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At the hour of going to press the encouraging reports concerning President McKinley's condition have given place to anxiety and alarm. Unfavorable symptoms suddenly developed and grave fears are expressed as to the outcome. In any event the public mind will be busied with inquiries as to the cause of the outrage which has brought him near to death, and the proper means of preventing hereafter the occurrence in this country of crimes of this class. It is said—though this is not beyond doubt—that, if the President should recover, his treacherous and brutal assailant can be punished, under the laws of this State, with not more than ten years' imprisonment, for an assault with murderous intent; and the general dissatisfaction with so moderate a punishment is plain enough. We are glad to see, however, that no serious proposals are made to remedy the alleged deficiency of the statute by the substitution of lynch law. In view of the temper of many sections of the country, nothing could be more wholesome, at this time, than a calm and dignified adherence to legal forms in the treatment of this dastardly crime.

Of the many suggestions which have already been made, two seem to be wise and fair:

1. That murderous assault upon the executive of a State or of the United States should be made a capital crime, irrespective of its result.
2. That the free and indiscriminate access of crowds of unknown individuals to the person of the President should be prevented, because it is not only needless, foolish and fatiguing to the victim, but also—as has now been shown once more—dangerous to the State. The President ought to be made more safe than an ordinary citizen, instead of less safe, as he now is; and the American people ought to be willing to give up the sentimental privilege of shaking innumerable hands with their chief magistrate, if that practice not only half kills him with kindness, but also exposes him to be killed outright by madness or malice.

The situation in McKeesport, Pa., during the last few days is a natural result of the conduct of the mayor of that city. The city is in the hands of a mob with which the local authorities exhibit no desire to cope. In fact, instead of attempting to restore order and to protect life and property, the mayor and police are in open sympathy with the mob. Men who disapprove of the strike and who desire to go to work are being subjected to intimidation and bodily injury, and law and order are set at defiance. It appears now as if the time had arrived for the State authorities to step in. Mayor Black, like Governor Altgelt, may not desire the presence of a higher authority, but Governor Stone will not make a mistake if he follows the precedent established by President Cleveland.

A decision of some interest has been given by the United States District Court for Idaho in a suit brought by Captain J. R. De La Mar against the De Lamar Mining Company. The suit was brought to enjoin an alleged infringement of United States patent No. 607,719, covering certain improvements in the cyanide process. The important claim in this patent was one covering the use of zinc dust instead of zinc scraps or shavings in precipitating the gold from the cyanide solution. The defense presented a mass of testimony—chiefly collected by Mr. D. B. Huntley, manager of the De Lamar Company—and was successful. The Court held that the patent was anticipated by prior publications and patents, and therefore the suit for infringement could not be maintained.

Up to date we have heard of no appeal, but it is altogether probable that Captain De La Mar will carry the case up to a higher court for final decision, as a test case.

The statement of the Missouri & Kansas Zinc Miners' Association, which is given in another column, presents clearly the position taken by the association in view of present conditions. The object which the association now has in view is to limit the production of spelter practically to the home demand; and it is proposed to effect this by exporting the surplus in the form of ores, which can be sold abroad at a better relative price than the metal. The Vieille Montagne Company has bought ores here for several years, and other European companies have begun to follow its example; so that the Missouri & Kansas Association now has offers for a considerable tonnage of ore. If the miners will all unite with the association, it is claimed that the export trade can be used to steady and maintain the current prices of ore.

The position the association has taken as representative of the miners appears to be a reasonable one, and will probably be supported by nearly all—if not all—of the ore producers of the district; though in some points it may not meet the views of the smelters. The latter have never done as much as they might in the way of promoting a wider use of spelter. For instance, the application of sheet zinc for roofing is but little known here, though it is very common in Europe; and

other uses might be suggested. Some good work of the kind mentioned might be made very effective.

The Hargreaves-Bird process for producing soda and bleach electrolytically is now in operation on a commercial scale at Middlewich, in Cheshire, England, and the products are finding a ready market. At the present time 50 cells, of the type described in "The Mineral Industry," Volume VI., are at work, and the daily capacity is about 9 tons of bleach and 13 tons of soda crystals, though the soda output is not marketed solely as crystals. Another set of 50 cells is in course of erection, and further extensions will be proceeded with as the products become known. The Electrolytic Alkali Company has always exhibited caution in conducting its business, and its policy has been to refrain from suddenly increasing the supply of these products. Thus it does not upset the chemical market nor make violent fluctuations in the price.

An incidental advantage of this process is that the bleach obtained keeps absolutely dry. There is no hydrochloric acid about to form calcium chloride, which is always found in Leblanc bleach. Another point of interest is that the soda crystals average 99 per cent. in purity, the remaining 1 per cent. consisting of sodium chloride, sulphate and sulphite of soda. This small proportion of sulphate and sulphite is due to the presence of sulphur in the carbonating gases. Brunner, Mond & Company, who use the ammonia-soda process have recently pointed out that there is a good deal of soda placed on the English market by English and Continental producers that contains over 25 per cent. of sulphate of soda and in some cases even a greater percentage than that. These crystals are presumably made by the Leblanc process, and the black ash process must be imperfectly carried out with a view of lowering the cost of production. Brunner, Mond & Company claim a percentage of 98.25 for their soda crystals, not quite so high as the figure given by the Electrolytic Alkali Company, but still high enough for all purposes for which soda crystals are used.

A GREAT ACHIEVEMENT IN ENGINEERING.

The near completion of the new Delaware Breakwater, below Philadelphia, has been the occasion of a noteworthy statement from General Gillespie, chief of the Corps of Engineers of the United States Army, which we find in the columns of the Philadelphia "Public Ledger" of August 29th, and the substance of which we here condense.

The old Delaware Breakwater is about 1 mile long, contains 1,231,587 tons of stone, was 70 years (1828 to 1898) under construction, cost about \$2,807,000, and created a limited and shallow harbor of refuge, now used by small coasting and fishing vessels. In building it the greatest amount of stone deposited in any one year was about 32,000 tons.

The new breakwater, designed in 1892, is about 1.5 miles long, covers an area of 552 acres, with minimum low-water depth of 30 ft., besides 237 acres with 24 ft. depth; contains 1,464,410 tons of stone, which have been placed in position in 44 working months, the average per month being 32,300 tons, the maximum per month 62,719 tons, and the maximum year's work 450,460 tons. The work has thus been done about 25 times as rapidly as that of the old breakwater. As to its cost, a direct comparison based upon its length would not be fair. A better measurement is found in the circumstance that in 1892 a commission of engineers, basing its calculations upon the experience gained in the building of the old breakwater, estimated the probable cost of the new one at \$4,665,000; whereas, it will be fully completed in November next at a cost of about \$2,239,334, or slightly less than half the estimate.

This surprising result has been partly due to the very low price (\$1.18%) per ton at which, by the use of powerful machinery at both breakwater and quarry, the contractors have been able to put the rock in place; but it is also largely the result of the great saving of at least half a million tons in the amount of stone required, which has been effected by the new method of construction employed. Without going into a detailed description of this method, we may say that it consists essentially in adopting for the submerged portion of the breakwater a cross-section determined by the action of the sea itself, instead of a much flatter slope, such as was previously supposed (without experimental reason) to be necessary. Lt.-Col. Charles W. Raymond, the engineer in charge, is entitled to the credit of having proposed this bold innovation, secured for it, by his arguments and experimental proofs, the approval of the Board of United States Engineers, and supervised its execution with vigilance and intelligence. In the words of General Gillespie the work is "a monument to his efficiency and skill as an engineer."

During the progress of its construction the new Delaware Breakwater has been visited by many engineers and has been watched with great interest, as certain, if successful, to mark a memorable advance in the methods of harbor engineering. Thus far the minutest observations have failed to detect the least sign of weakness or inade-

quacy in the novel submarine section employed. For the local conditions there is no doubt that the plan is successful. Whether it can be employed, and how it would have to be modified for other localities and conditions remains to be determined. The theory of it—namely, that in any locality the sea itself should be allowed to determine the submerged section for a breakwater, or, in other words, that the talus of the broken stone should be that which the sea has been found to form, and thereafter not to disturb—seems to be universally applicable. At all events, no great structures of this class will be undertaken hereafter in the civilized world without careful consideration of this new American precedent.

CONCENTRATING SYSTEMS.

Natural raw materials usually yield the largest profits when they are handled by successive methods, beginning with the very simplest and roughest processes, and only applying refined and complicated treatment to the final concentrated products whose values have been greatly increased by classification and the elimination of worthless or hurtful waste matter.

The successful methods of separating mixed metallic ores as practiced to-day, have been evolved from centuries of practical experience, and it is only in details that inventive genius has ever scored a success. Note the universal failure of "new processes" frequently advertised as "destined to revolutionize" this or that branch of metallurgy.

Manifestly, the value of any ore, after it has been mined, is that of all the valuable elements contained in it available for extraction and refining, less the costs of treatment and marketing and less the necessary losses in handling throughout.

When an ore containing a number of elements is sent to an ore market, the copper smelter will bid for it according to the values which are available in the products of his process, as that of the copper, silver and gold combined in the matte product, with a deduction for carriage and treatment, plus a penalty for the presence in the ore of substances injurious to the quality of the copper, or causing unusual loss or excessive expense in the process, as arsenic, antimony, zinc or excess of silica, alumina or barytes. On the other hand, he may allow a premium for the presence in the ore of an excess of desirable fluxing constituents, like iron, fluorspar, etc. Similarly the silver-lead smelter bases his valuation primarily upon the lead contents, allowing nearly full value for silver and gold, and a fair valuation for the copper saved from the matte, with increased charges for the presence of an excess of silica over iron, or of zinc above a certain limit, etc. The zinc smelter can pay only for the zinc in the ore, less a very considerable penalty for iron and silver, as well as for lime, lead or other injurious constituents.

It is apparent then that to realize anything like full value for a complex sulphide ore, the copper, lead, zinc, antimony and iron minerals in it should be separated from each other before the ore is sent to market.

With a passing reference to hand sorting with the aid of hammers, the most primitive yet in some cases still the most effective method, and to the use of sorting tables or belts where the ore requires crushing by machinery, the application of power jigs to the separation of minerals according to their differences in density or specific gravity is the most general method.

The superiority of the jig over other mechanical appliance for this purpose is claimed by many, although the very large use in this country of vanners or concentrating tables in connection with gold stamp mills has undoubtedly led to different notions in this respect, and not infrequently have ore dressing plants been erected and experimented with upon other than simple gold ores, using only some new form of slime table or other fine concentrating device, when jigs could better have been made to do the greater or at least the preliminary part of the work.

It is not only expensive to reduce the whole product of a mine to the state of fine sand and slime, especially when the bulk of the material is quartz or flint, but it is wasteful of value, because the soft sulphides once ground to slime cannot be recovered by any system of concentration. On the other hand, it is often the case that when hard flinty ores, even as well as soft "free" ores, are crushed to say half-inch (12½ millimeter) size, the greater part of the sulphides are set free and perhaps 80 per cent. of the rock or quartz fragments are practically barren, so that they can be eliminated at once by running the material at this stage directly upon the coarse or rougher jigs, while the pure, coarse sulphides may be saved from further loss, leaving only a small amount of mixed material to be re-crushed and re-jigged.

No unnecessary expense should be put upon worthless waste. It is a thing to be gotten rid of at the earliest possible stage. Even when the mineral or sulphide is disseminated in such fine particles that the ultimate reliance must be upon table or buddle concentration it is almost always the case that a large percentage of barren rock material can be

eliminated by jiggling before the ore bearing material is reduced to sand.

In the matter of jigs the choice does not lie so much between different styles of jigs (provided they are large enough) as between methods of use. That is, whether to size the roll product and run each size over a special jig of two to four compartments, or to run the whole of the roll product after it reaches a certain size, first upon a coarse or rougher jig having several compartments or cells with diminishing stroke, and the first product from the rougher again over a fine or cleaner jig. The choice is one in which capacity, economy and effectiveness figure largely, and in which theoretical considerations are outweighed in practice.

In the zinc-lead mining district surrounding Joplin, Mo., to take a specific instance, there are over 500 steam-power concentrating plants, in which almost every system of jiggling and concentrating known has been tried, with the result that to-day not a single one of all these mills is using other than the two-line or rougher and cleaner type, supplemented sometimes with a line of sand jigs. The products of these mills are; first, nearly clean galena, averaging from 76 to 83 per cent. metallic lead, and rarely containing more than 2 per cent. of iron or zinc; second, waste mundic or pyrite, carrying usually 15 to 25 per cent. zinc, which is practically all recovered by magnetic separation; third, clean blende, carrying not over 0.2 per cent. lead, and from 0.75 per cent. to 10 or 15 per cent. of iron, in the case of pyritic ores; and, finally, sand and flint tailings containing less than 0.2 per cent. lead and generally not more than from 1 to 2 per cent. zinc with a small amount of slime or sludge, quite rich in zinc, which is treated at centrally located sludge mills for the production of fine concentrates.

It is to be noted that the crude ore from the mines of this district rarely averages more than 2 or 3 per cent. lead and 5 to 8 per cent. of zinc, usually in the hardest flint gangue, with no other elements of value than the lead and zinc; and also that the concentrates produced by the apparently crude system in use are, as a rule, much more free from sand than those yielded by the theoretically more perfect system of sizing and special jigs.

When the zinc blende concentrates carry over 4 per cent. of iron their value to the zinc smelters is lessened so greatly that it has been found profitable to separate the pyrite completely from the blende by magnetic separation. Here a magnetic system has been evolved by experiment and practice, which is proving successful in a very satisfactory way.

The instance given from the Joplin region is an indication of the way in which methods have been and may be worked out to meet the requirements of different districts and special ores.

NEW PUBLICATIONS.

"Notes on Thermodynamics." Part I. Second Edition. By H. W. Spangler. New York; John Wiley & Sons. London; Chapman & Hall, Limited. Pages, 72; illustrated. Price, \$1.

The first edition of this useful little text-book was noticed in our columns when it appeared. The present edition has been carefully revised and brought up to date with the assistance of recent writers who have published results of their investigations. The book was originally prepared for the use of the author's classes, and the revision has been made on the same lines, to increase its usefulness as a text-book.

"Les Mines d'Or de la Californie." By Albert Bordeaux. Liege, Belgium; reprinted from the "Revue Universelle des Mines."

This is an interesting account of the present condition of mining in California from the point of view of a French mining engineer. With some statistics of the output of the gold mines, it goes at considerable length into the methods adopted of working gravel mines and quartz mines, the machinery used and other details. It also describes the different ways in which gold occurs in California. The methods of ore treatment are also referred to in some detail. The book presents the whole subject in a way which would give its foreign readers a good idea of California mines, their value and the methods used in their exploitation.

"Mysore: Report of the Chief Inspector of Mines." By W. F. Smeeth, Inspector. Madras, India; printed for the State. Pages, 32; with tables.

Mysore is one of the so-called independent States of India, which have their own governments, but are kept strictly under British control. From a mining point of view it is important because it contains, in the Kolar Gold-field, the only gold mines of any importance in India. This is by far the most valuable industry of the State, though salt, iron ore, asbestos, corundum and mica are also mined, and there is a considerable production of building stone and of bricks and other clay products. The inspectors are all Englishmen, though appointed and employed by the Mysore State; and the gold mines are under English management. The labor employed is largely native. The report gives many interesting details concerning the gold mines, including the methods in use, the accidents occurring and the means used to protect employees, etc. A matter peculiar to this field is statistics in relation to the bubonic plague, which has interfered considerably with the working of the mines. An appendix gives a brief note on the geology of the Kolar mineral belt, with geological map of the region.

"Iowa Geological Survey. Volume XI. Administrative Reports." Samuel Calvin, State Geologist; A. G. Leonard, Assistant. Des Moines, Iowa; published for the Survey. Pages, 520; illustrated.

This volume continues the series of excellent reports which the Iowa Geological Survey has issued from time to time. Besides the progress reports covering the work of the Survey for the year 1900, and the mineral production of the State, there are several of the detailed reports on different sections of the State. The monographs in this volume are on the geology, respectively, of Louisa, Marion, Pottawattamie, Cedar, Clay and O'Brien counties. They are accompanied by maps and numerous illustrations.

The field work during the year laid the foundation for other monographs on different counties, which are now being prepared for publication. Two investigations in progress which promise valuable results are on Iowa clays, under charge of Dr. Beyer; and on the cement materials of the State. Both of these require much careful work and the monographs, when completed, will doubtless be of value to the people of the State. The Survey has also taken up the question of water supply and is studying artesian wells in various sections. A brief discussion in the introductory reports shows the absence of general knowledge in relation to geological conditions; it relates to the wild reports of gold discoveries in the State, which are occasionally circulated and which have been invariably proved to be without foundation.

The work of the Iowa Survey has been, as a rule, well planned and carefully executed; and the proof is to be found in its excellent reports.

BOOKS RECEIVED.

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

"On the Crystalline Structure of Some Gold, Silver and Copper Nuggets." By Prof. A. Liversidge. Sydney, N. S. W.; printed for the Royal Society. Pages, 8; with 7 plates.

"Report of the Bureau of Mines of the Department of Internal Affairs of the State of Pennsylvania. 1900." James E. Roderick, Chief of Bureau. Harrisburg, Pa.; State Printer. Pages, 716; illustrated.

"Japan. Report of the Director of the Imperial Mint at Osaka for the Year ending 31st Third Month, 34th Year of Meiji (March 31st, 1901)." T. Hasegawa, Director. Tokyo, Japan; printed by the Insetu Kyoku. Pages, 40.

"The Silver Creek Hydraulic Limestone of Southeastern Indiana" and "The Indiana Oolitic Limestone Industry in 1900." By C. E. Siebenthal. Prepared for the Geological Survey of Indiana. Indianapolis, Ind.; State Printers. Pages, 64; illustrated.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

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

Mexican Statistics and "The Mineral Industry."

