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The enterprises concerning which the Governor of Arizona has sent out a warning, and which were long ago pointed out in the "Engineering and Mining Journal" as "extra hazardous" risks, are not the only cases in which great care should be exercised. British Columbia has a good many examples of this species, and even the Missouri zinc-lead districts are not without them, though the danger there thus far has been from the overcapitalization of good property rather than the floating of worthless enterprises.

The conditions of the smelters' strike in Colorado have been materially changed by the decision of the Supreme Court of the State rendered this week, which holds that the eight-hour law is unconstitutional and void. This puts matters back where they were before the law went into effect and the strike began. Negotiations for a settlement are in progress between the representatives of the strikers and the American Smelting and Refining Company. It is probable that a return to the old system of 12-hour shifts will be made, but the company will grant some increase in wages. Such an advance had been proposed before the strike began, but the passage of the eight-hour law prevented its final adoption. The company has no objection to an increase in wages, it is understood, though it was not willing to give twelve hours' pay for eight hours' work, as it was asked to do.

What arrangements will be made in the mines and mills where the system of paying by the hour had been adopted remain to be seen. Whether they will continue to work under it or go back to the old plan in use before the law was passed probably depends upon local conditions. The passage of the eight-hour law has effected nothing, except to unsettle matters and make trouble for all parties.

Litigation over the cyanide patents still continues in the Australasian colonies. The latest decision is in Victoria, where the trial of a test case has just been concluded by the Supreme Court. In that colony the original application for a patent--the MacArthur-Forrest--was refused on account of the too broad and general nature of the claims, and application was then made for leave to amend the specifications on the same lines as the English courts allowed, by limiting them to the use of cyanide solutions of certain defined strength. The commissioner of patents refused leave to amend, and appeal was taken to the courts. On the first trial the commissioner was sustained in this action, but on another appeal the Supreme Court has reversed this decision and decided that the holders of the patent should be allowed to amend their claims and validate the patent. The decision was by a bare majority of the court, the minority of the judges filing a dissenting opinion.

The mine-owners, who have fought the case against the Australian Gold Recovery Company, do not propose to give it up yet, however, and have filed notice of a further appeal to the British Privy Council, which is the final authority. It will take some time to hear and decide the case before this last tribunal, and it is, of course, uncertain whether the case will be tried anew or whether the Council will accept the decisions of the English courts as precedents in the case. Meantime the company will still be barred from collecting royalties in the colony.

The first shipments of gold from the Klondike by way of Dawson and St. Michaels have reached Puget Sound; and we have the usual exaggerated and contradictory accounts of the amount forwarded. The total so far brought down varies from \$1,500,000 to \$5,000,000 in the dispatches, and the truth seems to be not far from \$2,500,000, as the first steamers brought heavy shipments from the banks, besides some considerable amounts to the credit of individuals.

As to the total amount of the clean-up in the Yukon, which will be shipped out during the present summer, estimates are also extremely contradictory, and the majority of them are seemingly wild guesses. The banks and the Canadian authorities, warned by their last year's mistakes, have given out no estimates. The guesses reported vary from \$15,000,000 to \$25,000,000, and the nearest approximation that can be made to the result of the year's work is considerably under \$20,000,000. This sum will all be from the Klondike or central part of the Yukon Region, since the outlying districts have done comparatively little. Most of them, in fact, have reported poor results, Copper River showing absolutely nothing, while the new districts at Cape Nome and along the northeast coast have made no returns as yet.

The transportation companies are indulging in some of the usual exaggerations, but with very little effect. The Klondike excitement was broken long ago, and no revival of it is to be looked for. The war and increasing business activity killed the boom, and no public interest is aroused by the new stories from the north. The region and its possibilities are better appreciated, and its drawbacks are likewise understood.

We said recently that it was difficult to say how long order would be maintained in the Coeur d'Alenes after the withdrawal of the Federal troops. An answer to that question seems to be found in the latest

news from the region, which reports that the Miners' Union has already begun to show its hand. A number of the men who have come in from outside have received warning and threatening notices, which are distributed in such a way that it has been almost impossible to trace them to their authors. The men from Missouri and the Joplin zinc region, who have been employed at several mines, are specially favored with these notices and seem to be, above all, the object of dislike to the Union men. All of this shows that there has been no change in the spirit of the Union and that any withdrawal of the immediate pressure of armed force at the present time would be followed by a savage outbreak.

We regret to see that some of the reputable labor organizations are disposed to take up the cause of the Coeur d'Alene Miners' Union, and we think that this must have been done without due investigation of the facts. The cause of the legitimate labor organizations would certainly be very much injured in general public estimation if they were to take upon themselves the responsibility for all the outrages which have been perpetrated in Northern Idaho. Thus it is stated in the press dispatches that a deputation from some of these organizations called recently on the President to induce him to order the Federal troops away from the district. The President's reply was, of course, non-committal, but he will hardly undertake to remove the troops without the consent of the Governor of Idaho, who seems now thoroughly in earnest in his determination to maintain order.

The trials of the rioters who were engaged in the destruction of the Bunker Hill & Sullivan mill proceed slowly and it may be some time before they are concluded. In the meantime, however, the Idaho court has administered some needed discipline by removing the sheriff and county commissioners of Shoshone County for inefficiency and neglect of duty, and the Governor has made new appointments in their place of men who, it is believed, will not be afraid to perform the duties which the law requires from them.

COPPER PRODUCTION IN 1898.

The copper production of the United States in the year 1898 was the largest ever recorded in a single year. The figures as furnished by the producers for "The Mineral Industry," Volume VII., show a total of 535,900,232 pounds of fine copper, which was an increase over 1897 of 34,529,937 pounds, or 6.8 per cent. The ratio of increase was about the same as that shown in 1897 over 1896, but was considerably less than that reported in 1896 over the previous year. The production by States is shown in the following table, the figures being in pounds of fine copper:

States.	Copper Production in the United States. (Pounds of Fine Copper.)			
	1895.	1896.	1897.	1898.
Arizona	48,329,403	73,745,321	81,019,922	110,823,864
California	225,650	1,971,545	14,129,920	21,543,229
Colorado	6,125,000	9,539,245	9,437,663	10,870,869
Michigan	129,740,765	144,058,524	145,830,749	156,669,098
Montana	194,768,825	228,958,164	237,158,540	216,979,334
Utah	2,664,757	3,550,050	3,854,821	5,385,246
Eastern & Southern States.	3,255,000	3,750,124	3,727,939	4,473,213
All others	1,344,350	2,050,000	2,018,929	2,134,909
Copper in sulphate	12,000,000	12,183,210	4,182,812	7,015,375
Total domestic product.	398,453,850	479,806,183	501,370,295	535,900,232
Stock January 1.	78,738,689	86,961,280	83,600,000	48,882,143
Imports bars, ingots, old and ores	13,875,560	27,404,087	26,938,254	38,922,552
Total supply	491,068,099	594,171,550	611,908,549	622,704,927
Deduct exports	138,358,080	281,905,217	288,626,240	299,765,054
Deduct consumption	265,738,739	228,666,333	274,400,166	269,578,403
Stock, Dec. 31st.	86,971,280	83,600,000	48,882,143	54,361,470

Note.—The statistics for 1895 and 1896 include some copper in sulphate not recorded as a by-product; in 1897 and 1898 only the copper in by-product sulphate is counted, statistics making that distinction not having been collected in previous years. This explains the apparent decrease in production from 1896 to 1897.

The table above given, in addition to the production, shows that there was imported into the United States during the year 38,922,552 pounds of copper, this metal coming chiefly in the form of copper matte and copper bullion from the mines of Mexico and British Columbia, sent to this country to be refined. On the other hand, the exports for the year amounted to 299,765,054 pounds, or about 55 per cent. of the total production. The consumption, as arrived at approximately by these figures, showed very little change from that of the preceding year. During the current year, however, the production has increased but very slightly, while the consumption has grown on a large scale, and there has been necessarily a falling off in exports, with a temporary scarcity of supplies. These conditions—coupled with the somewhat excited imagination of buyers—have resulted in the extraordinary increase in prices which has been from time to time noticed in our columns.

In the production of copper Montana has remained the leading State, although it is the only producing State which showed a decrease last year as compared with 1897, the falling off being 20,179,206 pounds, or 8.5 per cent. Michigan showed a moderate increase, of about 7 per cent., and is still the second State. Arizona, which was last year the third State in the amount of its production, showed a gain of 19,820,942 pounds or 24 per cent., the greater part of which came from its two great mines,

the United Verde and the Copper Queen; although some of the smaller producers, such as the Arizona Copper Company, at Graham, showed large advances. The three States already named produced over 90 per cent. of all the copper mined in the United States.

Among the producers of less importance California showed the greatest progress, its total for 1898 being greater than that for 1897 by more than 50 per cent., a large part of this being the result of the active operation of the Mountain Copper Mines at Keswick; while part was also due to the active working of other mines which had been neglected for years past. The series of articles recently published in the "Engineering and Mining Journal" on the copper resources of California shows the extent to which prospecting and new development have been stimulated in that State.

Outside of the States mentioned the greatest proportional increase has been from Utah, where also there has been considerable activity in the development of copper properties, the Highland Boy, at Bingham—owned by the Utah Consolidated Gold Mines—being the most notable instance. The Colorado production showed only a moderate change; this is derived almost entirely as a by-product from ores worked by the smelters chiefly for their gold and silver contents. The remaining States call for little remark.

The great rise in price already referred to, and the demand for the metal, have stimulated prospecting and the development of new mines, and we hear from all quarters of the discovery of copper "mines." A few of these will doubtless prove of value, but the greater part, unfortunately, are of very little importance and will probably contribute to our future supplies only to a very small extent. Moreover, but few of these mines will be producers of any importance during the current year. The time occupied in opening a copper deposit and erecting a smelter is considerable, even under the most favorable circumstances. In the Lake Superior region experts consider that three years and \$750,000 are needed to prove the value of a mine and put it in producing condition. Somewhat less is required in other regions perhaps, but there is no place known to us where a copper mine can be made without a large expenditure of both time and money. The increase in copper production which may be looked for in 1899 will come chiefly from extended operations at the older mines, and at a few where previous operations have brought the properties into condition to yield. In the latter class will be found such mines as the Santa Fe, in New Mexico, the properties lately consolidated under the Tennessee Copper Company, and two or three of the old mines recently reopened in Vermont.

ARIZONA MINING SCHEMES.

The public announcement made by Governor Murphy of Arizona, as noted in the "Engineering and Mining Journal" of July 8th, has naturally called out a great deal of comment. The action of the Governor has been generally supported both in Arizona and elsewhere, and has been considered unfavorably only by the parties whose interests are involved.

We have received the following telegram from the Governor, under date of July 16th:

"Owners of United Verde Extension say they are injured by parties who quote me as declaring their property fraudulent. This I did not do. The language I used invited close scrutiny, which can injure no legitimate company. The United Verde Extension, which joins the United Verde, has reasonable possibilities, and stock sold in a limited amount for development purposes, with full notice to investors of the chances they are taking, cannot properly be declared fraudulent. What I particularly denounce is stock jobbing upon false statements and grossly exaggerated advertisements. No meritorious property can be injured by careful investigation, and the truth can be easily demonstrated. I send this telegram at the request of good citizens, who claim that they are being injured by misquotations. N. O. MURPHY, Governor."

In this telegram Governor Murphy shows a natural and commendable caution. His public announcement in relation to the Val Verde Company was based upon the report of an expert; and he hesitates, very properly, to condemn other schemes in so formal a manner, without similar authority. Nevertheless his recommendation of the closest investigation and inquiry is commendable and unexceptionable.

A fair specimen of the methods adopted by these companies will be found in another column, where Superintendent Giroux, of the United Verde Mines, writes to protest against the wholly unauthorized use of his name in a prospectus issued by the company calling itself the United Verde Junior. Not only was his name used in this way, but it was appended to a statement which he never made. Such methods as these used in advertising so-called mining companies speak for themselves.

A further emphatic condemnation of these schemes is found in the action of the local press. The papers of a mining region are naturally reluctant to express opinions adverse to any plans for the development of their districts; but we find in the best and most widely circulated of the Arizona papers—such as the Tucson "Citizen," the Phoenix "Republican" and the "Arizona Silver Belt"—most emphatic opinions expressed in relation to the unworthy schemes which unscrupulous opera-

tors have located in the Territory. The most bitter of these denunciations are leveled at the Spenazuma Mining Company, which seems to have been the leader among the fake concerns, and has unfortunately met with the greatest success in disposing of its stock. We have heretofore published extracts from Arizona papers showing how the operations of this company were conducted, and the later accounts fully confirm those statements. Reports from mythical experts; purchases of ore for the purpose of salting the "mine," and excursions to the property in which such judges as bakers, tradesmen and women who had never seen a mine were permitted to examine the "workings" were among the means used to sell and advertise the stock.

What the success of one of these schemes may mean is illustrated by a story published in the New York daily papers, showing how, in the little town of Tivoli on the Hudson River, in New York, a sum estimated at from \$50,000 to \$60,000 has been invested in Spenazuma stock. The greater part of this amount has come from people who cannot afford to lose it. They have put in their small savings, and in some cases have mortgaged their property to buy stock. The inevitable collapse will cause widespread distress in this community, and will, moreover, create a distrust of all mining enterprises hereafter. It is in such localities as this, where the people are ignorant of all the conditions of mining, that the promoters of these fake companies have been chiefly operating. They have professed their willingness to have their claims examined, but have been very careful to see that no such examination should be made by anyone competent to judge.

Apart from the natural wish to prevent the success of deception and fraud, there is the further reason for exposing these concerns, that they work very great injury to legitimate mining enterprise. Every dollar invested in a fake company keeps not only that amount, but in the long run many other dollars, out of the treasuries of honestly operated companies. The losses resulting from such "investments" tend to confirm the too common belief that mining is a gamble rather than a legitimate business. The promoters of honest enterprises find themselves constantly handicapped in this way. This view of the case is fully appreciated by Governor Murphy and the Arizona papers which support him.

Some of the companies to which objection is made have just enough showing of ore to justify incorporation; others have only their alleged proximity to a great producing mine. In a few cases there is enough showing, perhaps, to justify a small expenditure in prospecting; but in the majority there has been little development and no merit. In some again there is only a bond and no title to the property. If the truth were told concerning a claim, and money asked to prospect and develop it, the risk being fully understood, no fault could be found. If people are disposed to put in money on the chance of getting something out, with the equal chance of losing it, the deal is their own affair. There are plenty of men who do it every day, understanding fully the risks. But to advertise and sell stock on the assumption that an undeveloped claim has the value of a producing mine is to obtain money under false pretences, and should subject the promoters to punishment by law.

The recent progress of mining in Arizona has been notable. Its copper production, as shown in another column, has made great advances, while other mining is in a more promising condition than ever before. That the mining fakirs should choose the Territory as the scene of their operations under these circumstances is natural, though unfortunate. The action of Governor Murphy and the excitement caused by it cannot fail to do much toward clearing away the fake schemes, and so aiding the mining industry.

NEW PUBLICATIONS.

"Practical Dictionary of Electrical Engineering and Chemistry. In German, English and Spanish, treating especially of modern machine industry, the foundry and metallurgy." By Paul Heyne. Dresden, Germany: Gerhard Kuhlmann; and London: H. Grevel & Co. Cloth, 12mo.; pages 209. Price, \$1.75.

This dictionary is published in three volumes, the first being German-English-Spanish, the second English-Spanish-German, and the third Spanish-German-English. Each is arranged in three columns. The copy before us is Volume II.—the English-Spanish-German edition. It is certainly a most interesting work. From it a great deal is to be learned not merely about technical words and phrases, but also about English "as she is wrote" and Spanish as she too is wrote. For example, to begin at the head of the alphabet, our knowledge of chemistry is widened by the following additions to the vernacular: Acetamide, acetamidide, acetite, acetite of gold, aceto-gold, acetomate, acetomic acid, ammonio-muratic (sic) copper, ammoniuret, anisotropic, antichlore (something to neutralize chlorine in dye stuffs?), arsenicalise, borum (boron), brome (bromine), etc. Skipping a few pages we run across other novelties, as: Hydrogen bioxide, hydroguret (hydride?), hydro-sulphuret, etc. In mechanics there are also additions of interest, as, for instance: Air-sucker, air-sucking pump (both of which are more vividly descriptive than plain air-pump), ancon (which we find to be a hook or elbow), barillet (which Webster says is French for "a little cask or

something resembling one"), basquil bolt, booster, etc. This last we at first thought might be a car starter, but looking across the parallel columns we find its synonyms to be "el dinamo suplementaria" (sic) or a "zusadzynamo"—from which we conclude it to be the exciter attachment. We have not yet quite made out what an agometer is, nor an adopter, nor a hydrostatimeter—though possibly the last may be a pressure gauge; but we do know now that a cock of passage is the same thing as a "grifo de paso" or a "durchgangshahn," and so are pretty sure that it is only an ordinary escape cock. Other words are hard to classify; possibly they belong to "the modern machine industry;" perhaps they don't. Here are a few to start with: Acierable, acierage, affinage, affine, chamotte, cladding. In the Spanish column there are some very original expressions, usually roundabout paraphrases of the German. As a matter of fact, in real Spanish there are few idiomatic technical phrases apart from the mule, the road, the silver reduction works and the mine, resort being had to either the French or the English, just as we in our turn have borrowed from the Spanish. But the compiler of this remarkable little dictionary has ingeniously built up his Spanish on the same lines as his English, making both to correspond after a fashion with his German column, this last of course being right enough so far as we have noticed.

"Municipal Public Service Industries." By Allen Ripley Foote. Chicago: The Other Side Publishing Company. Cloth, 8vo.; pages 329. Price, \$1.

Three separate discussions of questions involved in the ownership, operation and regulation of municipal public service industries are contained in this volume. Part I. is an attempt to solve the problem "How Should the Franchise Question be Settled?" This is a paper prepared for the League of Illinois Municipalities, March 1st, 1899, and is the latest in date of the three; but, as the author explains, is presented first "because a system of regulation is proposed . . . which it is believed will effect a satisfactory settlement of all questions pertaining to public service industries. By presenting this system first, busy men can get at the proposals at once." It is somewhat disappointing to find that after a masterly analysis of the conditions, showing a thorough grasp of the details of the problem, the author reaches so vague a conclusion in the section entitled "The Solution Found." His scheme, as we understand it, is a compromise between independent corporate and municipal ownership and control. How this is to be effected is not very clear. In order to get the drift of the argument it is necessary to read carefully the preliminary statements, and it is perhaps unfair to quote the conclusion baldly. But this is Mr. Foote's summing up:

"By combining regulations necessary to render the municipal ownership and operation of public service industries successful, if it can be made successful, with regulations necessary to render corporate ownership and operation of such industries just, the people will secure a fuller measure of advantage than it is possible for them to gain by any other means. Investors will secure permanency and profitable employment for their capital pledged by the faith of the people, founded on reason made intelligent by a correct knowledge of the facts, showing established conditions to be right and just. A firmer base than this on which to rest corporate right does not exist in human affairs." And more to the same purport.

Now, what is wanted at present, and very earnestly wanted, is a concrete plan for equalizing the advantages, the expenses and the profits of certain "public services," like the street railroad, gas and electric lighting, water, heating and similar industries. On the one hand capital demands long-term franchises with every possible safeguard and the prospect of earning something beyond interest and other fixed charges upon investment; on the other hand a good many of "the public" have utopian ideas of getting something for nothing, or at least at cost or less. To adjust these demands and expectations is a difficult and delicate task. It seems to us that these, like all similar questions, depend to a large extent upon the human element in the case—the personal equation. If our local politics were clean and intelligent it would be feasible to enter upon an out-and-out Bellamy, populist, paternal system, so that a city might own and control not only water-works (as do most cities) but gas works, like Philadelphia, and street railroads, like Glasgow. But imagine applying the idea in its entirety to a city like New York. It would be manifestly unsafe to go farther than we have. Better stop with city ownership and control of the water supply and ordinary permanent improvements, such as parks, paving, wharves, bridges and tunnels, and let free rides for school children await a municipal millennium. Meanwhile, capital, with its intelligent self-interest, stands always ready to introduce any industrial improvements when there is a prospect of profit and assurance of protection; and under the present system charters can be drawn which will not be unfair to either investors or public, and which should have a certain flexibility in the way of provision for unexpected changes in conditions and should not be of the hard-and-fast ninety-nine-year order.

Part II. discusses "The Powers of Municipalities." This is a paper read before the Commercial Club of Indianapolis, December 8th, 1898. Part III. is a paper on the "Cost of Service to Users and Taxpayers," submitted to the National Conference of Mayors and Councilmen at Columbus, September 28th, 1897. These two discussions should be read in connection with Part I. in order to obtain a fair idea of the author's views, with which readers may not agree, but will be much interested, for the whole subject is one of timely and immense importance.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review on another page of the Journal.

"The Treasure State: Montana and its Magnificent Resources." Sixth Annual Report of the Bureau of Agriculture, Labor and Industry of the State of Montana, 1898. J. H. Calderhead, Commissioner, Helena, Montana; State Printers. Pages, 120; with maps.

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. Letter should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.

The Atlin Lake County.

Sir: I have just received a letter from my brother, at Atlin Lake, N. W. Ter., where he has been several months prospecting, which contains some remarks that may interest your readers. He says:

"This camp is a swindle pure and simple. There are not 100 men at work in the district, and what few claims contain gold are of too low grade to pay wages. Wages for common labor about \$2 per day and board, and hard work to get employment, so more men are going out than coming in.

"The exclusion act has really worked in favor of Americans, as it diverted them and their money elsewhere. The country I have passed over has no timber or soil, and beyond scattered bunch grass appears to be valueless. It has a similarity to the burnt-over district of Cook County, Minn. Such quartz stringers as I found on the contact of slates and granite contained no mineral."

Baltimore, Md., July 18, 1899.

R. W. Petre.

The Pneumatic Cyanide Process.

Sir: I have read with interest Mr. Webb's claims for the "Pneumatic Cyanide Process" in your issue of July 1st. Will Mr. Webb kindly give us figures showing the consumption of cyanide per ton of ore by their process compared with the ordinary process? I hope that those who take advantage of the company's offer to use its process for 30 days free of charge will also give us the respective amount of cyanide used per ton of ore by the two processes.

This factor (consumption of KCy per ton), which is not stated in Mr. Webb's account of the test made by Mr. C. F. Cuno, is as important as the rapidity and percentage of extraction. The quantity of cyanide used per ton of ore is of more importance, in my estimation, than the time of extraction, and if inventors would give as much time to the former factor as to the latter the whole cyanide industry would be thankful.

Victor, Colo., July 11, 1899.

Algernon Del Mar.

The United Verde Junior Copper Mining Company.

Sir:—My attention has been directed towards a circular issued by the "United Verde Junior Copper Mining Company," to its stockholders, dated at Boston, Mass., June 7th, 1899, and purporting to be a copy of a "report" signed by Hon. J. W. Deane, said to be the general manager of the above named company, in which I find that I am quoted as follows: "Property much better than Wallace's report. I believe it contains every possibility and every probability of Clark's Verde, acre for acre . . . and will make one of the world's greatest copper mines."

I will state emphatically and unequivocally that the above alleged quotation is wholly unauthorized by me, and that it is false in every particular. I have never expressed an opinion concerning the merits, present, past or potential, to Mr. Deane, or to anyone else at any time. I do not know Mr. Deane. I will further state that I have no knowledge whatever of the property referred to, in respect of its mineral value; and that, while it is not my purpose or desire to give out anything adverse to the enterprise, I most strenuously object to being falsely represented as ever having expressed any opinion whatsoever, either pro or con, regarding the location in question.

I repeat that the alleged quotation published as above stated is utterly and wholly false in each and every part, and in toto; and I trust that this denial may meet with as extended a circulation as the circular first above referred to.

Jerome, Arizona, June 25, 1899.

Joseph L. Giroux,

Superintendent United Verde Copper Company.

Arizona Mining Schemes.

Sir: Having just returned from a trip through Arizona, I send you some notes that may be of interest concerning some companies much talked about just now. The Val Verde people have about 30 men at work. The railroad from Williams has been graded out 10 miles. You will remember they are proposed to build a railroad from Williams on the Atchison, Topeka & Santa Fe Railroad, to the mines, 45 miles distant. The Val Verde people have taken an option upon a water right 16 miles from Prescott, on the Agua Frio River, where there is supposed to be 100 inches of water, and are having the Prescott & Eastern Railroad put in a spur 1¼ miles to the site, and propose to erect a smelter there for treating custom ore, and I presume their own ore from above Williams. This site is really 200 miles from their Val Verde mines. Meanwhile a firm of the name of N. B. Clifford & Company has taken a lease upon the old smelting plant upon Big Bug of the Commercial Mining Company (Phelps, Dodge & Company), and proposes to reconstruct it and start it up as a custom plant. As the furnace is but three miles from the point where the Val Verde people propose to erect theirs, it will be interesting to watch these two operations, and see whether they propose to stock them and float the stock East. There is ore sufficient for, say, a 40-ton furnace, and in course of time a competent, honest management might build up quite a business.

Part of the newspapers here condemn Governor Murphy for his proclamation, saying it will hurt mining, etc. They are particularly adverse to any criticism upon the companies operating near the United Verde, who are endeavoring to strike a similar ore-body. I am informed that the Val Verde, Jr., has sold \$400,000 worth of stock.

Santa Fe, N. M., July 10, 1899.

O. N.

Okanogan County, Washington.

Sir: Any important mining development which opens a new field to mining men must be of interest to the readers of the "Engineering and Mining Journal."

When a correspondent speaks of Okanogan County it means a territory containing something more than 8,000 square miles, 6,000 of which have been pronounced by competent authority a mineral field. It is not the purpose to enter into a scientific description of the formation and ores found in this county, but to give a few general facts of about 30 square miles of the central-northern portion of the county, generally known as the Palmer Mountain District. This, properly speaking, consists of the Wannicut Lake, Gold Hill and a portion of Mineral Hill organized districts, but Palmer Mountain being about midway of the three, it is generally spoken of as the Palmer Mountain District.

The district has free gold, concentrating and smelting gold ores, high grade silver and copper showing. There is mining being done and developments made in the district, which cannot help to attract the attention of mining men.

The Palmer Mountain Gold Mining and Tunnel Company is engaged in running into Palmer Mountain a tunnel (perhaps adit is the more correct term) to be 6,500 ft. long, and which will be 4,500 ft. in depth vertical at the face when completed. This company owns 42 claims, which lie like a blanket on the southeast side of Palmer Mountain, upon each of which a vein crops out of various widths, making some 25 or more parallel veins to be cross-cut by this adit.

At this time the adit has reached a length of 2,022 ft. and gained 1,020 vertical ft. depth. It has cut 12 veins ranging from 5 to 4½ ft. in width, and carrying pay streaks of from 1 to 35 ft. The lowest assay had in the last vein cut being \$37, and the average being \$97 to \$108.

In the several drifts good ore is shown and in three are visible gold, showing that a portion of the gold is free milling. A treatment plant is now under consideration by the company, which is composed of Washington State, Cleveland, Ohio, and Waltham, Mass., capitalists, who have already expended more than \$100,000.

Loomis, Wash., July 11, 1899.

R. N. Bishop.

IRON PRODUCTION IN BELGIUM.—The production of the Belgian blast furnaces in June was 98,700 metric tons of pig iron. For the half year ending June 30th the production was 596,770 tons, showing an increase of 94,275 tons, or 18.8 per cent., over 1898.

GERMAN IRON PRODUCTION.—The production of pig iron in Germany in May was 678,566 metric tons, showing an increase of 11,941 tons over April and of 68,013 tons over May, 1898. For the five months ending May 31st the production was as follows: Foundry iron, 596,353 tons; forge iron, 701,534 tons; Bessemer pig, 226,828 tons; Thomas (basic) pig, 1,812,303 tons; total, 3,337,009 tons. This is an increase over 1898 of 333,513 tons; or 10.1 per cent. The largest proportional gain was in Thomas pig.

AN ENGLISH PRIZE COMES TO AMERICA.—The senior prize offered by the council of the British Society of Mining Students for the best paper on "Electricity as Applied to Mining Engineering," has been awarded to W. S. Gresley, mining engineer, of Erie, Pa., who is an honorary member of that institute. Mr. Gresley is also the contributor of the article on Coal Mining Methods in the coming volume of "The Mineral Industry." The paper which gained the prize will be found in the "Journal" of the British Society of Mining Students, Volume XXI, page 133, June, 1899, and is published by G. E. J. McMurtrie, Cinderford, Gloucestershire, England. This prize takes the form of books.

SAULT STE. MARIE TRAFFIC.—Although the canals at the Sault opened 18 days later this year than last, the movement of freight to and from Lake Superior has been very large. The total freight movement through the canal from the opening to July 1st was 6,409,086 tons; of which 5,281,821 tons were east-bound, and 1,127,265 tons were west-bound. The increase over last year was no less than 1,087,274 tons, this gain being entirely in east-bound freight. In west-bound there was some falling off, especially in coal. The mineral freight passing through the canal this year included 257,319 tons anthracite, 696,227 tons bituminous coal; 3,917,675 tons iron ore and 26,135 tons of copper. The increase in iron ore shipments was 195,127 tons. In copper there was a very large proportional decrease from 1898, which was probably due to heavy rail shipments made before the opening of navigation.

ELECTRIC MOTORS AT A SALT MINE.—A complete electric plant was recently installed at the Gluckauf Salt Mine at Sondershausen, in Germany. Power is supplied from a central station to all the mines and works. A current of 500 volts is led down the shaft to the landing by a steel-armored cable 61 mm. in diameter, with three copper wires, each of 70 sq. mm. cross-section. Current of the original tension is supplied to the electromotors for driving winches and small auxiliary fans, but reduced by transformers to that of 220 volts for rock drills and electric lighting. Altogether there are 24 electromotors in the Gluckauf Mine—16 on the surface and 8 underground—varying from 1¼ to 105 H. P.; and it is only the large types—those of 105 H. P. for the mills—that require constant attention, the others being looked after by men while going their rounds, which is quite sufficient, because all the motors are provided with ring lubrication.

MINERAL IMPORTS AND EXPORTS OF SPAIN.—The imports of mineral fuel into Spain for the five months ending May 31st are reported by the "Revista Minera" at 768,083 tons coal and 100,022 tons coke. Imports of iron and steel included 933 tons pig iron, 2,308 tons wrought iron, 9,241 tons steel and 838 tons tin-plates. Exports of minerals were, in metric tons:

	1898.	1899.	Changes.
Iron ores	2,979,604	3,614,992	I. 635,388
Copper ore	348,708	405,086	I. 56,378
Zinc ore	21,716	33,282	I. 11,566
Lead ore	3,370	3,783	I. 413
Salt	89,851	127,620	I. 37,769

Exports of metals were 17,014 tons pig iron (20,405 tons in 1898); 11,382 tons copper (12,784 tons in 1898); 65,727 tons lead (74,267 tons in 1898).

RESOURCES OF THE MOUNT WILSON DISTRICT, COLORADO.

Written for the Engineering and Mining Journal by Frank L. Nason.

There are no definite lines bounding this district, but for the purposes of this paper the district will be roughly limited to the territory between the San Miguel River on the north, the Dolores on the south and lying wholly in the southern part of San Miguel County, Colorado, and in the northern part of Dolores County.

The section of the district lying in Dolores County in what is known as Navajo Basin, is included, since, for a part of the year at least, its supplies are packed over the divide between Bear Creek and Navajo basins from the north side. In spite of the fact that in this district lies one of the best known mines in Southern Colorado, and also that the whole country is gashed by unexplored veins, there has been but little capital diverted towards exploring the country outside of the Mount Wilson Gold and Silver Mining Company's property—the well-known Silver Pick. The reason for this is probably, first, that the great mines around Telluride and Rico, which were the first to be located, are closely grouped and of great extent; and, second, that the Mount Wilson District stands by itself with its one great producing mine. A further reason is that the region is very high, from 11,500 to 13,000 ft., and consequently the snow comes early, usually in October, and does not go away before the middle or end of June; in fact, the snow never goes away entirely.

This renders the prospecting season short, and even with an exceptionally good prospect, it is rather difficult to interest proposing investors when they are told at the outset that the prospect or prospects are accessible for only three or four months in the year. No amount of explaining will convince them that a mine would have no difficulty in maintaining open roads throughout the year. The bases of the lofty

having an altitude of 8,500 to 9,000 ft., has many evidences of the existence of metalliferous veins carrying copper, lead and silver, with a little gold, but has been but little prospected. The difficulties of prospecting here are entirely different from those of the Alpine part of the district. The rocks exposed in the Bear Creek and other canyons near their junction with the canyon of the San Miguel are of the Jura Trias, consisting of heavy beds of white and red sandstone and conglomerates interbedded with arenaceous-argillaceous shales. These rocks are horizontal and, except in the canyons, only the surface beds are exposed, and these but rarely, owing to the heavy mantle of soil. Prospecting has, therefore, been confined almost exclusively to the canyons. Though no mines have been opened up, the country is by no means an unpromising one.

In considering the advisability of investing in a given locality, the well-informed investor will ask the following questions, and upon their answers he will base his decision as to whether the risks to which his capital is exposed are legitimate or not. The questions which would readily occur to such an investor are as follows:

1. What volume of water is available?
2. Is the supply temporary or available throughout the year?
3. What is the nature, supply and cost of fuel?
4. What is the available extent and cost of mining timbers and lumber?
5. What is the nature and cost of transportation?

