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Table with 3 columns: Article Title, Page, and Page. Includes sections like Witwatersrand Gold Production, Kaolin and China Clay, Technology Quarterly, Beam Process, etc.

The gold production of the Witswatersrand in August was 259,608 ounces, which was a big increase over that of the previous month and is the largest for any single month in the history of the district.

There is a good deal of confusion in the use of the terms "kaolin" and "china clay," which are often employed in technical publications as if they were interchangeable. Kaolin is mineralogically a simple hydrous silicate of aluminum...

At a meeting of the Society of Arts, which is intimately associated with the Massachusetts Institute of Technology in Boston, held May 27th, 1897, the annual report of the Executive Committee was presented...

The Beam Process.

The "Beam process" for treating gold and silver ores is exciting a good deal of attention in the non-technical press of the Rocky Mountains. We are unfamiliar with all the details of this process; indeed, we are not sure that some of them are not secret...

The interest in this "process" among miners and "practical" men is largely, we conceive, a survival of the ancient superstition as to the elusiveness of gold, or certain kinds of it, in the assayer's crucible.

minute. It is useless to point out that the gold left in a vat full of cyanide tailings, we shall say, plus the amount recovered from the zinc boxes, is practically equal to what the original assay showed there was in the ore; or that in the treating 116,519.5 pounds of Russell sulphides, containing 572,544.45 ounces silver by assay, there was a gain in the actual returns of only 2,078.81 ounces over the assay valuation. In the case of the results claimed for the Beam process, and others of the same class, of course the explanation is either gross errors in sampling and assaying, or intentional deception of the ignorant. The ignorant, however, are more apt to learn from experience than from any advice that can be given them.

Development of the Silver-Lead Smelting Industry.

The development of the silver-lead smelting industry in new countries has generally proceeded upon similar lines. At first furnaces were erected at particular mines to smelt the ores of their own production. As more mines were opened in the vicinity the company owning the furnaces purchased ores from them, and as this work became profitable other plants were erected in the same district to carry on a general smelting business. When, however, the country became well opened by railways it proved commonly that the smelting could be carried on more profitably at central points where advantageous supplies of all kinds of ores, fluxes and fuel could be obtained more economically than in an isolated district where, perhaps, only one kind of ore was available, and other conditions were not favorable.

Thus in the United States we have seen [the erection of numerous independent furnaces, then the growth of a smelting industry at such points as Eureka, Nev., and Leadville, Colo., and finally the concentration of the industry at central points like Denver and Pueblo, Colo., Salt Lake City, Utah, and El Paso, Tex. We do not mean to be considered as saying that there is no longer smelting at Leadville, for there is still one large plant in operation there, but a large part of the product of the Leadville mines goes now to the Valley for treatment. This concentration of the silver-lead smelting industry into a few large works at favorable points has led to improvements which have greatly reduced the cost of smelting. Probably the most important of these has been the increase in the size of the furnaces. A modern silver-lead furnace at Denver, Colo., is a radically different affair from those which were built at Eureka, Nev. in 1869, at which time the silver-lead smelting industry in the United States may be considered as having originated; it is, indeed, very different from the furnaces in use in Leadville only 15 years ago, and also from the German furnaces of the present day, the long-established smelting industry of Germany not having experienced anything like the development of our own.

A similar development has taken place in Australia, where, however, the promoters of the industry, which began many years after it was well established in America, had the advantage of the American experience to start with. The greatest producers of silver-lead ore in Australia are the Broken Hill mines, from which nearly all the lead credited to the seven colonies is derived. In 1896 the production of the Broken Hill Proprietary Company alone was nearly 83 per cent. of the total for Australia and New Zealand. In this statement, however, no account is taken of the large amount of lead which is exported from Australia in the form of ores and put upon the market by European smelters.

The Broken Hill mines, vast in their extent, offered a great variety of ores, so that it was possible to carry out smelting near the mines without the restrictions which have hampered similar attempts elsewhere. The silver-lead bullion produced there passed through Port Pirie, where the company maintained an office for its dispatch. When the company began refining and secondary treatment of its products works for this purpose were established at Port Pirie. Then blast furnaces were erected and a part of the Broken Hill ore was shipped there for reduction. It has proved more economical to smelt at Port Pirie than at Broken Hill, and operations are being concentrated gradually at the former place. Four new furnaces of large size were expected to be ready by the end of this month, and four more will probably be completed before the end of the year. When the plant is completed the entire product of the mine will be smelted there.

The Port Pirie works, however, will not be reserved exclusively for Broken Hill ore. On the contrary, arrangements are being made to enter the public market, and a good deal of Western Australian ore will be purchased. It is expected that the Port Pirie works, which are already the most important in Australia, will become one of the greatest metallurgical works of the world. The products turned out by them are of the usual variety. At present they comprise desilverized lead which was formerly sent to London but has lately been sold entirely in the East, especially China and Japan; fine silver which is sold in London but is despatched directly to the East; fine gold which goes to London; antimonial lead, bluestone and copper matte. Besides these the company recently has been exporting zinc ore, for which it reports it has found a ready market.

The Spelter Production.

The production of spelter in the United States for the first six months of the current year, as compiled from reports made to the *Engineering and Mining Journal* by all the producers was 45,965 short tons, of which 4,861 tons were turned out by works in the Eastern and Southern States, 18,125 by works in Illinois and Indiana, and 22,979 tons by works in Kansas and Missouri. These figures show a large increase over the production in the second half of 1896, which in turn was a good deal more than that of the first half of 1896. In addition to this output of spelter there was produced about 10,000 tons of zinc oxide, while 3,256 tons of high grade zinc ore were exported for reduction in Europe. The production of zinc oxide is equivalent to about 8,000 tons of spelter, while the 3,256 tons of ore exported will probably yield about 1,450 tons.

The production of spelter in the United States has been stimulated by the organization of the Cherokee-Lanyon Spelter Company, which consolidated 10 small works, and the subsequent agreement between this company and several of the independent producers. This agreement, does not include the two large works in Illinois. The Illinois works, however, are the only ones in the United States which have rolling mills, and since their product is marketed chiefly in the form of sheet zinc, they are practically out of the spelter market. The agreement among the remaining Western producers, which was effected during the current year, provides for the regulation of their product by allotment, and thereby for the maintenance of prices. This has been accomplished successfully so far, and the price of zinc in the United States has averaged higher in 1897 than at any time since the panic of 1893. The average price in New York in 1896 was 3.94 cents. In January, 1897, it was 3.91 cents, and up to the end of July it increased steadily, the average for July being 4.32 cents.

The producers have not, however, reaped the benefits that the market quotations would indicate, since it is well known that the present production of spelter in the United States is in excess of the domestic requirements, and the Western producers especially have been obliged to market their surplus product abroad at a sacrifice. On September 24th Western spelter was quoted in New York at 4.20 cents, while good ordinaries were sold in London at £17 15s., which at the rate of exchange that day was equivalent to 3.84 cents per pound. Deducting the cost of carriage, etc., the Western exporters were not realizing more than 3.50 cents per pound. Most of this Western spelter is going to Liverpool via Galveston, a rate of 30 cents per 100 pounds having been made by that route.

The exports of zinc from the United States for the first six months of the current year amounted to 9,003 short tons. The total exportation in 1896 was 10,130 tons, which was the largest in the history of this country, but it is evident that the shipments of 1896 will be far exceeded this year. It will be interesting to observe how long the present condition of affairs in the American spelter market will be maintained. We have at present comparatively high prices here, more or less arbitrarily established by a combination of producers which is stimulating the production of concerns outside the combination and forcing the allied producers to market their surplus abroad at a sacrifice. The outlook is for a further large increase in production before the end of the year. One large work is being erected at Iola, Kan., and another is being planned for the same place, while several of the existing works in Kansas and Missouri are making extensions.

As zinc smelting is carried out in the Missouri-Kansas districts, where excellence in the metallurgical practice is not much striven for, new works can be erected with great rapidity and comparatively little outlay of principal. Our resources of zinc ore are very large and the conditions under which the deposits in Missouri and Kansas are exploited are generally favorable. Under the circumstances it is hard to see how any combination can long withstand such a movement in the trade as is now going on.

Although our surplus spelter is being unloaded on Europe, the production of the European works is also increasing this year. Industrial conditions are still in such a satisfactory way, there, however, that the market is bearing the increased supply very well. An interesting feature of the European market at the present time is the considerable quantity of electrolytic zinc which is offered. This is mostly the production of the Chemische Fabrik Führfort in Germany, and Brunner, Mond & Company, who have works at Winnington, near Chester in England. At each of these works the Hoepfner process is used and, besides the zinc, chlorine is recovered for the manufacture of bleaching powder. The zinc production of these works this year, we are reliably informed, will probably amount to about 1,200 metric tons. The Führfort works use a zinky pyrites, which averages only about 10 per cent. zinc, but at the English works ores with as much as 45 per cent. zinc have been successfully treated. The spelter produced is of exceptional purity, containing only about 0.01 per cent. of iron, and sells regularly at a considerable premium. There has also been a small amount of electrolytic spelter from Australia in the market, as we mentioned last week.]

NEW PUBLICATIONS.

DIE KUPFERERZLAGERSTATTEN DER ERDE IN GEOLOGISCHER, GEOGRAPHISCHER UND WIRTSCHAFTLICHER HINSICHT. By C. A. Hering. Berlin, Germany. Published in the *Zeitschrift für das Berg- und Hüttenwesen*. Volume XLV., Part 1, 1897.

This is an exhaustive monograph covering 89 of the large pages of the *Zeitschrift*. It describes the existence of copper in nature and gives a comprehensive list of the copper containing minerals, of which 107 are mentioned. The author then describes the occurrence of all the important deposits of copper ores in each continent, his descriptions being illustrated by numerous geological sections. There are many statistical tables of production, prices, etc., but among them there is nothing which has not been published previously elsewhere. The monograph is compiled from various authorities, which are mentioned in the preface; most of them standard, and although we have detected some inaccuracies, it is on the whole a fairly good summary of the occurrences of copper ore in the world.

UNITED STATES GEOLOGICAL SURVEY. Seventeenth Annual Report, 1895-96. Volume 1. Director's Report and other papers; Volume 2. Economic Geology and Hydrography. By Charles D. Walcott, Director. Washington: Government Printing Office.

Volume 1 contains 1,076 pages; Volume 2 has 864 pages; Volume 3, which deals with the mineral resources of the United States, was published previously. At the present time we can only refer briefly to these huge volumes, which contain many geological monographs of great importance, leaving a critical discussion of them for a subsequent issue. Volume 1 contains the administrative report of the Director of the Survey, which covers 197 pages. The remainder of the volume is devoted to the accompanying papers, which are as follows: "Magnetic Declination in the United States," by Henry Gannett; "A Geological Reconnaissance in Northwestern Oregon," by J. S. Diller; "Further Contributions to the Geology of the Sierra Nevada," by H. W. Turner; "Report on Coal and Lignite of Alaska," by W. H. Dall (this is a very important paper, in view of the prospective mining developments in this Territory); "The Uintaite (Gibsonite) Deposits of Utah," by G. H. Eldridge, to which we have previously referred; "Glacial Brick Clays of Rhode Island and Southeastern Massachusetts," by N. S. Shaler, J. B. Woodworth and C. F. Marbut; Prof. Shaler's name is a guarantee that this is an authoritative exposition of the subject; "The Faunal Relations of the Eocene and Upper Cretaceous on the Pacific Coast," by T. W. Stanton.

Volume 2 contains "The Gold-Quartz Veins of Nevada City and Grass Valley, California," by Waldemar Lindgren. This monograph is one of the masterly treatises on ore deposits like those of Emmons on "Leadville," Becker on "The Quicksilver Deposits of California," and Curtis on "The Silver-Lead Deposits of Eureka, Nevada," which have been published heretofore by the Survey. It covers 262 pages and is magnificently illustrated by maps, geological sections, reproductions of photographs, and rock sections, some of the last in colors being admirable specimens of photo-lithography. The second paper of the book is upon "The Geology of Silver Cliff and the Rosita Hills, Colorado," by Whitman Cross; and the third is upon "The Mines of Custer County, Colo.," by S. F. Emmons, which was published essentially in the Transactions of the American Institute of Mining Engineers, Vol. XXVI. The remaining papers are: "Geologic Section Along the New and Kanawha Rivers in West Virginia," by M. R. Campbell and W. C. Mendenhall; "The Tennessee Phosphates," by C. W. Hayes; "The Underground Water of the Arkansas Valley in Eastern Colorado," by G. K. Gilbert; "Preliminary Report on Artesian Waters of a Portion of the Dakotas," by N. H. Darton; "The Water Resources of Illinois," by Frank Leverett. The papers on hydrography occupy nearly 300 pages of this volume. As to the propriety of publishing technical monographs upon this subject in the reports of the Geological Survey, we have previously expressed our opinion.

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.

Die Bedeutung und Neuere Entwicklung der Flusseisenenerzeugung. Düsseldorf, Germany; published by *Stahl und Eisen* for the Verein Deutsche Eisenhüttenleute. Pages, 64; illustrated.

Magic Stage Illusions and Scientific Diversions, including Trick Photography. Compiled and edited by Albert A. Hopkins. With an introduction by Henry Ridgely Evans. New York: Munn & Co. 1897. Pages, 556; illustrated.

United States Geological Survey: Atlas to accompany Monograph XXVII, on the Marquette Iron-Bearing District of Michigan. By Charles Richard Van Hise and William Shirley Bayley. Washington, D. C.: Government Printing Office. Sheets, 39.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested. Letters should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.

Cyanide Mill Solutions.

Sir: In your issue of August 28th you published a table on "Changes in Cyanide Mill Solutions," which was taken from an article by me in the report of the Colorado School of Mines. As I had no opportunity to correct the proof of the original article, there were certain errors in it

which have been, of course, repeated in the *Engineering and Mining Journal*, and I shall thank you to make the following changes:

	A.	B.	C.	D.
Should be	K C N 0.301%	0.451%	0.555%	0.410% as published.
CYANIDE, Colo., Sept. 24, 1897.	K C N 0.501%	0.491%	0.505%	0.505%

PHILIP ARGALL.

THE ALUMINUM INDUSTRY.

The present output of aluminum in the world is a little less than 10 tons a day, of which about one-fifth is produced in the United States. In Great Britain the British Aluminum Company has its works at the Falls of Foyers in full operation, using about 3,500 H. P. for the production of calcium carbide and aluminum, and making about 6,000 lbs. of the latter a day. According to *Engineering*, however, this company is making preparations for a very much larger output. In France the Société Electro-Metallurgique Française at Le Praz makes 3,600 lbs. a day with 3,000 H. P. by the Heroult process, and the Société Industrielle d'Aluminium at St. Michel makes 5,000 lbs. with 4,000 H. P. by the Hall process. In Switzerland the Aluminum Industrie Aktien Gesellschaft at Neuhäusen makes 5,000 lbs. a day with 4,000 H. P. by the Heroult process. The demand for aluminum in the United States has lately been largely increased by purchases for Japan, and it is not unlikely that Europe will shortly be subjected to an inundation of Japanese art work in this metal.

The seven works at present producing aluminum are using either the Hall or the Heroult process. There have recently been hints in one of the papers devoted to the interests of this metal of a possible combination of the various producing firms for regulation of the output and the price. The current price quoted for the best grade aluminum in England is 33.2c. per lb. A recently published estimate of the cost of production by Roberts-Austen was 27.2c. per lb., of which only 2.2c. is for electrical energy, while 12c. is for the raw material of the manufacture. Becker, the former manager of the aluminum works at St. Michel, has published in his paper, *L'Industrie Electrochimique*, a method of reducing this latter item by substitution of calcined bauxite at 1c. a pound for the refined alumina generally used. Since 2.2 lb. of this calcined bauxite would suffice to produce 1 lb. of the metal, it follows that such a substitution would reduce the cost of aluminum by 9.8c. per pound. The aluminum produced, however, would contain about 6% silicon and iron as impurities; and in order to obtain from it high-grade aluminum, Becker would refine it by a wet process with which he is at present experimenting.

Minet's process for the production of aluminum, which was worked at St. Michel by Messrs. Bernard Brothers, of Paris, from 1890 to 1894, when it was displaced by Hall's process, has recently been further experimented with at St. Michel. The process consists in the electrolysis of a fused mixture of aluminum fluoride and common salt, and it is said that a pressure of only three volts is required to effect the separation of the aluminum from this electrolyte.

Blackmore, of New York, has suggested the use of aluminum sulphide manufactured by a cheapened method, in place of the oxide. Kershaw has examined this proposal, and shown that it would not effect any reduction in the cost of the metal. Blackmore has also described a metallurgical method for producing aluminum which is more promising. Molten iron in shot form is allowed to descend through aluminum sulphide dissolved in molten fluorides of the alkali metals; the aluminum sulphide is robbed of its sulphur by the iron, and molten aluminum collects at the bottom of the vessel. Blackmore states that this process has been tried on an experimental scale with satisfactory results; but no details of the purity of the aluminum obtained by it have yet been published.

The influence of small amounts of carbon upon the physical properties of iron is so remarkable that it is interesting to note that repeated attempts have been made to obtain aluminum with a small percentage of it as carbide. The difficulty has been to get the carbide formed at temperatures below that of the electric arc. Dr. Roman has, however, patented a method for effecting the combination indirectly by means of calcium carbide. The aluminum and calcium carbide are melted together in the required proportions, and in this way the carbon is transferred to the aluminum at a comparatively low temperature. Aluminum containing from 0.1% to 1.5% carbon has been produced by this method, and this is said to possess great elasticity and hardness. Dr. Roman has also patented an alloy of aluminum containing 1% nickel and 1% wolfram, which possess the color of pure aluminum, but has much greater tensile strength and takes a finer polish.

The Gold Production of Tasmania.—In the first half-year of 1897 this amounted to 26,749 oz., which shows a large falling off from 1896, though it is fully up to the average of previous years. Practically the entire output of gold in Tasmania is derived from quartz mines.

Brick Pavement in Chicago.—Four or five years ago brick pavement was unknown in Chicago. To-day it is named as one of the four or five kinds of pavement deserving of consideration, and is put alongside of the granite pavement, and above asphalt and cedar block pavement. Commissioner McGann, in a review of the situation, takes a position against the asphalt and cedar block pavements, saying that when laid down town they would soon need repair or entire replacement. He says that the city engineer found that vitrified brick might be laid for about \$46,000 a mile. He notes that macadam and cedar blocks are rapidly disappearing as pavements, and are being replaced with vitrified brick, granite blocks and sheet asphalt. He calls attention to the paving of Milwaukee avenue from Lake street to Chicago avenue with vitrified brick, and to the severe test to which it will be put, owing to the heavy traffic on that avenue. There is one point about vitrified brick, that it takes kindly to the shoe of a horse and is not slippery like asphalt. The estimated cost of asphalt is about \$54,000 a mile. By the square yard it costs as low as \$1.89 and as high as \$2.25, while vitrified brick costs from \$1.35 to \$1.50 a square yard. The brick pavement which has been down in the vicinity of the Chicago, Burlington & Quincy freight-house is said by competent authority to be still in an excellent state of preservation, although it has for several years been subjected to the severest traffic.

JAPANESE PETROLEUM.

United States Consul-General McIvor has forwarded to the State Department an article from a recent issue of a Japanese periodical, *Chugai Shogyo*, which says that "the demand for kerosene oil in Japan has become very extensive. It is not only used for lighting purposes, but as the originator of motive power. At present about 6,000,000 yen worth of American and Russian oils are imported annually, but the oil districts in Japan—that is to say, the province of Echigo and its environs—are very promising. The oil districts of Japan extend from Hokkaido to Akita on the north, traverse the provinces of Echigo and Shinano, and reach the Totomi Province. The number of machines now in course of fitting up by the various companies in Tosan District is 56, and in addition to these, some 28 more well-boring rigs will be set up within the year, making a total of 84. Hitherto the work had not been earnestly undertaken on account of the easy access to the foreign oil, and the wells have been sunk in an unscientific manner about 600 ft.; but since 1890 American boring machinery and its accessories have been introduced, and at present oil is taken out from the depth of 800 to 2,000 ft. The process of refining has also been greatly improved, so that Japanese oil is now practically the same in quality as foreign petroleum. The principal markets of the Echigo oil are the Hokkaido, Shinano and northern provinces in the mainland."

Consul Monaghan, at Chemnitz, Germany, says that the German Empire is turning its attention to the oil territory of Japan. If, instead of the 80 men who work the wells now, a syndicate similar to that of the Standard Oil Company or Russian Trust could be organized, the product could be multiplied many times. An effort is being made in Tokio to organize such a syndicate. In 1895 Japan imported 2,240,000 hectoliters of petroleum, worth \$5,135,000. The demand is increasing. All eastern Asia offers a market for Japan's oil, hence any and every effort to develop the industry must pay. Recent reports say Formosa has wells. It might be worth while for our manufacturers of oil-well working and refining machinery to look to the Japanese oil districts for markets.

DEVELOPMENT OF THE AMERICAN BLOOMING MILL.

Mr. Ralph Crooker, Jr., in a paper read before the Engineers' Society of Western Pennsylvania recently, described the development of the American blooming mill in a very interesting manner. With the decreasing requirements for rails in this decade, he said, and the ever-increasing demand for steel for other purposes, the three-high mill, except for replacements in rail works, received but little attention. It seemed to be accepted as fact that the two-high mill was best where a wide range of work was to be done. It is for this reason that a mill put down at the Otis works, at Cleveland, to combine the advantages of both systems, requires description, being the last of the modifications of the three-high mill.

In this mill the bottom roll was fixed, the top roll was counterbalanced and worked with screws in the same manner as the top roll of a two-high mill, while the middle roll was thrown up and down between passes as in a three-high plate mill, the collars being made extra wide to support the middle roll, which rested against them when working. The Fritz tables of this mill were 30 ft. long, and the only ones of that type ever fitted to a mill for general bloom and billet work.

With the beginning of the present decade practice had become so established that but one mill may be considered as particularly departing from it. This is the Sparrow's Point mill, which is the only thoroughly American reversing mill which has yet been intended exclusively for rail blooms, and is noticeable chiefly for the great power of its engines, which demonstrated the capacity of this form of mill when properly engaged; and since the installation there has been a marked increase in the power provided for mills of its class.

The three-high blooming mill reached its highest development at about the time that the two-high mill began its career and within 10 years of its inception, and since that time their number has diminished rather than increased, partly because of a reduction in the number of rail-making establishments, in which field it has maintained its pre-eminence, and shows how thoroughly adapted it was to the purpose for which it was intended. With the two-high mill it is a story of progressive development for nearly 20 years. We did not begin with this kind of mill until it had been in use abroad for many years, but we availed ourselves little of foreign experience and followed lines of our own, improving and altering our original designs.

The first table frames made of I-beams were displaced by cast iron, with the bearings cast on; these were followed by built-up wrought-iron and cast-iron frames with separate bearings; the present table frame being a substantial cast-iron bed plate with the bearings bolted on, and, in some instances, water cooled. Table rollers of cast-iron, with wrought axles wrought in, were quickly abandoned for the wrought-iron pipe roller in general use on the three-high mills; then came the steel casting with the necks cast on, and to-day the preference is divided between these and a roller made of a cast-iron body fitted with a forged axle.

The driving of the table rollers began by taking power from the main engine, which was soon changed to the use of a separate engine driving both tables together through a countershaft; and finally the countershaft has been done away with, an engine coupled directly to the line shaft being used for each table. At the same time there has been a steady improvement in the table gearing. In the earlier mills the rollers were divided into groups driven by spurs and idlers; the number of these has been gradually reduced until each separate roller is now driven by a mitre gear, and there is not a single intermediate gear or countershaft of any kind in the best mills.

Manipulators, after a few trials, superseded the old-fashioned hooks and tongs, and since 1890 have been in general use. In this manner alone there seems still to be a difference of opinion, and some half dozen kinds have their advocates.

In the mill itself, we have finally widened the windows of the housings so that rolls may be changed through them; and we now generally use hydraulic counterbalancing for the top roll—methods which have prevailed in other countries from the beginning, but which we reached

rather by evolution than by imitation. For working the roll screws there has been but slight change since hydraulic power took the place of belts and engines, although electric motors are used on some mills requiring extraordinary lift to the top roll.

The early mills were driven by engines with gearing of three or four to one; these ratios have been steadily cut down until gearing has been abandoned, and the latest mills are connected directly to the crank shaft.

It seems as though the work of simplifying the two-high mill has about reached its limit, and, like the three-high mill of 15 years ago, there is little room left for further improvement.

THE TASMANIAN TIN INDUSTRY.

The export of tin from Tasmania in the first six months of 1897 amounted to 1,143 long tons, against 2,700 tons in the whole year 1896. The output of the Mt. Bischoff mine was well maintained. The company continues to pay regular monthly dividends, and up to June 30th, 1897, it had distributed £1,465,000. Very little tin has been produced in this district this year, however, outside of the big mine. In the Northeastern District the output of alluvial tin ore was less than usual, owing to the scarcity of water and the lower price of the metal. Other extensive deposits are known to exist, however, and under favorable conditions the output will increase. Scarcity of water also affected the production of alluvial tin ore in the Eastern District. But large plants are now being erected there to work the tin lodes of the Blue Tier field on a large scale.

The Commissioner of Mines for the Northeastern District reports that so long as the price of tin keeps at the present figure, he cannot look for any improvement in the industry in that district, though with a moderate advance there would be a revival of prosperity, since there are extensive areas of tin-bearing gravel of moderate richness which have not yet been exploited.

In the Eastern district the Anchor Tin Mining Company is making preparations to work the Anchor lode on a very extensive scale. It is building a mill with 200 head of stamps, which it is expected will be ready for operation about the end of this year. A 20-stamp mill is to be erected on the Liberator mine, situated not far from the Anchor, and the mill of the Australian mine is to be reconstructed. There are large bodies of low-grade tin ore in this district and the three companies, which are engaged in their exploitation, will demonstrate whether they can be made to pay by the aid of modern machinery.

Flanging Large Boiler Heads.—The Lukens Iron and Steel Company of Coatesville has just finished flanging four very large boiler heads. These required flat circles 118½ in. in diameter and ¾ in. thick, which were made directly from ingots on rolls only 120 in. long. These circles were dished to 108 in. radius and flanged to 108 in. in diameter. Then 60-in. flue holes were flanged in the center, each by hydraulic power at one operation. There was about 4 in. in depth of flat flange both on outside and in the flue hole flanges.

Mineral Resources of Kouang-Toung.—According to an article in the *Bulletin de la Société de Géographie Commerciale*, Paris, Vol. XIX. (Nos. 6 and 7), there are many indications of mineral wealth in the province of Kouang Toung, China. Coal is abundant, gold, silver and copper have been found, and more iron ore than in any other province of the empire. The mining industry in China has always been considered of less importance than that of agriculture. Little native capital has been invested in this manner; but according to the terms of the Franco-Chinese convention of 1895, the French now have an opportunity of developing the mines.

The Coal Industry of Roumania.—A discovery of coal is reported at Brandusch, in the Dimbowitz district of Roumania. A recent British Foreign Office report states that a royal decree has been issued allowing M. Dinea Schilern to construct a local railway between Schela and Tirgu-jui for the working of the coal mines in the neighborhood of the former place. The anthracite mine at Schela, in the district of Garj, worked by Messrs. Slade, Stanley & Company, is said to be capable of producing sufficient anthracite coal to supply all the requirements of Roumania for the future. Its seams, it is said, are from 2 to 5 m. in thickness, and the workings of the mine extend to over 600 m. in length.

Manufacture of Phosphor Bronze.—Max H. Wickhorst, in the *Journal American Chemical Society*, 19, 393-395, states that the phosphorus added to bronze to deoxidize the metal may be introduced as phosphorus or as a high phosphorus alloy, called "hardener." The latter contains 6% P., with copper and tin in the ratio 8:1. It is made by melting 90 lbs. of copper and adding 11 lbs. of tin. Seven pounds of phosphorus are put into a dilute solution of blue vitriol, until coated with metallic copper, which protects the phosphorus when it is dried in the air. After drying, the sticks of copper-plated phosphorus are introduced into the melted bronze, two or three at a time, and held below the surface of the metal by a cup-shaped tool.

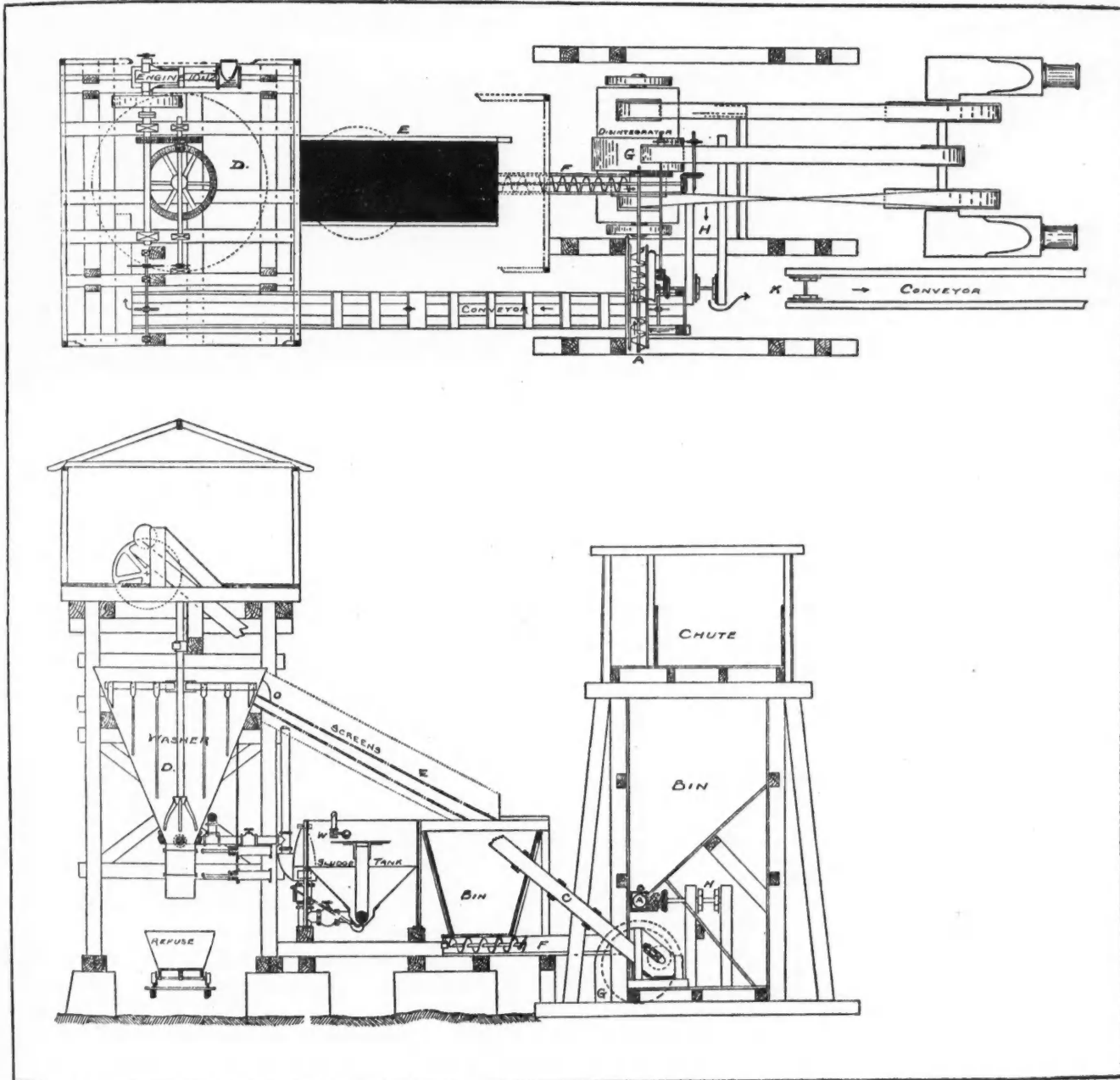
The European Coal Trade.—Mr. Francis Laur reports that the manager of a large railway company recently said to him: "There is now happening that which will certainly make a great commotion in the coal trade. English slack has gone up a shilling a ton, and this is not the end of the advance. The advance is due to two causes: In the first place to the firm condition of the coke trade, and in the second to the rearrangement of the boilers of the English navy for small coal, so that the demand for that description has become very active, and run of mine is offered for almost less than the market price, while we cannot get any slack. Add to this the rise in freights, and you will have a good idea of the curious state of things that will soon prevail on the European coal market. There will certainly, before very long, be a rise in the price of slack all along the line."

THE COAL-WASHING PLANT AT TRACY CITY, TENNESSEE.

A typical Southern coal-washing plant is found at the mines of the Tennessee Coal, Iron and Railroad Company at Tracy City, Tenn., which are described in the report of State Mine Inspector A. H. Woods for 1896. The works are shown in plan and sectional elevation in the accompanying drawings.

At the East Fork plant there are two screens, each 12 ft. long and 3 ft. 4 in. wide, of No. 8 steel, corrugated, the corrugations being 6 by 1; the plates have round perforations staggered. The screen frames are built of 2½-in. angle iron, independently of the plates, which are removable, to allow the substitution of other plates with different sized perforations, which can be done in a few minutes. The screens hang side by side, having bearing buffers between, and are suspended from hooks by chains. This arrangement allows a variation to be made in the inclination of the screens when desired. The screens vibrate 6 in., 120 times a minute,

In the present plant the slack coal from the screens falls into the bin under the chute, as shown in the plan, and is taken by the right-and-left hand screw *A*, regulated by the sliding door *B*, to the conveyor *C*, which has 5 × 15-in. flights every 13 in., and is speeded at 150 ft. per minute, to the top of the washer *D*. Here it meets the ascending current of water and is set in motion by the rotating arms and blades; the heavier slate, pyrites and other impurities find their way to the bottom of the washer, while the lighter coal is washed through an opening *O*, on to the drainage screens *E*, which are double. The top screen is of ¼-in. steel with round perforations, and carries nine-tenths of the coal; the lower one is of manganese bronze with ½-in. perforations. The washed coal drains on the screens and slides by gravity into the small bin. The water, with the material under ½ in., is collected in the sludge tank, which is the patented invention of E. Ramsey, of Birmingham, Ala. This is a steel tank with a bottom casting, which is a T, having two 8-in. discharges for water, connecting inside the tank with



COAL WASHING PLANT AT TRACY CITY, TENNESSEE.

and the eccentrics, which are both on one shaft, are set 180° apart, that the shocks may neutralize each other. The shaft also carries a large fly-wheel. The washer is a 400-ton Robinson. It consists principally of a well-built cone of heavy plate steel, having at its lower end a specially arranged water-jacket. Inside this cone is located a rotating shaft, which is arranged with arms and blades, actuated by power from the head, revolving at the rate of about three revolutions per minute. The blades projecting down into the cone keep the material in a constant state of agitation. The lower end of the cone is made with two valves, operated by means of levers, for the purpose of removing impurities which fall to the bottom. The water is fed direct from the pump through pipes connected with the water-jackets, out of which the water passes into the washer through the various openings, so as to supply it equally on all sides. The overflow is collected in a suitable tank and by means of a pump is again forced into the washer.

a short 10-in. vertical suction pipe. This suction pipe is covered with a circular deflecting plate; the water and sludge passing the lower screen is directed centrally upon the plate, flowing off around its edge with small velocity, giving the heavier particles of impurities an opportunity to settle, while the lighter coal particles are drawn with the water through the suction pipe and forced through the pulsometer pump to the washer, thus rendering the operation continuous. The water supply is kept constant by a 2-in. fresh water pipe *Q*, supplied with float valve, which replaces that carried off by the products. The pulsometers are two No. 9's, the pumping device being in duplicate; as a rule, only one pump being used at a time. The pumps are connected with a 50-ft. stand-pipe, as an air chamber to relieve any unusual pressure brought upon the pumps by stoppage of the water vents in the water-jacket by an over-accumulation of impurities or coal. The valves at the bottom of the

washer being double, the refuse is removed three to five times an hour, or oftener, without interrupting in the least the operations of the washer. These valves are operated by steam pistons worked with a combination of three-way cocks. A 10x12-in. engine furnishes power for the washer and conveyor as well as for a drum (not shown on plan), which, in combination with an automatic clutch and gearing, hauls back the refuse car, which runs out over the railroad tracks by gravity, and empties itself. One man attends the washer, and is not overworked.

The coal is taken from the washer bin by a 12-in. screw *F* to the disintegrator; the screw has a perforated lining which further drains the coal. It has been found advisable to drain the coal as thoroughly as possible before disintegrating. The disintegrator is a 60-in. Stedman, and is operated by a pair of 12 in. x 20 in. engines at 55 revolutions per minute. From the disintegrator it is taken up a short elevator *H* to the main conveyor *K*, thence to the drainage bin.

It should be remarked in passing that the plant is not cited as an ideal one, as available space and other considerations circumscribed its location and arrangement, as is often the case in making additions to old mining plants.

The drainage and storage bin is of yellow pine, 55 ft. by 18 ft. by 20 ft., in three compartments, with overhead feed conveyor supplied with discharge gates. A 10-ton double compartment side-discharge larry carries the coal out to the ovens by gravity, and is returned by a 3/4-in. rope and 10 H. P. endless-rope engine.

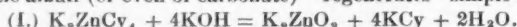
The cost of a 400-ton washing plant of this type in the South should not be over \$6,000 to \$8,000. The cost of washing is from 2c. to 3c. per ton, including repairs. At this plant the ash reduction has been 30% on an average.

NOTES ON THE ACTION OF POTASSIUM ZINC CYANIDE SOLUTIONS ON GOLD.

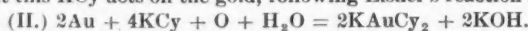
Written for the Engineering and Mining Journal by W. J. Sharwood.

The fact that gold is soluble in a solution of the "double salt" potassium zinc cyanide has been known for some time. It was mentioned in 1894, by W. R. Feldtmann (*Engineering and Mining Journal*, September 8th, 1894, 58, 218; and "Notes on Gold Extraction," page 10), and W. H. Virgoe (*Engineering and Mining Journal*, October 6th, 1894, 58, 314); later work has been done by G. A. Goyder, of the South Australian School of Mines (*Chemical News*, August 18th and 23d, 1895, 72 81 and 97), J. S. C. Wells (*Engineering and Mining Journal*, December 21st, 1895, and February 22d, 1896, 60, 584 and 61, 179), N. Anderson (Proceedings Colorado Scientific Society, April, 1895), and J. Ellis (*Journal Society of Chemical Industry*, February, 1897, 16, 116). Some uncertainty exists as to the nature of the chemical changes taking place during solution.