Sir: It is to be regretted that the editor of your worthy contemporary, the "Mining Journal, Railway and Commercial Gazette" of London, should publish so unjust a criticism of "The Mineral Industry" as that appearing in its issue of August 24th, 1901, under the caption "Progress of Mexico." In this article attention is called to alleged discrepancies between the production and trade of gold, copper and coke as reported in "The Mineral Industry," Volume IX., and as given in the report of Mr. Consul Bjorklund.

The estimate of the gold production in Mexico by Consul Bjorklund is based entirely upon the amount of gold exported in various forms. To arrive at a correct estimate, account must also be taken of the gold deposited at the mints for coinage and the gold used in the arts. The figures quoted as taken from "The Mineral Industry" are erroneous, as may be seen by referring to page 314, Volume IX., where Mexico is credited with production of \$9,409,063 in 1900. The same figures are repeated on page 330. Nowhere in the book can be found such an inaccurate and misleading estimate as £824,058.

In reference to the source of the coke used in smelting operations in Mexico and the destination of the copper exports, the writer has misread the article in Volume XI. of "The Mineral Industry," or he is attempting to distort the facts purposely. By referring to pages 205 and 206 no statement will be found that "the matte and black copper are shipped to Europe for refining," except in so far as the Boleo Company is concerned. This company, which produces more than one-half of the total copper output, does ship its matte and black copper to Europe, although a part enters the United States and is transhipped at New Orleans. The statement in "The Mineral Industry" that the coke used for copper smelting comes from Westphalia and Wales, refers also to the Boleo Company and not to the smelting concerns in general, as will be observed by consulting the text on pages 205 and 206, which is based on the report of the Boleo Company and upon notes furnished by Mr. F. J. Pope, a mining engineer familiar with the conditions in Mexico.

False statements, particularly when reflecting on character—either of publications or individuals—are inexcusable, and can only be construed as the result of intention or carelessness. Choosing the lesser of the two evils, it certainly calls for severe criticism on the action of your contemporary in allowing a prominent editorial to be so garbled and misleading, especially when a mere reference to "The Mineral Industry," Volume IX., would have shown at once the falsity of the alleged quotations therefrom. In justice to all concerned, your contemporary

should correct in its columns the false statements now on record which reflect on the value of the statistical information of "The Mineral Industry."

Joseph Struthers,
Editor "Mineral Industry."

New York, Sept. 6, 1901.

The Desert District in Southern California.

Sir: I see from time to time reports of rapid development in many mining districts published in the "Engineering and Mining Journal," and I would like to call your attention to the great Desert District in California. It comprises the larger part of the counties of Inyo, Kern, San Bernardino, Ventura, Los Angeles, Orange, Riverside and San Diego, in the southern part of the State. Attention has been turned from this promising field for the reason that there is an apparent scarcity of water. But that objection has always been surmounted wherever the necessary courage and enterprise has been displayed.

Near Mojave, in Kern County, at Bower's Mountain, the Exposed Treasure Company has developed mines, has erected a reduction plant and has abundance of water coming to the works by the flow of gravity alone. Five years since this was looked upon as a barren and worthless locality. The Mojave Mining and Milling Company also has near completion a large reduction plant near the Exposed Treasure, and in a few months these two companies and many smaller ones will become steady producers. Some 30 miles east, at Randsburg, the Yellow Aster is dropping 130 stamps and the monthly clean up is more than \$100,000. There are six mills within sight of the Yellow Aster, and all have water in abundance. Six years ago water cost \$1.50 a barrel and the camp was declared to be worthless. Again, 45 miles northeast of Randsburg, in the Slate Range, is the San Francisco Gold Mine, operated by Dean & Jones. It has a 20-stamp mill, a concentrating and cyanide plant with also plenty of water. Here the water, as at Randsburg, is pumped a distance of several miles.

Further north in the Argus Range, many mines are being opened up, and in every case water has been found. Further east near the Nevada line is Marvel, and around it are gold and copper deposits that are being brought into the line of producers. Further south in the Buckeye District, Senator Dewey and capitalists of Rochester, N. Y., are opening up the Bagdad Mine. They have sunk 300 ft. in solid ore and have drifted along the ledge a like distance. It has a thickness of 25 ft., and better than \$10 ore in sight. The Ludlow Mining Company adjoins this mine and has a body of ore in sight and some of great promise is now being opened up. A standard rig is now drilling for water and arrangements are about complete for a 50-stamp mill. When this is erected this group of mines will become large producers.

Further south there is the American Girl, paying regular dividends and having abundant ore in sight. Beside it are the Golden Cross and several other mines working large deposits of low-grade ores. All the mines mentioned are won from an absolute desert, but when once won in this climate there is a perpetual work day.

In this region many such places can be found, and with wise management can be made to yield abundantly.

C. S. M.

Los Angeles, Cal., Aug. 26, 1901.

Boiler Horse-Power Rating.

Sir: I note your answer to a correspondent under this heading in the "Engineering and Mining Journal," August 17th. In this connection I would call your attention to a paper recently read before the Engineers' Society of Western Pennsylvania by Mr. W. E. Snyder. An extract from that paper reads as follows:

"The evaporative performance of boilers is rated by horse-power, which, in this case, means the rate of heat transference from the furnace to the boiler, one boiler horse-power developed, meaning that the boiler has absorbed 33,317 British thermal units in one hour.

"Different manufacturers allow different areas of heating surface to effect this absorption, varying from 7 to 12 sq. ft. per horse-power in the ordinary types. This of course means that the manufacturer of one boiler considers that 7 sq. ft. of heating surface in his boiler will transmit as much heat in an equal time and under similar conditions as 12 sq. ft. in the other man's boiler. This is, of course, nonsense, because, as is evident, the laws governing boiler phenomena are natural laws, and are not inclined to favor Mr. A's boiler any more than they do Mr. B's. It is, it must be granted, an ingenious fallacy so contrived as to deceive and mislead, while at the same time it is made all the more attractive because it contains some elements of truth. The deception comes from the fact that boilers are usually bought or sold by the horse-power, and in competitive bidding the builder of the boiler of high surface rating is evidently placed at an unfair disadvantage when bidding against a builder of a low surface rating boiler. In bidding on an equal number of horse-power the first man will furnish much larger boilers than the second, and the latter has every show to underbid the former and may still make a larger profit on his contract. The best and fairest way is for the buyer to have each bidder state in his specifications the area of heating surface he has allowed per horse-power, as well as the total efficient heating surface in the boiler, and its distribution. This will make the prices submitted more intelligible.

"The elements of truth which go to make up a very attractive argument for builders of low surface rating boilers, is that the design of their boilers is such, that the internal circulation of the water and the external circulation of the gases is so perfect that each square foot of heating surface does really transmit more heat than in other types of boilers. There is probably some truth in this, though it is not of nearly such importance as some boiler builders would have us suppose. In boilers of high surface rating a great deal of the surface is no doubt ineffective. When the gases pass transversely across the tubes, the side of the tubes which the gas is leaving cannot be nearly so efficient as the side against which the gas impinges. And further, the writer has seen the path of the gases very beautifully depicted on drawings by curved lines, but in actual practice the gases absolutely refused to follow the course marked out by the draftsman but took frightful short cuts. The result is there would be several large corners

in the boiler, hot, of course, but not in any effective current of moving gas from the furnace. The trouble is not so much that the heating surface in the one boiler is really less efficient than it is in the other, but that in the former every element of surface is not doing its legitimate duty. We are expecting results proportional to the amount of heating surface in the boiler, while the results we obtain are proportionate to the amount of heating surface in effective operation. The foregoing explanation is suggested as one way of accounting for apparently higher evaporation per square foot of heating surface in some boilers of low surface rating than in others of high surface rating."

The fact is that the old fashion of rating a boiler by horse-power, to which we still adhere, is too indefinite ever to be satisfactory. Nearly everyone will admit this, but when you come to establishing a general and satisfactory standard no two persons seem to agree. If a few large boiler users would agree, it would go far to establish a better system.

Boiler-User.

Duluth, Minn., Aug. 19, 1901.

MEXICAN MEETING OF THE AMERICAN INSTITUTE OF MINING ENGINEERS.

It appears from advices to Mr. Dwight, who has charge of the arrangements for the November meeting of the Institute in Mexico, that a most interesting programme has been prepared. In the City of Mexico the entertainment will consist of a number of receptions, among which will be one by the Minister of the Interior, the Society of Engineers, the Architects of Mexico and the Academy of Science. Another reception will be given by the resident bankers and engineers, a third will be tendered by General Powell Clayton, the American Ambassador, and still another by the mayor and city council at the National Palace.

There will be excursions by special trains, etc., to many of the points of interest in the vicinity, all of which will be provided by the local committees. The sessions will be held in the hall of the School of Engineers.

The head of the Mexican committee is Ing. Carlos F. de Landero. The senior chairman of the Mexico City local committee is Ing. Victor M. Braschi; vice-chairman, Ing. Ezequiel Ordóñez and Edmundo Girault; secretary, Henry M. Stanley, and treasurer, John F. Allan. The honorary vice-presidents are Ing. Leandro Fernandez, Minister of Public Instruction; Jose y Limantour, Minister of Finance; General Powell Clayton, Ambassador of the United States, and Ing. Lando y Escandoro, mayor of the city. In all the other places where stops are arranged the local members have joined with the officials of the States or towns to provide for the entertainment of the visitors.

We are informed by Mr. Dwight that a few of the members who had registered for the trip have been compelled to resign their places. This leaves a few accommodations still available, and they are at the disposal of any other members who may desire to go.

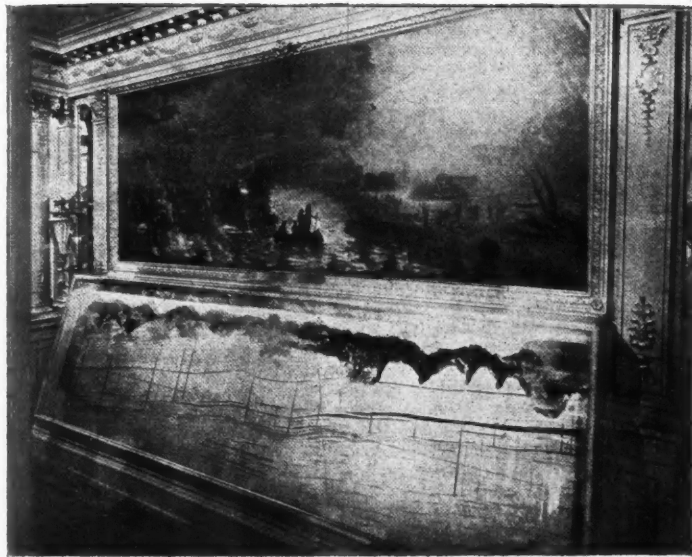
ACCIDENTS FROM ELECTRICITY IN MINES.—The London "Colliery Guardian" says that the dangers of electricity and treatment of sufferers from shock have given rise to a great many sets of instructions, some founded on laboratory experiments and others on accidents that have occurred in electric installations; but, notwithstanding the many facts recorded, serious difficulties are encountered when it becomes a question of arriving at precise conclusions, because the physiological actions of electricity vary greatly with the circumstances, and important details are often wanting in accounts of accidents and experiments. Thus observes M. Halleux, Ingénieur des Mines, secretary of the Belgian Electrical Commission, who deals with the dangers of continuous and alternating currents, arriving at the following conclusions: 1. It is not correct to found appreciation of the danger presented by an electric installation on the voltage merely. 2. The insulation conditions play an important part in the danger presented by an electric plant, the putting of a pole to earth greatly increasing the danger. 3. The widely-spread opinion that low voltages present no danger should be combated. 4. The lowest differences of potential that have caused fatal accidents are 220 volts in continuous and 110 volts in alternate currents. 5. The more the differences increase beyond these two limits the more must all tensions be regarded as equally dangerous. 6. Greater danger is presented by alternate than by continuous currents, other things being equal.

ELECTROLYTIC PRINTING.—London "Engineering" says: "The object of Mr. Friese-Greene's method of electrolytic printing is to do away with the use of printer's ink. The same presses and type can be used as heretofore, but instead of inking the type, the latter is connected to the negative line of some source of electricity. The paper used is impregnated with suitable chemicals, while the pressure rollers are connected to the positive line. A current accordingly traverses the paper as it passes through the press, and the chemicals being decomposed thereby, a sharp impression of the type appears on the surface of the paper. The amount of chemicals needed to give a good impression is small. Thus in one experiment with a silver nitrate paper the current used was measured, and on deducting therefrom the amount of silver liberated, it appears that an eight-page newspaper could be printed with the liberation of 0.134 grain of silver. Of course silver nitrate, though convenient for experimental work, is unsuitable for practical use, since a paper impregnated with this salt turns black on exposure to light. The chemicals originally suggested for use in the industrial development of the scheme were a mixture of manganese sulphate, and nitrate of soda, both of which are very cheap. This yielded an impression of a very dark brown, which tends to become blacker with age. Other salts have, however, been discovered which give perfectly black prints, the impression, it is stated, being sharper than can be obtained with ink. The rate of production is very great, the experiments going to show that some 36,000 impressions per hour are quite feasible, and it is possible to print on both sides of the paper, which is, of course, essential if the process is to compete with the older methods. By suitably selecting the impregnating salts, prints can be obtained in a great variety of colors."

THE PAN-AMERICAN EXPOSITION AT BUFFALO.—XII. THE STANDARD OIL EXHIBIT.

Written for the Engineering and Mining Journal by Mrs. Harriet Connor Brown.

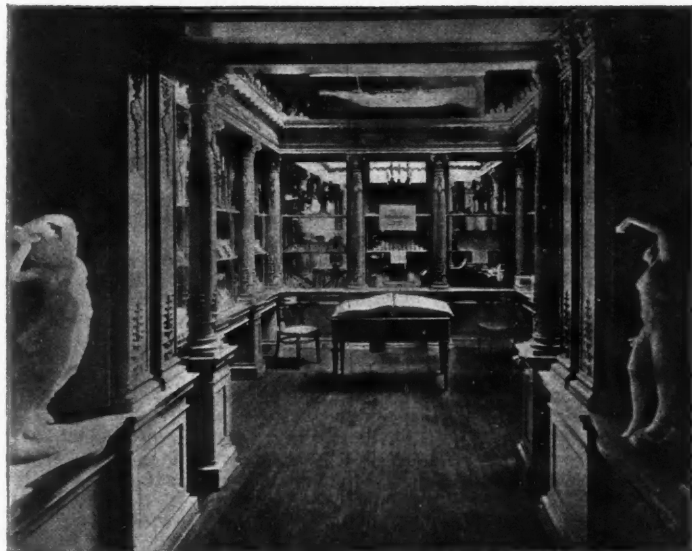
Probably the most artistically installed exhibit at the Pan-American Exposition is that of the Standard Oil Company, which occupies a conspicuous place directly opposite the main door of the Mines Building. The exhibit is made under the supervision of the United States Geological Survey, whose representative, Dr. David T. Day, co-operated with Mr. O. T. Waring of the Standard Oil Company in collecting and arranging the material. The booth is the same as that exhibited last year at the Paris Exposition, where it was much admired, but the exhibit



DISCOVERY OF OIL—SECTION IN PENNSYLVANIA OIL REGION.

is even more complete than that shown in Paris. It is here, as it was there, in charge of Mr. N. H. Busey.

The booth consists of an elaborate, three-roomed structure which covers about 1,500 sq. ft. of space. The woodwork, which is painted a delicate green, is elaborately turned and ornamented, and has an appearance of great elegance. The rooms are brilliantly lighted by the kerosene lamps of the Transcendent Light Company. By means of these an incandescent light is obtained from kerosene oil, the oil being conducted through a tube from above. Heated by the flame, the oil vaporizes, and with the aid of Welsbach mantles, a light as brilliant as an electric light is produced. A decorative feature at the front of the exhibit are six perpendicular tubes set into the framework of the booth.



RECEPTION ROOM AND PARAFFINE EXHIBIT.

Through these course oil of different colors designed to illustrate by the difference in the shape of their bubbles the varying viscosity and density of the oils.

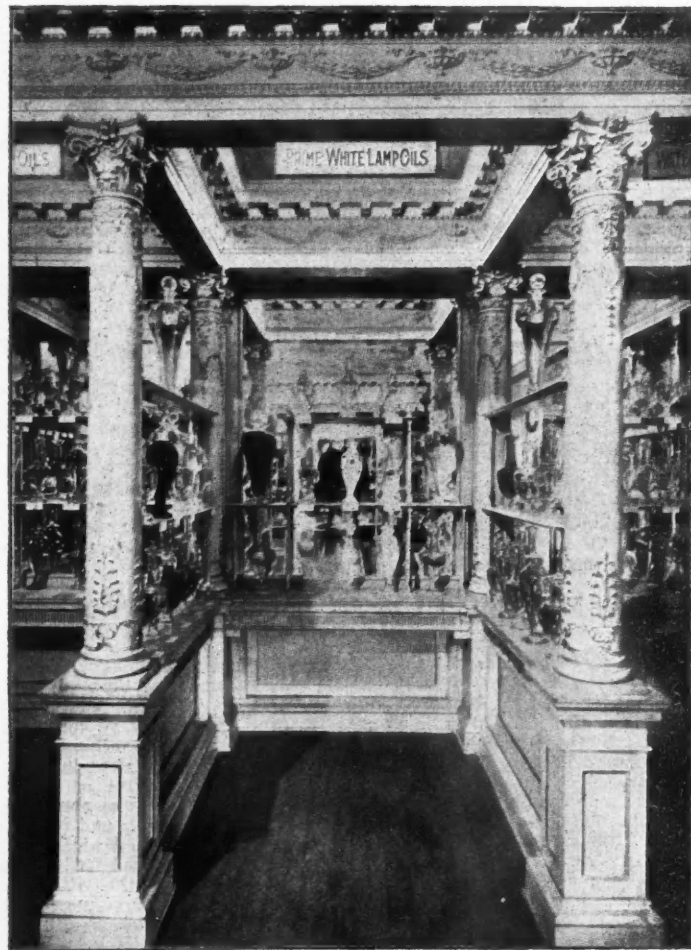
But the artistic merit of the installation is insignificant in comparison with the scientific value of the exhibit. It is impossible to imagine a more complete epitome of the petroleum industry than is here given. The whole subject is thoroughly illustrated, geologically and commercially. Where oil is found, how it occurs in wells, what rocks are oil-bearing, how the oil is extracted, refined and distributed throughout the world, what solid and semi-solid products are derived from the oil, and how they are prepared are some of the subjects exploited in this exhibit.