With reliable answers to these questions practical calculations can be made as to whether it will be wise, other things being equal, to risk money necessary to explore a given prospect, or as to whether a given prospect with favorable indications can be worked as a profitable investment. In regard to the first question, the natural supply of water from melting snows in any of the basins is amply sufficient to run from 100 stamps upward. The flow of water begins from the middle of April to the middle of May and lasts till about December 1st. With com-

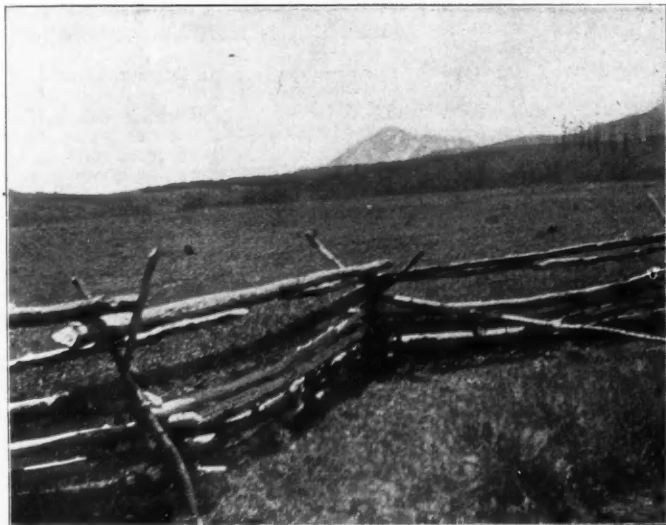


FIG. 1.

VIEWS IN MOUNT WILSON DISTRICT, COLORADO.



FIG. 2.



FIG. 3.

mountains rising from the surrounding mesas are covered by great masses of slide rock, often extending to the extreme summits, and the several peaks are gashed deep with probable mineral veins; but even these gashes are filled with slide to such an extent as to cover the veins. In the majority of cases before the vein can be gotten at a long tunnel must be driven. These conditions, with short working seasons, rather discourage prospecting, to say nothing of proposing investors, though one prospector in the district has driven a tunnel 400 ft. to intersect a great vein on Mount Wilson. The vein is inaccessible otherwise. This man has worked on his tunnel for the last 15 years without any outside aid, and expects to cut the vein this summer. Let us wish him success at least.

It may be asked what reason there is to suppose that these veins are valuable, if, as is the case, many are inaccessible? First of all there is the Silver Pick, and as is always the case with a successful mine, adjoining claims are either extensions of the Pick vein or they have the mother vein, of which the Pick is only a spur. In addition, on Fall, Elk and Bear creeks, all of which head on Mount Wilson, are located placer claims. None of the placers have been paying propositions, but they carry gold, and the source of the gold is Mount Wilson and its spurs. The slide rock, filling for the most part the basins between the spurs of Mount Wilson, is gold bearing with large quantities of sulphides. These black sands, as the writer can vouch from personal assays, when freed from metallic gold, run from \$50 to \$100 or more in gold and silver. On the crests of the divides are innumerable small veins, all carrying free gold and auriferous sulphides are found; and these, with the larger veins, have supplied the slide rock debris and mesa gravels with their metallic contents. These facts, in spite of difficulties, have made the Mount Wilson District a popular one for prospecting, though, as has already been stated, very little capital outside of "grub-stakes" and the time of the prospectors have been expended here.

The Mesa country, lying about 2,000 ft. below the Silver Pick mill,

paratively little expense the various small streams that flow from the mountains could be collected into one and the supply would in this case begin earlier and last later in the season. So far as is known to the writer, no attempts have ever been made to build storage reservoirs with which to tide over a season in which the natural flow of water is insufficient. In nearly all of the upper parts of the basins there are natural ponds, covering from an acre down, which, at a slight expense, could be greatly enlarged. Storage reservoirs at the great elevation, from 11,000 to 12,000 ft., of the basins would be subject to great loss by evaporation, especially as the reservoirs would expose a large surface and would be comparatively shallow; but in June, July and August, when evaporation would reach the maximum, the supply of water would be greatly in excess of actual need, and early in September or, at latest, October 1st, long before the flow of water perceptibly decreases, the reservoir would be protected from further loss by a mantle of ice.

There is another way in which a supply of water could be stored in reservoirs where the conditions of shallow depths and large surface exposures could be reversed. In the basins are canyons from 150 to 200 ft. in depth. These could be dammed by building log cribs, which could be filled with rocks from either side of the canyon, brushed, and a water-tight dam formed by hydraulicking the surface soil and sluicing it against the inner face of the dam. Millions of gallons of water could thus be stored, and with a depth of from 150 ft. upward and a width of not to exceed 200 ft., evaporation would be reduced to a minimum. The flow of water through the winter months would more than keep any leakage good, and there are often several weeks in mid-winter when the natural flow of water would be sufficient for milling. By building the mill on the Mesa the necessity for storage would be obviated, as by leading together the different streams an ample supply of water would be obtained the year around. In this case a tramway from 2 to 4 miles long would be a necessity; but this extra length of tram would be at least partly neutralized by the facts that a mill thus situated would be

exposed to less severe cold and storms, would be nearer fuel supply and nearer railroad shipping point.

It is hardly necessary to add that during the summer season, at least, a mill could be run by water power. From the Silver Pick Mine to the mill the air-line distance, measured up the slope, is 5,900 ft. and the fall is 2,000 ft. From the present site of the mill and 800 ft. up the slope a head of 400 ft. could be gained. From the present mill site to one mile below all the water in the Pick basin could be turned into one stream at the present mill site, and used one mile distant under a head of 1,000 ft. What is true of the Pick basin holds true for all of the basins in the district.

In regard to the fuel supply the district in question is exceptionally fortunate. The practical limit of available fuel in altitude is 11,000 to 11,500 ft. From this line down to a distance of from 1 to 2 miles is, first, a belt of evergreens, principally consisting of white spruce with a considerable amount of Canada balsam and quaking asp. The second belt, reaching out on the mesa for a mile or more, is almost entirely quaking asp of large size and dense growth. There are not less than 12,000 acres of available wood-land at a maximum distance, laterally from a given point, of 5 miles, allowing the belt a width of 2 miles.

At a distance of 4 miles from the Silver Pick mill a horizontal bed of coal, 3 ft. thick, has been opened up. About 18 in. of this is very fair as to quality. Then a layer of fire-clay 6 in. thick comes in, separating the lower from an upper coal stratum of 18 in. of coal of poorer quality. This coal bed has not been extensively prospected, but from the contour of the mesa there is little doubt of its covering an area of not less than 25 square miles. There is no reasonable doubt but that this coal bed is coextensive with the mesa surrounding Mount Wilson, Little Cone and Lone Cone mountains. As to the calorific values of these fuels, the spruce, balsam and quaking asp need not be discussed. They have constituted the almost exclusive fuels of many of the great mining camps of Colorado as well as elsewhere. In regard to the mesa coal, no practical test of this has ever been made except by local blacksmiths and in cook-stoves, in which it has proven fairly satisfactory. Experiments by the writer has proven that the mesa coal will produce a fair quality of coke. An approximate analysis is as follows: Volatile hydrocarbons and water, 17; fixed carbon from coke by Berthies's method, 58.70; ash, by difference, 24.30 per cent.

The cost of mesa coal at a distance of 5 miles from bank, hauled by wagons, would be: Mining and royalties, per ton, \$1; hauling to mill, \$2.50; total, at mill, \$3.50. The cost of wood delivered at the above distance is \$2.50 per cord.

The maximum distance of 5 miles for coal is taken, since, if coal is not discovered elsewhere than at the present known bank, this distance will not be exceeded in delivering coal to actual or probable mill sites. With regard to wood, in any possible mill site in the district this will be the maximum for many years. At present the wood haulage distance is much less.

The belt of available timber for mining purposes is coextensive with the wood belt. Lagging, mills and stulls in this belt are entirely of white spruce, and delivered at mills within five miles at the following prices: Lagging, 7 ft. by 3 to 8 in. diameter, each 11c.; mills, 6 to 8 in. diameter, per foot, 4c.; stulls, 6 to 15 or 18 in. diameter, per foot, 4c. At these prices all timbers are peeled and delivered. Lagging is cut in 7 ft. lengths. Mills are delivered in pieces from 12 to 18 in., 3 ft. lengths or multiples of 3 ft., and allowance made for waste. The same holds with regard to stulls.

Lumber, boards, planks and square timbers, from white or red spruce, of fair quality, supplied from local timber belts, cost \$17 per thousand, delivered. Lumber of a little better quality can be had at a maximum price—except hardwood—of \$24 per thousand, delivered.

For a haulage of 9 miles, concentrates or ores are hauled to railroad and return freight to mine or mill at \$3 per ton. Where a mine or mill is continuously operated throughout the year, the cost of keeping the road open, even in mid-winter, is comparatively light; where a road is allowed to close during the winter the cost of opening it in the spring varies from \$150 to \$250.

At an elevation of 11,000 ft. the minimum temperature is — 40° F., but this low temperature is only of a few hours' duration, and nearly every sunny day throughout the winter the thermometer rises above 32°.

With a mill properly built and with proper care, no trouble with freezing pipes would be experienced.

The accompanying views show wood and timber lands contiguous to the Mount Wilson mining district. Fig. 1 is from a photograph of Sunshine Mountain, a spur of Mount Wilson. Fig. 2 is a view of Mount Wilson proper, taken from Bear Creek Mesa. Fig. 3 shows Mount Wilson on the left, Polar Peak in the center and Dolores Mountain on the right. The three views cover a range, east and west, of about 15 miles. The timber and wood belt is over 2 miles wide. The views were taken from Bear Creek Mesa, which is probably underlaid with coal beds.

What has been said of the Mount Wilson District applies generally to the adjacent mining camps. Before the writer was located in the San Juan country he had heard repeatedly that it, as a whole, was greatly hampered by lack of water and, inferentially, of lumber and mining timbers. The object of this paper has been to set matters in their true light, assuming that many others not specially informed had the same unfavorable impression of the country. The surrounding mesas are taken up by ranchmen and consequently hay, stock, meat and vegetable supplies are unusually cheap and abundant. The country, as a whole, seems to be becoming more widely and favorably known, and there are no good reasons why growing expectations of its productiveness should not be realized.

THE COPPER DEPOSITS OF INGUARAN, MEXICO.

These deposits are described in a paper recently read by E. Cumenge before the Societe Francaise de Mineralogie. According to this description the mountain of Inguaran forms one of the spurs of the Sierra Madre, in that portion of it which runs through the State of Michoacan in northwestern Mexico. Pazcuaro is the nearest railroad point.

The recent volcanic cone of Jurullo (1,950 ft.), dating only from the last century, rises from the plain within a mile or two of Inguaran. At the last named locality the evidence of incomparably more ancient volcanic eruptions exists in the shape of an enormous flow of andesite, and the great deposit of copper pyrites lies between this and the granite which forms the backbone of the neighboring mountain ranges. The cupriferous masses, locally termed "guedales," occur in a belt of microgranulite, some 2,250 or 2,550 ft. wide and 5 or 6 miles long, which intervenes between the andesite and granite from base to summit of the mountain (3,250 ft. difference of level). So rich are these masses of altered microgranulite, wherein the chalcopyrite or copper pyrites forms the cementing material, that one single mass at the base of Inguaran contains, according to estimate, 30,000,000 tons of ore.

Relics of ancient workings show that the Aztecs, and after them the Spaniards, extracted the ore for the manufacture of domestic utensils. Indeed there are still some primitive smelting works in the little town of Santa Clara del Cobre, where the pyrites, crushed by hand between two stones, is washed, roasted, and finally smelted in a hole dug in the ground, by means of charcoal fuel and hand bellows. The black copper thus obtained is refined on a small hearth, and the metal (which is of first rate quality) is hammered into shape by very skilful workmen.

The chalcopyrite is associated at Inguaran with bornite and black sulphide or chalcocine, both minerals much richer in copper than pyrites. These two minerals are sometimes found here in rather thick layers, encrusting the less altered blocks of microgranulite in the breccia. Some of these harder blocks are several feet thick, and form barren "caballos" in the midst of the ore deposit. The metallic copper in the ore ranges from 3 to 4 per cent., and the concentrates obtained by primitive treatment usually contain 32 to 33 per cent. of the metal. The author believes that this high percentage is due to the almost entire absence of iron pyrites, an absence very unusual in cupriferous deposits.

The mineral resources of Inguaran would allow of an annual production of 25,000 to 30,000 tons of metallic copper, and it is expected that working will be started on a large scale with modern methods, so soon as readier means of access to the locality have been provided.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

LOCATION AND ACQUISITION OF CLAIMS ON PUBLIC LANDS.—

A mining claim was located in the names of four persons. The one who located it, who was the only one who had anything to do with it, testified that, after working it a while, he decided it was no good, destroyed the monument, and went away, with the intention of having nothing further to do with it. This was held by the court to be an abandonment, so that a subsequent location, made before the statutory time of forfeiture, was valid. Where an action is brought against such new locator before the expiration of the time allowed by statute for the filing of the notice, the latter may show acts of location independent of a certificate of location.—Kinney vs. Flemming (56 Pacific Reporter, 723); Supreme Court of Arizona.

SUFFICIENCY OF NOTICE.—A notice of location of a mining claim recited that: "Said claim is 1,500 ft. in length, and we claim 300 ft. on each side of the center of discovery shaft for the full length of the claim. The general course of this lode deposit or premises is easterly and westerly." This sufficiently complies with Laws of 1895, Act No. 42, section 1, requiring such notice to contain "the number of feet in length of such claim, and the number of feet claimed on each side of the center of the discovery shaft lengthwise of the claim" and "the general course of the lode, deposit or premises located" so as to be admissible in evidence. A mine referred to by name is a "permanent monument" within the meaning of said statute, requiring the notice of location to refer to some permanent monument to identify it. Where such reference is made, the one who attacks it has the burden of showing that there was no such mine as the one referred to.—Kinney vs. Flemming (56 Pacific Reporter, 724); Supreme Court of Arizona.

WHAT IS ANTHRACITE COAL?—In a case arising in San Francisco the decision of the collector, upheld later by the board of general appraisers, held that under the present tariff law all coal containing less than 92 per cent. of fixed carbon must be classed as bituminous coal and liable to a duty of 67c. per ton. The coal in question was Welsh anthracite. The importers appealed to the United States Circuit Court, and that court, in a decision recently rendered, affirmed the action of the collector. In the opinion the Court said:

"The language of this section, as will be seen by comparison, is a departure from that of all previous sections of the law upon this subject, and distinctly provides that all coals containing less than 92 per cent. of fixed carbon, including bituminous coal, which had been mentioned by name in all the acts since the act of March 2d, 1861, should be subject to a duty of 67c. per ton. There is no question but that the article involved in this controversy is coal, and, that being so, there remains but one other inquiry to determine whether it comes under this section (paragraph), and that is, does it contain less than 92 per cent. of fixed carbon? It is admitted that it does. Then, it is distinctly described, and made subject to the duty of 67c. per ton."

"With regard to appellant's contention that such a construction excludes anthracite coal from the free list altogether, for no cargo of anthracite coal contains more than 92 per cent. of fixed carbon, it is sufficient to say that the statute does not impose the duty by the cargo, but on the unit of a ton; and it appears from the evidence that, as a matter of fact, samples of anthracite coal, taken and tested, show a variation in the amount of fixed carbon ranging from 86 to 94 per cent. There is, then, an imported article of coal upon which the free list provision of the statute may operate; and if this is so, there is no ground for saying that the statute is meaningless. It is only where a word or sentence is unintelligible, or produces absurd and conflicting results, that it may be disregarded in giving effect to other provisions."

UNDERGROUND IN A QUEENSLAND MINE.

The accompanying illustration is from a photograph, for which we are indebted to the courtesy of Mr. A. C. Austin. It was taken in the Silver Spur Mine in South Queensland, which is a mine of some reputation. The view is on the 90-ft. level, in No. 3 drift, looking toward the underlay shaft. The ore taken out is a soft gossan, the deposit running from 8 to 35 ft. wide. The photograph shows the timbering of the drift very plainly. The timbers used are Australian hardwood, or ironbark. The view is very clearly and well taken.

THE MINING CAMP OF EL ORO, MEXICO.

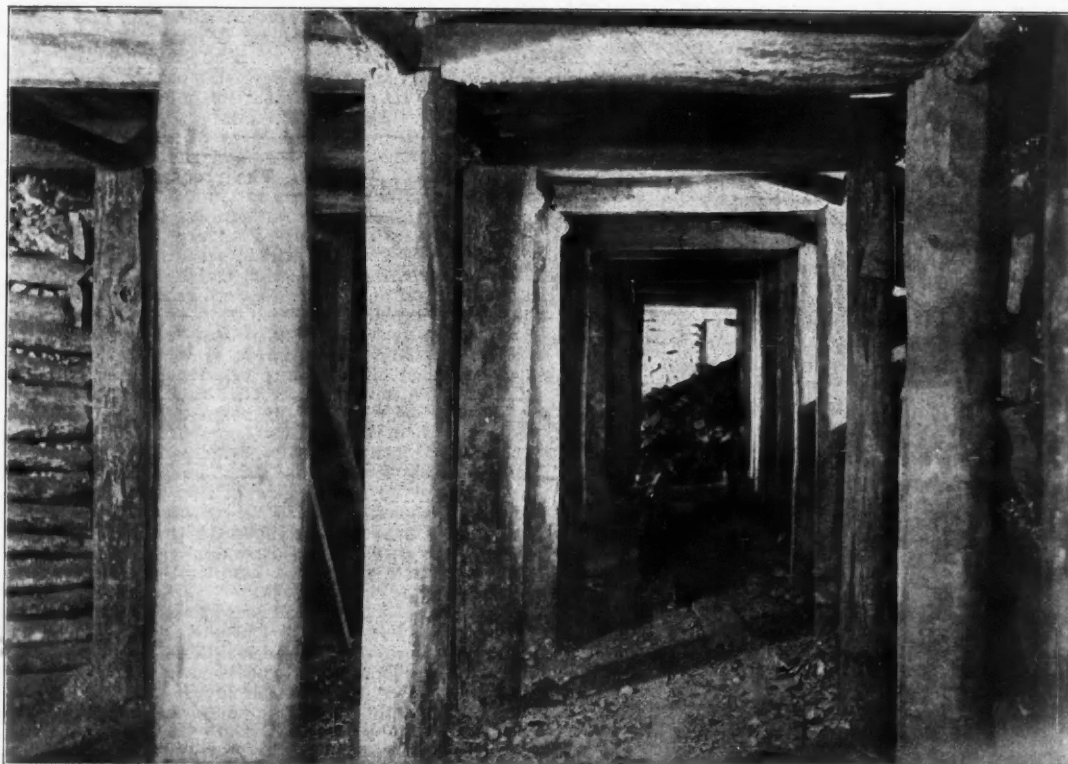
Written for the Engineering and Mining Journal by Robert S. Barrett.

Of the gold mining camps in the Republic of Mexico at the present time none have shown a more phenomenal growth than that of El Oro, which, within the past five years, has attracted capital from all parts of the world, and which at present is producing bullion at the rate of \$300,000 each month. The camp of El Oro is situated on the boundary line of the states of Michoacan and Mexico, 5½ miles from the Tultenango station of the Mexican National Railroad, which is 102 miles north of Mexico City and 738 miles south of Laredo, Texas. A narrow-gauge railroad owned by the American Railroad and Lumber Company, practically a branch of the American Mining Company, has been recently

At present over 100 claims have been located in the immediate territory of El Oro and on one-third of these some work is being done. Three mines, La Esperanza, El Oro and El Carmen, are producing bullion. The principal mines on which development work is being done and on which ore has been found, are: The Nolan shaft, the Mexico, La Esmeralda, Los Dos Estrellas, La Joya, Buena Vista, Victoria y Anexas, Somera and Buen Despacho.

La Esperanza is probably the best known mine in Mexico, because it has figured in some big deals in the past few years and has been prominently placed before English capitalists. It is at present in the hands of the company which originally opened it about five years ago. In May of this year it was bonded for \$3,000,000 gold to an English company, in which Wernher, Beit & Co., the London bankers, and Cecil Rhodes of South Africa, were supposed to be interested. They overcapitalized the company and their experts were not willing to report that the mine would earn reasonable dividends on the \$4,500,000 of stock to be issued. The deal fell through and the promoters forfeited \$100,000 gold which they had paid for the option. A like sum was lost by C. D. Lane, the famous California miner, in 1897, when the property was bonded to him for \$3,000,000 gold. He was unable to place the mine in England and forfeited his deposit.

Since the last sale was declared off work has been going on more vigorously than ever and the company is now spending the last forfeit money in erecting a new stamp mill. The new mill will have 80 stamps and will run in connection with the 40 stamps now in operation. A new



TIMBERING IN SILVER SPUR MINE, SOUTH QUEENSLAND.

built between the camp and Tultenango, and is now in operation. The elevation of the town of El Oro is 9,200 ft. and it is beautifully situated.

As yet no geological survey has been made of El Oro District and the only information to be obtained regarding the veins and the formation of the strata is the rather meager knowledge gained from the shafts that have been sunk. Under a few feet of soil is found the volcanic overflow of andesite, ranging from 100 to 600 ft. in thickness in the various mines, and covering the slate in which the veins are found. This bed of andesite is very hard and the shafts that have been sunk through it have been very expensive. There is no surface outcrop, and El Oro, like Real del Monte, in the State of Hidalgo, is a district where large capital is needed for the deep shafts, extensive machinery and substantial timbering that is required.

Four principal veins are now known and are being worked and there are four smaller veins which have been discovered within the past five years. The chief vein is the San Rafael, on which all the principal mines are located. It has been exploited for a distance of 2 miles and along its supposed course, land has been denounced for a distance of 11 miles. In width it ranges from 30 ft. in the Carmen Mine, where it is first uncovered, to 150 ft. in the shaft of the Esperanza, where it carries a rich pay streak 20 ft. in width. The ore is a pure silicate, containing the gold and silver, which runs as high as \$150 in gold and \$10 in silver per ton. It is a free-milling ore and in the Esperanza and El Oro mills is treated by pan amalgamation and the tailings by the cyanide process. Dry crushing and direct treatment by cyanide, as practiced on El Carmen property, have proven very successful and are believed by Mr. Arthur Thomas, a former manager of the company, to give the best results, because of the extremely fine state of division in which the gold is found. The San Rafael vein is the principal one on which work is being done and on which most of the claims are located. It has been declared by experts to be one of the most extraordinary veins in the world, because of its wealth and the high value of the rich ore obtained in the streaks.

cyanide plant capable of treating 150 tons of tailings daily is to be erected. Mr. August Sahlberg, the company's manager, is now in the United States for the purpose of purchasing machinery for the two plants. The present depth of the main Esperanza shaft is 700 ft., work, however, being mainly carried on at the 450 and 550-ft. levels, where the veins have been cross-cut and blocked out in regular and approved manner. The pay streak on the hanging wall of the San Rafael vein, which is 20 ft. in width, averages \$30 (United States currency) to the ton. The equipment of La Esperanza is very complete and modern in every respect. The ores are treated by pan and plate amalgamation and the tailings cyanided. One of the most remarkable things about the mines at El Oro is that the ore is not sorted but goes direct from the shaft to the mill.

Adjoining La Esperanza to the south is El Oro Mine, which is the largest operating at El Oro, and which is very productive. It is owned by the American Mining Company, composed, for the main part, of J. B. Haggin & Co. of New York and General J. B. Frisbie of Mexico. This company also owns the American Railway and Lumber Company which connects El Oro with the Mexican National at Tultenango, and which will eventually run to the center of the lumber district, a distance of 30 kilometers, and bring firewood and mining timbers for the camp. At El Oro a great amount of building is going on and the mine is being worked on the most approved principles. A new 100-stamp mill has just been completed and the machinery installed. It is ready to be started and will be used in connection with the 25-stamp and Chilean mill now in operation. The machinery is from Frazer & Chalmers of Chicago. An electric light and air-compressing plant, foundry and huge cyanide plant complete the equipment. The San Rafael vein and the next important, the Descubridora, both run through El Oro and are being worked. The first named vein runs through the whole length of the mine, being about 6 meters wide at the south end and 50 meters at the north. M. J. Walsh is the manager of El Oro.

Although El Oro and La Esperanza are the show places of the camp,

extensive development work is going on in a number of other mines. For instance, the Mexico Venture Syndicate of London, owning the Mexican Mine, adjoining La Esperanza on the north, has just added £20,000 to the capital. It is believed that the San Rafael vein has been cut and a large amount of machinery has recently been ordered. On El Carmen claim, owned by the British Gold Mines of London, Limited, a London company organized in 1896, the San Rafael vein has been found and bullion is being produced. It has a plant of ten stamps. The ore is dry crushed and then treated by the direct cyanide process. On the Somera, which is bonded to C. D. Lane of California, a shaft is being sunk to the depth of 1,500 ft. The shaft is a long three-compartment one and is extremely well timbered. As soon as the San Rafael vein is cut a cross-cut will be driven to the west to cut other and smaller veins.

There seems no doubt that El Oro is destined to become in the course of a few years one of the greatest gold mining camps in the world.

CORRESPONDENCE SCHOOLS.*

By R. P. Rothwell.

(Concluded from page 66.)

In considering the more important American correspondence schools I shall specially mention those which have engineering courses. It should be added that the tendency is already well developed to include in a single such enterprise instruction in all subjects for which there seems to be a paying demand. The extra cost of advertising and instruction is small in proportion to the extra profit, and the schools tend to become "department stores" of vast and varied scope.

The following is a list of the more important schools, arranged alphabetically.

1. American School of Correspondence, of Boston, Mass.
2. American Correspondence School of Textiles, of New Bedford, Mass.
3. Electrical Engineer Institute, of New York City.
4. Institute for Home Study of Engineering, of Cleveland, Ohio.
5. International Correspondence Schools, of Scranton, Pa.
6. National Correspondence Institute, Washington, D. C.
7. Railway Correspondence School, New York City.
8. Sprague Correspondence Schools, Detroit, Mich.
9. United Correspondence Schools, New York City.

There are a number of correspondence schools of law, of medicine, and of literature, such as the Chautauqua school, which has been taken over by the University of Chicago, and the "Cosmopolitan University," which is a correspondence school of literature organized by the "Cosmopolitan Magazine."

There are three correspondence schools of mining in England, but they are not important.

1. The American School of Correspondence, of Boston, Mass., has a very distinguished board of officers and instructors, men well known in the engineering professions. The courses taught by it are six, namely, in stationary, locomotive, mechanical, marine and electrical engineering, and mechanical drawing. This school lays special emphasis on the fact that it is devoted strictly to the study of steam and electrical engineering and the construction and operation of machinery, and upon the high professional standing of its officers and instructors. It has the elements of success, and appears to be conducted honorably and with intelligence.
2. The American Correspondence School of Textiles has entered a very useful field, though it is somewhat foreign to our Institute of Mining Engineers. As the school is under the directorship of a competent and experienced gentleman, Mr. C. P. Brooks, it will doubtless make a success, and will be of great benefit to the industry to which it is devoted.
3. The Electrical Engineer Institute of Correspondence Instruction, of New York, connected with the "Electrical Engineer," is devoted to instruction in electrical engineering in its various branches. The instruction covers arithmetic, mensuration, algebra, physics, chemistry, mechanics, mechanical drawing (optional), principles of electricity and magnetism, instruments and measurements, continuous current machinery (optional), and electro-metallurgy. This school lays special stress on its reference, by permission, to a long list of well known electrical engineers as to its good faith, trustworthiness and technical reliability. It also refers to letters from its students as to the satisfaction given in the methods of instruction and treatment generally.
4. The Institute for Home Study of Engineering, of Cleveland, Ohio, includes also the Correspondence School of Technology of Cleveland, these schools having been united. This school is six years old, and is the oldest correspondence school in this country including instruction in electricity. It is devoted exclusively to the study of engineering, and its courses are arithmetic, algebra, geometry, trigonometry, physics, mechanical drawing, shop, steam engineering, electrical engineering, electrical-mechanical engineering, surveying and railroads, bridges, roofs and structures, hydraulic engineering and advanced mathematics. This school has several well known engineers as heads of departments.[†]
5. The International Correspondence Schools of Scranton, Pa., have courses in arithmetic, mensuration, mechanics, geometrical and mechanical drawing, mining, mechanics, steam engineering, electricity, architecture, plumbing, heating and ventilation, civil engineering, railroad engineering, bridge engineering, municipal engineering, hydraulic engineering, English branches, bookkeeping and stenography, sheet-metal pattern drafting, pedagogy and chemistry.
6. The National Correspondence Institute, Washington, D. C., has been in operation about six years. It gives instruction in seven different departments, besides the usual preliminary courses in arithmetic, algebra, etc., which are common to all the schools. The departments

taught are engineering in all branches, science, journalism, English, bookkeeping and business, shorthand and typewriting, and preparations for civil service and other examinations. The last department appears to be that which receives the chief attention and has the largest number of students. The faculty of this school contains a number of graduates from our leading colleges and universities, and the school, under them, is doing good work, to the satisfaction of its students.

7. The Railway Correspondence School of New York is a young and modest institution, which is devoted to giving instruction to locomotive engineers, firemen, railway mechanics, trainmen and trackmen. The courses cover fifty lessons each, and appear to be well adapted to the classes addressed.

8. The Sprague Correspondence Schools, Detroit, Mich. This institution has a school of law and also one of journalism. It is one of the older correspondence schools, and is very pushing and enterprising in its business methods, and apparently successful in its educational features.

9. The United Correspondence Schools, of New York City. This institution, though young, is of greater interest to the members of the American Institute of Mining Engineers than any of the others, because it is devoting special attention to instruction in mining, metallurgy and kindred subjects. The courses of study include the usual subjects—arithmetic, algebra, logarithms, geometry, mensuration, trigonometry, geometrical and mechanical drawing; and the engineering courses comprise electrical engineering in all its branches; mechanical engineering; steam engineering; civil engineering, including hydraulic, municipal, railroad and bridge engineering; surveying and mapping; sanitary engineering, including plumbing, drainage, heating and ventilation; gas fitting. There is a school of art and architecture, and there are schools of trades, including sheet-metal workers, pattern makers, etc. The school of mines includes geology, mineralogy, assaying, ore deposits, prospecting, coal and metal mining, ventilation of mines, mechanical engineering of mines, metallurgy of all the metals, electro-metallurgy, etc. These courses are new, and the students enrolled are as yet in the preliminary subjects. The preparation of the instruction papers and the care of the students are in the hands of experienced and practical mining engineers of high standing in the profession.

There is also in formation a very important "School for Practical Newspaper Workers," in which, besides the training of pupils for strictly newspaper work, instruction will be given in the preparation of such statements and descriptions as are required for scientific and technical papers; in the suitable preparation of manuscript for the printer, and in the reading of proof, etc. These courses will be conducted by eminent literary authorities connected with the New York press, who will teach the practical work in every department of a newspaper.

It is not too much to say that this is the one department in which most engineers, however otherwise accomplished, are deficient. Many who are high authorities in theory and practice keenly feel their lack of the art of stating with correctness and convincing force, and preparing completely for publication, the results of their study and observation, and will welcome an agency by the help of which they can supply this deficiency without interrupting their professional work.

Since this paper was announced the writer has become personally interested in the United Correspondence Schools, and naturally entertains a favorable opinion of them, although, in fact, that opinion should be considered as the cause, rather than the result, of his participation in the enterprise. The schools were founded in 1897 by Mr. F. W. Ewald, who, in 1892, left the shops of the Dickson Manufacturing Company, at Scranton, to take the technical direction of the Scranton Correspondence schools. This difficult position in a new field he occupied for five years, and under his direction the Scranton schools established themselves successfully. It is one of the regrettable results of the business aspect of this subject that Prof. Stoek did not see fit to recognize in his paper the services which Mr. Ewald had rendered as a pioneer in a new educational method. If he had been writing a purely scientific review of the history of any improvement in the arts he would doubtless have made cordial mention of one who had contributed to its progress; but the courtesies of business do not, it appears, include praise of a competitor.

Of course Mr. Ewald believes that, profiting by his past experience, he has been able, in organizing these schools, to avoid errors of judgment already demonstrated, and to make the new courses better than those previously prepared under his direction. However reasonable this and other claims may be, they cannot be settled by assertion and counter assertion. The only test is the careful comparison of means and results.

A few particulars may be pointed out as points of critical value in such a comparison.

Instruction Papers.—The instruction papers of the correspondence schools are naturally based on standard text-books, and on periodicals devoted to the respective specialties concerned. But neither text-books nor periodicals are free from errors and inconsistencies; and the instruction papers must be prepared by experts not only competent to criticize and correct, but also able to make the result clear, accurate and complete. For, in the vast majority of cases, these papers are sent to persons to whom general and special authorities are not accessible, and perhaps would not be comprehensible. The reference of the student to printed books for information not clearly given in the papers he receives is clearly impracticable. It would increase his expense and labor, discourage his endeavor, and lose his "custom." Hence, the instruction papers must be complete in themselves, giving all the information necessary for the work required of him.

Of course they should be accurate; but they ought, in addition, to be uniform. The great cost of answering separately individual letters of inquiry makes every obscurity or inconsistency in an instruction paper fatally expensive. If the weight of a cubic foot of water is stated in one paper as 62½ lb., and in another as 62¼ lb., or if in a machine drawing, it is not clear whether a certain piece is a bolt or a screw, and if, at different times, 10,000 students separately want to know which is correct, the trouble and cost of the necessary explanations would be ruinously large, and the certainty of its indefinite continuance, together with the injury to the student's trust in the school involved in every

*Paper read before the American Institute of Mining Engineers, New York Meeting, February, 1899.