One view, stated by Feldtmann and also by Bettel (*Chemical News*, December 20th, 1895, 72, 298), is that the double cyanide in the presence of caustic alkali (or even of carbonate) "regenerates" simple KCy:



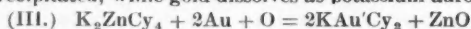
and that this KCy acts on the gold, following Elsner's reaction:



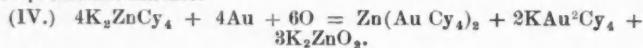
This idea derives apparent support from the fact that, in titrating with silver nitrate in presence of free alkali, no precipitate forms until all the cyanogen of the double cyanide is converted into KAg_2Cy_2 , while without alkali a precipitate forms much sooner, the titration in presence of free alkali appearing to indicate a larger proportion of simple KCy; this evidence is by no means conclusive, as is plainly shown both by Wells and Ellis, for the decomposition by alkali may take place after the addition of the silver nitrate, as is probable from the slow redissolving of the end-precipitates obtained in titrating such solutions by silver. Feldtmann also states that solution may occur in absence of free alkali.

Ellis (*Journal Society of Chemical Industry*), 16, 119) states that the extraction of gold from ores by spent solutions was higher when the solutions were treated with an alkali than without such treatment; on the other hand, Wells found that addition of caustic potash made "scarcely any difference" in the rate of solution of gold, when exposed in test tubes to the action of double zinc cyanide (prepared by digesting decinormal KCy solution with an excess of precipitated zinc cyanide), and thence concluded that the double salt is not decomposed by alkali.

Goyder, experimenting with crystallized potassium zinc cyanide, found that it dissolved gold in presence of oxygen, and states that oxide of zinc is precipitated, while gold dissolves as potassium aurocyanide:

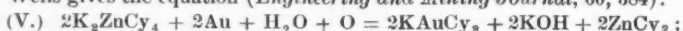


but that auricyanides of zinc and of potassium are also formed, together with potassium zincate:

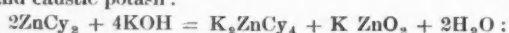


In the article quoted no explanation is given as to how these equations were arrived at.

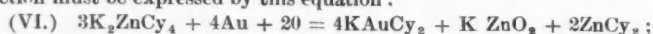
Feldtmann and Virgoe both suppose that zinc cyanide is precipitated. Wells gives the equation (*Engineering and Mining Journal*, 60, 584):



but on the next page gives the following as the reaction between zinc cyanide and caustic potash:



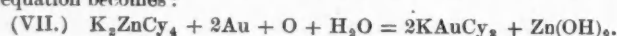
whence, if the latter holds good under all conditions, the complete reaction must be expressed by this equation:



which indicates the precipitation of a smaller proportion of zinc cyanide than V. According to V., the solution contains free potash; according to VI., potassium zincate.

Anderson gives an equation essentially the same as Wells' V., but does not describe the quantitative experiments by which this was arrived at.

Should zinc hydroxide fall out, instead of the oxide in reaction III., the equation becomes:



According to equation III., VI., or VII., two atoms of gold, in dissolving, precipitate one atom of zinc as oxide or cyanide; according to V., each atom of gold precipitates one of zinc.

The experimenters mentioned appear to have worked with an excess of a comparatively weak solution of double zinc cyanide, conditions which approach those of "spent solutions."

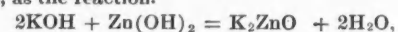
The question as to which of the above reactions is correct is of some interest, though probably it is not of much importance from a metallurgical standpoint; the precipitation of either the oxide or cyanide would only remove about 1/4 or 1/2 oz. of zinc, and the latter only 1/4 or 1/2 oz. of cyanogen, for each ounce of gold dissolved.

THERMO-CHEMICAL CONSIDERATIONS.

Wells, in the article mentioned, showed (making one reasonable assumption regarding the heat of formation of an undetermined salt)



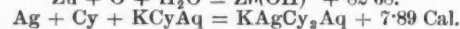
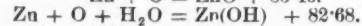
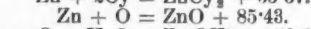
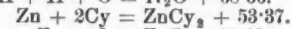
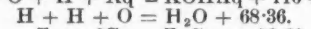
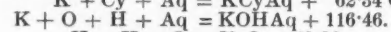
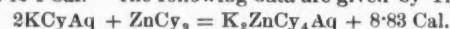
that there is nothing improbable in equation V from a thermo-chemical standpoint. He did not in this article consider other possibilities. Unfortunately, no exact data seem to be available on the heat of formation of alkaline zincates, so that we cannot compare, with any great accuracy, the relative probabilities of reactions III., V., VI. and VII. The heat developed in the formation (in solution) of a zincate is probably less than that of a double zinc cyanide; it is probably small and variable with conditions, as the reaction:



is reversible by slight changes of conditions, and only takes place in presence of an excess of alkali, as shown in the report of Prescott and Miller on alkaline zinc solutions (*Journal of American Chemical Society*, 1880; 2, 29): In the following calculations x Cal. is the value taken for heat of formation of one gram molecule by the last reaction, and y Cal. for the following:



the products in each case being in solution; y is therefore the value taken by Wells as 12.4 Cal.* The following data are given by Thomsen:



From these data the following values are calculated:
Two gram-atoms of gold, in dissolving to $KAuCy_2$, yield:
In $KCyAq$ (Equation II.) 39.88 + 2y Cal. (or 64.69, * Wells, *loc. cit.*)
In K_2ZnCy_4Aq (V.) 22.22 + 2y (47.03, Wells)
" (III.) 23.23 + 2y (or 48.04 following Wells' assumption)
" (VII.) 20.48 + 2y (45.29 following Wells' assumption)
" (VI.) 21.27 + 2y + $\frac{1}{2}x$ (or 46.18 + $\frac{1}{2}x$ following Wells)

The value of x in the last case is probably small.

These results are apparently somewhat in favor of reactions III., V. or VI. taking place rather than VII., but the differences are too small to form a safe basis for conclusive reasoning, especially as variations in heat development are caused by variations which exist in the crystalline character of the precipitates formed from zinc solutions. Further, other experimenters have obtained values differing from Thomsen's more than the above values differ from one another; but errors in these affect all the reactions except II. in the same way and do not affect the comparison materially. So far as heat calculations go, all the above reactions are possible, and all nearly equally probable.

(To be continued.)

Iron Ore Mining in Poland.—In 1896 operations were carried on at 91 mines, which produced 18,785,000 poods, but this was insufficient to meet the demands of the Polish furnaces, and ore had to be brought from the Kherson and Krivoi Rog districts. Several new deposits of iron ore have been discovered lately in the Bendzin district, which comprises that part of Poland where the three empires meet.

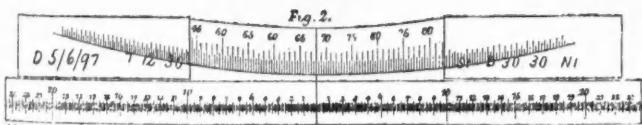
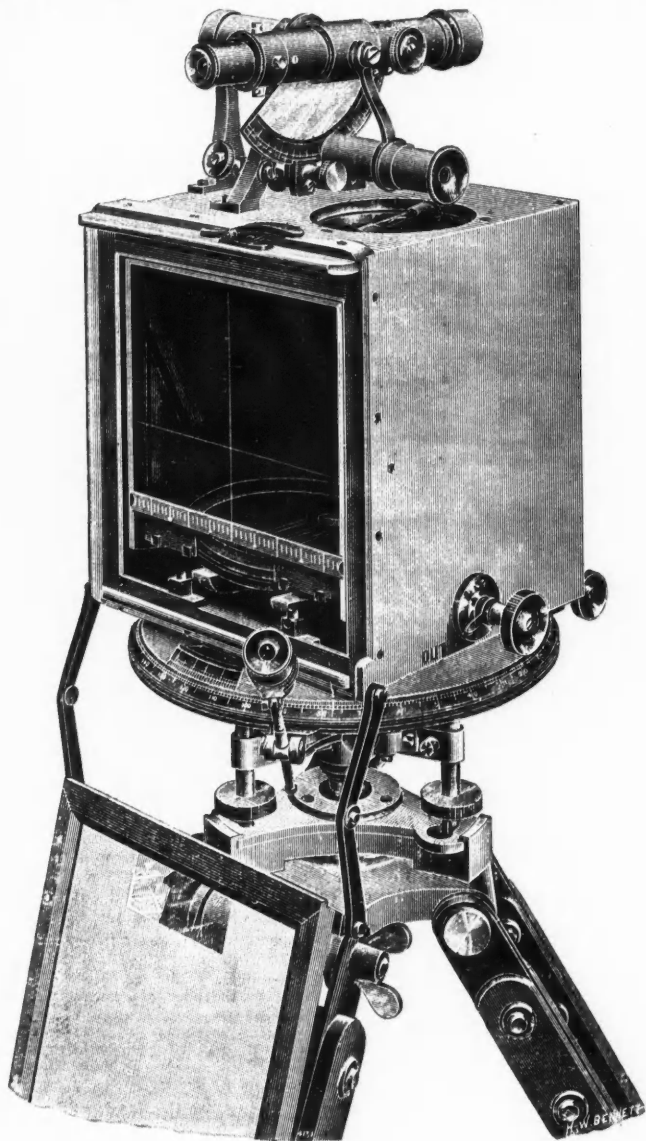
Chemical Works in Sweden.—The manufacture of sulphuric acid in Sweden, according to the *Chemiker-Zeitung*, amounts to about 35,000 tons of chamber acid per annum. The greater part of this production is used for the manufacture of superphosphates. The principal producers are the Joint Stock Company, of Stockholm, and the Scandinavian Joint Stock Superphosphate and Sulphuric Acid Manufacturing Company, of Helsingborg. This latter is the most important one of the kind in Scandinavia. It produces annually about 18,000 tons of chamber acid and about 30,000 tons of superphosphate. It is the only concern, also, in any of the Scandinavian countries that produces the double superphosphate containing as much as 45% of soluble phosphoric acid.

Sulphuric acid is very largely used in Sweden for the manufacture of sulphate of copper. The "Stora Kopparbergs Bergslags Actiebolag," the works of which are at Falun, produces annually 1,500 tons of sulphate of copper. This company, which possesses the celebrated Falun copper mine, and has a capital of 12,650,000 fr., is the most important in Sweden, and produces, besides sulphate of copper, 50,000 tons of cast iron, 43,000 tons of manufactured iron and rolled and forged steel, 7,000 tons of Thomas slag, 6,000 tons of paper, 1,000 tons of red mineral paint, 2,000 tons of sulphuric acid, 350 kilos of silver, and 100 kilos of gold per annum.

* It is probable that this value is somewhat too high, at least if rate of solution is to be taken as being approximately proportional to heat developed; for the heat developed in the solution of two atoms of silver by a similar reaction, all the data for which have been determined, is 55.66 calories, and Maclaurin has shown (*Journal of Chemical Society*, 1895, 67, 212) that gold and silver dissolve at nearly the same rate, atom for atom, in solutions containing equal proportions of potassium cyanide; whence the value for gold in Equation II. should not be far from 55, or the value of y above should be nearer 7.8, corresponding to that of $Ag + Cy + KCyAq$. T. K. Rose (*Metallurgy of Gold*, p. 317) merely gives evidence that Reaction II. is exothermic.

THE PHOTO-THEODOLITE.

The idea of using the camera as a surveying instrument has occurred independently to quite a number of engineers, though apparently the honor of being the pioneer in the matter must be conceded to Colonel Laussedat, of the French Army.* The credit of introducing the system on an extensive scale for the production of topographic plans must, however, be awarded to Mr. E. Deville, Surveyor-General of Dominion lands, who has introduced the method very extensively into his department, say *London Engineering*; no less than 14,000 square miles of territory being thus surveyed during 1893 and 1894, in connection with the settlement of the International boundary between Canada and Alaska.



THE BRIDGES-LEE PHOTO-THEODOLITE.

One great advantage of the camera as a surveying instrument lies in the fact that it is much less dependent on the weather than is a plane table, this latter being the particular instrument with which it more especially compares. With the plane table all work must be done in the field, while with the camera the whole of the plotting being done in the office the wet and dull days of winter can be used to work up the photographs taken during the finer summer weather. In the Rocky Mountains, Mr. Deville states, plane-table work costs at least three times as much as a camera survey. Moreover, with the latter it is possible to make first a rough plot showing only the more prominent features of the ground, and then, if, later on, a more detailed plan is required, this can be made from the original photographs without necessitating a fresh visit to the ground. As with the plane table, any required degree of accuracy can be obtained by multiplying the photographs taken.

The principle on which the method is based rests upon the geometric truth that if the bearing of any individual object on a photograph from the camera station is known, then the bearing of every other point shown on the print can be calculated if the focal length of the lens is known. Two photographs being taken of the same landscape from two different stations, and the distance and relative bearing of these two being known,

then the whole landscape can be plotted by means of intersections, just as in plane-tableing, but with the photographic method the whole of the work can be done in the office.

Special cameras have been devised to simplify the work, the essentials being a method of marking on the negative a vertical and a horizontal line intersecting on the axis of the lens. The bearing of the optic axis may be obtained from a compass, and noted at the time the exposure is made. A more convenient method has, however, been devised by Mr. Bridges-Lee, of London, who places a compass, having its divisions engraved on a vertical ring of transparent celluloid, inside the camera in such a position that the bearing of the optic axis is automatically recorded on the plate at the same time the exposure is made. More recently Mr. Bridges-Lee has made further additions to the instrument, which, as now made, is shown in the accompanying engraving. The body of the camera is of aluminum, and fits on a theodolite base below, while at the top is a small telescope, which enables the instrument to be used as an ordinary theodolite when desired, large vertical angles being observed when necessary by a prism or mirror attachment. The divided horizontal circle enables azimuth readings to be made to half a minute of arc, a vernier and reading microscope being fitted as shown. The latter is carried on a telescopic arm and can also be used for reading the compass bearing through a window in the focussing screen. The level shown at the top of the camera moves on a circular run, and enables the instrument to be leveled without necessitating the turning of the camera as a whole. Inside the camera is a frame sliding on ways, and carrying in the first place the compass already mentioned; and, secondly, the cross wires, which by their shadows mark on the negative the principal vertical and horizontal lines of the picture. When a slide is in place and the shutter withdrawn, the frame already mentioned is moved up by the milled head shown to the right of the camera, until its edges are in contact with the sensitive plate. The latter is then carried back with the frame until further motion of the latter is arrested by fixed stops, so that, whatever the thickness of the plate, the distance of the sensitive surface from the lens is always the same. The cross strip shown attached to the back of the frame is of glass and carries an accurate tangent scale, which enables the horizontal angle which any object shown on the print makes with the optic axis to be determined directly by the use of a parallel ruler or a pair of dividers. The two little strips of celluloid shown below and at either end of the tangent scale are removable, and on them can be written previous to taking the photograph such data as the camera station, its number and elevation, date, etc., all of which will then be reproduced on the negative, and thus any possible danger of confusing two negatives on the subsequent plotting is totally avoided. The information recorded on a negative in this way is shown in Fig. 2, which is reproduced on the sky of each negative. The lens adopted is of the rectilinear type, and is used with a fixed focus and a very small stop. In order to avoid photographic haze, which tends to render distant objects indistinct, isochromatic plates and a yellow or green screen are made use of, and with this precaution there is no difficulty in getting sharpness in the "distance" of the picture.

To secure the stability of the instrument during the long exposure entailed by the use of this screen and the small lens aperture adopted, it is usual in Canada to carry a net, which is hung on the camera tripod when set up and filled with stones, the precaution being taken of letting the bottom of the net just scrape the ground, as otherwise it would swing with the wind and cause shaking.

Having obtained a plan of a survey in the way described, the introduction of contour lines is not difficult, since the distance of any particular point from the camera station is then known, and its depth above or below the horizon line in the print is a measure of its angular elevation or depression as observed from the camera station. The level of a few points being thus ascertained, the contours can be filled in with considerable accuracy by estimation from the appearance of the photograph.

Gold with Barite.—Gold is said to have been found in association with barite at Big Bend, Butte County, Cal. This is an interesting mineralogical occurrence.

Coal Production of Prussia.—According to the official statistics the production of coal in Prussia during the first half of 1897 amounted to 40,017,473 tons; 268 collieries were in operation and 296,412 workmen employed. The production of brown coal during the same period was 11,226,562 tons from 369 mines, 31,709 workmen being employed.

The Supply of Fuel and Air.—Lord Kelvin, speaking at the meeting of the British Association on the fuel and air supply of the earth, said that all the known fuel on the earth is the residue of ancient vegetation. One ton of average fuel takes three tons of oxygen to burn it, and therefore its vegetable origins, decomposing carbonic acid and water by the power of sunlight, gave three tons of oxygen to our atmosphere. Every square meter of the earth's surface bears 10 tons of air, of which two tons is oxygen. The whole surface is 124,000 millions of acres, or 510,000,000 millions of square meters. Hence there is not more than 340,000,000 million tons of fuel in the earth, and this is probably the exact amount, because it is probable that all the oxygen of our atmosphere came from primeval vegetation. The surely available coal supply of England, Scotland and Wales was estimated by the Coal Supply Commission of 1831, which included Sir Roderick Murchison and Sir Andrew Ramsay among its members, as being 146,000,000,000 tons. This is approximately six-tenths of a ton per square meter of area of Great Britain. To burn this quantity would take one and eight-tenths of a ton of oxygen, or within two-tenths of a ton of the total oxygen of the atmosphere resting on each square meter of Great Britain. The commission estimated 56,000,000,000 tons more of coal as probably existing at the present in lower and less easily accessible strata. It may, therefore, be considered as almost quite certain that Great Britain could not burn all its own coal with its own air, and therefore that the coal of Great Britain is considerably in excess of the fuel supply the rest of the world reckoned per equal area whether of land or sea.

*See *Engineering and Mining Journal* for April 29th, 1893, page 393.

THE SOUTHWESTERN EXTREMITY OF THE APPALACHIAN GOLD FIELDS.

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

I have lately had the opportunity of examining that portion of the Alabama gold belt lying in the southeastern part of Chilton County and the northeastern part of Elmore County, continuing and extending the observations made in my report on the "Lower Gold Belt" in Alabama, published by the Alabama Geological Survey. The district comprises what is believed to be the southeastern end of the gold-bearing rocks that follow the general course of the Appalachian Mountains from Labrador to Middle Alabama—schists, quartzites, more or less highly altered slates, and granitoid gneisses, carrying gold quartz and auriferous sulphurets. It lies east of the Louisville & Nashville Railroad and between that and the Coosa River, 20 miles north of Wetumpka.

It is not a question of much practical importance whether the age of the rocks is Archaean or Lower Silurian, or whether they are of sedimentary or igneous origin. The evidences of metamorphism are abundant and conclusive, especially where the streams have cut their way down to depths of 100 to 300 ft. below the general level of the country, exposing huge cliffs and vertical sections of bare rock. The general drainage is toward the east, but the configuration of the country is a bewildering view of cross hills, ridges and deep gulches, clothed with the long-leaf pine, hickory, chestnut, poplar, beech, oak and dogwood. There is abundance of timber, some of it valuable, although the saw-mills have cut out a great part of the better grades of pine where this was convenient of access.

Prospecting for gold has been carried on for many years, the early settlers of 60 and 70 years ago and their immediate successors having worked along nearly all the creeks and little branches with pick and shovel, sluice box and cradle. Some of these workings were fairly profitable, as things went then, and exaggerated reports of the richness of the gravel have been handed down to these days. No attempts were made to ascertain the source of the gold other than the immediate gravel in which it was found, nor did these "branch miners" concern themselves much with fine gold. That which was visible in the pan, box, or cradle, and was easily saved, they recovered, and as the gravel is still characterized by coarse gold, varying in size from a pin's head to pieces weighing 3, 5, 7 and rarely above 10 dwts., they made some money. But the cream has been long ago taken, and although the more persistent prospectors still find from 25c. to 50c. to the pan in rich and very limited pockets, the usual average of a day's work is not far from \$1 per man, and this with great labor.

There is no general rule in respect to the depth of the gravel below the surface. I have had good panning at 2 ft., and again have seen pits where pay gravel was not struck until after 6 ft. of soil and clay had been removed. The coarsest gold lies against a stiff bluish clay, impervious to water, which underlies the gravel with great persistence. This clay not infrequently forms a false bottom to the gravel, and then there are two benches of the latter. When this is the case gold may be found in both benches, but for the most part it is confined to the upper bench. The gravel is seldom more than 2 ft. thick, and is characterized by the usual water-worn quartz pebbles, by rounded garnets and a great deal of heavy black sand (titaniferous iron). A noticeable occurrence is that of fragments of mica, both colorless and black, and when this is taken in connection with the angularity of the gold and the frequent occurrence of angular fragments of quartz, one is forced to the conclusion that the original source of the gold was near by. But no considerable gold-bearing quartz seams have been found above the placers, although some of the smaller seams do carry free gold.

The schists themselves carry free gold, although in small amounts, probably not over \$1 per ton, but when one considers that there has been an enormous erosion of the country and a concentration even along the present creeks and branches for a very long time, it is not surprising that under favorable conditions of deposition there should be rich pockets here and there. The ancient creek beds, which may now be found in places 150 ft. above the present bed, and which are characterized by gravel firmly held in a ferruginous cement of a deep red color, also carry free gold. A very coarse-grained conglomerate lying in masses of several hundred pounds weight 20 and 50 ft. above the present drainage level contains gold also. So far as concerns placer gold, with the exception of two or three localities which the old miners did not know of, or else neglected, there is very little encouragement for the modern miner in this district. Possibly there are rich pockets still in the old placers, or even in the Coosa River, and it is conceivable that by systematic search some of them could be found, but on the whole it is not thought that it would pay to undertake the opening of the old placers or the search for new ones. The valleys are narrow, mostly mere gulches, and the extension of the work on either side would entail the removal of very large amounts of earth and clay, while along the course of the streams by far the best gravel has already been worked over.

The conclusions that were reached in the report above mentioned as to the placers somewhat to the north of the district now under discussion are adopted as to this district also; namely, that the placers in and for themselves will not repay the investment of capital. If the district is to be worked for gold at all the placers may indeed furnish some subsidiary value, but cannot be depended on as the mainstay. They may be of incidental value, but nothing beyond this.

As to the schists, although they do carry some gold, so far as present indications go they cannot be depended upon as a source of gold on a working scale. In this respect they differ from the schists of Clay County, a description of which will be found in the *Engineering and Mining Journal* of August 14th, 1897. In Clay County the schists are decomposed to depths of 30 to 60 ft., and carry free gold as far down as they have been prospected and worked. Whatever decomposing agencies may have been at work, they seem to have exercised a more energetic action there than in Chilton or Elmore County. It is believed that the principal agent in the softening of these schists was decomposing pyrite, the free access of air and water being of course understood. In Clay County, among the schists, there is very little pyrite remaining, but in Chilton and Elmore pyrite is frequently encountered. It has not been decomposed, and the enclosing rocks are firm and dense. Some of the gold is

unquestionably carried by pyrite, and the breaking down of this mineral would set free oxide of iron and sulphuric acid, the former staining the schists of a red color, the latter softening and still further decomposing whatever rocks it might reach. Garnets are everywhere plentiful, and it is a notable fact that some of the richest Clay County schists are characterized by an extraordinary development of them. They have not been observed on so large a scale in the southwestern part of the gold belt, but nevertheless are nearly always present, especially so where the gravel is the richest.

The general course of the schists is a few degrees north of east, the dip being to the southeast, at angles varying from 30° to 50°. There is a strong tendency among the schists to assume the character of a normal mica schist, such as occurs in Mitchell County, North Carolina, and holds there large veins of mica. This mineral has also been found in Chilton County, and has been prospected to some extent with promising results. The intrusions of granite, which are common enough in this district, have been subjected to crystallizing forces on a large scale, resulting in the formation of crystals of mica and large masses of quartz and feldspar.

It is to the quartz seams, whether sulphuretted or not, that one must look for profitable and continuous mining, but it is not yet known that these occur of sufficient size and richness in the district. The schists are everywhere traversed by quartz seams, the bolder ones interbedded with the schists for the most part, but now and then crossing them at all angles. Investigations now in progress will decide whether or not some of the larger quartz seams are workable. The district has received very little attention aside from the unsystematic and intermittent placer mining of the last half century. What has been done hardly deserves the name of mining. That the gold obtained from the placers could not have been carried far is, I think, beyond question, but whether it came from the breaking down of the schists or quartz seams, or the decomposition of pyrite, is uncertain. It may well be that it originated from all three of these sources and that no mother lode exists in the district.

To those who are interested in the district, whether as owners of agricultural land or of mineral rights, only one word need be said. There is but little hope of the placers, and whatever money is spent should be devoted to exploiting the quartz seams. There are two or three localities where the outlook is certainly encouraging and where a little money judiciously expended would prove whether profitable quartz mining could be carried on here.

PETROLEUM IN TEXAS.

Petroleum was discovered early this year at Corsicana, Texas, at a depth of 1,040 ft. At this horizon there is a bluish sandy shale about 20 ft. thick, which is saturated with petroleum. There is no rock either above or below, the drill passing down the whole way through a hard clay. The Texas Petroleum Company, organized six months ago, has three flowing wells, the latest of which is said to be producing about 20 barrels per day. The Corsicana Oil Development Company has a well which is flowing 25 barrels. A correspondent of the *Pittsburg Times* who has visited the district states that according to the testimony of those familiar with the products of the different fields, Texas oil is better than the Ohio oil, but not as good as that found in Pennsylvania. It most resembles that produced at Neosho, Kansas. Its flow is like that of the wells in the Bradford field. An analysis of the oil showed about 90% of volatile matter and 10% of residuum. As compared with other oils results are as follows:

Crude oil from	Specific gravity at 17°C.	Began to boil at degrees C.	Came over under 150°C. per cent.	Between 150° and 300° C. per cent.	Over 305° C. per cent.
Texas-Corsicana.....	821	80	34.6	40	15.8
Pennsylvania.....	818	82	21	38	40.7
Galicia.....	824	90	26.5	47	25.5
Baku.....	859	91	23	38	39
Alsace.....	907	135	3	50	47
Hanover.....	859	170	....	32	68

The line of development at present is about 1½ miles long, and covers an area of about 150 acres. It costs about \$1,500 to put down a well, and the royalty varies from one-eighth to one-tenth.

The present production is used exclusively for fuel. Some is consumed at the wells and in the local manufacturing establishments, and the rest goes to Dallas, Houston, Austin, etc. In the towns named it is being used in making illuminating gas. It is delivered in Corsicana for fuel at 75c. a barrel. At present there is a market for all that is produced, but if the continued development increases the production a larger market must be had, or a refinery established.

The Belgian Coal Mining Industry.—The report of M. Timmerhaus, the Inspector-General of the Liège District, states that the total production of coal there in 1896 amounted to 5,241,220 tons, as compared with 5,084,284 tons in the previous year. This was divided as follows:

	1896.	1895.
Lean coal.....	660,830 tons	626,140 tons
Semi-fat coal.....	2,553,260 "	2,458,334 "
Fat coal.....	2,027,030 "	1,993,810 "

The average price realized in 1896 was 9 fr. 87c. per metric ton, an increase of 5c. as compared with 1895. The average cost of production, on the other hand, decreased from 9 fr. 48c. to 9 fr. 26c., so that the net profit realized was 61c. per ton as against only 34c. in the previous year. The number of persons employed was 28,890—21,688 below ground and 7,202 on the pit banks. Their average annual wage amounted to 1,031 fr. The average annual output per man below ground increased from 234 tons in 1895 to 242 tons in 1896. As regards coke, the output from the 965 ovens in operation during the year amounted to 503,020 tons. The average price realized was 14 fr. 73c. per ton, an advance of 56c. over 1895. As to patent fuel, there are nine works in the district, which last year turned out a total of 189,752 tons, an increase of 22,967 tons over 1895. The average price realized was 12 fr. 7c., a slight decrease from the preceding 12 months.

THE PORPHYRY DIKE MINES OF MONTANA.

Written for the Engineering and Mining Journal by L. A. Sisley.

The mines of this name are about 18 miles in a direct line southwest of Helena, Montana, and half that distance from Rimini, the terminus of a branch line of the Northern Pacific Railroad. They are located on the summit forming the divide at the head of Ten-Mile Creek and of Basin Creek, the district being the north end of the broad granitic mountain mass that lies east of the Deer Lodge valley, extending from Helena to Butte. In general features, this mountain tract differs materially from the adjacent ranges on either side. It is relatively low, though forming part of the Continental divide, and is trenched by canyons and possesses many summits.

The geology of this tract is simple in its general features, but complicated in detail. A great mass of intrusive granite varying in nature, but essentially a geological unit, is surrounded by the upturned metamorphosed and sedimentary rocks only seen in the neighboring ranges. A considerable part of this great tract is covered by dark andesite rocks resting upon an uneven surface of granite. Both granite and andesite are covered about the borders of the tract by rhyolitic rocks of varying nature. Erosion has removed large areas of both rocks, the granite now forming the surface. In the immediate neighborhood of the Porphyry Dike mines the dark andesitic rocks are not present, but rhyolites rest directly upon the uneven surface of the granite. The eruptions of rhyolite are seen to have been only local in character, and but a relatively small tract is covered by them. The neighborhood is well known as a mineral producer, several mines, among others the Ontario and Josephine, being located near by on argentiferous fissure veins in the granite. The Porphyry Dike ores, however, are gold ores, all free-milling, and occur only in the rhyolite porphyry. This mode of occurrence is, so far as we know, unknown elsewhere in Montana.

The workings are situated at the head of Monitor gulch, a tributary of Ten Mile. Twenty years or more ago, the gravels of this stream were successfully worked as placers, and for some 10 years past a small amount of placer working has been done each summer at the head of the main Ten Mile Creek, $\frac{1}{4}$ mile from the present Pauper's Dream mine. From these placer workings it became evident that the source of the gold was so high up that it must lie in the rhyolite porphyry, and this was confirmed by the assay of the rock from the head of the gulches.

The ore occurs in minute cracks or fissures in the rhyolite porphyry, and to a lesser extent throughout the more decomposed. This rock is, therefore, both gangue and country. The rhyolite porphyry occurs in such a variety of forms, colors and textures that it is not always recognizable as the same rock. In the placer workings about the mill it is a breccia—a mass of cemented fragments. In the Pauper's Dream workings it is in part a solid, nearly uniform straw-colored rock, showing porphyritic crystals and traversed by joint planes. Here it is also in part a breccia, and having in part of it many rounded boulders of the same rhyolite of varying sizes, and with a rusty yellow coating and solid core. On the hill top above this mine, and at the Columbia, across the gulch, the rock is banded and contains large quantities of spherulites, rounded or flattened spherical bodies, often partly hollow, or cavernous, a not uncommon feature of rhyolite flows. The cavities in these spherulites are in these ores often lined as well as checked and fissured with quartz.

As already stated, the ores occur in narrow fissures and minute cracks in the rhyolite porphyry. In part these occur in soft and decomposed rocks, the rock itself being impregnated, but the fresher looking rock seen on the little hills of debris that rise above the general wooded level of the main divide are also said to be gold-bearing. The writer is assured by Mr. T. Schweitzer that it is impossible to tell the value of the rock by its appearance, and that owing to the irregular distribution of the gold panning of large samples is necessary, as assays of small pieces are misleading. In general, it has been found that a well-developed jointing or fissuring of the rock accompanies the ore.

The richest ore is the "talc" or clay of decomposed rock found as thin films, rarely over $\frac{1}{4}$ in. thick, in the joints. Samples collected and panned by the writer showed medium sizes of flake gold, the clay having a value of perhaps \$100 per ton. Examinations of the various openings showed that the gold occurred mainly, if not entirely, in such fissures. The rock is fractured by many minute fissures, the smallest of microscopic size, the largest being well developed joint planes traceable for many yards. In the Columbia workings the hollow spherulites contain a clay filling rich in gold.

The Pauper's Dream mine workings consist of a tunnel nearly 400 ft. in length tapping a shaft 100 feet deep. The rock is being broken off at the top and shot down the shaft into cars, by which it is taken through the tunnel and dumped into the ore bins. The rhyolite being generally auriferous, no definite lode or ore shoot being found, the entire mass is mined. This tunnel shows soft, greenish, decomposed rhyolite for the first 300 ft. from its entrance, the rock being clayey, with irregular fracture and without definite jointing, and of uniform appearance. The last 85 ft. shows a firmer well-jointed rock, the fissure planes dipping at 70° to the west. Both the open pit at the top of the shaft and the old quarry in the slope, from which ore was formerly extracted, show a well-defined jointing, running east and west with a dip of the joint planes to the south. These planes are marked by films and thin seams, an inch at most, of "talc" or clay, the decomposed rock carrying the gold.

The Columbia, also located upon the rhyolite, lies across Monitor Gulch to the northwest. The tunnel and chamber cut into the hillside show a banded and spherulitic rhyolite in great curved plates, dipping down the hill at 45°. The rock is traversed by joints running into the slope (east and west) and breaks into huge splintery masses, owing to the jointing and the false walls of the rhyolite plates. The rock is not uniformly impregnated with gold, the different layers varying in character. The rock is here noticeably checked and fissured with silica, in contrast to that of the workings across the gulch, but much gold has been found in the soft mud or clay streaks and fillings. Several other claims are being worked on this side of the gulch, on the same rhyolite wall, and also in the brecciated rock of Flat Mountain, the summit above the Columbia. The solid boulders, occurring in a fine paste in the

breccia mass of the Pauper's Dream, being harder than the cement, weather out, and are seen in Monitor Gulch on the placer workings in the creek above the mill. They are believed to be part of the filling of a volcanic vent.

In many of its features the Porphyry Dike ore deposit closely resembles that of Silver Cliff, Colo. The ore is of different character, being in Colorado a silver ore, but the geological occurrence is very similar. At Silver Cliff, stratified rhyolite tufts are overlaid by a rhyolite lava flow; a part of it remarkable for its huge spherulites. The whole mass is silver-bearing, but except near the surface, where it was very rich, the ore is too low grade to pay for working. The general dissemination of the silver through the rock is believed by Emmons to be a consequence of the character of the rock, which did not permit well-defined channels for mineralizing waters, but rather their general diffusion through minute cracks and fissures. The same theory seems to offer a reasonable explanation of the occurrence of the Porphyry Dike deposits. The future of these deposits is dependent chiefly upon an economical process of extraction from the low-grade ore.

STEEL BARRELS FOR THE OIL TRADE.

The Standard Oil Company now proposes to use steel barrels. These are to be made by the Barrheat-Strange Patent Barrel Syndicate of Bucklesbury, England. The material for both the barrels and bungs is steel, the bodies being made from steel sheets varying in thickness from one-sixteenth inch upward, according to the strength or size of the barrel needed. These sheets are formed cold into barrel bodies by special rolling machinery, whereby a properly formed bilge is obtained, while the material retains its smoothness both inside and out. The rolling machine is so devised that the pressure is brought to bear only on the middle of the sheet, thus preventing breaking.

After leaving the rolls the sheets, bent to their proper shape, are transferred to an electric welding apparatus. They are clamped with their opposite edges somewhat apart and a strip of steel is applied to the opening and fused by the electric arc. The ends are made from rectangular steel sheets, stamped in a powerful hydraulic press into circular form, each with a circular flange for insertion into the body of the barrel, and with circular corrugations for stiffening. The flanged ends are fitted into the barrel body and tightly jammed between outside and inside steel hoops. There are thus four thicknesses of metal, the inner hoop, the end of the barrel, the flange of the barrel end and the outside hoop. They are fused together electrically so as to form one solid piece of steel. The bungs are of stamped steel and the boss of the central or body bung is welded to the inside of the barrel so as to avoid any outside projection. The boss of the end bung is welded to the outside of one end of the barrel so as to allow its being emptied entirely. The bungs are constructed in such a manner that they can be easily sealed, so that the senders can rely on their customers receiving the exact contents, without loss by theft or leakage. This, it is expected, will entirely revolutionize the barrel-making business and will add a new department to boiler shops and steel mills.

Nickel-Aluminum Wire.—The Pittsburg Reduction Company is now drawing a nickel aluminum wire, which is said to be much stronger and stiffer than wire made from the pure metal. Hitherto it has generally been considered impossible to draw aluminum into wire when alloyed with other metals. The wire is used for purposes requiring stiffness. A good deal of it is employed for making hairpins.

Slag Cement.—At a recent meeting of the Liège section of the Association des Ingénieurs de Liège, M. H. Detienne, engineer to the Cockerill Company, Seraing, traced the history of slag cement and pointed out, from the results of his own tests and observations, the influence exerted by granulating the slag. His paper is summarized by the *Colliery Guardian*. M. Detienne subjected slag cement to special tests and investigations, which proved (1) the non-injurious effect of free lime, magnesia, sulphides and sulphuric acid; (2) the enormous influence exerted by (a) the fineness of grinding the cement on the standing of the mortar made with it and (b) the quantity of water used in the mixing and the temperature of the surrounding air on the rapidity of setting; and (3) the nature and size of the sand added on the resistance of the mortar. He concludes that slag cement is in no way inferior to Portland cement, for which it may be substituted, with the advantages of lower price and a higher yield of rich mortar, while the manufacture is sure and simple. Lastly, slag cement may be used without fear of any disagreeable surprise.

A New Safety Catch for Mine Cages.—A new brake-action safety catch for mine cages lately brought out by Herren Gerlach and Bömcke, of the Dortmund Iron Works, is described by the *Colliery Guardian*. It recalls in general arrangement the White & Grant safety apparatus, which is largely used in the Rhenish-Westphalian colliery district; but it chiefly differs therefrom in the fact of the eccentric sheaf, having in its circumference a groove, the profile of which forms an angle of 90°, for receiving a circular strap, turned on its inside surface with a corresponding angle of 90°, and toothed on its outer edge. In the event of the rope breaking, a powerful spiral spring, encircling the link-bar, or drawbar, of the cage, presses downward a crosspiece, each end of which draws down a vertical bolt, which, in turn, acts upon a link that pulls round the eccentric, so as to bring its point of greatest eccentricity nearer the side of the shaft guide, which is of timber. The toothed strap, or ring, encircling the eccentric follows this motion, but more slowly, on account of its slip over the eccentric, though this slip is diminished or limited, owing to the large bearing surface given by the angular form of the groove. By this arrangement the two-toothed straps or rings engage only gradually with the two sides of the guides, but this engagement continues with progressive force until all the *vis viva* of the descending cage is absorbed by the friction between the rings and the eccentrics, and the cage remains suspended without having sustained any shock.

SOME SAFETY APPLIANCES FOR MINES.

In a recent number of the *Oesterreichische Zeitschrift für Berg und Hüttenwesen* there are described several new devices which have been introduced by Herr Mauerhofer in the mines of Count Wilczek at Mährisch-Ostau, in Austria, of which he is director. The accompanying illustrations show some of these.