Around the wall of the main room, just below the ceiling, runs a

decorative frieze, electrically illuminated, which depicts the industry as it appears to the observer, who visits the wells where the oil is taken from the ground, the factories where it is refined, and the docks whence it is shipped to the consumer.

On the back wall of the room is an oil painting made by Lyell Carr, which is an ornamental as well as suggestive piece of decoration. It reproduces the story of the first discovery of oil in the New World some four centuries ago. A band of itinerant Jesuit priests were told by a tribe of Indians on the Allegheny River, to whom they were preaching, that if they would go with them down the river in their canoes, they would show them a tribe of people who could set the river on fire. The Jesuits went, they saw the water in flames, and watched the naked Indians dancing in the light of the burning river. It is this scene that Lyell Carr's painting depicts. The incident took place at the junction of Oil Creek and the Allegheny River. By diverting the current of the creek the savages were able to collect enough oil on the surface of the water to make a big blaze when fired.

Below this painting is a splendid plaster cast of a geological section in miniature of the oil and gas-bearing sands between Oil City and McDonald, Pa. The geological studies for this work were made by Mr. F. H. Oliphant, of the Geological Survey, and the cast was modeled by Mr. Edwin E. Howell. It represents a cut into the earth over a mile deep and a mile long, and is made on the scale of 100 ft. to 1 in.



ILLUMINATING OIL EXHIBIT.

vertically and 1 mile to 2 in. horizontally. Painted to represent the various geological strata, the surface with its shrubbery and oil wells illumined by concealed electric lights, it is certainly a very finished and realistic production of great scientific value.

At the back of the exhibit is a case containing specimens of oil-bearing rocks. Prominent among them, of course, are samples of Trenton limestone and Pennsylvania sandstone. Olean pebble conglomerates are shown as specimens of the surface rock at Olean, in Cattaraugus County, N. Y. Crinoidal or green limestone is also displayed. In another case are exhibited proportionate quantities of various products obtained from 10 gals. of Pennsylvania crude petroleum. A 10-gal. measure containing crude petroleum occupies the center of the case and the other products are grouped around it. They include acid sludge, standard white oil, standard white distillate, prime white oil, prime white distillate, water white oil, water white distillate, benzine, deodorized benzine, gasoline, deodorized gasoline, gas oil, hatching oil, straw oil, paraffine wax, roofers' wax, and coke.

To the left of the entrance are arranged on shelves, in large, handsome bottles, specimens of the lubricating oils, varying from the palest straw color to a deep red or a dark turbid green. The engine, spindle, wool and cylinder oils each have a separate section. They represent every variety of lubricating oil from the heavy kind used for oiling car wheels to the fine quality employed in the delicate machinery of a watch. In addition to the liquid lubricants in bottles, the semi-solid ones in tin pails are also exhibited. They include useful products, such as harness oil, axle grease, thresher hard oil, mica axle oil, and wax tailings.

On the opposite side of the room the illuminating oils are similarly installed. They include three sections, representing the water-white lamp oils, the prime white lamp oils and special lamp oils.

A special room has been set aside for the paraffine exhibit, which, from its nature, is capable of being very attractively installed. There are displayed various kinds of paraffine, including the coarser kind sometimes used as an illuminant in mines, where other lights are forbidden, and the finer kind employed for making the best candles and waxed paper. Handsomely ornamented candles of different colors are displayed in elaborate candelabra. Marking crayons made of paraffine are shown. An exhibit of wax flowers and fruit shows how paraffine can be utilized in an artistic way by melting and casting it in molds. To illustrate this use, a couple of large and handsome pieces of paraffine statuary occupied for a while prominent niches in the wall of the exhibit, but the paraffine goddesses suffered with the heat, as the summer advanced, and their places are now taken by some elaborate lamps.

In the third room of the exhibit is a case containing samples of crude petroleum from all parts of the world, and a case of Maybery products. The latter represent the constituents to which Prof. Maybery succeeded in reducing petroleum at different degrees of temperature. In a third case is a miscellaneous collection of substances manufactured from petroleum. They include vaseline, cosmetics of various kinds, hair tonic, shoe paste, and liniments for man and beast.

A little red model of a Standard Oil delivery wagon is the most attractive feature of this exhibit in the eyes of every small boy who visits it. A model derrick is interesting because made of wood from the original Drake well, which was drilled in 1858. With it goes a sample of the oil that bubbled from it, a treasure highly esteemed among the lares and penates of the Standard Oil Company.

The most interesting and significant curio of the exhibit is a time-worn bottle of medicinal oil. It was distilled from petroleum in 1859 by Sam Kier, of Pittsburg, and it was the beginning of the oil industry. From the idea of distilling oil for medicinal purposes grew the idea of distilling it so that it might be used as an illuminant. Sam Kier described his distilled oil on the labels of the bottles as a panacea for all the ills to which flesh is heir. Since then oil has proved to many of its purchasers a sovereign remedy for all forms of financial ills.

A complete set of photographs illustrates every phase of the petroleum industry which can not be more strikingly represented in the exhibit. A large series of fine photographs illustrates, for instance, how an oil well is sometimes shot with a charge of nitro-glycerine.

A useful feature of the exhibit is a map compiled by F. H. Oliphant to show the oil and gas-fields of the United States. On it is indicated every spot where oil or gas has ever been found, as well as the possible extension of both oil and gas-fields. Even the recent discoveries in Texas and California are noted. There was not room in the exhibit proper to accommodate the map, which is in the form of a large transparency, the oil and gas-fields being indicated upon it in colors. It was accordingly hung upstairs before a window in the gallery of the Mines Building, where it can be seen to excellent advantage. Not a detail which could have increased the beauty or perfection of the exhibit seems to have been forgotten.

EXTENSION OF THE SNOQUALMIE FALLS POWER INSTALLATION.

Two years have passed since the first current from Snoqualmie Falls was carried into the cities of Seattle and Tacoma, Washington, and in this short time the initial installation has proven too small. The capacity of the plant is to be enlarged to meet the increasing demand for power in these growing cities. At the falls, distant 44 miles in an air line from Tacoma, and 32 miles from Seattle, are installed in a rock-excavated chamber four generating units, each consisting of a water-wheel direct-connected to a 2,000 H. P. Westinghouse three-phase alternator. This power transmission system, now generating and distributing 8,000 electrical horse power, is to be more than doubled in capacity. At the same transmission voltage now employed, 30,000 volts, it is proposed to carry 12,000 horse-power more into the cities above mentioned, making a total output of 20,000 electrical horse-power. The electrical machinery is to be wholly furnished by the Westinghouse Electric and Manufacturing Company.

The Abner Doble Company, of San Francisco, which furnished the water-wheel equipment for the initial installation, is figuring upon placing its wheels in the new extension; and an engineer of another water-wheel concern is likewise looking into the matter. The water-wheel contract is not let yet. If an impact wheel is used there will be a single wheel on each end of each generator shaft and each wheel will be driven by a single jet of water 14 in. in diameter, the two jets combined being sufficient under the existing head of 270 ft. to give the requisite power. The two water wheels and the generator between, will be built on a single hollow shaft of oil-tempered nickel steel.

The present underground generating station, which is 200 ft. long, is to be lengthened out 150 ft. up stream to make room for the new installation. A new penstock is to be built, which will carry 50 per cent. more water than the old one. The transmission line that is to parallel the old line will require 125 tons of aluminum wire, and the order for it has already been placed. At Tacoma a large and commodious brick and stone sub-station is now being erected. The entire cost of these improvements will be in the neighborhood of \$400,000. The work is to be vigorously prosecuted and it is expected that the first of the new generators will be delivering current into Seattle and Tacoma within the next nine months. The generating machinery will consist of three 3,000 Kw. (4,000 H. P.) rotating field generators of the two bearing type, generating a three-phase current at 1,100 volts and 7,200 alternations. The speed is to be 100 revolutions per minute. Each generator will require an exciting current of 320 amperes approximately at 125 volts. For exciting these three generators a 200 Kw., eight-pole, direct-current generator of the two-bearing type is to be used. At 175 revolutions per minute it is to deliver, under normal load, a current of 1,600 amperes at 125 volts.

The current which is generated at 1,100 volts is to be raised to a line potential of 30,000 volts by nine 1,000 Kw., oil-insulated, water-cooled transformers. These are to be delta-connected on both the primary and secondary sides. It is estimated that each transformer will weigh 11,000 lbs. and require 500 gals. of oil. The switchboard that is to be installed is to consist of 14 panels of white marble and is to be of the special type that was furnished for the original installation. Instead of the Niagara type single-phase indicating wattmeter that is in use on the present switchboard a polyphase long-scale indicating wattmeter is to be used. Where formerly a field plug switch was used a double pole field switch is to be employed. The standard equipment of synchronizing lamps is to be replaced by a single-pole plug switch mounted on the generating panel and connected to a synchroscope which will be mounted on the multiplying panel. The increased capacity of the generators will necessitate placing three single-pole main switches instead of one three-pole main switch. The circuit-breakers, which are to be non-automatic, will be placed on an extension panel above the main instrument panel.

Each of the three generator panels is to be furnished with a complete set of instruments.

THE MISSOURI & KANSAS ZINC MINERS' ASSOCIATION.

By Our Special Correspondent.

In view of the many rumors that a zinc trust was being formed of all the zinc smelters of the United States, a signed statement has just been given out by Mr. J. B. Daniel, president of the Missouri & Kansas Zinc Miners' Association, regarding the attitude of his association toward the smelters which now purchase zinc ore in this district, or toward any trust which may be formed. This statement is given below:

For many years dissatisfaction had existed among the producers of zinc ore in the Joplin District, the mine owners believing that they were not receiving their due. It was the custom of ore-buyers to visit the mines and, after examining the ore in the bins, to offer the producers such prices as they cared to give. There was no uniformity of price for a given grade of ore. If the producers refused to take the prices offered, they could keep their ore. Buyers met frequently and established prices for ore, and for lack of organization sellers were compelled to accept what was offered. In December, 1898, a few of the leading producers of the district assembled for the purpose of discussing these conditions, and finally it was decided to organize a strong association for self-protection. Thus the Missouri & Kansas Zinc Miners' Association was formed, its object being to protect and promote the zinc ore producers' interests and to secure for them equitable prices. The plan met with the hearty approval of the ore producers generally. The association grew in numbers until every portion of the mineral belt was represented, and three months later it asserted its importance by fixing a schedule of prices for the various grades of zinc ore, based upon the assay value and upon the market price of spelter.

This resulted in more nearly uniform prices for the ore, and in higher values, and as a natural sequence attracted the attention of capitalists to the district. For the year 1898 the average price of zinc ore was \$28.42 per ton. For the year 1899 the average value was \$42.50 per ton. During the latter year much new capital was invested in the district. With it old methods of mining were in part abandoned, modern machinery was installed, and more scientific and systematic methods in operating and mining were adopted. The result was seen in the larger output, which this year will approximate 255,000 tons of ore, or about 7,000 tons more than the output of 1900, when the ore surplus was about 50,000 tons.

The producers have a new condition confronting them. Last year this country consumed 98,000 tons of spelter, and of the surplus, 24,800 tons were shipped abroad by the smelters at a considerable loss, while the price of zinc ore for the year averaged \$26.50. This shipment of metal broke the price of spelter abroad, and reacted on our home market. In commercial economy it would seem best to export metal instead of ore, because the freight on a ton of spelter is no more than that on a ton of ore, but the foreign makers of metal will do everything possible to prevent American metal from interfering with their business, but will take our surplus ore at a fair price.

In proof of this, the association has a communication from Europe, from large users of ore, under date of July 30th, 1901, making a proposition for the surplus ore—any quantity we may have to sell—but, they say, "that a guarantee must be given that the American smelters will export no spelter to Europe."

This is now the situation. There is a surplus of zinc ore, and as a result the price is low. The foreign market will not take our spelter, but will take our ore. Hence the association has incorporated with a capital of \$100,000, so that it can make binding contracts with foreign ore buyers, as well as with producers, to furnish the ore. Of the latter 75 per cent. of the product has been signed for, but no exports of ore will be made until enough can be called upon to make the movement effective.

There is not a producer in the district that does not concede that better prices are necessary, but this condition will not be secured without the co-operation of those who have so far refused to assist.

In view of the report of the organization of a zinc smelter trust with J. Pierpont Morgan at its head, it is of vital importance to this district that every producer, whether great or small, should assist in making the association stronger, and in organizing on a business basis before the projected smelter trust gets down to business. It is the plain duty of all producers who have not yet signed the export contract to do so.

The aim of the association has never been to antagonize the smelting interests. The real interests of the miners and the smelters are mutual, and it is believed that the export of zinc ore will materially benefit the smelter as well as the miner. The former will get a higher price for his metal, and the latter a higher price for his ore, if the surplus is handled in such a way that it will be no longer a menace to prices; and the production of spelter will not exceed the quantity which the country can consume.

THE USES OF PETROLEUM AND NATURAL GAS IN KANSAS.

Written for the Engineering and Mining Journal by Erasmus Hawarth.

The Standard Oil Company erected a refinery at Neodesha which began operations in May, 1897. Its capacity is much greater than is implied by the amount of oil yet refined. It is supplied with crude oil almost entirely from Kansas wells, a small amount having been shipped some time ago from the vicinity of Bartelsville, Indian Territory. Gas is used as a fuel in the refinery, and water for condensing the oil vapors is pumped from the Verdigris River. The products of the refinery supply the markets of Kansas and adjoining territory with kerosene, gasolene and fuel oil wherever there is a demand for the latter. Some of the crude petroleum is likewise shipped to different towns and cities of the State and elsewhere to be used by local gas companies in the manufacture of artificial illuminating gas.

The production of oil in Kansas varies considerably from year to year. In 1899 the output was a little over 85,000 barrels (42 gals. each) of crude oil, from which the refinery obtained about 30,000 bbls. (50 gals. each) of refined oil, aggregating a little over 41 per cent., a little over 8 per cent. of gasolene and naphtha, the remainder being principally accounted for as fuel oil. In 1900 the refinery used about 100,000 bbls. of crude oil, producing 52,000 bbls. of fuel oil, 37,000 bbls. of refined oil and nearly 6,000 bbls. of naphtha or gasolene.

Gas is used as the principal fuel and light producer in 12 or 15 different cities and villages, besides being piped to many farm houses throughout the gas region. Iola, Independence, Coffeyville, Cherryvale, Chanute, Paola, Neodesha, Parsons and Ossawatimie are the largest of these. Generally there is a local company owning the lines and the franchise. This company lays pipes over the city and into the dwellings, business blocks and factories.

The gas is consumed by a great variety of burners. In many cases a small gas pipe is placed in an ordinary stove, small openings being made in the pipe through which the gas escapes, the supply being regulated by a valve outside the stove. The ordinary draft through the stove supplies oxygen to consume the gas. In this way the company can put a burner into any stove in any residence, so that the consumer need not go to the expense of buying new gas stoves. For new buildings, and buildings whose owners do not wish to apply this temporary method, the various forms of stoves and burners found in eastern gas-fields are likewise used here. In factories and mills where steam power is used, generally an artificial burner is placed in the fire-box of the ordinary steam engine by carrying a gas pipe of proper size through the outer walls and having small openings made in the pipe to let gas escape. In all the modern mills and factories, brick plants, cement furnaces, zinc smelting furnaces, etc., regular burners similar to those used elsewhere are employed. They consist essentially of the gas pipe passing through a conical sleeve of from 4 to 6 times the diameter of the gas pipe. As the gas rushes out of the pipe a suction is created which draws air through the sleeve and in that way mixes it with the gas before the point of combustion is reached. For the portland cement factory at Iola burners were especially made, patterned after other burners and made of a much larger size, so that the blast would be carried entirely through the long rotary furnaces used in the production of the clinker.

On account of the abundant and cheap fuel supplied by natural gas a number of manufacturing enterprises have already been established in Kansas. The more extensive of these are zinc smelters, brick plants, and portland cement factories. Early in 1897 the first zinc smelter using gas for fuel was established at Iola by the Robert Lanyon's Sons Company, who put up a plant of 2,400 retorts. A few months later the W. & J. Lanyon Company established a plant at Iola with a capacity of 1,800 retorts. In 1899 the Robert Lanyon's Sons Company built a plant at La Harpe, 7 miles east of Iola, with a capacity of 3,000 retorts, and the Nicholson Zinc Company established one at Iola with 1,500 retorts. The same year the Prime Western Smelter Company established a furnace at Iola with a capacity of 1,200 retorts, and the Cherokee-Lanyon Spelter Company, which had been operating coal furnaces at Weir, Pittsburg and other points in the coal-fields, established a smelter at Iola with a capacity of 1,500 retorts. The same year the Edgar Zinc Company, of St. Louis, established a smelter at Cherryvale with a capacity of 1,800 retorts. Early in 1900 a strong company was formed, consisting principally of the Robert Lanyon's Sons Company, the W. & J. Lanyon Company and the Palmer Oil Company, which purchased the smelters of the above-named firms and the gas property of the Palmer Oil Company in and around Iola, the new company being known by the firm name of the Lanyon Zinc Company. Late in 1900 a number of plant enlargements were begun or arranged for which will be completed during 1901. The Cherokee-Lanyon Company is enlarging the plant at Iola sufficiently to take the place of its coal furnaces, practically all of which are shut down. The Lanyon Zinc Company is greatly enlarging its plant, making it in the combined form probably the largest zinc smelting plant in the world.

