. 3	.01
Goleta .....	Nev.	2	Sept. 25	Oct. 25	.15
Grape Vine Canyon.	Cal	3	Oct. 23	Nov. 14	.07
Horn Silver Tunnel.	Utah	1	Aug. 18	Oct. 20	.00 1/2
Julia Con. ....	Nev.	30	Sept. 27	Oct. 18	.05
Justice .....	Nev.	69	Sept. 22	Oct. 15	.05
Kentuck Con. ....	Nev.	16	Sept. 25	Oct. 17	.03
Mariana Marsicano	Cal.	24	Oct. 23	Nov. 12	.02
Mariposa Com'l & Mg.	Cal.	18	Oct. 10	Nov. 8	10.00
Mayflower Gravel.	Cal.	1	Oct. 22	.....	.05
North Rapidan .....	Nev.	1	Oct. 15	.....	.04
Ophir .....	Nev.	79	Oct. 4	Oct. 24	.20
Savage .....	Nev.	101	Sept. 18	Oct. 8	.10
Showar Con. ....	Utah	2	Oct. 1	Nov. 1	.02
Sonora .....	Cal.	1	Oct. 3	Nov. 13	.01
Sunbeam .....	Utah	1	Oct. 25	.....	.02
Tetro .....	Utah	15	Oct. 17	Nov. 10	.01
Utah Con. ....	Nev.	34	Oct. 9	Oct. 30	.15
West Park & Swansea	Utah	1	Oct. 8	Oct. 23	.00 1/2

**ANNUAL MEETINGS.**

Name of Co.	Locat'n.	Date.	Place of Meeting.
Alpha Con. ....	Nev. ....	Oct. 25	San Francisco, Cal.
Breece .....	Colo. ....	Oct. 11	24 Broad St., N. Y.
Central Eureka. Cal.	.....	Oct. 24	San Francisco, Cal.
Comstock Tunnel Nev.	.....	Oct. 10	45 William St., N. Y.
Con. Cal. & Va.	Nev. ....	Oct. 20	San Francisco, Cal.
*Ludwig Copper	Nev. ....	Nov. 7	Gold Hill, Nev.

\*Special meeting.



STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing company names, locations, par values, and prices for various dates from Sept. 23 to Oct. 3.

BOSTON, MASS.†

Table of stock quotations for Boston, Mass., listing company names, par values, and prices for various dates from Sept. 27 to Oct. 3.

† Official quotations Boston Stock Exchange. Total sales, 20,161.

COAL AND INDUSTRIAL STOCKS.

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

Total sales, 121,180. † Ex-dividend.

PHILADELPHIA, PA.‡

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

Total shares sold, 27,218. ‡ Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, Cal., listing company names, locations, par values, and prices.

CALIFORNIA OIL STOCKS.\*

Table of California oil stock quotations, listing company names, par values, and prices.

\* California and Producers Oil Exchanges. Total sales, 8,545 shares.

SALT LAKE CITY, UTAH.

Sept. 29.

Table of stock quotations for Salt Lake City, Utah, listing stocks, shares, par values, and prices.

TORONTO, ONT.

Table of stock quotations for Toronto, Ont., listing company names, par values, and prices.

Total shares sold, 118,437.

SPOKANE, WASH.

Table of stock quotations for Spokane, Wash., listing company names, par values, and prices.

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo., listing companies like Acacia, Alamo, Am. Con., and others with columns for dates (Sept. 22-28) and sales.

Colorado Springs Mining Stock Exchange. Total sales, 1,511,919 shares.

MONTREAL, CANADA.

Table of stock quotations for Montreal, Canada, listing companies like Big Three, California, and others with columns for week of Oct. 1 and sales.

Montreal Stock Exchange. Total sales, 44,550 shares.

MEXICO.

Table of stock quotations for Mexico, listing companies like Durango, Barrandon y Cab., and others with columns for prices and shares.

DENVER, COLO.

Table of stock quotations for Denver, Colo., listing companies like Alamo, Anaconda, and others with columns for dates (Sept. 22-28) and sales.

Official Quotations Denver Stock Exchange. Total sales, 124,900 shares.

PARIS.

Sept. 13.

Table of stock quotations for Paris, listing companies like Acieries de Creusot, Firminy, and others with columns for country, product, and prices.

LONDON.

Sept. 21.

Table of stock quotations for London, listing companies like Alaska Goldfields, Copiapo, and others with columns for country, capital, and prices.

\* Ex-dividend



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 numerous mining companies and their financial details.

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 chemical and mineral products (e.g., Abrasives, Borax, Magnesium, Silver) and their current market prices. Includes sub-sections for 'THE RARE ELEMENTS' and 'THE RARE ELEMENTS' with detailed pricing for elements like Barium, Beryllium, etc.

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 Sept. 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.