Figs. 1 and 2 show automatic doors for shaft stations. In these drawings *H* represents the gallery. There are two guides *R* and *R'*, in the form of a very flat *V*, permitting the gates *PP*, which are of iron work, to close by their own weight. Each gate is carried by rollers running upon the guides or inclined rails. These gates are also furnished with four other guides *gg* placed inside the shaft and have buffers of rubber to prevent any shock when they close. On the hoisting cage *C* there is an iron frame *L* which ends above and below in triangular guides *G* and *G'*. This

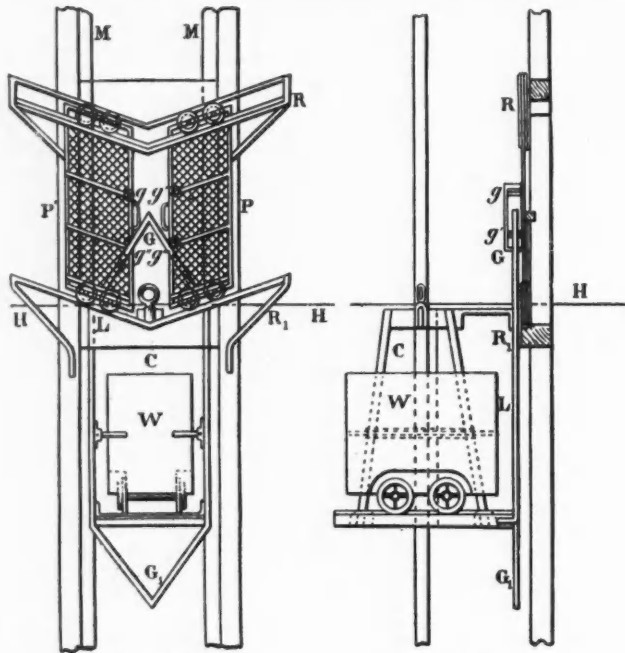


FIG. 1.

FIG. 2.

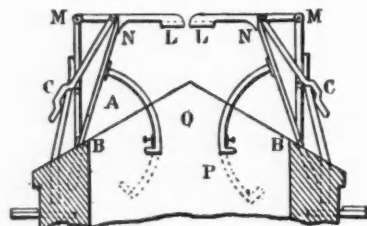


FIG. 5.

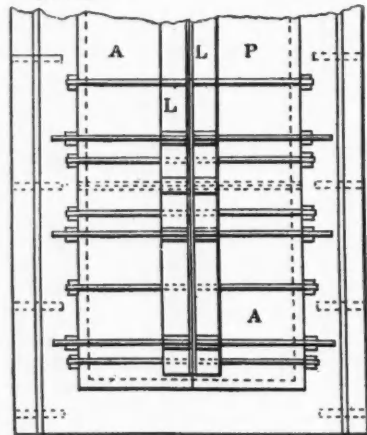


FIG. 6.

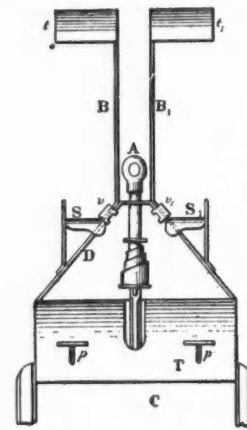


FIG. 3.

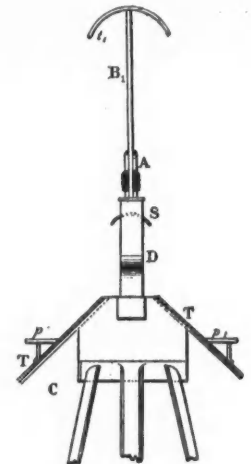


FIG. 4.

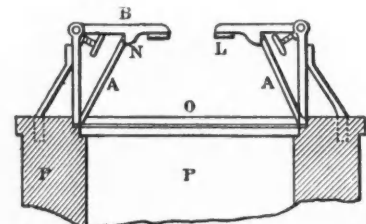


FIG. 7.

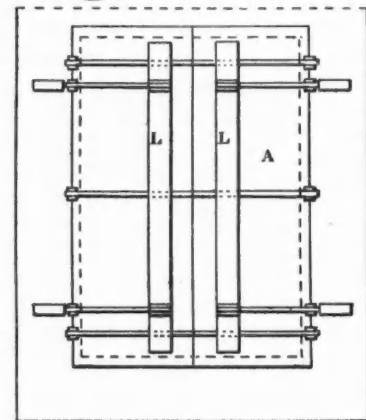


FIG. 8.

frame is so placed that before the skip reaches the level of the gallery *H* one of those triangular sections will strike the guides *gg* and will gradually open the gates. The perpendicular portion of the guide *L* holds the gates open as long as the skip is at the level of the gallery, but when it rises or falls the gates will shut without further attention.

Accidents frequently occur by the fall of stones or other bodies upon the workmen who are engaged in repairing a shaft. In this work if the men remain inside the cage they do not have the necessary freedom of movement and they usually take their places on top. The device adopted for their protection is shown in Figs. 3 and 4, which give two views of the top of the hoisting cage as arranged for this purpose. On the frame of the cage are placed two sockets *vv* in which can be placed when necessary the two rods *BB*, which carry at their top semi-cylindrical protectors *tt*. These are of sufficient size to ward off any stone or small body which might fall down the shaft. In addition to these protectors there are provided two small saddles *SS* upon which

the workmen can seat themselves, and in addition there are foot rests *pp*. In this way the workman is not only protected, but is able to give his full attention to the work without losing time in keeping his foothold.

Figs. 5, 6, 7, and 8 show the installations in the St. Michael and St. John shafts to shut off automatically and instantaneously the return of air in case of an accident in the mine. This is very necessary in case of an explosion of coal dust, for example, where the more violent the current of air the further will the trouble extend. The first device, shown in Figs. 5 and 6, consists essentially of a series of vertical rods joined at their upper ends by the horizontal frames *M*, on which move the horizontal bars *N*, which are joined together by plates *I*, which receive the shock of the air in the case of an accident. To the bars *N* are attached the doors *A*, which turn around the axes *B* and are directed by circular guides. Should an accident occur, the latches *L* will be thrown up by the pressure coming from the interior of the shaft, and the doors, being no longer held, fall automatically and close completely the opening of the shaft. The second arrangement, which is shown in Figs. 7 and 8, is very similar to that just described. It is also composed of vertical frames turning around their axes and provided with plates to receive the shock of the air. In this case the circular guides are not used.

In Figs. 9, 10 and 11 are given the details of a simple and practical

arrangement to avoid collision between cars running in a side gallery with those in the main haulage way. The system consists simply of a long chain fixed at both ends to two gates working on pivots and counterweighted. These, when they are lowered, stop all movement in the main haulage way *A*. The chain is carried up both sides the entire length of the side gallery or incline and passes at the upper end over a hook and guides, as shown in Fig. 11. The working of this apparatus is very simple. If the car is in motion the gallery is closed at once by drawing in the chain and attaching it to a hook fixed in the timbering above. The car can then move freely, as the chain will not interrupt its progress. In the main gallery *A*, at the same time, the force exercised in drawing up the chain lowers the gate, and the movement of the cars is stopped. When, on the other hand, the car stops in the main gallery, the counterweight opens the gate in the side gallery, but the chain is stretched and stops the car in the side gallery.

THE TREATMENT OF KAOLIN AT LIMOGES.

In an article on the methods in use at the famous potteries of Limoges in France, in the *Clay Record*, Mr. Walter T. Griffen says that the first important factor in this china is the kaolin. What are reputed to be the purest deposits of this clay in the world are found in the quarries around St. Yrieix, Haute Vienne, Forchhammer, Brongniart, Salvetat and other chemists have given the formula of true kaolin as $Al_2O_3 \cdot 2SiO_2 + 2H_2O$. The St. Yrieix kaolin corresponds to this. There are many other decompositions of feldspathic rock in other sections of France; but they all contain more or less iron, mica, magnesia, and often sulphur. An excess of water is very injurious in making the very delicate paste used by the Limoges potters.

Different grades in this china are frequently made by mixing the cheaper and impure clays from other quarries with true kaolin. The color and weight of the ware are apparent immediately to the eye of an expert in china. The body of the glaze consists principally of feldspar and kaolin; many manufacturers add to these a certain proportion of ground china.

Before the kaolin is delivered at the factory it is washed and ground and all impurities removed. After its reception at the works it is again washed, and a pump carries the liquid up into a receiver, where it passes between two electro-magnets to remove every particle of iron that might remain in the clay; this mineral discolors the china (often forming black spots, so much objected to). The liquid is then poured into bags and transferred to a hydraulic press, where the superfluous water is forced out of the clay. The bags are emptied on a sort of platform covered with zinc.

average, the price for the year having been 90.41 marks per kilogram against 80.02 marks in 1895.

The total production of copper ore from the mine was 650,985 metric tons, the average cost per ton being 25.08 marks. This shows an increase of 85.153 tons, and a decrease in cost of 1.12 marks per ton. The four smelting works, in which 13 out of 17 stacks were at work on an average, treated a total of 642,738 tons of ore from the company's mines, which shows an increase of 86,744 tons. The matte from these furnaces was treated in the works at Eisleben. The yield per ton of ore showed a slight decrease from the preceding year, the average return having been 3.2% copper and 0.17 kg. of silver, against 3.3% copper and 0.19 kg. silver per ton in 1895. The average return in silver was 0.56 kg. per 100 kg. copper.

The refining works turned out altogether 17,802 tons of fine copper, an increase of 3,702 tons. The electrolytic works produced 651 tons of electrolytic copper, and there was also 83 tons of fine copper won from imported ores treated by the company. This brought the total production of copper up to 18,536 tons, which was 3,457 tons more than in the preceding year. There was also produced in the electrolytic refinery in parting 18 tons of anodes, with 5,975 kg. of silver and 1.40 kg. of gold. In addition there were 19,726 kg. of nickel-vitriol made and sold. The total production of silver for the year was 100,357 kg., which is 24,480 kg. more than in 1895.

The production of the works at Eckardt-Hütte reached 19,704 tons of chamber acid of 50° Beaume. The selling price of sulphuric acid varying from 50° up to 66° Beaume was, averaging the whole, 21 marks per ton.

The Mansfeld Company looks carefully after its by-products, and the

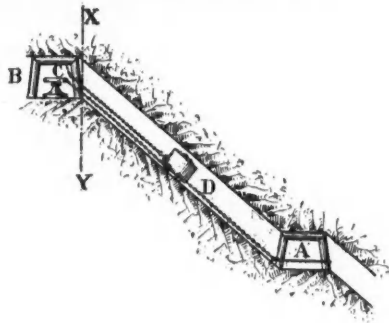


FIG. 9.

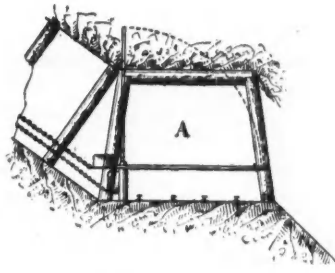


FIG. 10.

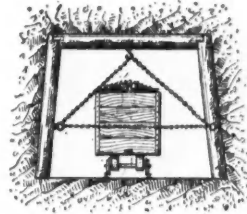


FIG. 11.

SAFETY APPLIANCES FOR MINES.

When the clay has finished its course under these rollers it is placed on another zinc-covered disc and worked by similar cylinders. These mixers give a plasticity and evenness to the paste that no other manipulator has been able to impart. The paste is now ready for the potter.

ABSTRACTS OF OFFICIAL REPORTS.

Central Chile Copper Company, Chile.

This company is a reorganization of the old Panulcillo Copper Company, and has operated the mines in Chile for two years past. The second annual statement of accounts shows a net profit of £4,226 for the 12 months ending with December 31st, 1896. Three causes contributed to curtail profits, a sudden and unforeseen change of management; a change in method of smelting, involving the erection of a new plant, and insufficiency of working capital. The actual net profits since the commencement of operations in Chile, and after writing down liberally for depreciation have amounted in round figures to £8,000. But the company has only been able to distribute a little more than one-seventh of this amount as a first dividend on the priority shares. The debts and liabilities of the old Panulcillo Company, which the company had to take over and liquidate, turned out to be more than equivalent to the whole of the working capital received.

The Panulcillo mines during the year 1896 produced 13,170 tons of sulphuret ores (*despintes*) with an average copper content of a little over 4%, besides 1,350 tons of oxidized ores (*colorados*) of 6.74%. This small output, the consequence of the abandonment by the old company of the necessary exploration and development work for several years, has prevented the company from profiting to any considerable extent by the favorable price of copper, the product of the mines serving merely as flux for the smelting of the purchased ores. For the purpose of increasing the output of the mines the company re-started the extensive exploration works at the Asuncion mine. Of this the manager says that after a minute inspection of the old workings it was decided to continue sinking the shaft below the 60 m. level, and after sinking 2 m. the ground commenced to change, producing some good *despintes*, since when it has been gradually improving. The shaft is at present down 8½ m., meeting with stone containing 5% of copper, and taking the bottom as a whole the average would be 2%. The monthly production of fine copper, which amounted to 113 tons in 1895, was increased to 132 tons in 1896, and this could be considerably increased were the working capital larger.

The Mansfeld Copper Company, Germany.

The report of this company, which is by far the most important copper producer in Germany, shows that for the year ending December 31st, 1896, there was a great improvement in the financial returns, owing chiefly to the higher price of copper which prevailed during the year. The net earnings for 1896 were 5,241,568 marks, as compared with 1,635,946 marks in the previous year. The average price received per metric ton of refined copper in 1896 was 1.065.30 marks, while in the previous year it was 907.70 marks. Electrolytic copper brought 985.90 marks per ton, against 908.80 marks in 1895. Silver also shows a higher

profits were increased by the disposition made of the slag. Sales of this material from the furnaces reached a total of 8,894 cu. m. slag for road material, 8,726,181 slag brick for paving and similar purposes, and 41,854 finished building brick. There was a decrease in the quantity of road material sold, but a large increase in the paving brick, which seems to be well appreciated in Germany.

At the hammer-works and rolling mill at Rothenburg and Eberswald the company turned out a total of 1,670 tons of copper in plates, rods and other finished forms, showing a small increase over the previous year.

Arsenic in Iron and Steel.—M. Leblanc at a meeting of the Société de l'Industrie Minérale stated that Herr Stend has conducted a series of tests on Bessemer and Siemens-Martin steels, which proved that an appreciable quantity of arsenic increases the strength of steel and in no way destroys its weldability, while the specimens tested showed not the slightest tendency to hot-shortness. Although arsenic diminishes the electric conductivity of iron, it possesses this property only in common with all other foreign substances.

The Walker Puddling Furnace.—A test of the patent puddling furnaces of the Robert L. Walker type was made recently at the plant of Moorhead Bros. & Company, at Sharpsburg. The results showed, according to the *American Manufacturer*, that during one turn of four heats, using 1,145 lbs. of coal, there were produced 2,385 lbs. of iron. During a general test of 55 heats, using 20,700 lbs. of coal, 31,545 lbs. of iron were produced. In comparison with the common type of furnace this is a saving of 27%, both in increased production of iron and decreased amount of coal used. At a test made at Zug & Company's mill of 17 days duration, running two turns per day, results showed 1.12 lbs. of iron per pound of coal against the common furnace producing 0.89 lbs. of iron per pound of coal. Heating furnaces at the Keystone Bridge Works are using 33% less coal and doing 50% more work. Tests are now being made at the plants of Spang, Chalfant & Company, at Etna, and the Lockhart Iron and Steel Company, at McKees Rocks.

Oil Wells in Quebec.—United States Consul Dickson writes from Gaspé Basin, Quebec, to the State Department that the Petroleum Oil Trust Company has for some time extended its operations to a district about 22 miles distant from Gaspé Basin, near one of the tributaries of the York River, called the Mississippi Brook. Several wells have been bored in that neighborhood with varying results; some have yielded half a barrel, some one barrel per day. On July 23d well No. 27 in that district produced a quantity of oil from a depth of 1,400 to 1,500 ft. This is the best known so far in Gaspé. The well flowed several times before it was under control, and 300 to 400 bbls. are said to have been lost. It was pumped later and gave at one pumping 1,600 gals. During the time taken to replace the plug the well filled again and the oil was forcing the plug. The oil is of very good quality and the rock beds are nearly flat in its neighborhood, whereas in the parts of the country first prospected the wells were bored into the rock at a sharp angle. The company is having several tanks built around this well and, it is said, intends to bore other wells in the vicinity immediately.

PERSONAL.

MR. EMIL DURANT, a French mining engineer, has been in San Francisco.

MR. ERNEST KENNEDY, a mining man of Trail Creek, has returned to Rossland after an extended stay in London, England.

MR. W. H. HULICK, vice-president of the Warren Foundry and Machine Works of New York, has sailed for Europe.

MR. W. H. CLINGERMAN has been appointed manager of the car shops of the H. C. Frick Coke Company at Everson, Pa.

DR. W. J. NELSON, of Boston, is in San Francisco. He is interested in mining properties in Amador and Nevada counties, California.

MR. M. J. HEELER, mining engineer of San Francisco, is in Silver Peak, Nevada, examining gold properties in the interests of Eastern parties.

MR. JOHN FRITZ, it is said, has been selected as an expert by the Navy Department to estimate the cost of building a government plant for making armor plate.

MR. JOHN F. WHALEN has been appointed Solicitor of the Philadelphia & Reading Coal, Iron and Railroad Company to succeed Major James Ellis, deceased.

MR. ARTHUR I. PEASE, of London, is in San Francisco. He is said to be a high authority on the gold fields of Peru, having made several visits to that country.

MR. G. J. MCCARTHY, of Sonora, Mex., representative of English capitalists, is in San Francisco on his way to examine California mines in the interests of his principals.

MR. CHARLES PETTIGREW, formerly manager of the Joliet Works of the Illinois Steel Company, has been appointed assistant to the president of the Maryland Steel Company, Sparrow's Point, Md.

MR. D. M. CLEMSON, superintendent of the Carnegie Natural Gas Company, has been added to the Board of Managers of the Carnegie Steel Company, Limited, to succeed JOHN PONTEFRAC, resigned.

MR. HARRY VAN GORDER has resigned the superintendency of the Mammoth plant of the H. C. Frick Coke Company, and has accepted a position in the shipping department of the company's offices at Scottdale, Pa.

DR. WILLIAM B. PHILLIPS, of Birmingham, Ala., has been appointed a member of the Jury on Awards in the Department of Mining, Mineral and Geology at the Nashville Exposition. He will be engaged in this work for several weeks.

MESSRS. J. P. MEYERS, of Berkley; G. SKIDMORE, of Nevada County, and W. WHELAN, of Butte County, Cal., have just returned from Ecuador, South America, where they have been developing a large placer claim for a New York syndicate.

MR. RALPH NICHOLS, mining engineer, recently returned from Salt Lake. He sailed from New York September 29th on the *Paris*, and expects to spend some time in Europe on professional business. His address will be 32 Old Jewry, London, E. C.

MR. HARRINGTON BLAUVELT, mining engineer, has been appointed superintendent of the Gladiator Gold Mining and Milling Company in Yavapai County, Arizona, and has taken charge there. He has had much experience in Arizona and will doubtless bring the work at the Gladiator into good shape.

DR. M. O. HOLST, of the Geological Department of Sweden, made a short stay at San Francisco on his way home from Western Australia where he examined mines in the interests of the Anglo-Scandinavian Exploration Company. This company owns several mines there and contemplates purchasing others.

MR. J. L. PARKER, of Rossland, B. C., recently made an extended investigation of the principal mines in the Sloean, Ainsworth and Nelson divisions of British Columbia. He will shortly visit the Illecillewaite, Lardo, Boundary, Similkameen and Okanogan districts of the same province, and examine some mining properties there.

OBITUARY.

MOWRY NICHOLS died at Pottstown, Pa., September 26th, aged 73 years. He was for a long time connected with the Pottstown Iron Company as superintendent.

SOCIETIES AND TECHNICAL SCHOOLS.

NORTHWEST MINING ASSOCIATION.—Notice is given that the third annual meeting will be held in Spokane, Wash., on October 7th, 8th and 9th. A large attendance is expected, and important subjects relating to mining will be discussed. Mr. L. K. Armstrong, of Spokane, is secretary of the association.

CALIFORNIA STATE MINERS' ASSOCIATION.—The

annual meeting of this association will be held in San Francisco on October 18th. Among the important subjects to be considered is that of river improvement for the mutual benefit of the mining and agricultural regions of the Sacramento Valley, and the revision and amendment of the Federal mining laws.

ENGINEERS' CLUB OF PHILADELPHIA.—At the regular meeting of September 18th Dr. Henry Leffmann, by means of the blackboard formulas, described the compositions of clay, and exhibited four samples of material in which the pure clay had been separated from foreign matters in a way to show the percentage of each. He described the physical formation of clay, and showed the character of rock from which the clay is obtained, by projecting thin sections upon the screen by means of the electric lantern with microscope and polarizing attachments. Mr. Joseph T. Richards exhibited and described lantern-views of a small dam which he had built in the neighborhood of Philadelphia, and lined satisfactorily with the clay found in that locality; also views of the larger dam at South Fork. Mr. Harrison Souder cited a case at Germantown, Philadelphia, where a perfectly water-tight dam was made accidentally by a pile of mica-schist and quarry-refuse which had been dumped in a gully. Prof. Lewis M. Haupt called attention to the incompleteness of our information regarding clay, and stated that the best substance for reservoir lining was a mixture of 60 parts of gravel, 22 parts of sand and 18 parts of clay. He also called attention to the permanence of clay banks in tropical countries, and the advantage of cutting out the clay vertically, instead of on a slope. Mr. John C. Trautwine, Jr., described the clay which had been gotten from the neighborhood to line the Queen Lane Reservoir, and attributed its porosity to the large amount of mica which it contained. Mr. Max Livingston called attention to the use of clay for the refining of certain oils.

INDUSTRIAL NOTES.

R. S. Terry will, it is said, erect a barytes mill at Lynchburg, Va.

The second Henry Clay furnace, at Reading, Pa., has been started.

A large plant for the manufacture of firebrick will be erected near Calvert, Tex.

The Mahoning Iron Company has blown in its Hannah furnace at Youngstown, O.

The Thomas furnace at Niles, O., has resumed operations after a shut down of about one year.

The No. 2 furnace of Andrews & Hitchcock Company at Hubbard, O., has been put into blast.

The Dayton Coal, Iron and Railway Company is preparing to blow in its No. 2 furnace at Dayton, Tenn.

It is reported that Clarence L. Wheeler has been appointed receiver for the Malleable Iron Works, of Marion, Ind.

The Laughlin Nail Company will increase the capacity of its tin plant at Martin's Ferry, O., to double its present size.

The Bellaire Steel Company, Bellaire, O., recently started its blast furnace, steel plant and plate mill, giving employment to 500 men.

The Johnson Company, at Lorain, O., has begun to roll steel for the order of 2,000 tons of street railway rails to be shipped to Ireland.

The Kansas City Car and Foundry Company, at Armourdale, Kan., will rebuild its foundry department, which was destroyed by fire August 25th.

Claire Furnace, at Sharpville, Pa., operated by M. A. Hanna & Company, of Cleveland, O., was blown in recently after an idleness of nearly two years.

Alice Furnace, of Pickands, Mather & Company, at Sharpville, Pa., has been blown in. Only two furnaces out of eight at Sharpville are now idle.

The old puddling department of the Birmingham (Ala.) Rolling Mill, which has not been in operation for three years, went on in full force recently.

The Whitaker Iron Company, Wheeling, W. Va., manufacturers of black and galvanized sheet iron, have changed two of their sheet mills to black-plate mills.

The new Lawrence shot and lead works, located near the line between Omaha, Neb., and South Omaha, is now completed and began making shot recently.

The Tonawanda Iron Company has started up its furnace B at North Tonawanda, N. Y., and now has two stacks in blast. The furnace is new and of the most approved construction.

A report announces the assignment of Charles E. Birch & Company, manufacturers of architectural iron, Cincinnati, O., to Charles J. Hunt. The assets and liabilities are both placed at \$12,000.

A fire occurred recently at the Horseshoe Phosphate Works, near Waterboro, S. C., resulting in a loss of about \$5,000 to the owner of the mines and the temporary suspension of mining operations.

The Pittsburg Reduction Company has been asked by the United States Geological Survey to make a bid for furnishing aluminum disks and pins for bench marks to be used in its topographic work in place of those made of brass.

The Cherokee-Lanyon Smelting Company's plant at Rich Hill, Mo., which was disabled by wind three months ago, was started recently with the former force of about 200, who had been idle in the interim. The repairs cost \$15,000.

At Hollidaysburg, Pa., September 27th, operations were resumed at the Hollidaysburg Iron and Nail Works after a long period of idleness. The Eleanor Iron Works, which have been shut down for improvements and repairs, started up on October 1st.

The St. Clair Company, of St. Louis, Mo., has been incorporated with a capital of \$1,000,000, to engage in mining, smelting and refining lead ore and other minerals. Incorporators, Richard J. Dyas, Edward R. Hoyt, W. S. Swingley, D. L. Dyas and Warwick M. Hough.

Contracts for a 60-ton addition to the South Sharon, Pa., steel mill have been awarded, and the plant will soon be at work. At the Sharon, Pa., Iron Works 18 more puddling furnaces were recently fired up, and an additional force of men will be employed.

The Colorado Iron Works Company at Denver, Colo., reports the shipment of a 10-stamp mill, including crushers, etc., to the Golden Star Gold Mining Company at Baker City, Oregon. This company has also just closed a contract for a smelting plant to be erected in Mexico.

The Anglo-American Mineral Milling Company, of Denver, Colo., was recently incorporated with a capital of \$500,000 to build, operate, buy and sell machinery. The incorporators are Henry A. Bradford, Frank C. Lake and Joseph F. Poche. Denver will be the principal place of business.

The Edward P. Allis Company, of Milwaukee, Wis., has recently shipped a gold milling plant to the Mastodon Gold Mining Company, at Pony, Mont., and is building a complete 10-stamp gold mill, 850 lb. stamp, with power and all fixtures for the Polaris Mining Company, near Dillon, Mont.

The Phoenix Iron Company, at Phoenixville, Pa., has begun to tear down its great blast furnaces, which were once among the largest and most expensive in the world. The furnaces were built first in 1836 and have since been rebuilt and improved at a cost of nearly \$1,000,000. Since 1886 the furnaces have stood idle.

The Davis & Egan Machine Tool Company, of Cincinnati, O., recently received a contract from the French government for four heavy 36 in. standard engine lathes with 22-ft. beds. These lathes are to be equipped with metric lead screw and full set of change gears for cutting a large range of threads of the metric pitch.

The Westinghouse Air-Brake Company held its annual meeting recently at Wilmerding, Pa., and re-elected the old officers and directors. The annual report showed net earnings of \$1,820,527. On the following day the board of directors held a meeting and declared the regular quarterly dividend and an extra dividend of 5%.

The Pennsylvania Steel Company's works at Shelton are busier than at any time since 1895. All of the open-hearth furnaces are in operation. The company is rolling rail plates for an East Indian railroad at its merchant mills, at Steelton. Its open-hearth department at the same place has all six of its 50-ton furnaces in operation.

It is announced that a large cement plant is to be established at Sparrow's Point, Md., to manufacture cement from slag. The new company will be known as the Maryland Cement Company. The works are to have a capacity of 500 bbls. per day, and the raw material is to be obtained from the Maryland Steel Company of the same place.

The Richmond Guano Company, at Richmond, Va., will increase its capital stock to \$300,000. A new factory will be erected for the manufacture of chemical fertilizers and acid phosphates. The officers are: R. H. Johnson, president; W. S. Forbes, vice president; J. A. Moncure, secretary-treasurer, and these, with J. P. George and J. W. Harrison, are the directors.

The Parke & Lacy Company, of San Francisco, Cal., reports the sale of two 150 ft. x 14 ft. Ropp furnaces, one to Robert Lanyon's Sons' Spelter Company, of Iola, Kan., the other to the Mountain Copper Company, Limited, of Keswick, Cal. The company also reports sale of hoisting and air compressor plant to Leopold Meyer for the Drake property at Angels Camp, California.

The Mahoning Rolling Mill, of Danville, Pa., which has passed into the hands of F. P. Howe, of Philadelphia, will continue to make structural iron and tubing. R. K. Polk, of Danville, will be superintendent of the mill under the new management. In the near future the puddle mill will be put into operation, while the foundry and machine shop will probably continue in the hands of Curry & Vannan.

The National Electrolytic Company will erect a plant at Niagara Falls, and take 1,000 H. P. from the Niagara Falls Power Company. The product

will be chlorate of potash, but several months will elapse before it will come on the market. At a recent meeting of the board of directors the following officers were elected: Edward Michael, president; Henry Koons, secretary, and Tracy C. Becker, treasurer.

With a capitalization of \$7,000,000 the American Air Power Company of New York City, has been incorporated. The company proposes to construct power plants and to supply light, heat and power to railroads and manufacturing companies. Its directors are Alfred C. Jopling, Francis R. Foraker and Arthur C. Hume, of New York City; Michael Sanford, of Hackensack, N. J., and John C. Breckinridge, of Brooklyn.

James Miller, of Miller Bros., contractors, recently left for Mariopol, Russia, together with Frank Gilmore and Charles Rice, to superintend the construction of a big steel plant and blast furnace for the Mariopol-Nicopol Mining and Metallurgical Company. This company is composed of American capitalists and it intends to compete with the big steel plants of Europe on their own territory. Julian Kennedy is the engineer in charge of the new plant.

At the annual meeting of the stockholders of the Brown-Bonnell Iron Company, held in Youngstown, O., recently, directors were elected as follows: Samuel Mather, Robert McCurdy, H. C. Boughman, Henry Wick, John I. Williams, Daniel Bells and Joseph Forker. The directors elected Samuel Mather president; Robert McCurdy vice-president; John F. Taylor secretary and treasurer; J. M. Butler assistant secretary and John I. Williams general manager.

The Thomas Iron Company's stockholders have elected the following officers for the coming year: Directors, Samuel Thomas, Hokendaqua; B. F. Fackenthal, Jr., Fred. R. Drake, William H. Hulick and Joseph S. Rodenbough, of Easton; William P. Hardenberg, of Newark, N. J., and J. Samuel Krause, of Bethlehem. The directors have organized by re-electing B. F. Fackenthal, Jr., president; William H. Hulick, vice-president, and James W. Weaver, of Easton, secretary and treasurer.

At a meeting of the stockholders and creditors of the Salem Iron Company, of Leetonia, O., held recently, a reorganization was effected. The company has been in the hands of a receiver for some time past. The new officers are John McKeefrey, of Leetonia, O., president; A. C. Norton, of Cleveland, vice-president; George J. Gorman, of Pittsburg, treasurer; W. D. McKeefrey, of Leetonia, general manager. The fires will be started in the furnace at once and business pushed to the full capacity of the mills.

A new incorporation is the Alaska Transportation and Development Company, of Chicago, capitalized at \$5,000,000. Senator Mason, of Illinois, and Albert Blatz, of Milwaukee, are among the men identified with the company. A fleet of six modern steel steamships will be operated between Seattle and St. Michael, giving at least a weekly service. Six light draft steamers will be operated on the Yukon from St. Michael to Dawson City. Two of the ocean steamships are of 2,500 tons register and carry 800 passengers each. Two others are of 1,500 tons and the remaining two of 1,000 tons.

The roof of the new Spence Library building at Richmond, Va., will be of fire-proof construction. The trusses will be steel, and the covering slate, attached directly to metal supports. One end of the building is round, making a conical shaped roof, and at various points of the roof slope are placed dormers and skylights. The peculiarity of the construction makes the iron work very intricate in order to get the pleasing architectural appearance desired. The contract for furnishing and erecting the steel work for the roof has been given to the Berlin Iron Bridge Company, of East Berlin, Conn.

The Commissioners of Public Works, Buffalo, N. Y., have recommended that the offer of the Lake Erie Engineering Works of Buffalo of \$64,250 for a 30,000,000 gallon vertical triple-expansion pumping engine be accepted. The following bids were received: Lake Erie Engineering Works, \$64,250; Holley Manufacturing Company, specifications A, \$82,500; B, \$47,500; Groshon High Duty Pumping Engine Company, \$92,000; Henry R. Worthington, specifications A, \$77,800; B, \$69,500; Buffalo Engineering Company, electrical engines, \$59,400. The bid of the Buffalo Engineering Company was withdrawn.

The Indiana steel casting plant at Montpelier, Ind., was sold at Receiver's sale recently for \$1,500 to Charles S. Bash, of Fort Wayne, who had previously assumed liens amounting to \$50,000. Immediately after the sale the National Steel Castings Company was organized with a capital of \$200,000, of which \$105,000 has already been subscribed and fully paid in. The new parties identified with the plant are Burt H. Whiteley, of Muncie; Sinclair & Morrison, of Lima, O.; Clifton R. Springer, Alliance, O.; J. A. Hindman, of Hartford City; E. H. Labee, of Chicago, and Maurice Goldberg, J. H. Mandeville and Charles S. Bash, of Fort Wayne.

The three European cities of Dublin, Ireland, and Barcelona and Madrid, Spain, are to be equipped with trolley systems. The contract has just been closed with the British Thomson-Houston Company, of London. All the electrical and steam ap-

paratus on the Dublin order and all the electrical apparatus on the Barcelona and Madrid lines will be of American manufacture, the electrical apparatus being made in Schenectady, N. Y., and the engines at Milwaukee, Wis. The Dublin contract includes all the steam boiler and engine and dynamo and motor equipment, amounting to about 5,000 H. P. The motor equipment will be sufficient for 150 cars. The Barcelona and Madrid contract, for the electrical equipment only, covers 3,000 H. P. in dynamos and motor equipment for 140 cars.

The Weber Gas and Gasoline Engine Company at Kansas City, Mo., has recently shipped an engine and pumping plant to the Texas Gold Mining Company, of Buford, Ga.; four engines, pumping and electric light plant to the Squaw Queen Mining District near Phoenix, Ariz.; two gasoline hoisting engines to the Guggenheim Smelting Company, Mexico; one blowing engine to Sargent, Colo.; three heavy hill engines to the M. A. Sebring Mining and Milling Company at Benson, Ariz.; one 40-H. P. engine to operate placer mining pump, to L. C. Trent & Co., Salt Lake City, Utah; three placer mining plants, including gasoline engines to W. E. Putnam, Nyssa, Ore.; two 40-H. P. gasoline hoisting engines to the Consolidated Kansas City Smelting and Refining Company; one gasoline hoisting engine to the Gopher Gold Mining Company, Chapparral, Ariz., and one hoisting engine to J. T. McLaughlin, San Pedro, N. Mexico.

TRADE CATALOGUES.

White's condensing equipments are described in a little pamphlet issued by Mr. Edward F. White, of No. 116 Liberty street, New York. It illustrates several forms of condensers of novel design and speaks briefly of the advantages to be gained by condensing in steam plants. The apparatus shown are compact and well adapted for plants where room is a consideration, as well as for other power installations.

The City of Birmingham, Ala., is described in a little pamphlet issued by the Birmingham Commercial Club as the "Industrial Center of the South." Facts are given to justify this claim, and a large amount of information is packed into 16 small pages. The list of manufacturing establishments in and about the city occupies two of these pages and shows a varied industry, headed by the blast furnaces and rolling mills which form the main foundation of the city's prosperity.

NEW PATENTS.

UNITED STATES.

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

WEEK ENDING SEPTEMBER 21st, 1897.

591,217. PROCESS OF MAKING CYANIDES. Adolph Frank, Charlottenburg, and Nikodem Caro, Berlin, Germany. Patented in Belgium August 10th, 1895, No. 116,953, and in Luxemburg August 11th, 1895, No. 2,346. The process consists in subjecting a described carbide of a suitable alkaline metal, to the action of heat and nitrogen in the presence of steam.

591,227. QUARTZ PULVERIZER. Willard S. Isham, City of Mexico, Mexico. Combination with a mortar having its chamber of decreasing diameter from top to bottom, its inner walls being vertically convex and having their upper portions vertically ribbed, of a passage entering through its bottom, a duct leading to the bottom of the mortar chamber, a stem projecting upwardly from the head, a vertical shaft journaled above the mortar and in central alignment therewith, the stem being eccentrically journaled in the end of the shaft and ore service and discharge ways communicating with the mortar above the grinding chamber.

591,239. PROCESS OF TREATING PHOSPHORIC IRON. Auguste J. Rossi, New York, N. Y., assignor of one-half to James MacNaughton, Albany, N. Y. The process consists in mixing and smelting together in a blast furnace such phosphoric ore together with titaniferous ore.

591,291. AMALGAMATING MACHINE. Achilles Allen, Milton, Ore., assignor of one-half to M. A. Baker and W. H. Bailey, same place. This machine consists of a trough, suitably supported, so as to be slightly inclined, and having an outlet, a central opening in such trough with an upwardly projecting flange, a trough or vat, mounted over the opening in the trough, a plate or riddle, a trap, circular plates or collars, a cylinder provided with a receiver, and suitable sluices and supports therefor, for carrying off the refuse, the parts being combined.

591,400. MEANS FOR ROLLING WIRE AND ROUND BARS. Gustaf Lürmann, Gunnebo, Sweden. Combination of three conical, convergent rollers, a rotating disk, placed centrally to the space between the rollers, and provided with bearings for the spindles of the rollers, and a stationary cogged wheel, gearing with pinions on the spindles.

591,418. CALORIMETER. Henry J. Williams, Boston, Mass. This apparatus consists of a calorimeter can for containing a bomb or combustion chamber, the can having on one side an auxiliary chamber open to its main portion or chamber, in combination with a stirrer or agitating device placed within the auxiliary chamber and arranged to produce a free circulation of the fluid within the main chamber to equalize the temperature of the fluid throughout its mass.

591,423. CEMENT GRAVEL MILL AND CRUSHER. John M. Rademaker, San Francisco, Cal. The apparatus consists of a cylinder composed of disks or heads at opposite ends, bars extending from end to end and

fitting into radial slots in the heads, means for securing the bars in place and regulating the spaces between, consisting of wedge-plates fitting between the adjacent bars arranged in circles having outwardly projecting lugs, and bands fitting in grooves or channels in the lugs adapted to clamp them in place.

591,441. ACETYLENE GAS GENERATOR. Delbert J. Reynolds, Winnebago, Minn., assignor, by mesne assignments, to the Walmsley, Fuller & Company, of Chicago, Ill. The combination to an expansible gasometer, of a generating-chamber, a dipper movable into and out of a body of liquid by the movement of the gasometer, and a liquid-conveying pipe or connection between the dipper and the generating-chamber.