Gas is used extensively in the manufacture of different kinds of brick. This was first begun at Iola by the Iola Brick Company in 1896. This company has enlarged its plant east of the city and built a new one south of the city, each of which is operated by natural gas. A third brick plant is now in operation at Iola, using the same fuel. The Coffeyville Vitrified Brick Company began using gas for the manufacture of brick in 1895. This company has enlarged its plant from time to time and has built a branch factory at Cherryvale, so that the combined capacity is about 15,000,000 bricks per annum. Two other brick plants likewise are established at Cherryvale, one large one at Independence, one in process of construction at Neodesha and two in operation at Chanute. There is also a brick plant at Paola using gas for fuel, although not quite so large as some of those already mentioned. The number of brick made by the various plants is constantly increasing, with the result that they have practically driven out of existence the various brick plants using coal for fuel throughout southeastern Kansas.

Early in 1900 the Iola Portland Cement Company began operations at Iola, using gas for fuel. The plant when completed will consist essentially of seven distinct plants grouped together under one management. The whole establishment uses gas for fuel for all of the power in running the various forms of machinery and for burning the cement. When completed it will have a daily capacity of about 5,000 bbls.

It is difficult to estimate the amount of gas used by these various enterprises. It requires in round numbers 7 tons of bituminous coal to produce 1 ton of spelter. On this basis there is now consumed annually in the zinc smelting business natural gas equal to 300,000 or 400,000 tons of soft coal. More than half this amount is used by the various brick factories, while the portland cement factory, when entirely completed, will consume gas approximating the equivalent of 200,000 tons of soft coal per annum. If we add to the above enumeration the different factories of various kinds that have been attracted to the gas region of Kansas, a conservative estimate would place the amount of gas consumed at present in manufacturing enterprises as closely approximating 800,000 tons of soft coal per annum. This coal at the mines in Cherokee and Crawford counties is worth about \$1.25 per ton, making the gas value for manufacturing purposes as now consumed close to \$1,000,000 per year.

THE TREATMENT OF ORE DUMPS IN CORNWALL.

Written for the Engineering and Mining Journal by Edward Skewes.

Mining in Cornwall at present is at a low ebb compared with that of a few years ago. The number of employees in 1874 was 22,117 but has since decreased to less than 6,000. In the St. Just District only one mine is at work, the Levant. The Royal Botallack Mine, first worked for tin in 1721, and whose workings extended under the ocean for fully half a mile, has been abandoned recently.

In the Cambrene District the famous Dolcoath, Carn Brea, East Pool and Wheal Grenville are the principal mines at work. In the Callington District there is not a mine at work; the same remark applies to the Caradon District. In the Gunnislake District the Prince of Wales Mine is doing splendidly under new management and French capital. Stopping is going on from the upper levels left by the former working. Messrs. Taylor are providing funds for the draining of Drakewalls Mine, and if satisfactory will equip the mine with the best machinery.

In the Liskeard District not a mine is at work and the town is now a sleepy, agricultural, one-horse affair. A few of your readers can well remember when on an average over £2,000 per week was paid there in wages. One Saturday the Caradon copper miners received their pay, the mines being situated 5 miles north of the town; the next Saturday the Menheniot lead mines, distant about 3 miles east; the next Saturday the Herodsfoot lead mines, about 4 miles, and the next Saturday the St. Neots tin mines, distant about 5 miles; but now not one of the above-named is at work.

In other districts, as a rule, when the mines cease to work the towns cease to exist, and often it is a painful sight to see such ruins; but in Cornwall such is not the case. The buildings that are raised are far superior to the old houses, and not a few such homes are built by capital earned in foreign mining camps. For instance, the town of Redruth has the same population as 20 years ago, when a dozen or more mines were in operation, and the taxable value has increased 100 per cent. The money has come largely from miners employed in South Africa and the United States.

At Wheal Mary Ann lead mine, Menheniot, the dumps or burrows are being worked for the lead and silver. While the mine was at work £600,000 of mineral was sold and £123,000 distributed as dividends. The mine was very wet, so that 80-in. pumping engines were necessary. The percentage of lead in the ore was close to 80, with 50 oz. of silver to the ton of 2,240 lbs. The concentrates sold by the present syndicate assayed 18 per cent. lead and 48 oz. silver. The dumps are estimated at 1,000,000 tons, carrying 3 per cent. lead. The present plant is capable of treating 40 tons a day and is fast being increased to 80 tons a day for 10 hours daily, or 2,000 tons a month. At that rate 1,000,000 tons will last 40 years. The plant consists of crusher, revolving belt sorting table, two sets of Cornish rolls, jigs, Wilfley tables, etc. It is the most modern and the most automatic concentrating plant in the West of England, which does not speak volumes for success. On the revolving belt I noticed that the fluorspar was not considered of any commercial value.

West Seton, in the Camborne District, is having its waste heaps worked by foreigners, who have erected a 45-stamp mill and whose profits amount to £4,000 a year. The same syndicate is now at work in the Guennap District, where there are several million tons, and they have dropped 20-in. pitwork to pump the water for the stamps and dressing purposes.

A London syndicate has had agents in Cornwall and Devon for some time trying to get hold of all the burrows or dumps suitable for treatment by the Elmore process. The Caradon copper dumps have been applied for several times on behalf of French, South African and even American capital.

Cornwall—the classic ground of the profession—is deservedly receiving attention for certain of its products which 100, even 50 years ago were considered valueless—such as blende, arsenic, wolfram, iron pyrites, fluorspar—minerals which to-day can be mined at a profit. In fact, the large dumps, which were only eye sores, are fast being removed in some of the old mining districts. Were the owners of the land a little more liberal as to royalties, and less stringent in a thousand and one stipulations, but few of the dumps would remain. To show how the waste products of a few years ago are being utilized, the drillings and scrap iron from machine shops and foundries are sold at from 30s. to 60s. per ton to the tin smelters, who use it to mix with the tin ore, or black tin—free from iron—brought from Bolivia and elsewhere, which is, after smelting, sold for English tin.

THE WARING SYSTEM OF MAGNETIC CONCENTRATION.

It is well known that certain minerals, especially magnetite (black sand in gold washing) and pyrrhotite are attracted by the hand magnet in a natural state. Other minerals, like pyrite, chalcopyrite, siderite and a number of compound minerals become magnetic when they are heated more or less, or when they are partly desulphurized. Some minerals which do not become magnetic when treated alone, become strongly magnetic when heated in contact with pyrite or other sulphides. Quite a number of minerals of the pyrite-blende group, however, do not become magnetic under such treatment. Zinc blende is a familiar example of this quality.

Evidently, a system of magnetic concentration capable of taking advantage of these facts to the fullest extent, and at the same time simple and inexpensive in operation, ought to be of benefit to producers of zinciferous sulphide ores. The problem has, however, been beset with mechanical difficulties, so that until quite recently but little advance has been made in this line.

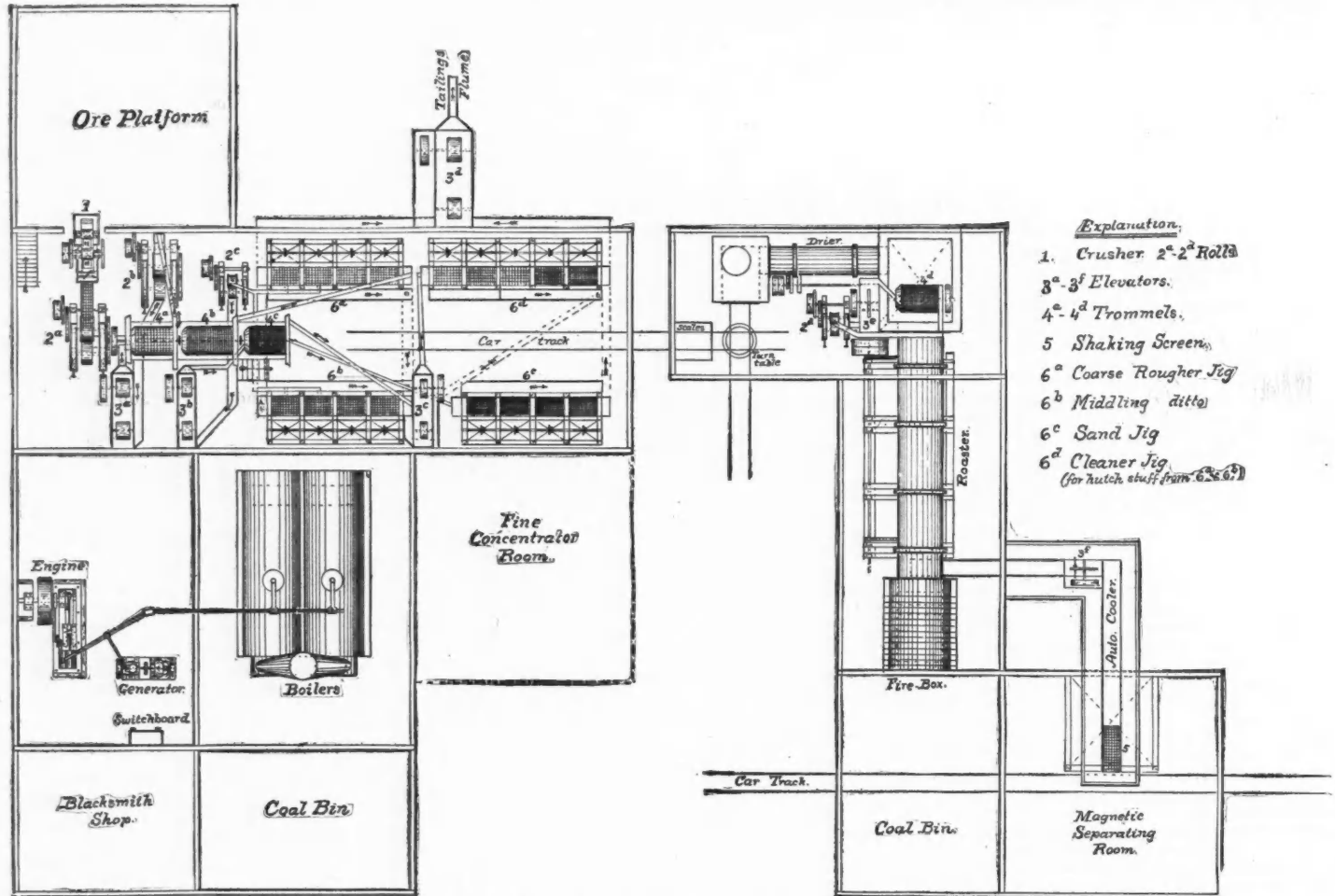
Up to the present time five distinct types of magnetic separators have been devised, and it will be instructive to notice the special characteristics of each type.

when not crowded. The diamagnetic product is not so clean. Capacity limited. The variable field is a fault of this type.

Fifth Type.—In which magnets oscillate from side to side directly across a flowing stream of material.

This type is characterized by the production of magnetic fields of uniform intensity in every part of each field, the separate fields being adjustable to any required degree of attractive force, so enabling the machine to classify at a single pass. Other advantages of this type are free exposure of the magnetic particles to the magnetic attractive faces, great capacity and small expenditure of electrical energy. This type requires somewhat more mechanical power to operate than machines of the first type, and is not as capable of producing absolutely clean diamagnetic products as in Class A of the first type, but the paramagnetic products of this type are wonderfully clean.

All the requirements of an ideal machine are met, it is claimed, by combining the best forms of Type 1, Class A, and Type 5. This is done in the Waring system of magnetic concentration and classification. This system is in use at Webb City, Missouri, for the purification of zinc blende ores, the extraction of blende from pyritic jig stuff and for the experimental separation of pure zinc, copper and iron material from complex sulphide ores. Its application for such purposes has been fully



PLAN OF COMPLETE WARING CONCENTRATION PLANT.

First Type.—The revolving cylinder or drum type, in two classes: Class A, with magnetic fields created in peculiarly formed grooves extending annularly around the drum. Class B, with the magnetic fields lying over or between pole pieces extending across the face of the drum.

Class A machines are characterized by great capacity for moderately coarse and fine material, not requiring the material to be sized; intensity of attractive power which is excited by direct contact without intervention; low intensity of current and small mechanical power required to operate. These machines produce an almost absolutely clean diamagnetic product at a single pass, but are not adapted for the classification of magnetic minerals.

Class B has also the advantage of great capacity for coarse material, but does not handle fine material to advantage, nor are machines of this class capable of classifying the magnetic product.

Second Type.—The double pole crossed or tangent belt machines, including also a variety of belt machines.

This type is characterized, in the most improved form, by the production of an intense magnetic field of limited area. Machines of this type are capable of classifying the product by operating in series.

Third Type.—In which the magnetic particles are deflected out of the course of a falling stream of material.

Machines of the third type have the advantage of great capacity and of producing fairly clean magnetic material, but so far as known they are capable of working only upon highly magnetic material.

Fourth Type.—Vertical, single or multiple magnets revolving partly over a belt or pan carrying the material to be separated.

The machines of this type produce fairly clean magnetic products

demonstrated in practice, and the advantages of the system are at once apparent to all who observe it.

The zinciferous or cupriferous concentrates, if they are moist, are dried in a mechanical drier, from which they pass through a screen of 1/4-in. mesh into a mechanical calciner, the oversize going to rolls to be crushed to pass the screen. The calciner is adapted to partially desulphurize the pyritic minerals and to reduce ferric oxides and ferrous carbonates, copper minerals, etc., to the magnetic condition, without in the least degree affecting the blende or such other minerals as are subsequently to be separated by magnetic repulsion. The heat generated by the burning sulphur of the pyritic constituents is usually quite sufficient to produce the exact condition required. No expert labor is needed, and the results are quite easily controlled.

The hot material, after being cooled mechanically, is delivered to a Waring separator of the drum type, falling into the intense magnetic fields lying within the peculiarly arranged annular grooves of the machine, from which the diamagnetic blende is expelled by magnetic repulsion aided by centrifugal force, while every particle of paramagnetic mineral, no matter how low its magnetic permeability may be, remains attached to and in direct contact with the polar rings, whence they are released upon arriving at the opposite side of the axis.

The first product of this machine requires no further treatment, as it is always quite free from iron bearing or other magnetic minerals. The paramagnetic product containing iron, copper ores, etc., as well as many garnet minerals, in case such were present in the ore, may also contain particles of zinc blende not separated from the pyrite, etc., in crushing and still adhering thereto, and requires a further separation or

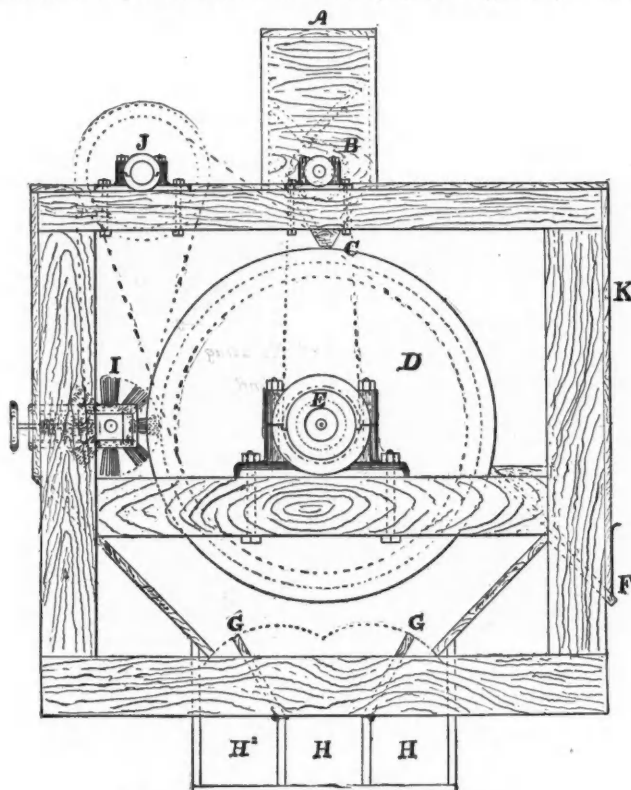
classification. It passes, accordingly, down an inclined plane in rapid flow under the magnetic classifier, which sorts out the minerals according to their degree of magnetic permeability, the strongly magnetic pyrite first and the least magnetic minerals last into separate chutes on each side of the plane.

The last product of the classifier, usually very small in amount, is either recrushed and re-run over the separator, or it is added at once to the appropriate class of finished material. All the work in this system is automatic. As each machine is designed specially for its particular duty, there is no unnecessary loss of energy nor stoppages from overheating, etc., no other attention being required than the usual oiling of bearings, etc.

The accompanying drawing, Fig. 1, illustrates the general features of the Waring separator and classifier. The plan shown in Fig. 2 gives in detail the general arrangement of a complete ore dressing and magnetic separating plant, embodying all the most valuable features of the best modern practices, as built by the Webb City Iron Works at Webb City, Mo.

Two striking examples of the advantages secured by this system of magnetic concentration are shown below:

1. Ordinary pyritiferous zinc ores from Galena, Kansas. Ores of this class are produced everywhere in the district. They averaged 44 per cent. metallic zinc and 15 per cent. metallic iron and were worth less than \$10 per ton in the ore market. Such ores yield by magnetic separation: 64 per cent. of clean blende, containing 64.2 per cent. of



THE WARING MAGNETIC CONCENTRATOR.

metallic zinc, absolutely free from pyrite, and worth \$28 per ton in the zinc market, and 28 per cent. of burnt pyrite carrying 49.5 per cent. of metallic iron and 2.8 per cent. of zinc. Value of zinc blende product (0.64 ton) from one ton of ore: \$17.92.