†Since this paper was in the printer's hands this school has been sold to and consolidated with the United Correspondence Schools of New York.

confession and correction of an error in its instruction papers, would dictate the cancellation of the papers thus found unsatisfactory, and the issue of a new edition. It is, in any event, continuously and imperatively necessary for all such schools, large or small, to revise and reissue instruction papers, bringing them up to date in accuracy and completeness. They do not all, however, fulfill this requirement.

Revision of Question Papers.—The first examination of the work of a student upon the question paper is performed by employees (mostly young women) not capable of solving difficulties or giving instruction, who simply mark it according to a "key," which gives the correct answers called for by the question paper. It is scarcely fair to include as "instructors" the persons who perform such purely clerical duty, as is done in Prof. Stoek's paper. The real instructors are those to whom, in each department, difficulties and inquiries are referred; and these are comparatively few.

The Future of Correspondence Instruction.—In view of the undoubted value of correspondence schools, and the reception which they have experienced from the public, they will undoubtedly not only continue, but multiply; yet there are limits to their probable increase. Their scale of charges is low. They are like mills running on low-grade ore, of which the supply is practically unlimited, but the treatment leaves only a narrow margin of profit, and they must, therefore, be carried on upon a large scale, with adequate capital and with business sagacity. The example of the success of the Scranton schools is not so encouraging to imitators as many persons suppose.

The financial success of the correspondence schools depends very largely upon advertising and soliciting, after the manner of life insurance companies. The advertisements in technical and trade papers attract many, who are thus brought to understand that they can increase by this means their earning capacity, while the ubiquitous canvasser, whose remuneration is a commission on the students enrolled, employs the arts with which we are all familiar to convince the wage earner that more knowledge means greater efficiency and higher pay; and that the school he represents affords superior advantages to any other. In this way the correspondence schools are not only supplying useful knowledge to thousands of wage earners and others who have the desire to improve, but cannot avail themselves of existing facilities; they are also arousing tens of thousands, who had never felt this desire, to an appreciation, an inspiration, and a resolve, to which they might otherwise remain wholly indifferent.

Since nearly every occupation that men and women follow is a fit subject for correspondence instruction, greatly increasing their efficiency and earning power, this new development of educational methods is, in my opinion, one of the most important and beneficial that has ever been undertaken, and is bound to exercise a vast influence upon the industrial development of nations. The benefit of the technical education of the masses has been gaining recognition in every civilized nation, as witness the many free schools of science and art and of manual training, established in this and other countries through private or public munificence. But in this, as in other matters, private commercial enterprise is much more efficient and more useful than public subsidized institutions; in the first place, because, in general, men rarely appreciate what they get for nothing; secondly, because private enterprise is bound to furnish what is of most practical value to the people addressed, or it loses its investment. It is, as it were, under bond, to the amount of that investment, to give good value for what it receives; while public appropriations, and often private contributions, to "institutions of learning," go on, whether the institution gives value for what it receives or not. Private initiative and enterprise devoted to making money while supplying a public want, which possibly they have themselves created, are always more beneficial in their results, and these are more highly appreciated by those for whom they are intended than is free instruction paid for by the State, that is, by all the people.

But correspondence instruction is not, and cannot become, the equivalent of thorough education in our great technical schools. No such comparison should be made. The two methods address quite different classes and are adapted to persons studying under altogether different conditions. The correspondence school addresses chiefly those who are assumed at the outset to know only how to read and write, and who can devote to study at most only their evenings, holidays and odd hours during one, two, three or four years, while engaged in the engrossing pursuit of their daily bread-winning occupation. They could not understand, and do not need, the higher instruction given in ordinary textbooks; and the time they have to devote to the study of a subject is probably not more than from one-tenth to one-fiftieth what is necessary for a student in one of our excellent technical schools. The objects and necessary methods of instruction of the classes addressed are not comparable. The correspondence school will teach 100 where the technical school teaches 1. It does not pretend to give as thorough instruction; but, in the aggregate results of its influence on the betterment of the condition of the wage-earning classes, it may compare very favorably with the technical schools or colleges of the country. To disparage it would be as irrational as to condemn hydraulic mining which melts away mountains, and earns dividends out of material yielding but 4c. of gold per cubic yard, because it does not compare in percentage saved with the treatment of gold ores by chlorination or cyaniding. Correspondence instruction is a process for the treatment of low-grade material, the supply of which is practically unlimited. It is adapted to the handling of immense quantities at low cost, and, though its efficiency is not as high as that of more expensive processes, its aggregate returns are immeasurably great and of real profit to the community.

CALCIUM CARBIDE IN AUSTRIA.—A plant for the manufacture of calcium carbide employed at Meran, in Austria, is driven by water power. The turbines drive five three-phase alternators of 1,200-horse power. According to some figures given by M. Carl Heving in "L'Eclairage Electrique," theoretically it requires 1,900 lbs. of lime and 1,230 lbs. of carbon to produce a ton of the carbide; in practice, however, 2,050 lbs. and 1,420 lbs. respectively are required. The cost of carbide at this factory is said to be about \$36 a metric ton.

ABSTRACTS OF OFFICIAL REPORTS.

Central Chile Copper Company, Chile.

The first full report of this company, which took over by a reorganization the old Paulcillo Mines, covers the year 1898, during which the work done was chiefly preliminary, including the clearing out of the old mines and a considerable amount of development. The total profit for the year was £6,096. The expenses payable out of this profit amounted to £2,828, and in addition there was charged off losses on the old exchange account amounting to £5,875. This account is now finally closed. The total payments amounted to £3,704, showing a loss for the year of £2,608. The directors' report says that the work was conducted under unfavorable conditions, but the development has shown new ore bodies of great value, and the output is now steadily increasing, so that there is no doubt that the company will be a producer on a considerable scale during the current year.

New Elkhorn Mining Company.

This company owns two distinct properties, the old Elkhorn Mine in Montana, and the new Elkhorn Mine in Leadville, Colo. The report covers the year ending December 31st, 1898. Nothing has been done at the Leadville mines during the year, the only expenditure being for the payment of taxes and the preservation of the plant. It is expected that work will be resumed before long under more favorable conditions, but for the present it has been postponed for reasons which seemed satisfactory to the directors.

At the old property in Montana development work and the extraction of ore continued. There was mined during the year 12,365 tons of ore. Of this 1,700 tons were sold to the smelters, the contents returned being 532,429 lbs. lead, 214,909 oz. silver and 231 oz. gold, and the total value \$104,946. The remainder of the ore was sent to the mill, which, in addition, received 299 tons selected from the waste dump. The mill report shows 11,424 tons crushed and panned, 2,144 tons of salt being used in treatment. The proportion saved was 83 per cent. The product was 375,963 oz. silver and 244 oz. gold. The batteries were in service 223 days and the average amount crushed per stamp per day was 2.05 tons. The pans were in service 352 days. The cost of mining and of milling per ton of ore hoisted and per ton treated, respectively, was as follows:

Mining per ton.		Milling, per ton.	
Superintendence	\$0.7833	Superintendence	\$0.5217
Mine Labor	9.0269	Labor	3.3058
Ore-house labor	0.7246	Quicksilver	0.8904
Fuel	3.0993	Salt	2.1406
Explosives	0.8090	Fuel	1.3973
Timber	0.1250	Chemicals	0.0661
Illuminants	0.0768	General supplies and repairs..	0.7214
General supplies and repairs....	0.5362	Surface expenses	0.2034
Surface expenses	0.1892	Taxes, insurance and legal exp.	0.2423
Taxes, insurance and legal exp.	0.2238		
Total	\$15.5941	Total	\$9.4890

The superintendent's report says that prospecting has been quite extensive without any very considerable discovery. The most important is an ore body found on the 1,450-ft. level, which is now being followed downward. This occurs in a position where no ore was previously known to exist, and promises well. While there is less ore in sight in the mine than there was a year ago it is not certain that further work may not result in fresh discoveries and it is recommended that prospecting be kept up.

The total receipts, as stated in sterling from the London office, were as follows: From Montana Mine, £65,541; from Leadville Mine royalties, £37; interest, exchange, etc., £46; total, £65,624. The expenses at Leadville were £1,234; in Montana, £61,993; in London, £1,328. This leaves a balance of £1,068 to be carried forward to the new account.

Ontario Silver Mining Company, Utah.

The report of this company for the year 1898 is necessarily brief, very little mining work having been done during the year, although prospecting was continued to some extent, and the drainage work carried on. The superintendent reports that the mine is in good condition for working at any time when a full force may be put on again. Work during the year was confined to a little stoping above the 600-ft. level and to taking out remains of the ore bodies at the west end of the mine. This was done with the object of getting out all the pay-ore so as to save the expense of retimbering that part of the mine. The ore taken out paid for all the expenses. The only work done below the 600-ft. level was that necessary to keep the mine in repair. Drain Tunnel No. 1 was put in good repair and a track put down for the purpose of tramping out ores from the Ontario and Daly mines. Drain Tunnel No. 2 was kept in order and some new timbering put in. The flow of water through this tunnel has been as high as 8,000 gallons a minute.

The Marsac Mill being idle, it was decided to make a trial working over the large tailings dump. The mill was started on June 1st and run until the close of the year. During this period 11,919 tons of tailings were worked, the average assay being 10.6 oz. silver to the ton. From this there was realized silver bullion valued at \$66,726. In spite of some delay caused by the fire at Park City in June, a profit was made on this run.

The Treasurer's statement shows that there was sold 3,095 tons of ore and 7 tons of mill cleanings, the smelters' return giving 229,034 oz. silver and 397 oz. gold, valued at \$117,088. This return, with sales of bullion obtained from tailings in the Marsac Mill, made the receipts for the year \$149,814. The expenditures amounted to \$170,257, of which \$57,401 was for reduction of tailings, the balance being for maintenance, repairs, taxes and other general expenses in the mine. The net loss for the year was therefore \$20,443. In addition to this there remains on hand unsold bullion valued at \$34,000. The mill working of the tailings showed a recovery of 76.7 per cent. of the assay value.

The operations of the Weber Coal Company, which is controlled by the Ontario, were much lighter than usual, owing to the partial settling down of the Ontario and Daly mines, which used the greater part of the coal. The mines, however, were kept open, and although small prices were realized on the coal sold to outsiders owing to the great

competition among the Utah mines, the property was kept in good condition for future use without loss. This coal property consists of 811 acres of coal land, a large hoisting plant, screening works, etc., and is capable of shipping 500 tons of coal a day.

Nothing is said in the report with reference to the reopening of the mine during the current year.

Alaska Mexican Gold Mining Company, Alaska.

The report of this company covers the year ending December 31st, 1898. The company continues to work its great deposit of low-grade ore on Douglas Island, Alaska, on a large scale. During the year there were 162,457 tons of ore crushed, the total average yield being \$2.31 per ton. There were 3,402 tons of sulphurets saved from the tailings and treated by chlorination, yielding an average of \$34.80 per ton. The average return per ton crushed from sulphurets was therefore \$0.73, and that obtained from the mill in free gold was \$1.58. The operating costs on the basis of 162,457 tons of ore mined and crushed were as follows:

	Total.	Per ton.
Bullion sold	\$375,882	\$2.3137
Interest received	695	0.0043
Total receipts	\$376,577	\$2.3180
Mining, 162,457 tons ore.....	\$173,871	\$1.0702
Milling, 162,457 tons ore, and concentrating 3,366 tons sulphurets	51,436	0.3166
Chlorination of 3,300 tons of sulphurets	33,002	0.2032
General expenses, Douglas Island.....	6,012	0.0370
San Francisco, office expenses.....	2,317	0.0142
London office expenses	422	0.0026
Paris office expenses	154	0.0009
Consulting engineer expenses	1,139	0.0070
Bullion charges—freight, refining and insurance.....	4,029	0.0249
Total operating costs	\$272,382	\$1.6766
Construction: Gates crusher	3,532	0.0217
Total operating and construction.....	\$275,914	\$1.6983
Net profit for year.....	\$100,663	\$0.6197

The reports of this company continue to be notable and to deserve commendation for the fullness of detail with which the working costs are given. The great economy with which both mine and mill are operated also deserve note, the company making a profit and paying steady dividends on its stock from ore yielding little over \$2 per ton. The total receipts during the year, including interest, were \$376,577, while the total expenses were \$275,914, leaving a balance of \$100,663. From this surplus dividends amounting to \$72,000, or 8 per cent. on the stock, were paid, and a balance of \$28,663 carried forward to surplus. The total cash surplus at the close of the year was \$59,641.

The superintendent's report shows that of the ore mined during the year 56,130 tons came from the adit level, 79,513 tons from the 110-ft. level and 26,814 tons from the 220-ft. level. Development work continued actively during the year, both on the 110 and 220-ft. levels. The total length of drifts, cross-cuts, etc., was 2,081 ft. The consequence of this development was a large addition to the ore in sight, which the superintendent estimates at the close of the year at 445,500 tons. The mill ran by water power 194 days, and by steam 156 days, making a total of 350 days. The average duty was 3.87 tons per stamp per day. The only addition of machinery made during the year was a No. 6 Gates crusher, which took the place of two small-sized Comet crushers.

AN IMPROVED ELECTRICAL FUSE.

We illustrate herewith an electrical fuse made by the Aetna Powder Company of Chicago. The illustration shows, in section, a fuse of nearly actual size. A shell of copper contains in one end the charge of explosive, composed mainly of fulminate of mercury. The copper wires, entering the shell through a sulphur plug, have a cotton covering, which affords sufficient insulation for all ordinary purposes, the plug holding the wires firmly in place. The bare ends of the copper wires are con-



AETNA ELECTRIC FUSE.

nected by a very fine platinum wire or bridge, soldered to and connecting the two ends of the wires, which project into the priming of gun cotton. The bridge is heated to redness or combustion by the passage of the electrical current. The wires of the fuse are of pure copper being doubly covered and will not strip. Two grades of fuses are manufactured—the ordinary quality or single strength, made with quintuple force caps adapted to all ordinary requirements, and the extra quality or double strength, made with sextuple force caps. The latter fuses will explode any of the high explosives, such as blasting gelatin, gelatin-dynamite, ammonia powder or ordinary dynamite. All the fuses are of equal electrical resistance.

RAILROAD TRAFFIC IN THE UNITED STATES.—The report of the Inter-State Commerce Commission for the year ending June 30th, 1898, shows that the aggregate number of passengers carried during the year, as returned in the annual reports of railways, was 501,066,681, indicating an increase, as compared with the previous year, of 11,621,483. The number of passengers carried one mile during the year was 13,379,930,004, there being an increase of 1,122,990,357. The increased density of passenger traffic is shown by the fact that in 1898 the number of passengers carried one mile per mile of line was 72,462, as compared with 66,874 for the previous year. The corresponding figure for 1893, however, was 83,809. The number of tons of freight carried during the year was 879,006,307, there being an increase of 137,300,361. The number of tons of freight carried one mile was 114,077,576,305, which, compared with the previous year, shows the large increase of 18,938,554,080. The number of tons of freight carried one mile per mile of line was 617,810, which is 98,731 greater than the corresponding item for the year preceding.

A GERMAN BLOWING ENGINE.

A blowing engine lately completed for the great new blast furnaces of the Gewerkschaft Deutscher Kaiser at Brueckhausen, is described in a recent number of "Stahl und Eisen." The engine was built by the Societe Alsacienne des Constructions Mecaniques, and has some features worth study.

The engine, as shown in the accompanying illustrations, is of the vertical compound type, each steam cylinder having an air cylinder directly above it. The high pressure cylinder is 1.200 m. in diameter and the low-pressure 1.870 m., both being 1.500 m. stroke. The air cylinders are 2.000 m. diameter. The cylinders are carried on a stiff frame, in which the guides are placed. The vertical frames are bolted at their bases to heavy cast-iron pedestals. A reservoir of oil is carried in the pedestal. The bearings are of cast-iron and arrangements are made for cooling them by passing a stream of water through them.

The fly-wheel shaft and cranks are of steel, the shaft having a hole 10 cm. diameter through it. The cranks are fitted on the shaft hot. The shaft and cranks together weigh 29,700 lbs. The shaft carries at the center a fly-wheel 6 m. diameter and weighing 36 metric tons.

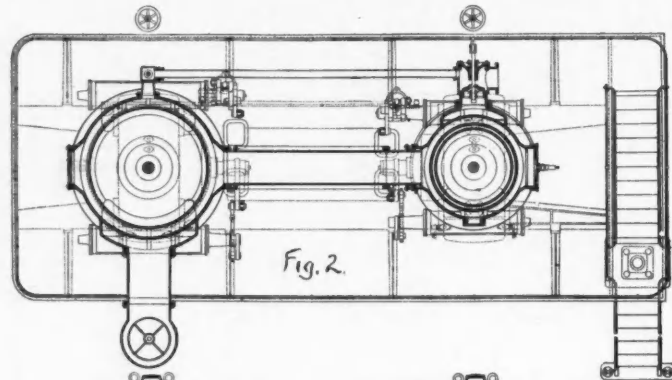


Fig. 2.

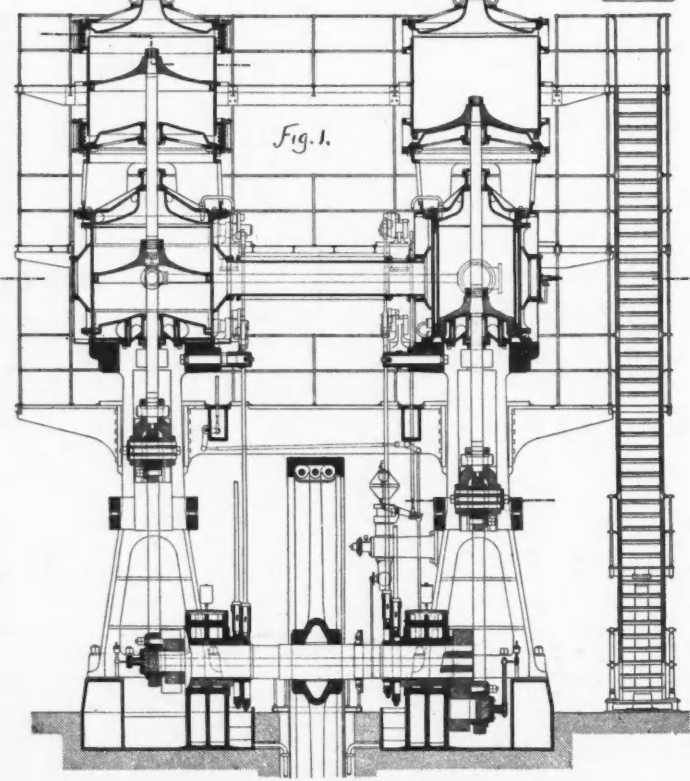


Fig. 1.

BLOWING ENGINE, DEUTSCHER KAISER FURNACE.

In the engravings, Fig. 1 is a sectional elevation; Fig. 2 is a plan; Fig. 4 a side view; Fig. 5 a vertical section through the low-pressure cylinder. Fig. 3 is a section through the blowing cylinder on line C D, Fig. 1; Fig. 6 a section through the guides on line F, Fig. 1. Fig. 7 is a section and Fig. 8 a plan, showing the valves in the air cylinder.

The steam valves are of the Corliss type. The outlet valves are actuated by a special eccentric; the pressure and the lead are regulated by hand. The cylinders are furnished with steam jackets and are lagged. The steam piston and air piston are made of cast steel, and are furnished with piston rings in two sections; the stuffing boxes are provided with elastic metallic packing.

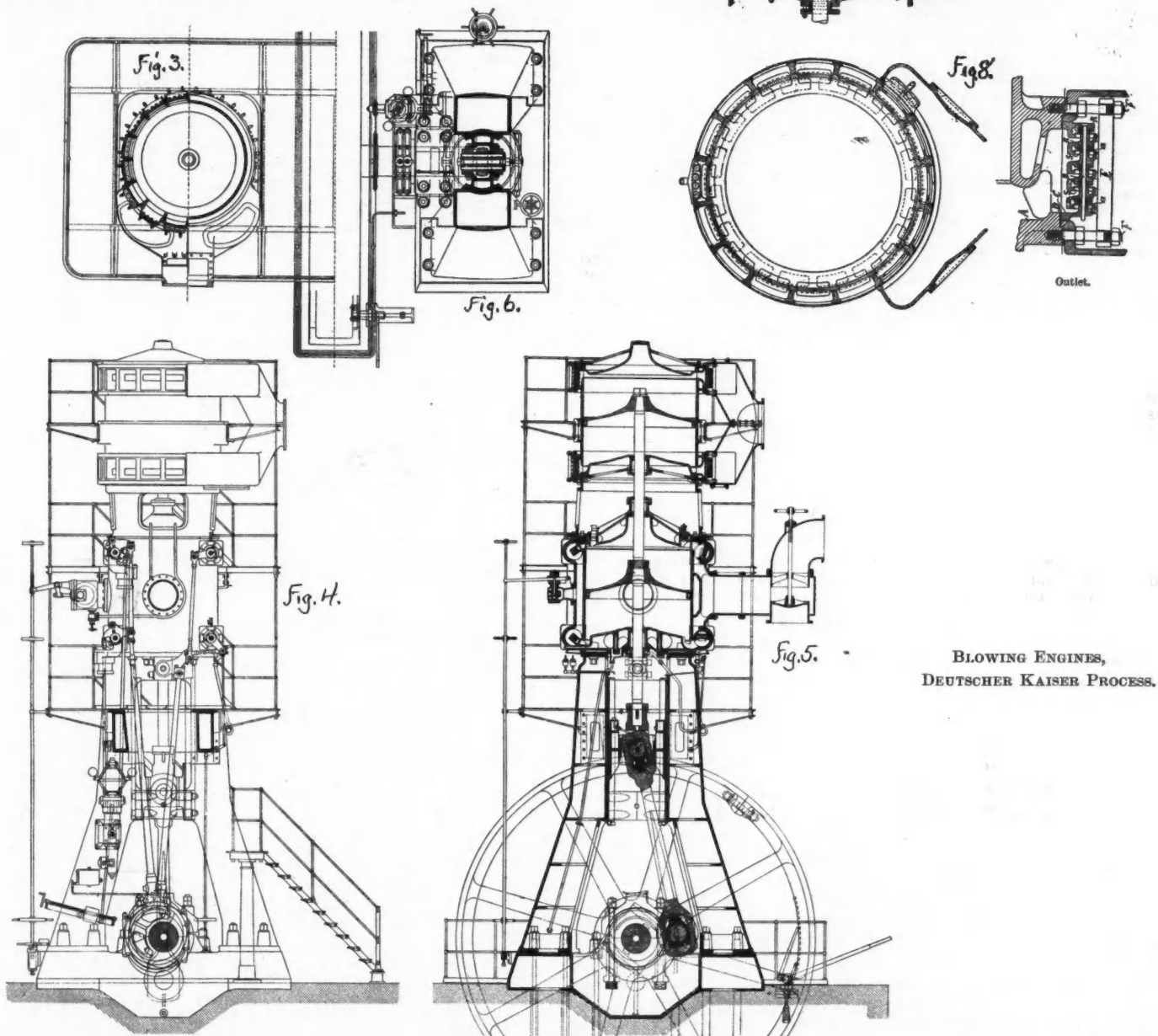
The steam inlet valve can be controlled either from the ground or from each of the three platforms which, being reached by means of staircases, give access to the various parts of the engine. In order to facilitate the starting of the latter, no matter in what position the cranks may be at the time, a special valve admitting live steam into the low-pressure cylinder has been provided. As regards the exhaust steam, it either escapes into a central condenser or into an injection condenser fitted to the pedestal of the frame of the low-pressure cylinder, which

is worked by a lever actuated by the crosshead of that cylinder. Access to the stuffing boxes and to the steam and blowing cylinders is rendered easy by the open arrangement of the stays which connect the latter. The cover of the steam cylinder and the piston can be lifted from above through the framework, together with the bottom of the blowing cylinder and its piston; moreover, it is possible to examine both piston and cylinder by simply lifting the corresponding cylinder cover. With a view of obtaining a comparatively high speed without increasing the parts or surfaces liable to wear and without diminishing the volume of the air supplied, the Societe Alsacienne de Constructions Mecaniques invented a special contrivance, by means of which a large number of valves may be grouped together upon the blowing cylinder in a small space, so that with a comparatively moderate travel the valves, both in drawing in and in expelling the air, bring into play ports of large section. These valves can be easily removed and examined; we give a representation of them in the annexed drawing.

They consist of disks, *a*, made of sheet steel mounted upon a rod, *B*, which works in a cast-iron valve frame, *C*, in which the openings, *S*, are arranged. Each of these frames is furnished, as required, with a smaller or larger number of these rods, *B*: usually four rods are placed side by

QUESTIONS AND ANSWERS.

(Queries addressed to this department should relate to matters within the special province of this periodical, such as mining, metallurgy, chemistry, geology, mineralogy, machinery, supplies, etc. As it is manifestly impossible to devote space to all the questions and notes constantly received, preference will be given to topics which seem to be of interest to others besides



BLOWING ENGINES,
DEUTSCHER KAISER PROCESS.

side, and as each of them carries five valves the number in the group thus amounts to 20. These valves are supported against their seats by means of helical metallic springs, *R*, which surround the rods, *B*, and fit into recesses which are underneath the seats of the valves. The frames are fixed to the cylinder, *A*, by being screwed to the bracket, *D*, by means of the screw, *F*, outside the hoop or strap, *E*.

As these valves are close to the wall of the cylinder, and as in comparison with the area of valve surfaces or openings they present they occupy a very moderate amount of space, it will be easily understood that the parts liable to wear are very few. Neither the valves nor the rods are liable to wear out in a short space of time; moreover, repairs can be easily and promptly effected. The short travel of the valves enables the engine to be worked at a high speed without detriment to the quantity of air supplied. The section of the orifices in comparison with that of the piston is as 1 to 7.5 in drawing in and as 1 to 12.5 in expelling the air.

COAL IN MADAGASCAR.—Coal has been discovered on the north-west coast of the island, and the quality is said to be very good.

the inquirer. We cannot here undertake to give professional advice on problems requiring special investigation and which should be obtained from a consulting expert. Nor can we undertake to give advice about mining companies or mining stocks. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers should send their names and addresses. Anonymous questions will not be answered.—Editor E. & M. J.)

Wooden Water Pipes.—Can you tell me anything about wooden water pipes for carrying water under pressure? I would like to know something about the manufacture, dimensions, etc.—J. F. W.

Answer.—Wooden water pipes have been used to some extent for carrying water under pressure. A few firms have made a specialty of manufacturing them, although the demand is not large. For pressures not exceeding 10 or 15 lbs. the plain log pipes, either square or round and bored to the desired size, have been used without any strengthening or reinforcement. Where the pressures run up to about 25 lbs. it is usual to strengthen the log at each end by heavy iron bands and for higher pressures the logs are either banded at intervals, or in some

cases wound with hoop iron. In the latter case the heavy iron bands at each end are retained. Usually wooden pipes are not used where an interior diameter of over 6 inches or 7 inches is required, but it is claimed that pipes can be made as large as 16 inches inside diameter. It is also claimed that they have withstood pressures as high as 150 lbs. to the square inch. As to durability, wooden pipes, when covered, have been known to last for many years. Thus pipes used under a moderate head simply to convey water, have been dug up after 70 or 80 years' service and found to be sound. These cases are somewhat exceptional, however; still a well made and sound wooden pipe ought to have a long life. It is customary to coat them with tar or some kind of asphalt preparation before putting in place.

Wooden pipes of large dimensions made of staves and bound together with iron hoops have been used to a considerable extent in California for carrying water. Unfortunately there have been few tests of pressures which such pipes can withstand, and it is difficult to find records of the tests. A few cases, we believe, are found in the very valuable reports on irrigation and water supply made by Mr. Hamilton Hall some years ago when he was State engineer of California.

Working Flat Placers.—In answer to the questions asked by E. F. H. in the "Engineering and Mining Journal," June 24th, page 735, Mr. J. W. Pinder, of San Francisco, Cal., sends answers which are given below. The questions were as follows and related to placer ground where there is no fall to get a head of water or to carry off the tailings.

I am anxious to learn: 1. What would be the best pump to work the giants, the plant to have a capacity of say 500 cu. yds. per day; also the amounts of water required?

2. The best form of cylinder, trommel or a puddler.

3. The best form of table.

4. The best method of handling the tailings. Would the stumps of the trees in the ground be an obstacle to the effective working? The roots are only about 1 to 2 ft. below surface and do not go down.

5. In sluicing down the flumes cut in the clay bedrock, would gold get driven into the clay and so be lost?

6. What would be the boiler capacity required for the whole plant?

Answer.—I would state my own experience in tropical deposits, under conditions similar to those he describes. When the bedrock is not too hard, broken and hilly, would suggest the use of a steam dredge of the endless chain and bucket type, set on a platform, upon cribs, rails and trucks, so that the plant could be easily moved from point to point as work in the gravel banks progressed. Upon this platform should be placed the boiler, dredge, trommel, or revolving grizzly, riffles, tables for saving auriferous sands and sulphurets, and the elevator for tailings. A plant for handling 500 cu. yds. per day should not occupy a platform larger than 25 by 35 ft., set on four trucks, upon double tracks of railroad iron, the tracks laid on temporary cribbing of timber to level up the unevenness of the bedrock. A small winze and cable and a convenient tree could be utilized for changing position. The pump should be located as near the water supply as possible, with steam hose and pipe connections from the boiler on the dredge, if there is not sufficient head to deliver it to the dredge. If it can be delivered into the grizzly without force, no pump at all would be required except a small one for boiler feed purposes. A slight pressure of 6 or 8 ft. for the hydraulic riffles would be all the pressure needed in the general work. Having adopted this system, the following may reply to the inquiries in detail:

1. As the supply of water for this system would be less than 1 miner's inch (1,760 cu. ft.) for every 150 cu. yds. of gravel (gross) dredged, the question of pumps is not an important one, if the water can be delivered into the grizzly, 8 ft. above the surface of the platform. Otherwise, any good make of pump would answer.

2. The placer dredges made by Risdon Iron Works, with some modifications, would be well suited for this work. The revolving grizzly, or trommel, should have three separate divisions, the first, or inner one, to be of steel bars 1 in. by 4 in., on edge, $\frac{1}{4}$ in. spaces between each. This division separates the heavy gravel from the finer, the coarser boulders larger than 4 in. diameter having been screened off in the hopper grizzly without entering the trommel. The middle division with an interval of 6 in. from the inner, should be of $\frac{1}{4}$ -in. sheet steel with round holes $\frac{1}{4}$ in. diameter, punched so that the holes may be larger on the outer edge to prevent choking. The third division, 3 in. from the second, should be of 1/12-in. sheet steel, with diagonal slots, as in battery screens, punched diagonally, 1/16-in. diameter.

3. As my experience has been that there is usually an excess of paying auriferous sands, and sulphurets in varying degrees of decomposition in the deposits of South America, especially in Colombia and Ecuador, I devised special plans to save these, as well as a hydraulic riffle to catch the fine free gold. I have used these devices successfully and have sketches. If there are nuggets in the gravel such as may not pass through the outer screen, the coarse and fine sands should be run over separate riffles and tables, the sizing obtained in the sectional trommel making this plan possible. Run through mixed would not be so good. Should there be no coarser gold in the deposits, the finest screenings

alone may be passed over the riffles and tables. Use no quicksilver. It is not necessary and does little good in nine cases out of ten.

4. The best way to handle the tailings would be to elevate them mechanically and dump in rear of the plant as it advances into the work. The stumps and roots could be easily pulled up by the dredge and thrown aside. In the ordinary method of sluicing these things would cause no end of trouble when so plentiful as found in tropical growths.

5. In sluice work, clay is always a bad thing to have about. If soft, it will steal off the gold and roll away in the tailings. If indurated, innumerable cracks often conceal fine gold, and will carry it to some depth. Dredging will obviate this loss in the bedrock, and the erosion and wash of the trommel will dissolve most of the soft clay.

6. About a 60 H. P. boiler will handle the plant herein described, although much will depend on conditions. It is possible a smaller one would suffice under favorable conditions.

Where water in large quantities would have to be pumped for hydraulicking, suitable dumping ground unavailable, and no proper grades for good wooden sluice lines, the work becomes very unsatisfactory and unprofitable; and although the first cost of a suitable dredging outfit, as I partially describe, may be comparatively large, it would be undoubtedly money well invested under these circumstances and would soon repay for the outlay if the gold is there. The cost of these operations, when everything is in good working order, should not exceed 5 cents per cu. yd. of gravel dredged, not counting the clearing of land of the trees, if the banks are high and soft.

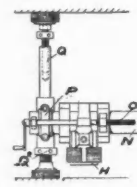
PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

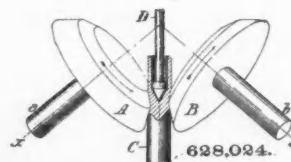
The following is a list of the patents relating to mining and metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

Week Ending July 4th, 1899.