591,514. PROCESS OF PRODUCING METALLIC CARBIDES. Alfred H. Cowles, Cleveland, O., assignor, by mesne assignments, to the Electro Gas Company of West Virginia. The process consists in causing a current to pass between electrodes laterally projecting into a mass of intimately commingled calcium oxide and carbon of such extent that a material proportion thereof will remain undecomposed by the passage of the current, and in gradually separating the electrodes as the material between them is reduced so as to produce between the electrodes a body of the carbide surrounded by an undecomposed mass of the mixture.

591,524. APPARATUS FOR EXTRACTING PRECIOUS METALS FROM BLACK SAND, ETC. Charles A. Hitchcock, San Francisco, Cal. An amalgamator comprising an inclined table, having longitudinal side-bars, an amalgamated electrode forming plate resting on the table between the side bars, and provided on its upper face with a series of riddle bars, an upper electrode resting on the side-bars and forming a cover overlying the lower electrode through its length and spaced above its riddle bars, the riddle bars being adapted to cause the rapidly descending current to splash upwardly against the upper electrode, or form a catract, and the cover being adapted to prevent the immediate escape of the gases generated by the electric current, and connections from the electrodes to a source of electricity.

591,538. COAL SEPARATING MACHINE. Morgan Davis, Jr., Scranton, Pa., assignor of one-half to Charles D. Sanderson, Throop, Pa. Combination of a casing having two chambers, and a contracted intervening passage-way by which the two chambers communicate along their length, one of the chambers having an air-inlet and the other an air-outlet, conveyors arranged in the chambers and operating to move the substances within the chambers longitudinally thereof, and means for forcing air through the air inlet and outlet for the purpose of holding the substance of less specific gravity in suspension in one of the chambers while the substance of greater specific gravity descends through the contracted passage-way into the other chamber.

591,548. PROCESS OF PRODUCING HYDRATES OR OTHER SALTS OF ALKALINE METALS. Charles Kellner, Hallein, Austria-Hungary. Patented in Germany August 17th, 1892, Nos. 70,077 and 73,224; in France September 26th, 1892, No. 224,557; in Belgium September 26th, 1892, No. 10,506; in England September 26th, 1892, No. 18,169; in Sweden September 26th, 1892, No. 4,949; in Norway September 26th, 1892, No. 3,045; in Italy September 30th, 1892, XXVII, 37,733, and LXIV, 341; in Austria-Hungary December 28th, 1892, No. 47,193 and No. 71,840; in Russia May 28th, 1894, No. 7,492, and in Switzerland July 11th, 1895, No. 11,585. The method consists in forming at one point a given quantity of amalgam by electrolysis of a solution of a suitable salt in presence of a mercury cathode and simultaneously oxidizing a substantially equivalent quantity of the alkaline metal contained in the amalgam at another point, by constituting the latter the anode (zinc pole) of a galvanic cell containing a liquid reagent and a cathode electronegative to the amalgam and short circuited therewith.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the *Engineering and Mining Journal* of what he needs he will be put in communication with the best manufacturers of the same.

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GENERAL MINING NEWS.

ALABAMA.

BIBB COUNTY.

BESSEMER LAND AND IMPROVEMENT COMPANY.—A fire recently took place in this company's No. 2 mine at Bell Ellen, near Blockton, and it is believed that several of the workmen who were in the mine at the time have been suffocated by the smoke. The fire originated near the bottom of the main slope. About 100 men are employed in the mine.

GLEBURNE COUNTY.

BENNETT.—These gold mines, near Edwardsville, are being developed by Charles Schofield.

KLONDIKE GOLD MINING COMPANY.—This company has been organized at Edwardsville to develop gold property in this county, and a shaft is now being sunk. The capital stock is placed at \$100,000. D. J. Sinclair is president; W. B. Merrill, vice-president; L. D. Phillips, secretary-treasurer; H. D. Watson, director, and J. B. Merrill, director.

PERUVIAN GOLD MINING COMPANY.—A 10-stamp mill will be erected at this company's mines in Edwardsville.

ALASKA.

COPPER RIVER DISTRICT.

(From our Special Correspondent.)

The brig *La Ninfa* has cleared for Prince William's Sound from San Francisco with 59 men and two women. The intention of this party is to prospect the Copper River for minerals and to locate a town site that will be the center of mining operations in that section.

YUKON-KLONDIKE DISTRICT.

No steamer has arrived from St. Michael during the week, and the news from the Yukon country is meager. There are various reports as to the quantity of gold which the next steamer—due in a few days—will bring, and until it arrives no definite news can be given. The Yukon navigation had not closed on September 10th, the latest date reported, and it is believed that a large quantity of supplies will reach Dawson City and the Klondike region yet this fall.

The adventurers who are trying to reach the Klondike by the lower routes, from Dyea to Skagway, seem to be making very slow progress. The route from Skagway, through the White Pass, has been almost given up for the season. A large landslide occurred in the Chilkoot Pass, following heavy rains, and it is reported that 18 people were killed, though the number is not quite certain. It is probable that many people will have to pass the winter on the coast.

CALIFORNIA.

STATE MINING BUREAU.—State Mineralogist A. S. Cooper has ready for publication the first of the series of county mining maps which will be a distinguishing feature of his administration. The map of Santa Barbara has been lithographed in three colors, and it will be printed for distribution soon. Mr. Cooper proposes to issue no biennial report descriptive of the mines and mineral resources of the State, as all his predecessors have done, but will publish instead a complete register of the mines and minerals of California, accompanied by large maps of all the counties having important mineral resources. This will constitute the most complete mining directory ever made. It will contain no descriptive matter, the information all being in tabular form. The register will consist of six tabular statements dealing respectively with the quartz, hydraulic and drift mines of the State, mills and arrastras, mineral springs and all the miscellaneous minerals. The character of the formation, which will be briefly given in words or figures, may be judged by the following headings of the columns in the list of quartz mines:

Name of mine, nearest town, section, township, range, map number, whether patented, elevation, number of veins, width of vein, strike, dip, character of ore, hanging wall, foot wall, shaft, incline, open cut, tunnel, drifts, greatest depth below outcrop, mill power, employees, name and residence of owner and superintendent, references to published reports.

To secure the needed information circulars and blanks are being sent to owners and superintendents throughout the State and information on file or published is being compiled in the office. The value and completeness of the work will depend largely on the readiness with which the blanks are filled and returned and it is hoped that all mine owners will respond with correct information.

All the mines, etc., listed in the register will be indicated on the maps with reference numbers. The maps are being made on the large scale of $\frac{1}{2}$ in. to the mile and show the geographical features, including gulches, roads and trails, in great detail.

It is Mr. Cooper's intention to employ a competent man in each county to carefully revise the map after it is compiled. The publication of these maps and registers would be a great tax on the funds of the Bureau, and Mr. Cooper expects to get the boards of supervisors to pay the cost of printing and paper after the compiling and engraving are done. Boards of supervisors may thus cheaply issue these maps for distribution along with the descriptive matter about their counties which they wish to print. Each map and register will be issued, if possible, as soon as ready, and in a year or more they will be published altogether. Work is now being done on the maps of Trinity, Shasta and Kern, and several will be made this fall.

The usual field work of the Bureau has been wholly discontinued, except for Deputy W. L. Watts' studies in the southern oil region, and the deputies dismissed except Messrs. Preston and Means, who are compiling maps in the office. The compilation of this valuable work of reference will nearly monopolize the activities of this institution for a year or so.

AMADOR COUNTY.

(From Our Special Correspondent.)

DORA.—This mine, three miles north of Murphy, on Indian Creek, has resumed active operations under the management of W. G. Drown, who represents San Francisco parties.

LIVE OAKS.—This mine, three miles west of Jackson, is being developed by Sullivan & Young, who have sunk a shaft down 25 ft. on a 4-ft. ledge, the pay streak being 2 ft. in width. This mine was worked some years ago and some rich ore was taken out of the old shaft. Work was discontinued when the water level was reached.

WILDMAN-MAHONEY.—The additional stamps be-

ing put in this mine will make a total of 80 stamps. These mines, at Sutter Creek, are producing largely.

CALAVERAS COUNTY.

CARSON CREEK MINING COMPANY.—The proposed trustees' sale of this company's claims, the Jones mine, the Virgennes, the Independence, the Gates, the Carson Creek, the Harrison, the Remington, the Garrett Placer and the Douglass Hill, in default of the payment of a promissory note for \$20,117, secured by a deed of trust covering the entire property, claims and appurtenances, was restrained by an injunction on behalf of Patrick Phillips, a shareholder, on the ground of irregularity in issuing the deed of trust. Litigation is therefore pending.

(From Our Special Correspondent.)

The Sierra Railway is in operation to Dom Pedro and has been constructed to a point about 7 miles from Jamestown, which point will be reached in about 10 days.

FRESNO COUNTY.

An important oil strike has been made near Coaliga, where a well developed by Chancellor & Canfield is yielding 110 barrels a day.

KERN COUNTY.

A miners' union is being formed at Randsburg by the secretary of the Virginia City (Nev.) union.

RAND MINING AND MILLING COMPANY.—This company has leased the Visalia 10-stamp mill for a long term, and will make important improvements there at once, including the sinking of another deep well. This will enable the mill to run night and day, and add materially to the output. A. D. Marchand, the new superintendent, formerly of Los Angeles, has assumed charge of the undertaking.

WEDGE.—The shaft in this mine at Randsburg has reached a depth of 400 ft. and the ore is said to run from \$50 to \$100.

(From Our Special Correspondent.)

ALAMEDA.—At this mine, in shaft No. 3, a 2 ft. vein of high-grade ore has been uncovered at a depth of 75 ft.

COLORADO GOLD MINING AND DEVELOPMENT COMPANY.—This company has been incorporated under the laws of West Virginia. Capital stock, 500 shares. Directors, J. J. Shafer, J. G. Lyman, W. E. Rhodes and H. C. E. Stuart, of New York, and T. C. Perkins, of Hartford, Conn. The property to be worked is located in this county.

RANDBURG RAILWAY.—Work has been commenced on this railroad to be constructed from Kramer Station, on the Atlantic & Pacific Railway, to Johannesburg. The Pacific Borax Works will also build a narrow-gauge road from its works to Daggett.

NEVADA COUNTY.

(From Our Special Correspondent.)

GOLD FLAT.—This mine, near Nevada City, which was bonded a short time since by a party of practical miners for \$15,000, is being worked successfully. The mill runs show \$12 ore, and five stamps crush six tons per day. The ledge is 14 in. in width and is well defined. The shaft, now down 116 ft., will be continued another 100 ft., when drifting will commence.

ORLEANS.—A new air compressor, power drills and dynamos have been put in this mine, one mile southeast of Grass Valley. A Pelton water wheel furnishes the power.

PLACER COUNTY.

(From Our Special Correspondent.)

BEAR RIVER HYDRAULIC COMPANY.—This company is preparing to bring water to the hydraulic elevator, $2\frac{1}{2}$ miles north of Colfax, to work the tailings in the river. Pipe will be laid for 4,500 ft. and a flume built 4,700 ft. in length. The pressure will be 430 ft. The company has a contract with the South Yuba Company for 500 in. of water.

TRINITY COUNTY.

(From Our Special Correspondent.)

CIE ESE COMPANY.—This company is laying a siphon pipe over a mile long and 34 in. in diameter to carry water to the Keno claim, located near Junction City.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

RAWHIDE.—On the 300-ft. level, in the south drift, at this mine, $2\frac{1}{2}$ miles northwest of Jamestown, the face of the drift has exposed another ledge of high-grade ores.

COLORADO.

SENATOR MINING AND MILLING COMPANY.—An Associated Press dispatch from Denver states that Attorney-General Carr recently called the attention of District Attorney Barnes to an alleged violation of the laws of the State by this company. Investigations were urged of the charges so that proceedings can be instituted against the officers of the company. The officers are Theodore Stegner, president, and F. E. Borrows, secretary. The company in its prospectus and pamphlets publishes a sworn statement that its capital stock is \$5,000,000, but the records of the Secretary of State's office show that it is but \$1,090,000. The law requires the filing of a certificate and the payment of a fee when the capital of any company is increased after incorporation, but the Senator people appear to have neglected this. For so doing they may be compelled to forfeit their charter, or pay the Secretary of State an additional \$600 as a fee for raising the

amount of the company's stock to \$5,000,000 to say nothing of other proceedings.

BOULDER COUNTY.

BLAND.—This claim is owned by Newton Brothers and is located in the Long's Peak mining district. A new strike is reported to have been made on this property at a depth of 55 ft. Two mill runs of the ore have already been made, one running \$24 and the other \$26 in gold to the ton.

CHAFFEE COUNTY.

(From Our Special Correspondent.)

CALUMET.—A deal has been made by which Walter O'Malley receives \$15,000 for this property, near the head of Green Gulch. Messrs. Griswold & Glidden, the purchasers, represent the Woods Investment Company, and \$500 cash was paid in closing the deal.

INDEPENDENCE.—The 50-ft. contract on this shaft has just been completed, making the total depth 171 $\frac{1}{2}$ ft. A good body of ore is in sight, and a force of men will be put to work October 1st, drifting both ways in order to open up stopping ground.

THREE FRIENDS.—An important deal affecting this property in Cat Gulch, has just been concluded, the mine passing into the hands of Atkinson Bros., of Colorado Springs, under bond and lease for \$100,000. Mr. W. S. Stratton, of Cripple Creek, is also associated in the deal. The sum of \$1,000 cash has been paid to bind the bargain.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

HOME RUN.—The Sheldon Investment Company has filed its answer to the petition of J. J. Wyatt for a receiver for this mining claim. The Sheldon Company recites that it agreed to purchase a 13-16 interest in a lease of the property for \$2,800, and entered upon the lease on August 1st last. The company gave its promissory note for \$656 as a further consideration. It asserts on the other hand that Wyatt failed to carry out his part of the agreement and operated the mine in an unsatisfactory manner until the owner, James Doyle, declared the original lease forfeited.

(From Our Special Correspondent.)

ANCHORIA-LELAND.—In the Anchoria-Leland a new vein has been encountered at the 278-ft. level running parallel with the Chance vein. The vein was encountered several days ago, but nothing was given out until it was learned that an ore chute was broken into at the point where the vein was cut, and although only three days' work has been done the ore has been determined to be of high grade. The vein is 4 ft. across with an 8 to 12 in. streak of fluorine stained quartz. Three assays taken from the vein ran \$252, \$786 and \$983, respectively. The management regards this as one of the biggest finds in the history of the mine.

ELKTON CONSOLIDATED MINING COMPANY.—This company issued a statement September 21st giving the output of the mine for August. The net smelting and mill returns during the month of August were \$39,759. The mine operating expenses were \$14,000, leaving the net earnings \$25,759. The grade of the ore being shipped is holding out well.

MOON-ANCHOR.—The Anchoria-Leland Company has just sold 75,080 shares of Moon-Anchor stock which has been held in its treasury for some time, to J. R. McKinnie and Verner Z. Reed, president and vice-president respectively of the Moon-Anchor Company. The price paid was \$1 a share. This is the largest transaction that has taken place in Cripple Creek stocks since the famous Elkton deal was made over a year ago. George S. Wilson, a director of the Moon-Anchor Company resigned, and W. S. Stratton was chosen to succeed him.

LAKE COUNTY.

(From Our Special Correspondent.)

During the past few months there has been considerable New York capital coming into this field, but I learned to-day that one of the biggest deals closed this year has just been consummated and that New York people are to take hold of a proposition here that will be of much importance. At the present writing, however, the parties concerned in the deal will not divulge any particulars.

OUTPUT.—By figures carefully compiled from reliable sources it is shown that the output of the camp to-day is greater than it has been for a number of years past. This output, however, is largely composed of iron and manganiferous iron ore and amounts to over 1,800 tons of ore per day. The fact that the Ibez group is producing some 300 tons of silicious ore per day and that there are a number of new producers of such ores makes a market for the iron, which is needed for fluxing purposes. The increased output in the Cripple Creek District of silicious ores makes a further demand for Leadville iron for fluxing, and while it may not materially increase the value on the year's output it does increase the tonnage, which means the employment of more labor. Among the leading producers of the camp and their daily tonnage at this time are the following: Ibez properties, 300 tons; Sedalia, 60 tons; Lillian, 25 tons; Big Four, 30 tons; Reurrection, 20 tons; Nettie Morgan, 30 tons; Gallagher, 70 tons; Mahala Mining Company, 150 tons; Small Hopes Combination, 50 tons; Catalpa Crescent, 175 tons; Yankee Doodle, 61 tons; Maid of Erin, 125 tons; Little Chief, 125 tons; Elk Tunnel, 100 tons; Rock & Dome, 60 tons; Elk, 40 tons; Iron-Silver, 50 tons; Wm. Wallace, 50 tons; Shenango, 30 tons; Rawlings, 20 tons; Matchless, 50 tons; Duncan, 20 tons; Robert Emmet leases, 50 tons; making a total of nearly 1,700 tons daily, of all

kinds of ore, while other small leases shipping 5, 10 and 15 tons every day or so run the tonnage over 1,800 tons daily. Of this amount there is probably some 750 tons of iron ore and 200 tons of manganese iron for the Steel Works Company.

RAILROAD FREIGHT RATES.—A committee of leading mine managers of the camp has been appointed, and will meet with the traffic managers of the three railroads entering here some time this week. The traffic managers have already intimated that they will do all in their power for the Leadville mine shippers. The freight rates on ore from Aspen to Denver have been reduced by the railroads during the present low price of silver, and the local mine managers will ask for the same concessions.

ALLEGHENY MINING COMPANY.—The directors of this company held a meeting in Leadville, September 25th, at which time the following officers were elected for the ensuing year: President, A. Sherwin; vice-president, B. F. Stickley; secretary, R. J. Allison; treasurer, C. T. Limberg.

BANKER.—These people, to whom I referred at length last week, got their work under way during the week and are now rushing the Banker shaft down from the 350-ft. level to cut the ore shoot of Breese hill.

DOLLIE B. GROUP.—Mr. Connolly has been arranging to start up operations on these properties in Evans Gulch. Some very important work is to be conducted. It is the intention to drift for the Sedalia ore shoot, and it is thought that this can be satisfactorily opened up in this ground.

DOWNTOWN PUMPING.—At the present writing this proposition is again under most careful and serious consideration, and at a meeting to be held in Denver the supposition is that work will be ordered resumed at once on the pumps. Detailed accounts of the importance of the downtown pumping proposition have been given, but for some weeks not a move has been made towards a resumption of pumping operations. All of the machinery is on the ground, but not in place. When work was stopped towards putting in the pumps silver was down to 52c., and at the same time the royalties were alleged to be too high. As a result all the owners have been asked to reduce their royalties, and this has been done, so that now it looks very favorable for a start up before the end of the month. Mr. Eben Smith, of the Smith-Moffat combination, has just returned from Europe, and it was at once decided to hold a conference with Mr. Smith in Denver. The executive committee consists of Messrs. Dennis Sheedy, of the Globe smelter; Eben Smith, A. Sherwin, J. W. Newell and R. B. Estey.

MAHALA MINING COMPANY.—These people are doing an immense amount of work, and from Manager Mitchell I learn that while carrying on development work and opening up a large ore shoot the Mahala is shipping 150 tons per day. Over 125 men are employed, and most of the work is being carried on at the fourth level at a depth of 1,100 ft. The stuff shipped is a good sulphide ore.

WHITE PRINCE GROUP.—The White Prince and across the Ocean claims have shown improvement during the past few weeks and shipments of 75 to 100 tons a day of lead ore with a good iron excess will be commenced this week. The work is being conducted on the White Prince where a good body of ore has been opened up, which runs about 8% lead, 5 oz. silver and 0.02 oz. gold. A fine surface plant has been placed on the property, and operations will be on a large scale from now on.

ZINKIFEROUS SMELTER.—Mr. Marcus Ruthenburg who is conducting the zinkiferous sulphide treatment in this camp and operating at the Elgin smelter, has closed down his plant for a few days to await the arrival of some pumps which he sent for. These are now here and the smelter will be in operation again in a few days on the Colonel Sellers ore, of which Mr. Ruthenburg will handle some 50 tons per day.

OURAY COUNTY.

(From Our Special Correspondent.)

BACHELOR.—The ore chute is richer than ever, a 4-in. streak of almost solid gray copper having recently been disclosed in the upper level. Ten men were laid off recently, but were re-installed with the new strike.

CAROLINE MINING COMPANY.—At the Virginias, 80 men were laid off recently, and the mine closed indefinitely. The employees, however, were given work at the Revenue, owned by the same company, which is producing large quantities of gold ore. Five carloads of concentrates are being shipped every other day. The force now consists of 450 men.

MELDRUM TUNNEL.—This project is apparently at a standstill, but the promoters are confident of beginning work before winter sets in. The scheme is backed by parties in Glasgow, Scotland.

TEMPEST.—Van Houten & Prosser, owners of this mine, have refused an offer of \$5,000 cash for their property. An offer to bond and lease for \$30,000 was also refused. The owners have now made an offer to give a bond and lease on the property for \$60,000 to Mr. McMahon, superintendent of the Wedge Mines Company, who advanced the original proposition. The Tempest adjoins the Camp Bird in Imogene Basin, on the south.

TOM PAYNE.—The vein in this property has been cut through the Bank of Ouray tunnel, and runs 2 oz. gold and 65 oz. silver. This vein is a continuation of the Humboldt, and lies between the

Sweepstakes and Sailor's Fortune, both old-time producers in the Sneffels district.

WEDGE.—An average of 40 carloads monthly is being shipped to Denver smelters. The ore carries little or no lead, but runs high in silver. The force now consists of 75 men. Ore sorters' wages have been cut 50c. per day.

GEORGIA.

CHEROKEE COUNTY.

SIXES GOLD MINING COMPANY.—This company was recently incorporated, its capital being fixed at \$500,000, divided into 25 shares. The directors are Judge Henry B. Tompkins, Dr. F. H. Orme, C. W. Hunnicutt, Atlanta; Mr. Howland, Allatoona, and Colonel J. H. Moore and A. B. Coggins, of Canton, Ga. There are 166 acres of land in the tract, lying four miles northwest of Holly Springs, on the Atlanta, Knoxville & Northern Railway, and six miles southwest of Canton. J. L. Hughes, of Kennesaw, says that in 1867 he sunk a shaft on the Sixes 80 ft. deep and found at the bottom a vein almost 8 ft. wide. It is proposed to erect a 20-stamp mill, with a chlorination plant.

IDAHO.

LEMHI COUNTY.

(From Our Special Correspondent.)

ITALIAN GOLD MINING COMPANY.—This is a new Utah corporation with head office at Salt Lake. Capitalization \$300,000, shares \$1, with 100,000 shares set apart for treasury purposes. Stock assessable; no one assessment to exceed 2% of the capital stock, nor shall assessments be levied oftener than four times a year. Annual meeting third Monday in September. Officers and directors are: S. J. Kenyon, president; A. S. Dry, vice-president; W. E. Hubbard, secretary; W. H. Irvine, treasurer; L. W. Clark, all of Salt Lake. Realty consists of Gold Star, Caledonia, Cleveland, Plumas, Caroline, Lincoln lode claims in Mackinaw mining district, on which there is an encumbrance of \$23,000. Present owners have but just taken possession and are pushing forward exploration. Development consists of 2,000 ft. of workings. There is a 10-stamp mill. Ore is free milling.

SHOSHONE COUNTY.

A number of locations have been made within the past 10 days on the north fork of the Little St. Joe. Claims are located on the headwaters of the river, about 12 miles east of Wallace. It is said one ledge can be traced several miles. The vein is said to be large and to carry copper. Samples of ore taken from the ledge show up well.

FATHER LODGE MINING COMPANY.—It is said that operations are to be resumed on the company's property on Sunset Peak, after an idleness of some time.

FEATHER.—It is said that arrangements are being made to resume work on this property at Sunset Peak. A force will be put at work in the old tunnel, and will be kept at work all winter.

FORMOSA.—In this mine, near Gem, a new tunnel has been begun, starting from the level of the ore bins at the mill. The tunnel through which ore has so far been taken—the middle tunnel—is high above the mill, the ore being sent down through a chute, a long trestle connecting the upper end of the chute with the mouth of the tunnel. The new tunnel will be 95 ft. lower and will run about 300 ft. to cut the vein. The present working tunnel ran 100 ft. to the lode; thence they drifted 400 ft., all the way on ore, and then broke it down from above until the tunnel was full the whole length before the mill was built. Since then a shaft was sunk 35 ft., all through ore, before starting the mill tunnel. Three shafts are being worked, and it is going in about 10 ft. every 24 hours. They expect to hold to that rate for the next 100 ft., that distance being through an old slide, but there solid rock will be struck and progress will be slower. The mill will be run little until the new tunnel is done.

RED CLOUD.—It is reported that a vein 2 ft. wide, rich in galena, was recently struck in this mine, near Wardner. The strike was made in a tunnel, about 125 ft. from the mouth and 100 ft. below the surface.

ILLINOIS.

BUREAU COUNTY.

SPRING VALLEY COAL COMPANY.—An important decision bearing on the coal mining industry of this State was recently handed down by Judge Crabtree, of the Appellate Court of this district. The case had been fought for three years by this company, in order to defeat an ordinance of the city which created the office of inspector of weights and measures. The miners had been claiming the scales at the shafts defrauded them of one-third of the coal they dug. Judge Crabtree holds that the city ordinance is not in conflict with the State law, that both inspectors use the same standard, and that if they do their duty they cannot come into conflict.

WILL COUNTY.

STAR COAL COMPANY.—This company's No. 1 mine, at Braidwood, which has been idle for 18 months, was recently destroyed by fire, the loss amounting to \$75,000.

WILLIAMSON COUNTY.

WILLIAMSON COUNTY COAL COMPANY.—An explosion recently occurred in this company's mine, four miles north of Marion. Fifteen wounded miners, two of whom have since died, have been res-

cued. Several of the wounded are so severely crushed and otherwise hurt that they will die. There are said to be five or six miners still imprisoned in the burning mine. The explosion is believed to have been caused by gas, of which there is a good deal in the mine, taking fire from the miners' lamps.

INDIAN TERRITORY.

In view of reported discoveries of gold near Purcell, the Chickasaw Legislature, now in session at Tahomaz, has passed an act placing a royalty on all gold hereafter mined in the Chickasaw Nation

MASSACHUSETTS.

GRANITE MANUFACTURERS' ASSOCIATION.—At the annual meeting recently the following officers were elected: President, James Thompson; vice-president, A. Marnock; treasurer, M. P. Wright; secretary, T. J. Dunphy. Executive committee: President, vice president and treasurer, *ex-officio*, Thos. H. McDonnell, Harry Nicoll, Tobias H. Burke, George McFarlane, John Switbin, Henry McGrath. Figuring committee: James McGilvray, Thomas McDonnell, M. F. O'Brien. Confidential record committee: President, vice president, *ex-officio*, Tobias H. Burke, William T. Spargo, Charles A. Hayes. Representative to the Arbitration Board: Thomas F. Burke. Membership committee: Thomas F. Burke, Thomas W. Smith, John Cashman, John A. McDonnell, A. Marnock. Committee on violation of rules: William Deacon, Walter R. Fegan, T. Marnock.

MICHIGAN.

COPPER.

The old Mineral Range Railroad, the narrow-gauge line which was built some 30 years ago, and which was the first railroad in the copper country, was sold some years ago to the Duluth, South Shore & Atlantic Company, which has since operated it. The old road was narrow-gauge, and when it had no railroad connection this was not an inconvenience, but it was some time since decided to change the line to standard gauge as a matter of convenience. This work has now been completed, and the narrow-gauge rolling stock has been withdrawn. The Mineral Range and the Hancock & Calumet—both narrow gauge—were for many years the only railroads in the region, and connected the mines with the ports on Lake Superior and Portage Lake.

ISLE ROYALE.—The shaft on the Portage property of this mine is in poor condition, and the management may abandon it and reopen the old No. 1 shaft instead. No. 2 shaft is irregular and has been sunk 600 ft. The shaft on the Isle Royale is cribbed up and ready for hoisting. The boilers from the Huron mill, although practically new, need considerable repairing before they can be put to work.

OSCEOLA-KEARSARGE-TAMARACK, JR., CONSOLIDATION.—A circular to the stockholders of the Osceola Mining Company has been issued, which says that on September 20th the board of directors voted unanimously to recommend to the stockholders that the capital stock of the company be increased to 100,000 shares of the par value of \$25 each, and that the 50,000 new shares be used to purchase the property of the Kearsarge Mining Company and of the Tamarack, Jr. Mining Company, paying for the former 25,000 shares, and for the latter 16,000, leaving 9,000 shares in the treasury of the company, which should be disposed of by the directors, and the proceeds placed in the treasury of the company. The circular says, in explanation: "The history of this mine in the past has been that common to all mines working on an amygdaloid lode. The various parts of the mine have at times all been in good copper-bearing ground, while at other times the reverse has been the case, and it has been a severe strain upon the mine to furnish the regular product. In case this leanness of the rock should come at the same time as a sharp decrease in the price of copper, this condition of affairs would only be intensified. Fortunately, this has not happened to us in the past. This great variation in the lode has always made it necessary to carry on development and opening work to a very extensive degree, so that there should always be as many good places opened up in the mine as possible to replace any that were temporarily poor. This has necessitated the tying up of a very large amount of money and has prevented the mine from making as good a record as it really deserves. With our No. 6 shaft in commission and the increase in product expected from it to be provided for, there will be a corresponding increase in this development work, and a corresponding increase in the amount of money necessary to be tied up. It has been felt by the directors that if the consolidation of the Osceola could be brought about with some of the other companies operated under the same management, there would be no necessity for this extraordinarily large amount of opening expense, as the other mines could be drawn upon more strongly during temporary periods of leanness in the Osceola, it being hardly possible that all the mines should be in a poor place at the same time. In addition to this, the Osceola stamp mill, originally erected over 30 years ago, has arrived now at an age when it needs very extensive alterations to bring it up to the standard of modern mills. If a consolidation were effected, a larger number of stamps would be necessary, and a much more modern and complete mill could be erected than if we merely attempted to remodel the old mill, and yet this latter is all that would be

warranted if we only have the Osceola product in view.

"The companies which it is proposed to take into the consolidation are the Tamarack, Jr., and the Kearsarge (including the Iroquois Copper Company's property, lately purchased). As the simplest method of consolidation, it is proposed to have the Osceola Company buy the property of the other companies, paying for them with its stock. It is proposed to increase the capital stock of the Osceola Company by the issue of 50,000 new shares, paying for the Kearsarge property 25,000 shares, for the Tamarack, Jr., 16,000 shares, and leaving 9,000 shares in the treasury of the Osceola Company. The terms of consolidation as proposed by the directors have been carefully considered and seem to them to be fair and equitable to all the companies, and they are submitted to the stockholders with the unanimous recommendation that they be carried out, as it is felt that with the consolidation larger dividends can be paid to the owners of the consolidated property than they would otherwise receive if the properties were to go on as at present."

Similar circulars have been issued to the stockholders of the Kearsarge and the Tamarack, Jr., companies. Special meetings of the stockholders of all three companies have been called, to be held in Boston on October 26th, to vote on the necessary orders and agreements. Under the Michigan law at least three-fifths of the stock must be represented at these meetings.

MINNESOTA.

(From Our Special Correspondent.)

Shipments of ore are lighter and will probably continue to grow less as the season advances. There is so much freight to be moved now that rates will steadily rise, and the mining companies are not prepared to pay an advance on old rates. About all ore sold early has been delivered or contracted for with vessel room, and sales made now are largely contingent on rates, which are at this writing 65c. from the head of the lakes, and very strong at that. Wheat to be moved forward is now coming into Duluth at the rate of 3,000,000 bushels a week, and the coal movement will absorb a tremendous amount of tonnage from this time on. As an instance of what will be needed in the way of coal room, it is interesting to note that the Minnesota Iron Company will require about 50,000 tons at Two Harbors to carry its mines and road over the winter, and this is only a small part of the general demand.

Ore shipments from Two Harbors last week were 100,000 tons, and for the month, about 420,000 tons, while from Duluth they were a trifle larger. Most of the great ore ships of the Bessemer Company, owned by Rockefeller, are now in the grain trade and are said to be earning about \$1,000 net a trip.

It begins to look as if the Duluth, Mississippi River & Northern road, owned by the fee-holders of the Mahoning mine, would to continue its line to Duluth this winter, and put in terminals there. This will save 18 miles of haul, and will give it all the freight which it now has to divide with the Duluth, Superior & Western. The line will not be expensive, and to the knowledge of the writer has been under consideration for three years. The Mahoning, by the way, will not ship 100,000,000 tons, as the types made this correspondence say a short time ago, but one-hundredth part of that. Even this bagatelle, comparatively speaking, will give the builders a very reasonable insurance on their through line to Duluth, as they control the traffic of the Mahoning and several other mines in the western Mesabi.

IRON—MESABI RANGE.

(From our Special Correspondent.)

ETNA IRON COMPANY.—As fast as places can be made for them 206 men will be put on stripping this mine for the coming year. It joins the Mountain Iron. Some 50,000 yds. are to be moved.

FAYAL IRON COMPANY.—The shipments from this new mine now are 540,000 tons for this season, bringing it fully up to the predictions as to its importance made in these columns a year or more ago. It is probable that 600,000 tons will be shipped this year. No. 3 shaft will be sunk at once on the company's fee land, giving it two working shafts and much greater mining capacity. It will be equipped with two 18x42-in. Corliss engines, probably from Milwaukee, operating a 6-ft. drum. The company owns 80 acres of land in fee and 200 in lease, on practically all of which there is ore.

MINNESOTA ORE COMPANY.—This company, operating the Cincinnati mine, has a steam shovel at work loading the 20,000-ton stock pile there. At this mine there has been much emulation between shovelmen Johnson and Armstrong, who are at work on a Barnhart shovel in stripping. They have successively made records for 10 hours of 550, 573 and 591 cars of dirt, the latter being by Johnson in a night run. These cars hold 2 cu. yds. each and are loaded in trains of 10 cars each. There are three trains supplying the shovel, and there is no delay from lack of cars.

MOUNTAIN IRON.—Shipments from this mine are now about 3,750 tons daily, and a night shift is being added.

OLIVER MINING COMPANY.—This company's Oliver mine and its Lone Jack at Virginia have shut down, probably for the season. They have been shipping to the Carnegie furnaces. The product for the season, less than 5 months, has been 510,000 tons. About 125 men are thrown out of work, but will probably be given employment in stripping and other operations. This leaves only the Auburn,

Norman, Commodore and Ohio at work near Virginia.

PENOBSCOT MINING COMPANY.—The Hibbing mine of this company now has a battery of four big Prescott duplex plunger pumps, and the last moves 2,200 gals. a minute. Some 170 tons of ore are being hoisted daily. The mine was inspected last week for the first time by its owners, Eddy Brothers, of Bay City, Mich., who paid \$90,000 for the ground alone, and have spent money freely but judiciously in a complete and elaborate equipment.

IRON—VERMILLION RANGE.

(From Our Special Correspondent.)

CHANDLER IRON COMPANY.—Only 200 men are at work now, and the night shift has been temporarily laid off, but 1,200 tons of ore are coming up daily, and are being shipped, making the entire shipments from the mine at present. The mine has room for 400,000 tons of a stock pile, despite its almost 200,000 tons on hand, and is preparing for an active winter, and the indications are that every man in Ely will be steadily at work all winter. The removal of the house at No. 4 shaft is almost completed, and when it is gone there will be none of the works of 1891 left above ground.

MINNESOTA IRON COMPANY.—Shipments for the year to date from the mines at Soudan-Tower are almost an exact 600,000 tons, and will be light from this time on, probably not more than 2,000 tons a day. The stock-piles are cleaned up, for the first time in five years. There is a general air of preparation for extensive work for the winter, and the wages of all employees are to be advanced 10% October 1st, putting them at the point from which they were reduced last fall. It is evident that a great tonnage will be mined this winter at these mines.

PIONEER MINING COMPANY.—The rumors of the sale of this mine to the Carnegie people are still rife. The mine has been for sale in times past for about \$1,000,000, and it is probable that the present option is not far from that figure. The mine is now enlarging its stock ground and putting up trestles. There is a large stock-pile on hand.

SECTION 26.—Developments at this property indicate that there has been discovered here one of the large hard ore mines of the range. Drilling at the bottom of the shaft has revealed an immense body of ore, and winter work will be prosecuted very vigorously. Ground in the neighborhood will be prospected thoroughly this winter by the owners of 26 and others.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—There was an active demand for zinc ore, and competition advanced the price 75c. over the preceding week for lead ore. The shipments of zinc ore showed an increase of 28 carloads over the preceding week and 49 cars over the corresponding week of 1896. The lead ore sales were one car less than the preceding week, but eight more than in the same week last year. Fifteen carloads of zinc ore sold at \$22.50 per ton, other grades selling at lower prices, according to quality. The greater part of lead ore sales were made at \$28.25 per 1,000 lbs. at the beginning of the week; later there was an advance to \$29, and sharp competition on several lots ran the price to \$29.50 on about 200,000 lbs. The corresponding week of 1896 zinc ore sold at \$20.50 per ton, top price, showing an improvement of \$2 per ton, while lead ore sold then at \$14.50 per 1,000 lbs., showing an increase in price of over 100%.

Following are the sales of lead and zinc ores for the week ending September 25th, 1897:

Joplin zinc, 1,582,950 lbs.; lead, 320,170 lbs.; value, \$26,607. Carterville zinc, 1,453,940 lbs.; lead, 289,050 lbs.; value, \$22,922. Webb City zinc, 718,810 lbs.; lead, 69,170 lbs.; value, \$9,193. Galena zinc, 3,578,000 lbs.; lead, 568,830 lbs.; value, \$48,639. Aurora zinc, 585,000 lbs.; lead, 25,000 lbs.; value, \$5,227. Stotts City zinc, 260,440 lbs.; lead, 35,370 lbs.; value, \$3,956. Oronogo zinc, 142,950 lbs.; lead, 4,200 lbs.; value, \$1,670. Springfield zinc, 44,000 lbs.; value, \$495. The district totals for the week are: Zinc, 8,410,600 lbs.; lead, 1,309,850 lbs.; value, \$119,300. The district totals for 39 weeks have been: Zinc, 252,880,270 lbs.; lead, 42,309,690 lbs.; value, \$3,169,451.

BROADBENT, MILLER & HARRINGTON.—They are sinking a shaft on the Granby land, and at 100 ft. they struck both lead and jack in open ground with very little water.

CHURCH & COLLINS.—They have leased 55 acres of the John Jackson land, two miles west of Joplin. They have a shaft down 125 ft., and are drifting on a 25 ft. face of zinc ore in hard ground with only enough water to run the plant. This week they completed a large steam concentrating plant that will clean 100 tons of dirt every 10 hours. There are three more shafts from which they are taking out pay dirt.

ELEVENTH HOUR COMPANY.—This company has two 16-in. pumps running day and night and is rapidly draining its lease. Already four large concentrators have started up and are making a large output of ore every week.