2. Colorado mixed sulphide ore, second grade, comprising over 70 per cent. of the mine yield, and assaying:

Gold	0.13 oz.	@ \$19.00	= \$2.47
Silver	5.1 oz.	@ 0.57	= 2.75
Lead	10.0%	@ 0.60	= 5.70
Copper	4.5%	@ 2.50	= 10.67
Zinc	14.6%		
Iron	12.2%	Gross val.	\$21.59

The best price obtainable at the mine for this material, considered a bad ore, is \$1.40 per ton. As copper ore it is only valued at 9c. per ton. After dressing this ore by jig concentration it yielded per 100 tons of raw ore; 48 tons of tailings assaying 2 oz. silver, 0.02 oz. gold, 2.5 per cent. lead, 2.2 per cent. zinc, 3 per cent. iron and 2.4 per cent. copper; 10.5 tons of galena, assaying 78 per cent. lead, 2.5 per cent. zinc, 5 per cent. iron, 0.8 per cent. copper, 15 oz. silver and 0.3 oz. gold, worth at the mine \$53.55 per ton net, or \$562.27 for 10.5 tons; 41 tons of zinciferous sulphides assaying:

Gold	0.21 oz.	@ \$19.00	= \$3.99
Silver	5.1 oz.	@ .57	= 2.91
Copper	8.0%	@ 2.50	= 20.00
Lead	1.6%		
Zinc	31.2%		\$26.90
Iron	25.0%		

Upon which the freight and smelting charges amounted to \$23.60 per ton (including a zinc excess penalty of \$10.60) leaving a net value of \$3.30 per ton at the mine, or \$135.30 for 41 tons.

The zinciferous sulphides after being treated by magnetic concentration at an expense of \$1.10 per ton, yielded 19.5 tons of zinc blende, assaying:

Zinc	60.2%	Copper	0.5%
Iron	1.2%	Silver	2.0 oz.
Lead	1.2%	Gold	0.02 oz.

worth at the mine \$17 per ton (\$25 at Webb City) or \$231.50 for 19.5 tons; also 21 tons of iron-copper ore assaying:

Gold	0.4 oz.	@ \$19.00	= \$7.60
Silver	10.0 oz.	@ 0.57	= 5.70
Copper	15.0%	@ 3.00	= 4.50
Iron	46.0%		= 41% excess @ .15
Zinc	5.1%		
Lead	2.0%		
			\$23.95

worth at the mine \$18.45 per ton net, or \$387.45 for 21 tons.

Thus it will appear that 100 tons of the original second-class material, worth at best \$140 at the mine, yielded by wet concentration alone products worth \$697.57 at the mine, and by wet concentration combined with magnetic separation, products worth \$1,181.22, or, after deducting expense of magnetic separation \$1,136.12, a gain of \$438.55 over wet concentration alone, or a gain of \$10.70 per ton in the value of the 41 tons of zinciferous sulphides.

An approximate idea of the adaptability of an ore or concentrated product to magnetic concentration may be gained by heating 10 to 12 grams or more of the material in scorifiers; or in a roasting dish, placed near the mouth of an assay muffle, the temperature of which, for this purpose, should be considerably lower than is required for cupellation, but still above the melting of lead. As soon as the pyrite in the material begins to burn well, the ore must be stirred with a bent wire and the stirring must be continued at frequent intervals for 5 or 10 minutes, or as long as the oxidation of the pyritic sulphur continues to manifest itself by a lively glow in the material exceeding considerably that of the muffle walls. The material should be removed, however, before the rapid oxidation thus shown begins to decrease materially. After cooling, weigh out a definite amount, separate the magnetic particles with a hand magnet so long as any can be found to exhibit attractiveness, brushing the attracted portions from the poles of the magnet into a separate receptacle and cleaning the magnetic portion from entangled non-magnetic material by retreatment with the magnet. The separated portions are then to be weighed and assayed separately for copper, gold, silver, zinc, iron, etc. The results in many cases will be quite surprising. For hand-magnet testing it is desirable that the grade of fineness of the material should be between 16-mesh and 40-mesh.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

LAW OF SAFE PLACE TO WORK IN MINE IN ILLINOIS.—The law with reference to a safe place to work in has application to a coal mine, where the day crew of an undercutting machine are allowed to go to work without any warning as to the dangerous condition of the face of the coal where they were to work, making a fall of coal likely, the evidence tending to show that the owner knew it was not reasonably safe.—Consolidated Coal Company v. Gruber (59 Northeastern Reporter, 254); Supreme Court of Illinois.

"MINING PRIVILEGES INCLUSIVE."—Where parties secured mining privileges in land at a time when zinc mining was not profitable, and discovering only zinc did not work the mine for several years, but afterward worked it from time to time whenever the market for zinc warranted, the fact that the owner might have taken possession on the first failure to work the mine, but did not do so, did not give the heirs of the grantor the right to dispossess the grantees. The fact that it had been worked only when the market for zinc was profitable did not make an abandonment.—Hosford vs. Metcalf (84 Northwestern Reporter, 1055); Supreme Court of Iowa.

MANAGER DOES NOT BECOME FELLOW SERVANT.—Where it was part of the duties of one, as assistant mine manager, to repair a machine in a mine, and, finding it was out of order, he commenced to operate it, not for the purpose of cutting coal, but to ascertain why it would not work, and to remedy the defect, such operation would not make him for the time a fellow servant of one employed about the machine, so as to relieve the employer from liability for his negligence in such operation, resulting in injury to one so employed.—Consolidated Coal Company v. Gruber (59 Northeastern Reporter, 233); Supreme Court of Illinois.

ORAL GRANT OF MINING PRIVILEGES MAY BE CONVEYED.—A parole grant of mining privileges in land, on the strength of which grantees expended much money and labor on the premises, gave grantees an interest in the land entitling them to continue, and which was transferable, and which was not merely a personal license and revocable, nor by death of grantor. The grantees acquired an existing exclusive privilege, and others who claimed under a grant from the heirs of the owner were not entitled to terminate the privilege by paying back the money that had been theretofore expended by the grantees.—Hosford v. Metcalf (84 Northwestern Reporter, 1054); Supreme Court of Iowa.

MINE OPERATOR NOT LIABLE WHERE HE HAS HAD EXAMINATION MADE.—Where the operator of a coal mine, before permitting persons to enter such mine, causes it to be examined by a competent and duly authorized agent, who in good faith makes such examination to ascertain if there are any dangerous conditions which render it unsafe for men to work therein, and reports the mine to be in safe condition when in fact it is not, such operator ought not to be held liable to the widow of a person killed by such dangerous conditions, as the miners' act of Illinois does not make the mine owner liable for injury to an employee unless the owner has been guilty of wilfully failing to have the mine examined by a competent agent.—Himrod Coal Company v. Schroath (91 Illinois Appellate Court Reporter, 234); Appellate Court of Illinois.

ELECTRIC POWER PLANTS IN THE MINING DISTRICTS OF NORTHERN CALIFORNIA.

Written for the Engineering and Mining Journal by G. P. Grimsley.

(Continued from page 301.)

During the past few months the subject of electric power plants has attracted much attention in Shasta County, and a number of new companies have been incorporated. The Shasta Electric Light and Power Company is planning to take water directly from the McCloud River, 15 miles above the Fisheries, in Shasta County, and it is calculated that the ditch and flume, which will be 7 1/3 miles long, will have a capacity of 50,000 miner's inches of water (1,000 cu. ft. per second), equal to 16,000 theoretical H. P. at the water-wheel with a fall of 145 ft. This plant, like some others already described, is similar to those of the eastern companies in obtaining the power from a large volume of water with low fall. It is able to do this on account of the permanent character of the water supply of the river, which is fed by the melting snow and glaciers of Mount Shasta.

The first power-house will be built 2 miles from the river and equipped with four 1,000-Kw. generators direct-connected with turbine water-wheels. The transmission line, when completed, will be 100 miles long, and is expected to supply light and power to the Copper Mountain and Trinity mines, to the De la Mar Smelter, Electric Iron and Steel Company, and to other mines in the neighborhood. An electric road of

for four 750-Kw. generators and for four turbine wheels. This company expects to supply current next October to the Shasta County mines.

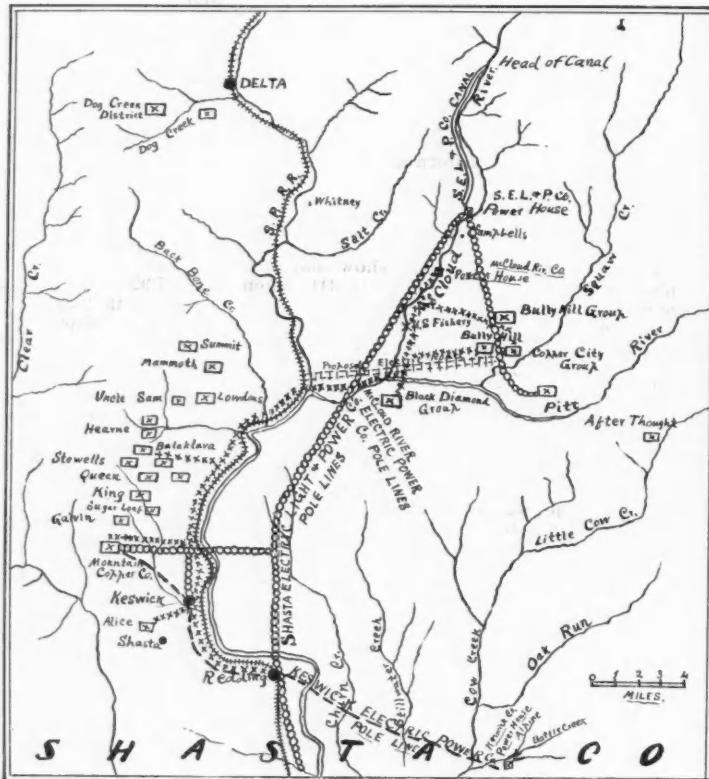
In all electric-power installations where the power is generated by means of high heads of water, the tangential or Pelton water-wheel is used. The first company to introduce this type of wheel was the Pelton Water Wheel Company, of San Francisco and New York. During the past 20 years it has made over 9,500 wheels. Pelton wheels are now used in 231 electric-power stations, developing 150,708 H. P. Of these, 142 in 18 States are in the United States, and 89 are in 21 foreign countries, varying from Canada and Mexico to South Africa and Java.

The construction of electric-power plants in California has had a marked influence on mining development. In some sections of the State the cost of power at the mines by the introduction of electricity has been lowered from \$15 per H. P. to \$5 and \$7. In one mine in Northern California, producing \$2,500 per month, the cost of power and labor had risen to \$3,000. By the introduction of electric power the cost was lowered to \$1,500, replacing the \$500 loss by a gain of \$1,000 per month.

In this way many mines are able to extend their workings on lower grade ores; and new mines, situated in regions where fuel is high, or far up on steep mountain slopes almost inaccessible, have been opened to add their part to the mineral output of the State.

The difficulties and cost of handling fuel in the dredger operations at Oroville and other sections would probably have prevented the working of these low-grade gravels if electric power had not been at hand.

Electric power is now used for nearly all branches of mine work, but appears to be more successful in some than in others. It is a disputed question whether the alternating current is best adapted to hoisting where there is not a continuous and uniform motion. Many claim that in this work it is better to use the current with air compressors and run the hoists by air. Where uniform power is required, and in lighting the mines, the value of electric power has been generally rec-



PROPOSED POWER PLANTS IN SHASTA COUNTY.

standard gauge, 14 1/2 miles long, will be built from the Bully Hill Mine to the Southern Pacific Railroad, north of Kennet, and will carry railroad cars to and from the mines. Light and power will be furnished to the towns of Redding, Keswick, De la Mar, Copper City, Salee, Shasta, Cottonwood and Red Bluffs, if the present plans are carried out.

A number of local companies are being organized to take charge of the electric light and power in these different towns, and it is stated that some of these have already signed contracts with the Shasta Company. The total cost of the plant and railroad when complete is expected to be \$1,500,000.

The Keswick Electric Power Company, organized in August, 1900, is constructing a power-house at Shingleton, in Shasta County. Dams are being built across Mill, Battle, Alpine and Berry creeks which will give an available power of 6,000 H. P. The water will be carried through a 3,800-ft. ditch to a small reservoir with a fall of 1,200 ft. Contracts have been signed for the power-house equipment, which will consist of three 1,500-H.-P. Pelton water-wheels connected with three 750-Kw. Westinghouse generators. The transmission line will be 28 miles long to Redding, and 5 miles more to Keswick, and may be extended to Red Bluff and Anderson. The company expects to complete its work by next fall, and has contracted to furnish the Mountain Copper Company at Keswick with 1,500 H. P. It has also absorbed the Redding Electric Light and Power Company, which supplies light and power to Redding.

A third company, known as the McCloud River Power Company, has been organized to construct an electric plant in Shasta County. It plans to build a dam across the McCloud River 3 miles north of the United States Fisheries, where it will have a fall of 45 ft. and a water flow of 85,000 miner's inches, yielding 7,500 to 9,000 H. P. While construction has not commenced at this writing, contracts are claimed to have been made with the Bullock Manufacturing Company, of Cincinnati, Ohio,



MCCLOUD RIVER IN SHASTA COUNTY, CAL.

ognized; and now the use of electricity in mines seems to be limited only by present supply, or by the presence of good water-power close to some mines.

The limitation in supply bids fair to be removed in a very short time if we consider the number of new companies now being organized. Electric power is now used on a large scale for hoists on the Comstock, and it may be that this limitation will be removed.

In California, electric drills have not been looked upon with favor in most of the mines. The Gardner electric drill, made at Denver, is now being tested in a few mines, and it is claimed that it is successful.

NIOBIUM.—In a note recently presented to the Paris Academy of Sciences, M. Henri Moissau states that niobic acid, which cannot be reduced by the most intense heat obtained in an ordinary furnace, is reduced in the electric furnace, giving an ingot which contains only a very small quantity of combined carbon, and is nearly pure metal. The metal is very heavy; remains solid at the melting point of platinum; is attacked by acids only in a very slight degree; at a red heat has no action on water vapor. The metal, however, burns easily in oxygen, forming a stable acid, which possesses some curious reducing properties. Its general properties seem to separate niobium from the metals, and to class it rather with such elementary bodies as silicon and boron.

AMERICAN LOCOMOTIVES ON INDIAN RAILROADS.—"Indian Engineering," just received, says: "In the present heated controversy regarding the failure or success of American locomotives on Indian railways, it is interesting and useful to get the unbiased report of an official like the locomotive superintendent of the Oudh & Rohilkhand Railway, published in the 'Board of Trade Journal' for June 6th, 1901. He refers to the working of the engines of the Mogul type, which on arrival in India had to be slightly altered to adapt them for the use of Bengal coal. The results have been satisfactory. The engines are used to draw passenger trains at 20 miles an hour. They do so at an average coal consumption of 48.29 lbs. per engine mile and 1.92 lbs. per vehicle mile, which compares favorably with the averages of the new English locomotives, the averages of which are 45.25 lbs. per engine mile and 1.94 lbs. per vehicle mile. The cost of the American locomotive was 42,020 rupees; while that of the English locomotive is 44,826 rupees, and the work done practically the same."

ABSTRACTS OF OFFICIAL REPORTS.

Hyderabad Deccan Company, India.

This company holds a large concession and operates the Singareni Coal Mine, the largest colliery in India. During the year 1900 the accounts, as issued from the London office, show a total revenue from sales of coal of £126,250. Working expenses were £71,655; agencies, £2,951; royalties, £7,166; total, £81,772; leaving a profit balance of £44,478 from coal operations.

The company has been adjusting its accounts, and has written off for depreciation, prospecting charges, etc., £277,128; on account of Wondalli Gold Mine, £124,990; from estimated value of concession, £270,000; a total of £672,118. To offset this the capital stock has been reduced from £1,120,000 to £672,000.

The directors report says: "The working during the year 1900 of the Singareni Collieries showed a decided improvement on that of the previous year, which itself was a record one. The output was increased by 68,000 tons, and the working expenses per ton were reduced. The advance in the output is due in some measure to the large supply of labor we had last year, the famine in India having assisted us. Consequently with the return of prosperity to the country we are again experiencing the labor difficulty.

"The negotiations with Messrs. Goerz & Co. did not lead to the formation of the company proposed for working the gold, but arrangements have now been made which it is anticipated will lead to the development of the Hutti Mine, particulars of which are briefly as follows: A company called the Hutti (Nizam's) Gold Mines, Limited, has been formed with a capital of £50,000 to acquire the Hutti Block of 9 square miles, for which the Hyderabad Deccan Company receives as vendors £10,000 in fully paid shares. The first issue of £30,000 is now being offered for subscription, the shareholders in the Hyderabad Deccan Company having a prior right at allotment in proportion to their holdings. The machinery is rented from the Hyderabad Deccan Company by the Hutti Company at a nominal rent so long as it continues active mining operations. In addition, the Hutti Company has the option of acquiring within three years a further block not exceeding 25 square miles in extent, known as the Topuldodi Block, in consideration of the payment to the Hyderabad Deccan Company of 20 per cent. of all net profits, derived from working or selling that block.

"Since the formation of the company, no amount has been taken into account for depreciation, and a large amount of the capital spent on prospecting and developing some parts of our property has led to no paying results. The consequence is, that several of the assets which have stood in our balance sheet up to last year represent lost capital and are not available assets. They have therefore now been written off, together with all bad debts, and a loss is consequently shown in the revenue account of £449,905."

St. John del Rey Mining Company, Brazil.

The report of this company, recently issued from the London office, covers the year ending February 28th, 1901. It is the 70th yearly report made by the company, which had had many vicissitudes in the course of its long existence, but is now in a fairly prosperous condition. The authorized capital stock is £600,000 in shares of £1 each, of which 534,868 shares have been issued. The company has also outstanding £131,860 in mortgage and debenture bonds.

The total tonnage raised from the mine during the year was 152,238 tons, of which 7.18 per cent. was sorted out as worthless, leaving 140,885 tons sent to the mill. The saving from this was 78,199 oz. gold bullion in the mill and 20,998 tons from the tailings by second process; a total of 99,197 oz. gold bullion which, by values, was equal to 76,090 oz. fine gold, or \$1,572,783. Of the gold saved 78.8 per cent. was from first treatment in the mill, and 21.2 per cent. from treatment of tailings by second process.