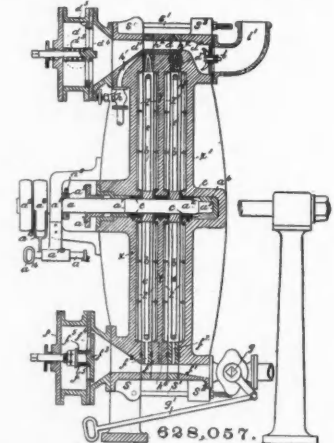
- 627,988. FIREPROOFING COMPOSITION. Gustave X. Dime, New York, N. Y. The composition of matter, consisting of chloride of ammonium, carbonate of ammonium and microcosmic salt.
- 628,007. COAL MINING MACHINE. Charles M. Johnson, New York, N. Y. The combination of a rotatable beam, a support movable longitudinally on said beam and adapted to be turned with the latter, a shaft journaled in said support, a motor carried by said support for rotating said shaft, a hinged arm connected with said support and rotatable about the axis of said shaft, a shaft forming the pintle connecting the members of said arm, a shaft carried at the free end of said arm, a cutter secured on the last-mentioned shaft, a shaft for conveying motion from the shaft journaled in the support to the shaft forming the pintle, and a shaft for conveying motion from the shaft forming the pintle to the shaft carrying the cutter.
- 628,024. MECHANISM FOR MAKING TUBES FROM BILLETS. John H. Nicholson, Cleveland, O. The combination of a piercing-mandrel, and two rotary members fixed upon shafts which are adapted to rotate on opposite sides of the axial line of said mandrel, the axes



628,007



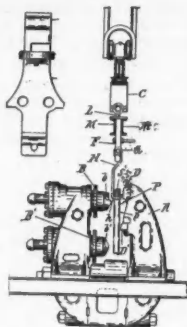
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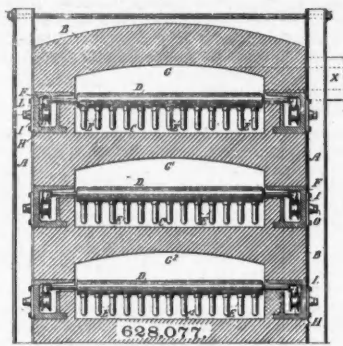
628,057

of said members being (a) oppositely inclined to a longitudinal vertical plane passing through said axial line, and themselves intersecting said plane when produced (b) upwardly and downwardly inclined, respectively, to a horizontal plane passing through said axial line, and themselves intersecting said plane, and (c) inclined in the same direction, out of line one with the other, to said horizontal plane, and with the centers of the rotary members located, respectively, above and below said plane.

- 628,057. FILTER-PRESS. John Williamson, Glasgow, Scotland. Apparatus comprising the framing, the gratings movably mounted therein carrying filtering media, the movable brushes for moving over the faces of the filtering media to clean the same, means for operating said brushes, and means for moving or adjusting the position of the gratings.
- 628,069. PIG-BREAKING MACHINE. Alexander E. Brown, Cleveland, Ohio. The combination with a pig-breaking machine, having horizontal plungers, of an overhead carrier and a series of hooks connected to the same for the purpose of grappling the sow and thereby suspending the pigs thereof vertically from said carrier during the process of breaking the pig-bed.
- 628,077. CALCINING FURNACE. Walter B. Devereux, New York, N. Y. The combination with the side walls and the roof of a furnace, of a hollow metallic girder having three sides closed and the fourth side divided by a continuous slot extending throughout its length, set longitudinally into the wall of the furnace, with its outer face set in the plane of the exterior wall of the furnace and forming the exclusive support for the side walls and roof above said chan-



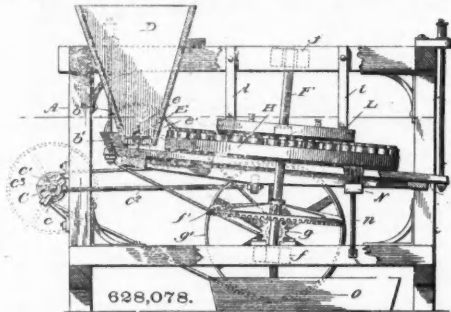
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nel, and with the slot opening into the interior of the furnace throughout the length of the bed.

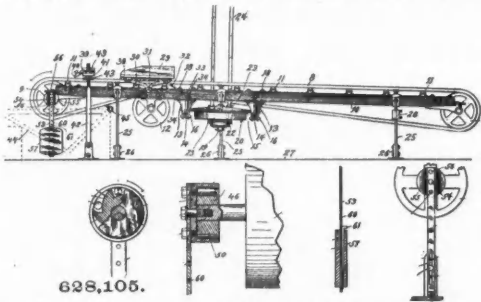
- 628,078. **MAGNETIC SEPARATOR.** Alvin Dings, Milwaukee, Wis. Assignor of one-half to David Dings, same place, and Alfred Pew, Washington, D. C. The combination with a conveyor, of a revoluble horizontally-disposed disk lying parallel with said conveyor and having a portion overhanging the conveyor and a portion extending



628,078.

laterally thereof, a series of magnets carried by said disk, circuit-controllers for said magnets carried by said disk and provided each with a stationary and a movable part adapted to make contact with each other, and a stationary device for engaging said movable parts of the circuit-controllers, for separating the movable and stationary contacts and cutting said magnets out of circuit while they are out of line with the conveyor.

- 628,105. **ORE-CONCENTRATOR.** Allan G. Mather and Frederick T. Snyder, Milwaukee, Wis. The combination, of a frame, flexible supports connected at their upper ends to the frame, and at their lower



628,105.

ends to the flooring, and capable of yielding in all directions parallel to the frame, a concentrator vessel or surface mounted in the frame, mechanism for shaking the frame and concentrator vessel.

- 628,168. **WELDING MECHANISM.** Gustav F. Stevern, Reynoldton, Pa. The combination of a bell and a mandrel or ball, the mandrel or ball being mounted upon the bell in such manner that it will automatically move into operative position within the bell.

- 628,210. **PACKER FOR OIL OR LIKE WELLS.** George Palm, Butler, Pa. Assignor to W. H. Larkin, same place. The combination with a packer adapted to be expanded by the weight of the casing, of a wedging device below the packer adapted to engage the well-walls and thereby hold the base of the packer from downward movement, and a separate pushing-sleeve below the wedging device.

- 628,219. **MEANS FOR RAISING WATER FROM MINE-SHAFTS, ETC.** Ross E. Browne, San Francisco, Cal. Assignor to the Fraser & Chalmers, Limited, London, England. The combination of a frame at the head of a shaft, or tank supported upon the frame adapted to be raised and lowered in the shaft, said tank having a suction-pipe, and a valve-controlled discharge-opening at its lower end, a vacuum-generator at the shaft-head, an adjustable pipe connecting the generator with the tank, hoisting mechanism for raising and lowering the tank, and means for automatically opening the discharge-opening of the tank when the same reaches the discharge-point in its upward movement.

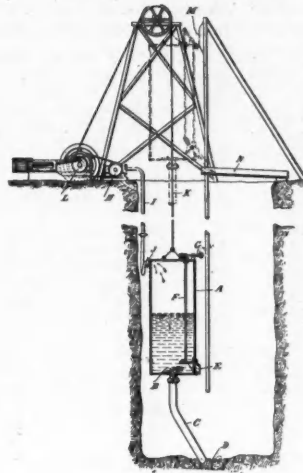
- 628,270. **PRODUCT OF MERCURY SOLUBLE IN WATER AND METHOD OF MANUFACTURING SAME.** Alfred Lottermoser, Dresden, Germany. Assignor to the Chemische Fabrik von Heyden, Gesellschaft mit Beschränkter Haftung, Radebeul, Germany. A water-soluble colloidal mercury consisting of solid black pieces of metallic luster dissolving in water into a dark solution which is transparent only with translucent light and strongly fluorescent with incident light.

- 628,274. **ENDLESS CONVEYOR.** Theodore L. Marvel, Taunton, Mass. The combination in a conveyor with the buckets and chains for connecting them in endless series, of a shield between the edge of one bucket and the edge of the next, and pivots at the ends of the shield supported directly upon the chains.

- 628,288. **LINING FOR METALLURGICAL FURNACES.** Benjamin Talbot, Pencoyd, Pa. A metallurgical structure having a neutral lining of amorphous carbide of silicon, freed from silica and combined with a binding agent.

- 628,317. **APPARATUS FOR APPLYING POWDER IN MANUFACTURING ARTIFICIAL STONE.** Gustav Hattingen, Sinzig, Germany. Combination with the powder reservoir, the stencil-plate in the bottom thereof and the mold under the stencil-plate, of vertically-movable rods or wires having bristles at their lower ends which, when the rods or wires are lowered, spread horizontally over the upper surface of the stencil-plate.

- 628,318. **COMPRESSED-AIR WATER-ELEVATOR.** Fred Hayes, Bristol, Tenn., and Horace L. Frost, Bristol, Va. The air-pressure pipe and the liquid-eduction pipe having the coincident non-revoluble tuolar journals, and a rocking tank mounted eccentrically and loosely on said journals to turn freely thereon, the journal of the eduction-

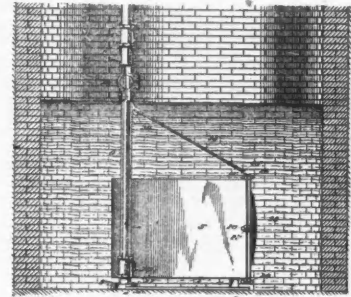


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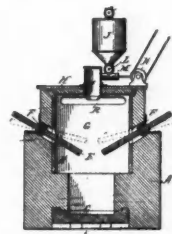
pipe communicating directly with the chamber of said tank, combined with a liquid-induction valve at the free or unconfined end of said tank, a branch air-pipe contained within the tank to extend above the liquid-level therein, and an air-pressure valve mounted on the air-pressure pipe and connected with said tank to be opened and closed thereby as the tank is rocked on the journals.

- 628,373. **ELECTRIC FURNACE.** Frank P. Van Denbergh, Buffalo, N. Y. A furnace comprising a feeding device, electrodes adjustable to vary the length of the arc, and movable also so as to change the position of the arc with reference to the metal under treatment.

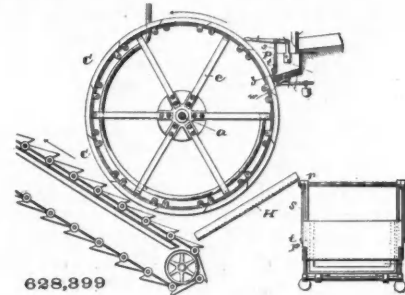
- 628,399. **APPARATUS FOR TREATING SLAG.** Charles Diebold, Pittsburg, Pa. A revoluble wheel mold-carrier having a series of molds secured to the periphery thereof at one of their ends, the other end



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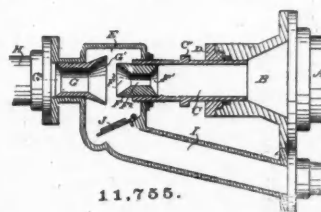
of each mold being free to rise and slide on said periphery as the molds are expanded by heat, in combination with means for supplying liquid slag to the molds.

- 628,419. **PUMPING-ENGINE.** John C. Smith, Cleveland, Ohio. The combination with the steam-piston and the liquid-piston, of a working beam pivotally connected to the respective pistons and a lever having one arm movably connected in the working beam to form a varying fulcrum therefor and the other arm connected to the liquid-piston, whereby the pressure on the liquid-piston is maintained substantially uniform by the varying position of the engagement of said lever with the working beam.

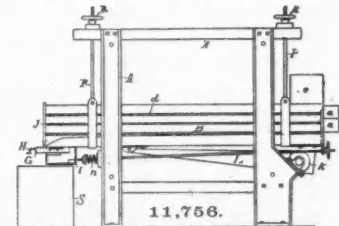
- 628,427. **WELDING METALS.** August W. Andersen, Galesburg, Ill. Assignor to the Copper and Steel Welding Company, same place. A welding flux composed of borax, pulverized clay, and potassium ferrocyanide.

- 628,429. **METHOD OF HEATING METALS BY ELECTRICITY.** Edward M. Bentley, Boston, Mass. The method consists in placing the material to be heated at one terminal of an electric circuit and bringing it into contact with a liquid forming the other terminal of the circuit.

- Reissue 11,755. **EJECTOR FOR MINING AND DREDGING.** William Muir, Michigan Bluff, Cal. Assignor to the Hydraulic Ejector Dredging Company, of California. Original No. 573,611, dated December 22d, 1896. A supply-pipe, a receiving-chamber with which it is connected, a suction-chamber separated from and in line therewith, a cylindrical sleeve having screw-threads fitting a corresponding



11,755.



11,756.

screw-threaded opening in the suction-chamber at one end, and a smooth cylindrical portion slidably through a stuffing-box into the receiving-chamber, a means for rotating the sleeve so as to advance or retract it with relation to the suction-chamber, a sleeve adjustable in the discharge end of the cylinder having a central cylindrical passage and conical ends, and a corresponding sleeve fitting the opposite side of the suction-chamber axially in line with the first-named sleeve and with the discharge-pipe, and a suction-pipe connecting with the suction-chamber.

- Reissue 11,756. **ORE-CONCENTRATING TABLE.** Frank L. Bartlett, Canyon, Colo. Original No. 621,515, dated March 21st, 1899. A longitudinally-reciprocating shaking-table having a series of laterally-inclined shelves provided with longitudinal riffles extending to the concentrates-discharge end thereof whereby the concentrated material is discharged at the end of each shelf, a separate water-supply for each shelf and means for conveying the unconcentrated material from each shelf except the last to the next shelf in the series.

PERSONAL.

Mr. Fred S. Harris, mining engineer, of Guadalajara, Mexico, is in New York.

Mr. W. M. McMechen, mine manager, of Denver, Colo., is visiting New York on business.

Dr. A. R. Ledoux, of New York, has gone to Nova Scotia for the purpose of examining some mining properties there.

Mr. Archer Brown denies current rumors that he was to be appointed manager in the Birmingham (Ala.) District for the Sloss Iron and Steel Company.

Mr. Charles E. Gable, manager of the B. & G. Mining Company, of Montana, has returned to Butte from an extended trip to New York, Boston and Chicago.

Mr. Geo. Kisingberg, mining expert, of Salt Lake City, and Hartwig A. Cohen, of New York, have been examining copper properties in Shasta County, California.

Mr. George Berry, Sr., a pioneer of the Cripple Creek District, Colo., has gone to Guadalajara, Mexico. He will have charge of some mining property for a Denver party.

Mr. T. L. Murphy, for four years assistant manager of the Harqua Hala Gold Mining Company, of Arizona, is taking a special course in mining and metallurgy at the University of California.

Mr. Horace J. Pillen, consulting engineer for the Belle Harscom Mines of Hendersonville, N. C., and for the Gold Belt Mines at Tennessee Pass, Colo., is in Chicago purchasing machinery for the Belle Harscom Mines.

Mr. R. G. Reid, whose name has been often before the public latterly from his connection with the industrial development of Newfoundland, has returned from a trip to Africa, undertaken for his health, which is now much improved.

Mr. R. H. Kleinschmidt, mining operator, of Helena, Mont.; Mr. Fillus, mine promoter, of Boston, Mass., and Mr. W. H. Sodenberg, mining expert, of Knochersville, Idaho, have been inspecting copper properties in Shasta County, California.

Mr. Henry Knippenberg has tendered his resignation as manager of the Hecla Consolidated Mining Company, at Glendale, Mont., to take effect September 1st. Mr. Knippenberg has been at the head of the Hecla for a number of years, and his management has been very successful.

Mr. Geo. E. Hogg, mining engineer, of New York and San Francisco, sailed on July 15th for Cape Nome and Golovan Bay Districts, Alaska, in the interests of several San Francisco companies who have a number of claims in the above districts.

Prof. Alexander Micinski, of St. Petersburg, Russia, recently examined the workings in the anthracite collieries in Pennsylvania. He will also visit Alabama, and later the bituminous coal mines in Pennsylvania, in the interest of his Government.

Mr. K. Ludloff, mining engineer of Toledo, Lewis County, Washington, is preparing an expedition to the region about the head-waters of the Fraser River in British Columbia. His intention is to examine this district in the interest of some English capitalists.

Mr. Deane P. Mitchell, mining engineer and graduate of the Stanford University, Cal., who has been in Coolgardie, West Australia, for the past three years, is in San Francisco. He is on his way to Tien-tsin, China, to join a party of engineers who are engaged in developing an extensive gold district for an English syndicate.

Mr. H. M. Chance, of Philadelphia, has been appointed consulting mining engineer to the Delaware, Lackawanna & Western Railroad Company. The many changes recently made by that company are strengthening its operating and coal departments very much, and bringing in new men whose assistance was very much needed.

OBITUARY.

Mr. H. E. M. Davies, chairman of the Consolidated Goldfields of South Africa, Limited, died in London, July 4th, after a short illness. The deceased was deeply interested in South African gold mining enterprises.

Russell Farnham Lord died at his home in New York City, July 12th, at the age of 61 years. Mr. Lord was the son of Russell F. Lord, Sr., for many years the Delaware & Hudson Canal Company's chief engineer; a graduate from the Sheffield Scientific School. At the death of his father he succeeded to his place, becoming in addition the company's general manager. In the civil war he was commissioned brigadier-general of volunteers by Gov. Curtin of Pennsylvania, and served through the war. Then he went West, to take up mining engineering. In

1886 Mr. Lord became chief engineer to the government of Salvador. Six years later he was sent to Ecuador to develop the mining property of the Playa de Oro Company. In 1897, because of falling health, Mr. Lord returned to New York. He was to have sailed for the Ecuador mines as consulting engineer on July 13th.

Patrick Kirwin, the well-known Comstock mine superintendent, died at a sanitarium at San Jose, Cal., July 11th, from an attack of pneumonia, aged 61 years. He was born in County Wexford, Ireland; came to California in 1861, first settling at Grass Valley; from there going to the Ontario Mine in Utah as foreman, a position he held for many years. Returning to California he became the expert for Haggin & Trevis for several years; after this he became the superintendent of the Gould & Curry the Best & Belcher and Utah. At the time of his death he held the position of superintendent of the Consolidated California & Virginia Mine. For a long time he had been the confidential mining adviser of J. W. Mackay and J. L. Flood, and with them he was associated of late in the ownership of the Allison Ranch Mine at Grass Valley, now in operation. Mr. Kirwin was widely known and highly respected all through the western part of the country. He leaves a widow and three children, two girls and one boy.

SOCIETIES AND TECHNICAL SCHOOLS.

Southern Gold Miners' Association.—At a recent meeting in Atlanta, Ga., several addresses were made. Mr. A. W. Irvine, of Gainesville, Ga.; Mr. Geo. Collins, of the Hamburg mines, White County, Ga.; H. M. McIntosh, Greenfield, and President H. D. Jaquish spoke. Mr. John Martin, of London, vice-president of the Association, who is mining in White County, also addressed the meeting. Resolutions were adopted in favor of the establishment of a Government assay office in Atlanta.

Iron and Steel Institute (Great Britain).—The autumn meeting of the Institute will be held at Manchester, England, on Tuesday, Wednesday, Thursday and Friday, August 15th, 16th, 17th and 18th next. The following papers have been promised for reading:

1. On the Constitution of Steel. By Prof. E. D. Campbell, Ann Arbor, Michigan.
2. On Diffusion in Steel. By F. W. Harbord, and Thomas Twynam.
3. On the Magnetic Concentration of Iron Ore. By H. C. McNeill, London.
4. On India as a Centre for Steel Manufacture. By Major R. H. Mahon, Cossipore, India.
5. On Pig Iron Fractures and Their Value in Foundry Practice. By J. W. Miller, London.
6. On Practical Microscopic Analysis for Use in the Steel Industries. By C. H. Ridsdale, Guisborough.
7. On the Relation Between the Structure of Steel and Its Thermal and Mechanical Treatment. By Albert Sauveur, Boston, U. S. A.
8. On the Present Position of the Solution Theory of Carburised Iron. By A. Stansfield.
9. On the Iron Industry in the Territory of His Highness the Nizam. By Shamsul Ulama Syed Ali Bilgrami, Secretary to the Nizam's Government Public Works Department, Railways and Mines.
10. On a New Casting Machine for Blast Furnaces. By R. Hanbury Wainford, Stoke-upon-Trent.
11. On the Utilization of Powdered Iron Ore. By Professor J. Wiborgh, Stockholm, Sweden.

INDUSTRIAL NOTES

The Lehigh Zinc Works, at South Bethlehem, Pa., are repairing the spiegel furnaces for active operation.

It is reported that the General Electric Company, of New York, will erect a large steel plant at Lynn, Mass.

The Carnegie Steel Company has started its new 48 in. universal mill, and also ten 50-ton open-hearth furnaces.

The Rand Drill Company, of New York, will shortly ship an air compressor drill plant to Vladivostok, in Eastern Siberia.

The Bates Metal Company, brass and cast iron founders, has built a new and larger plant at Avondale, a suburb of Birmingham, Ala., and will move therein at once.

The Chattanooga (Tenn.) Furnace Company has recently taken out a charter for the purpose of working the Chattanooga furnace. The company is capitalized at \$100,000.

The Baldwin Locomotive Works have taken an order for 13 consolidation engines for the State railways of Finland. These locomotives are to be delivered by January 1st next.

H. F. De Bardeleben has purchased, in company with M. Adler and other associates 100,000 acres of good coal and ore lands in Alabama and will shortly begin developing them.

The Birmingham Machine and Foundry Com-

pany, whose plant at East Birmingham, Ala., was destroyed by fire a few weeks ago, is putting up a temporary building and will protect the contracts on hand at the time of the fire.

The Birmingham (Ala.) Rolling Mills are now controlled by the Republic Iron and Steel Company, the consideration being \$275,000. In addition to this amount the purchasers paid off \$467,000 debts of the rolling mill company.

The Pressed Steel Car Company, of Pittsburg, has contracted with the Carnegie Steel Company for 30,000 tons of steel plates monthly for 10 years. The actual cost of the material to be furnished is placed at about \$15,000 a year. Deliveries will begin August 1st next.

Officials of the United States Cast Iron Pipe Company, who operate the big pipe plant in Bessemer, Ala., were also here last week inspecting their property. Mr. J. K. Dimmick, of Anniston, has been named as general manager of the plants belonging to the company at Bessemer and Anniston, this State.

The American Diamond Rock Drill Company, of 120 Liberty street, New York, report as among recent sales one diamond drill for South America, one for Canada, two for the Southern States, one for Pennsylvania, and two for Central America. The supply trade is also keeping the shops busy, and the outlook seems good for increased business.

The steel mill at Ensley, Ala., will hardly be in operation until the latter part of September or October. The contract for the full complement of tools to be used in the plant has been let to the Niles Tool Works, of Hamilton, O., and the goods are to be delivered in the near future. The order was the largest the Niles people ever received in the South.

The Alabama Consolidated Coal and Iron Company filed articles of incorporation in New Jersey July 19th. The capital is \$5,000,000, and the incorporators are Walter S. Dryfoos, Roland B. Harny, Frank Hart and Harry L. Paughborn, of New York; Davis J. Gillet and Winthrop M. Tuttle, of Brooklyn; Edwin B. Hopkinson, of East Orange, and Walter M. Wilsey, of Ridge-wood, N. J.

The Electric Light and Power Company, of Syracuse, N. Y., is extending the present power house. The extension will be 70 ft. wide and 100 ft. long, 1-story structure, having brick side walls and steel framework, arranged to carry 2 traveling cranes over the dynamos and engines. The Berlin Iron Bridge Company, of East Berlin, Conn., is given the contract to design, furnish and erect the steel work in this extension.

The American Iron and Steel Company has recently been formed to control the iron mills of Lebanon and Reading, Pa. The plants are those of the Pennsylvania Bolt and Nut Company, the East Lebanon Iron Company of Lebanon, J. H. Sternbergh & Sons and the National Bolt, Nut and Rivet Works of Reading. The annual output of these five plants is over 140,000 tons, and 4,000 men are employed. The capital stock of the new company will be from \$25,000,000 to \$35,000,000.

During the past week President R. S. Warner and other officials of the Republic Iron and Steel Company were in the Birmingham District, in Alabama, and made a personal inspection of the plants belonging to that concern. The gentlemen gave out the impression that some improvements were contemplated, but no expression as to what they would be could be ascertained. President Warner stated that he was delighted at the opportunities and the general industrial awakening that was evident on all sides. There were rumors of all their plants in the district being enlarged.

The Buffalo Forge Company, Buffalo, N. Y., recently received an order for a fan system heating and ventilating apparatus to be used in the Imperial Crown Prince Palace now building in Tokio, Japan. The fan is of special design and has an engine of the United States government type direct attached. Each section of the heater is valved separately, so that either live or exhaust steam may be used entirely or any portion of live or exhaust steam. The Buffalo Forge Company has under construction another large order from the Japanese government, including pressure blowers for foundry work, etc.

The Continental Manufacturing Company, with a capital of \$1,500,000, recently organized in New Jersey, will shortly erect a large plant on the Delaware River front in the vicinity of Philadelphia on the Pennsylvania side, for making chemicals, oxides, litharges and various colors. The capital stock is said to be fully paid in and is non-assessable. It consists of \$500,000 preferred 7% cumulative stock and \$1,000,000 common stock. It is a close corporation, and the officers are: President, George Harrison Frazier, of Brown Brothers & Co.; vice-president, Frank M. Zeller; treasurer, W. W. Frazier, Jr., and general manager, Arthur H. Eyles, of New York. The principal stockholders are the Messrs. Frazier, Brown Brothers & Co., Frank M. Zeller

and a manufacturing syndicate of New York City whose plant has been absorbed by the new company and will be transferred.

The Baltimore Brick Company has been organized with a capitalization of \$2,100,000, of which \$1,500,000 is in bonds. The object is to control the plants of the Baltimore High-Grade Brick Company, Druid Brick Company, Cromwell Bros., John H. Foss & Co., Daniel Donnelly & Son, Maryland Brick Company, A. & F. Wehr, Smith & Schwartz, William H. Perot, J. Klein & Bros., John Knecht & Sons, Pitcher-Creager Brick Company, Weaver & Harman, Charles Classen, John J. Hoffman, W. W. Dashiels, Allers & Son, Hertel Bros., Charles Nitsch, Samuel Busey, Riverside Brick Company and Charles Voyce. Richard Cromwell is mentioned as the probable president of the company, and Jos. R. Wilson, president of the Baltimore High-Grade Brick Company, it is stated, will be the general manager of the combination. H. Slingsluff was active in negotiating the consolidation and the Maryland Trust Company financed it.

TRADE CATALOGUES.

An attractive pamphlet, containing mere information and having less space filled by cuts than is usual in publications of its class, is issued by the Southern Railway Company. It is entitled "Mines and Minerals Along the Southern Railway," and will interest anyone looking for information about the mineral resources of the Appalachian belt of the Southern States.

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, and shall be pleased to furnish them information concerning goods of any kind and forward them catalogues and discounts of manufacturers in each line.

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

GENERAL MINING NEWS.

Oil Production in June.—The total output this month was 4,222,967 bbls., of which Pennsylvania furnished 2,740,897 bbls. and Ohio 1,482,070 bbls. As compared with May there is a decrease of 42,324 bbls. Deliveries in June were 4,384,390 bbls., or 76,429 bbls. less than May. Of these deliveries Pennsylvania reported 2,538,921 bbls., and Ohio 1,845,469 bbls. Stocks on June 30th were 25,404,414 bbls., or 169,418 bbls. less than May.

ALASKA.

Douglass Island.

Alaska Treadwell Gold Mining Company.—The report for June shows 66,098 tons of ore crushed, yielding in the mill \$78,103 in gold; 692 tons of sulphurets saved and treated, yielding \$23,931; 160 tons of sulphurets shipped, value \$6,500. The total yield was therefore \$108,634, or \$1.63 a ton. The expenses for the month were \$33,500.

ARIZONA.

Gila County.

Old Dominion Mining Company.—A 160-ton water-jacket furnace is being erected, and a new hoisting engine installed at the main shaft. Graham County.

Lone Pine.—The Albratten & Clausen-Lone Star group of mines on the south slope of Mount Turnbull have been bonded to Dr. G. M. Ruff, Mr. Belue and others, for \$22,500. There are four mines in the group. The company's headquarters will be at Safford.

Pinal County.

(From Our Special Correspondent.)

Ray Copper Mines of Arizona, Limited.—This group of mines, which includes the Innes & Taylor group, located on Mineral Creek near Riverside, now owned by this company, which is controlled by English capital, has about 190,000 tons of ore in sight. The plant in operation has a capacity of 75 tons per day. The company is capitalized at £260,000, £50,000 being reserved as

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Central-Eureka.—The drift on the 1,350-ft. level of this mine, at Sutter Creek, has been run 40 ft. and the vein has been found to be about 3½ ft. in width. Some 75 tons are on the dump. On the 1,450 level another body of ore has been encountered 20 in. in width. The ore is ribbon rock, assaying \$20 and upward.

Easton.—Work at this mine, a short distance north of Plymouth, is being vigorously developed. The ore vein in the working incline, now 160 ft. in depth, has gradually enlarged and is 14 ft. in width in the bottom of the incline. The

ore is mostly of the ribbon kind, characteristic of the Mother Lode, and assays satisfactorily. The Shenandoah Mining and Milling Company, of which T. J. Parsons, of San Francisco, is president, intends to develop the property on a large scale to ascertain the required capacity of the future milling plant. S. K. Thornton is superintendent.

Calaveras County.

(From Our Special Correspondent.)

Gwin.—At this mine, 4 miles southwest of Mokelumne Hill, a new ledge, which prospects well, has been discovered between the 1,500 and 1,600 levels.

Inyo County.

(From Our Special Correspondent.)

Horseshoe.—This mine, in the Argus District, is being developed by C. A. Burcham & Co., the owners. The shaft is now down 80 ft. and the ore at the bottom is said to assay \$100 per ton. The ore body is well defined between walls of granite and porphyry. The working force is to be increased.

Squires Brothers.—The gravel claims owned by these gentlemen in Mazourka Canyon are to be developed by a tunnel 2,000 ft. in length, to reach the bottom of the canyon. The owners have ample means and will push work until bed rock is reached.

Kern County.

(From Our Special Correspondent.)

Mr. F. H. Heald, of Elsinore, has developed a vein of coal about 15 miles west of Randsburg. Work has been going on for more than a year. The coal is of the quality known as lignite and is good steam and cooking fuel.

Nevada County.

(From Our Special Correspondent.)

Otsego.—At this mine, on the Middle Fork, about 15 tons of machinery, consisting of a mill, tramway, etc., is now on the ground. The management expect to be ready to start up by the middle of August.

Placer County.

(From Our Special Correspondent.)

Alder Creek Mining Company.—This company has placed an air compressor and two drills in position at the Van Avery Mine, located ½ mile from Blue Canyon, near Gold Run. There are 28 men employed on day and night shift. A gravity incline tramway about 1,000 ft. in length conveys the loaded cars to the mill and back over automatic switches. Some of the ore is high grade, milling from \$25 to \$50 per ton.

Plumas County.

(From Our Special Correspondent.)

Manhattan Gold Mining Company.—This company has been incorporated with a capital stock of 250,000 shares. Directors are C. E. Hegard, C. A. Krogh, C. V. Hegard, H. Boldt and G. E. Bangle. The company will develop the Hegard Mine near the head of Rock Creek, southeast of Quincy.

San Bernardino County.

St. George.—This mine, in Vanderbilt District, which was once owned and worked by John W. Mackey, James L. Flood and W. S. Lyle, and was afterwards abandoned by them and bought last year by A. G. Campbell, of Salt Lake City, has shown much improvement. Over 20 tons of ore per day are now being taken out, and the report has been confirmed that Campbell was lately offered \$300,000 for the property.

San Diego County.

Golden Cross.—The long litigation over the ownership of this mine has been settled by a compromise. By this agreement the title of the Free Gold Company to the entire property is confirmed and quieted and the \$1,000,000 purchase money lien of the Golden Cross Company is established, payable out of a percentage of the net profits of the mines; and the Credits Commutation Company's claim is settled for \$85,000, payable out of the net profits of the mines, and a joint board of managers is provided for until such time as the entire purchase money lien of \$1,000,000 has been paid and discharged. On this board the seller and the buyer are equally represented, the Golden Cross Company being represented by D. T. Hedges and T. S. Fuller, and the Free Gold Company by Jefferson Chandler and Col. Isaac Trumbo. The fifth member of the board is D. M. Delmas, of San Francisco, who is supposed to be the arbitrator on the board and not a partisan of either of the companies represented. This board was organized at a meeting held in San Francisco, at which D. M. Delmas was elected president; Colonel Isaac Trumbo, vice-president and general manager; and T. S. Fuller, secretary. So far the owners have only opened up three of their 30 claims. There are in the tailings now upon the dumps in the mines a large amount, 90% of which can, it is claimed, be saved by the cyanide process of treatment at a low cost.

Shasta County.

(From Our Special Correspondent.)

The three divers from Michigan who have been operating in the Sacramento River below the

town, for gold, have moved their scow to the mouth of Squaw Creek, near Copley. The pay-streak in the former location did not yield enough gold to justify them in putting in machinery for a suction plant, which was contemplated.

Captain De La Mar, the multi-millionaire mining operator, is said to have bought the Bully Hill copper mine for a sum approximating \$350,000. James Sallee, owner of the mine, and Hartwig A. Cohen, manager for Captain De La Mar, arranged the transfer. The Bully Hill Copper Mine is situated near Copper City, 25 miles from Redding. The property consists of 4 different claims. There are numerous tunnels, development work having reached 3,000 ft. altogether. Three years ago James M. Sallee, of San Francisco, purchased the Bully Hill at a small figure. The mine showed well, and the first of this year it was bonded to L. A. Scowden and others for \$275,000. Scowden made a trip to London and thought he had floated the property there. He lacked time, however, and when his bond expired on July 1st all efforts to have it extended were useless. Mr. Scowden, however, is understood to be in the present deal. It is reported that the mine will be worked on a large scale.