ELLA J. MINING COMPANY.—In sinking a shaft on College Hill at 70 ft. the company struck lead in talow clay and went through 3 ft. into black ground containing both lead and zinc ores in open ground with enough water to clean the ore.

GET THERE MINING COMPANY.—This company has a 40-acre lease at Prosperity, and it is producing large quantities of both lead and zinc ore. Colonel Steers, at the Phoenix mine on this lease, has put in a large air compressor to run four air drills, which break enough dirt to keep his plant running steadily. McGee & Company are putting in a large air compressor to run air drills in their mine. Hall & Company will finish their new complete concentrating plant this week. At the Legal Tender shaft they are hoisting rich zinc ore and clean it up on hand jigs and a crusher and rolls. The shafts were sunk through from 80 to 120 ft. of hard limestone.

MONTANA.

CASCADE COUNTY.

BROADWATER.—These mines having passed under the control of the Great Falls & East Helena Smelting Works Company, ore will be taken out as fast as possible. Mr. F. M. Smith, the manager for the Reduction Company, and Mr. J. M. Heuley, the superintendent, are reported to be impressed with the favorable prospects the mines have provided, of course, that silver should not fall much below its present value. Mr. R. N. Jones has been appointed general manager. The output for August was 2,260 tons, about 90 tons of ore for each day the mine was worked.

DEER LODGE COUNTY.

(From Our Special Correspondent.)

GOLD COIN MINING AND MILLING COMPANY.—This company's property is at the head of Silver Lake, about 16 miles from Anaconda, and is under charge of General Manager Loomis, an experienced mining man. The 10-stamp mill which has been in constant operation for nearly a year past has proved the property to contain ore bodies of sufficient value to warrant the erection of 20 additional stamps. Fraser & Chalmers secured the contract and the machinery is now being hauled from Anaconda to the mill site. Mr. Weller, of Baker City, Ore., is superintending the erection of the new plant, which will be in operation by October 15th. A 5-drill air-compressor plant of the Rand make is also being installed to operate drills and supply air. The ore bodies of the Gold Coin average fully 20 ft. in width, all of which carries some value. The books of the company show that the 10-stamp mill has crushed an average of 3 tons to the stamp in 24 hours, and that the savings in the batteries and on plates have averaged \$8.40 per ton, the tailings assaying only 30c. per ton. A 6-ft. Frue vanner in operation for 30 days saved one ton of concentrates valued at \$43. The lode has been opened up for a distance of 6,000 ft.; as yet the deepest workings are 160 ft. The company is organized under the laws of the state of Montana; the shares are held by parties in Cleveland, O. In all, the company owns some 20 claims.

GRANITE COUNTY.

MANHATTAN & MONTANA MINING COMPANY.—The board of directors of this company recently held a meeting in New York and decided to keep the capital stock at \$500,000, all of which is non-assessable. There are 100,000 shares of stock in the treasury, the proceeds of which are destined for exploration and development work, for the erection of mills and for the purchase of machinery. Brokers in Butte, Mont., are handling the stock of this company which is offered for sale, and the last sale was made at 47½c. per share. We are officially advised that the company proposes to run two tunnels; one, an adit, to a distance of 1,000 ft., and the other on a crosscut 750 ft., which will cut the vein and expose a bank of ore of 1,500 ft. There are three veins, 4, 7 and 9 ft. respectively, on the top of the hill, which it is presumed meet the main vein at its base. This latter vein increases in width on the walls of the hill and runs from 7 ft. on the surface to 20 ft. at the bottom of the hill. From a large number of samples taken from the property it is conservatively estimated that the ore body already exposed assays over \$18 per ton, of which 80% is free milling.

JEFFERSON COUNTY.

BASIN MINING AND MILLING COMPANY.—This company is progressing favorably with the plans and arrangements for the new concentrating and smelting plant to treat the ores from the Katie mine. They have already let some small contracts and the other work will go on just as soon as they can possibly get ready for it. The pumps will be started within three months, so that the mine will be pumped out and ready to commence producing ore as soon as the concentrator is ready to start up, which is expected to be some time next March or April.

BEAU MONDE.—This property, in the Basin District, owned by Eugene Francis, G. C. Eastman and a few others, is a gold and silver bearing proposition, located on the Boulder Hill, about two miles distant from Basin. Two or three months ago the owners commenced sinking a shaft. At a depth of only 15 ft. they encountered a vein of free-milling gold ore. They have since continued the shaft down to the 50-ft. level and crosscut to the lode, on which they are now drifting and taking out ore. They now have considerable ore on the dump and will commence shipping within a few days.

BOULDER.—Frank Wiegenstein, Mose St. Michaels, George Prince and Albert Barbie have taken a sub-lease on this mine from O'Neill & Largent. They will sink the shaft 75 ft. deeper. The Boulder mine has been a good producer of gold, silver and lead

ore in the past. This property is equipped with a hoist and a 19-stamp mill.

BUCKEYE CONCENTRATOR.—The new concentrator being built on Basin Creek is nearing completion and will be ready for a trial run soon. The concentrator will have a capacity of from 25 to 30 tons per day. The mine is considered good property. The company has for some time been shipping some of the best ore to the smelting works at East Helena. The ore is said to be rich in lead and carries some values in gold and silver.

HIGH ORE GOLD AND COPPER MINING COMPANY.—The High Ore mine is located on High Ore gulch, about four miles east of Basin, and about two miles from the Northern Pacific and Montana Central railways, and is considered to have excellent showings. It is stated that the mine will be reopened and commenced within the next 30 days. Last year the company worked a force of from 15 to 20 men on this work. Already nearly \$15,000 has been spent on the property, but work was suspended last October owing to financial reverses of the company. A group of eight claims is embraced in the tract owned by this company, which covers an area of ground 2,400 by 3,000 ft. in extent. The tract encloses a mountain that rises 1,100 ft. above a 1,700-ft. tunnel, which is now being run. At the top of this mountain is a reef of quartz and hematite, 90 ft. high, and 80 to 100 ft. in width, and extending through the entire length of the claim. There are several leads running through this group of claims. In an upper tunnel, called the M. C. tunnel, the cropping of a 20-ft. lode was cut, and 60 ft. farther in another, 18 ft. wide, was cut. The tunnel runs in 120 ft. farther, where still another large lode was cut, making three in about 200 ft. The site of the new tunnel is on the mountain side, just high enough to get ample dumping ground, and to get the greatest possible depth. The machinery used consists of an engine and 40-H. P. boilers with a 14x16 air compressor and two Rand machine drills. The new tunnel is showing the property up. A short distance from the mouth of this tunnel a blind lead, 14 ft. wide, was struck. It was cut near the surface, but shows some good concentrating ore. In a distance of 600 ft. the first lead cut in the M. C. tunnel above was encountered. Here it is cut at a depth of 400 ft. from the surface. At the time work was stopped last fall this tunnel was in 1,280 ft. The owners are R. B. Young and Mrs. E. K. Haskell, of Helena; James Davidson, of Butte, and a number of Minneapolis capitalists.

LEWIS & CLARKE COUNTY.

L. WATTRICK MINING COMPANY.—Operations have been resumed on this company's property by O. D. Woodman. The company has been restocked and reincorporated and the stock is now held by N. B. Davidson, who is treasurer, David Lawrence, president, and W. H. Lindsay, secretary.

MADISON COUNTY.

According to the *Anaconda Standard* there is more work being done around Virginia City than for many years back. Among other properties is the Kennett. Its owner, W. B. Miller, of Omaha, has done a large amount of development work in the last 18 months. He has showed up large ore bodies of low-grade. He now intends to put in a 50-stamp mill, and with such a plant can successfully treat Kennett ores, as he will handle them on a big scale. He is now engaged in experimenting with the kind of machinery and processes best adapted to his ores. Near the Kennett is the Bertha, operated by C. M. Hatheway. Mr. Hatheway has perfected a new milling process, an invention of his own. The output from Madison County placers will be less this year than last, owing to the short supply of water. A company has been applying a steam shovel to placer mining in Alder, a short distance from Virginia, all summer, with success. It is a new mechanical plant, operating differently from any other system in which machinery is applied to that kind of mining, but has proved to be a success. The company recently took up its bond on between 600 and 700 acres of placer ground. The steam scraper car travels on a system of cable ways between an A frame and a tower 40 ft. high. The car carries a ton of gravel to a load and has a capacity of about 60 loads to the hour. The gravel is deposited at the top of the tower in ordinary sluices, where it is washed.

GAYLORD SMELTING WORKS.—The Parrot Silver and Copper Company is building these. More than \$50,000 has been expended since the work was first commenced. Robert D. Grant, who was connected with the company as assistant manager, was made manager July 27th last, and he is pushing the work of construction. The works when completed will have a capacity of about 1,000 tons a day. The furnace building, which is constructed of unusually heavy iron beams and plates, is 395 ft. long by 250 ft. wide. It is provided with a brick stack 200 ft. high and 40 ft. in diameter at the base. An 18-mile canal, which taps the Jefferson River, will supply the water.

LONGFELLOW.—Sinking on this mine, at Rochester, was recently begun, and will be continued until the shaft reaches a depth of 400 ft. The pumping machinery handles the water without difficulty, and the work called for in the bond between James A. Murray and Savin Lisa on the one hand and the Montana Mining and Smelting Company on the other, to be done before further leveling and stoping is done, will be rapidly pushed to completion. The lode shows up well at the depth attained, and the

character of the ore is unchanged since work below water level was begun. The ore from the shaft is being hauled to the company's works at Twin Bridges for treatment. At present they are delivering about 12 tons per day.

THISTLE.—John E. Woods is pushing development work on this mine, at Rochester, on which Joseph K. Clark is erecting a new mill and concentrator. He is blocking out a large body of ore, most of which averages well up with that which this mine has already produced.

TOLEDO MINING AND SMELTING COMPANY.—The smelting works at Brandon have been successfully started and are now running.

(From Our Special Correspondent.)

BRESINGER-BECK.—Since the incorporation of the company a few weeks ago, the particulars of which were given in the *Engineering and Mining Journal*, systematic exploration is under way. The present main working artery is a tunnel in 350 ft., from the face of which a shaft is down 195 ft., and from bottom drifts are being extended on each side. Some handsome wire silver, forming a network through the vein rock, is a recent find. This is an old mine worked 20 years ago, formerly known as the Zebra. For a time it was a notable shipper.

LXINGTON.—The inside in regard to the purchase of this property some months ago for \$50,000—the sale being by the French company, the Société des Anonymes des Mines de Lexington, to a private French association—is but now coming to the surface. The Butte representative of the purchasers is arranging for active operations and will mine for copper through the ancient deep workings. The Lexington was formerly a large silver producer, but between the 700 and 900 levels it entered the copper zone of Butte district. In following two large veins on this horizon the Lexington works are said to have entered the territory of the Butte & Boston, and a suit for ore extracted ensued, the result being a judgment in favor of the Butte & Boston for \$125,000. The present purchasers in addition to the price of \$50,000 for the property have assumed this judgment, making the actual purchase price \$175,000. This explains the mystery surrounding the deal, as the low figure of \$50,000—the announced purchase price—had given rise to the suspicion that the sale was washed in some manner.

SUNNY SIDE GROUP.—Less than a month ago the Rocky Mountain Exploration Company, through its representative, E. A. Sedlmayr, purchased this property, and has now a large force of men at work on road building. To reach this property with a good grade about three miles of difficult road must be built. It is expected that this work will be completed in about 60 days. Mr. Savage, who is in charge of the property, says that as soon as the road is finished lumber will be hauled in with which to build ore bins and other buildings. It is not expected that a milling plant can be erected before early next spring. The property is a valuable one and its purchase by this English company means much for the Meadow Creek district, in which the property is located; it is not a new mining district, but like many others in Montana has been much neglected for other far away and inaccessible sections. The ore bodies in the Sunny Side group range in width from 6 to 20 ft. and in value from \$12 to \$18. It is a cyanide proposition and the tests made by Mr. Savage show a saving of 80% in the gold value.

MEAGHER COUNTY.

STEWART.—This mine is now owned and operated by John Nesbitt and Martin Woldson. The interest formerly owned by George N. Higgins has been bought by Mr. Woldson. There is a night and a day shift at work on the mine running a drift so as to tap a blow out about 70 ft. below.

SILVER BOW COUNTY.

(From Our Special Correspondent.)

BORDEAUX PROPERTIES.—These properties are located south of the Leonard claim and east of the Hattie Harvey claim owned by the Boston & Montana Company. The locations cover ground that was supposed to be owned by the company, as the old Colusa smelter was built on this ground, and the company had been receiving ground rent for the use of part of the surface for building purposes. The shaft is down 250 ft. and crosscutting is in progress on this level. About \$30,000 has been spent in development work, with no ore discovered up to the present, although your correspondent was informed that a large volume of "high grade" water had been struck.

BOSTON & MONTANA MINING COMPANY.—Excavations and foundations for a new 1,000 H. P. boiler-plant between the Leonard shaft and West Colusa are completed and some of the boilers are on the ground; they are of the locomotive type, from 100 H. P. to 150 H. P. each, built by John Mohr & Sons of Chicago. They will be connected to a steel smokestack 8 ft. in diameter and 135 ft. high. At the Pennsylvania work is in progress on the old Harris & Lloyd tunnel, supposedly for the purpose of determining the location of veins of disputed ownership. At the Leonard the 800-ft. level west is approaching the West Colusa shaft, which is now down 800 ft.

COMANCHE MINE.—A suit for one-fourth interest in this claim has been on trial for several days in the District Court at Butte, David Upton, one of the original locators, claiming that the sale of the property to the Boston & Montana Mining Com-

pany about four years ago did not transfer his one-fourth interest to the company. He has since transferred his interest to other parties. Among others H. L. Frank, Senator Mantle and F. Aug. Heinze are interested in the result of the action. This claim is one of the most valuable of the Boston & Montana Company's mines.

HESPERUS MINE.—Operations at this mine are completely suspended. Developments consist of a three-compartment shaft 250 ft. deep, with about 550 ft. of crosscuts.

MONTANA ORE PURCHASING COMPANY.—There was filed for record September 22d a release of a mortgage for \$1,500,000, executed to Richard Lacy by this company March 8th, 1897. Work on the Glangarry and Rarus is progressing as usual. At the Nipper crosscutting is in progress on the 450-ft. level. The lease and bond on the Big Bonanza silver-gold mine has been assigned by William Wilson to this company.

RUBY MINE.—This mine is located in the low lands, about 12 miles northeast of Butte; two car loads of ore shipped from this mine netted over \$6,000. The property is reported sold to New York parties, with the first payment of \$30,000 made September 15th.

NEVADA.

ELKO COUNTY.

(From Our Special Correspondent.)

DEXTER GOLD MINING COMPANY.—This company, at Tuscarora, has just placed a contract with the Colorado Iron Works for a 40-stamp mill with 8 Ellis concentrating tables, capacity 100 tons, to be completed within 90 days. At the same time the 50-ton cyaniding plant is to have its tankage capacity doubled, to treat tailings from the mill. The power is electric, to be transmitted 12 miles; the water supply will be the large flowing Italian springs, the priority rights to which have just been secured. Returns are at hand on a car of 18½ tons, marketed in Salt Lake last week, which carried 35.41 oz. gold, 48.7 oz. silver per ton, and brought more than \$15,500 over freight and treatment. At the same time there was sent forward \$12,000 in bullion from less than four weeks' run of the mill. The mine shows marked improvement. The cyaniding plant, which has been handling old tailings some 8 miles away, is being moved to the mine.

HUMBOLDT COUNTY.

(From Our Special Correspondent.)

LEAD MOUNTAIN.—This mountain is situated in the Antelope Mining District, some 17 miles northwest from Humboldt station. The country rock is slate, though some distance to the east there is a marked barren porphyry blow-out. The course of the strata is north and south. Standing nearly vertical and between walls of slate occurs a quartz outcrop, associated with which, on the surface, is copper ore in a variety of forms. The main copper ledge is 35 ft. wide, and for 700 ft. on the mountain, up one side and down the other, it crops out. Assays average 14.5% copper and 25 oz. silver, while picked samples from 2 ft. of ore runs as high as 48% copper. With the property, which has been bonded to Utah people, goes a magnificent water right, while in the Humboldt River, 11 miles distant, splendid opportunities exist for the generation of electrical currents.

PIONEER.—This property, situated in the Humboldt Mining District, has been bonded to a Salt Lake, Utah, association at the head of which is C. L. Dignowity. The group comprises five claims through which extends a remarkable quartz vein—a contact between lime and slate—over 100 ft. wide. Average assays run 15 oz. to 33 oz. gold and 55 oz. silver. Valuable water rights go with the property.

(From Our Special Correspondent.)

AUSTIN.—Everything is reported as moving satisfactorily, both in the mine and the rejuvenated mill. Some 30 miners arrived from Utah a fortnight ago, making a total of 150. This increase is necessary to make the output equal to the demands of the mill, 100 tons a day. Austin is an historic silver mine with miles of development, of which but little has been heard recently. The ore is dry, with practically no lead and very little gold. Less than 10% is a shipping product, while the low grade is readily concentrated. Mill is equipped with 30 stamps and 18 vanners. Under a new order of things the company starts out on what is believed to be an era of prosperity. This is a New Jersey corporation of which all but a few shares are owned by Anson Phelps Stokes, A. C. Washington and P. T. Farnsworth.

STOREY COUNTY—BRUNSWICK LODGE.

CHOLLAR MINING COMPANY.—The latest weekly official letter says that the stopes on and above the 300 and 400 levels are yielding about the same. They are breaking about seven tons per day of good ore. The dump at the mine is full and they resumed shipments of ore to the Nevada mill September 17th. On the 400 level No. 4 west crosscut was extended 15 ft.; total length 128 ft.; connected with the top of the upraise from the 500 level. The connection has been timbered, and they are now engaged in taking out the waste and chute. On the 500 level crosscut has been extended 22 ft. since last report; total length 86 ft.; face in hard rock. Incline upraise No. 1 started from the end of No. 2 west crosscut has been extended 7 ft. for the week; total height 142 ft., and connected, as above noted. On

the 600 level the west crosscut from the end of the main south drift has been extended 8 ft. for the week; total length 68 ft.; connected with the bottom of the 500 level winze, thus establishing an air connection and escape from the 600 level to the surface, independent of the main shaft. From the main drift, at points 100 to 200 ft. south of the north line, they have started Nos. 1 and 2 east crosscuts, and advanced them respectively 34 and 24 ft.; both in porphyry; the footwall is exposed at the mouth of the east crosscut.

OCCIDENTAL CONSOLIDATED MINING COMPANY.—The official letter for the week says: "550 level—east crosscut No. 1 on the tunnel level has been extended 15 ft.; total length, 868 ft.; face still in streaks of quartz that show same value by assay. 600 level—the south drift has been extended 5 ft.; total length, 670 ft., following the footwall under the ore. East crosscut No. 1, started at a point 600 ft. from the station, has been advanced 11 ft. through ore assaying \$8 per ton in gold. East crosscut No. 2, started at a point 50 ft. south of No. 1, is into the ledge 3 ft. and the assays show an average of \$22.50 per ton in gold. 750 level—we are cleaning out and repairing the south drift on this level and preparing to extend it further south to reach the ore body found on the 650 level. The drift is now 500 ft. and will have to be extended about 160 ft. to reach the ore body on the 650 level.

STOREY COUNTY—COMSTOCK LODGE.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—This company recently had a lot of 322½ tons of low grade ore worked at the Kinkead Mill as an experiment. The total return reported was 62 oz. gold and 632 oz. silver, and the amount received for the bullion was \$1,601. The expenses were \$833, showing a profit of \$768. The cost of mining is not figured in the above statement, as the ore worked had been extracted quite a time ago, but the Virginia office is figuring what the total cost, including mining, of handling the low grade ores would be. Enough, it is claimed, has already been shown to establish the fact that there is a profit in mining and milling such ores.

The latest weekly official report says that on the 1,550 level the south drift started from the double compartment incline upraise No. 1 at a point 178 ft. on the slope above this level has been extended 18 ft., passing through porphyry, clay and narrow streaks of quartz assaying \$1.50 per ton; total length, 154 ft. East crosscut No. 2 started from this drift 100 ft. south of the upraise has been advanced 20 ft., passing through porphyry, clay and quartz assaying 75c. per ton; total length, 41 ft. On the 1,650 level on the incline upraise No. 1 at a point 60 ft. above the sill floor of this level the south drift skirting along the footwall has been extended 13 ft., passing through porphyry and quartz assaying \$1 per ton; total length, 96 ft. From No. 2 upraise at a point 65 ft. on the slope above the sill floor, the north drift has advanced 25 ft., passing through porphyry and quartz assaying from \$2 to \$5 per ton; total length, 96 ft. On the 1,750 level on the 11th floor north from the upraise a west crosscut has been started and advanced 30 ft., passing through porphyry and quartz assaying from \$1 to \$5 per ton. No ore was extracted from the mine during the week.

SIERRA NEVADA MINING COMPANY.—The latest weekly official letter says that in the Layton tunnel workings the east crosscut from the bottom of the winze has been advanced during the week 11 ft.; total length 45 ft., face in clay. A south drift has been started on the pay streak at a point 22 ft. east from the bottom of the winze and is now out 10 ft. The face is in clay and porphyry and some quartz of no value. This drift was started on a three-foot streak of good grade which extended only 2½ ft. when it cut out. The remainder of this drift was material of no value. On the 900-ft. level of the Union shaft workings of the Sierra Nevada the north lateral drift was advanced during the week 20 ft., total distance 386 ft. north from the Sierra Nevada shaft and 145 ft. from west crosscut No. 3; face in porphyry.

NEW MEXICO.

SANTA FE COUNTY.

GOLD EXTRACTION, MINING AND SUPPLY COMPANY.—This company was recently incorporated at Santa Fe, with a capital stock of \$5,000,000. The incorporators are: Charles W. Caryl, W. L. Davis, of Las Cruces, N. M.; Roderick Stewart, F. C. L. Sergeant, and Alexander Stewart, Denver, Colo. J. D. Bryan, of Las Cruces, is resident agent, and offices are to be maintained in New York and Denver.

NEW YORK.

ROCKLAND COUNTY.

COSGRIFF TRAP ROCK COMPANY.—This new concern, at Rockland Lake, is capitalized at \$30,000, with the privilege of increasing to \$500,000. The stock is divided into 300 shares, and the company is to begin business with its full capital. The objects are to quarry, crush, transport and dispose of stone. The work is to be done at Rockland Lake, where large quantities of trap rock are found. The directors for the first year are Andrew Cosgriff, Ira M. Hedger and George H. Smith, all of Haverstraw, N. Y. Each holds 100 shares.

OHIO.

PERRY COUNTY.

SUNDAY CREEK MINERS' STRIKE.—President W. E. Farms, of the Ohio division of the United Mine

Workers of America, has called out all the machine miners in the Sunday Creek Valley until after the pick mining question has been settled. Trouble brewing for some time at mines Nos. 8 and 3, at Corning and Rendville, owned by the Sunday Creek Coal Company and Col. W. P. Rend, of Chicago. Representatives of the mine owners held a conference with a committee of miners and President Farms, in an indirect manner, offered to permit them to resume work if they would accept a rate of 50c. a ton for mining the regular coal and 35c. a ton for mining what is known as the top coal. The calling out of the machine miners in the Sunday Creek Valley affects, approximately, 1,500 men. It is understood that a delegate convention of miners will be called to meet shortly at Glouster to consider the situation. The call affects the mines of the Sunday Creek Coal Company, Col. W. P. Rend and Courtright, Kistler & Company besides others.

OREGON.

BAKER COUNTY.

BASILEY-ELKHORN.—It is said that this mine, 15 miles northwest of Baker City, will pass into the hands of a New York syndicate, with a prospect of being developed with ample capital. The property has been a gold producer even under adverse circumstances. It is stated that the purchase price is \$60,000.

RACHAEL.—At this mine 10 men are employed in raising, and a depth by shaft of 420 ft. has already been attained. Deep sinking operations will soon be resumed. The showing is promising.

ROBBINS-ELKHORN.—It is reported that Albert Geiser, late of the Bonanza mine, has bought this mine, near the Basiley-Elkhorn, and that development work will commence at once on an extensive plan.

JACKSON COUNTY.

(From an Occasional Correspondent.)

APOLLO MINING AND MILLING COMPANY.—This company, located in the Pearl Mining District, Elk Creek, is making some extensive improvements considering the short time the company has been organized. It has several cabins built, and with a force of 20 men is pushing tunnels, mill-site and other work right along. The company proposed to put in a mill of 35 tons per day capacity, but owing to the lateness of the season and the fact that there is some road to build, it will be compelled to postpone the mill till spring. The company controls about 20 claims; the ore is a low-grade, sulphuret proposition, with large quantities in sight. It is a large deposit without walls and assays from \$4 to \$20 in gold with a trace of silver, with great quantities of timber—a great forest of sugar pine, red fir, hemlock and spruce—and great water power for all purposes. This part of Oregon has been neglected by miners until recently.

JOSEPHINE COUNTY.

HALE BROTHERS' HYDRAULIC MINE.—Walleke & Porter, who own this mine at Leland, are constructing a new ditch from Wolf Creek, which, when completed will give them plenty of water for eight months. The ditch is 4 ft. on the bottom and five miles long. The water will be carried across Graves Creek in a 30-in. iron pipe.

PENNSYLVANIA.

ANTHRACITE.

EDGERTON COAL COMPANY.—Several hundred miners employed by this company went out on strike recently so that the Last Chance, Edgerton and Eyebrow mines are affected, and also those at the Hosie breaker. The men were dissatisfied in the way that credit was given them for the coal mined. Those at the Northwest mine feel in sympathy with these men and may go out. The 20 mine mules at the Last Chance have been removed, and the fires of the engine drawn. Meetings of the dissatisfied men are being held, and it is hoped that an arrangement will be made.

JERMYN No. 1.—Five men recently met death from black damp, the after accumulation of a fire, in this colliery near Rendham. The dead are Isaac Watkins, fire boss; William Tompkins, Joseph Smith, John Gallagher and William Franklin, company men.

LEHIGH & WILKES-BARRE COAL COMPANY.—The large pumps which were put in the upper veins of the Nottingham colliery of this company at Plymouth several months ago to rid them of the water flowing in from the Avondale mine have been removed to the Red Ash vein.

PHILADELPHIA & READING COAL AND IRON COMPANY.—An experiment in mining operations is being made by this company near Barry's Junction which promises to instill activity in that vicinity. The operations are directed toward the opening of a stripping, and are between the turnpike and the Lehigh Valley Railroad. A gang of men are now engaged in the work. They started on the slope of the mountain, and are digging a cut 12 ft. deep to see how much surface it will be necessary to strip. The coal lying adjacent is the top split of the Mammoth vein. If it is not too far from the surface to make the work profitable active operations will be instituted. The coal will probably be sent to the Mahanoy City colliery for preparation.

BITUMINOUS COAL.

The newly-appointed board of mine examiners for the First Bituminous Coal District of the State met in the council chamber at Monongahela City yesterday

and were duly sworn into office by Mayor S. Clark Wilson, of that place. An organization was effected by the election of the following officers: John U. P. Coulter, president; D. M. Blackburn, secretary; H. P. Louttit, treasurer.

Following is the full text of the new law for weighing coal in the bituminous districts, passed at the last session of the Pennsylvania Legislature:

"Section 1—Be it enacted, etc., That it shall be unlawful for any mine owner, lessee or operator of any bituminous coal mine in this Commonwealth, employing miners, at bushel or ton rates, or other quantity, to pass the output of coal mined by said miners over any screen or other device which shall take any part from the weight, value or quantity thereof, before the same shall have been weighed and duly credited to the employee sending the same to the surface and accounted for at the legal rate of weight fixed by the laws of this Commonwealth.

"Section 2—Any owner, lessee or operator of any bituminous coal mine violating the provisions of this act shall be deemed guilty of a misdemeanor, and shall, upon conviction, for each and every such offense be punished by a fine of not less than one hundred (\$100) dollars, nor more than five hundred (\$500) dollars, or by imprisonment in the county jail for a period not to exceed 90 days, or by both such fine and imprisonment, at the discretion of the court; proceedings to be instituted in any court of competent jurisdiction.

"Section 3—All acts or parts of acts inconsistent herewith be and the same are hereby repealed."

TIP TOP COKE WORKS.—These works, near Scottsdale, started operations recently with 150 men. The plant had been idle for three years.

SOUTH DAKOTA.

LAWRENCE COUNTY.

DEALWOOD & DELAWARE SMELTING COMPANY.—About half of the 650 tons of ore smelted daily is silicious and the balance Homestake concentrates. The plant employs 200 men, and is turning out \$170,000 per month. The company recently paid \$75,000 for new mining claims, which makes 2,500 acres of ground now owned by it in the Black Hills.

EDGEMONT & UNION HILL SMELTER COMPANY.—A new hoist has been erected at this company's stamp mill to facilitate the raising of the heavy timbers.

HOODOO.—A body of free-milling ore was recently struck on this property. The vein is 12 ft. wide and lies between walls of porphyry and slate. The shaft on the May is being sunk in low grade ore. A crosscut tunnel is being run from the Hoodoo tunnel to the May shaft in order to open up the ore bodies between.

KILDONAN MILL.—The chlorination plant is now working to its full capacity. There are several hundred tons of ore in the bins, but regular shipments have been resumed. About 75 miners have been put to work in the Welcome and Hardscrabble mines and the force in the Mark Twain will be increased. There is said to be more ore in sight than ever.

UTAH.

(From Our Special Correspondent.)

October starts out under brighter auspices than July or August. The feeling in the Utah mining circles is more hopeful, based on improved market conditions and increased ore production. Every reliable shipping district reports a better feeling and gives assurance of more men being employed. Even in Park City, recovery from the severe setback of the Ontario and Daly close-down is steadily going on. Silver King and other properties, in part make good the local business loss due to the Ontario and Daly quiet. Bingham will show a larger September output than August, which will be further increased in October. The same is true of Tintic. Fish Springs is supplying a new surprise in the way it is working up its heavy lead products. If Mercur seems to move forward slowly, just at present, it is surely going ahead, as will be apparent before the end of the year.

SHIPMENTS FROM SALT LAKE.—During the week ending September 25th there were shipped East 29 cars or 1,047,841 lbs. lead-silver bullion; 52 cars or 1,052 tons of lead-silver ore.

BEAVER COUNTY.

(From Our Special Correspondent.)

BEAVER LAKE DISTRICT.—Next week the Oregon Short Line is to run a special excursion of mining men, which will be participated in by 30 or more. Several good surface showings of copper ore are to be seen, but nowhere has sufficient work been done to assure a reliable shipping proposition. During the past season there was too much mining in Beaver Lake District on paper and too little on the ground; not an uncommon happening for a comparatively new region, though in this instance it was carried to the extreme. A promise of a change is now made, to take effect in October. Most of the participants in this excursion have interests here, and while they are on the ground plans for systematic development will be determined upon.

HORN SILVER TUNNEL MINING AND MILLING COMPANY.—Articles of incorporation were filed with the Secretary of State on September 25th. Capitalization \$50,000; shares 50c. Head office, Salt Lake. Officers and directors are: F. M. Lyman, Jr., president; J. S. Lane, vice-president; Ezra T. Palmer, secretary; E. M. West, treasurer; A. L. Morris, W. Beckstead, Phil Bentz, all to serve till the second Monday of September, 1901, when the first

stockholders' meeting for election of directors will be held, and on the same day each year thereafter. This is a tunnel site proposition in the San Francisco district near the Horn Silver mine.

JUAB COUNTY.

(From Our Special Correspondent.)

EUREKA HILL.—A Wilfley concentrating table was put in mill for a trial test last week. Material was taken from five stamps, feed running 14 oz. silver, 3% lead, affording concentrates of 99.8 oz. silver, 41% lead; tails, 4.5 oz. silver, 1% lead. This was in every way satisfactory.

GALENA AND UTAH.—Though under different managements, these Fish Springs mines are to have a joint compressed air power plant. Being situated in the desert, 110 miles from the railroad, fuel is a burdensome expense. It is now proposed to put in a compressor 3,000 ft. distant and 800 ft. below the mines. Wood will be the fuel and the needed water will be pumped from a well over half a mile from the power plant and at about the same level, the compressor doing the pumping. This plan has been examined, is pronounced feasible and the operating cost for both mines is placed at less than for one steam hoist; it is to be carried out forthwith. In the Galena, the Maxfield winze from No. 3 level, a 6 to 8 in. seam is the most recent development, carrying 602 oz. silver, 42% lead. A car of this ore is being shipped. Physical condition of Utah is also better and October shipments will be double the September tonnage.

HOMESTAKE.—Until the pump arrives, which is looked for daily, everything is at a standstill.

LOWER MAMMOTH.—The next addition to the regular shipping roster will be the Lower Mammoth. Already there are two cars on the dump, taken out without stopping in developing the new carbonate find, which is proving a continuous ore chute.

TINTIC SHIPMENTS.—For the week ending September 25th the following lots of ore were sent out: Bullion Beck, 20 cars; Centennial-Eureka, 2 cars; Gemini, 14 cars; Uncle Sam, 7 cars; Swansea, 4 cars; South Swansea, 4 cars. The Sioux Mill shipped 3 cars concentrates and Dragon Iron, 27 cars of hematite for flux.

UNCLE SAM.—On a second thought Jesse Knight has changed his mind about waiting for electric power to be introduced into Tintic and is installing a steam plant. There is an abundance of lead-silver ore and now is the acceptable time for crowding the output.

MILLARD COUNTY.

(From Our Special Correspondent.)

LAKE BONNEVILLE WATER AND POWER COMPANY.—Morton B. Hirsch, of Philadelphia, President, and T. H. Cavanaugh, General Manager, are again in Utah, bringing assurance of the placing of the bonds for this important irrigation and mining enterprise, an outline of which has appeared in the *Engineering and Mining Journal*. Mr. Cavanaugh states that construction will be shortly begun. The lower dam for Reservoir No. 3 will be put in so that the first water for irrigation will be delivered in May, 1898, and at the same time electric power will be supplied to the mines at Tintic. From power plant to Mammoth the distance is 26½ miles over an almost level country.

SALT LAKE COUNTY.

(From Our Special Correspondent.)

LAST CHANCE CONCENTRATING MILL.—Recently, at Salt Lake, the contract to rebuild the Last Chance concentrating mill, Bingham, Utah, destroyed by fire on August 14th, was let to J. W. Evans, to be completed in 60 days. The machinery will be supplied from the Lake Superior Iron Works, Houghton, Mich., the plant of Mr. C. J. Hodge, owner of the Last Chance. It will consist of a 9 x 15-in. Blake crusher, one set of 14 x 24-in. rolls, one 5-ft. Chilean mill, and 6 Hodge patent jigs; capacity, 100 tons per diem. A 75-H.P. boiler and 50-H.P. engine will furnish power. Recently this property was styled the North Last Chance. Mr. Hodge has decided to drop the word "North," as it is the only Last Chance mine of the district.

TOOELE COUNTY.

(From Our Special Correspondent.)

ANNIE.—A steam hoist is about in place to aid deeper exploration. Annie is a mile southeast of the Mercur ground in an air line.

CHLORIDE POINT.—Work on the mill is well advanced. It is showing above the foundation and the way lumber is arriving the structure will be completed next month. Underground everything continues as favorably as at any time under the present progressive regime.

GLENCOE.—The latest report has it that the gold vein is just opened in Glencoe, and that it is the Mercur beyond question, cinnabar and all.

INDEPENDENCE.—An unlooked-for discovery was made Monday on the West Dip, between Ophir and Dry Canyons, in the Independence group, a 300-acre tract, of which little has been heretofore known, chiefly owned by J. H. Conrad. The expectation was to cut the gold zone proven in La Cigale, three miles to the south, between 175 and 200 ft. from the surface. At 105 ft. the shaft broke into mineralized material which continues 18 ft., and the end is not reached. Samples show 80 to 112 oz. silver and \$2 gold. The dip at this point is 10° in place of 35°, as anticipated. Mr. Conrad states this is the most important uncovering made in the Mercur area

this year. The shaft will be continued for the gold seam, which, from the apparent dip of the country rock, should be cut within 50 ft. A syndicate represented by F. L. Gardner, of London and Paris, is carrying on this exploration, as well as on other parcels of ground, under an option with Mr. Conrad.

INTERNATIONAL MINING COMPANY.—Articles of incorporation filed with the Secretary of State on September 20th; capitalization, \$300,000; shares, \$1. Head office, Salt Lake; annual meeting first Monday in October. Officers and directors are: Michael Kopp, president; John G. Williams, vice-president; George Mueller, treasurer-secretary; Dave C. Williams, W. H. Williams, F. D. Rugg, R. W. Galloway and Frank A. Hook, all of Salt Lake. Realty consists of Hidden Treasure, Yankee, Sandy Hook, Oak, Agnes, Bee Hive, Blacksmith, Eclipse and Gypsie, all in Blue Bell mining district.

LUCKY JOHN.—Shaft, now 120 ft., is being extended. This is a prospective venture in Ophir Canyon, based on a careful geologic examination of the near by country.

WASHINGTON.

SNOHOMISH COUNTY.

(From Our Special Correspondent.)