The statement of earnings and expenses is as follows, the figures being reduced to United States currency to enable comparisons to be made easily:

	Total	Per ton.
Tons worked in mill (2,240 lbs.).....	140,885	.....
Gold produced, proceeds.....	\$1,572,783	\$11.16
Mine department	\$369,004	\$2.62
Reduction	265,939	1.89
Engineers' work	63,725	0.45
Office, store, hospital, etc.....	152,179	1.08
Renewal and development	180,458	1.28
Taxes, shipments, etc.....	90,598	0.64
Total expenses	\$1,121,903	\$7.96
Net proceeds	\$450,880	\$3.20

The net result, restated in sterling as in the report, amounted to £93,933. To this is to be added £696, net profit from working Cuibaba Mine, making a total profit for the year of £94,629. Interest and sundries were £1,941, and balance from preceding year £397, making a total of £96,967. Payments from this total were: Debenture interest, etc., £19,347; appropriated to reserve fund, £15,000; dividends (2s. per share), income tax and directors' percentage, £48,652; total, £82,999. This left a balance of £13,968 forward to current year.

The mine plan given in the report shows the peculiar position of the mine and the complications arising from the old workings nearer the surface. Concerning improvements now in progress the report of Mr. G. Chalmers, the superintendent of the mine, says: "The lode having flattened has interfered with the original plan of making the underlie shaft the main-road into depth. For when the mineral has been removed from the lower horizons, it will be found that the excavations will considerably undercut the shaft, and although the filling in the excavations will prevent the wall adjacent to the shaft breaking away altogether, it will probably shrink to some extent, and the wall may break off sufficiently to affect the shaft in time. However, this will probably not occur for many years, and the underlie will be used as the

exit for mineral from horizons 11 and 12. A scheme has been decided on for providing a main-road into depth from horizon 8, which will be commenced as soon as the sinkers arrive from England. On account of the flattening of the lode at horizons 10 and 11, and the large amount of dead driving that would be necessary to reach the lode, it has been decided for the future to explore in depth by underlie instead of vertical winzes. The principal objections raised against the former are as follows: First, that the rate of sinking will be slow; second, that a single road only can be made use of, as both walls and roof would require securing if width sufficient for two roads were excavated. However, against these disadvantages an underlie shaft has the following advantages: It always remains in touch with the lode, and should a variation occur it is at once realized. The underlie shafts will allow of the distance between horizons being increased, which will mean a considerable saving in masonry arching; they will be more convenient for the stopping operations; as they will always maintain the same position in the lode, instead of constantly varying in distance from the lode as in the case of vertical winzes. The first will be sunk in the indent from horizons 10 to 11; the second from the north branch end of the slide from horizons 11 to 12."

The directors' report notes that the rise in exchange with Brazil, and consequently in cost of labor, supplies, etc., was on an average of 33 per cent., as compared with the previous year. An attempt was made to reduce the cost of labor, but this resulted in the loss of a number of experienced Spanish miners. The directors' report further says:

"The total amount of new capital issued in conformity with the option of shares given the proprietors has brought the amount of share capital to £534,868, the whole of which is entitled to participate in the dividend that will be declared in December next.

"The zone of poor mineral between levels 9 and 8 will be shortly worked through in the stopes going upward toward No. 8. As soon as this is the case, and the lode is opened out at No. 11 the directors hope that the yield per ton of the mineral will, instead of being at the present very low rate of \$8.40 per ton, the average for the months of March, April and May, be fully up to the average of \$11.52 obtained since the re-opening of the mine. The developments at horizon 11 since the beginning of April last have been so far very satisfactory; Mr. Chalmers considers some of the Eastern mineral the finest he has ever seen in the Morro Velho Lode."

IRON AND STEEL IN SWEDEN.

The official returns in Sweden show that in the calendar year 1900 the number of iron mines working was 341, whence 2,607,925 tons of ore were raised, as against 321 mines and 2,434,606 tons of ore in 1899. The increase in output was 173,319 tons, or 7.1 per cent. The output last year is the largest on record.

Of the total output, 2,337,177 tons, or 89.6 per cent., was magnetic or black ore, and 270,748 tons, or 10.4 per cent., red ore. The number of ore separators in use last year was 23, treating 166,000 tons, as against 125,000 tons in 1899. The number of miners at work was 9,840, making 265 tons of ore per man, as against 9,063 men and 268.6 tons in 1899.

In addition to the magnetic ore raised there was also obtained 1,575 tons of lake and bog ores. The recovery of these kinds of ores varies according to the winters, being highest—2,700 tons—in 1895. Adding this quantity, the total production of all kinds of ore in Sweden last year was 2,609,500 tons, as against 2,435,200 tons in the preceding year.

Coming to the Swedish pig iron industry last year, we learn that 113 furnaces were in operation, while 26 were idle. The total production was 526,868 tons, of which 8,081 tons were castings direct from the furnaces. In 1899 the figures were 497,727 tons. There is therefore an increase of 29,141 tons, or 5.9 per cent.

The pig iron produced was classed as follows, in metric tons:

	Tons.	Per ct.
Forge pig.....	248,423	47.1
Steel pig.....	250,527	47.5
Spiegeleisen	1,923	0.4
Other iron and castings.....	25,995	5.0
Totals	526,868	100.0

The production of puddled or wrought bars and of forged bars and blooms was 188,455 tons, a reduction of 6,876 tons, or 3.5 per cent. from 1899. The production of steel ingots for the year was as follows, in metric tons:

	Acid.	Basic.	Totals.	Per ct.
Bessemer (converter).....	61,397	29,668	91,065	30.5
Open-hearth	121,242	86,176	207,418	69.1
Crucible and blister.....	.....	.....	1,121	0.4
Total steel.....	182,639	115,844	298,483	100.0

The total in 1899 was 272,480 tons, showing an increase last year of 271,124 tons, or 9.9 per cent. Acid steel was 61.2 per cent. of the total, and basic 38.8 per cent.

The production of finished iron and steel in all forms was 356,078 tons, which was less than the total reported for 1899 by 6,389 tons, or 1.8 per cent.

The number of motors employed in the iron industry was 1,670, of which 539 were in use in the mines and 1,131 at works. Of these, 1,113 were water turbine motors, and 383 steam engines, the total force being 72,000 H. P., of which 53,000 H. P. were turbines. The number of workmen employed in the metal and coal industries was 13,861, of whom 70 per cent. were engaged in the iron and steel industry. Of the former number, 615 were women, two-thirds being employed in the iron mines, and 209 being under 18 years of age. There were 712 accidents, 24 being fatal.

MINERAL PRODUCTION OF SWEDEN.—The production of minerals in Sweden in 1900, other than coal and iron ore, was as follows, in metric tons: Silver and lead ores, 5,300 tons; copper ore, 22,725 tons; manganese ore, 2,651 tons; zinc ore, 11,044 tons; iron pyrites, 179 tons. The production of metals included 1,423 metric tons lead; 136 tons copper; 1,927 kgs. silver and 88 kgs. gold.

THE CALKINS GYRATORY MULLER.

The accompanying illustration shows an improved muller made by F. W. Braun & Company, of Los Angeles, Cal. It is intended to run by power, and is designed to pulverize samples of ore, etc., to any desired degree of fineness, the samples having previously been run through a crusher. A heavy iron mortar, with an opening or discharge outlet in the bottom, forms a base for this machine. In this mortar is a ball or pestle with about one-sixth of its area in actual contact with the entire bottom of the mortar when no substance intervenes. This construction gives the maximum amount of grinding surface. A bail or arch hinged at one side and fastened with a thumbscrew at the other, is over the mortar, and through its center a vertical shaft passes. Gears impart the rotary motion of the pulley shaft to this shaft. A right-angle clutch extension is fastened to the bottom of the vertical shaft, and at the end of this extension the knuckle-box fitting over the ball-shaft is attached. The ball shaft is secured to this box by a cap-screw and washer, allowing it to revolve freely.

A gyratory and rotary motion is imparted to the ball by the clutch extension. The material being ground produces by attrition a revolution of the ball in an opposite direction to the way it is being gyrated. This effects a twisting and grinding motion, preventing any material



THE CALKINS GYRATORY MULLER.

being thrown ahead of the ball by centrifugal force, and is an important feature of this appliance. The material is rapidly pulverized and forced to discharge through the opening in the bottom. The shields prevent any material being thrown from the machine. A coil-spring around the ball-shaft between the knuckle-box and ball, makes a tight engagement between the surface of the ball and the mortar. By adding washers above this spring, more compression may be obtained. As the ball is a true sphere and the lower portion of the mortar in contact with it an arc of a true circle the parts wear to place. These portions are turned by special tools made for the purpose.

The inner portion of the machine is readily accessible for cleaning thus: The belt is slipped from the pulley, the thumbscrew loosened, and the entire upper portion swung over, lifting the ball out of the mortar.

To reduce a sample to an extremely fine powder, it is necessary to screen the product after each feeding, and re-feed the coarse material. In this way a uniform product is obtained.

A removable plug fitted to the outlet of the machine is furnished if desired, and by inserting this plug a perfect amalgamating mortar is obtained.

A cast-iron stand for supporting this machine is furnished at a slight additional cost. The greatest width of the machine is 17 in.; greatest height, 23 in.; diameter of ball, 5 in.; net weight, 105 lbs.

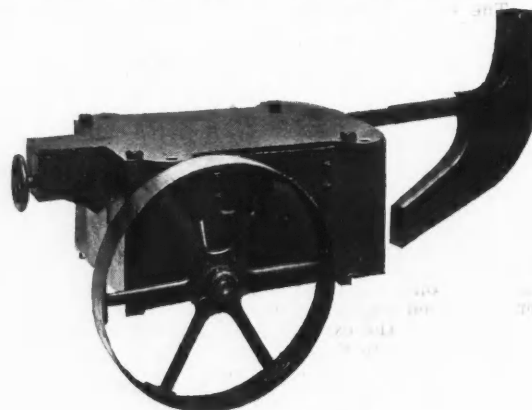
A NEW COKING PROCESS IN GERMANY.—A German exchange says that in a process for making coke from coals too slightly bituminous to be calcined alone, patented in Germany by Herr Schild, of Bochum, the coal, reduced to a finely-divided state, is mixed with the residue of sulphitic cellulose in the proportion of about 10 to 1; and the mixture, while still damp, is calcined in an ordinary coke oven. If a mixture of 2 parts non-bituminous and 1 part of bituminous coal be employed, an excellent coke, hard and having a metallic ring, may be obtained; and for avoiding an increase of ash content in the coke, the sulphitic residue is freed from lime, for instance, by means of carbonate or sulphate of ammonia followed by filtration.

THE SCOBEY SAMPLER.

A neat and useful accessory to accurate milling work is being introduced into concentrating mills where excess of water used as a carrier for the stock has been a hindrance to sampling the pulp, either during the process of treatment or after discharged as tailings. The necessity for such a machine, working automatically and positively driven, taking a correct cut from the whole stream of stock, has long been felt, and numerous attempts have been made to duplicate the action of hand sampling such a stream by passing a bucket quickly through the flow and resting for regular periods of time between strokes. Quite a number of ingenious devices are to be found that are relied upon to give a sample of tailings from stamp mills, amalgamators, leaching and concentrating mills. The compact machine shown in the accompanying illustration seems very well adapted to the purpose.

The sampler is arranged to be attached to or supported by the frame directly under the launder in position to allow the bucket to rest at one side of the falling stream and at a proper time—as may be adjusted by conditions—to pass quickly through the pulp, deflecting a very small portion to a convenient receptacle for retaining the samples, and then to rest for an equal period of time, and to return in the same manner. The bucket is automatically locked in position at the end of its stroke so that it may in no way be tampered with or accidentally thrown in the stream; it is completely out of the flow of ore except during the instant of taking the sample, the wear on the machine is accordingly very slight.

A 150-ton concentrating mill has a regular flow from its tailings launder of about 300 gals. per minute, or 144,000 gals. per 8-hour shift.



THE SCOBEY SAMPLER.

The Scobey sampler set at its highest limit, taking a sample once in each 5 minutes, will gather about 15 gals. of wet pulp sample or about 1 gal. of dried sample. This is 1/10,000 part of the ore. The machine has a complete range of adjustment with its standard 2-in. bucket of from 1/1,000 to 1/10,000th part. By substituting a 1-in. bucket the range is carried to 1/20,000 part. By direct connecting the gearing the apportionment is carried to 1/100 part. This wide scope is attained by adjusting the length of the ore traversed by the bucket in conjunction with two extra gears. The scientific correctness of these small samples is demonstrated from the axiom that the size or weight of the sample has no connection with the quantity of ore sampled, but is directly dependent upon the size of ore particles sampled.

This sampler is controlled and made by the Mine and Smelter Supply Company, of Denver, Colorado.

QUESTIONS AND ANSWERS.

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

Books referred to in this column can be obtained from the Book Department of the Scientific Publishing Company.—Editor E. & M. J.)

Cyanide Processes.—Can you give me any particulars respecting the Park-Whitaker and the Hannay electro-cyanide processes?—Alpha.

Answer.—1. In the Park-Whitaker cyanide process, which was intended for the treatment of cupriferous ores and concentrates, the ore is subjected to a chloridizing roasting, after which the soluble copper chlorides are removed by leaching with water. An alkaline wash is then applied, and the gold and silver extracted with a dilute solution of cyanide.

2. The Hannay electro-cyanide process was very similar to the Pelatan-Clerici process. The object was to accomplish the extraction of the gold and its recovery at the same time and in the same vat. This was accomplished by leaching the ore with cyanide solution, the process being hastened by agitation, and then passing an electric current through the vat, between suitable anodes and cathodes. The current decomposes the solution, the gold being deposited on the cathodes.

Consult Bosqui's "Practical Notes on the Cyanide Process."

Graphite.—Can you give me any description of the process used in refining or preparing graphite for the market? Can you give any statement as to the percentage of graphite usually found in the ore or rock,

additional to the information already given in your yearly publications? What concentrators are in use at Ticonderoga, for instance? Are your quotations for crude or refined graphite? Are they graded by per cent. of carbon?—J. H. L.

Answer.—1. The treatment of graphite usually consists in crushing when necessary, and in concentrating to free the graphite from rock and waste. The circumstances vary widely; sometimes it is found in small pieces scattered through the rock; sometimes it occurs in masses of considerable size.

2. We have no information as to percentages usually found, other than that which has been published already in the "Engineering and Mining Journal" and "The Mineral Industry."

3. The Hooper pneumatic concentrator was originally devised for treating graphite, and is in use at Ticonderoga; with success, we believe. It is now made by the General Concentrates Company.

4. Quotations for lump graphite are for the crude mineral. Those for pulverized are for refined or clean graphite. There is no established rule as to percentage of carbon.

Chrome Ore.—I note in your paper weekly quotations for 50 per cent. chrome ore. Could you kindly supplement this information by letting me know the following: 1. Is there a steady demand for such ore, and how low grade? 2. Who are the principal buyers in the United States? 3. What premium is paid per unit above 50 per cent. chromium? 4. Is there any import duty and any trade discount? 5. What would be the present rates, cost of freight, etc., from an English port to New York?—H. V.

Answer.—The demand for chrome ore in this country is growing. The chief use for the grades of ore as low as 40 per cent. is in the manufacture of iron and steel alloys, while 46 per cent. up to and above 50 per cent. stuff is employed in the chemical industry for making bichromates of potash and soda principally; and also for making refractory bricks for blast furnaces. Detailed information of the preparation of chrome ore for these various uses will be found in "The Mineral Industry," especially Volumes II. and IV. Leading buyers of chrome ore are the Baltimore Chrome Works, Baltimore, Md.; Stein & Boericke, Primos, Pa.; the Chrome Steel Works, Brooklyn, N. Y., and the Willson Aluminum Company, 99 Cedar street, New York City. The market price of \$24 per long ton, ex-ship New York, which is quoted in the "Engineering and Mining Journal," is based on ore carrying 50 per cent., any excess being paid for at the rate of 50 to 75c. per unit. There is no import duty on chrome ore, and trade discounts depend on the arrangements between buyer and seller. As vessels are usually chartered abroad either by the exporters or their agents, and as rates are subject to agreement as to time of shipment, etc., it is almost impossible to give the cost of delivering chrome ore at New York. Roughly, the ocean freight from a desirable port in Great Britain to New York is around \$3 per ton. If you anticipate exporting chrome ore to this country an advertisement in the "Engineering and Mining Journal" would doubtless put you in communication with buyers.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

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

We have received recently several packages of minerals for examination which were not marked with the name and address of the sender. Such samples can receive no attention. All samples should be numbered and the package marked with the name and address of the sender. The locality from which the minerals are taken should be given in the package or in an accompanying letter or postal card.

416.—Strontium Minerals from New Jersey.—The latest Geological Survey report says: "No minerals containing strontium have heretofore been reported from New Jersey, therefore considerable interest is attached to the recent finding of celestite from near Harmony, in Warren County, at the northeast end of the Marble Mountain, and with it a strontium-bearing calcite, the latter being found also at both the Andover and Roseville mines in Sussex County. Celestite was observed in only one specimen, in fine fibers projecting from the enclosing limestone where it had been weathered, and was also left behind when the limestone was dissolved away with dilute acid. It was at first mistaken for tremolite, but its insolubility and its reactions for sulphur and strontium are sufficient for its complete identification. In the accompanying calcite strontium was detected under the usual blowpipe tests, and one of the specimens was analyzed, as follows: Insoluble, 0.12 per cent.; Fe₂O₃ and Al₂O₃, 1.12; SrO, 0.28; CaO, 53.32; MgO, 2.82; CO₂, 42.40; total, 100.06.

"The amount of strontium is much less than was expected, from the blowpipe tests, but it is unquestionably present, and so another element is added to those found among the minerals of New Jersey."