Black Diamond.—This group of copper mines on Stillwater Creek, 12 miles from Redding, is reported to have been sold by Kahny, Holden & Klaukins for the sum of \$30,000 cash, to the North California Investment Company. This company has a paid-up capital of \$300,000. The directors are Geo. Bayha, of Kohn, Germany; J. A. Stephens, of San Francisco; W. L. Bayha, of Stillwater, and James E. Isaacs, of Redding, Cal. Development work is to be continued, and a railway will probably be built to connect with the Southern Pacific Railroad.

Trinity County.

(From Our Special Correspondent.)

Brown Bear.—Charles Dobler, superintendent of this mine, is on a visit to San Francisco. The new lower crosscut tunnel is in 1,700 ft. The rate of progress is from 200 ft. to 260 ft. per month. It will require nearly 1 year more to complete the adit.

Tuolumne County.

(From Our Special Correspondent.)

Atlas.—Work at this mine on Jackass Hill has been resumed. The 500 ft. tunnel from Soldiers' Gulch will be driven ahead to the old Atlas Mine, a distance of 4,500 ft. further. Mr. Brad Barnar is superintendent.

Homestake.—At this mine, on the south side of Blue Gulch, 1½ miles north of Jacksonville, the tunnel gives 150 ft. of backs at the point where the vein has been crosscut 15 ft., without reaching the wall. The same ledge in the Eagle-Shawmut Mine, which adjoins, is 70 ft. in width.

COLORADO.

In Denver, July 17th, the State Supreme Court decided that the 8-hour law is unconstitutional and consequently void. As soon as this decision was announced negotiations began between the striking employees and the American Smelting and Refining Company for a settlement. It is said that the old working schedule will be restored, but some concessions in wages are expected from the company.

Aspen County.

Enterprise.—This company has ordered from the E. P. Allis Company, of Milwaukee, Wis., the machinery for a large concentrating mill to handle the old tailings dumps.

Boulder County.

Antietam Gold Mining Company.—At the directors' meeting in Denver, recently, were elected the following officers: President, John C. Keegan; vice-president, W. L. Jackson; secretary, F. A. Love; treasurer, Adam Rittmayer. The company has property at Eldora.

Clear Creek County.

(From Our Special Correspondent.)

Big Chief Mining Company.—This is a company of Milwaukee capitalists opening up the Little Richard Lode on Soda Creek at Idaho Springs. The section is entirely new and has been given very little attention in the past. The present company began some extensive development a few months ago. A shaft was commenced and a depth of 250 ft. has opened into 1 ft. of ore which runs 30% copper, 20% lead, 2 oz. gold and 5 oz. silver to the ton.

Newhouse Tunnel.—The English capitalists interested in this bore at Idaho Springs have finally awakened to the importance of the undertaking and have raised money to push it ahead towards the veins of Gilpin County. The tunnel is now into the mountain for 7,650 ft. and is now close to the veins of Seaton Mountain. L. Hanchess, manager of the Lamartine Mine, has been appointed manager of the Newhouse Tunnel, succeeding T. R. Henahan, who goes with Samuel Newhouse to other work. Mr. Hanchett is getting everything in shape and it is understood will have the tunnel going some time soon. He is now making contracts with the owners of properties along the line to insure the working of the mines through the tunnel. I am told by one on the inside that the management ex-

pects to have 500 miners working on properties through the tunnel within a year.

Lake County.

(From Our Special Correspondent.)

Output.—The daily output of the district is estimated conservatively at 800 tons per day. Most of this is handled by the Guggenheims at Pueblo; a small part by the Bimetallic Smelter and some of it is stored. Commencing this week, the output will be somewhat increased in the hope that the Supreme Court renders its decision this week and that a smelter start up on all the plants will follow in short order.

Adams-Maid-Wolftone Mining Company.—Active work was commenced this week on the large acreage controlled by this new combination. The old Wolftone shaft is being enlarged and will be sunk deeper. Water stands 700 ft. from the surface and sinkers will be required to lower it to the 1,000 foot levels. Boilers carrying 150 lbs. pressure are used in this new work. This is the first adoption by this camp of a high pressure steam system. The directors of the new company have elected the following officers: S. D. Nicholson, president and manager; L. A. Reynolds, vice-president; C. L. Hill, secretary and treasurer.

Bromley Strike.—Last week I called attention to the finds of gold telluride made about 12 miles west of Twin Lakes, this county, the strike having at that time just been reported. Since that time a large number of prospectors from here and Twin Lakes have visited the place which is on Star Mountain and have confirmed the find. Several other strikes have also been reported and considerable excitement exists. Some good gold telluride has been taken from the Little Alec group which shows assays of 50 oz. gold to the ton. J. W. Dixon, of Philadelphia, who is mining in that vicinity, visited the new properties and believes that the new find will prove of sufficient size and importance to give great impetus to mining in that section for the remainder of the season. Several other finds are reported by properties adjoining, and much prospecting is being carried on. The main workings in the little Alec group consists of an adit level 160 ft. long. It followed a streak of quartz which was barren for 100 ft., when yellow copper and white iron began to show while the last 10 ft. of work done shows a telluride mineral. The quartz streak ranges from 1 to 2 ft. and lays upon a well-defined foot-wall. Some distance above this a drift has been run on an oxidized ore which has been shipped to the smelters in the past and shows returns of \$100 to the ton. The vein is a strong and continuous fissure. The group comprises four claims, taking up 6,000 ft. on the vein.

Burmah Mining Company.—Operations were resumed this week by this company at Alicante. The mill is in charge of Mr. Parmeter, and will run continuously on the ore from the Alicante vein, which shows sufficiently to keep the mill going for over a year. The mill uses two Wilfley tables, and will handle 40 tons crude ore per day, producing concentrates of 1 ton to 10.

Chippewa.—Mr. Estey started work this week on the Lady Jane shaft of this group, lying near the Ballard and Penn properties on the gold belt. Fine surface plants have been erected and work has commenced in earnest. This Lady Jane will be sent down to tap the main Ballard ore shoot, while a new shaft will be started south of the Breese fault to catch the Penn ore shoot.

Diamond.—Manager Frank Brooks is sending down his new shaft on this property in Evans Gulch above the Dollie B, and has reached a depth of 100 ft. This is one of the very important exploration enterprises of the gold belt locality as it explores further to the northeast than any other operations in the locality.

Golden Eagle Mining Company.—These people paid a dividend this week on their stock of 1 cent a share. This is their thirteenth dividend.

Hap-Hazard.—The past 30 days have seen much important development on this Lake Park property. In addition to the great bodies of honey-combed quartz that are to be found throughout the territory owned by the Hahnwald Bros., and which will be treated by concentration, work on the main tunnel has been carried ahead and just above the tunnel is an open cut of 15 ft. the main vein has been opened showing 2½ ft. mineral averaging 2 to 4 oz. gold.

Home Mining Company.—A special meeting of the stockholders has been called for Wednesday, July 26, for the purpose of considering and acting on the proposed amendment increasing the capital stock of the company to 100,000 shares of \$1 each. The present capitalization is \$50,000 and all this money has been paid in and used in drainage and preparatory work. The Starr and other workings of the company are in a satisfactory condition.

Ibex Mining Company.—The new machinery is in place and several hundred men are at work on opening up the great ore bodies in the different workings of the combination; 50 to 75 tons of ore are being sent to the Bimetallic, but as

soon as the other smelters resume the Ibex will ship 400 to 500 tons per day.

Last Chip.—The lease on this property was purchased this week by George W. Cook, who is operating the Garden City. Mr. Cook is one of the big manganese operators in this camp, shipping heavily to the Illinois Steel Works, and he intends putting in a big plant of machinery, deepening the shaft and opening up the large bodies of manganese in the Chip. Mr. Cook is also putting down the shaft on his Garden City property preparing to opening the manganese bodies in this ground.

Midas Mining Company.—This combination to develop the old Gazelle and Pocahontas group is officered by the same people as the Wolftone combination and has also started active work. They have placed a good plant of machinery on the Midas ground and have started the new shaft which has attained a depth of 25 ft. at this writing and is to be sent to lower contacts.

New Monarch Gold Mining Company.—The directors held their annual meeting here this week and selected Mr. J. C. Kortz, Cleveland, O., president; W. E. Brooks, vice-president; W. A. Miller, secretary; C. L. Thayer, treasurer, and Tim Goodwin of Leadville as general manager. Mr. Goodwin has been conducting the work for these people for several years past, and his reports and a favorable examination of the mine by the Eastern owners, showed a very favorable state of affairs. Mr. Goodwin's plans to put down a new shaft on the Winnie and also send the New Monarch shaft down to the lower contacts were concurred in.

Teller County—Cripple Creek.

Stratton's Independence.—The May production was \$247,000 from 2,980 tons of ore assaying from \$2.24 to \$5.93 per ton. Mr. T. A. Rickards' report for the month shows 46,145 cu. ft. of stoping, 226 ft. raise, and 190 ft. of drives. Most work was done on the third level.

(From Our Special Correspondent.)

The effects of the lack of a market for the smelting ore are beginning to be noticed in the district. The mills treating the lower grade ores are most of them running. It is reported that the Brodie Mill, at Mound City, which has been idle for several months, is to be started again.

Mining Sales.—Besides the sale of the Rose Maud, 2 other pieces of property have changed hands during the week—the Cary M. Stanley, on Globe Hill, and the Margaret, on Bull Hill. The former was bought by John Harnen, one of the heavy stockholders in the Portland, from J. M. Parker and others. The price is given as \$12,000. The Margaret was sold by H. L. Shepherd and others to a company formed by the Woods Investment Company, for \$15,000. This claim lies near the town site of Grasse, which was recently purchased by the Woods Investment Company.

Doctor.—This old time producer on Raven Hill is soon to be worked again. A 2 years' lease has been secured on this property by Mr. Josiah Winchester and other parties. The ground included in the lease consists of the Doctor and Chief claims and takes in the main Doctor workings. At one time this property was considered one of the richest mines in the district and considerable ore was shipped. The mine is owned by Cone & Robinson, of Canyon City. No work to speak of has been done on it for considerable time, and the operations of the new lessees will be watched with interest.

Elkton Consolidated Mining and Milling Company.—According to all reports, the deal between this company and the Venture Corporation, of London, is off, the reason being that the parties could not agree on the price.

Jack Pot Mining Company.—The first regular meeting of the new Jack Pot directors was held this week at the office of the Woods Investment Company, in Victor. It is understood that the same conservative policy which characterizes all those properties controlled by the Woods people will be pursued in this case with regard to the distribution of dividends. At present no dividend will be declared. The treasury reserve is now about \$46,000, and is being increased from month to month by the royalties paid in by the Creston Mining Company, which is operating a part of the Jack Pot lease. The monthly royalties are said to be about \$6,000.

Nugget Gold Mining Company.—Lessee Hummer is at present crosscutting at the 300 ft. in the shaft for the Jack Pot vein on his lease on the Elizabeth Cooper claim of this company. Considerable work has been done on this property looking for the extension of the Jack Pot ore shoot. The claim lies to the eastward of the Jack Pot and is believed by many to have the apex of that vein.

Portland Gold Mining Company.—Work is progressing much the same as usual on this property, although no smelting ore is being broken down on account of the slack market for this kind of ore caused by the smelter strike. Preparations are being made to put a new pump in this mine. This pump has a capacity of 1,200 gallons per minute for a lift of 1,000 ft.

Rose Maud.—This claim has been bought during the week from the Ingham Company by English parties. The price is not given officially, but is believed to have been in the neighborhood of \$40,000 or \$50,000. The claim lies in a very good location west of the Work property. It is understood that the money received by the Ingham Company from this sale will be used for the development of the rest of the company's property.

GEORGIA.

Lumpkin County.

Hargrove.—This mine, at Auraria, is doing very well. A 10-stamp mill has been ordered. The mine is owned by Hargrove & Keady, and adjoins the Stewart.

Eight lots of gold land near Dahlonga were recently sold by D. & I. Anderson to C. S. Marsland, who represents parties in England.

Moore.—The old shaft is to be cleaned out and the workings will be carefully prospected for copper.

IDAHO.

Shoshone County.

The Miners' Union is making all possible efforts to terrorize the new men who have been brought into the district. Open violence is not possible just now, but threatening letters are being freely distributed and the men are assured that they will be severely dealt with when the troops leave. The miners from Joplin seem to be the special objects of dislike to the union.

The court has ordered the removal of the sheriff and county commissioners of Shoshone County for inefficiency and failure to do their duty.

MARYLAND.

A syndicate composed of Col. Wm. F. Mason McCarty, of Baltimore; Wm. D. Elger, of New York; Harry Yingling, of Gettysburg, and others, have taken 16 portions and leases on about 500 acres of mineral land in the South Mountains, in Washington and Frederick counties. The option prices range from \$3 to \$100 per acre. Copper is to be looked for.

MICHIGAN.

Copper.

Copper Range Mining and Development Company.—This company has 11,000 acres of land in Section 31, T. 54, R. 35, and is part of the Copper Range Railroad, which is building the road from Houghton to Greenland. An amygdaloid ledge 30 ft. wide is reported uncovered, showing good copper values. About 25 men are sinking test pits under the direction of Dr. D. L. Hubbard, late State geologist of Michigan. W. A. Payne is president of the company, F. Stanwood secretary and treasurer.

Devon & Tremont.—These companies have gone into the hands of George W. Stannard, of Rockland, as receiver. These properties are to be reorganized, and are located in Ontonagon County.

Elm River Copper Mining.—This company has 2,500 acres north of the Kaukauna and is one of the Fay Group. The management claims to have traced the Winona Lode across the property. Work started last May and 125 men are now sinking test pits. James Chenoweth is superintendent. The main offices are in Boston, and the company has the same officers as the Centennial.

Kaukauna.—This property embraces several old properties north of the Wyandot. It is stated that all flaws to the title of the old property has been cleared up by Mr. Sheldon of Houghton, during his visit East, and the company may be floated any time.

Quincy Mining Company.—A new machine shop 144 by 62 ft. is being erected, and ground has been broken for a compressor house 50 by 69 ft., and a boiler house 52 by 90 ft., with a pump house, 26 by 34 ft. attached. The Wisconsin Bridge and Iron Company, of Milwaukee, has the contract for these buildings.

Quincy Mining Company.—The June production was 742 tons of copper.

Iron—Marquette Range.

Dexter.—This mine, 7 miles west of Ishpeming, is to be reopened and worked by the Minnesota Iron Company. It has lain idle 4 or 5 years. Capt. Jacob Harper has charge.

MINNESOTA.

(From Our Special Correspondent.)

The State has recently examined all its mineral land contracts taken in past years, and as a result some 175 of them have been ordered cancelled. Many of these as soon as cancelled have been taken up by others, and explorations are now in progress on some. The State will cancel others of the leases made out in the time of the Mesabi boom, some years ago.

It is stated that several of the large companies using Mesabi ores have decided to make their mixtures more heavily Mesabis than ever before, and that it is planned by the American Steel and Wire Company, for instance, to use 70% Mesabis in its furnaces next year. There is no question that furnace ingenuity can obviate

in time the difficulties that have in the past made the large use of these ores dangerous, and that the Mesabi Range will furnish a larger and larger percentage of the product of Lake Superior as time goes on. Necessity, as well as the self interest involved by reason of the lower price of Mesabi and the ownership of its mines by the active consumers, is driving these companies to this step.

Minnesota Iron Company.—This company, whose offices are in Duluth, has since its absorption into the Federal Steel Company, become very active in the securing of additional ore lands, and has departed radically from old practice. The company now has secured over 80 mining locations—in many cases a group of them covering but one mine—on the Menominee Range alone, and has gone to the Marquette Range, where it is gathering up what is available at low prices. The company is not buying developed mines, but is taking well located and promising lands on which it may find mines at the expenditure of little money, a process that undoubtedly will give it far better results at much less cost than the buying of developed mines at such enormous prices as are said to have been paid in cases recently.

Freights are now very strong at \$1 a ton from the head of the Lakes to Ohio ports, and it can easily be figured out that the new type of ship, say a steamer carrying 5,000 tons and pulling a barge carrying as much more, can clear above all charges over \$1,000 a day. Stock piles are about gone at mines on all ranges, and there will of necessity be a slackening of shipments before long, while the grain trade will demand shipping in another 40 to 50 days. The coal trade, too, will be in such a position that it must have ships in the fall, and this will delay the movement of both ore and grain.

The "James Houghton" and the "Smeaton," the two latest of the Bessemer (Rockefeller) fleet, will be out next week, and are expected to break all records of the Lakes.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Biwabik Mining Company.—At this mine, at Biwabik, a new 90-ton shovel of the type now much in favor on the range, has been received. At present the mine is loading but about 2,000 tons a day.

Elba Iron Company.—This mine, near McKinley, has mastered the tremendous flow of water encountered some time ago, and is shipping ore regularly again.

Eveleth Townsite.—The fee owners of this property, for whom D. T. Adams, of Duluth, is agent, have closed a lease of the property to a heavy concern, and expect to make announcement soon. It is expected that this property will show up one of the finest mines of the Mesabi Range, with an ore similar in characteristics to Adams and Fayal, which are close to it. The work of removing the town of Eveleth is progressing rapidly, and in a few weeks the mining location will be clear of people.

Sauntry Mine.—This company is now employing labor to the amount of \$10,000 per month, and is stripping very fast. A third 90-ton steam shovel will be at work soon. The mine is located at Virginia, Minn.

Yawkey Explorations.—M. L. Fay, of Virginia, Minn., agent for W. C. Yawkey, has started explorations on two important locations near Virginia the past week, one adjoining the Norman and the other the Jones. On both there are excellent indications of iron.

Iron—Vermillion Range.

(From Our Special Correspondent.)

The State has examined its mineral lands on this range and is endeavoring to discover whether or not any are taken with a view to mere speculation. It has found so far that most of the locations under lease are for actual exploration and development. Three of its most important leases, in section 36, 64-10, are likely to be under exploration by a large company very soon.

Oliver Iron Mining Company.—This company, with headquarters at Milwaukee, Wis., has closed a deal for the lease of the McDonald 40, a part of the famous section 30, under litigation for the past 20 years, and soon work of developing will begin here. This will be about the first actual work ever done on section 30, though probably a million has been spent in lawsuits there. The Oliver Company will soon erect a number of dwellings for its employees at its locations near Ely.

Pittsburg & Lake Angeline Company.—This company, of Marquette, Mich., is reported satisfied at the showings at its explorations on the Eastern Vermillion Range, and will soon make a very important move looking to far greater efforts in the Minnesota ore fields. A deal of great importance is likely to be announced soon in connection with this company.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The mills which had been shut down for two weeks in response to the

request of the directors of the Missouri & Kansas Zinc Miners' Association, resumed work last Monday morning and there was a large output all over the district. At least 2,500 tons of this week's output remains in the bins, 1,000 tons of this amount being in Galena alone and a considerable amount of the balance at Oronogo. The ore buyers paid the association scale price and the fancy ore of the Eagle Mine at Belleville sold at \$44.50 per ton, while the price for lower grades was advanced on an average 75c. to \$1 per ton. Lead also advanced \$1.50 per thousand, selling throughout the week at \$27.50. During the corresponding week last year, top grade zinc ore sold at \$29.50 per ton and lead at \$24 per thousand. The lead sales were greater than last week by 183,590 lbs., but the zinc sales were less by 505,610 lbs., and the value was less by \$58,070. For the corresponding 28 weeks of 1898, the lead sales were greater than this year by 5,633,200 lbs., but the zinc sales were less by 65,732,680 lbs., and the value was less by \$2,746,335. Compared with the preceding week, the sales show an increase of 1,520,520 lbs. of zinc, 488,920 lbs. of lead, and the value was greater by \$48,605. Following is the turn-in by camps:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	2,002,980	308,950	\$50,315
Cartersville	1,272,300	218,970	31,468
Oronogo	805,450	.....	15,608
Galena-Empire	2,132,670	236,490	47,223
Webb City	408,340	44,060	9,195
Belleville	275,310	710	5,800
Central City	351,160	15,360	7,084
Cave Springs	10,120	.....	202
Alba	120,300	.....	2,845
Hells Neck	.....	31,450	864
Everton, Dade Co.	106,800	.....	875
Stotts City	389,060	.....	8,170
Duenweg	531,680	40,580	10,913
Springfield	44,500	935	997
Carthage	35,500	745	760
Aurora	660,000	10,000	10,326
Total for week	9,155,170	903,240	\$202,645
Total 28 weeks	283,482,740	25,251,770	\$6,128,524

With the exception of the mills owned by the big syndicates, the shut-down was general, fully 90% of the smaller operators having complied with the request of the directors of the Producers' Association to suspend the production of ore for two weeks. The American Zinc, Lead and Smelting Company was a notable exception among the syndicate operators. They appear to fully realize existing conditions and promptly closed their mills in response to the action of the Producers' Association, although not members of it. The action of some of the other big syndicate companies is severely criticised, as the present high price for ore which has made investments in zinc stocks so profitable is due to the formation and active efforts of the Association, and should the lately organized companies continue to refuse to co-operate with it the result may be a demoralization of the ore market which will cost the stockholders far more than a two weeks' shut-down. The fact that the stock of most of the new companies was sold on a guarantee that it would make certain dividends probably impelled the local management to run through the present shut-down, but it is believed that as soon as those who have charge of the general management of the properties become fully informed in regard to conditions here that they will become members of the Association and will take an active part in promoting the interests of the district, as any other action would be suicidal to their own interests.

American Zinc, Lead and Smelting Company.—This company, represented in the district by Gov. William C. Renfrow, was a large purchaser of property again this week, and closed deals aggregating \$432,000. Among the property acquired was the fee of the Richland ground at Cartersville, consisting of 30 acres on which four new mills have just been completed. The price paid was \$150,000; the property was owned by P. E. Hannum and C. F. McElroy, of Carthage, and B. F. Hatcher, of Scotland, Mo. The company also purchased 200 acres of land near Cartersville for \$12,000 from Wm. Thompson and J. E. Stout, the Cass & Company mine and mill at Oronogo for \$30,000, the Silver Dick and Howell & Crowley mines, mills and leases on the ground of the Centre Valley Company at Oronogo for \$90,000, and the 185 acre first lease of the Centre Valley Company for \$150,000. The company now owns property which has cost it over \$900,000, and will continue to add to its holdings indefinitely. It has some of the best producing property in the district and it is the intention to erect smelting works to smelt the ore from all their properties in the near future.

Other sales have been recorded this week aggregating \$35,650, besides the numerous small transfers that are not matters of record.

MONTANA.

Flathead County.

Snowshoe.—Over 100 men are employed at this mine, in the Libby District, doing much development work. A flume is to be erected in the Leigh Creek Gulch, and a 500-ton concentrator is talked of. Charles W. McMeekin is the consulting engineer.

Deer Lodge County.

Montana & Denver Reduction Company.—This company, through its general manager, Mr. Ar-

thur B. Brown, has placed the order for its combination mill with the Edward P. Allis Company at its Denver office. This will be a custom mill, with a sampling mill attached. Twenty 850-lb. stamps, copper plates, followed by concentration, and cyanide. This mill is to be erected near Coloma.

Madison County.

Nevada & Utah Exploration Company.—A contract has been let to the E. P. Allis Company, of Milwaukee, Wis., for a 50-ton cyanide mill to be erected at Norris. Ore will be furnished by the Madisonian Mine. Mr. J. H. Conrad is largely interested in the company. The mill will be erected under charge of Mr. Frank B. Turner.

Park County.

Montana Coal and Coke Company.—Recently the Montana corporation was transferred to the Montana Coal and Coke Company, the consideration being \$199,800 worth of full paid stock in the New Jersey concern.

Silver Bow County.

In court at Butte a settlement has been made in the matter of the injunction in the case of the Montana Ore Purchasing Company and the Johnstown Mining Company vs. the Boston & Montana and the Butte & Boston Companies, the plaintiffs conceding modifications asked for by the defendants. It was stipulated that the court issue an injunction pending the final determination of the action and that it be so modified as to allow certain development work to be done by the defendants within the territory covered by the injunction and to allow the officers, agents and employees of plaintiffs to enter and inspect the premises. The plaintiffs' bond on the injunction was fixed at \$5,000.

The order under the injunction is substantially as follows: "The defendants shall have the right to continue the sinking of the winze heretofore started from the south end of the extreme west crosscut on the 210 ft. level of the Michael Devitt Mine.

"To raise from the end of the crosscut extended in a northeasterly direction on and from the first level of the Pennsylvania Mine and to drift easterly from said crosscut and westerly from the winze first mentioned so as to make a connection between the winze and the crosscut. "To continue the said crosscut in a north and easterly direction until it shall encounter the north side line of the Pennsylvania lode claim.

"To continue the sinking of shaft No. 12, situated about 200 ft. south of the Pennsylvania north side line.

"To continue the raise heretofore started by the defendants on the 210 ft. level of the Michael Devitt Mine from the north crosscut. This raise so far as it has gone is situated within the vertical lines of the Rarus lode claim.

"To continue the winze heretofore started by the defendants from the 134 ft. level of the Michael Devitt lode claim from the east crosscut of said level and to drift easterly therefrom beyond the plane of the east end line of the Rarus claim, and also to drift westerly from the said winze toward and up to the west end line of the Michael Devitt lode claim.

"To continue the crosscut driven from the Pennsylvania shaft about 150 ft. to the north, and to raise from the crosscut toward the surface.

"All ore extracted from any of the said workings shall be stored at a convenient point, the determination of the ownership of the said ore to await the final determination of this action.

"The plaintiffs and the defendants by their officers, agents and employees shall have the right at all reasonable times to enter into and inspect all workings authorized to be made or carried on. All workings or openings authorized by this order to be made, shall be of the usual size in accordance with the rules of good mining, and properly timbered."

Anaconda Copper Mining Company.—This company announces the removal of its offices in New York to the Exchange Court Building, No. 52 Broadway.

(From Our Special Correspondent.)

Alice.—The old 8x8 timbers in the mine shaft from the 200 to the surface are being replaced by more substantial 10x10 timber work. Rumor has it that this property will increase the working force shortly. The Boston Mine, property of the Alice Company, has again been abandoned and the machinery in and around the mine taken out.

Anaconda.—The suit of this company vs. the Colusa Parrot, property of W. A. Clark, is now being tried before R. L. Clinton, appointed as a special master in chancery. The question involved is the ownership of the Never Sweat Mine, now held by the Anaconda Company. The Colusa Parrot and Never Sweat were located on what appeared to be two separate and distinct veins, but later developments—according to testimony now being offered—showed that the two veins came together and formed a single ledge or vein. The Colusa Parrot is the oldest location, consequently its owners maintain they have a prior claim to the ledge. The Anaconda Company contends that the apex of the vein is on Never Sweat ground, and that the two great

copper producing veins are altogether distinct from the one traversing the Colusa Parrot.

Boston & Montana.—Sinking in the Mountain View, property of this company, commenced July 5th from the 1,400-ft. level, and will be continuous until 200 ft. has been added to present depth. Great progress is being made, the miners working 8-hour shifts.

Butte & Boston.—Sinking in the East Gray Rock shaft, property of this company, commenced two weeks ago, a depth of 30 ft. below the starting point being obtained, when orders from the directors came for a cessation of work. Much speculation is rife at the unusual proceeding, local report having it that this property, having been absorbed by the Amalgamated Copper combine, will in the future be worked through the Diamond, the adjoining claim, property of the Anaconda Company.

Leggat.—A crew of men has been put to work on the Leggat property, the shaft of which is situated within 40 ft. of the county house. This is not by any means the first attempt to work this property, as a few weeks since a restraining injunction was issued to deter work. The affair will shortly reach an ultimatum through the courts.

Parrot.—The smelter, one of the oldest in Butte, has closed permanently. The smelter alone employed over 400 men. Undoubtedly the closing of these works is due to the copper combine, as it has already been given out that in the future all ores from Parrot mines will be treated at Anaconda and Great Falls.

NEVADA.

Elko County.

(From Our Special Correspondent.)

Dexter.—On July 13th, at the principal office of the company at Salt Lake City, the annual meeting was held, 141,000 of the total of 200,000 shares being represented. Report of the manager states that betterments, including improved and enlarged electric power plant, cyanide mill, hoist and additional mining claims—amounting to \$64,969—were made during the year. The treasurer's report shows earnings of \$51,000 over operating expenses and betterments. Physical condition of mines is represented as materially better than a year ago, with enough ore above 150 ft. level to supply 100 tons daily for 2 years and promising uncoverings on 250 ft. level. For the current year John Dern is president; J. S. Laken, vice-president; George E. Airis, secretary-treasurer. John Dern, J. S. Laken, E. O. Lee, S. B. Milner, all of Salt Lake City, and H. C. Southworth, of Boston, compose the directorate.

Esmeralda County.

New life has been given to Silver Peak by the finding of promising silver and gold ledges there last winter. The discovery was made by James Courts, and he and T. J. Bell have since located 15 claims, which have just been bonded to H. A. Cohen for 60 days for \$100,000. The croppings of the silver ledge are easily traced. It will be difficult and expensive property to develop. Wood is 12 miles away and water must be obtained at Fish Lake, about 30 miles from the mines. The extent and apparent value of the ledges, however, will very probably fully justify unusual expenditures.

Lander County.

The suit of J. S. Paul and others vs. J. V. Blossom and others for possession of the Anaconda King & Queen mining claims, at Old Battle Mountain, and for \$45,000 damages, has been decided in favor of the defendants.

Storey County—Comstock Lode.

Comstock Pumping Association.—The latest weekly official report of G. McM. Ross, general manager, is as follows: "During the week the water has been lowered as follows: Hale & Norcross incline, 2 ft. 4 in.; vertical, 1.62 ft.; Chol-lar combination shaft, 71 ft. The No. 1 elevator has been continuously at work since last weekly report. Between the telegraphic reports of the 6th and 7th there was a raise of water in the shaft, the water standing between 3 and 5 ft. deep on the 1,950-ft. level station. This station is connected with a network of drifts and the ebbing and flowing of the water is evidently due to some light obstruction in these drifts that gave way under the pressure of water back of them. The variation in the discharge of the elevator has been very slight. It is now discharging more water than when started, and nearly if not fully as much as at any time since starting. The water is steadily draining into the C. & C. shaft from the surrounding country, and it is but reasonable to expect that this No. 1 elevator will very shortly drain the 1,950-ft. level."

NEW HAMPSHIRE.

Grafton County.

Alexandria Mica Mining Company.—Operations have been begun on this company's newly acquired mica property at Alexandria. Massachusetts and New York people are interested.

NEW MEXICO.

Santa Fe County.

Gold Standard.—This mine at Golden has been sold to Colorado Springs people, who have 90 days in which to complete the purchase. The mine has been owned by R. M. Curley and others, who have a shaft down 160 ft., with some 125 ft. of drifting done on the vein.

OREGON.

Baker County.

La Bellevue.—It is stated that this mine, in Onion Creek camp, 10 miles north of Granite, has started work with a full force of men. The mill can handle 35 tons daily. Salt Lake parties are interested.

Lane County.

Music.—At this mine, in the Bohemia District, a strike of free-milling gold ore is reported. This strike was made in the west end of No. 2 level, which has 800 ft. of tunnel. The vein is 4 ft. wide. This property was recently sold to Montreal and New York parties for \$150,000. I. H. Bingham, of Spokane, has charge. The property has about 3,000 ft. of tunnels and one 5 and one 10-stamp mill, which are in operation.

PENNSYLVANIA.

Anthracite Coal.

The miners have struck at the William A. Mine at Duryea, claiming that the dockage is unsatisfactory.

Dobson.—This breaker at Plymouth, owned by John C. Haddock, was recently completely destroyed by fire. Shortly afterward the mine began to burn, throwing 500 men and boys out of employment. The mine is being flooded.

Delaware & Hudson.—The White Oak breaker at Archbald was destroyed by fire on July 14th. The loss is estimated at \$50,000.

Bituminous Coal.

Work has been begun on the coal works of the Schoenberger Company, which belongs to the American Steel and Wire Company. The new plant will be located on the George farm, midway between Latrobe and St. Vincents, and almost on the line of the Unity Branch of the Pennsylvania Railroad. The plant will be in operation January 1st, 1900.

The strike among the employees of the Glassport by-product coke works has been settled, and the men will receive \$1.54 per day of 11 hours. The men were getting \$1.50 for 12 hours' work and struck for \$1.60.

Over 3,000 acres of bituminous coal lands in the Irwin District were recently taken up by ex-Congressman E. E. Robbins, who represents the Baltimore & Ohio Railroad. A branch line is to be run to the land.

Chester County.

Exton Silica Sand Company.—This company, whose mines are at Exton, and offices 39 Cortlandt street, New York City, is shipping a fine sand running from 98 to 99% silica. This product is being used by a number of copper refiners, iron and steel manufacturers, for furnace beds. The company has a large plant with a capacity of 200 tons a day, and is now shipping two to three carloads a day. The officers of the company are: W. Kloman, president; George C. Hoffman, treasurer; and G. Blake, secretary.

Montgomery County.

Stubbs Mining Company.—A shaft is being sunk near Colmar, and some lead is said to have been found.

SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

Chilcoat.—Work will be resumed again on this property. A rich body of ore was recently encountered in a drift north of the tunnel.

Duchess.—The company owning this property in the Dansby District has closed down work until a plant can be put in capable of handling the water and sinking to the 500 ft. level.