MAGUS.—The first shipment of fourteen tons from the Magus mine was made in September, 1896, and was packed on ponies 24 miles to Sultan. The Everett smelter paid \$105.96 per ton for this shipment, the values being distributed as follows: gold \$15.80, silver \$90.16. Shipments to date aggregate 246 tons valued at \$28,000; the value per ton ranging from \$105 to \$126 in gold, silver and lead. All the ore shipped this season has been packed over the range to Silverton. From 35 to 40 ponies are used; they carry 150 to 200 pounds each and make the round trip in a day. The ore shipped this season is really of a higher grade than that shipped last season, but the returns have been little if any larger because of the decline in the price of silver, the predominating metal. The ore is carefully sorted as it comes from the mine, and only the higher grade is sacked and shipped. Fifteen hundred tons of second-grade ore, sampling \$20 per ton, is awaiting shipment as soon as the new trams are completed, and the dump contains 1,500 tons of \$8-ore that will concentrate five into one. The conservatively estimated value of ore on hand is \$42,000, and of that "in sight" in the mine, \$300,000. In a length of 232 ft., No. 2, the present working tunnel at the Magus intersects the main vein 176 ft. below the workings from which the first shipments were made. Drifts are being extended east and west from this point of intersection. In these drifts and the connecting winzes and raises there is exposed from 4 to 8 ft. of ore with a pay streak ranging from 20 to 30 in. in width. The average value of seven samples taken from different points in an 80-ft. raise, the average width of ore being 4½ ft., was \$46.83 per ton on one side and \$63.29 on the other. Selected samples assay as high as \$680 per ton. Stopping has been suspended and will not be resumed until the new trams are completed. Much better ore than that heretofore taken out is coming from the two winzes, and this will keep the pack-train going. At present the ore is transported from mine to trail over a two-span, two-bucket tram, one span being 1,200 ft. in length and the other 800. This tram has a capacity of one ton an hour. Manila rope used last season has been replaced by wire rope. In the construction of this tram Manager Brown displayed considerable ingenuity, and his experiments and example have been the means of inducing other operators to open up good properties formerly considered inaccessible. All the company's buildings except the warehouse, stable and office at Silverton, and the new tram terminals, are built of logs. At the headquarters camp (where is located the mill and the tram junction), the main building is 38 x 50 ft., two stories high, containing office, store, kitchen, and dining and sleeping rooms; a one-story L, 12 x 40 ft., contains assay office, machine shop and storage room. The bunk house for employees is a 1½-story building, 18 x 24 ft. A stable, 24 x 60 ft., can furnish shelter for 60 horses. The sawmill is 28 x 60 ft., and it is capable of handling a log 30 ft. long and 40 in. in diameter. A 640-ft. pipe line, graduated from 13 in. down to 9 in. in diameter, with a fall of 200 ft., furnishes power for the mill, the power being transmitted from a 42-in. Pelton wheel by manilla rope 762 ft. up the mountain. At the Magus mine are comfortable quarters for 28 men; the ore bins, sorting table, blacksmith shop and engine-room are all under one roof; a small steam engine furnishes power for the ventilating fan and the incandescent light dynamo. The company now gives employment to 64 men—21 at the mine, 24 in mill and woods and at headquarters, 15 on tram construction, and 3 at the railroad warehouse. The following wages are paid: Miners and mechanics, \$3 per day; woodsmen, \$2.50; common laborers, \$2.25. Board is \$7 per week.

WHATCOM COUNTY.

There is much excitement over the discoveries near Mt. Baker, and many men are going there. Parties who have visited the country say that the find is in Bald Mountains, situated in the northeast portion of Whatcom County, northeast of Mount Baker. The mineral range runs northwest and southeast, and is located for 30 miles. There is no telling how much further it extends. The richest vein in five claims—Lone Jack, Bennie, Sidney, Lulu and Whist—varies from 3 to 5 ft. in thick-

ness. It runs under a layer of porphyry in a serpentine manner, and auriferous shale appears in the ledge. It is free-milling quartz carrying some copper and silver.

WYOMING.

CARBON COUNTY.

(From An Occasional Correspondent.)

WYOMING DEVELOPMENT AND TRANSPORTATION COMPANY.—The annual meeting of the stockholders was held at Cheyenne, Wyo., September 2d, and the following directors were elected for the ensuing year: Isaac Van Horn, Albert C. Smith, Charles F. Birchard, Chas. O. Ellingwood, Boston, Mass.; Fred. A. Miller, Lincoln, Neb.; E. P. Weatherby, Norfolk, Neb.; E. S. Weatherby, Sioux City, Ia. The stockholders present at the meeting left immediately after adjournment for an inspection of the plant of the company in the Upper Platte Valley, in Southern Wyoming. The mines of the company, 18 in number, located at Gold Hill, were carefully looked over and the work of the past year reviewed. The company is now engaged in arranging its finances for the development of its plant, which will include a railroad through the valley, a large custom stamp mill, smelting works, the irrigation of a large tract of land and the opening of coal fields. A resolution passed at the annual meeting of stockholders prohibits any dividends until the improvements are all made and the company's reserve is at least \$100,000. The directors of the company decided to push work on the Lakeside tunnel, which will pass through all the properties of the company.

WESTON COUNTY.

A large force of men has been employed by James Callahan, of Des Moines, Ia., to build a canal and flume to convey water from Cold Springs to his placer ground of 305 acres in Beaver Gulch, near Newcastle. The flume will be 2 ft. deep and 3 ft. wide, will run 500 miners' inches of water and carry it a distance of 28 miles. It is estimated that from 2,500,000 to 3,000,000 ft. of plank will be required to construct the flume. The placer ground will be worked by hydraulic giants.

FOREIGN MINING NEWS.

CANADA.

BRITISH COLUMBIA.

(From Our Special Correspondent.)

KOOTENAY ORE SHIPMENTS.—The total value of ore shipments from the Slocan via Kaslo and Nakusp, and from Rossland by Northport and Nelson from January 1st to September 22d, 1897, amounted to \$2,574,448, and the value of the matte, the produce of Trail and Nelson smelting works, during the same period amounted to \$2,979,594, being a total of \$5,553,982. The mining subdivisions included in the above are Slocan, Ainsworth, New Denver, Nelson and Rossland. The quantity of ore shipped in the above-named division amounts to about 90,000 tons, of which about 58,000 tons are credited to the Trail Creek division. The average value of the Slocan, Ainsworth and Nelson ores are nearly double those of Trail Creek, being at least \$70 per ton. The quantity of matte shipped by the Hall-mines during the above period was about 1,800 tons and that shipped by the Trail Creek Smelting Works was about 4,000 tons.

BRITISH COLUMBIA—NELSON DIVISION.

(From Our Special Correspondent.)

DUNDEE.—The management of this company has sent to Rossland a sample of ore taken from the shaft at a depth of 170 ft. It is high grade. The management continues its policy of sinking on the lead until the showing justifies crosscutting. There is a good body of ore which has steadily improved in grade. The condition of this mine continues very satisfactory and shipments will be made for the first time during the coming winter.

NORTHWEST TERRITORY.

Anthracite coal is reported to have been found recently in the Qu'Appelle River, near Wapella, Assiniboia.

NOVA SCOTIA—CAPE BRETON.

COXHEATH COPPER MINE.—It is reported that the management of this copper mine will shortly make application for the listing of its stock on the Boston Stock Exchange. A recent report from the mine says that No. 1 shaft in the crosscut is being driven south to intersect the vein B, where a stringer of rich ore a foot wide was cut 147 ft. from the shaft. The ground in the heading looks remarkably promising. In No. 2 shaft the stopes in both B and C veins have been put in order for immediate work. The heading of the west drift on the 320-ft. level is coming into high-grade ore. No. 3 shaft is located on top of the Coxheath hills, on what is known as the Mountain vein. On the 100-ft level of No. 3 drifting was recently commenced, both east and west, with an air drill in each heading. Each drift is now in about 30 ft. At this depth the vein is fully 14 ft. wide, with a small band of white quartz running through the center of it. The vein is well mineralized, and the ore in both headings is rapidly improving in quality. The surface prospecting to the west of No. 2 shaft on the strike of the B vein has been resumed. A few shots in the pit 2,000 ft. west of No. 2 ore produced some ore.

ONTARIO—LAKE OF THE WOODS.

(From Our Special Correspondent.)

JUBILEE VEIN.—Messrs. John McArn & Company are opening up the Jubilee vein on location Mc A,

129, which promises to be as good as anything yet worked in the district. The quartz, which is highly mineralized and pans freely, and the vein which increased 1 ft. in width in the first 6 ft., assay \$20.

SULTANA MINE.—The shaft is now down between 400 and 500 ft., at which point the vein is 65 ft. wide and averages about 15 dwts. to the ton. The new mill will shortly be completed. The machinery, with 30 new stamps, is being erected by the Jenks Machine Company, of Sherbrooke, Que., and room will be allowed in the new mill for the erection of 20 new stamps when required.

WITCH BAY.—Considerable work is now being done in the Witch Bay District, about 20 miles southeast from Rat Portage. The quartz veins in the vicinity will, it is believed, pay well for milling. The Ontario Prospectors are now down 40 ft. on the Stella vein, and have considerable development on the contract. Messrs. James & Gordon have sunk a small shaft on an adjoining location, which is under working option for \$15,000.

BRITISH COLUMBIA—TRAIL CREEK DISTRICT.

(From Our Special Correspondent.)

ORE SHIPMENTS.—The quantity of ore shipped from the Rossland mines and milled in the camp from January 1st to September 18th, inclusive, is placed at about 56,000 tons. The average of the present shipments per week amount to 1,500 tons.

BRITISH COLUMBIA BULLION EXTRACTING COMPANY.—Mr. L. H. Webber, manager of this company, has submitted a proposition to the directors of the Le Roi for the treatment of low-grade ores. The company has a capital of \$200,000. The directors are Major-General Webber, chairman; Lieutenant-General B. Edwards; Mr. Wilberforce Bryant and Mr. Louis Pelatan. The preliminary work for the erection of this company's reduction works has already begun on Little Sheep Creek a short distance south of the O. K. mine. The company has acquired the right to several patents, among others the Pelatan Clerici process. It is not proposed to treat the high grades ores, which are now shipped to smelters. The object is to treat ores ranging from \$6 to \$18 per ton. The plant is to have a capacity of 50 tons a day and it will be constructed with a view to future enlargement. The company has acquired a water supply on Little Sheep Creek and Spokane Creek. The water will be flumed to the mill and from this it is proposed to divert it to the south end of Spokane Mountain. The water from Spokane Creek is to be piped a distance of 1,500 ft. A spur to the Red Mountain Railway is to give the necessary railway facilities.

CITY OF SPOKANE.—Two experts recently examined this property. It is reported that they were sent to make the examination by the Horne-Payne syndicate, the owners.

COLUMBIA & KOOTENAY.—This company, after shipping 2,400 tons for the present year, has suspended operations. It is not known when work will be resumed.

EXPORT DUTY ON ORE.—The committee appointed at the public meeting recently held in Rossland on the subject of an export duty on Trail Creek ores has prepared an elaborate memorial addressed to the Governor-General in Council at Ottawa, setting forth much statistical matter with reference to Trail Creek ores and the mineral industry of the Kootenay District, and remonstrating against the imposition of an export duty. The most urgent need, according to the memorial, is increased railway communication with upper points on the Columbia River, and the Canadian Pacific Railway Company is expected to furnish this. The memorial recites and supplements the resolutions passed at the recent public meeting. The text of this memorial has been published, and the original has been forwarded to the government at Ottawa. The memorial is signed by Mr. Oliver Durant, of the Center Star mine; Mr. J. B. McArthur and Mr. J. F. McCrea, of Rossland.

IRON COLT.—This company is installing a new two-drill compressor, when development work will be resumed.

IRON MASK.—This mine continues to ship regularly. The total shipments to September 18th for this year reached 2,434 tons. It still retains its place as the third largest shipper of this camp.

JOSIE.—This property, it is reported, is likely to pass into the hands of new owners. A meeting to consider the proposal recently made in connection with Mr. Thomas Rickard's visit here is announced to take place in Spokane shortly.

LE ROI.—This company lately completed a new hoist on the 500-ft. level. The skip now connects with the bottom of the shaft. Work will shortly be commenced on a three-compartment shaft. This when completed will enable the management to double its output. The work of sinking to the 600-ft. level is now being pushed and it will be continued to completion. A fine body of ore, 18 ft. wide, has been encountered near the 600-ft. level.

MONTE CRISTO.—This company has resumed operations after a temporary suspension. The showing of the ore body continues to be encouraging.

ORA PLATA.—This property has two large ledges running the entire distance. It is situated about 18 miles from Nelson. The directors comprise Mr. W. H. Fyfe, president; Mr. J. R. Reavis, vice-president; Mr. J. W. Cover, managing director and Mr. T. M. Elgee, secretary-treasurer. All of Rossland.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, October 1.

Statement of shipments of anthracite coal (approximate) in tons of 2,240 lbs., for the week ending September 25th, 1897, compared with the corresponding period last year:

	1897.		1896.
	Week.	Year.	Year.
Pennsylvania Railroad.....	94,323	2,512,756	2,586,539

PRODUCTION OF BITUMINOUS COAL in tons of 2,000 lbs. for week ending September 25th, and for years from January 1st, 1897 and 1896.

	1897.		1896.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	45,367	1,739,461	1,697,012
Barclay, Pa.....	*	31,435	31,437
Beech Creek, Pa.....	165,631	2,740,523	2,126,932
Broad Top, Pa.....	10,706	530,202	283,778
Clearfield, Pa.....	71,592	3,301,591	3,392,592
Cumberland, Md.....	83,837	2,843,796	2,535,438
Kanawha, W. Va.....	170,452	3,289,796	2,158,246
Phila. & Erie.....	1,283	181,972	55,774
Pocahontas Flat Top.....	*	*	2,539,978
Totals.....	319,868	14,477,586	14,821,207

	1897.		1896.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	10,757	788,066	930,317
Pittsburg, Pa.....	36,822	1,400,265	1,399,313
Westmoreland, Pa.....	66,254	1,583,056	1,385,797
Totals.....	123,833	3,771,387	3,715,427
Grand totals.....	473,701	18,249,073	18,536,634

Production of coke on line of Pennsylvania Railroad for the week ending September 25th, 1897, and year from January 1st, 1897, in tons of 2,000 lbs.: Week, 101,619 tons; year, 3,301,825; year to corresponding date in 1896, 2,017,158 tons.

* For week ending September 14th. * Returns not received.

Anthracite.

Conditions in the hard coal trade have been altered materially since the opening of the year, and the operators are now beginning to see by their profits how advantageous it is to adhere to a conservative policy in regard to production. The earnings of the coal roads in August increased, and probably a good profit has been made. Though the trade at the present time is not active, prices are nevertheless better than they were last year. By this it is not meant that prices to-day are higher because the list quotations are well maintained, for they are not. There is more or less cutting, and we are aware that in some instances prices on sales have been less than the July circular, and in a few remote cases even less than the May circular. Good Lehigh chestnut coal has been sold this week at \$3.85 per ton alongside New York, which is 15 to 20c. less than the price quoted in May last. Stove coal has also been sold at \$3.90 per ton alongside, which is 35c. less than the May circular. Sales have been made of other sizes at proportionately lower prices. This probably explains why some operators are still adverse to the issuance of a new circular beginning October 1st. So far many of them are of the opinion that a 25c. increase in tidewater prices is not likely to be made until either October 15th or later. Nevertheless, the Philadelphia & Reading has put up its line and city prices 10c. on egg, lump, broken and stove, and 15c. on chestnut. It is also understood that the Pennsylvania and the Lehigh companies have made a similar advance.

Why chestnut coal should be increased in price 5c. above the other sizes is a matter of conjecture to many operators, as they contend that this size is very plentiful in the hands of producers. Admitting that there is a good outlet for chestnut coal in the West during lake navigation, what will become of the coal when the season closes? That is the point now under debate. One of the leading operators states that it would be better at this time to establish a price for this coal which will be satisfactory to the consumer and induce him to buy more freely than usual.

Egg coal is scarce, and in some cases is commanding a good price. Dealers in the East have fair stocks of all the other sizes on hand, but it is intimated that a few days of cold weather will force them into the market for supplies. Coal shipments from the mines have been delayed owing to a scarcity of cars.

The production of coal in October is expected to aggregate between 4,500,000 and 5,000,000 tons. It is believed that the market will consume the greater portion of this coal, as business usually increases in that month. The mines in several regions have been working only 10 days a month. The strike is practically ended, and all looks well for the operators for the remainder of the year, provided they adhere to the proper restrictions in output. The Lehigh Valley Railroad Company shipped 730,000 tons of coal in August, which is 130,000 tons more than in the preceding month.

Improvements are anticipated at the different collieries in the anthracite regions. The Philadelphia & Reading Company has been experimenting with electricity, and it is understood that it will substitute machinery for the mules which are now working underground. This should materially lessen the company's operating expenses. The Delaware, Lackawanna & Western Railroad is also contemplating the increased use of the culm from its

mines for its locomotives. Other collieries are installing mining machines, and all this will in all probability reduce the cost of production, and perhaps the cost of coal to the consumer. The operators will then be in a position to compete more keenly with the gas interests which have been gaining a foothold among consumers in the cities.

It is again rumored that the Susquehanna & Western is about to change hands. This time Wall Street is responsible for the statement that the Buffalo, Rochester & Pittsburg is endeavoring to secure it. The object of that road is to secure a direct entrance into New York. It appears, however, that the whole matter is brokers' talk thus far.

We quote prices as follows: Broken, \$4; egg and chestnut, \$4.25; stove, \$4.50 per ton alongside New York.

NOTES OF THE WEEK.

The Lehigh Valley Coal Company's statement for August shows net earnings of \$34,870. Those for the nine months ending August 31st amounted to \$206,246, against \$51,597 in 1896.

The Philadelphia & Reading Coal and Iron Company reports its net earnings in August at \$108,396, against \$63,954 last year. For the fiscal year ending August 31st the net earnings were \$268,839 in 1897 and \$130,730 in 1896.

In the appellate term of the New York Supreme Court at Saratoga, September 30th the session was devoted to hearing argument on the appeal of Attorney-General Hancock against Judge Chester's decree, which vacated the order to take testimony before a referee in order to determine whether or not proceedings should be commenced against various coal railroads accused of violating the anti-trust law. Elaborate arguments were presented on both sides.

Bituminous.

The seaboard soft coal trade is quiet, the bulk of the business continuing to be on old contracts. The few outside orders taken are mainly from dealers who are wanting the different coals on which they have not been running of late, and the amount is not very large. Prices remain unchanged, though the coming month should show some results from the attempts being made to raise the price of coal according to the understanding which has been prevalent for the last two or three weeks. The idea was that this advance was to go into effect on new business after October 1st, but whether it is going to be so or not we are unable to discover at this writing. The tonnages going forward are moderate, and the talk of the trade is that orders are scarce and difficult to get. Producers, if anything, are urging present shipments upon contracts in hand.

Trade in the far East is slow and orders are not forthcoming in good supply. The report is that the mills are working fairly well, but the stocks of coal on hand are plentiful.

Long Island Sound business is taking a fair amount of tonnage, and is helping out the producers considerably. New York Harbor trade is fairly good, and where consignees are able they are inclined to increase the stocks of coal on hand.

All-rail business is irregular, though fairly good, the heavy shipments of one day making a fair general average for those days on which shipments are poor.

Trade local to the shipping ports is quiet, the regular amounts going forward to the usual quarters. Transportation from mines to tide is still slow, though complaints are not as frequent as they have been. The car supply is fair on some roads and poor on others. There are embargoes in some instances to points off main lines on foreign roads. In the coastwise market vessels are in good supply and orders scarce. Freights are weak and rates 5c. off from what they were. The question of ice has not entered into the market yet; indeed, there are more inquiries for freights to the ice ports to get the last of the cargoes of ice back. A good many of the vessels have taken lumber freights, but there is a shortage of lumber orders in the market at the present time, according to the reports of the trade. The demand for vessels for shoal-water ports is falling off, as most of the orders on contracts to these points are pretty well closed up. We quote current rates of freight from Philadelphia: To Boston and Salem, 60 to 65c.; Portland, 65c.; Providence, New Bedford and the South, 55c.; Wareham, Bath and Bangor, 70c.; Lynn and Newburyport, 75 to 85c.; Dover, 90c. and towages; Saco, 85c. and towages; Gardiner, 70 to 75c. and towages. Five and 10c. above these rates are asked from the more distant lower ports.

Buffalo.

Sept. 30.

(From Our Special Correspondent.)

The anthracite coal trade is fairly active as the weather has been cooler and fuel in demand. Prices are nominally unchanged, but there is talk of a 25c. advance to-morrow. The prospects for the fall trade are considered good, as stocks are small at all nearby points, and very many families have not laid in their winter supplies. Bituminous coal is fairly active and no change reported in quotations other than they favor buyers. Stocks are plentiful. There is no difficulty in obtaining coal for vessel use now at lower figures than those ruling during the strike. There is some talk, however, that prices may rule

higher to make up the concessions to the workmen in the mines.

The shipments of coal by lake from Buffalo for the week ending September 25th inclusive aggregated 61,711 net tons, distributed about as follows: 22,950 tons to Chicago, 11,526 tons to Milwaukee, 3,900 tons to Superior, 3,500 tons to Green Bay, 600 tons to Detroit, 3,325 tons to Toledo, 360 tons to East Tawas, 800 tons to Menominee, 1,500 tons to Cleveland, 1,000 tons to Washburn, 2,990 tons to Gladstone, 550 tons to Bay City, and 2,700 tons to Manitowoc. The rates of freight were 20c. to Chicago, Milwaukee, Duluth, Superior, Detroit, Toledo, Gladstone, Manitowoc and Cleveland; 25c. to Green Bay, Bay City and Grand Haven, and 30c. to East Tawas. Closing very firm, but the bulk of the vessels leaving port cleared light.

Yesterday three vessels were chartered for coal to Chicago at 30c., an advance of 10c. per ton.

A freight car famine is reported from the Pittsburgh coal district as the result of the settlement of the miners' strike. The operators are complaining bitterly of the failure of the railroad companies to supply cars and move their coal to the Lake ports.

Arrangements are now being perfected whereby the three Buffalo gas companies will sell out to a wealthy New York syndicate for a sum reported to be \$5,000,000. It is stated that the new company will be formed with a capital stock of \$7,000,000 and a bonded indebtedness at 5%, running 30 years, of \$7,000,000.

Chicago. Sept. 29.

(From Our Special Correspondent.)

Anthracite Coal.—The buying of hard coal has not increased as yet to any extent worthy of notice. It is done only in a dilatory sort of way and in amounts just about sufficient to cover temporary wants. Dealers one and all appear to be holding off until the very latest day and in consequence the expected early fall trade has failed to materialize. The out-of-town trade has not expanded as yet, though the Central West and Northwest have had some cold weather. Somehow or other the anthracite coal market appears to be incapable of a boom, for, of late, every other commodity has gone up in price because of a greatly increased demand, but hard coal remains inactive and its price very shaky. Weather conditions will continue to govern the market. Prices, as per circular, still remain on grate \$5.35; egg, stove and chestnut, \$5.60.

Bituminous Coal.—Soft coal is finding a fair market and at prices that are considered good. The supply is sufficient now to meet all present wants, and there are indications of a rush of soft coal to this market very soon. A great deal of buying just now is in small quantities, though there are a few fair-sized contracts made from day to day.

Pittsburg. Sept. 30.

(From Our Special Correspondent.)

Coal.—We stated in our last that a good many of the miners were dissatisfied and are again talking strike. The convention held at Monongahela City on Saturday was far from a satisfactory one and may lead to a total suspension. A new differential has been adopted and a committee appointed to confer with the operators. Following closely in the wake of the strike just settled, another total suspension of river mining is probable. The full text of the resolutions as adopted is as follows: "Resolved, That the differential be 25c. per 100 bu. for mining between the first three pools and the fourth pool; that we appoint a committee of five to confer with the river operators; that if necessary we authorize a total suspension of river mining until these terms are complied with."

These resolutions were adopted unanimously. Under the 25c. differential, the rates demanded are \$2.47 per 100 bu. for mining in the first, second and third pools, and \$2.22 in the fourth pool. This will give the fourth pool miners an advance of 25c. per 100 bu. over what they are receiving at the present time.

Director Bigelow, of Pittsburg, has let contracts to the New York & Cleveland Gas Coal Company for supplying fuel for Brilliant pumping station for the coming fiscal year, their bid being 5½c. per bushel for coal; 4¼ for nut; 3¼ nut and slack mixed and 3c. for slack. The People's Natural Gas Company took the contract for supplying fuel for Herron Hill pumping station, the price being 8c., 10c. and 15c. per 1,000 ft., according to the amount used—that is, if 500,000 ft., 15c.; 1,000,000 ft., 10c.; 5,000,000 ft., 8c. The Philadelphia company will furnish the Garfield pumping station at 10c. and 15c. per 1,000, according to the amount used.

The latest news is that a strike of the river mines has been ordered. The miners' leaders did not approve the movement, but the men will do as they please.

Coke.—A boom in coke is apparent; the largest weekly output for the years is shown by the returns. Over 534 ovens were blown in, and the demand was almost unprecedented. The production amounted to 134,545 tons. Shipments did not show as large an increase, which is due to the scarcity of cars. The betterment in the coke trade is due to the activity in the iron trade, many furnaces having started up during the week. A number of coke plants which were blown out on account of the dry weather were also put in operation, considerably increasing the production.

A steady advance is predicted for next week, and the operators are sanguine of a continued large demand. The summary of the week shows 12,594 ovens in blast, with a production of 134,545 tons,

The shipments amounted to 7,580 cars. In the running order for the week 5,247 ovens made six days; 6,737 ovens made five days; 177 ovens made four days, and 50 ovens, Semet-Solvay plant, seven days. The report that H. C. Frick had purchased the Rainey plant could not be verified; the Carnegies on this and other subjects are dumb.

The shipments for the week are as follows: To Pittsburg, 3 255 cars; points West, 3,152 cars; shipped East, 1,173 cars; total, 7,580 cars. Prices are nominal: Furnace, \$1.40@1.50; crushed and foundry, \$2.30. Prices will certainly advance.

The Union Coal and Coke Company of New York has bought several hundred acres of coal land west of Salineville, O., and this week the building of 150 coke ovens begins. The price paid was \$83 per acre. The coal is believed to equal that of the Connells-ville region for coking purposes.

IRON MARKET REVIEW.

New York, Friday Evening, Oct. 1, 1897.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From Jan., '96.	From Jan., '97.
	Oct. 2, 1896.	Oct. 1, 1897.		
Anthracite.	31 18,050	22 13,150	966,760	587,062
Coke.....	15 108,180	118 168,275	5,919,594	5,230,357
Charcoal...	23 6,420	21 4,625	225,065	164,007
Totals	149 132,650	161 186,050	7,111,329	5,981,426

The iron trade still shows great activity, and the consumers who held off all through the period of extreme low prices are coming forward now, apparently with the determination to put in stocks large enough for an active winter's trade. Buying in the West is not quite as extensive as our reports last week showed, but in the East there are more inquiries, and some large transactions. The demand at present is chiefly for steel billets and Bessemer pig. Sales of finished material have been on a considerable scale everywhere; in some lines the larger mills are oversold and are placing orders outside with smaller concerns. Foundry and forge pig are less active, and some of the foundries—especially in the East—are still hesitating about their purchases.

Prices are showing some appreciation, perhaps more in anticipation than in reality. The general range, however, is notably higher than at the opening of September, but in most lines it is still below that prevailing in October of last year. In pig iron the rise is most noticeable, though the quantities still to be delivered on old contracts at low prices are large. The Alabama ironmakers claim that they are selling now on the basis of \$8 per ton at furnace for No. 2 foundry; while Eastern furnaces are standing out for \$10.50 on cars at furnace for No. 2 plain and \$10.75 for No. 2 X. It is quite probable that good iron can be had for a little less, especially on cash or short time orders. The Pittsburg and Western Pennsylvania people are holding off on long time orders, and are not anxious to take contracts for 1898 delivery. There is little anxiety about ore prices, but a general belief that coke will be higher, and until this point is settled no one wants to fix prices far ahead. Recent transactions have strengthened the Frick Company's control of the Connellsville coke region, and there is an impression that coke prices may be put up at any time.

Lake ore shipments continue on a very large scale, and the indications are that, outside of ore already contracted for there will be enough on the docks at Lake Erie ports to meet any probable demand through the winter. Rumors of the purchase of the Norrie and Tilden mines, on the Gogebic Range, by the Carnegie Steel Company are still current, but cannot be confirmed.

There have been reports that negotiations were in progress for the reconstruction of the steel rail pool, but they cannot be traced to any reliable source. The rail mills are generally busy, with plenty of orders ahead. They are generally refusing to take any contracts for less than \$20 a ton at mill, and a quotation of \$22 for standard sections is talked about. Girder rails are in demand, and there is some call for light T-rails.

The proposed pool in the wire trade makes no progress, and there seems to be nothing to it but talk. It would not be easy to organize such a pool under present conditions, especially as some of the larger concerns will have nothing to do with it.

NOTES OF THE WEEK.

A meeting of the Wrought Iron Pipe Association was held in Pittsburg, September 30th, for the purpose of arranging new discounts. It was expected that prices would be raised from 5% to 10% over the present list.

New York. Oct. 1.

The local iron market continues to show a marked improvement both as to the volume of business done and the prices obtained. The flow of orders has been steady during the past week in steel rails, which product has been the main feature and attracted most attention. The price has advanced to \$20 at mill for standard sections, which fact has given color to a faint rumor of combination, although prominent dealers deny emphatically that there is any truth in the report.

Structural material still commands an important place in the market, and although no large con-

tracts have been closed, the demand has continued fair, with numerous inquiries.

Pig iron is rather unsettled, with Southern producers asking \$8 per ton for No. 2 at Birmingham for 1898 delivery.

Inquiries in export material retain some prominence in the market, although producers do not seem to search after this business on account of the volume of domestic work in sight. The placing of an order for 15,000 tons of steel rails for Japan was to be decided on September 30th, but the high freight rates to that country will act as a barrier to the order being placed in America.

Pig Iron.—The condition of the pig iron market is very unsettled as far as future deliveries are concerned, but orders for immediate delivery are steady and firm, with prices as quoted last but an undercurrent of an advance. Quotations are: Northern No. 1 X Foundry, \$11.50@12 per ton; No. 2 X foundry, \$10.75@11; No. 2 plain, \$10.50@10.75; gray forge, \$10.25@10.50; Southern No. 1 Foundry, \$11@11.25 per ton; No. 2 foundry, \$10.50@10.75; No. 1 soft, \$11@11.25; No. 2 soft, \$10.75@11; gray forge, \$10@10.25; Basic, \$10.50@10.75. All prices are for tidewater delivery.

Cast Iron Pipe.—Business continues steady in small orders, with prices stationary.

Spiegeleisen and Ferro-Manganese.—The market continues fair. Quotations are: Spiegeleisen, 20%, \$19@19.50; ferro-manganese, 80% domestic, \$45.50@46, delivered at buyer's mill.

Steel Billets and Rods.—This market has received an impetus during the past week, and although prices have not advanced to any extent, yet they are held firm. Quotations are \$17.50@18 for billets at tidewater and \$22@22.50 for rods at mill.

Merchant Iron and Steel.—The trade in merchant material is in fairly good condition with prices unchanged. Quotations are: Common bar, 1@1'05c.; refined, 1'10@1'15c.; soft steel bars, 1'15@1'20c.; steel hoops, 1'30@1'35c.; steel axles, 1'40@1'60c.; tire steel, 1'05@1'10c.; spring steel, 1'35@1'40c.; links and pins, 1'50@1'60c.; cotton ties, 55c. per bdl. at mill.

Plates.—The inquiries in this market are steadily growing in volume, and orders booked show an improved business. We quote for universal mill plates 1'17½@1'20c. For steel plates prices are: Tank, 1'17½@1'20c., boiler shell, 1'25@1'30c.; flange, 1'35@1'40c.; firebox, 1'60@1'75c., and 2'25@2'50c. for locomotive firebox, according to quality. Charcoal iron plates are 2'25c. for shell, 2'75c. for flange and 3'25c. for firebox. Rivets are 2'25@2'50c. for iron and 1'75@1'85c. for steel. Prices are for tidewater delivery in large quantities.

Structural Iron and Steel.—Large orders in sight have tended to strengthen the tone for structural material with prices unchanged, but firm. We quote for angles, 1'15@1'20c.; tees, 1'25@1'35c.; channels, 1'15@1'25c. The price of beams, New York delivery, is 1'15c. for ordinary sizes, 1'20c. for 20-in., and 1'25c. for 24-in., carload lots.

Steel Rails and Rail Fastenings.—An increased demand, especially for rail fastenings, has changed quotations somewhat during the past week for the better. Quotations for steel rails are \$19@20 per ton for standard sections and \$23 for girder rails. Lighter rails are figured on by reliable concerns as follows: 16-lb., 20-lb., 25-lb., 30-lb. and 35-lb., \$22; 40-lb. and 45-lb., \$20 f. o. b. mill.

Tidewater quotations for rail fastenings are: Angle bars, 1'15@1'20c.; spikes, 1'50@1'55c.; bolts, square nuts, 1'80@1'85c.; hexagon nuts, 1'90@1'95c.

Wrought-Iron Pipe.—Business continues fair at unchanged prices.

Nails.—Wire nails have remained steady with prices unchanged. Carload lots are quoted at \$1.45 @1.50 f. o. b. mill and \$1.50 on dock at New York. Smaller quantities from store are quoted at \$1.65. Cut nails have shown an increased demand with prices firm. Base quotations for carload lots are \$1.33 delivered at New York; \$1.31 at Philadelphia; \$1.35 at Boston; \$1.30 at Baltimore; \$1.33 at Albany, and \$1.27½ at Buffalo. Small lots at New York are quoted at \$1.43@1.45 from store.

Old Material.—The market has shown considerable activity during the past week, with the demand in all lines greatly improved. Prices are firm but unchanged.

Buffalo. Sept. 29.

(Special Report of Rogers, Brown & Co.)

Shipments from local furnaces during the past week have been very heavy, and stocks have been worked down so that there is a scarcity of some grades. The majority of the foundries are taking on additional casting contracts, which call for more pig iron. The recent advances seem to have stimulated further buying. There is a much better feeling noticed all around. Many concerns who a short time ago hesitated about placing iron orders at record-breaking prices are now very glad to pay the full advanced prices. At the same time, any further material advance in pig iron prices would be a hardship to jobbing foundries, as it is understood as yet they have been unable to get any advance on castings. We quote below on the cash basis f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$11.25; No. 2 strong foundry coke iron, Lake Superior ore, \$10.75; Ohio strong softener No. 1, \$11.40; Ohio strong softener No. 2, \$10.90; Jackson County silvery No. 1, \$14; Southern soft No. 1, \$11.75; Southern soft No. 2, \$11.25; Niagara malleable, \$10.50.

Chicago. Sept. 29. (From Our Special Correspondent.)

Pig Iron.—There has not been a great deal of pig iron sold in this market during the past week. The larger consumers have pretty well stocked up and the buying at the present time is mostly in small quantities all the way from a carload up to one sale of 1,000 tons. The advance in prices has undoubtedly affected sales, but it is noticed that some of the smaller consumers do not believe that the advanced prices will hold and they are consequently just buying enough for temporary wants. The business of the week was about equally divided between the Northern and Southern furnaces. Prices are as follows: Lake Superior charcoal, \$13@13.25; local coke foundry No. 1, \$11@11.50; No. 2, \$10.50@11; No. 3, \$10.25@10.50; local Scotch foundry No. 1, \$11.50@12; No. 2, \$11@11.50; No. 3, \$10.50@11; Southern coke, No. 1, \$11@11.25; No. 2, \$10.50@10.75; No. 3, \$10.25@10.50; Southern No. 1, soft, \$11@11.25; No. 2, soft, \$10.50@10.75; Southern silveries, \$10.60@10.75; Jackson County silveries, \$12.50@14.50; Ohio strong softeners, \$12@12.25; Alabama car wheel, \$15.50@16; Malleable Bessemer, \$10.75@11; Coke Bessemer, \$11.50@12.

Bar Iron.—Some fair-sized contracts were booked during the week and there are a number more at present awaiting action. There were a number of small orders received and a very fair week's tonnage was sold. The mills are firmer and there is no hesitancy about making prices. Common iron is quoted 1'10@1'20c.; guaranteed 1'15@1'25c.

Steel Rails.—There is considerable business being received for delivery early next year. The mills in this neighborhood are overflowing with business and are booking no large orders for delivery the remainder of this year. Small lots can be had at top prices. Quotations are still \$19@21, Chicago.

Billets and Rods.—Orders for small quantities only continue to be booked for delivery this year. The mills are filled with orders and are taking no large business for delivery earlier than next year. Quotations are \$18 for billets and \$25 for rods.

Structural Material.—Railroad bridges continue to absorb most of the business in structural material, a number of the railroads in the West having contracted of late for a considerable quantity of such work. Small sales are the rule just now in building and bridge shapes, there being nothing of a large nature in the market. Prices are firm and are: Beams and channels, 1'20@1'25c.; tees, 1'30@1'40c.; plates, 1'20@1'25c.; angles, 1'20@1'25c.

Cleveland. Sept. 29. (From Our Special Correspondent.)

Iron Ore.—A fair business has been done in small and moderate transfers of ores during the past week, but no large transactions have been reported. Taken altogether, however, the activity has been equal to that of the past few weeks. There was no real expectation of large sales, and in some of the standard ores large sales are out of the question, as the majority of the operators have made contracts which equal the output of their mines. The prevailing prices follow: Specular and magnetic ores, Bessemer quality, \$3@3.75; specular and magnetic ores, non-Bessemer quality, \$2.50@2.75; hematite ores, Bessemer quality, \$2.50@3; hematite ores, non-Bessemer quality, \$2@2.50. There is considerable activity at present in the movement of ores from the upper Lake region. The freight rates, however, are unchanged.

Pig Iron.—A larger trade is reported in the pig iron market than during the past few weeks. Bessemer pig has strengthened somewhat and the indications are that the quotations will be still higher next week. On account of the fair demand the market is firm and the probabilities are that advances will be reported next week. Following are the quotations: Lake Superior charcoal, \$13.25; Bessemer, \$10.50@10.75; No. 1 foundry, \$10.75@11; No. 2, \$10.25@10.50; No. 1 Ohio Scotch, \$11.15; No. 2, \$10.65; gray forge, \$9.75@10.

Pittsburg. Sept. 30. (From Our Special Correspondent.)

Continued improvement may be noted in the iron and steel trade, prices moving steadily upward. So many orders have been taken that many sellers would prefer waiting awhile before entering more, but when it becomes necessary to make a price it is invariably higher than on the previous sale. Most branches of the iron and steel trade are clearly no longer able to keep up with their new orders. Others are fully employed for months ahead, and with all the demand is increasing. Heavy buying in Pittsburg advanced prices all along the line and to-day prices are the highest of the year. The advance here was fully two weeks ahead of the Eastern movement. The Pittsburg sales of raw iron the past two weeks aggregated 301,795 tons; business like that makes pleasant reading. A statement of September sales of raw iron and steel for the past four weeks follows in tons:

Table with 4 columns: Bessemer, Billets, Mill, All kinds. Rows for September 4, 11, 18, 25, and Totals.

Pig-Iron.—One thing is very noticeable, specu-

lators have held off so far, and transactions generally were made with producers which makes business more healthy. Iron in the Valley continues scarce and the stock—nearly 1,000,000 tons—which had been piled up at the various furnaces has all disappeared as if by magic; there will be no piling up for a long time to come, as the Valley furnaces have all made engagements which will keep them busy the balance of the year with numerous sales for the first quarter of 1898. The Southern furnaces are also loaded down with orders.

Finished Material.—For wrought iron and steel pipe the market is very active. The demand is far in advance of the supply and a further advance is not far off; all the plants are running double time. Steel wire rods are still advancing; the mills are all sold ahead and the market is bare of stocks. Wire nails show a further advance to \$1.55; indications point to still higher prices, as the supply falls far short of the demand and makers are not anxious to sell ahead. For sheet bars the market is very firm and the demand is ahead of the supply. Sales are 8,000 tons at \$18.25@18.75. For old iron and steel rails the market is very firm and advancing. Iron rails touched \$15. Scrap iron is very firm.