417.—Silver with Triassic Copper.—Prof. Albert H. Chester, in the report of the New Jersey Geological Survey for 1900, says: "Native silver was recently discovered by Edgar H. Sarles on the Drake farm at Newtown, near Stelton, in Middlesex County, and specimens were brought to the Mineralogical Bureau for identification. It occurs in small flakes and specks on a Triassic sandstone, associated with chrysocolla and cuprite. So far only a few surface specimens have been brought in, and no work has been done there. This occurrence of real silver in appreciable quantities, after the numberless mistaken reports of finding silver in the State, is of great interest, and the locality deserves careful examination, not so much in the hope of developing

a paying silver mine as to learn something more of the conditions under which this most interesting mineral has been deposited there. No native copper was observed on any of the specimens found. Since writing the above I have learned that the ore of the American Copper Mining Company, located near Pluckamin, contains a little silver, as is true in general of all the copper ores of the State. But free native silver has not often been observed. This ore is almost entirely native copper, which is often found in broad sheets of some thickness. It occurs in an indurated shale at its contact with the trap, and the silver is occasionally visible to the eye in minute specks or flakes, sometimes on the copper itself."

422.—Marcasite.—E. M. M.—The mineral has the crystalline habit and other physical characteristics of marcasite, a sulphide of iron containing, when pure, 53.4 per cent. sulphur and 46.6 per cent. iron. It differs from pyrite in its crystalline form and lower specific gravity.

423.—Graphite from Mexico.—D. B. R.—The sample of graphite you send is of good grade. The value of a graphite mine depends on the size of the deposit, cost of separation, transportation, etc.

424.—Specimens from Kentucky.—Your specimens are such as may be found in many sections of this country. The gray rock is a fossiliferous palaeozoic limestone. The glistening crystals are calcite. The supposed silver ore shows nothing in the least resembling a silver mineral, and is probably a piece of the same limestone. The iron ore contains very little iron and is of no value. The "mineral blossom" is a silicious band such as is not uncommon in limestones. The brownish crystals are quartz. The rock shows no indications of containing minerals of value.

PATENTS RELATING TO MINING AND METALLURGY.

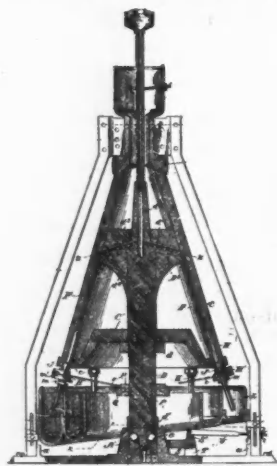
UNITED STATES.

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

Week Ending August 27th, 1901.

- 681,190. METHOD OF TREATING DISINTEGRATED SLATE MIXTURE FOR THE MANUFACTURE OF ARTICLES. William C. Broughton, Gloucester, England. A process comprising the combination with a powdered state of a disintegrated mixture of whitening and sand, and a suitable varnish, the whole being impregnated with steam and afterward pressed to the required shape and heated.
- 681,216. PNEUMATIC LIQUID-RAISING APPARATUS. Edward Gray, Bradford, Pa., assignor of one-half to Philo C. Blaisdell, same place. The combination of a receiver for limited charges of the liquid to be raised, means for automatically controlling the supply of said charges, an eduction-pipe, means for successively expelling the liquid charges therethrough by compressed air acting under the liquid in said eduction-pipe, and a follower in said pipe between the air column and the liquid column.
- 681,231. EXCAVATOR. George W. King and Harry J. Barnhart, Marion, Ohio, assignors to the Marion Steam Shovel Company, same place. An A-frame for excavators and the like, each leg whereof is composed of parallel channel-bars having their flanges extending in the same direction inward toward the central line of the frame, and front and back plates riveted to the flanges of the channel-bars.
- 681,232. AMALGAMATOR. Ernest J. Kiss, Fort Wayne, Ind. An upright tank having a laterally-extended chamber on one end thereof; a pair of cylinders revolvably mounted one above the other in said tank; a driving-chain operatively connecting said cylinders; a pair of mercury-receptacles in co-operative relation with the said cylinders respectively as shown; a screw conveyor rotatably mounted in the bottom of said tank and dipping into a body of mercury therein; an inclined chain conveyor arranged in said chamber and adapted to discharge the ore from the machine; and means for actuating said screw conveyor and said conveyor-chain.
- 681,234. ORE-CRUSHER. Charles H. Krause, South Lake Linden; and Henry C. Krause, Point Mills, Mich. In an ore-crusher, the combination with a stamp and mortar for crushing the ore and a screen through which the crushed ore is discharged by the splash from the stamp, of an auxiliary discharge for free metal too large to pass through the screen, consisting of a conduit leading downwardly out of said mortar and a water-supply connection leading into said conduit and adapted to produce an upward current through the same.
- 681,241. PROCESS OF UTILIZING WASTE SULPHITE LIQUOR AND PRODUCT THEREFROM. Alexander Mitscherlich, Freiburg, Germany. The process for the purification of spent sulphite liquors from the manufacture of wood-pulp and for the separation of a tanning and adhesive agent therefrom by first treating said liquor with lime and a suitable precipitant for removing any iron present therein and submitting the resultant liquid to a process of dialysis.
- 681,255. APPARATUS FOR MANUFACTURING TIN-PLATE. Horatio N. Norton, Oak Park, Ill., assignor by mesne assignments to American Can Company, Jersey City, N. J. The combination with an inclined discharge-chute, of a feed-table extending in the same direction as the discharge chute, upon which the sheets are delivered from said discharge-chute and by which their forward motion is continued, a longitudinally-acting set of cleaning-rollers to which the sheets are delivered from said feed-table, and transversely-acting set of cleaning-rollers.
- 681,256. STONE-DRESSING MACHINE. Samuel Oldham, Philadelphia, Pa. A cylindrical standard, a carriage arranged tangentially to the periphery of the standard, a sleeve surrounding but wholly disconnected from the standard and free to slide up and down and to turn thereon, said sleeve carrying said carriage, means for supporting the carriage and sleeve from the top of said standard, a beam having two points of support in the carriage and adapted to slide therein in a plane to one side of the central axis of the standard, and an impact-tool carried at one end of said beam.
- 681,271. ORE-CONCENTRATOR. Philip H. Shue, Ouray, Colo. The combination with a casing having a discharge-tube provided with an opening, of a tube adjustably secured therein provided with an opening adapted to register with the opening of the discharge-tube, means for adjusting the interior tube, consisting of a threaded coupling and a suitable threaded member stationarily supported, and means for moving the coupling to effect its adjustment during the operation of the machine.
- 681,329. METHOD OF MAKING SECONDARY-BATTERY PLATES. Berthold Kuettner, London, England. Mixing lead oxides with a solution of a soluble silicate to form a paste, making the paste into a plate and dipping the plate in a dilute solution of an ammonium salt.

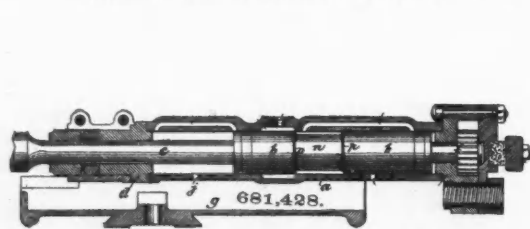
- 681,354. COMBINED ORE HEATING, ROASTING AND SMELTING FURNACE. Samuel M. Trapp, Seattle, Wash. A smelting-furnace comprising a combustion-chamber, a stationary crucible located therein with its top open and its sides free from the walls of the combustion-chamber, a passage-way leading from the crucible and terminating in a tap-hole, and a forchearth connected with said passage-way and entirely located within the combustion-chamber.
- 681,357 and 681,358. APPARATUS FOR AND PROCESS OF PREHEATING AND MOISTENING COMPRESSED AIR. William O. Webber, Boston, Mass., assignor to Walter C. Carr, New York, N. Y. The combination with a compressed-air passage, of a furnace having a series of chambers adapted to be heated at different temperatures, air-circulating pipes extending through said chambers, and a moistening apparatus arranged to discharge into each of said circulating-pipes.
- 681,367. REDUCTION OF ORES OR COMPOUNDS. Hugh A. Irvine, Niagara Falls, N. Y. The method consists in interposing between electric conductors a temporary conducting heap or mass, placing next to the same charge material having fusible mineral constituents and containing a reducing agent, passing a current through the intermediate mass, producing a fused body of mineral slag, and then continuing the passage of the current through such slag, and maintaining next to the slag a body of the charge material to be reduced by the heat generated by the passage of the current.
- 681,369. GAS, OIL AND WATER SEPARATOR. Frank P. Nourse, Alexandria, Ind., assignor to Harry V. Otts, same place. The combination with a gas-well having the usual outer and inner casings and gas-discharging pipe, of a separating-tank into which said pipe leads, a gas-pipe through which the gas may pass off from said tank, and a liquid-discharging pipe connected to the bottom of said separating-tank.
- 681,381. CUTTER FOR ROCK-DRILLS. Jacob Wallace, D. Frank Irwin and Joseph H. Smith, Plymouth, Ohio, assignors to the Wallwinth



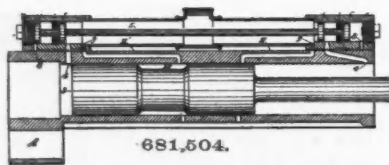
681,271.

Manufacturing Company, of Ohio. A bit or cutter for rock-drills provided at its lower end with a lead of greater width than thickness and provided above the wider sides of the lead with graduated shoulders to bevel the wider sides of the hole formed by the lead, downwardly and inwardly for a splitting-wedge.

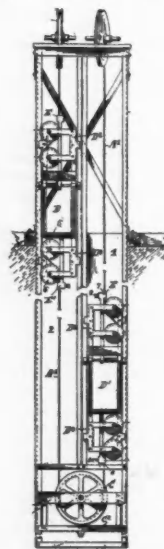
- 681,407. PROCESS OF OBTAINING SALT. Percle H. Coward, San Francisco, Cal. The process of obtaining salt, which comprises the following steps: crystallizing the salt from brine, flushing the salt to wash it after crystallization, and transferring it by such flushing operation.
- 681,419. ADJUSTABLE ECCENTRIC OF MINERAL OR ORE WASHING JIGS. Charles J. Hodge, Houghton, Mich. The combination of the plungers, a driving-shaft having supporting-bearings, two eccentrics having eccentric-straps, one eccentric being connected with each of said plungers and eccentric to said shaft, and a crank connected to the shaft and having operative connection with both of said eccentrics.
- 681,428. VALVELESS ROCK-DRILL. Robert L. Ambrose, Tarrytown, N. Y., assignor to Rand Drill Company, New York, N. Y. The combination with a cylinder having separate admission and exhaust



681,428.



681,504.



681,430.

ports for each end of the cylinder and a common inlet-port, of a piston, having a reduced central portion and adapted to control said ports, which are so located with respect to each other and to the piston that during a rearward stroke of the piston admission cut-off at the forward end is substantially simultaneous with exhaust-closure at the rear end, but is earlier with respect to a full

stroke of the piston than the corresponding point of admission cut-off at the rear end during a forward stroke.

- 681,430. HOIST MECHANISM FOR MINE-SHAFTS. Thomas J. Barbour, San Francisco, Cal. In a single-cable hoist apparatus for mine-shafts, the combination with the endless hoisting-cable, of the opposing cable-cages, of devices carried by the cages whereby the endless cable is guided above and below the same, and means whereby the cages may be held locked to or released from the cable in order to permit of its position being varied in accordance with the working level of the mine-shaft.
- 681,482. COMPOUND OF SILVER AND GELATOSE AND PROCESS OF MAKING SAME. Arthur Liebrecht, Frankfurt-on-the-Main, Germany, assignor to Farbwerke, vorm. Meister, Lucius & Bruning, Höchst-on-the-Main, Germany. A process for the manufacture of neutral, soluble silver compounds of high percentage, which consists in neutralizing solutions of gelatoses and combining them with the solution of a salt of silver and then drying them.
- 681,504. ROCK DRILL. Charley Hultquist, Jerome, Arizona. The combination of a cylinder, a drill-piston, reciprocal therein, a steam-chest having a valve-chamber at each end and a steam-entrance intermediate of said chambers and common to both chambers, ports connecting each valve-chamber directly with the cylinder, a valve-rod and a double valve at each end thereof, said valves operating in their chambers and controlling the admission of steam to and the exhaust from the cylinder.
- 681,527. METHOD OF PRODUCING SOFT-METAL CASTINGS. George H. Brabrook, Taunton, Mass. The method consists in impregnating the inner surface of a porous non-metallic mold with stearic acid and running in the molten metal.
- 681,557. APPARATUS FOR ROLLING TUBES. Richard Laybourne, Charles W. E. Marsh, and Benjamin Price, Newport, England. In apparatus for rolling or swaging metal tubes from hollow ingots step by step in which the rolls or swaging devices are journaled in housings adapted to be bodily reciprocated along the ingot and having a feed-screw and mandrel adapted to intermittently advance and rotate the hollow ingot on said mandrel.
- 681,561. FEED-BOX FOR ORE-CONCENTRATORS. John H. Michelsen and Miller L. Borglum, Butte, Mont. A feed-box rectangular in outline provided with a feed-hopper at one end, a row of discharge-holes near its bottom, a series of grooved shelves of different lengths arranged one above the other, each of said shelves being separated from one of the sides of the box by a space, said spaces being arranged alternately on different sides of the box.
- 681,580. PROCESS OF HARDENING ARTIFICIAL STONE OR THE LIKE. Carl Rensing, Berlin, Germany. The process consists in subjecting the articles to be treated, while inclosed, to the action of air and steam combined under high pressure.
- 681,581. HIGH-PRESSURE ROTARY PUMP. John Richards, San Francisco, Cal. A series of impellers, set in like position on one shaft and acting successively on this shaft, a hydraulic piston exposed to the maximum or discharge pressure, and a vent-cock whereby this piston can be placed in or out of action.
- 681,586. APPARATUS FOR PRODUCING BISULPHITE LIQUOR. George A. Stebins, Watertown, N. Y. An apparatus having a sulphurous generator with a pan, an absorption-tank, a gas-pipe passing from the generator to the absorption-tank, means for conducting a cooling liquid into contact with and then into the tank.
- 681,609. PROCESS OF TREATING ZINC-BEARING COMPLEX ORES. Guy De Becchi, Paris, France, assignor to the General Metal Reduction Company, Limited, London, England. A process which consists in mixing the complex ore with a chloride salt of an alkali or an alkaline-earth metal, roasting said mixture of the salt and ore and finally introducing a reducing agent and smelting the mixture, the entire process being carried out in one operation at such a high temperature that part of the metals is evolved as fumes of metallic chlorides and oxides and part is recovered as metal, and condensing the said fumes.
- 681,654. ELECTRIC PROSPECTING APPARATUS. Augustus F. McClatchey, Aurora, Ill., assignor to Frederick M. Steele and Ernest Dale Owen, Chicago, Ill. In an apparatus for detecting and locating minerals, metals, ores or the like in the earth, an electric generator, an indicating device and a measuring device, in combination with terminals arranged to be inserted in the earth, and means for protecting said terminals from the effects of electrolytic action.

GREAT BRITAIN.

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

Week Ending August 3d, 1901.

- 13,815 of 1900. CHLORINE PRODUCTION. G. J. Atkins, London. Method of producing chlorine by treating mixed chlorides and chlorates with sulphuric acid.
- 14,503 of 1900. FURNACE LINING. B. Talbot, London. Impregnating furnace bricks with liquid hydrocarbons to increase their adhesiveness.
- 19,248 of 1900. COATING IRON AND STEEL. J. Melke, Glasgow. Improved furnace for coating iron and steel articles with magnetic oxide.
- 23,052 of 1900. ACID TOWERS. J. M. Gibson, Flint. Improved method of making the packing material for Glover's towers, to increase the power of holding moisture, etc.
- 23,858 of 1900. IRON PIGMENT. A. S. Ramage, Cleveland, O., U. S. A. Method of making a hydrated basic ferric oxide suitable for pigments from waste iron pickle liquor.
- 9,503 of 1901. ZINC-LEAD ORE TREATMENT. J. C. Clancy and L. M. Marsland, Sydney, N. S. W. Modifications in the process of treating zinc-lead ores by volatilizing the metals as oxides and forming sulphates separable in water.
- 10,506 of 1901. MAGNETIC SEPARATOR. T. A. Edison, New York, U. S. A. In magnetic separators, increasing the separation on a rapidly moving belt.
- 10,976 of 1901. ELECTROLYTIC CELL. Castner Electric Alkali Company, Niagara Falls, U. S. A. Improvements in the inventor's oscillating cells of electrolytic baths.
- 11,466 of 1901. OXYGEN PRODUCTION. G. F. Joubert, Paris, France. Making compressed tablets of chloride of lime and sodium dioxide, which give off oxygen when placed in water.

Week Ending August 10th, 1901.

- 14,741 of 1900. PUMP. E. L. Matthews and F. A. Matthews, Manchester. Method of placing the barrels of deep borehole pumps without the use of hanging tubes.
- 17,796 of 1900. FURNACE DOOR. J. Strain, Glasgow. Improved methods of firing and raising and lowering the doors of reheating furnaces used in steel making.
- 19,322 of 1900. CAUSTIC LIQUOR. A. Brand, London. Producing caustic liquor by adding carbonate of lime to black ash and reheating and then lixiviating.
- 11,687 of 1901. CASE-HARDENING STEEL. O. Schramm, Berlin, Germany. Improved cementation process for surface hardening iron and steel, using powdered horse-chestnut as source of carbon.
- 12,274 of 1901. ZINC-WHITE MAKING. W. B. Middleton, London. Improved furnaces for producing zinc white.

PERSONAL.

Mr. J. Bresnahan, has returned to Spokane from Nome, Alaska.

Mr. C. Hesselbine, of Russell Gulch, Colo., has left for the East on mining business.

Mr. F. McM. Stanton has returned to Houghton, Mich., from a visit to New York.

Mr. H. G. Lee, of Minneapolis, Minn., has been examining mines at Eagleville, Nev.

Mr. G. P. Collins, of Bradford, Pa., is looking after mining interests in Gilpin County, Colo.