North Star.—The water has been pumped from this mine and work has been resumed in the drift. A. T. Feay, of Keystone, is superintendent.

Lawrence County.

(From Our Special Correspondent.)

New Cyanide Plant.—Seth Bullock and associates, of Deadwood, have commenced remodeling an old stamp mill at Central City for a 20-ton cyanide plant. The ore will come from the Bald Mountain District.

Black Hills Coal Mining Company.—This company has purchased a complete steam hoisting plant for the coal mine in the Hay Creek Coal District. The coal has to be hoisted up a 900 ft. incline. The company reports more orders than can be filled with the old facilities. George M. Nix has been appointed general manager of the company.

Deadbroke.—R. M. Maloney, of Deadwood, has bonded and leased this mine and mill in Black-tail Gulch northwest of the Minerva property. He made his first clean-up this week, which was satisfactory, and the work will continue. He

has added the cyanide process to the stamps. This cement belt is several miles long and a mile or more wide and averages about \$8 a ton gold.

Deadwood Copper Mine.—W. J. Morgan and James Rogers, of Deadwood, have two shafts down on their copper property in South Deadwood, one shaft 45 ft. A copper vein is being followed down.

Minerva.—This mining property, consisting of several claims and a stamp mill, has been leased and bonded to a Chicago company under the management of John Underwood, of that city. The mill is being repaired and 20 stamps will be operated. A system of tanks will be added for cyaniding with a capacity of about 50 tons per day. The mine contains a great deal of low grade cement ore averaging \$8 a-ton gold. The ore will be stamped and run directly to the cyanide tanks.

Pyrites.—A. W. Coe, of Deadwood, has received a contract for furnishing 500 tons of iron pyrites to the Deadwood & Delaware smelter. The mine is on City Creek, in Deadwood.

Spearfish Cyanide Company.—This company has secured a lease on the ground of the Squaw Creek Mining Company in Squaw Creek, and will treat the lower grade ore in the cyanide plant at Spearfish.

Pennington County.

(From Our Special Correspondent.)

Bismarck.—The large concentrating plant at this mine started up again this week for a continued run. The process is new to the Black Hills. The company reports the working very satisfactory.

Crown Hill Mining Company.—The annual meeting of this company occurred this week at Rapid City. Directors elected are: George H. Dippo, Chagrin Falls, O.; Dr. C. E. Jones, T. A. Snow, W. H. Smith, Chicago; J. G. Eddy, Sioux Falls, S. D.; A. A. Craft, Greenville, Me.; S. E. Young, Rapid City, S. D. Officers elected are: George H. Dippo, president; Dr. C. E. Jones, vice-president; S. E. Young, secretary and general manager; T. A. Snow, treasurer. The board of directors decided to make immediate arrangements for the erection of a concentrating plant of 50 tons capacity at the Spokane Mine in Custer County. Also to go on with the development work of the mining property at Crown Hill, in Lawrence County, and sink the main shaft in the Spokane Mine from the 200 ft. to the 300 ft. level. The shaft is going down on a ledge of ore carrying lead, galena, gold and from 1 to 3% copper. The company recently purchased several claims in the phonolite belt west of Deadwood and will develop them. Two members of the company, A. B. Beveridge and C. C. Peterson, have leased two of the claims in the Crown Hill group and will ship ore immediately.

Lena.—Two shifts of men have been put on the Lena development work by the Minneapolis company. Several stringers of ore have been crosscut and a shaft is being sunk which is expected to encounter the main ledge of ore at the 100 ft. level.

Palmer Copper Reef.—C. W. Carpenter and associates, of Deadwood, have a lease on some copper ground in the western part of the county. There is said to be quite a large body of carbonate of copper. A 750 ft. tunnel is to be run at the water level to tap the main ore ledge. The district has been exploited but little.

TENNESSEE.

Anderson County.

The Knoxville Iron Company has given its miners at Briceville, an increase in wages. The pick miners get 44c. per ton, an increase of 4c., and the loaders 25c. per ton, an increase of 5c.

UTAH.

(From Our Special Correspondent.)

Bullion and Ore Shipments.—During the week ending July 15th, there were forwarded East from the different smelteries of the trust 29 cars, or 1,260,223 lbs., lead-silver bullion, and 1 car, or 41,788 lbs., copper bullion. The Utah Consolidated Smelter has loaded 4 cars, or 233,200 lbs., pig copper during the week. From the different camps of the State there were shipped 22 cars, or 953,277 lbs., ore and concentrate products that were forwarded beyond the State for treatment.

Local Smelter Conditions.—Indications of a prolonged shut-down of the Colorado smelteries are of advantage to Utah plants. The quota of Tintic and ores from other camps formerly shipped to Colorado for treatment are treated at home. The bulk of Park City's smelting products still goes to Colorado—fortunately under contracts with the Guggenheims—though a greater tonnage would be forwarded if it could be treated there. Shipments of Colorado ore westward to Salt Lake City have just been made from the Iron Mask at Red Cliff, which may soon be followed by other mines. An effort to have the Utah smelter men join in the strike of their Colorado brothers was planned, so it is said, but was found futile. As no labor difficulty is threatened, with an increasing production from the

mines the signs are for a new high record for Utah smelters this year.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—In the week of July 15th there were shipped from the 3 railroad points of the district 60 cars of ore and 1 bar of bullion, contributed as follows: Grand Central, 8 cars; Gemini, 10; Centennial-Eureka, 6; Humbug & Uncle Sam, 6; Mammoth, 5; Godiva, 1 car, and Dragon Iron 24 cars of hematite for flux. The bar of bullion was sent forward from the Sioux Mill.

Plute County.

(From Our Special Correspondent.)

Annie Laurie.—Consummation of the sale of the Annie Laurie group seems probable, though the report that it is an accomplished fact—circulated in Salt Lake City last week—was premature. Senator Frank J. Cannon is in Chicago, promoting this transfer. It is said the experts' reports verify the representations relative to the physical condition of the mines.

Salt Lake County.

Butte & Bingham Copper Mining Company.—This company, with \$100,000 capital in 10c. shares, has been incorporated with the following officers: C. K. McCormick, Salt Lake, president; H. C. Edwards, Salt Lake, vice-president; Cornelius Sullivan, Butte, treasurer; W. H. Nichols, Butte, secretary. According to the prospectus the company owns the Snow Bird, a full claim, and the Lulu, a fractional claim, in Bingham Canyon. Most of the prospectus is given to description of the geology of Bingham Canyon, and detailed mention of various claims owned by different companies or individuals. The Butte & Bingham Company, it says, is to run a tunnel on the Snow Bird. O. Roberts is manager.

(From Our Special Correspondent.)

Dalton & Lark.—On the 800 ft. level south a 5 ft. face of good grade lead ore is uncovered. Manager Farnsworth states that since the mine has been unwatered other and more important developments have been made. Mr. Ellsworth Daggett has his detailed campaign of a systematic examination of these mines well under way.

Fortune.—A 40-ton lot of copper rock has just been settled for which returned \$69 per ton. As told by Manager Hill, recent developments are very encouraging.

Frisco.—As a result of the annual meeting held July 14th, E. W. Genter is president; J. L. Thomson, vice-president; and George E. Forrester, secretary and treasurer; who, with J. B. Milan and J. W. Delano, compose the directorate for the ensuing year. It is planned to increase the shares from 200,000 to 500,000, and to add to the ready holdings.

Silver Shield.—Shareowners in this new company are indulging in felicitations that the property is paying for its development. The ground is south of United States Mining Company's territory. Shipments of 2 to 4 cars a month are made, the ore values being in silver, copper and lead.

Summit County.

(From Our Special Correspondent.)

Park City Shipments.—During the week ending July 15th, there were sent out from the Mackintosh sampler 3,535,845 lbs. of ore and smelter products, contributed from the following mines: Silver King, crude 728,220 lbs., concentrates 688,450 lbs.; Daly West, crude 1,078,170 lbs.; Ontario, crude 418,290 lbs.; Anchor, concentrates, 408,205 lbs.; Penny concentrates, 128,420 lbs.; Daly lease, crude 58,670 lbs.; Wright, concentrates 27,420 lbs.

Tooele County.

(From Our Special Correspondent.)

Boston & Mercur.—At La Cigale on West Dip, the mill is running to good advantage. Manager Whitney has overhauled the roasting furnace, which is about to be put in commission again, as much of the ore carrying the best values is quite talcy.

De La Mar Mines.—A shipment of 2 tons of cyanides was made on July 13th to Salt Lake City, which represents about half a month's run. As near as can be learned the gross yield is about \$140,000 per month.

Mercur.—President Dern states that the calcining annex to the cyaniding plant will be put in under the direction of D. C. Jackling, who has achieved remarkable success at the De La Mar Mill.

VIRGINIA.

Botetourt County.

(From an Occasional Correspondent.)

A body of exquisite onyx was discovered at Salt Petre Cave last week. It is pronounced by those who have seen both, that the onyx is as attractive as the best Mexican.

WASHINGTON.

Okanogan County.

(From Our Special Correspondent.)

Black Bear.—This was the first location on Palmer Mountain, near Loomis, and the year

after its discovery a 10 stamp mill was erected, a water power developed, several drifts run, and it is said more than \$100,000 in bullion shipped. Differences which resulted in litigation prevented further development. A company, just organized with strong backing, has taken over this claim and the War Eagle. John Boyd is manager, and is preparing to put in a 25 H. P. hoist on the Bear, improving the flume and ditch, before adding 5 stamps to the mill. There is ore ready to hoist as soon as machinery is in place.

Okanogan Free Gold Mines, Limited.—This is a British Columbia and Spokane (Washington) company which has 12 claims in a shape 1,200 by 3,000 ft., the whole surface of which is more or less mineralized, the mass running from \$5 up in gold. They have cut a 55 ft. ledge at 13 ft. depth, and are now engaged in installing a 10-stamp mill, a concentrator, and cyanide vats, believing they can save full values through a combination process. The property is in charge of Arthur S. Edgecomb, an experienced Australian mining engineer.

Palmer Mountain Gold Mining and Tunnel Company.—The 12th vein in the tunnel is reported as cross cut. It is 4½ ft. wide, containing 35 ft. of ore, the average value of which is said to be not far from \$100. This vein was cross cut at 965 ft. depth.

Q. S.—At 600 ft. depth the vein has been struck by a cross cut tunnel. The ore on the surface is reported to run 14% in copper and about \$5 in gold, and in the cross cut copper values are better. Eighteen claims and 6 mill sites are being patented.

WEST VIRGINIA.

It is reported that a deal covering the transfer of 20,000 acres of oil lands to an English syndicate has been arranged through C. F. Z. Carracristi.

Brown Coal and Coke Company.—This company has organized at Wheeling by electing the following officers: President, A. F. Gasmire; vice-president, James L. Brown; treasurer, Howard Thompson; secretary, C. B. Mabon, and general manager, C. B. Colborn, all of Wheeling. The company has purchased a large tract of land and it is thought will supply coal for the West Virginia Steel Company, which is expected to turn out tinplate and sheets independently of the combine, and will erect large mills east of Wheeling on ground recently purchased from the Baltimore & Ohio Railroad Company.

Brooke County.

Brown Coal and Coke Company.—The incorporators of this company have chosen as directors James L. Brown, Frank G. Caldwell, Dr. A. F. Gasmire, Howard Thompson and C. B. Colburn. The officers are: A. F. Gasmire, president; James L. Brown, vice-president; Howard Thompson, treasurer; C. B. Hahon, secretary.

Preston County.

West End Coke Company.—This company's plant at Tunnelton, which has been operated during the past year by the Larew & Orr Coal Company, has been sold to the U. N. Orr Coal and Coke Company. They are opening a new mine, and expect also to put in a large coke plant.

Ritchie County.

White Oak Fuel Company.—This company, authorized capital \$300,000, has been chartered by Enoch Smith and J. H. Gaines, of Charleston, and others. They have secured control of the Glen, Jean, Lower Loup & Deep Water Railroad, and will complete the line through the coal-fields which it controls, connecting them with the Loup Creek Division of the Chesapeake & Ohio Railroad. The company will engage in coal mining on an extensive scale.

FOREIGN MINING NEWS.

AUSTRALASIA.

Queensland.

The Mines Department reports for May a production of 87,722 oz. gold, of which 85,988 oz. were from quartz mines and 1,734 oz. from alluvial workings. The increase was 13,228 oz., or 17.8%, as compared with May of last year.

Tasmania.

Mount Lyell Mining Company.—This company's report for the four weeks ending June 28th shows 20,036 tons of ore smelted. The result was matte containing 646 tons copper, 54,689 oz. silver and 1,754 oz. gold. The averages were 3.22% copper, 2.73 oz. silver and 0.09 oz. gold to the ton.

CANADA.

British Columbia.

Granby Consolidated Mining and Smelting Company.—This company has awarded Murdoch Bros., the well-known railway contractors, who built several sections of the Canadian Pacific railway, the contract for the construction of the mile flume for the proposed smelter at Grand Forks. They were also awarded the contract for the work of grading the smelter site. The grading will be completed within a fortnight. It

is expected that the flume, whose construction will give employment to 150 men, will be completed by September 1st.

The smelter company has decided to start work on its reduction works at once. The work will not be let by contract.

British Columbia—Nelson.

Hall Mines, Limited.—This company's smelting operations for the four weeks ending June 30th are reported as follows: Fifteen days' smelting, 116 tons of Silver King ore and 385 tons of custom ores. The product was 119 tons of lead bullion, containing (approximately) 115 tons of lead, 29,760 oz. silver, and 184 oz. gold. The approximate averages were therefore 23% lead, 59.4 oz. silver and 0.37 oz. gold to the ton.

British Columbia—Trail Creek Division.

(From Our Special Correspondent.)

The rupture between Premier Semlin and Attorney-General Martin is likely to result in a reconstruction of the Cabinet or a dissolution of the Legislature. The Lieutenant Governor is absent and nothing will be done until his return to Victoria. In the meantime the agitation to repeal the mining legislation enacted at the last session of the Legislature continues to acquire force, and there is a distinct movement to secure a government that will repeal the 8-hour law, though popular opinion in favor of this law is very strong.

Ore Shipments.—Up to July 13th of the present year the ore shipments from Rossland mines amounted to 70,000 tons.

British America Corporation.—This company is putting Rossland town lots on the market.

Cliff.—Work will be resumed on this property about the end of July. Operations have been suspended for two years.

Great Western.—New machinery is about being installed.

Iron Horse.—Operations have been temporarily suspended. The machinery is being repaired.

Monte Cristo.—The compressor is supplying air to the Virginia. It is not known when work will be resumed on the Monte Cristo.

Velvet.—This property is owned by the New Gold Fields of British Columbia, of which Sir Charles Tupper is chairman. It was purchased in 1897. In June, 1898, a separate company with a capital of \$500,000 was formed in London, England, for the purpose of working the property. So far the development work done has been solely of a prospecting character—sinking, driving, etc. The shaft is down 250 ft. and the vein cut is said to be promising. This is also the case on the 100 and 160 ft. levels. The plant comprises one 60 H.P. boiler and one of 25 H.P.; one 25 H.P. winding engine, two machine drills now worked by steam, one circular saw for cutting rough lumber, also an assay plant. The improvements contemplated are a 20-drill compressor plant, electric and telephone facilities. The present means of access to the mine is a rough mountain trail, but this is about to be replaced by a wagon road. The parent company—the New Gold Fields—retains a large interest in the Velvet, and it also owns other properties on Sophie Mountain, one especially, the Portland, which adjoins the Velvet. The head office is 23 Leadenhall street, London, E. C. W. A. Stevens is secretary and James Morrish is the mining engineer in charge.

Virginia.—Development continues without any change from former reports.

Ontario—Fort William District.

(From an Occasional Correspondent.)

Messrs. McKellar have just completed the closing of an option on their iron properties in the Attikokan through Mr. R. M. Hunter, a banker in Duluth, to some wealthy iron men of the United States. Mr. Hunter recently placed to their credit a draft for \$10,000 to bind the deal. It is understood that steps will at once be taken by the prospective buyers to prove the property, and should it turn out as well as their expert has reported, the deal will be completed, which means in all a turn-over of \$350,000 in cash to the present owners. The property lies to the south of the Canadian Pacific Railway track and not far from the prospective route of the Ontario & Rainy River Railway.

Yukon District.

The first gold shipments from the Klondike by way of St. Michaels have reached Puget Sound on the steamers "Roanoke," "Portland" and "Laurada." The reports give the amount variously from \$1,500,000 to \$5,500,000; but \$2,500,000 appears to be nearer the truth. The shipments were by the Canadian Bank of Commerce and the Alaska Commercial Company.

CUBA.

Havana despatches report that a question involving the ownership of a copper mine came to the official notice of Mayor Hyatt of Guanabacoa, when he was requested to send police to a mine near Las Minas, which was purchased a few months ago by Hugh J. Reilly and Gustavus Solomon of New York, and which is now being worked by them. Recently three Americans went to the mine and showed a paper purport-

ing to be a claim to the mine issued in 1891 in favor of a Spaniard named Munoz, who had signed over his alleged rights to the men who presented the paper. The latter were driven off the place by Reilly and Solomon's men. Mr. Hyatt was then requested to send the police. Mr. Reilly maintains that the Munoz claim, even if it ever had any legal value, has lapsed, and as he owns the land he intends going ahead with his mining operations.

EUROPE.

Great Britain.

(From Our Special Correspondent.)

A discovery of iron ore on a large scale has been made in Kent, England, by the company which is exploiting the newly discovered coal deposits near Dover. Some years ago, while drilling for coal, the cores showed the presence of iron ore some 500 ft. below the surface. Now that one of the shafts, 20 ft. in diameter, has reached that depth, the presence of a seam of iron ore 12 ft. thick has been demonstrated, and some hundreds of tons have already been brought to the surface and tested. The ore is brown hydrated oxide in the form of grains, and is embedded in a variable mixture of carbonates of lime and iron. The authorities at the works have not yet finished their investigations as to the question of average contents and the suitability of the ore for concentration, but no doubt this information will come to hand shortly. We should mention that the ore occurs in the oolite, and that it is very similar to that which occurs in the same geological deposits in the West of England, some of which used to be worked in days gone by.

MEXICO.

Durango.

(From Our Special Correspondent.)

Avino Mines of Mexico, Limited.—The machinery for the smelter to treat 100 tons of copper ore per day, and for the concentrating plant, capable of treating 100 tons of concentrating ore per day, to be erected on the property of this company, is now arriving at Durango, and is being placed in position. At the present time 100 tons of copper ore per day is being extracted, and it is expected that this amount will be increased to 250 tons within a short period. The same amount of concentrating ore will also be taken out. The facilities for handling the ore will be very complete. A new tunnel has been driven into the mountain to connect with the mine workings. Through this the ore will be brought to the surface, and the hill-side elevation will enable it to pass through the mill and smelter automatically. The first general meeting of the stockholders was held at the registered offices of the company, No. 110 Cannon street, London, England, on June 11th, and the report of the work on the property was satisfactory. The Earl of Donoughmore, chairman of the company, sailed from England on July 1st for Mexico.

SOUTH AMERICA.

British Guiana.

The gold output on which royalty was paid in the month of June was 10,290 oz. This is an increase of 1,376 oz. over June of last year.

Venezuela.

Dispatches from St. Paul, Minn., state that Thomas J. Hurley, of New York, representing the Exploration Syndicate, of that city and London, closed a deal with the Orinoco Company, Limited, for a controlling interest in the Orinoco concessions, in which Donald Grant and other people are interested. The Minnesota amount of the consideration is not known, but it is thought to be \$5,000,000. Headquarters of the company will be transferred to New York City. The company has been at work for three years past, and has concessions of 11,000,000 acres of land in Venezuela, lying on both sides of the river from which it takes its name. This immense territory is rich in iron and other metals. The Exploration Company will push development work and improve its resources to the utmost.

COAL TRADE REVIEW.

Anthracite.

New York

July 21

The anthracite trade is in unusually good condition for midsummer. There is much less than the usual July complaint of dullness, and coal is being sold better at tidewater than in the corresponding month for several years past. Production is on a good scale, the mines generally working five days in the week, but there is no sign of over-production, and stocks are not increasing.

Shipments to the West continue on a large scale. Chicago dealers are taking better quantities than they have done for a long time. The Sault Canal reports show that the anthracite going to Lake Superior points has been this year, up to July 1st, over 250,000 tons, or nearly twice last year's quantity, notwithstanding the facts that navigation opened this year 13 days later than in 1898, and that steamer rates are

considerably higher. Times are good, and the West is evidently going to be a large taker of anthracite this season.

Above all there is no cutting in prices reported. Coal men fully appreciate this fact, and are congratulating themselves on it. They also recognize that this welcome condition, which may be attributed in part to the general improvement in trade, is chiefly due to the change in the management of the company, which has always been the chief sinner in this respect, and has been notorious for its disregard of contracts. It is now possible to do business without facing the certainty that every agreement will be violated and every promise broken almost as soon as made.

There is some talk of an increase in circular prices. It is quite possible that it may be made later, but no change is expected at present. Prices at tidewater show no alteration.

Boston dealers, though they are not saying very much about it, are getting ready to meet the competition with which they are threatened by the New England Gas and Coke Company's plant, which will soon be supplying fuel gas and coke on a large scale. This is the beginning of a rivalry which the anthracite coal producers will have to meet in a few years at all the seaboard cities, and they will do well to prepare themselves for it.

On the authority of press despatches last week it was generally accepted that the Philadelphia & Reading Company had bought a large tract of bituminous coal lands in Somerset County, Pa. Many wise comments were made on the entry of the Reading Company into the bituminous trade, the probability of an extension of its line, an alliance with the Baltimore & Ohio, and so on. The fact is that the Philadelphia & Reading Company had nothing to do with the transaction. The coal lands were bought by the Reading Iron Company, a manufacturing concern in Reading, Pa., which desired to control its own supplies of coal and coke.

Bituminous.

The Atlantic seaboard soft coal trade is in an active condition. There is a large demand for coal, but the shortage of cars continues to make the supply small. It is not thought, however, that the demand is quite as feverish as it was last week, though it is up to all the desires of the producers who are not looking for new business. Transient trade has to pay 10 to 15c. above current prices.

The labor troubles in the various regions seem to be a thing of the past, with but here and there a sporadic showing.

Trade in the far East has been relieved a little by fair shipments during the week, notwithstanding the high ocean freights which must make some of the delivered prices stipulated in contracts earlier in the season look very small.

Trade along the Sound is calling for considerable coal, and is receiving but a portion of the demands.

New York harbor trade is quiet.

All-rail business is active and producers are cutting down the orders sent in for this class of trade wherever they can.

Transportation from mines to tide is apt to be slower. It is thought that there is a great deal of coal accumulated at the shipping ports owing to the short supply of ocean vessels. It is also understood that the railroads are making an effort to relieve these ports.

The car supply at the mines is not equal to the demand and has been falling off from day to day.

One hears very little of export trade at this time.

In the coastwise market vessels are scarce, orders plentiful and rates firm. We quote current rates of freight from Philadelphia as follows: To Boston and Portland, 85c.; Providence, New Bedford and the Sound, 75c.; Lynn, Saco and Gardner, 95c. @ \$1 and towages; Salem and Bath, 85c. @ 90c.; Newburyport, 95c.; Portsmouth and Bangor, 90c.; Dover, \$1.10 and towages. Five to 15c. above these rates are asked for the further lower ports.

Birmingham, Ala. July 17.

(From Our Special Correspondent.)

With the exception of the Brookwood mines, in Tuscaloosa, the Pearson and Moss mines, in Jefferson County, and the Galloway mines, in Walker County, all the coal mines in Alabama are in full blast, with large outputs. The trouble at the places named will be overcome, it is believed, before the expiration of this month, and the full complement of miners will be at work. Indications point to a large output in the State, a large increase over the production of last year.

A fair price is being received for the product. The domestic operators are complaining at the high wages that have to be paid the miners, saying that the advance in coal has not been in proportion. However, there is much work being given the miners throughout the State, and the coal is coming out in large quantities. The rolling mills, furnaces, railroads and other industries are demanding coal and the demands are quite steady.

New mines are being opened at Dogwood, a

small place on the Southern Railway, about 25 miles below here, between Birmingham and Selma. A railroad about 1 mile in length is now being built and the mines are to be opened under the direction of former State Assistant Mine Inspector F. Duncan. About 100 miners will be given employment at the place just as soon as the mines are ready for operation. Labor is a little scarce in some places, quite a number of colored miners being carried out of the State to Kansas.

An examination for certificates as mine foremen was held in Birmingham last week. A good class was examined and certificates will be given out shortly.

Pittsburg.

July 20.

(From Our Special Correspondent.)

The heavy demand for coal continues and all the railroad mines are being operated to their fullest capacity. The river mines are not running so well owing to the low water. Operators have been unable to get the empty boats and barges back from the lower ports, and all the empties here have been filled. The customary June rise did not come, but a rise was expected this week. The heavy rain of the past three days was not sufficient and brought the river up to within 1 ft. of a good boating stage. About 5,000,000 bushels of coal is ready to go out, but only 200,000 bushels were shipped. J. B. Finley, promoter of the river coal combination, believes it will be ready for business some time next month.

The combination of railroad coal operators is progressing favorably. Meetings of the promoters have been held every day this week, and they say the consolidation will be complete by September 1st. The new company will be capitalized at \$60,000,000, half of which will be preferred and half common stock. This was decided on at a meeting held on Tuesday. The company will be known as the Pennsylvania & Lake Erie Coal Company.

Connellsville Coke.—The production of coke this week will likely be the largest in the history of the region. Plants that were only running 5 days a week are now being operated full time. There is an unusual demand for workmen in the Connellsville region, and men are being imported. Two car loads of negroes were brought to the field from Virginia the other day and distributed about the Frick plants. A car load was also brought to the works of W. J. Rainey.

The shipments last week aggregated 8,739 cars, distributed as follows: To Pittsburg and river points, 2,753 cars; to points west of Pittsburg, 4,179; to points east of Connellsville, 1,827.

SLATE TRADE REVIEW.

New York.

July 21.

The market continues firm, and orders are multiplying. Quarrymen are very busy. There is talk of a scarcity in the supply of skilled labor at quarries, especially in Pennsylvania. Shipments of roofing slate from Slatington, Walnutport and Danielsville during the first two weeks of July aggregated 8,070 squares. In the same time Slatington also moved 1,208 cases of school slates and 822 crates of blackboards; Danielsville, 123 crates and 1 car blackboards, and 205 crates and 149 pieces flagging.

Export business is fairly active, and in June the total value of the shipments of all kinds of slate from this port was \$68,831, as compared with \$106,266 in the previous month, and \$97,050 in June, 1898. The distribution of the exports in June, 1899 was as follows, the figures in parenthesis being for May: United Kingdom, \$47,159 (\$74,354); Australasia, \$8,974 (\$12,369); Denmark, \$4,450 (\$7,829); Belgium, \$4,000 (\$3,700); Germany, \$1,645 (\$1,912); Holland, \$1,215 (\$1,815); other countries, including India, Africa, China, Central and South America, the West Indies, Mexico, the Hawaiian Isles, and Newfoundland, \$1,388 (\$4,227). The total exports of roofing slate during the month we estimate at 12,300 squares, against 19,666 squares in May, and 19,410 squares in June, 1898. Several lots of mantles and billiard slabs were sent to Great Britain, Denmark, Belgium and Newfoundland. Of the school slate shipments we note China received its first consignment this year, amounting to 20 cases only. Some roofing slate was sent to Honolulu, which is the first since January last. We see the United Kingdom imported from us in June 182 carloads of roofing slate, showing a decrease of 136 cars as compared with May, while Australasia received approximately 33 cars, against 38 cars in May. The shipments of school slates to Australia in June were only 198 cases, as against 1,061 cases in May. The falling off in total exports from this port in June was due partly to the increased home consumption and shortage of slate on banks at quarries.

Freight rates are about as follows from New York: To London, 12s. 6d. (\$3), or about 86c. per square roofing slate; Liverpool, 12s. 6d.; Manchester, Bristol, Leith and Glasgow, 15s. (\$3.60), or \$1 per square; Hamburg, 12s. 6d. prompt, and 15s. near future; Copenhagen, 16s. 3d. (\$3.90), or \$1.11 per square; Newcastle and Hull, 17s. 6d. (\$4.08), or \$1.17 per square; Denmark, Stettin, 17s. 6d., all with a 5% primage per ton weight,

To Bremen the rate is 15s. net (\$3.60), or \$1 per square. To Sydney, New South Wales, 15s. net is asked for roofing slate in cases or in bulk.

The list of prices per square for No. 1 slate standard brand f. o. b. at quarries is given below:

Prices of Roofing Slate.

Size, inches	Monson or Br'n ville.	Bangor.	Bangor Ribbon.	Alb'n or Jackson Bangor.	Lehigh.	Peach Bottom.	Sea Gr'n.	Unfad'g Gr'n.	Red.
24 x 14	6.10	3.50	3.00	3.35	3.4	4.85	3.00	3.00	3.00
24 x 12	6.00	3.50	3.00	3.35	3.40	5.00	3.00	3.75	3.75
22 x 12	6.00	3.50	3.25	3.50	3.40	5.00	3.00	3.75	3.75
22 x 11	6.50	3.75	3.25	3.50	3.40	5.00	3.00	4.00	4.00
20 x 12	6.90	3.75	3.00	3.50	3.40	5.00	3.00	3.75	3.75
20 x 11	6.80	3.75	3.00	3.50	3.40	5.00	3.00	3.75	3.75
20 x 10	6.80	4.50	3.50	4.00	3.75	5.10	3.25	4.25	9@10 1/2
18 x 12	6.80	3.75	3.00	3.50	3.40	5.00	3.00	3.75	3.75
18 x 11	7.00	3.75	3.00	3.50	3.40	5.00	3.00	3.75	3.75
18 x 10	7.20	4.50	3.50	4.00	3.75	5.10	3.00	4.00	9@10 1/2
16 x 11	7.10	4.50	3.50	4.00	3.75	5.10	3.00	4.25	9@10 1/2
16 x 10	6.80	3.75	3.00	3.50	3.40	5.00	2.85	3.50	3.50
16 x 9	7.10	4.25	3.50	4.00	3.75	5.00	2.85	4.00	9@10 1/2
16 x 8	7.00	4.25	3.50	4.00	3.75	5.10	2.85	4.25	9@10 1/2
14 x 10	6.60	3.75	3.25	3.35	3.40	5.00	2.75	3.75	3.75
14 x 9	6.50	3.75	3.25	3.35	3.40	4.85	2.75	3.75	3.75
14 x 8	6.60	3.75	3.25	3.35	3.40	4.85	2.75	3.75	3.75
14 x 7	6.40	3.75	3.25	3.35	3.40	4.85	2.50	4.25	9@11 1/2
12 x 10	5.80	3.75	3.00	3.50	3.40	4.85	2.50	3.25	3.25
12 x 9	5.60	3.75	3.00	3.50	3.40	4.85	2.50	3.25	3.25
12 x 8	5.50	3.50	3.00	3.35	3.25	4.60	2.50	3.50	8 1/2 @ 9
12 x 7	5.00	3.25	3.00	3.35	3.25	4.60	2.50	3.50	8 1/2 @ 9
12 x 6	4.80	3.25	3.00	3.35	3.25	4.60	2.50	3.50	8 1/2 @ 8 1/2

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

In Brownville and Monson delivery quotations can be had somewhat lower than above, which is also true of other brands. No. 1 Bangor are 50c. extra when full 3-16 in. thick, and Peach Bottom 25c. extra per square. Intermediate sea green, \$2.25@2.45 per square, according to size.

CHEMICALS AND MINERALS

(For further prices of chemicals, minerals and rare elements, see page 120.)

New York. July 21.

Heavy Chemicals.—Buying is limited for immediate consumption, but for next year's delivery further orders have been booked for domestic caustic soda on basis of \$1.45 per 100 lbs. f. o. b. works. Bleaching powder, owing to the warm weather, is in better request, and imports this week were 408 casks and 100 drums English, and 100 drums German. Chlorate of potash is easier, owing to larger arrivals. Receipts of domestic soda ash at this port this week amounted to 860 sacks, 800 kegs, 100 bbls. and 240 drums. A little export business has been done in caustic and bicarb. soda.

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York	In New York.
Alkali in bags.	67 1/2 @ 70c.	80 @ 85c.	80 @ 85c.
Caustic Soda, high test.	\$1.55 @ \$1.65	\$1.60 @ \$1.65	\$1.60 @ \$1.70
98% powd.	.....	2.75 @ 3.00	.....
60 @ 74 % powd.	.....	2.25 @ 2.25	.....
Sat Soda conc.	70c.	.....	62 1/2 @ 70
Bicarb Soda.	1.00 @ 1.35	.....	1.60 @ 1.65
" extra	1.12 1/2 @ 1.25	.....	2.12 1/2 @ 2.25
Bleach. Pdr., Eng. prime.	3.25 @ 3.50	.....	1.42 1/2 @ 1.50
other brnds.	.....	.....	1.25 @ 1.35
Chl. Pot. cryst. powd.	.....	9.25 @ 9.50	9.50 @ 9.75
.....	.....	9.75 @ 10.00	10.00 @ 10.25

Prices are generally for large quantities, and in many cases depend upon make, test and package.