Latest.—The market remains firm, with a good demand for raw and finished material. Billets show a further advance. Skelp steel is 5c. higher and billet ends 25c. above last week's prices. Old rails, iron and steel, are scarce and higher, with prices irregular. The same applies to all old material. Sheet bars and wire rods are very firm at last week's advance. The volume of transactions continues large and the general outlook is favorable.

Table with columns: COKE SMELTED, LAKE AND NATIVE ORE, SHEET BARS, SKELP IRON, SKELP STEEL, STEEL WIRE-RODS, BLOOMS, BILLETS, BARE ENDS, CHARCOAL, OLD RAILS, SCRAP MATERIAL, MUCK BAR.

Philadelphia. Oct. 1. (From Our Special Correspondent.)

Pig Iron.—Probable conditions in the steel business have more weight in this market on foundry and forge pig iron than the actual demand for it, a surprising but correct statement. The blowing in of more furnaces has strengthened prices by strengthening confidence. A large amount of business has been done this week, and every day we hear of something surprising. Quotations keep lower than the heavy demand would point to, but the large stocks and the assurance of increased production account for the continuance of low prices near. The small local buyers, when they come back to market in a month, will no doubt find higher prices prevailing despite the increasing output. Foundry buyers have done well. They bought up No. 1 X at \$12.50, but some refused to close because the particular irons they wanted were not to be had so soon. No. 2 X has actually advanced, and it is firm at \$11.25. No. 2 plain was marked up to \$10.50 at furnace this week, and No. 2 X to \$10.75. In one sense the market is quieter, for it is recognized that there cannot be much more buying for a while. Good forge is to be had at \$10.50; Basic, \$10.50; Low phosphorus, \$16; Bessemer, \$13.

Billets.—Western movements are disturbing our market. The news we get is that everybody is after billets there, and that \$20 will be reached. This remote possibility determined a few halting people to buy, and they did for winter delivery; \$19 is the ruling price to-day. Sudden changes are probable and in an upward direction.

Merchant Bar.—The talk in bar-iron quarters is that prices will be 1'20c. bottom for refined in a few days, and steel bars also are coiling for a spring.

The mill-men do not feel elated at all, but are pleased at the bettering conditions.

Sheet Iron.—This week's business netted \$1 to \$2 more per ton, though the bulk of business was small. Buyers don't object to the advances, so we will give them another dose of the same kind next week. Sheet iron has been selling too low all along.

Pipes and Tubes.—Business is good at all mills. Merchant Steel.—All kinds of merchant are moving along nicely and large shipments are being received from mills.

Plate and Tank.—A virtual advance of \$2 per ton has been effected to-day over quotations named a week ago. This advance was made out of parties who had to have early deliveries. Manufacturers think they can hold this advance and make it general. Tank, 1'20c.; universals, 1'25c.; flange, 1'30c.

Structural Material.—During the past two or three days inquiries have been figured upon which in the aggregate run up into thousands of tons, mostly bridge work for winter delivery. Engineers are sounding the market on forward deliveries, but they can be told in advance they will not get much satisfaction. Prices keep low; mill owners will not move up quotations yet awhile. Angles are 1'20c.; beams and channels, 1'25c.

Steel Rails.—The advance in steel has put up steel rail quotations.

Old Rails.—A few lots were taken this week at \$12.50 for iron.

Scrap.—Scrap is moving fast and some yards have already run out of kinds wanted. Many buyers were wise enough to secure options and are now taking advantage of the concession. Old car wheels are bringing \$9.50 and machinery costs about the same. Choice railroad scrap is very scarce, but is quoted about \$12.50.

METAL MARKET.

New York, Friday Evening, October 1, 1897. Gold and Silver.

Price of Silver per Ounce Troy.

Table with columns: September, St. Ex., London Pence, N. Y. Cts., Value of sil. in \$1., October, St. Ex., London Pence, N. Y. Cts., Value of sil. in \$1.

The course of silver has been erratic and tendency uncertain. As rates prevailing are relatively low, it is easy to run the market up on orders, but long silver is not drawn out very freely by slight advances; hence, a rapid rise on orders and a sharp and sudden decline on cessation of buying gives a spasmodic market.

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

Average Monthly Prices of Silver

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

Table with columns: Month, 1897, 1896, 1895. Sub-columns for London, New York, Pence, Cents.

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

Gold and Silver Exports and Imports

At all United States ports, August, 1897, and years from January 1st, 1897 and 1896:

Table with columns: Coin and bullion, Exports, Imports, In ores, Exports, Imports, Total excess, Exp. or Imp.

This statement includes the exports and imports at all United States ports, the figures being fur-

published by the Bureau of Statistics of the Treasury Department.

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

Per-iod	Gold.		Silver.		Total Ex-cess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	\$10,700	\$51,633	\$1,220,528	\$51,881	E. \$1,127,714
1897..	26,112,486	4,323,162	30,193,989	1,711,264	E. 52,272,049
1896..	40,396,318	52,420,445	29,729,800	2,119,059	E. 15,586,644
1895..	57,994,222	25,929,909	30,230,423	1,396,225	E. 60,898,511
1894..	82,440,270	14,451,646	27,633,737	1,323,083	E. 91,299,258

The gold exported for the week went to the West Indies; the silver to London and South America. The gold and silver imported came from Central and South America and the West Indies.

FINANCIAL NOTES OF THE WEEK.

General business continues to show some improvement, the most marked feature being the gain reported in railroad traffic, which is not confined to the grain-carriers, but is shown on other lines. There are other indications of increased activity. The loans of the New York banks have reached the highest figure on record, and a large proportion of these are business loans and not for speculative purposes.

Shipments of currency from New York to interior points have been very large. In fact the amounts have been so heavy that there has been some difficulty in securing the currency, especially the small bills, which are always needed in the season of crop movement.

No further gold imports are noted and there is still some difference of opinion as to the probabilities. Sales of American securities here on foreign account continue large.

By official records it is shown that in August the value of gold received at San Francisco from Australia was \$2,189,925 and in September the amount has been \$3,587,069, a total of \$5,776,994. Another steamer is understood to have left Sydney with a large consignment of gold on order from London.

The United States Treasury reports total receipts for September at \$21,319,643, and payments at \$24,752,360. The deficit for the month was \$3,432,717, and for the first three months of the fiscal year \$29,012,954. The returns from the customs in September were \$7,943,100, against \$6,987,702 in August. Internal revenue yielded \$12,701,975, against \$11,193,194 in the preceding month. Miscellaneous receipts amounted in September to \$674,568, against \$762,308 the month before. The total receipts for this fiscal year have been \$79,428,363 and the expenditures \$108,441,318. Pensions continue to furnish the greatest drain upon the Treasury, the month's payment being \$10,992,078, about 44% of the total expenditures. The cash balance stands at \$215,587,978, of which \$147,621,962 is in gold. This increase of nearly \$3,500,000 since August 31st in the gold reserve, in spite of a falling cash balance, is due to the desire of the general public to exchange gold for currency, which is more convenient for shipment through the country. More requests for such an exchange have come during this month than the Treasury has been able to meet.

The statement of the United States Treasury, on Thursday, September 30th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	Sept. 23.	Sept. 30.	Changes.
Gold	\$116,745,178	\$147,621,962	I. \$ 30,876,784
Silver	15,191,508	14,156,727	D. 1,034,781
Legal tenders	35,268,871	41,403,141	I. 6,134,270
Treasury notes, etc.	21,103,581	21,822,425	D. 728,844
Totals	\$221,309,138	\$225,004,256	I. \$ 3,695,118

Treasury deposits with national banks amounted to \$17,392,278, an increase of \$219,563 during the week.

The members of the Monetary Commission have been holding daily sessions in Washington, laying out the programme for the work that is before them. President Edmunds has announced the committees as follows: On Metallic Currency—C. Stuart Patterson, of Pennsylvania; Louis A. Garnett, of California; J. Laurence Laughlin, of Illinois. On Demand Obligations of the Government—Robert S. Taylor, of Indiana; Stuyvesant Fish, of New York; J. W. Fries, of North Carolina. The conference adjourned on Wednesday until October 11th, to give the committees time to work.

Imports of specie by water at San Francisco for the eight months ending August 31st were \$2,772,781 in gold and \$1,399,162 in silver; a total of \$4,171,943, against \$1,969,696 in the corresponding period in 1896. Of the total this year \$2,189,925 came from Australia, \$1,754,715 from Mexico, \$183,622 from British Columbia and the balance from other countries. These figures do not include the amounts received from Mexico overland.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending September 25th gives the following

totals, comparison being made with the corresponding weeks in 1896 and 1895:

	1895.	1896.	1897.
Loans and discounts	\$511,376,200	\$450,541,100	\$576,585,400
Deposits	549,136,500	448,368,700	626,356,000
Circulation	14,102,000	19,769,100	15,469,400
Reserve:			
Specie	61,677,500	54,330,900	91,870,600
Legal tenders	97,502,800	71,977,300	80,465,900
Total reserve	\$159,580,300	\$126,308,200	\$172,336,500
Legal requirements	137,284,125	112,092,175	156,339,000
Surplus reserve	\$22,296,175	\$14,216,025	\$15,997,500

Changes for the week were increases of \$607,200 in circulation and \$66,400 in specie; decreases were \$2,728,300 in loans, \$10,602,500 in deposits, \$6,614,700 in legal tenders, and \$3,897,675 in surplus reserve.

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

Banks.	1896.		1897.	
	Gold.	Silver.	Gold.	Silver.
N. Y. Assn.	\$54,330,900	.....	\$91,870,600	.....
England	241,932,310	.....	171,783,705	.....
France	395,152,169	\$248,766,336	399,341,010	\$240,501,700
Germany	22,700,000	.....	213,235,000	.....
Austro-Hun.	145,315,000	64,175,000	190,134,500	62,605,500
Netherlands	13,170,000	34,180,000	13,160,000	34,040,000
Belgium	19,945,000	.....	21,043,200	.....
Spain	42,610,000	52,005,000	45,135,000	52,970,000
Italy	61,440,000	11,125,000	62,980,000	13,515,000
Russia	435,850,000	.....	470,760,000	.....

The return for the Associated Banks of New York is of date September 25th; the Bank of Italy, August 20th; the Bank of Russia, August 16-28th; the Bank of Germany, September 7th; the Banks of Spain and the Netherlands, September 11th; the others are of date September 30th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England and the Bank of Russia report gold only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year up to September 16th are reported by Messrs. Pixley & Abell's circular as below:

	1896.	1897.	Changes.
India	\$2,893,778	\$4,041,136	I. \$1,147,358
China	574,413	238,479	D. 335,934
The Straits	545,686	277,067	D. 268,619
Totals	\$4,013,877	\$4,557,282	I. \$543,405

Arrivals for the week this year were \$162,000 in bar silver from New York, \$4,000 from the River Plate and \$22,000 from the West Indies; a total of \$188,000. Shipments for the week were \$153,266 in bar silver to India, and \$3,000 in Mexican dollars to China; a total of \$156,266.

Indian exchange shows a slight fall, which is largely due to heavy purchases of silver for Indian account. The bazaars are taking silver in large quantities, the demand being stimulated by the low price and also by a report, said to be current in native circles, that the mints will be reopened to silver coinage before long. For the time being silver shipments have taken the place of Council bills and commercial bills.

The following table, from the London Statist, shows the foreign trade of India for the three months of the fiscal year from April 1st to June 30th; also the imports and exports of treasure, the balance of exports over imports and the amount of Council bills sold; values are in rupees:

	1896.	1897.
Imports merchandise	19,36,11,104	15,65,11,847
Exports	27,55,22,549	22,50,53,858
Balance exports	8,17,11,445	6,85,42,011
Imports treasure	3,18,77,291	4,08,34,338
Exports	1,31,88,737	1,50,87,580
Balance imports	1,76,88,554	2,57,46,458
Balance exports	6,40,22,891	4,27,95,553
Council bills sold	9,38,17,291	4,25,95,983

It will be seen that the exports of merchandise fell off to a much greater extent than the imports, and that the imports of treasure were much larger than last year. The result is that the exports of merchandise and treasure exceed the imports for the quarter by only 428 lakhs., whereas last year in the same quarter the balance was as much as 640 lakhs. of rupees.

Notice is given that the government of Nicaragua has imposed an export duty of \$1 an ounce on gold bars or ingots and \$2 an ounce on gold dust.

Prices of Foreign Coins.

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

	Bid.	Asked.
Mexican dollars	\$.43	\$.45
Peruvian sole and Chilean pesos	.39	.43
Victoria sovereigns	4.85	4.90
Twenty francs	3.85	3.90
Twenty marks	4.74	4.80
Spanish 25 pesetas	4.78	4.85

Other Metals.

Copper.—The market, though not very active, continues fairly steady; in fact, consumption has

materially improved during the month just ended. Manufacturers, and especially those of brass, have of late run full time, which had not been the case for several months previously; besides, they have sufficient orders entered to admit of their running full time during the month of October and probably November also. The indications are that the improvement in demand, which has manifested itself in other lines some time since and which but recently came to affect copper, will make still further progress. Under the circumstances, it does not seem unreasonable to expect that, even if the foreign demand should fall off, of which, however, there are as yet no signs, present values can easily be maintained. We quote Lake 11½c.; electrolytic in cakes, bars or ingots, 10½c.; cathodes, 10½c. @ 10½c., and casting copper, 10½c.

The London market has moved within very narrow fluctuations, the price for g. m. b.'s having alternately advanced to \$49 5s. for spot and receded to \$49 2s. 6d., the closing quotations being \$49 2s. 6d. @ \$49 5s. for spot and \$49 10s. @ \$49 12s. 6d. for three months prompt. For refined and manufactured we quote: English tough, \$51 5s. @ \$51 10s.; best selected, \$52 5s. @ \$52 10s.; strong sheets, \$59; India sheets, \$57 10s.; yellow metal, 5d.

Statistics for the second half of October show an increase of 800 tons.

Tin.—Although the London quotation has steadily advanced, the price here has remained stationary, and is to-day below the cost at which tin can be imported. This is evidently due to the fact that the arrivals have been very heavy of late and consumption not quite as brisk as it had been during the few weeks previous. We quote for spot, 13 65c.

The London market, which opened on Monday at \$61 7s. 6d. @ \$61 10s. for spot, has steadily advanced, and closes to-day at \$62 @ \$62 2s. 6d. for spot and \$62 12s. 6d. @ \$62 15s. for three months prompt.

Lead has been quiet, with indications of weakness which became more pronounced as the week advanced; not that offerings have been very plentiful, but the demand was so insignificant that such lead as had to be marketed could find takers only at a sacrifice, business at the close being reported at 42 7½c. With the demand abroad well maintained and all the lead produced from foreign material going out of the country, it is not unlikely that the present depression will prove but a temporary one.

The foreign market has been firm, the quotation

Imports and Exports of Metals.

Port.	Week, Sept. 23.		Year, 1897.	
	Expts.	Impts.	Expts.	Impts.
*New York.				
Aluminum, boxes	.....	.....	2,618	.....
Antimony ore, short tons	.....	.....	.....	1,324
" regulus, casks	.....	.....	.....	471
Brass, old, short tons	16	.....	522	160
Copper, fine, long tons	1,189	99	36,166	5,820
" ore, long tons	.....	.....	.....	4,312
" matte, " "	148	.....	5,206	271
" sulphate, " "	.....	.....	4,686	.....
Ferro-chron e, " "	.....	.....	.....	5
Ferro-mangan se, " "	53	.....	3,009	52
Iron ore, " "	.....	.....	.....	9
" old, " "	.....	.....	.....	52
" pipe, " "	.....	.....	.....	185
" pig, bar, rod, " "	.....	.....	.....	3,326
" pyrites, " "	.....	.....	.....	7,570
Lead, antimonial, " "	.....	.....	2,100	100
" bullion, " "	1,192	1,070	27,005	54,744
Manganese ore, " "	.....	550	.....	4,963
Nails, " "	157	.....	564	.....
Nickel, " "	10	.....	1,029	115
Rails, old, " "	607	.....	8,972	.....
Spiegeleisen, " "	.....	.....	15,335	11,658
Steel billets, rods, " "	2	557	15,672	15,887
Tin, " "	67	400	1,216	7,784
" dross, " "	.....	.....	141	14,793
" and black plates, boxes	.....	.....	.....	261,671
Zinc, long tons	1,022	.....	3,192	.....
" dross, " "	9	.....	351	.....
†Baltimore.				
Brass scrap, long tons	.....	.....	9	.....
Chrome ore, " "	.....	.....	11	5,511
Copper, fine, " "	983	.....	30,666	.....
" sulphate, " "	60	.....	1,779	.....
Ferro-manganese, " "	20	.....	3,434	385
Ferro-silicon, " "	.....	.....	.....	231
Iron ore, " "	.....	.....	.....	201,567
" pig, bar, etc., " "	325	.....	2,609	2,670
" pipe, " "	10	.....	115	.....
Lead, " "	.....	.....	120	500
Manganese, " "	.....	.....	.....	11,959
Rails, steel, " "	.....	.....	3,000	.....
Spiegeleisen, " "	.....	.....	.....	1,208
Steel, " "	551	.....	4,676	4,030
" wire, bundles, " "	.....	.....	.....	11,333
" and black plates, boxes	.....	.....	770	5,744
Zinc, long tons	.....	.....	63	48
" dross, " "	6	.....	135	115,202
‡Philadelphia.				
Antimony, casks	.....	.....	.....	2,712
Chrome ore, long tons	.....	.....	.....	300
Copper ore, long tons	.....	.....	.....	10,791
Ferro-manganese, " "	.....	.....	.....	48
Iron ore, " "	.....	3,700	.....	144,552
" pig, " "	.....	.....	.....	59
" pyrites, " "	.....	.....	.....	4,550
Manganese ore, " "	.....	.....	.....	86,580
Tin, " "	.....	.....	40	613
" and black plates, boxes	.....	.....	.....	45,907

*New York Metal Exchange returns. †From our Special Correspondent. ‡Week ending Sept. 23. §Week ending Sept. 30.

at one time advancing to £13 17s. 6d. but closing at £13 16s. 3d. for Spanish and £13 18s. 9d. for English.

The New York Metal Exchange reports that arrivals of lead at New York in September were 4,500 long tons, all from Mexico. Exports of Mexican lead in bond amounted to 3,101 tons, of which 3,089 tons went to Europe and 12 tons to Canada. There were 450 tons entered and withdrawn for consumption during the month. The stocks in bond at New York and near-by ports on October 1st is estimated at 3,245 long tons.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: "Since our last report, our market, in conformity with sea board advices, has weakened a little. We quote common lead at 4'15c. and corroding at 4'17½@4'20c."

Spelter continues to be in satisfactory demand, but prices crumble away, which is only too natural in view of the fact that our production is very much in excess of consumption. Unless the surplus is exported as fast as it becomes apparent, confidence will necessarily be very much disturbed. We quote the market 4c. St. Louis and 4'20c. New York.

The English market remains firm at £17 7s. 6d. for ordinaries, and £18 for special brands.

Antimony is unchanged at 7½@8c. for Cookson's; 7½@7¾c. for Hallett's; 7½c. for Japanese, and 7½c. for U. S. Star.

Nickel.—There has been little business, but no change in prices can be reported. We quote for ton lots 33½@36c. per lb., and for smaller orders 35½@38c. London prices are 14@16d. per lb., according to size of order. The London price is about on a parity with New York, allowing for the duty of 6c. per lb.

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

For chemical ware, best hammered metal, Messrs. Elmer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams, for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes, 54c., 55c. and 56c. per gram. Wire and foil are 52c., 53c. and 54c. per gram.

Quicksilver.—The New York price continues at \$37.50 per flask. The London price is £6 15s., with the same figure quoted from second hands.

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

Aluminum :	Bismuth, ½ lb. . . .	\$1.50@1.80
No. 1, 98% ingots, ½ lb. 37@42c.	Phosphorus, ½ lb. . . .	50@55c.
No. 2, 94%	Tungsten	70c.
Ingots, scrap,	Tungstic acid,	45c.
Rolled sheets,	Ferro-tungsten, 60%	60c.
Alum.—Nickel,		35@40c.

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

Average Monthly Price of Metals

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

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.
Jan.	11'75	9'87	13'44	13'02	3'04	3'08	3'91	3'75
Feb.	11'92	10'64	13'59	13'44	3'28	3'19	4'02	4'03
March	11'80	11'03	13'43	13'30	3'41	3'14	4'12	4'20
April	11'48	10'98	13'34	13'34	3'32	3'07	4'13	4'07
May	11'03	11'15	13'44	13'54	3'26	3'03	4'21	3'98
June	11'11	11'67	13'77	13'59	3'33	3'03	4'21	4'10
July	11'11	11'40	13'89	13'83	3'72	2'96	4'32	3'97
August	11'16	10'98	13'89	13'49	3'84	2'73	4'26	3'76
Sept.	11'30	10'66	13'98	13'15	4'30	2'77	4'18	3'60
October	10'66	10'66	12'94	12'94	2'80	2'80	3'72	3'72
Nov.	11'23	11'23	13'09	13'09	2'96	2'96	3'99	3'99
Dec.	11'28	11'28	12'96	12'96	3'04	3'04	4'14	4'14
Year	10'88	10'88	13'29	13'29	2'98	2'98	3'94	3'94

CHEMICALS AND MINERALS.

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

New York. Oct. 1.

Heavy Chemicals.—The market was rather quiet this week as regards new business, while deliveries on old contracts were made in fairly good quantities. Prices are unchanged, and are as follows: Caustic soda, \$2@2.25 per 100 lbs. for 70@76% on 60% basis. Alkali, domestic, 58%, 60c. for 50-ton lots and over, and 70@80c. for smaller quantities; 48%, \$1@1.20 for jobbing lots. Foreign, 72½@77½c. Carbonated soda ash, 90@95c. per 100 lbs., for 58%, basis of 48%. Bleaching powder prime brands, \$1.85@2.00; Continental F brand, \$1.85@1.90; other brands, \$1.70@1.82 per 100 lbs. Bicarb. soda, English, 1'75@2c. per lb.; American, bulk, \$1.50@1.55 per 100 lbs., according to brand. Sal-soda, English, 75@80c. per 100 lbs.; American, 65@70c. per 100 lbs. Chlorate of potash, \$9.50@11 per 100 lbs.

Acids.—Locally the trade has been featureless, and prices are the same as last quoted. Sulphuric acid was moved in a good way on old contracts. The other acids are inquired for principally to fill an immediate demand. Quotations are per 100 lbs. in New York and vicinity, in lots of 50 carboys or over as follows: Acetic acid, commercial No. 8 (in barrels), \$1.40 @ \$1.50; in carboys, \$1.50@1.65; redistilled, 28% in bbls., \$1.70@1.80; in carboys, \$1.90@2.05. Muratic acid, 18°, 75@85c.; 20°, 85@95c.; \$1.15@

\$1.25, according to make and quantity. Nitric acid, 38°, \$3.50@4; 40°, \$4@4.50; 42°, \$4.50@5.50. Oxalic acid, \$7 ex-dock and \$7.25 ex-store. Mixed acids, according to mixture. Sulphuric acid, 66°, 70@85c. in carload lots, 10@15c. higher for small quantities. Chamber acid, 50°, \$6@6.50 per ton at factory. Blue vitriol, \$3.62½@3.75, according to grade and order.

Brimstone.—Market conditions are unchanged, both in demand and price. In the absence of new arrivals quotations are \$20@20.50 for best unmixd seconds, and \$1 less for thirds.

Fertilizing Chemicals.—The present needs of manufacturers have been satisfied by the recent liberal buying of leading ammoniates. However, there is still a good demand from the South, and the prospects are for a good fall trade. Potash salts are being delivered on pretty large contracts to satisfy current needs; new business is rather scarce. Prices of the fertilizing chemicals remain unchanged.

Sulphate of ammonia, gas liquor, \$2.22½@2.25; bone, \$2.10@2.15 per 100 lbs. Dried blood, high grade Western, \$1.90 per unit New York; \$1.55@1.60 per unit f. o. b. Chicago. Azotine, \$2.05 basis New York. Concentrated phosphate (30% available phosphoric acid), 57½c. per unit. Acid phosphate, 13½@15%, av. P₂O₅, 54@65c. per unit at sellers' works in bulk. Dissolved bone black, 17½@18% P₂O₅, 80c. per unit. Acidulated fish scrap, \$9.50@10, and dried scrap \$18.50@19 f. o. b. fish factory. Tankage, high grade, \$16.50@17 per ton, f. o. b. Chicago; concentrated tankage, \$1.55 per unit, f. o. b. Chicago; New York, \$21; low grade, \$13@13.50. Bone tankage, \$19@20; ground bone, \$21@23. Bonemeal, \$19.50@22.50.

Sulphate of Potash: 90%, New York and Boston, \$1.99½; Philadelphia, Baltimore and Norfolk, \$2.01; Southern ports, \$2.03.

Double Manure-Salt: Quotations for 48@49%, less than 2½% chlorate, are 1'01@1'01½c., to arrive, and 1'02@1'03c. on spot; basis of 48%. High grade, 90@98% sulphate of potash, 1'96½@2'00½c. to arrive; basis of 90%. In bulk 24@26%, 36½@37½c. per unit phosphate acid.

Muriate of Potash: We quote: New York and Boston, 1'75@1'78c. Philadelphia and Norfolk, 1'76@1'79½c.; Charleston, Savannah, Wilmington and New Orleans, for 80@85% basis of 80%, 1'78½@1'81c. in lots of 50 tons and upward.

Kainit.—Invoice weights, as taken at port of shipment, per ton of 2,240 lbs., testing 12¼% actual potash, equivalent to 23% sulphate of potash, \$8.80 @ \$9.90.

Nitrate of Soda.—The demand for this article continues rather quiet, and quotations are \$1.65@1.67½ per 100 lbs.

NOTES OF THE WEEK.

The shipments of phosphates from Tebessa, Algeria, in July amounted to 18,300 metric tons, against 19,358 tons in the previous month, and 15,607 tons in July, 1896. For the seven months the shipments aggregated 119,069 metric tons in 1897, 96,000 tons in 1896 and 67,907 tons in 1895.

The August returns of Board of Trade of the United Kingdom give the following information:

	Quantities.	
	1896.	1897.
Imports:		
Alkali, cwts.	18,474	18,496
Nitrate of soda, tons.	834	565
Brimstone, cwts.	319	47,668
Pyrites, tons.	34,708	43,705
Salt peter, cwts.	26,635	22,571
Exports:		
Alkali, cwts.	323,363	376,186
Chemical manures, tons.	35,145	50,496
Salt	55,508	48,554

This shows a marked gain in exports this year.

Liverpool. Sept. 21.

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

Since our last advice there is little change to report in the position of heavy chemicals, the market being firm generally, although without any special activity.

Soda ash is inquired for, while there is little offering, makers being well sold for balance of this year. Quotations vary according to export market, and range for tierces may be called about as follows: Leblanc ash, 48%, \$4 5s.@4 10s.; 58%, \$4 10s.@4 15s. per ton, net cash. Ammonia ash, 48%, \$3 7s. 6d.@4 5s.; 58%, \$3 12s. 6d.@4 5s. per ton, net cash. Bags are 5s. per ton under price for tierces. Special quotations for American business. Soda crystals are in request and quotations for barrels range from £2 7s. 6d.@2 17s. 6d. per ton, less 5% as to market, while bags are 7s. less. Special terms for American business.

Caustic soda is in a firm position, and we quote spot range as to market as follows: 60%, £6 5s.@6 10s.; 70%, £7 5s.@7 10s.; 74%, £8 5s.@8 10s.; 76%, £8 15s.@9 per ton, net cash. Bleaching powder is in moderate demand, and the range for hard-wood packages is about £6 12s. 6d.@6 17s. 6d. per ton, net cash, as to destination. Chlorate of potash is meeting with some inquiry, but without much actual business having resulted up to the present. The present quotation is 3½d. per pound, for any position. Bicarb. soda is steady at £6 15s. per ton, less 2½% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is in light supply, and is firmly held at from £8 7s. 6d.@8 10s. per ton, less 2½% for good gray, 24@25% in double bags, f. o. b. here as to quality.

Nitrate of soda is quietly steady at about £7 15s.@7 17s. 6d. per ton, less 2½% for double bags f. o. b. here as to quality and quantity.

Carb. ammonia, lump, 2½d.@3d. per pound; powdered, 3d.@3¼d. per pound, less 2½%.

Valparaiso, Chile. July 31.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—Private European advices quote the market inactive, with prices purely nominal at 7s. 4½d. per cwt., delivered terms for present shipments, and 7s. 1½d. per cwt. for spot. Exporters on this side have been very unwilling to operate, and consequently sales during the fortnight are small, amounting to about 320,000 quintals. Producers in general have tried to maintain prices, and have not been disposed to sell under 5s. 1½d. for 95%. At the close we quote: 95%, August, 5s. 1½d.; September-October, 5s. 2d. sellers; November-December, 5s. 2½d. nominal; refined, August-September, 5s. 3½d. sellers; October-December, 5s. 4½d. nominal. The price 5s. 1½d., with 18s. 9d. freight, stands in 6s. 4½d. per cwt., cost and freight without purchasing commission.

MINING STOCKS.

Complete quotations will be found on pages 416, 417 and 418 of mining stocks listed and dealt in at:

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

New York. Oct. 1.

Though the public demand for mining stocks is still small, prices in many instances are higher than last week, especially for the dividend paying stocks. The Comstocks, notably those whose properties are on Gold Hill, have moved upward in price owing to favorable reports. The Colorado stocks are steady. The California group is very quiet. Standard Consolidated sold at \$1.80, and is the first 100 share lot that has been sold for a long time. The company has declared a dividend amounting to \$17,000, which is rather encouraging to its stockholders. There were several sales of the South Dakota stock, Homestake* at \$37.25@39; the latter price is 50c. higher than that of last week. Horn Silver of Utah sold down to \$1 this week—the lowest price, we believe, since the stock was dealt in on this market. There continues to be a fair demand for Fortuna, the Lower California stock which is dealt in on the Consolidated Stock and Petroleum Exchange. It has declared another dividend of \$10,000 on its stock, which makes \$90,000 this year and \$130,000 since September, 1896. The full name is The Fortuna Gold Mining and Milling Company. It was incorporated under the laws of Utah and Mexico, and its capital is \$1,000,000, fully paid and non-assessable; divided into 100,000 shares of \$10 par value. The officers are Charles B. Boynton, president; Gay Lombard, vice-president and general manager; B. L. Harding, secretary and treasurer. The company's mines are located in the Zaragossa mining district of Lower California, about 70 miles from the California line, and about 50 miles east of Ensenada, Mexico. The property is equipped with a mill and other machinery. The stock of the company is selling at \$10.75@11.25 per share in the New York market.

A new company was called on the Mining Exchange this week—the Yukon Mining Company. This is an auxiliary to the Rossland Gold Mining, Development and Investment Company, Limited, and is under the same management. It is a Canadian corporation, and is capitalized at \$2,000,000, divided into shares of \$1 each, fully paid and non-assessable. The officers are J. E. Ellis, president; Hon. William Pugsley, first vice-president; G. A. Farini, second vice-president; Fred. Roper, secretary and treasurer; R. S. Neville, solicitor, and W. Fullerton, manager brokerage department. The company is represented in New York by members of the Exploration Syndicate, of which Thomas J. Hurley is secretary and treasurer and F. G. Corning manager. The company was formed to operate in the Klondike region. The stock has been selling at 18@22½c. on the Mining Exchange.

Boston. Sept. 30.

(From Our Special Correspondent.)

The market has not been as active this week as last, and prices are generally lower. Centennial and Butte have been the leaders; the former declined from \$23 to \$20, rallied to \$24½, with later sales at \$20½@20¾, closing at the lowest figures. Butte & Boston has been in good demand all the week, the lowest point touched being \$27½, from which it rallied to \$29½ with subsequent reaction to \$27½@27¾, the closing price at noon to-day. The proposition to consolidate Kearsarge and Tamarack, Jr., with Osceola has caused quite active buying of each stock, Osceola selling as high as \$41½ and Kearsarge \$21½, while Tamarack, Jr., declined from \$19½ to \$16½. Osceola was off to-day to \$40½@40¾, and Kearsarge to \$21½.

Old Dominion has been quite active, although the high price of last week was not fully maintained, the stock selling off from \$27½ to \$24½, with latest sale at \$25. Franklin declined from \$23 to \$21½ with recovery to \$22 later.

Atlantic, which sold up to \$27½ last week, declined to \$25½ and later sold at \$26. Wolverine has ruled steady during the week between \$17 and \$18, with sales at both figures. Arnold and Alouez have been fairly active at \$4¼@4 for the former and \$1¼@1½ for the latter.

Boston & Montana declined on moderate dealings from \$149 to \$143, with reaction later to \$145½. Sales of Calumet & Hecla were made early in the week at \$475@477, but to-day it sold at \$470. Quincy and Tamarack were both lower, the former off from \$120 to \$117, and the latter from \$142 to \$137. Copper Falls sold at \$4½ and Tecumseh at \$4. The gold stocks have been neglected this week and prices generally lower. Gold Coins sold at \$3, Pioneer at \$6½@7. Santa Ysabel declined from \$17½ to \$15. Merced sold at \$9.

3 p.m.—This afternoon the market was steady for all the list with the exception of Centennial, which under the pressure to sell stock declined to \$19. Boston & Montana was also lower, with sales at \$143½.

Cleveland. Sept. 29.

(From Our Special Correspondent.)

During the past week there has been little activity on the Cleveland stock market, and the quotations of stocks are the same this week as last. The brokers say this is a result of the fact that the season is drawing to a close, and the investors are losing interest in the stocks which are offered for sale in this city. It is thought, however, that there will be a reaction in favor of the holders in the near future, or as soon as some rumored deals are made clear to the public. The deals referred to are with reference to the Mesabi mines, of which much has been written recently.

Salt Lake City. Sept. 25.

(From Our Special Correspondent.)

Actual volume of business in Utah mining shares during the past week was small, but in spite of continued dearth of trading the general tone is moderately strong. The advance in silver to 59½¢ on Monday and Tuesday temporarily strengthened the market for the first time since the low water mark of 51½¢. In August the belief prevailed that silver was to rule under 50c., while to-day the impression is quite general it will not drop below 55c., and many predict 70c., or better, in December, which exerts a favorable influence. Meanwhile, the bright lead situation is bringing inquiries from the outside for certain shares, another strengthening influence, while the golds are strong and several are both higher and firmer.

The event of the week is the reorganization of the Geyser-Marion directorate on Thursday and the rather unlooked-for announcement of a 3c. dividend, payable October 1st, aggregating \$9,000, and making \$45,000 paid in all. It is intimated that in future dividends will be a monthly occurrence. The changes in the board are about as made public six weeks since. Theodore Bruback, Joseph Smith and S. T. Pearson retire and John Dean, president of the Mercur, Stuart Stephenson and George Dern fill the vacancies. John Dern succeeds Mr. Bruback as president and George Dern is to be secretary. By this move the last of the original Marion share owners step out and the management becomes decidedly Mercur-Geyser. After a thorough examination of the mine, President Dean purchased a considerable block of stock. As was to be anticipated, the shares show a greater strength.

Ajax continues weak. Anchor well holds its own. Something tangible is promised from the mill soon. Daly and Daly-West have advanced and are firm. Ontario is dull and inactive and there is nothing new from the mine. Silver King is strong at \$14 bid. Bullion-Beck and Centennial-Eureka are practically unchanged.

Galena and Utah are higher and in demand, due to improvement in mines, while the report of a new gold ore body in Mammoth fails to lend aid to the stock. Mammoth just now is not in favor, though it is said the mill is again doing better work. Grand Central and Lower Mammoth are firm and are looked on as among the best of the Tintic shares.

Swansea is steadily gaining, showing more positive strength. Some unusually fine ore was marketed this week. South Swansea records improvement in the stock and mine. Shipments are increasing, and it is almost assured that in October dividends will be resumed. Offerings of Emerald are lower and the same is true of Sunbeam and Homestake.

Mercur sold at \$7.70 early in the week. It closed a little stronger to-day and there is no cause to look for a change. Sunshine is in quiet demand, but nothing can be gleaned of renewing operations. Northern Light has recovered somewhat from the bear attack and closes firmer than a week ago. The mill—a cyaniding plant—is complete and results will soon be known.

Dexter exhibits a much stronger front. The mine is making a good profit, though a considerable outlay is at present going into surface improvements. By December 1st the 40-stamp mill will be finished and an electric power plant installed, which will greatly curtail operating costs.

San Francisco. Sept. 25.

(From Our Special Correspondent.)

The market opened this week with a very quiet tone, and it was soon evident that there would be no renewal of the recent activity. Either people had been very easily satisfied with speculation, or else they had found that there was very little satisfaction in going again over the old time-worn ground. New names are wanted, and new companies must be brought forward before the public can be induced to come into the market again. That is very clear, and nothing more than a few days' spurt now and then can be hoped for under present conditions.

With a dull market lower prices were to be expected, and they were found all along the line. One or two stocks were exceptions, and Occidental was forced up to \$2.65, but on very small sales.

Some prices noted are: Occidental, \$2.60@2.65; Consolidated California & Virginia, \$1.40; Sierra Nevada, \$1.05@1.10; Confidence, \$1; Ophir, 95@96c.; Chollar, 50@51c.; Potosi, 31c. There was a demand for Standard Consolidated at \$1.80@1.85.

The directors of the Standard Consolidated Mining Company met September 24th and declared a dividend of 10c. per share, amounting to \$17,000, on the outstanding stock, payable in San Francisco, and in New York on October 20th. After paying this dividend the company will have a coin surplus in its treasury equal to over two dividends of the same amount. All the improvements made to the hoisting and reduction plants at the mine within the last six months have been paid for, and the profits of the mine are steadily increasing. The dividend declared is the second since the reorganization of the company and the consolidation with the Bodie Consolidated, the Bulwer Consolidated, the Mono and Summit properties.

The Hexter Gold Mining Company of Calaveras County has levied an assessment of 4c. per share, delinquent October 25th.

The Live Yankee Gravel Mining Company of Nevada County has levied an assessment of 1c. per share, delinquent October 17th.

London. Sept. 22.

(From Our Special Correspondent.)

Both speculators and genuine buyers are getting tired of the South African market, chiefly on account of the delay on the part of the Transvaal government in dealing with the mining concessions. A different report as to the state of affairs comes over every day, and it is quite impossible to get a reasonable idea as to the intentions of the government in this matter. One thing is certain, however, and that is that the authorities are entirely at variance among themselves as to the policy to be pursued on granting concessions. Some people go so far as to fear that nothing will be done at all on account of this acute difference of opinion. Anyway the deadlock has a depressing effect on the stock market, and with the absence of business, the quotations are all falling. Chartered and Rand Mines are the only two companies that are receiving support from the insiders, who in both cases are engineering a strong market to prepare for further issues on the part of subsidiary companies.