Acids.—Exporters of sulphuric acid have raised prices from \$1 to \$1.15 per 100 lbs. for 66° in drums, and to \$1.50 in carboys, owing partly to the enhanced value of raw material, particularly pyrites. Domestic prices are unchanged, as below. Stocks of sulphuric acid are reported light, especially at works where pyrites are burned. Acetic and muriatic acids both show a good demand, while blue vitriol has eased off in consequence of speculative offerings, around \$5 per 100 lbs. We note 167 demijohns of acetic acid were imported this week from Antwerp.

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

Acetic, com. No 8.	\$1.50	Nitric, 38°	\$3.75 @ 3.80
Blue Vitriol, best.	5.25	Nitric, 40°	4.0 @ 4.05
Chamber, 50° ton.	11.50 @ 12.00	Nitric, 42°	4.62 @ 4.65
Muriatic, 15°	1.10 @ 1.15	Oxalic	.....
Muriatic, 20°	1.20 @ 1.25	Sulphuric 66°	1.10 @ 1.15
Muriatic, 22°	1.35 @ 1.40	Sulphurous, 100%	.....
Nitric, 36°	3.50 @ 3.55	SO ₂ anhydrous, 80°	@ 10.00

Brimstone.—Arrivals were 2,200 tons. Spot best unmixed seconds can be had at \$21.75 @ \$22 per ton, and shipments at \$20.50 @ \$20.75, while thirds are quoted from \$1.75 @ \$2 per ton less.

Pyrites.—Inquiry continues good, but supply is limited, most of the output of the larger mines being already under contract. Another charter of a British steamer of 1,570 tons has been taken

to carry pyrites from Huelva to Savannah, at 11s., August sailing. There is talk of working new pyrites deposits in the South. The use of this ore for making sulphuric acid is growing steadily, and already far exceeds the production. We quote American pyrites as follows: Mineral City, Va., lump ores, \$3.25 per long ton (basis 42%), and fines, \$3; Charlemont, Mass., lump, \$5.50, and fines, \$4.75; Pilley's Island, lump, \$6.50, and fine, \$4.50 per long ton, delivered in New York. Spanish pyrites, 12@14c. per unit, according to percentage of sulphur contents, delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46% to 51% sulphur, the American from 42% to 44%, and Pilley's Island, N. F., 50%.

Fertilizing Chemicals.—Demand is uninteresting and prices in several instances have softened, but gas sulphate of ammonia is again higher. The imports this week were 720 bags, while of potash salts the arrivals were 500 bags of muriate and 1,000 bags manure salt.

Articles.	F. o. b. Wks.	In N. Y.
Potash, muriate, 80 @ 85% 100 lbs.	.....	\$1.78
" " 95% " "	.....	1.81
" sulphate, 90% " "	.....	1.98 1/2
" " 95% " "	.....	2.10 1/2
" double muriate salt, 45 @ 50% 100 lbs.	.....	66c.
" " 30% " "	.....	80c.
" kainit, 12 1/2% long ton.	.....	8.70 @ 8.55
" sylvanit, per unit.	.....	37 @ 38c.
Sulph. Am. gas (25%) 100 lbs.	.....	3 12 1/2 @ 3.20
" bone, " " "	.....	2.90 @ 2.95
Blood, dried, h-gr. Chi. per unit	\$1.77 1/2 @ 1.80	.....
" " N. Y., " " "	.....	1.82 1/2 @ 1.85
Azotine, " " "	.....	1.85 @ 1.95
Bone black, diss., 17 @ 18% ton	.....	16.00 @ 16.50
Fish scrap, acid " " "	10.50 @ 11.00	12.50
" " dried " " "	19.50 @ 20	21.50
Tankage h. gr. Chicago, " " "	16 1/2 @ 17.00	21.00
" concentrated unit.	1.45 @ 1.50	1.90 @ 1.95
" bone, " " "	.....	20.00 @ 21.00
Bone, ground, " " "	.....	23.50 @ 25.00

The quotations on potash are on the basis of foreign invoice weights, tares and analysis, in quantities of not less than 500 tons bulk salts or 50 tons concentrated salts.

Nitrate of Soda.—Reports are current that future delivery orders will have to pay more, owing to a scarcity in freight room and consequent higher vessel rates. However, we understand orders will be booked for future shipment at \$1.57 1/2 @ \$1.62 1/2 per 100 lbs., while the spot stock is offering at \$1.60 @ \$1.62 1/2, and one or two large sellers asking \$1.65 per 100 lbs. The "Sahara" arrived with 42,981 bags and "Nellie Troop" with 16,211 bags this week. Part of the "Sahara" cargo has already been sold at \$1.60 per 100 lbs. As to the European situation the Permanent Nitrate Committee's statistics show that the imports for the six months ending June 30th amounted to 765,430 long tons, while the deliveries were 854,830 tons, and on July 1st the visible supply, including stocks and quantity afloat, was 335,140 tons.

Phosphates.—Export demand for Florida high grade rock is strong, and it is said no stocks are accumulating abroad as shippers were fully 60,000 or 80,000 tons behind on their contracts last year, owing to the war. It is estimated that the July shipments will be not far from 50,000 tons, and August promises as well. No Florida land pebble is offering, as miners are under contract; hence quotations are nominal. In Tennessee fields increased operations are noted, especially among exporters. In South Carolina a like condition exists and the shipments of rock from Charleston from September 1st last to July 7th are reported at 93,286 tons, against 83,489 tons in the corresponding period last year. We note two charters from Fernandina, one being of 1,579 tons to Rotterdam at 16s. 6d., and the other 1,675 tons to Stettin, at 19s., both August sailing. We understand that 150 sacks of phosphates were received at New York from Florida this week.

Latest quotations for American phosphates, delivered, c. i. f., United Kingdom or North Sea ports, are as follows, per unit: Florida, high-grade rock, 77 @ 80%, 9 1/4 d., all positions (about \$14 per long ton); Florida, land pebble, 68 @ 73%, 8d. (about \$11.20 per ton); Florida, Peace River, 58 @ 63%, 7 1/2 d. (\$9 per ton); Tennessee, 78 @ 80%, 8d. (\$12.64 per ton), while Algerian, 63 @ 70%, is quoted 7 1/4 d. (\$9.38 per ton), and 58 @ 63%, 6 3/4 d. (\$7.80 per long ton).

We quote: Florida high grade, 75 @ 80% rock, \$10 per long ton f. o. b. Fernandina. The freight rate to New York is about \$2 per ton. Florida land pebble, 68 @ 73%, \$7 @ \$7.50 per ton delivered in New York. Florida Peace River rock, 58 @ 63%, \$4.50 per ton f. o. b. Punta Gorda. South Carolina, hot-air dried, \$4.50 per ton, f. o. b. Feteressa, S. C. Tennessee phosphate rock, 75% av., \$3.50 @ \$4 f. o. b. mines for export, guaranteed 78% bone phosphate of lime and 3 @ 4% iron and alumina (ex-vessel New York \$9 @ \$10), and \$3 @ \$3.50 for domestic brown, and \$1.90 @ \$2 f. o. b. for blue or Hickman County rock. The difference in the price of this phosphate and Florida high grade is owing to the higher percentage of iron and alumina in the Tennessee rock. Concentrated phosphates, 13 @ 15% av. P₂O₅, 60 @ 62 1/2 c. per unit at sellers' works. Acid phosphates, 60c. per unit at sellers' works in bulk.

Liverpool. July 4.

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

Trade in heavy chemicals has gone rather quiet again, but there is no accumulation of stocks, and prices are well maintained.

Soda ash is firm and a good trade is passing at varying prices, according to market. We quote maximum spot range for tierces, as follows: Leblanc ash, 48%, £4 5s. @ £4 10s.; 58%, £4 10s. @ £4 15s. per ton, net cash. Ammonia ash, 48%, £4 @ £4 5s.; 58%, £4 5s. @ £4 10s. per ton, net cash. Bags are 5s. per ton under price for tierces. Soda crystals are selling freely, and are generally quoted at £2 17s. 6d. per ton, less 5% for barrels, with an allowance of 7s. per ton if taken in bags. Caustic Soda is in a strong position, and in some cases difficulty is experienced by buyers in filling prompt orders. We quote spot range as follows: 60%, £6; 70%, £7; 74%, £7 10s.; 76 @ 77%, £7 15s. @ £7 17s. 6d. per ton, net cash. Bleaching powder is steady at £4 15s. per ton, net cash, for hardwood packages. Chlorate of potash is in moderate demand at 3 1/2 d. @ 3 3/4 d. per lb. for crystals and 3 3/4 d. @ 3 1/2 d. per lb for powdered, as to quantity. Bicarb. soda is without change, and selling at varying prices according to destination, ranging from £5 5s. @ £6 15s. per ton, less 2 1/2% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia continues rather dull at about £12 10s. per ton, less 2 1/2% for good gray, 24 @ 25% in double bags f. o. b. here. Nitrate of soda is quiet at about £8 @ £8 2s. 6d. per ton, less 2 1/2% for double bags f. o. b. here, as to quality and quantity.

IRON MARKET REVIEW.

NEW YORK, July 21, 1899

Pig Iron Production and Furnaces in Blast

Fuel used	Week ending		From	
	July 22, 1898	July 21, 1899	Jan., '98	Jan., '99.
An'racite	F'ces. 24	Tons 19,229	F'ces. 40	Tons 35,350
Coke	142	224,200	164	223,150
Charcoal	19	6,637	20	6,250
Totals	185	248,086	224	264,750
				6,633,961
				7,126,132

The market continues unchanged, but is a little feverish. People are paying very high prices, but are a little more cautious about long contracts. The cry of an iron famine, which is still reiterated by some self-styled organs of the trade, is losing its force by repetition. People are getting used to it and are no longer frightened by it. Moreover, they are realizing that there will be plenty of iron to go round, with a reasonable amount of patience, though everybody cannot expect to get deliveries at once.

For raw material the range of prices is shown in our Pittsburgh and Alabama letters. At present prices the furnace-men ought to be making plenty of money. Their low-price contracts are now generally cleared up, and they are beginning to get the benefit of the higher range now quoted.

Finished material, which was a little behind pig iron and billets, is still going up. The chief advances noted this week are on wire and nails, bars and tin-plates.

Steel rails are in more limited demand, the prices having made railroads hesitate a little. The mills, however, have work enough to keep them going for the rest of this year and into 1900.

Export inquiries continue frequent, notwithstanding the high prices. The fact is that demand is large and prices are high in Europe as well as here. It is one of those periods which come at more or less regular intervals when the buyer does not ask the price, but only whether he can get the material he wants.

Notes of the Week.

The heaviest advance in the price of tin-plate in one day was made July 15th by the American Tin-Plate Company. The advance is from \$3.37 to \$4.37 a box of 100 lbs. In the past six months the price of tin-plate has increased over 65%. In January tin-plate was selling at \$2.65 a box of standard size. The increase to \$4.37 shows a total increase in the price of \$1.72. Prices in America are still below the figures at which Welsh tin-plate could be imported and sold at a profit. The Welsh product is now set down at the seaboard at \$3.75 a box. The duty is \$1.15.

The announcement has been made in Philadelphia that large quantities of iron ore have been purchased in Newfoundland by local capitalists for shipment to the United States, and that already two schooners with sample cargoes of the ore are now en route to Philadelphia from Newfoundland. The German steamship "Claudius," with a capacity of nearly 5,000 tons, has been chartered for the Newfoundland ore trade.

Birmingham, Ala. July 17.

(From Our Special Correspondent.)

The pig iron market in the Birmingham territory is in a most active condition. The demand is good, the supply a little insufficient to meet

the demand, and quotations steady, with a tendency to advance. The conditions could hardly be improved upon, unless there were more facilities for producing, so that more business could be accepted. It is stated that some furnaces cannot deliver this year and are accepting orders for delivery during the first months of 1900. It is also announced that within 4 months the production in Alabama is to be increased by considerable, contracts having been let or about to be let for the repairing of a dozen furnaces in the State, and that, if there should be no misgivings, they will be put into blast when ready. The shipments from the district are enormous.

During the month of June it is figured that Alabama and Tennessee furnaces shipped slightly over 150,000 tons of iron, which is 12,000 tons in excess of any previous month's business. Of this amount the Birmingham District furnished over 90,000 tons. During the month of June 14,000 tons of iron were exported, practically all of it coming from the Birmingham District. In all 15,000 tons of cast iron pipe were shipped last month, 6,000 tons of which went out from Birmingham.

The total movement of pig iron from Alabama and Tennessee for the period from January 1st to June 30th was 757,796 tons, an increase over the same period last year of 137,698 tons. Total movement of pig iron from the Birmingham District alone, 451,019 tons, an increase over same period of last year of 68,031 tons. Total movements of cast iron pipe from Alabama and Tennessee factories, 83,115 tons, an increase over same period last year of 19,326 tons. Total movements of cast iron pipe from the Birmingham District alone, 31,422 tons, an increase over same period last year of 7,653 tons. Total movements of export iron from the Alabama and Tennessee field—of which the Birmingham District furnished nine-tenths—98,142 tons, an increase over same period last year of 38,855 tons. Total amount of cast iron pipe exported from the Alabama and Tennessee field—of which the Birmingham District furnished nine-tenths—7,942 tons.

The following are the quotations given for the product: No. 1 foundry, \$15@15.50; No. 2 foundry, \$14.50@15; No. 3 foundry, \$13.50; No. 4 foundry, \$12.50@13.25; gray forge, \$12; No. 1 soft, \$14.50@15.50; No. 2 soft, \$15.

The work of repairing furnaces at Ironton, Vanderbilt, Ensley, Alice, in the city and the Anniston Woodstock furnaces is being rushed now. It is stated that contracts will be let immediately for the repairing of the furnaces at Trussville, Gadsden, Florence, Sheffield and Briarfield, and that by the end of the year the production in this State will have been increased by no less than 1,800 tons a day over what it is now.

There is no apprehension felt in this district as to the ability of the district to furnish enough raw material with which to keep the furnaces in blast right along. A strike at the Ishkooda ore mines, where the normal output is 95 to 100 cars of ore a day, has been on for about 4 weeks, but the Robinson Mining Company has been securing negroes from adjoining States and will soon have the works in full motion again. The coal and coke supply, it is believed, will be kept up.

Some very interesting rumors concerning the purchase by the Sloss Iron and Steel Company of furnace property at Sheffield and Florence and of ore lands near Russellville have been in circulation hereabouts during the last week or so. The secretary of the company denies any consolidation, but says that properties are being purchased outright. The Sloss Company has 4 furnaces in full blast now, with several coal and ore mines in operation, with quite a number of ovens manufacturing coke, and more building.

Buffalo, N. Y. July 18.
(Special Report of Rogers, Brown & Co.)

We have to note a further slight advance in prices and can report the market firm at the advanced figures. Buying for the first half of the year continues. We quote for cash f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$21@22; No. 2 strong foundry coke iron, Lake Superior ore, \$20@21; Ohio strong softener, No. 1, \$20.50@21; Jackson County silvery, No. 1, \$25; Southern soft, No. 1, \$20; Southern soft, No. 2, \$19.50; Lake Superior charcoal, \$22; coke malleable, \$21.

Cleveland, O. July 19.
(From Our Special Correspondent.)

Iron Ore.—The principal feature of the iron trade during the past week has been the heavy shipments. They were in fact extra heavy, and the demands for ore are large, which becomes evident from the advance in shipping rates. As high as \$1 has been paid from the head of Lake Superior, notwithstanding the fact that 90c. is given as the nominal price. The price from Escanaba is 75c. and from Marquette, 80c. There are no expectations of sales of large amounts of ore for many weeks yet. If any further tonnage is sold worthy of special mention it probably will not be before the latter part of August. Agents of the mining companies are at this time

chiefly engaged in getting down the ore already sold and fulfilling contracts already made.

The quotations are as follows: Specular and magnetic ores, Bessemer quality, \$4@4.25; specular and magnetic ores, non-Bessemer, \$3.25@3.75; red hematite ores, Bessemer quality, \$3.75@4.25; red hematite ores, non-Bessemer quality, \$2.75@3.25.

Pig Iron.—The quotations for the pig iron market are about the same as a week ago. The figures, however, must be given as the nominal prices. There is in reality no iron to be sold for immediate delivery and should anyone be so fortunate as to have a supply on hand he could about name his own figures. Reports from different parts of the State show that quite a large number of factories have shut down because of the lack of iron. As a result of the above conditions an exceptionally large number of sales have been made for which the deliveries are to be made the first six months of the year 1900. These advanced sales consisted of foundry iron, the prices being \$19.50 for No. 1 and \$19 for No. 2. At the above-named prices two sales were made of 3,000 tons each, three of 2,500 tons each, two of 1,500 tons each, besides a dozen or more of smaller sales. No sales for immediate shipment were made. The following are the quotations for pig iron f. o. b. Cleveland: Lake Superior charcoal, \$20.50; Bessemer, \$20; No. 1 foundry, \$20; No. 2 foundry, \$19.50; No. 1 Ohio Scotch, \$20; No. 2, \$19.50; gray forge, \$18.

Philadelphia. July 20.

(From Our Special Correspondent.)

Pig Iron.—Nominally prices are higher. Some little iron has been sold. Prices have been asked on large lots for late autumn. There have been no sales that way. The disposition is to let this and next month slip by before entering on new engagements. Mill buyers are occasionally heard from. Some of them have been endeavoring to close for Southern forge. The rigid quotations obstruct negotiations, but by August a good many buyers will be forced to protect themselves. Quotations are said to be above what sellers would really sell for if they had the iron. That is a question. No. 1 X foundry is quoted at \$21 and over; No. 2 X, \$20.50; plain, \$19.25; standard forge, \$18@18.50; basic, \$20; Bessemer, \$21.

Billets.—Billets are nominally \$35@36; but whatever business has been done this week has been kept very quiet.

Muck Bars.—Manufacturers, having all the business they can handle, are asking impossible prices.

Skelp.—A sharp Western demand for skelp is on, and some business has been accepted at prices that cannot be had.

Merchant Bars.—The merchant bar iron is quieter than for some weeks, but prices are very firm and mills are far enough oversold to make manufacturers altogether indifferent. Common is 1.90c.; refined, 2@2.10c.; tested, 2.15c.; special steel, 2.20c.

Sheets.—Large orders could be had this week at outside figures if manufacturers would listen, but they are all hard of hearing. There is an opinion spreading among users of sheet, and especially of corrugated, that sheet mill products will be higher next autumn.

Merchant Steel.—Western demand is given as the explanation of the higher prices asked for fall deliveries of all kinds of merchant steel. There is but little business done at present.

Pipes and Tubes.—Buyers are awaiting the acceptance of orders submitted a few weeks ago.

Structural Material.—Builders are quite willing to pay 2.10@2.25c. for material, but they are told it is simply impossible to furnish material under 60 to 90 days. Even at such times its deliveries are not certain. Bridge builders have placed inquiries in manufacturers' hands within a few days for very large lots of material for winter delivery.

Steel Rails.—Office managers say that there is a pressure for small lots, running from 200 to 1,000 tons. Quotations: \$29@30 for standard sections.

Old Rails.—Large purchases have been quietly made at \$20.50, but the rails may not be delivered for 2 or 3 months.

Scrap.—Scrap is scarce and high. Steel axles, \$17@17.50; iron, \$22@24; No. 1 railroad scrap, \$19@20.50; old car wheels, \$16@17; cast borings, \$11; heavy steel scrap, \$15.50.

Pittsburg. July 20.

(From Our Special Correspondent.)

The most important change in prices during the past week was in wire and wire nails. This advance was expected on July 1st, but was not made until to-day, when the American Steel and Wire Company announced that beginning on Monday the prices of wire would be \$3 a ton higher, with an increase in wire nails of 25c. a keg.

Material is just as scarce as last week, and deliveries are as hard to get as at any time during the past month. All the blast furnaces in Pittsburg and in the Valleys are in full opera-

tion, turning out more iron than at any time in many years. Plans have been prepared for another furnace to be built alongside of the Edith Furnace, in Allegheny, by the American Steel and Wire Company.

The chain manufacturers of the United States met in Pittsburg on Tuesday to discuss a proposition to form a combination. Eleven firms were represented at the meeting. Action on the proposed combination was deferred. After a lengthy review of the situation the manufacturers agreed to take up the matter and meet again in about a month in New York, the time and place to be designated by John B. Schmidt, of York, Pa., president of the meeting, and William Kelly, of Louisville, Ky. It was decided at the meeting to advance the price of 3/4-in. chain, the standard size, \$5 a ton. This will make the standard size worth 4 1/2c. a pound instead of 4 1/4c., as heretofore.

The pipe mills are all sold up for from 4 to 6 months ahead, and high prices are paid jobbers who can make prompt shipments. Merchant pipe, black or galvanized, is 50 and 10% off. Pipe for prompt shipment is sold at 50% off. There are three pipe mills in this vicinity that are not in the recently formed combination known as the National Tube Company. They are the Pittsburg Tube Works; Spang, Chalfant & Co., and A. M. Byers & Co. The Spang mill is idle on account of a strike, the company refusing to sign the Amalgamated Association wage scale. An offer is being made to puddlers to work at \$1 a ton above the union prices, and strong efforts are being made to get the plant in operation. The other 2 mills are in full operation. New tube works are to be built at Wilson, near Pittsburg. The names of the projectors are not made public. It is to be called the Monongahela Tube Company. Application for a charter will be made to the Governor of Pennsylvania on Thursday, August 10th.

The Carnegie Steel Company has completed 10 new open-hearth furnaces and put them in operation on Tuesday. Two plate mills were also started and 2 more are almost completed. It was necessary to increase the capacity at the big Homestead Steel plant on account of the large contract with the Pressed Steel Car Company. This contract calls for from 20,000 to 30,000 tons of steel plate a month and continues for 10 years. In order to supply these plates the Carnegie Company spent about \$3,000,000 in improvements and extensions to the works. The new plant of the Pressed Steel Car Company, at McKee's Rocks, near Pittsburg, is almost completed. It will make the fourth large shop owned by the company.

Pig Iron.—The demand is still heavy and the supply short. The sales of Bessemer made during the week were all at an advance in price. Prices at Pittsburg are \$20.75@21 a ton, and in the Valley 75c. less. Gray forge is \$17.50, and No. 2 foundry \$19.

All furnaces producing Bessemer iron are making good runs, but these are so far behind in orders that they will not catch up this year.

Steel Billets.—The quotations for Bessemer are about the same as last week; prices, \$33@34 a ton. In open-hearth billets a great scarcity is reported and prices have advanced \$2 a ton, being now \$43@45. Manufacturers are using what they make themselves and have but little to spare.

Ferro-manganese.—To-day 80% ferro is quoted at \$85@100, the higher figure being for spot delivery.

Iron and Steel Bars.—The demand for both iron and steel bars is very heavy. Steel bars are 2.10@2.25c., the same as last week. Common iron bars are 1.90@2c. at Valley mills.

Structural Material.—Beams and channels up to 15-in. are quoted at 2c.; 18, 20 and 24-in., 2.10c.; universal mill plates, 2.25c.

Sheets.—Black sheets, No. 27 gauge, are quoted at \$3.05@3.15 per 100 lbs.; No. 28 gauge, \$3.10@3.25; galvanized, 70% off.

Tin-plate.—All the mills are running full. The price has been advanced by the American Tin-plate Company from \$3.87 a box of 100-lb. coke plates to \$4.25. This is the base rate of the Amalgamated Association wage scale. The workers were granted an advance of 15% over last year's wages and are to receive an additional advance of 2% with every 10c. advance in price over \$4.25 a box.

Wire.—Smooth wire in car load lots is now quoted at 2.50c., and galvanized at 3.25c. Wire nails are now quoted at \$2.60 a keg in car load lots and \$2.75 a keg in less than car load lots.

Cartagena, Spain. July 8.

(Special Report of Barrington & Holt.)

Iron and Manganiferous Ores.—The number of cargoes shipped in the month of June was 21, 11 of these being dry ore and 10 manganiferous. In the early part of the month the Cartagena District was visited by very heavy storms of wind and rain, the latter doing much damage to the mines, many of which had some of their workings flooded. Rates of freight have continued firm, but are now somewhat easier. There is a

considerable feeling of uneasiness among the exporters and buyers of iron ore, owing to the proposed export duty on these ores, equal to 80 centimos of a peseta per ton of 1,000 kilos. It is further proposed to considerably increase the surface rights and production tax on the output of iron ore at the mines. If the project is carried out, it will of course mean an increased price to the buyer, as neither miners nor exporters have any margin whereby to cover this large tax, which may be estimated on dry iron ore as about 30% of its value at the pit's mouth. Owing to this position sellers decline to quote at the moment for fresh contracts for forward delivery, or only conditionally upon buyers paying any new tax or dues that may be levied.

We quote iron ores per ton, as follows: Ordinary 50% Portman ore, 6s. 3d. @ 6s. 9d.; special low phosphorus, 6s. 7d. @ 6s. 11d.; extra quality low phosphorus, 7s. 3d.; special iron ore, 7s. 9d.; specular iron ore, 9s. 9d. For manganeseiferous ores we quote, per ton, as follows: No. 1, containing 20% iron and 20% manganese, 15s.; No. 1 B, 25% iron and 17% manganese, 12s.; No. 2, 30% iron and 15% manganese, 11s. 6d.; No. 3, 35% iron and 12% manganese, 9s. 10d. Any new tax that may be levied must be paid by buyers.

New York, July 21.

There is little change in the market. Small orders continue numerous, prices apparently having little effect on the demand. Some structural orders, however, are held back for the present; doubtless they will come on the market later.

Export trade is active. There are numerous inquiries in the market calling for large lots of manufactured iron goods for early shipment to Japan. Among these are one for 5,000 tons of steel rails, another for about 80,000 feet of wrought iron pipe, and still another for two slide valve engines and three large pumps.

Pig Iron.—Prices are firm, deliveries slow and offerings moderate. We quote, for Northern brands at tidewater: No. 1 X foundry, \$21; No. 2, \$20. Southern brands, New York delivery: No. 1 foundry, \$21; No. 2 foundry, \$20; No. 1 soft, \$20; No. 2 soft, \$19; No. 3, \$18.

Warrant Irons are higher. Alabama No. 2 is \$14.50; No. 3, \$13.50; No. 4 and gray forge are steady at \$12.75.

Bar Iron.—The market is good and prices are higher. We quote refined iron 2.10@2.15c. in large lots on dock, and common 2c.

Plate.—The local demand continues moderate, but prices are very firm. We quote large lots at tidewater: Tank, 1/4 in. and heavier, 2.65@2.75c.; tank, 3-16 in., 2.75@2.85c.; shell, 2.75@2.85c.; flange, 2.85@2.95c.; marine, 2.95@3c.; firebox, 3@3.10c.; universals, 2.60c. Higher prices will be asked for any but the best orders.

Steel Rails and Rail Fastenings.—Rails are quoted as nominally \$29 for standard sections f. o. b. mills. Small rails are nominally quoted: 12-lb., \$34; 16-lb., \$34; 20-lb., \$34; 30-lb., \$32; 40-lb. to standard, \$30, with the usual advance for small orders. Angle bars are 1.80c.; spikes, 1.95c., and bolts, 2.25c.

Structural Material.—The call for structural material continues good and prices are higher. We quote for large lots at tide-water: Beams, 15-in., 2.25c.; tees, 2.25@2.35c.; channels, 2.25c.; angles, 2.20@2.30c.

Nails.—Demand is active. The increase in price does not seem to check buying. Wire nails are \$2.75 for large lots on dock. Cut nails have been advanced also, and are \$2.45@2.50.

Scrap.—There is a demand for good scrap, but the market is almost bare, and most dealers' yards have an empty look.

METAL MARKET.

NEW YORK, July 21, 1899.

Gold and Silver.

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

	June.		Year.	
	1898.	1899.	1898.	1899.
GOLD Exports	\$375,529	\$20,908,377	\$6,226,192	\$27,203,119
Imports	3,330,412	3,105,686	92,372,070	23,050,019
Excess I.	\$2,955,083	E.\$17,802,641	I.\$86,145,888	E.\$4,153,100
SILVER Exports	4,166,650	3,843,099	24,607,397	27,569,913
Imports	2,023,803	1,917,215	12,893,039	13,921,403
Excess E.	\$2,132,847	E.\$1,925,884	E.\$11,714,358	E.\$13,648,515

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

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars	\$.43 1/2	\$.50
Peruvian soles and Chilean pesos	.43 1/2	.46
Victoria sovereigns	4.86	4.89
Twenty francs	3.88	3.92
Twenty marks	4.78	4.83
Spanish 25 pesetas	4.78	4.84

Gold and Silver Exports and Imports, New York

For the week ending July 19th, 1899, and for years from January 1st, 1899, 1898, 1897, 1896.

Period	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	\$6,200	\$102,958	\$592,935	\$79,086	I. \$417,091
1899..	11,424,967	7,371,726	15,492,017	1,873,452	E. 17,671,806
1898..	4,334,463	69,018,025	18,559,573	1,893,956	I. 47,817,945
1897..	14,968,564	1,985,472	22,817,041	1,571,566	E. 34,228,567
1896..	40,210,798	17,369,180	21,251,063	1,361,711	E. 42,830,990

The gold exported for the week went to South America and the West Indies, and the silver to London. Of the gold imported \$65,466 came from England, and the remainder from Germany and Central America; the silver was from the same sources.

The United States Assay Office in New York reports the total receipts of silver at 101,000 oz. for the week.

Average Prices of Silver per oz. Troy.

Month.	1899.		1898.		1897.	
	London Pence.	N. Y. Cents.	London Pence.	N. Y. Cents.	London Pence.	N. Y. Cents.
January..	27.42	59.36	25.29	56.77	29.74	64.79
February..	27.44	59.42	25.89	56.07	29.68	64.67
March.....	27.48	59.64	25.47	54.90	28.96	63.06
April.....	27.65	60.10	25.95	56.02	28.36	61.85
May.....	28.15	61.23	26.31	56.98	27.86	60.42
June.....	27.77	60.43	27.09	58.61	27.58	60.10
July.....			27.32	59.06	27.36	59.61
August.....			27.48	59.54	24.93	54.19
September..			28.05	60.68	25.66	55.74
October.....			27.90	60.42	26.77	57.57
November...			27.93	60.60	26.87	57.93
December..			27.45	59.42	26.83	58.01
Year.....			26.76	58.26	27.55	59.79

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

Average Prices of Metals per lb., New York

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1899.	1898.	1899.	1898.	1899.	1898.	1899.	1898.
Jan.....	14.75	10.99	22.48	13.87	4.18	3.65	5.24	3.96
Feb.....	18.00	11.28	24.20	14.08	4.49	3.71	6.28	4.04
March.....	17.54	11.93	23.82	14.38	4.37	3.72	6.31	4.25
April.....	18.43	12.14	24.98	14.60	4.31	3.63	6.67	4.26
May.....	18.25	12.09	25.76	15.22	4.44	3.64	6.88	4.27
June.....	17.93	11.89	25.85	15.22	4.42 1/2	3.82	5.98	4.77
July.....		11.63		15.60		3.95		4.66
August.....		11.89		16.23		4.00		4.58
Sept.....		12.31		16.03		3.99		4.67
October.....		12.41		17.42		3.78		4.98
Nov.....		12.86		18.20		3.70		5.29
Dec.....		12.93		18.30		3.76		5.10
Year.....		12.03		15.70		3.78		4.87

The price given in the table is for Lake Copper. The average price of electrolytic copper in January was 14.26c.; in February it was 17.02c.; in March, 16.35c.; in April, 17.13c.; in May, 17.21c.; in June, 16.93c.

Financial Notes of the Week.

The condition of general business varies very little, and much greater activity than is usual for the summer season continues to be the rule. The crop reports are fairly favorable. In the East the crops have been injured by long continued drought, but away from the seaboard there has been rain enough, and the great staple products are not affected. The speculative markets have been checked by dearer money, and it looks as if this condition would last for some time, as the season has come when there is usually a heavy demand from the interior for currency.

In the European money markets rates are generally high, and there is a strong demand. At the rates which are now given for money in London, Paris, and especially in Berlin, it is quite possible that there may be further shipments of gold from this side.

The silver market continued dull and drooping until close of the week, when the prospect of a French tender for next week imparted a stronger tendency. The market closes firm at 27 3/4 d. in London.

The steamer "Kentigem" arrived in Philadelphia this week from the west coast of South America. Included in her cargo was 16,239 sacks of high-grade silver ore and 600 bars of silver bullion. These came from mines in Bolivia, and are the first shipments of the kind received here from that country for treatment.

The statement of the United States Treasury on Thursday, July 20th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date of last week:

	July 13.	July 20.	Changes.
Gold	\$246,037,424	\$245,021,258	D. \$1,016,166
Silver	4,934,075	5,304,332	I. 370,257
Legal tenders	15,184,700	15,062,881	D. 121,819
Treas. notes, etc.	995,147	727,578	D. 267,569
Totals	\$267,151,346	\$266,116,649	D. \$1,034,697

Treasury deposits with national banks amounted to \$78,440,620, an increase of \$291,414 during the week.

Imports and Exports of Metals.