In the absence of South African business, more attention has been paid to West Australian mines. Many mines in Hannan's district, or Kalgurli, are now giving excellent returns, and the promoters are using their opportunity for all it is worth. Many of the quotations are pushed up to absurdly high figures, but it is certain that the public are paying the price.

The Indian section also is pretty brisk, and there is plenty of genuine buying. The well-established mines are very firm, and so many people are paying attention to the smaller and less successful ones.

In other sections of the market the most noticeable feature has been the boom in Mount Lyell. Owing to a competition for the control these shares have gone as high as £16, but the excellent position into which the company has got goes a long way toward justifying this high price. The market has taken advantage of this boom to drag forward the other companies operating in the same district.

As regards new ventures in mining, nothing can be said this week. The months of September and October are usually dull ones for this kind of thing, as so many of the moneyed men on whom promoters depend leave London at this time of the year, and are either in Scotland or on the Continent.

Paris. Sept. 19.

(From Our Special Correspondent.)

The mining stock market has been generally active and speculation is lively. In nearly all departments of the market there is an excellent feeling. This is especially the case with the metallurgical shares, which are still rising. Business continues good and orders abundant. The latest news is that the Creusot and Commentry companies have received large orders for railroad material. The Russian group also shows generally higher quotations.

The copper shares are still actively in demand and prices are generally higher. There is a belief that the demand for copper will be large for some time to come, and that the metal will command such prices as will afford the producers excellent profits. Even if there is no increase above the present level the large mines can all do well, and there is a sufficient opportunity for the smaller producers also.

For the metals other than copper there is a very good demand and prices are improving. Lead especially is strong and is selling better than for some time, while zinc is also at a good price, though production in Europe is unrestricted and the imports from your side are increasing. The lead shares show, in consequence, higher quotations. The same may be said of the zinc companies' shares, except Malfidano, which this week fell off 30 fr. for some unexplained cause. Nickel shows a notable rise and now sells at 255 fr. the share.

The coal companies' stocks, which are usually considered more as investment than as speculative securities, have been gradually appreciating for some time past, and nearly all of them now stand at high prices. It must be admitted that these are

justified by the circumstances, since the demand for fuel has been large, owing to the activity in the iron and other trades. Coal and coke command good prices and will continue to do so, as the supply from the French and Belgian mines is not equal to the consumption.

The large production reported by the Transvaal mines for the month of August has helped to sustain prices of stocks, but the market for these shares has been very quiet, and there is little doing.

Your Colorado gold stock, Rebecca, continues at a low price, as reports from the mine are not good. Huanchaca is in disfavor, as it is said that last year's operations showed a loss of 833,000 bolivianos; but the full report has not yet been received.

The report of foreign trade for August is favorable, showing increases in imports of raw material and in exports of manufactures. The total amount of merchandise values for the eight months ending August 31st, as given by the Ministry of Commerce, is as follows:

	1896.	1897.
	France.	France.
IMPORTS:		
Food.....	667,288,000	605,718,000
Raw materials.....	1,521,865,000	1,592,309,000
Manufactures.....	468,587,000	411,739,000
Total.....	2,657,740,000	2,609,766,000
EXPORTS:		
Food.....	402,762,000	446,189,000
Raw materials.....	543,715,000	635,390,000
Manufactures.....	1,163,340,000	1,229,602,000
Postal parcels.....	95,754,000	97,718,000
Total.....	2,204,971,000	2,408,899,000
Excess, imports.....	392,769,000	200,867,000

The increase in imports was 12,026,000 fr., or 0.4%; in exports, 203,928,000 fr., or 9.2%. The excess of imports was therefore less by 191,902,000 fr. this year.

Attention is called to our colonial possessions in Senegal and the Western Soudan, where very little has yet been done, and there are great opportunities for the future. If we go to work as we should there and in our great island colony of Madagascar we have room for commercial development which will keep us busy for a good while.

Rosslund, B. C. Sept. 22.

(From Our Special Correspondent.)

The advance of this camp along the lines of legitimate work has not been made without many changes, and now the camp is losing a few, at least, of its best and most energetic business men, who are being attracted to other fields. The outlook of such mines as the Le Roi, War Eagle and Iron Mask continues to improve under able and business-like methods. The secondary shippers are not making the progress in shipment that the public were led to expect some weeks ago; otherwise the total out turn would at present be at least 60,000 tons.

The most promising feature of this district generally now is the railway development which, unlike some mining prospects, has reached a state of actual construction. The line is the Crow's Nest Pass Railway of the Canadian Pacific Railway system, which is to be completed within two years, running a distance of 400 miles opening up the Boundary, Similkameen and Okanagan districts, with its terminus on Lake Okanagan.

A curious dispute has just arisen between the Center Star and Iron Mask mines. In sinking a winze on the main tunnel of the latter a crosscut was driven by the Center Star mine and evidently within the Iron Mask lines. Operations by both parties were at once suspended, each company placing a sentry at the point of contact. In all probability the question will be amicably settled.

The area of the Trail Creek District is described as 16 by 20 miles. Since the first of the present year assessment work has been done on 1,420 claims in the district. The minimum amount required to be expended on every mining claim within the district yearly is \$100. The amount thus represented is equal to \$142,000. In 1896 assessment work was done on 1,206 claims, representing an expenditure of \$120,600.

The figures for the balance of the present year can only be estimated, but it is reasonable to expect a marked increase.

MISCELLANEOUS DIVIDENDS.

Texas & Pacific Coal Company, dividend of 1%, payable October 20th.

MEETINGS.

Horn Silver Mining Company, annual, at the office in Salt Lake City, Utah, October 5th, at 12 o'clock noon.

Kearsarge Mining Company, special meeting at the office, in Boston, October 26th, to act upon the question of selling its property to the Osceola Mining Company.

Osceola Mining Company, special meeting, at the office in Boston, October 26th, to act upon the question of increasing the capital stock and purchasing the properties of the Kearsarge and Tamarack, Jr., mining companies.

Tamarack, Jr. Mining Company, special meeting at the office in Boston, October 26th, to act upon the question of selling its property to the Osceola Mining Company.

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing companies like Alamo, Alice, Anaconda, and others with columns for location, par value, and dates from Sept. 25 to Oct. 1.

BOSTON, MASS.

Table of stock quotations for Boston, Mass., listing companies like Aetna Con., Allouez, and others with columns for location, par value, and dates from Sept. 24 to Sept. 30.

Official quotations Boston Stock Exchange. *Bid and ask quotations. Total sales, \$5,958.

BALTIMORE, MD.* Week ending Sept. 30.

Table of stock quotations for Baltimore, Md., listing companies like Atlantic Coal, Big Vein Coal, and others with columns for location, par value, bid, and ask.

Official quotations Baltimore Stock Exchange.

CLEVELAND O.*

Table of stock quotations for Cleveland, O., listing companies like Aurora, Chandler, and others with columns for par value, bid, and ask.

*From our special correspondent.

ASPEN, COLO. Sept. 24.

Table of stock quotations for Aspen, Colo., listing companies like Ames C., Aetna, and others with columns for location, capitalization, par value, bid, and ask.

COLORADO SPRINGS, COLO.:

Table of stock quotations for Colorado Springs, Colo., listing companies like Alamo, Anaconda, and others with columns for par value, bid, and ask.

Official quotations Colo. Springs Mining Stock Association. Total shares sold, listed, 425,831; unlisted, 200,185.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stocks listing companies like American Coal, Col. C. & I. Dev, and others with columns for par value and dates.

Official quotations. New York Stock Exchange, mining, 1.00 shares; other stocks, 77,751 shares; Consolidated Stock and Petroleum Exchange, mining, 35,170 shares; Mining Exchange, 330,800 shares. Total shares sold, 440,717. * Bid and ask quotations.

PHILADELPHIA, PA.†

Table of stock quotations for Philadelphia, Pa., listing companies like Cambria Iron, Choc. & Gif. Cifs, and others with columns for location, par value, bid, and ask.

Official quotations Philadelphia Stock Exchange. * Bid and ask quotations. Total sales, 7,128.

PITTSBURG, PA.* Sept. 29.

Table of stock quotations for Pittsburgh, Pa., listing companies like Allegheny, Carborundum, and others with columns for location, par value, bid, and ask.

Official quotations Pittsburgh Stock Exchange.

STOCK QUOTATIONS.

DENVER, COLO.

Table of stock quotations for Denver, Colorado, listing various companies and their share prices across multiple dates from Sept. 21 to Sept. 25.

LOS ANGELES, CAL.

Table of stock quotations for Los Angeles, California, listing various companies and their share prices across multiple dates from Sept. 6 to Sept. 11.

Official quotations, Los Angeles Mining and Stock Exchange. Bid and ask quotations. Total sales, 164,900 shares.

SALT LAKE CITY, UTAH.

Week ending Sept. 25.

Table of stock quotations for Salt Lake City, Utah, listing various stocks and their prices as of Sept. 25.

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

ROSSLAND, BRITISH COLUMBIA.

Sept. 22.

Table of stock quotations for Rossland, British Columbia, listing various companies and their share prices as of Sept. 22.

From Our Special Correspondent.

HELENA MONT.

Week ending Sept. 23.

Table of stock quotations for Helena, Montana, listing various companies and their share prices as of Sept. 23.

Special Report of Samuel K. Davis. Total shares sold, 2,000.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing various companies and their share prices across multiple dates from Sept. 24 to Sept. 30.

Official telegraphic quotations, San Francisco Stock Exchange.

MEXICO.

Week ending Sept. 14.

Table of stock quotations for Mexico, listing various companies, their states, share counts, dividends, and prices as of Sept. 14.

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

STOCK QUOTATIONS.

LONDON. Sept. 17. Table with columns: NAME OF COMPANY, Country, Authorized capital, Par value, Last dividend, Quotations (Buyers, Sellers).

PARIS. Week ending Sept. 16. Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Div. last year, Prices (Op'n'g, Closing).

VALPARAISO, CHILE. Aug. 11. Table with columns: NAME OF COMPANY, Location, Capital paid, Sh. Val. paid up, Last Dividend, Prices (Bid, Asked, Last sale).

SHANGHAI, CHINA. Sept. 3. Table with columns: NAME OF COMPANY, Country, No. of shares, Value (Par, Paid up), Last dividend (Date, Amount), Price (Tael, 1/100).

DIVIDENDS. Table with columns: NAME OF COMPANY, Current Dividends (Date, Am't), Paid since Jan. 1, 1897, Total to date, NAME OF COMPANY, Current Dividends (Date, Am't), Paid since Jan. 1, 1897, Total to date.

ASSESSMENTS. Table with columns: NAME OF COMPANY, Location, No., Dinq., Sals, Am.

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

* New assessment.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Name and Location of Company, Capital Stock, Shares, Assessments. It lists various mining companies and their financial details.

G. Gold, S. Silver, L. Lead, C. Copper, B. Borax. * Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. ‡ Previous to the consolidation in August, 1884, the California had paid \$31,330.00 in dividends and the Cons. Virginia \$42,300.00. § Bodie, Bulwer and Mono transferred to Standard Cons., January, 1897. * Dividends have not been paid in several years. Note.—This table is corrected up to October 1. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.

RARE ELEMENTS, CHEMICALS AND MINERALS—CURRENT PRICES.

NOTE.—This table is revised up to September 14th. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable.

CHEMICALS AND MINERALS.

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

Table listing various chemicals and minerals such as Carbide, Cement, Charcoal, Clay, Chromic Acid, Cobalt, Copper, Feldspar, Fluorspar, Graphite, Gypsum, Iodine, Iron, Kaolin, Lead, Lime, Magnesia, Manganese, Marble, and others, with their respective units and prices.

Table listing various minerals and chemicals including Calcium, Carbonate, Chem pure, Phosphate, Sulphide, Carbide, Portland Cement, Foreign Cement, Rosendale, Sand cement, Ceresine, Chalk, Com'l lump, English ppt, Fr. nch, Powdered, Charcoal, Animal, Clay China, Best grade, Washed, F. o. b. works, Del., Fire ground, Chlorine, Liquid, Chromic Ore, Cobalt, Carbonate, Nitrate, Oxide, standard, Extra, Sulphate, Copperas, Copper, Acetate, C. p. cryst, Carbonate, Chloride, Nitrate, Oxide, black, Red, Scale, Sulphate, Com'l, Chem. pure, Explosives, Judson R.R. powder, Rackerock, Dynamite, Glycerine, Nitro-glycerine, Nitrate, Glycerine, Nitro, Nitro-Benzole, Feldspar, At Trenton, N. J., Flint, Fluorspar, Domestic, No. 1, lump, No. 2, granulated, Crushed, Ground, Extra fine, Foreign, Fuller's Earth, Lamp, Powdered, Gilsonite, Chloride, pure cryst, Oxide, Graphite, Gypsum, American, ground, English, French, Iodine, Crude, Resublimed, Iron, Chromate, powdered, Muriate, Nitrate, com'l, Pure, Oxide, Scale, Kaolin, Kryolith, Lead, Acetate, brown cryst, White, cryst, Chromate, Nitrate, com'l, Chem. pure, Lime, Building, about 250 lbs., Fertilizing, Chemical marble, Hydrated, Flour, Magnesite, Lump, Calcined, Powdered, Calcined, Magnesium, Metallic, ingots, Powdered, Ribbon or wire, Carbonate, Chloride, com'l, Manganese, Crude, powdered, 70 to 75%, 75 to 85%, 85 to 90%, 90 to 95%, Metallic, (85%) (Ger.), Pure, Carbonate, Chloride, Oxide, Peroxide, pure, Sulphate, powdered, Pure cryst, Marble, Flour.

Table listing various chemicals and minerals including Mercury, Bichloride, Bisulphate, Red, ppt, White, ppt, Mica, Ground, Sheets, according to size and quality, Mineral Wool, Rock, Slag, Nickel, Oxide, black, No. 1, No. 2, Green, Oils, Mineral, Black, reduced, 29 gr., 25 to 30%, Black reduced, 29 gr., cold test, Black reduced, 29 gr., zero, Black reduced, summer, Smith's Ferry, 33 to 34 gr., West Virginia, nat 1 29 gr, Stock, dark steam ref., Dark filtered, Light, Extra cold test, Gasoline, 88°, 90°, Neutral filtered, lemon, 33 to 34 gr., White, 33 to 34 gr., Wool grade, 32 gr., Bloomless, 32 to 34 gr., Naphtha, crude, 68 to 72°, 70°, Petroleum, refined, bulk, Chem. high viscosity, 23 to 24 gravity, 28 to 32 gravity, 25, Red No. 1, No. 2, Ozokerite, Imported, Paints and Colors, Blanc Fixe, Benzine, Samatra, Marbled, Chrome, green, com'l, Green, extra, Chem. pure, Yellow, com'l, Common, Chem. pure, Lampblack, Com'l, Refined, Calcined, Fine spirit, Litharge, American, English flake, Metallic, brown, Red, Ocher, Rochelle, American, Golden, Dutch washed, French, Orange mineral, Amer., English, French, German, Paris green, in bulk, Red lead, American, Foreign, Shellac, No. 2, Orange, T. N., A. C. Garnet, Bleached, V. S. S. & S. O. S., Trioxide, V. S. O., D. C., Turpentine, spirits, Ultramarine, Vermilion, Amer. lead, Quicksilver, Chinese, English, imported, Artificial, White lead, Am., dry, In oil, Foreign, dry, In oil, Whiting, common, Gilder, Zinc white, Amer., dry, Antwerp, red seal, Green seal, Paris, red seal, Green seal, Palladium, Metallic, (Ger.), Black, (Moor), Pearl Ash, Pitch, Coal tar, Platinum, Bichloride, Plumbeo, American, pulverized, F. o. b., Providence, R. I., German, lump, Pulverized, Ceylon, crude, Pulverized, Potash Alum, Caustic, pure white, (76 to 78%), (90%), Potassium, Metallic, in Germany, Acetate, (retail), Bicarbonate, crystalline, Bichromate, Bromide, Carbonate, Carbonate, (98 to 100%), Ferricyanide, red, com'l, Chem. pure, Ferrocyanide, yellow, com'l, Chem. pure.

Table listing various rare elements and chemicals including Potassium, Iodide, bulk, In bottles, Nitrate, double refined, Chem. pure, permanganate, pure cr., Chem. pure, Sulphide, com'l, Chem. pure, Pyrites, Rough kiln, Am., iron, Small, Spanish, Non-cupreous, Iron, small, Quartz, (See Silica), Sal Ammoniac, White, Gray, Salt, Domestic, Saltpeter, Crude, Silica, Precipitated, Ground quartz, Lump quartz, Silver, Chloride, Cyanide, (retail), Nitrate, Oxide, Sulphide, (retail), Silate, Ground, Sodium, Metallic, in Germany, Acetate, Chem. pure, fused, Bichromate, Bisulphate, com'l dry, Bromide, Carbonate, Chlorate, crystalline, Molybdate, pure, (retail), Nitrate, Phosphate, gran. pure, Cryst. c. p. (retail), Dry, c. p. (retail), Silicate, p. cryst. (retail), Com'l, lumps, Sulphate, pure, Sulphite, crystalline, (Granulated, retail), Tungstate, com'l (retail), Pure, Strontium, Carbonate, precipitate, Nitrate, Sulfur, Flour, Roll, Sublimed, Pure, precipitated, Chloride, Tale, American, French, Italian, Tellurium, Metallic, c. p. (Ger.), Powder, Tin, Chloride, Crystals, Oxide, Ger. c. p., Protoxide, Sulfoxide, Tripoli, Powder, Uranium, Oxide, Zinc, Carbonate, Chloride, gran., Sulphate, Zirconium, Oxide, (retail), Oxide, hydr. (retail), THE RARE ELEMENTS, Prices given are at makers' works in Germany, unless otherwise noted, Argon, Spectrum (N. Y.), tube, Barium, Amalgam, Beryllium, Electrolyte, Beryllium, Powder, Crystals, Boron, Amorphous, Crystals, pure, Calcium, Electrolyte, Cerium, Fused, Chromium, Fused, Com'l pure powder, Chem. pure, cobalt, Cobalt, (98 to 99%), Didymium, Powder, Erbium, Gallium, Germanium, Powder, Fused, Gallium, Powder, Crystals, Helium, Spectrum (N. Y.), tube, Indium, Iridium, Powder, Fused, Lanthanum, Powder, Electrolyte, in balls, Lithium, Molybdenum, Com'l, Fused, electro., Niobium, Chem. pure, Niobium, Crystals, Radium, Pure, Rutherfordium, Selenium, Com'l powder, Sublimed powder, Silicon, Amorphous, Crystals, pure, Strontium, Electrolyte, Tantalum, Pure, Thallium, Thorium, Titanium, Vanadium, Fused, Vanadium, Wolfram, Com'l, Powder, pure, Yttrium, Zirconium, Com'l, Pure.

ALPHABETICAL INDEX TO ADVERTISERS.

(-) Indicates every other week or monthly advertisements.

Table with 3 columns of advertiser names and their corresponding page numbers, organized alphabetically from A to Z. Includes sub-sections for A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

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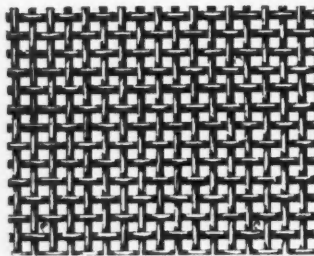
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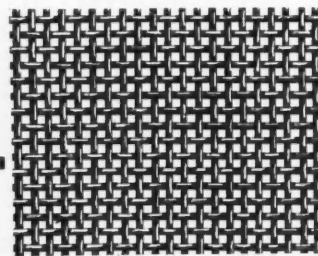
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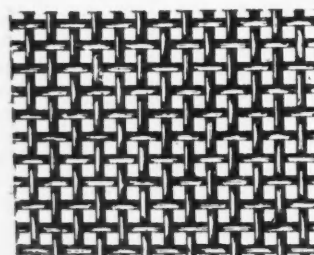
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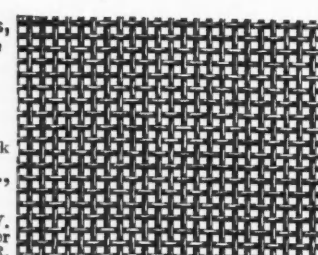


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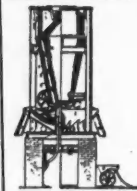
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 Detroit Lubricator Co.
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 Allis, Edw. P., & Co.
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 Besly, Chas. H., & Co.
 Blin, Chas. E. & Co.
 Blake, T. & Co.
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 Bullock, M. C. Mfg. Co.
 Caldwell, H. W., & Co.
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 Davis, F. M., Iron Works Co.
 Denver Eng. Wks. Co.
 Fairbanks, Morse & Co.
 Fraser & Chalmers.
 Gillette-Herzog Mfg. Co.
 Hammond, Mfg. Co.
 Hendrie & Bothoff Mfg. Co.
 Hodge, C. J.
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Jessop, W. & Sons, Ltd.
 Lambert Holting Engine Co.
 Lidgerwood Mfg. Co.
 Krupp, F.
 McCully, F.
 Meisenburg Ir. Wks. Mine & Smelter Supply Co.
Manganese Steel.
 Taylor Iron & Steel Co.
Metal Dealers.
 American Metal Co.
 Am. Zinc-Lead Co.
 Baker & Co.
 Bath, Henry & Son.
 Besly, Chas. H., & Co.
 Bridgeport Copper Co.
 Elliott's Metal Co., Ltd.
 Eureka Co.
 James & Shakespeare.
 Johnson, Matthey & Co.
 Lambert's Wharf, Co.
 Lehigh Bros.
 Mathison Smelting Co.
Metallurgical Works and Ore Purchasers' Processes.
 Amer. Zinc Lead Co.
 Baker & Co.
 Balbach Sm. & Ref. Co.
 Baltimore Copper Wks.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Colorado Iron Works Co.
 Conn. Kas. City B. & R. Co.
 Denver Eng. Wks. Co.
 Elliott's Metal Co., Ltd.

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

Mine, Mill and Smelters' Supplies.
 Davis, F. M., Iron Works Co.
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POSITIONS VACANT

Free Advertising.

Inquiries from employers in want of Superintendents, Engineers, Metallurgists, Chemists, Mine or Furnace Foremen, or other assistance of this character, will be inserted in this column WITHOUT CHARGE, whether subscribers or not.

The labor and expense involved in ascertaining what positions are open, in gratuitously advertising them and in attending to the correspondence of applicants, are incurred in the interest and for the exclusive benefit of subscribers to the ENGINEERING AND MINING JOURNAL.

Applicants should inclose the necessary postage to insure the forwarding of their letters.

1541 WANTED—CONTRACTOR'S FOREMAN on work within 100 miles of New York. One thoroughly experienced and familiar with all the latest methods of working rock drills, blasting and using steam shovels and railroad track work. Send copy of references and state salary required. Address H., ENGINEERING AND MINING JOURNAL.

1542 WANTED—STEAM DRILL REPAIR man to take charge of all repairs on fifteen Sargent drills. Send copy of references and state salary wanted. Address D., ENGINEERING AND MINING JOURNAL.

1544 MEN WANTED FOR BRITISH Guiana, familiar with diamond drills. Address, stating experience and references, X. Y., ENGINEERING AND MINING JOURNAL.

1545 WANTED—SUPERINTENDENT FOR Sulphuric Acid Works. Give particulars. Address ACID, ENGINEERING AND MINING JOURNAL.

1546 WANTED—CHEMIST AND METALLURGIST with special experience in working zinc ores, as well as erection and management of plant for that purpose. State previous experience. Address ZINC, ENGINEERING AND MINING JOURNAL.

1547 WANTED—A THOROUGHLY COMPETENT mining engineer, who has had experience in Alaska, and desires to join an exploring expedition that will start for the Yukon on March 1st, 1897. Address ALASKA ENGINEERING AND MINING JOURNAL.

1548 THERE IS A VACANCY ON THE staff of the ENGINEERING AND MINING JOURNAL. Applicants should have had experience in mining and editorial work. Address EDITOR, ENGINEERING AND MINING JOURNAL.

1549 WANTED—A COMPETENT ENGINEER to take charge of the construction of a railroad, where a permanent situation may be secured, if references, work and business connections are satisfactory. Address RAILROAD AND MINE, ENGINEERING AND MINING JOURNAL.

1550 ACID MAKER WANTED BY A large Southern fertilizer factory located in South Carolina. Applicants must be sober, reliable, with good ability to handle labor, burn lead and obtain best yield sulphuric acid. Address, stating family, salary expected and references, B. F., ENGINEERING AND MINING JOURNAL.

1551 WANTED—A THOROUGHLY PRACTICAL and competent mining engineer; one who understands assaying and surveying; must have a practical knowledge of placer mining; to go with large prospecting party to Alaska next March. Best of references required. Address G. No. 26, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

A MINING ENGINEER, AGE 26, DESIRES position; has energy, executive ability, experience in management and direction of large forces of men and familiar with business methods. Thorough assayer, chemist and bookkeeper. Address THOROUGH, ENGINEERING AND MINING JOURNAL. No. 18,094, Nov. 6.

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

CHEMIST AND ASSAYER, WITH TECHNICAL education, extensive business experience, formerly chemist for a large smelter, desires position with a mining, milling or smelting company. Speaks Spanish. Best references. Address M. R. K., ENGINEERING AND MINING JOURNAL. No. 18,098, Oct. 9.

MINING ENGINEER, 30 YEARS OF AGE, nine years' experience with gold and silver mining companies of the West, desires a responsible position with any reliable parties. Experienced both in quartz and gravel mining. Good references from all former employers. Address B., ENGINEERING AND MINING JOURNAL. No. 18,095, Oct. 9.

A MINING ENGINEER, ENERGETIC, TECHNICAL education, experienced in the management of men, 10 years' practice in charge of mines, desires position as manager or superintendent; speaks Spanish; excellent references. Address FILON, ENGINEERING AND MINING JOURNAL. No. 18,097, Nov. 6.

ASSISTANT SUPERINTENDENT OF HYDRAULIC Gold Mines, with first-class references and long practical experience, will shortly be open to engagement. Address T., ENGINEERING AND MINING JOURNAL. No. 18,108, Oct. 16.

WANTED BY MAN OF EDUCATION AND 12 years' experience, age 33, the management of a mining or milling property. Can furnish unexceptional credentials. Address W., 548 Equitable Building, Denver, Colo. No. 18,104, Oct. 16.

A MINING ENGINEER, FAMILIAR WITH mining, able to develop and work a mine, desires position with prospecting party. References given. Address P. H., ENGINEERING AND MINING JOURNAL. No. 18,098, Oct. 16.

WANTED—POSITION AS MANAGER OR Superintendent by a mining and metallurgical engineer with technical education and 16 years' experience in Colorado. Specialty—Fine concentration. Highest references. Address G. S. A., ENGINEERING AND MINING JOURNAL. No. 18,107, Oct. 23.

MANAGER OR MINE SUPERINTENDENT of extended experience, just returned after two years of successful operating in Central America, desires position with a strong company, either in prospect development or in established mining. Is a good organizer and fully posted as to details in mining both in the Northern countries and in the tropics. Best of testimonials and references. Address EXPERIENCED, ENGINEERING AND MINING JOURNAL. No. 18,108, Nov. 20.

MINING ENGINEER, HAVING OVER 20 years' experience in gold and silver mines, and proficient in the Spanish language, desires employment as manager, or would be willing to examine and report on mining properties in any part of the world; is a good surveyor and assayer; member of the American Institute of Mining Engineers; excellent references and testimonials. Address MINING ENGINEER, 37 Seventh Avenue, New York City. No. 18,110, Oct. 16.

WANTED—POSITION AS ASSAYER OR mill man; eight years' experience; first-class references; is fair draughtsman; understands amalgamation and concentration; will go anywhere; would take charge of small mill and do the assaying. Address WADE, ENGINEERING AND MINING JOURNAL. No. 18,109, Nov. 27.

\$7,800 GIVEN AWAY TO PERSONS making the greatest number of words out of the phrase "Patent Attorney Wedgerburn." For full particulars write the National Recorder, Washington, D. C., for sample copy containing same.

CONTRACTS OPEN.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., October 6th, 1897.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 27th day of October, 1897, and opened immediately thereafter for all the labor and materials required to fix in place, complete, the low pressure, return circulation steam heating and ventilating apparatus for the U. S. Post Office building at Saginaw, Mich., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Saginaw, Mich. The right is reserved to reject any or all bids, and to waive any defect or informality in any bid, should it be deemed in the interest of the Government to do so. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for the Heating and Ventilating Apparatus for U. S. Post Office at Saginaw, Mich.," and addressed to CHARLES E. KEMPER, Acting Supervising Architect. Orig.

ELECTRIC LIGHT.—Sealed bids will be received at the City Hall, in Somerset, Ky., until 10 a. m., on December 13th, 1897, to light the streets of said city by means of electricity, and to furnish commercial lights by electricity to the citizens thereof. Said bids will be awarded to the highest and best bidder, the right to reject any and all bids being reserved. Full information can be had by application to the Mayor or City Clerk.

U. S. ENGINEER OFFICE, ARMY BUILDING, New York.—Sealed proposals, in triplicate, for construction of about 40 lin. ft. stone retaining wall on north side of Dyckman Cut, west of Broadway, on line of Harlem River Improvement, will be received here until 12 m., October 13th, 1897, and then publicly opened. Information furnished on application. WILLIAM LUDLOW, Lt.-Col., Engrs.

RESERVOIR.—Sealed proposals will be received by the Water Commissioners of Haverhill, Mass., at their office until 12 o'clock noon, Saturday, October 10th, 1897, for the construction of an artificial distributing reservoir, capacity 9,000,000 gals., with earth embankment, masonry core wall, concrete lining and stone slope paving. Plans can be seen and specifications obtained only by personal application at the Water Commissioner's office, Haverhill, Mass., or at office of the engineer, Freeman C. Coffin, Exchange Building, Room 826 1/3 State Street, Boston. Each bidder will be required to make personal examination of site. Each bid must be accompanied by a certified check for \$1,000, payable to the order of "Haverhill Water-Works." The Board of Water Commissioners reserve the right to reject any and all bids, or to accept any proposal, should they deem it for the interest of the city of Haverhill so to do.

PUMPING ENGINE.—Proposals will be received at once by the Paducah Water Company, of Paducah, Ky., for furnishing one 4,000-gal. vertical compound pumping engine. PADUCAH WATER COMPANY.

ENGINES.—Sealed proposals will be received by Henry E. Howland, President of the Board of Managers, Manhattan State Hospital, No. 1 Madison Avenue, New York City, for furnishing materials and labor, for the installation of an engine and generators for the installation of electric wiring and fixtures in the new power house at Ward's Island, N. Y.; and for the plumbing for kitchen building at Central Islip, L. I., for Manhattan State Hospital, may be sent by mail, or delivered in person up to 4 p. m. Thursday, the 14th day of October, 1897, at which time the Board of Managers will open all proposals. Separate proposals must be made for each section of the work to be done. Drawings and specifications may be seen, and blank forms of proposals obtained at the office of I. G. Perry, architect, in the Capitol at Albany, N. Y., or at the office of the Board of Managers. The Board of Managers reserve the right to reject any or all bids.

DAM AND RESERVOIR.—Sealed proposals for building an intake dam and gate house and a distributing reservoir will be received by the Water Commissioners at the Town Hall, Westfield, Mass., until 12 o'clock noon, October 27th, 1897. Each bid must be accompanied by a certified check for five hundred dollars (\$500) payable to the Board of Water Commissioners of the town of Westfield, as a guarantee of good faith, in the usual manner. Plans can be seen and blank forms of specifications, contract and proposals obtained at the office of Town Engineer, Town Hall, Westfield, Mass. The Water Commissioners reserve the right to reject any and all bids.

LOCKS.—U. S. Engineers Office, Custom House, Cincinnati, O.—Sealed proposals for building locks numbered two, three, four and five, Ohio River, will be received here until 2 p. m., October 26th, 1897, and then publicly opened. Information furnished on application to MR. WILLIAM MARTIN, Davis Island Dam (P. O. Box 670, Pittsburg, Pa.), or to W. H. HEUER, Maj. Engrs.

(Continued on Page 21.)

THE ENGINEERING AND MINING JOURNAL

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A Patented Gold Mine near Junction Creek, La Plata
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district. For particulars address
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On reasonable terms, two patented mining claims at
Leadville, Colo., adjoining several of the largest pro-
ducers of the camp. Two thousand feet on shafts and
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erties now in operation. Address OWNER, P. O. Box
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The advertiser has had placed in his hands for sale
one of the most valuable slate bearing properties in
Canada, comprising an area of 144 acres, through the
entire length of which there exists a well defined slate
band of about 1,000 feet in width, which has been thor-
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is most advantageously situated, being both in
proximity to unfailing water power and railroad ship-
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Further information furnished on application to
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DIVIDENDS.

ISABELLA GOLD MINING COMPANY.
COLORADO SPRINGS, COLO., June 10, 1897.
DIVIDEND NO. 11.

A dividend of ONE-HALF CENT PER SHARE
(\$11,250) has been declared, payable June 25th, 1897, to
stockholders of record June 15th, 1897.
The stock transfer books will be closed June 15th,
1897, at 3 o'clock p. m., and will be reopened on the
morning of June 26th, 1897.

PERCY HAGERMAN,
Vice-President and Treasurer.

**NEW YORK AND HONDURAS ROSARIO
MINING COMPANY,**
No. 18 BROADWAY, NEW YORK, Oct. 4, 1897.

DIVIDEND 39.

The Trustees of the Company have this day declared
a dividend of TEN CENTS per share on its capital
stock, payable October 20th, 1897.
The transfer books will be closed from October
10th to 20th.

S. JACOBY, Treasurer.

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plete and new, built by Fraser & Chalmers; also one
18" x 42" Hamilton Corliss Engine; one 12" x 20" double
cylinder Hoisting Engine. Will be delivered f. o. b.
W. E. DAME, Cerrillos, N. Mex.

FOR SALE.

In running order, a 5-ft. Huntington Mill;
two sets 14 x 30 Asonia Rolls; a 14 x 16 Nor-
walk Compressor; a 7-in. Discharge Wilbraham
Pump. Address **MACHINERY,
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kinds.

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CONTRACTS OPEN.

Continued from Page 20.

**WATER-WORKS AND ELECTRIC LIGHT
Plants.**—Sealed proposals for constructing a system of
water-works will be received by the Commissioners of
Public Works of the town of Union, S. C., until four
o'clock p. m., the twelfth day (12th) day of October, 1897,
and opened immediately thereafter. Also at the same
time and place sealed proposals will be received by
said Commissioners for constructing an electric light-
ing plant. Each bid must have certified check for five
hundred dollars as per specifications. The Commis-
sioners reserve the right to reject any or all bids.
Specifications and further information furnished on
application to the Chairman.

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plant. Each bid must have certified check for five
hundred dollars as per specifications. The Commis-
sioners reserve the right to reject any or all bids.
Specifications and further information furnished on
application to the Chairman.

BRIDGE.—Sealed proposals will be received at
the office of the City Clerk by the City of Rockford,
Ill., until 2 p. m., on October 11th, 1897, for the con-
struction and erection of a plate girder bridge over
Keiths Creek, at Seminary street, all to be made accord-
ing to the plans and specifications on file in the office
of the City Engineer. Proposals must be accompanied
by a certified check on some responsible bank for
\$100 and payable to the order of the City of Rockford.
The city reserves the right to reject any or all bids.
Companies or firms bidding will give the individual as
well as the names of the firm, with their address.

DREDGING.—U. S. Engineer Office, 905 1/2 East
Main St., Richmond, Va. Sealed proposals for deep-
ening and widening channel of James River, Va., and for
constructing, repairing and revetment of windams will
be received here until 12 m., October 27th, 1897, and then
publicly opened. Information furnished on application
here to H. D. Whitcomb, CHAS. J. ALLEN, Lt. Col.
Engrs.

BRIDGE.—Sealed proposals will be received by
the Commissioners at 500 Broad street, Newark, N. J.,
until 4 o'clock, p. m., on October 12, 1897, for the con-
struction of a masonry bridge at the intersection of the
East Orange Parkway and the line of the Delaware,
Lackawanna & Western Railroad at Thompson
street, East Orange, N. J. The amount of securi-
ty which will be required for the proper execu-
tion of the contract will be \$15,000. Bidders are
requested to send samples of the stone and brick
on which their proposal is based to this office with
their proposal. Bidders will state in writing and also
in figures all prices for each of the items of the engi-
neer's estimate, which prices are to cover the full per-
formance of the work in accordance with the specifica-
tions. The engineer's estimate of the work to be done
and by which the bids will be tested is as follows: 6,500
cu. yds. excavation of earth, 100 cu. yds. excavation of
rock, 500 cu. yds. rock-faced masonry, 200 cu. yds. broken
range masonry, 2,200 cu. yds. concrete backing, 1,200 cu.
yds. foundation masonry, 550 cu. yds. brick arch masonry.
These quantities are considered as approximate, and
are not to be held as entitling the contractor to any
claim for extra time in the completion of the work, or
to any claim for damages, if the quantity of work be-
tween the points stated should prove to be greater or
less than is here estimated, and the Commission ex-
pressly reserves the right of increasing or diminishing
the said quantities, as in its opinion may be necessary.
The Commission expressly reserves the right to reject
any and all bids. Blank forms of proposal and further
information, with copies of this contract and specifica-
tion, can be had on application to the Secretary of the
Commission.

STONE SIDEWALKS.—Sealed proposals will
be received by the Mayor and Council of Roselle,
N. J., until October 20th, 1897, at 8 p. m., for furnish-
ing and laying not exceeding 10,000 running feet of
first quality stone, four feet wide and not less than two
inches thick, and no stone to contain less than eight
square feet, to be laid upon a foundation not less than
six inches deep of cinder sand or crushed stone. Walks
to be laid to a grade to be furnished by the Borough
and stones to be cut straight, so that they will fit pro-
perly against each other, and to be laid so as to pre-
serve a straight line along the sides.
Cinders can be purchased within half a mile of where
flagging is to be laid.
The party making proposal must agree to lay all
walks ordered during a period of three months from
October 20, at the price named in proposal, whether 10-
000 running feet more or less.
A bond of \$1,000 with satisfactory sureties will be re-
quired for faithful performance of the work.
All work must be finished within 30 days from time
of order.
Bids to be addressed to G. A. RAWLINS, Clerk,
Roselle, Union Co., N. J.
The council reserves the right to reject any or all
bids.

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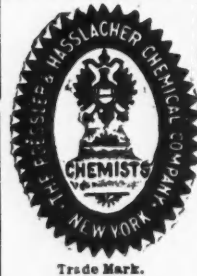
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