Port.	Week, July 19.		Year, 1899.	
	Expts.	Impts.	Expts.	Impts.
*New York.				
Aluminum.....long tons			277	10
Antimony ore.....		131		855
regulus.....		118		590
Brass.....		2	57	
Chrome ore.....				1,988
Copper, fine.....	1,541	1,034	29,887	12,516
matte.....			556	563
ore.....				10,399
ash.....			20	152
sulphate.....			11,403	
other.....				30
Cop-nickel matte.....				53
Ferro-mangan'se.....				121
Iron ore.....				50
" pig, bar, rod.....		1125	3,616	1,232
" pipe.....	482		18,838	
" plates, sheets.....		115	712	15
other.....			1,115	
Lead.....	825	1,500	30,938	28,962
Manganese ore.....				3,281
Metals, old scrap.....	547	1183	2,316	1,709
Composition.....			4,857	
Nails.....	111		11,028	
Nickel.....	60		1,072	723
ore.....				4,020
§ Rail'd material.....		1110	5,821	2,263
Rails, old.....			12,215	
Spiegeleisen.....				292
Steel bars, plates.....	211	1241	30,376	9,693
" rails.....	386		33,963	155
" hoops.....			486	
" wire.....	269		20,768	54
not spec'd.....	443	1289	9,514	1,518
Tin.....		400		15,168
" dross or ashes.....			60	10,439
" and black plates.....		11,122		252
Zinc.....			272	85
" dross.....		91	682	
" ashes, skim.....		37	1,557	
ore.....			3,006	
oxide.....		41	2,348	
†Baltimore.				
Alumina.....bags				3,479
Antimony regulus.....casks		77		252
Chrome Ore.....long tons			11	
Copper, fine.....	401		19,753	
matte.....				
sulphate.....	35		1,482	
pipe.....			100	
Ferro-manganese.....				1,737
Ferro-silicon.....				184
Iron pig, bar, etc.....				808
" ore.....			14,736	93,154
" pyrites.....		3,050		33,711
" pipe.....	49		2,828	
Manganese ore.....		984		20,384
Metals, scrap.....			4,413	14
Nails.....			455	
Pipe, iron & steel.....			3,526	
Spiegeleisen.....				843
Steel, bars, p'ces.....	228		24,808	56
" wire.....	32		595	231
" rails.....	1,144		32,889	
not specified.....			1,839	4
Tin.....		51		563
" dross.....				25
" and black plates.....		36		1,925
Zinc.....				5
" dross.....		20		172
" skimmings.....				131
oxide.....				
*Philadelphia.				
Antimony.....long tons				10
Chrome ore.....		1150		1,520
Copper ore.....				26,354
old.....				11
Ferro-manganese.....				942
Ferro-silicon.....		1160		160
Iron, pig.....				675
" ore.....				81,675
" pyrites.....		12,150		2,150
Manganese ore.....				32,153
Spiegeleisen.....				1,350
in.....				700
" and black plates.....		140		947
Zinc dust.....				15
ore.....				3,093

Total United States, \$§

Articles.	May.		Jan.—May.	
	Expts.	Impts.	Expts.	Impts.
Antimony.....long tons		70		528
ore.....		249		714
Copper fine.....	5,879	2,919	41,230	7,935
su phate.....	1,412		9,376	
Iron, pig & bar.....	24,589	2,541	132,538	15,671
ore.....	890	37,426	1,481	169,140
" rails.....	49		4,924	
Iron & steel plates.....	5,558	162	30,585	537
wire.....	12,107	274	47,794	1,177
Steel, billets.....	9,201			

The statement of the New York banks—including the 68 banks represented in the Clearing House—for the week ending July 15th, gives the following totals, comparison being made with the corresponding weeks in 1898 and 1897:

	1897.	1898.	1899.
Loans and discounts.....	\$533,766,600	\$633,675,300	\$776,672,200
Deposits	607,682,500	758,068,000	886,906,800
Circulation	13,782,900	14,620,400	13,626,000
Reserve:			
Specie	90,505,200	180,498,700	176,318,200
Legal tenders.....	102,776,80	62,363,600	56,107,000
Total reserve.....	\$198,282,000	\$242,862,300	\$232,425,200
Legal requirements.....	151,920,625	189,517,000	221,726,450
Balance, surplus.....	\$41,361,375	\$53,345,300	\$10,698,750

Changes for the week, this year, were increases of \$1,800,000 in circulation, \$2,327,400 in legal tenders, and \$5,636,275 in surplus reserve; decreases of \$17,180.7 in loans and discounts, \$15,273,100 in deposits, and \$509,400 in specie.

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

Banks.	1898.		1899.	
	Gold.	Silver.	Gold.	Silver.
N. Y. Assn.....	\$180,498,700	\$176,318,200		
England	181,733,135	161,100,330		
France	374,422,925	\$247,244,355	381,137,005	\$241,330,755
Germany	133,540,000	68,740,000	132,410,000	68,205,000
Aus.-Hun.	174,410,000	63,135,000	181,570,000	63,670,000
Spain	50,280,000	23,885,000	64,800,000	67,300,000
Neth'lnds	16,705,000	34,705,000	15,825,000	30,575,000
Italy	74,555,000	9,650,000	75,535,000	10,010,000
Russia	556,790,000	22,065,000	478,250,000	27,155,000

The returns of the Associated Banks of New York are of date July 15th, and the others are of date July 13th, 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 coin only.

Shipments of silver from London to the East for the week ending July 6th, 1899, are reported by Messrs. Pixley & Abell's circular as follows:

	1898.	1899.	Changes.
India	£2,935,040	£2,520,400	D. £414,640
China	354,140	740,353	I. 386,213
The Straits	138,561	41,046	D. 97,516
Totals	£3,427,742	£3,301,799	D. £125,943

Arrivals for the week, this year, were £140,000 in bar silver from New York, £19,000 from the West Indies, and £7,000 from Australia; total, £166,000. Shipments were £93,500 in bar silver to Bombay, £72,500 to Shanghai, £45,000 to Calcutta, and £26,557 to Hong Kong; total, £237,557.

Indian exchange has been less active, but the price of Council bills in London was maintained at 16d. per rupee. The report of the Commission has had no present effect on exchange.

Receipts of specie from Mexico at San Francisco, principally by rail, for the quarter ending June 30th, compare as follows:

	1898.	1899.
Silver dollars.....	\$731,106	\$153,293
Silver bullion.....	153,943	194,449
Gold bullion.....	206,886	216,054
Total	\$1,091,935	\$563,796

The small amount of dollars received in the past quarter this year is noteworthy. It is known that the China market has not favored a large movement, and holders in Mexico have been able to do better with their coin in that country than in shipping same to China. For the first half of the year these imports compare as follows:

	1898.	1899.
Silver dollars.....	\$1,153,471	\$208,913
Silver bullion.....	302,792	450,290
Gold bullion.....	369,817	439,465
Total	\$1,826,080	\$1,098,668

In the same time in 1897 the total was \$2,817,508, including \$2,094,098 in dollars.

Shipments of specie by water from San Francisco in June included \$355,360 gold and \$171,794 silver. For the six months ending June 30th the shipments were as follows:

	Gold.	Silver.	Totals.
Hongkong	20,935	\$1,428,673	\$1,449,608
Shanghai	598,442		598,442
Japan	200		200
New Zealand.....	2,500		2,500
South Sea Islands.....	3,937	1,000	4,937
Central America.....	4,636	5,964	10,600
Mexico	375	27,000	27,375
Total, foreign.....	\$32,383	\$2,056,279	\$2,088,662
Honolulu	1,151,370	102,500	1,253,870
New York.....	\$7,889	46,812	\$54,701
Totals	\$9,371,642	\$2,205,591	\$11,577,233
Totals, 1898.....	\$19,673,429	\$3,519,403	\$23,192,832

The descriptions shipped were: Gold bars, \$9,000; coin, \$9,364,848; dust, \$794; total gold, \$9,374,642. Silver bars, \$1,781,283; coin, \$152,464; South American coin, \$37,800; Mexican dollars, \$381,840; total silver, \$2,352,887.

Other Metals.

Daily Prices of Metals in New York.

July.	Sterling Exchange.	Silver.			Copper.			Tin.	Lead.	Spelter.
		Fine oz. Cts.	London Price	Lake, cts. @ lb.	Electrolytic, cts. @ lb.	London Standard, cts. @ lb.	cts.			
15	4.87 1/4	60	27 1/2	18 1/2	17 1/2	.....	29 1/2	4.55	5.87 1/2
17	4.87 1/4	60 1/4	27 3/4	18 1/2	17 1/2	76 7 1/2	29 1/2	4.55	5.87 1/2	
18	4.87 1/4	60 1/4	27 3/4	18 1/2	17 1/2	76 7 1/2	29 1/2	4.52 1/2	5.87 1/2	
19	4.87 1/4	60 1/4	27 3/4	18 1/2	17 1/2	76 5 0	29 1/2	4.52 1/2	5.80	
20	4.87 1/4	60 1/4	27 1/2	18 1/2	17 1/2	75 17 6	29 1/2	4.52 1/2	5.80	
21	4.87 1/4	60 3/4	27 1/2	18 1/2	17 1/2	76 5 0	29 1/2	4.52 1/2	5.87 1/2	

The quotations given for electrolytic copper are for cakes, ingots and wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The market continues strong. Various transactions are reported, and we find that for delivery within 60 days copper has become exceedingly scarce. For later deliveries full prices are asked. It is noteworthy that the comparatively high prices have not developed any selling pressure. On the contrary, producers display much confidence. From Europe we learn that consumption is improving, but we do not find that as yet much business has been done for export in this country, for the reason stated in our last issue, namely, that the Europeans are not yet ready to pay the prices asked.

In Lake copper, business has been done at 18 1/2c. but we understand that at the close none is obtainable at this figure, and 18 1/2c. is asked. Electrolytic copper, in cakes, wirebars and ingots is held for 17@17 1/2c.; in cathodes for 16 1/2@16 3/4c. Casting copper is firm at 17@17 1/2c.

The market for speculative sorts in London has again suffered under the adverse political and financial influences. It closed last week at £77, opened this week at £76 10s., and sagged off slowly to £75 17s. 6d. It closed at £76 5s. for spot. £76 15s. for three months.

Statistics for the first half of July show a decrease of 500 tons. Refined and manufactured sorts we quote: English tough, £79@£79 10s.; best selected, £80 15s.@£81 5s.; strong sheets, £87 10s.@£88 10s.; India sheets, £84 15s.@£85 5s.; yellow metal, 7d.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the producing companies, was as follows for June and the six months ending June 30th, stated in long tons (2,240 lbs.) of fine copper:

	June.	1898.	1899.	1898.	1899.
U. S., reporting mines.....	17,940	19,710	112,687	111,987	
U. S., outside sources.....	1,450	2,300	7,800	12,560	
Total United States.....	19,390	22,010	120,487	124,547	
Exports, United States.....	9,556	10,002	68,284	56,562	

The report of European production has not yet been received. The United States production in June was 72 tons less than in May, but 2,620 tons greater than in June, 1898. For the six months the total production shows an increase of 4,000 tons, or 3.3%, over last year. This was entirely in the copper from outside sources, the reporting mines showing a decrease of 700 tons, or 0.6%. There was a decrease of 11,722 tons, or 17.2%, in the exports this year. The copper exported was 45.4% of the total production, against 56.7% last year.

Tin.—The market has again been very strong and advancing. Supplies from the East continue scant, and consumption, the world over, unabated. The London market, which closed last week at £131 12s. 6d., opened 10s. higher at £132 2s. 6d., and advanced on Tuesday to £133, but that day it reacted 30s., recovering 20s. the next day to £132 10s. It closes at the best £134 2s. 6d. for spot, and 5s. higher for three months. Prices here have followed those quoted in London, and at the close the metal is held for 29 1/2c.

Lead.—The strike situation in Colorado has been simplified to the extent that the Supreme Court has declared unconstitutional the Eight-hour Law. The smelters are now in negotiation with the men to effect a settlement. It is, however, feared that the latter will be obdurate and considerable time elapse before all the works are again in operation. Consumption continues very large and stocks are much depleted. We have to quote lead in New York at 4.52 1/2@4.55c. In the West the prices are 4.50c.St. Louis, 4.55c. Chicago.

The foreign market has been firm. Spanish lead is quoted at £14 8s. 9d@£14 10s.; English lead at £14 13s. 9d.@£14 15s.

Spanish Lead Market.—We are advised by Messrs. Barrington & Holt, of Cartagena, Spain, that the average price of lead in June was 71.75 reales per qtl., or £12 17s. per long ton, f. o. b. Cartagena, the average exchange being 31.17 pesetas to the £1, and silver, 13.81 reales per oz. Weekly averages were: June 7th, lead, 73.25 reales per qtl. (£12 16s. 3d. per long ton), silver, 14.25 reales per oz., and exchange, 32 pesetas to £1; June 14th, lead, 71 reales per oz. (£12 17s. 2d. per ton), silver, 13.75 reales, and exchange, 30.92 pesetas; June 21st, lead, 70.75 reales per qtl. (£12 17s. 10d. per ton), silver, 13.50 reales per oz., and exchange, 30.75 pesetas; June 28th, lead, 72 reales per qtl. (£13 per ton), silver, 13.75 reales per

oz., and exchange, 21.02 pesetas to £1. Exports of lead in June were 2,093,705 kilos to Newcastle; 1,476,643 kilos to London; 1,310,166 kilos to Marseilles, 215,781 kilos to Coueron, France; 200,000 kilos to Antwerp, and 150,000 kilos to Genoa; total, 5,446,295 kilos. Other exports were 4,530,000 kilos zinc blende, and 400,000 kilos calamine ore to Antwerp, 100,000 kilos calamine ore to Rotterdam, 10,000 kilos lead ore to Genoa, and 1,228 kilos silver to Marseilles.

Spelter.—The market has been quiet this week, and little business has been transacted. We understand that in some quarters concessions were made to secure orders. We quote the metal at East St. Louis at 5 1/2c. and New York at 5 1/2c.

The European market remains unchanged at £25 15s. for good ordinaries, with specials 5s higher.

Antimony is unchanged. Cookson's is held for 10 1/2c.; Hallett's, "C" and U. S. Star for 10c.

Nickel continues on unchanged lines, and no alteration in prices can be reported. We quote for ton lots, 33@36c. per lb., and for smaller orders 35 1/2@38c. London prices are 14@16d. per lb., according to size of order.

Platinum.—Demand is active and prices continue high. For large lots \$15.50 per ounce is now quoted in New York, for smaller orders, \$16@17. The London quotation is 62@64s. an ounce.

Quicksilver.—The New York quotation remains unchanged at \$45 per flask. The London price is also unchanged at £8 7s. 6d., with the same quotation given from second hands.

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

Aluminum.	Per lb.	Bismuth	Per lb.
No. 1, 99% ingots.....	35@37c.	Magnesium.....	\$1.45@1.50
No. 2, 99% ingots	31@34c.	Phosphorus.....	\$2.75@3
Rolled sheets	38c. up	Phosphorus.....	40@50c.
Alum.-bronzes.....	20@23c.	Tungsten	70c.
Nickel-alum	33@39c.	Ferro-tungsten, 60%.	60c.

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

LATE NEWS.

Nicolas de Danilowski, managing director of the Pontiloff Iron Works, of St. Petersburg, Russia, is now inspecting the large steel works in the United States. He is also to visit ship-building plants, ordnance shops, etc.

A New York syndicate, represented by Thomas Davis of Scranton, Pa., has executed a lease with Henry Zeigler of Dupont, Pa., for 300 acres of coal land at Smithville, Pa., valued at \$1,500,000. The tract contains four veins of coal, aggregating 24 ft. in thickness. A breaker, with a capacity of 1,000 tons a day, is to be erected.

The Alabama Consolidated Coal & Iron Company, which was incorporated in New Jersey, July 19th, with a capital stock of \$5,000,000, is a consolidation of four iron and coal properties in Northern Alabama. The companies included are properties which have been in operation for some time, among them being two large furnaces.

The Homestake Mining Company of South Dakota has filed in San Francisco, Cal., certificate of the increase of its capital stock from \$12,500,000 to \$21,000,000. The object is to purchase all the properties of the Highland Mining Company, the Black Hills Canal and Water Company, and the Black Hills & Fort Pierre Railroad Company, all in South Dakota. The new capitalization will be divided into 125,000 shares of \$100 each, par value.

A number of substantial orders for Denmark, Sweden and Norway have lately been placed here. Among them are mentioned eight locomotives, bought from the Schenectady Locomotive Works; 165 various sized lathes, purchased from the Flather Machine Company, of Nashua, N. H.; two large lathes from the Niles Tool Works Company, and two electric traveling cranes from the Morgan Engineering Works.

Advices just received from Manchuria say that the Russian authorities have caused Chinese officials to stop working some gold mines that employ 2,000 men, because they are going to take possession of them. They also took some coal mines north of Moukden from Chinese. They are also trying to secure some iron mines. All these mines are near the Siberian Railway extension. This again proves that the Russians are determined to hold Manchuria and make the most of its resources.

(From Our Special Correspondent.)

The San Juan Gold Mining Company, in San Miguel County, Colorado, is having the plans made for a 150-ton cyanide plant, to be placed at the Bessie Mine, near Telluride. It will be constructed under the supervision of Mr. E. C. Engelhardt, who will be the superintendent. This gentleman has lately been in charge of Mr. Blaisdell's plant near Yuma, Arizona, and refused flattering offers to remain there, preferring to live farther north.

MINING STOCKS.

Complete quotations will be found on pages 116, 117 and 118 of mining stocks listed and dealt in at:

Baltimore,	Philadelphia,	Paris,
Boston,	St. Louis,	Rossland,
Colo. Springs,	Salt Lake,	Shanghai,
Denver,	San Francisco,	Toronto,
New York,	London,	Valparaiso,
	Mexico,	

New York. July 21.

On the exchanges the higher-priced securities were of most interest. Anaconda fluctuated between \$55 and \$57½, the largest dealings taking place around \$55½. On the curb Amalgamated Copper attracted much attention, and early in the week some buying was done on Boston account. Last Saturday the stock advanced sharply to \$99, with none offering below \$99½, which is ½ point less than the previous day, when several hundred shares were sold at par. Soon the market was flooded with stock, forcing the price down to \$97½ bid. No inside support was given the stock at these figures, although the transactions on Friday last amounted to about 2,500 shares. On July 17th rumors were circulated that the stock would be listed on the Exchange early in August, and this had the effect of raising the market a fraction. On July 18th 200 shares changed hands at \$98½, when the price again declined to \$97½, and a day later the stock was very quiet with bids at \$97½ and sellers at \$98. British Columbia Copper was quiet at \$10¼@11½, and Tennessee at \$19@20½.

American Smelting and Refining Company shares advanced, owing partly to the decision of the Colorado Supreme Court which declared the 8-hour law unconstitutional. A favorable agreement with the smelter employees is expected soon. The common shares rose from \$35½@36¼ on Friday last to \$37¼@38 on Thursday of this week, while the preferred advanced from \$82½@83½ to \$84½@85½.

In the California section Quicksilver preferred brought \$10, and Standard Consolidated was steady at \$2.50. The net value of the bullion yield of the Standard in June was \$32,506.

The Colorado shares showed few transactions. Breece advanced from \$1.60 to \$2.10, and at the close is strong around \$2. Elkton Consolidated touched 85c., but soon recovered to 91c. Portland was \$1.80@1.90. The report that Portland has been sold to English capitalists is denied. High Five pays its first dividend of 1c. per share (\$10,000) on July 25th; the stock sold at 32½@42½c., and closes at 37c.

In the Comstock group, Consolidated California & Virginia brought \$1.85@1.95, as against \$1.90@2.25 last week.

The National Salt Company declared its first quarterly dividend, amounting to 1¼% on the preferred stock, payable July 24th.

Other dividends declared are Bethlehem Iron, first quarterly of 1½%, payable August 1st; Cambria Steel Company, 60c. per share, payable August 15th; International Steam Pump Company, 1½% on preferred stock, payable August 1st; American Tin-Plate Company, regular quarterly of 1¼% on preferred stock, payable July 29th.

Boston. July 20.

(From Our Special Correspondent.)

The boom is not with us, in spite of the many flattering invitations extended to it, and it looks very much as if the public would resist all inducements to come into the market until the holiday season is over. The hot weather, the general conviction that there is nothing in copper stocks at present, a little distrust of the combination tactics in the market and tight money have combined to keep matters quiet. These do not make a boom market, nor are they likely to do so. The announcement that Mr. Lawson is preparing another manifesto is of itself quite enough to send people out of town for a rest.

Prices have been fair, but mainly on inside buying. The only special feature has been Boston & Montana, which was bid up considerably early in the week, but dropped after the dividend had been declared. A little flurry in 1 or 2 of the low-priced stocks served to pass away the time among the brokers.

Otherwise it has been a narrow market, though not an especially weak one.

Calumet & Hecla was quoted at \$800; Tamarack, \$225; Quincy, \$170; Osceola, \$88; Baltic, \$33; Atlantic, \$31; Wolverine, \$46; Winona, \$14. Of the Amalgamated Group, Boston & Montana brought \$367; Butte & Boston, \$78; Arcadian, \$65. Amalgamated stock sold at about \$98.

The gold stocks were a little more in demand. North American Gold Dredging sold for \$35; Santa Ysabel, \$13; Melones, \$12½; Guanajuato—the new Mexican stock—at \$4.

It is curious how carefully the Boston papers have avoided comment on Governor Murphy's proclamations about Arizona companies. Can it be that the copy was accidentally covered by an advertisement on each and all of the editorial tables?

The Boston & Montana Mining Company declared a quarterly dividend of \$4 and an extra dividend of \$6 per share, \$10 in all, or \$1,500,000, payable August 21st to stockholders of record

July 27th. This makes the third dividend of the current calendar year; \$6 was paid May 29th and \$5 February 20th. For the whole of 1898 \$16 was paid, in 1897 \$12, in 1896 \$10, in 1895 \$7, and in 1894 \$2. Including to-day's declaration the Montana's total of dividend disbursements is \$12,275,000.

The Boston Stock Exchange has admitted to the unlisted department 250,000 shares, par \$10, of the North Star Mines Company. The company is incorporated under New Jersey laws with an authorized capital of 500,000 shares. Officers are: James D. Hague, president; W. L. Bull, vice-president; W. D. Pagan, secretary and treasurer. Directors, A. G. Agnew, W. L. Bull, James D. Hague, W. D. Pagan, Benjamin Strong. The principal office of the company is at 13 Wall street, New York; Boston transfer office, Old Colony Trust Company; Globe National Bank, registrar. The shares are already listed on the New York Stock Exchange.

Salt Lake City, July 15.

(From Our Special Correspondent.)

More brisk trading prevailed during the week, though at a generally lower level. Most dividend payers remain firm, while the speculative list almost from top to bottom has softened. However, there has appeared a manifest willingness to buy, which has been lacking of late, and to this extent there is a marked improvement.

Ajax has weakened further. Anchor is very soft, partly, if not chiefly, because of the trespass suit brought by Daly West. Bullion-Beck paid the \$10,000 dividend to-day; the shares are very strong. Centennial-Eureka has just paid the \$15,000 dividend. The advance in the shares is a hint that the pending transfer will be consummated. Chloride Point is quiet; good reports come from the mill and mines. Daly is in demand. Daly West has softened to \$12. Dexter failed to put on strength since the annual meeting on the 13th. Daisy is dumpish.

Grand Central is again above \$9. Joe Bowers was a lively trader at ruling figures. Lower Mammoth is softer. Mammoth has put on more strength, and President McIntyre is quoted as saying that a \$20,000 monthly dividend may be depended upon. Northern Light supplied a little spice, slumping to 50, later recovering to 56½ bid. Petro, of Bingham, has declared its initial dividend of 2½c., or \$5,000, which is promised monthly hereafter. Silver King sold at \$43. Star Consolidated fails to recover. Another effort is being made for a transfer of the property, provided ¼ of the shares go into the pool. Swansea sold at \$4.

San Francisco. July 15.

(From Our Special Correspondent.)

The market for the Comstock shares has been generally dull and quiet during the week. No other report is to be looked for at this season, and yet some brokers imagine that the public takes an interest in the pumping returns. It does not, and the market is still an inside one, the fluctuations being based chiefly on the small dealings of the chippers, who alone are the interested parties.

Some quotations noted are: Consolidated California & Virginia, \$1.95; Ophir, \$1@1.05; Sierra Nevada, 60@63c.; Mexican, 55c.; Potosi, 45c.; Gould & Curry, 38c.; Hale & Norcross, 36c.; Yellow Jacket, 34c.

The sworn statements of the companies, as filed this week, show that the following companies report having cash on hand July 1st, 1899, with all expenses paid to that date unless otherwise stated: Alta, \$1,269, with \$1,000 due the bank and the balance of an assessment being collected; Andes, \$3,426; Alpha Consolidated, \$1,348; Belcher, \$1,588; Best & Belcher, \$289, with an assessment being collected; Caledonia, \$4,073, with the mine expenses for June unpaid; Bullion, \$3,722, with June bills at the mine unpaid; Confidence, \$4,704, with June expenses at the mine unpaid; Chollar, \$2,507; Consolidated New York, \$271; Consolidated California & Virginia, \$28,881, with June expenses at the mine largely paid and amount unpaid not known; Crown Point, \$8,046, with June expenses at the mine unpaid; Exchequer, \$575; Gould & Curry, \$5,985, with assessment being collected; Hale & Norcross, \$6,021, with bills payable of \$1,755; Julia Consolidated, \$1,081; Justice, \$95, with statement of indebtedness at the mine not yet received and no returns yet obtained from shipment of concentrates; Mexican, \$7,767; Ophir, \$2,855; Overman, \$1,342, with mine expenses for June unpaid; Potosi, \$6,694, with bills payable of \$2,000; Savage, \$2,354; Segregated Belcher, \$2,399; Sierra Nevada, \$3,718; Scorpion, \$13; Syndicate, \$1,677; Standard Consolidated, \$89,155, with mine expenses for June unpaid and bullion returns for that month not received; Union Consolidated, \$4,245; Utah Consolidated, \$1,006.

London, England. July 5.

(From Our Special Correspondent.)

The Transvaal crisis continues to cause much anxiety among city circles. The various political reports coming from South Africa are not by any means conclusive as to the ultimate action of the Transvaal government. In spite of bears' efforts, holders generally stick tight and very

few shares come on the market, so that on the whole the relapse is not very great. On the other hand the large houses do not care to inaugurate any new departure, though they have several new schemes on hand on which Mr. Hammond has just been advising them.

The mining market has been occupied more with West Australians lately, where the increasing output is being used for all it is worth. It may be interesting to note that the series of mining supplements dealing with West Australia that I mentioned a few weeks ago as having been inaugurated by the "Financial Times," have been combined from time to time. Altogether six such supplements have been issued and there is a promise of more to come. These supplements form interesting records of work in progress in West Australia, and though naturally they are of the nature of "write-ups" of the various mines and mills, yet I believe considerable care has been used in choosing only the genuinely miner-like operations for illustration and description. There are a large number of excellent photographs of town and camp scenes, mining and milling plants, well printed and on good paper. I believe the publication of these supplements has had a considerable influence in stirring up interest in West Australian speculation.

The Canadian and American mining section has been the reverse of active this week. The dullness in all the Whitaker Wright companies that I mentioned last week continues, and things are all very flat. No new companies have made their appearance in this or in the copper market. There is too much of the holiday air about, and promoters are not very anxious to get along with new business just now. It must not be supposed, however, that this dullness pervades the city generally, for in industrials, etc., there is much more movement. Home industries of various kinds, such as omnibus companies, spinning and dyeing companies, etc., are asking for money and getting it, while a new Mexican loan is being subscribed and a new British Columbia loan is to come out in a week or so under promising auspices, so that the dullness is chiefly observable in mines.

In my letter which appeared in your issue of May 27th, I mentioned that a new copper company had been introduced to the notice of the public called the Tablas Finana Copper Company, Limited, to work mines in Grenada and Almeria, Spain. I mentioned at the time that these were old properties which the promoters thought would pay with the present price of copper. A reliable correspondent in Spain has since informed me that the mines are way up in the Sierras, in an out of the way district, and the copper value problematical. The proposition is therefore of a highly speculative nature and might be left with advantage with the directors and promoters to develop.

Paris. July 9.

(From Our Special Correspondent.)

The stock market is still overshadowed by political uncertainties; and though the situation has cleared itself to some extent, there are still possibilities in it which make a financier very cautious.

The metallurgical shares, while the most active on the list, do not show important variations, but are inclined to be weaker. The Russian group continues to show the most frequent dealings and the greatest strength. These Russian steel works are indeed having a most prosperous course for the present.

The prices of copper have fluctuated and the copper shares have been rather quiet, without any notable loss in prices, but a general indisposition to buy. The copper stocks, in fact, have really been too high.

Le Nickel remains high, though the expected new uses for the metal in coinage do not develop. The high price of copper is aiding, however. The zinc and lead companies show a general reaction, due rather to the general commercial conditions than to anything in the situation of the metals.

Coal stocks have attracted some attention of late, and generally command good prices, which are justified by the demand for coal and its high prices. These stocks do not lend themselves well to ordinary speculation. The prices of most of them are so high that they are, in a word, unwieldy.

The meeting of the Societe des Phosphates de Gafsa has been held. The last year showed a very large return, owing to the high prices realized for phosphates during the second half of the year. A large part of the stock of this company is owned by the Mokta-el-Haddid Company.

A group of stocks which is attracting much attention lately is that of the companies dealing in electric power. Of those best known the Thomson-Houston sells to-day for 1,490fr.; the Compagnie Generale de Traction at 290 fr., and the Forces Motrices du Rhone at 475 fr. There are great possibilities for the future in this group.

The riots in Belgium have caused rather an uneasy feeling here. The cause of the trouble is well understood—but disorder has a way of spreading unexpectedly at times. Azote.

STOCK QUOTATIONS.

NEW YORK. Table with columns: NAME OF COMPANY, Location, Par. val., July 14, July 15, July 17, July 18, July 19, July 21, Sales.

BOSTON - MASS. Table with columns: NAME OF COMPANY, Par. val., No. of shares, July 13, July 14, July 15, July 17, July 18, July 19, Sales.

COAL AND INDUSTRIAL STOCKS. Table with columns: Am. Sm. & Ref., Am. S & W Co., Central of N. J., Col. Fuel & L., Col. & H. C. & I., Del. & Hud., Federal Steel, National Lead, National Salt, New Central C., N. Y. Ont. & W., Phila. & Read., Standard Oil, Tenn. C. & L., W. P. R.

PHILADELPHIA PA. Table with columns: NAME OF COMPANY, Location, Par. Val., July 13, July 14, July 15, July 17, July 18, July 19, Sales.

VALPARAISO, CHILE. June 3. Table with columns: NAME OF COMPANY, Location, Capital paid, Sh. Val. paid up, Last Div'd. Amt. Date, Prices. Bid., Asked, Last sale.

COLORADO SPRINGS COLO. Table with columns: NAME OF COMPANY, Par. val., July 10, July 11, July 12, July 13, July 14, July 15, Sales.

SPOKANE, WASH. Week July 14. Table with columns: NAME OF COMPANY, Par. val., Prices. H., L., Sales, NAME OF COMPANY, Par. val., Prices. H., L., Sales.

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

Official quotations Spokane Stock Exchange. Total Sales, 76,000 shares.

STOCK QUOTATIONS.

DENVER, COLO.

Table of stock quotations for Denver, Colorado, listing various mining and industrial companies with their share prices and sales figures.

Official Quotations Denver Stock Exchange. Sales: Mines, 25,200 shares; Prospects, including those mentioned, 14,000 shares; Miscellaneous, 50,000 shares; total, 89,200 shares.

SALT LAKE CITY, UTAH.

July 15.

Table of stock quotations for Salt Lake City, Utah, listing various mining and industrial companies with their share prices and sales figures.

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

ROSSLAND, BRITISH COLUMBIA.

July 13.

Table of stock quotations for Rossland, British Columbia, listing various mining and industrial companies with their share prices and sales figures.

*From Our Special Correspondent.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing various mining and industrial companies with their share prices and sales figures.

Official telegraphic quotations of San Francisco Stock Exchange.

TORONTO, CAN.

Table of stock quotations for Toronto, Canada, listing various mining and industrial companies with their share prices and sales figures.

*Official quotations of the Standard and Toronto Mining and Industrial Exchanges. Total shares sold, 143,500.

MEXICO.

July 6.

Table of stock quotations for Mexico, listing various mining and industrial companies with their share prices and sales figures.

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

PARIS.

June 29.

Table of stock quotations for Paris, listing various mining and industrial companies with their share prices and sales figures.

STOCK QUOTATIONS.

Table with columns: LONDON, July 7. Includes columns for NAME OF COMPANY, Country, Authorized capital, Par value, Last dividend, and Quotations (Buyers/Sellers).

Table with columns: MEETINGS. Includes columns for NAME OF COMPANY, Location, Meeting, Date, and Place of Meeting.

Table with columns: ASSESSMENTS. Includes columns for NAME OF COMPANY, Location, Div, Sale, Amt, and OFFICE.

1 Dividend pending. * Ex-Dividend.

DIVIDENDS.

Table with columns: NAME OF CO., Date, Am't, Paid 1899, Grand Total. Lists dividends for various companies like Alamo, Alaska, American Gold, etc.

Vertical list of numbers and names on the right margin, likely a continuation of a list from another page.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table containing two columns: 'DIVIDEND-PAYING MINES' and 'NON-DIVIDEND-PAYING MINES'. Each column lists company names, capital stock, shares, assessments, and dividends. The table is organized into multiple columns with headers for 'Name and Location of Company', 'Capital Stock', 'Shares' (No., Par Val), 'Assessments' (Total Levied, Date and Amount of Last), and 'Dividends' (Total Paid, Date and Amount of Last).

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. This table is corrected up to July 10. Correspondents are requested to forward changes or additions.

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

Table with multiple columns listing various chemicals and minerals such as Abrasives, Calcium, Mercury, Potassium, and others, along with their current prices and units.

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 June 16th. 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 Review of Chemicals and Minerals.