Mr. G. W. Crowe is manager of the Arizona Gold and Copper Company at Patagonia, Ariz.

Mr. W. H. McClintock has resigned as superintendent of the Goldwin Mine, near Sonora, Cal.

Mr. T. L. Lammars, of Denver, Colo., has been appointed superintendent of the Enterprise Mine at Eldora, Colo.

Mr. Eza Rue and son, of Elgin, Ill., are at Central City, Colo., where Mr. Rue is interested in mining property.

Mr. J. Nichols, of Georgetown, Colo., is now in charge of the mill of the Vacas-San Marcos Mine at Durango, Mex.

Mr. Herbert Megraw, for some time engaged in mining in Mexico, has returned to Baltimore, Md., on a vacation.

Mr. Edwin Baltzy is now head chemist in the laboratory of the Guggenheim Smelting Company at Perth Amboy, N. J.

Mr. Arthur Winslow, manager of the Liberty Bell Mine at Telluride, Colo., has returned from a visit to Kansas City, Mo.

Mr. R. J. Ferguson, of Kingman, Ariz., is now superintendent of the concentrating plant of the Peacock copper mine at Levic, Cal.

Mr. Don H. Bacon, after spending several weeks in the Birmingham, Ala., district, has returned to his headquarters in New York.

Mr. William F. Downs has resigned his position as manager for the Federal Graphite Company of Chester Springs, Chester County, Pa.

Mr. E. G. Tollett, of Tallaquah, Ind. T., has gone to Crossville, Tenn., to become manager of the coal mines of the Crab Orchard Coal Company.

Prof. Chas. E. VanBarneveld, of the Minnesota School of Mines, and Governor White, of North Dakota, are at Texada Island, B. C., examining copper properties.

Mr. James Belden, assistant to Chairman Bacon, of the Tennessee Coal, Iron and Railroad Company, is recovering from an attack of fever in Birmingham, Ala.

Mr. W. S. Aldrich, of Smith & Aldrich, consulting engineers of Toronto, Ont., has been appointed director of the Thos. S. Clarkson School of Technology at Potsdam, N. Y.

Prof. C. R. Rose, of the University of Illinois, has been appointed professor of metallurgy and assaying at the Colorado State School of Mines at Golden, and will assume his duties at once.

Prof. Paul Janet, of the department of electricity, University of Paris, is visiting the Pan-American Exposition as representative of the Society of Electricians of Paris.

Mr. H. V. Croll, who has had charge of the Spokane branch of E. P. Allis Company's business, has been transferred to Salt Lake as district manager of the Allis-Chalmers Company.

M. Laure, who has been manager for the International Copper Corporation, Limited, in New Caledonia, has resigned his position, but will remain in charge until his successor arrives in the colony.

Mr. A. F. Wuensch, of Denver, Colo., has returned there from a professional trip to Sonora, Mex., and will leave again shortly to superintend the erection of a reduction plant in the Magdalena District.

Messrs. M. Halleff and Walter Eschley, representing the Phoenix Special Steel Works, of Sheffield, Eng., are on a visit to the United States and at present are making a tour of steel mills in Ohio, Pennsylvania and Illinois.

Dr. Alcides Medrado, Brazilian Mining Commissioner to the Pan-American Exposition, is in New York City. He announces that a syndicate of American capitalists is being organized for the exploration and exploitation of mines in Brazil.

Mr. Sam Silverman has returned to Butte, Mont., from a business trip to Prince of Wales Island, Alaska. Mr. Silverman was accompanied on the trip by former Lieut.-Gov. A. E. Spriggs, Mr. Albert J. Huneke and Dr. Maurice Eisenberg.

Mr. D. C. Jackling, formerly general superintendent of the Republic Power and Cyaniding

Mill, Republic, Wash., has left Spokane, Wash., for the East and is spending a week or two at Salt Lake City and other places en route to New York City.

A letter has been received at the "Engineering and Mining Journal" office from Selukive, Rhodesia, addressed to James R. Cooper, Denver, Colo. We have been unable to find Mr. Cooper; perhaps he, or some of our readers, can furnish his present address.

Mr. Spencer Miller, engineer with the Lidgerwood Manufacturing Company, of New York City, sailed for Europe recently and will attend the trials by the British Admiralty of his marine cableway. The task set by the Admiralty is 40 tons of coal per hour to be transferred from ship to ship, speeding at 10 knots.

Mr. J. E. Spurr, of the United States Geological Survey, now acting as special mining adviser to the Sultan of Turkey, has returned to Constantinople from a trip to Macedonia and Albania, in the course of which he examined various gold, silver and lead deposits.

Mr. J. S. Jones, of Chicago, and Mr. E. H. Coxe, of Springfield, Ill., president and general superintendent respectively of the Jones & Adams Company's mine at the latter place, together with Mr. W. K. Bellis, of Indianapolis, Ind., and Mr. J. J. Williams, an expert accountant of Chicago, spent part of last week looking over some coal lands in Kentucky and Tennessee in the interest of the Jones & Adams Company.

OBITUARY.

Jacob Tomer, a wealthy coal operator of the Pittsburg District, died at his home in Webster, Pa., on September 4th. He was 66 years of age and leaves a wife and 6 children.

John C. Griffiths, an ore and bullion buyer, died in Salt Lake, Utah, recently from complications following an operation for appendicitis. He was a native of Utah and was born at Morgan in 1867. He took up mining, milling and smelting after leaving school. His first experience in ore buying was in the employ of Scott & Anderson. He left that firm and went to Idaho, where, for several years, he managed the Hailey Sampling Works. On his return to Salt Lake he went to the Hanauer Smelter, and after the absorption of that plant by the American Company and its closing down about 2 years ago, he went into the ore and bullion purchasing business on his own account with much success. He left a widow and one child.

Peter Ferry, who died recently at his home in St. Louis, Mo., was born in Ireland in 1826. He came to the United States in 1849 and became connected with the iron manufacturing firms of White & Company and Lloyd & Company, in Pennsylvania. His abilities attracted the attention of Chouteau, Harrison & Valle, of St. Louis, and he took up the experiment of reducing iron ores taken from the company's Iron Mountain mines. He later investigated the Big Muddy coal properties at Grand Tower, Mo., with a view to using that coal for reducing iron ores, but the panic of 1857 and the Civil War caused a postponement of the enterprise. Mr. Ferry then went West, making his way to the Rockies on foot, and for some time worked as a miner on a daily wage. After this he was in Leadville, Virginia City, British Columbia and Montana. He returned to Pennsylvania, and later became superintendent of the Grafton Furnaces at Latonia, O. In 1869 Mr. Ferry took charge of the Kingsland Furnaces in Missouri and later became superintendent of the Missouri and South St. Louis blast furnaces. In 1890 he gave his entire time to the Kingsland Furnaces, then known as the Vulcan Iron Works. Since then to the time of his retirement Mr. Ferry travelled through the South putting in furnaces for his company.

SOCIETIES AND TECHNICAL SCHOOLS.

Thomas S. Clarkson School of Technology.—This school, at Potsdam, N. Y., has been thoroughly reorganized. The entrance requirements are now those of the Regents of the University of New York. The school has been thoroughly provided for in the way of new instructors and additional equipment. It now offers regular 4-year engineering courses in theoretical and practical work leading to the degree of Bachelor of Science in civil, electrical and mechanical engineering. W. S. Aldrich is the new director.

Michigan College of Mines.—At the recent commencement exercises of this college at Houghton 26 young men received the degree of engineer of mines and 18 that of bachelor of science. After the presentation of diplomas President F. W. McNair announced that the Allis-Chalmers Company had tendered a scholarship to be conferred on one graduate from each class who stands highest in competitive tests in his class work, the scholarship carrying with it a guarantee of a position in one of the Allis-Chalmers shops where the student can learn the

processes and become familiar with the manufacture of heavy machinery. This favor has been shown to but one other college in the past, McGill University at Montreal. The Rev. Theodore Clifton, of Chicago, delivered the address of the evening.

INDUSTRIAL NOTES.

The Harrisburg Foundry and Machine Works, of Harrisburg, Pa., has secured through its New York office some fair-sized orders for engines for Vera Cruz, Mex.

The John A. Roebling Company, of Trenton, N. J., has recently had constructed by Riehle Brothers, Philadelphia, Pa., the largest wire-testing machine ever built. It has a tensile capacity of 600,000 lbs.

The Pacific Steel Company at Irondale, Wash., which recently acquired the property of the Puget Sound Iron Company, has cleared a large tract of land, erected dwelling houses, refitted the machine shop and rebuilt the blast furnace.

The American Agricultural Chemical Company reports for the year ended June 30th: Manufacturing profits, \$1,275,035; other income, \$328,711; total income, \$1,603,746; deductions, \$543,954; profits applicable to dividends, \$1,059,791; dividends, \$513,270; surplus, \$546,521. The general balance sheet shows total invested assets, \$24,353,069; cash in bank, \$520,729; profits and loss surplus, \$546,521.

Serrell, White & Company, of Paris, have undertaken the establishment of a number of selling houses throughout France for the A. S. Cameron Steam Pump Works, of New York City. An order for a number of service pumps was received last week, this being the second order from the Marseilles district. The local branch of the above concern is Serrell & White, at 18 Broadway, New York.

The Williams Patent Crusher and Pulverizer Company of St. Louis, Mo., states that it is compelled to add to its plant and is putting in some very fine tools. It is getting orders from all parts of the world, including crushers, friction clutch pulleys, cut-off couplings, and pneumatic pulleys for Canada, Cuba, Australia, the Hawaiian Islands and several of the countries of Continental Europe.

The Ashland Iron and Steel Company, Ashland, Wis., is erecting near its blast furnaces large charcoal kilns and chemical works for the recovery of by-products. The primary still house will be 50 by 72 ft., the acetate house 50 by 120 ft. and the finishing house 50 by 172 ft. All these buildings will be 28 ft. high, built of wood with corrugated steel roofs and sides. The improvements also include a new boiler house.

At the annual meeting of the stockholders of the Franklin Air Compressor Company, at Franklin, Pa., on September 2d, the following officers were re-elected: President, Charles Miller; vice-president, J. W. Duntley; secretary and general manager, Samuel G. Allen; treasurer, O. D. Bleakley. The following board of directors was also elected: Charles Miller, J. W. Duntley, J. S. Coffin, W. P. Pressinger, S. A. Megeath, W. H. Forbes, C. J. S. Miller, S. C. Lewis, S. G. Allen.

The Lidgerwood Manufacturing Company, of New York City, has secured a contract, through the Japanese house of Takata & Company, calling for a complete hoisting outfit, which is intended for use in the Ashio Mine, one of the largest copper properties in Japan. The hoist will have a friction drum 30 in. in diameter with 24-in. face. This drum will be geared to give a rope speed of about 100 ft. per minute. The hoist will be operated by electricity, the order for the necessary motor having been allotted to the Westinghouse Electric and Manufacturing Company, of Pittsburg, Pa.

The contract for the 10 large Corliss engines to furnish electric power to the subway railway in New York City has just been awarded to the Allis-Chalmers Company, and will be built by the E. P. Allis branch at Milwaukee. These engines are to be of the combined horizontal and vertical type, such as the Allis Company is building 8 for the Manhattan Electric Railway in New York, are rated at 8,000 H. P. each at most economical point of cut-off, and are capable of operating continuously under a load of 12,000 H. P. each. This will be considered a notable order, even for the big Allis shops.

TRADE CATALOGUES.

The International Investments Company, of Los Angeles, Cal., has issued a little pamphlet containing data of a large number of Arizona and southern California oil companies.

The Bretherton Hot Blast Smelting Company, of Denver, Colo., is sending out circulars calling attention to its improved blast box or stove. This is stated to cost only half as much for construction and installation, including royalty, as the U-pipe stove and to cost less for repairs and fuel.

"Electric Locomotives" is the title of an attractive 55-page catalogue published by the Jeffrey Manufacturing Company, of Columbus, O. The company builds its trolley locomotives in 3 types and several sizes, including locomotives of special design for thin veins. The company also manufactures storage battery locomotives. Numerous illustrations show locomotives at work and give an excellent idea of the efficiency of these aids to cheap mining.

Advance sheet No. 13 sent out by the Jeanesville Iron Works, of Jeanesville, Pa., describes the Jeanesville centrally packed pumps for mines, mills, elevators and water works. The mine pumps of this design have 4 separate water cylinders and are constructed for working pressures up to 600 ft. The different sizes take 8, 10 or 12-in. suction and 6, 8 and 10-in. discharges. The smallest size is 47 H. P., the largest 180 H. P., and has a capacity of 1,200 gal. per minute.

Buffalo steel pressure blowers are described in a neat little 20-page pamphlet issued by the Buffalo Forge Company, of Buffalo, N. Y. The company states that its blowers are constructed especially to withstand high-pressure duty, such as supplying blasts to cupolas, furnaces, forge fires and blast machines, and for any work where air must be forced long distances. Attention is called to the solid peripheral shell of the blowers with the side plates securely fastened thereto. This, it is stated, results in a blower of marked strength and rigidity.

"A Review of Technical Paints for the Protection of Metal Surfaces" is the title of a 32-page pamphlet published by the National Paint Works of Williamsport, Pa. The pamphlet describes various experiments that have been made to test the durability of various pigments, liquids and metal protectors, and gives the preference to the oxides as pigments and to linseed oil as a vehicle. The pamphlet also describes the various special paints made by the company, and is worthy of perusal by architects and engineers.

Advance sheets of its mining directory for 1901-2 are being sent out by the Western Mining Directory Company, of Denver, Colo. In this directory the mining and milling companies are arranged by States and towns. The character of the ore mined, the mill and equipment, power used and the number of men employed are briefly stated for each company. The directory is designed to cover all the principal mines and mills of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, British Columbia and Mexico.

The Jackson hand-power rock drill is described in detail in a 24-page pamphlet published by H. D. Crippen, of New York City. This drill, it is stated, can be used for tunneling, sinking and stoping, also for all kinds of quarry and surface stone work, including railroad construction, sewer and cellar work. It may be mounted on column, cross-bar tripod or quarry bar. It is claimed that the length of stroke can be instantly varied and the bits changed in a few seconds. The drill has been on the market several years, and the pamphlet gives a long list of testimonials from practical miners.

The Ingersoll-Sergeant Drill Company, of New York City, issues an excellent series of little illustrated pamphlets showing some of the many services performed by compressed air. The little pamphlets contain clear and concise descriptions of various devices and plants, and are interesting reading. Form No. 146 tells about the "Use of Compressed Air in the Monon Railroad's Shops," at Lafayette, Ind. Here car jacks, car wheel and axle hoists, scrap shears, punches, timber hoists, and carpet cleaners use compressed air. Form No. 147 describes the water-works at Dixon, Ill., where 2 artesian wells by means of the Pohle air lift supply all the water that can be handled by a pump having a capacity of 2,400,000 gal. in 24 hours. Form No. 148 shows the applications of compressed air in the structural iron works of John J. Radley & Company, in New York City. Form No. 154 shows the several patterns of the famous Ingersoll-Sergeant rock drills. Form No. 166 describes at length the company's channeling and quarrying machinery, stating the advantages of rock drills compared with hand methods. Form No. 167 tells about the Pohle air lift system of pumping, and Form No. 169 shows the various types of air compressors the company manufactures.

MACHINERY AND SUPPLIES WANTED.

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

We also offer our services to foreign correspondents who desire to purchase American goods of any kind, and shall be pleased to furnish them information, catalogues, etc.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, and have no pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

Petroleum Developments.—There were 1,143 wells completed in the Pennsylvania and Trenton rock fields during August, inclusive of 250 dry holes, and the new production was estimated at 15,965 bbls, says the Oil City "Derrick." This is an increase over July of 67 wells completed and 21 dry holes, accompanied by a loss of 295 bbls. in new production. In the Eastern and Western oil-fields, 1,076 wells were completed in July; the new production was estimated at 16,260 bbls., and the unproductive wells numbered 229. This was a decrease of 69 wells and 17 dry holes from the June figures, accompanied by a gain of 787 bbls. in the new production. On August 31st there were 494 rigs and 1,525 drilling wells under way in the Eastern and Western oil-fields, which is the greatest number recorded thus far the current year. The increase over the figures of July 31st is 54 rigs and 87 drilling wells.

ALABAMA.

Walker County.

(From Our Special Correspondent.)

The discovery of a pocket of oil near Cardova, has created considerable excitement and caused much activity among the numerous companies organized to search for oil. The Houghton Oil Company made the discovery and a sample of the oil is said to be of fair quality.

ALASKA.

Douglas Island.

Alaska Treadwell.—The report for the month ending on August 15th shows 70,725 tons ore crushed, valued at \$62,817, and 1,133 tons sulphurets saved, valued at \$36,268. The gross yield was \$107,085; working expenses, \$60,865; average value of ore, \$1.52.

CALIFORNIA.

State Mining Bureau.—A number of changes have taken place on the staff. State Mineralogist Aubury has appointed C. S. Long, of Alameda, secretary and librarian, vice Van W. Jacobs; Shirley Baker, of Stanford University, draftsman, vice Bartlett Cooper, and J. W. Cline, of Fresno, assistant curator, vice H. L. Barker.

In the drafting department a mineral map of Inyo County has been completed and a register of the mineral deposits of that county will be finished this winter. It is the desire of the mineralogist to compile a mineral map, with accompanying register, of each mineral producing county in the State, the same to be revised yearly as development progresses. Each mine or producing mineral deposit is to be located as exact as possible with a number, and the accompanying register is to furnish a description of the same, with information of a general character. Some changes will be made in the character of the register. Plain statement of facts will be given, and all mines will be treated alike, without boom or favor. The mineralogist has instructed his assistants to furnish facts and not theories.

Many of the handsome specimens which were sent to the Paris Exposition have been returned, and are now being replaced in their case in the Museum. A large portion of the exhibit is still at the Pan-American Exposition, but will be returned at the close of the same.

An increasing demand is observed for the Bulletins of the Bureau. Anyone desiring to procure them can do so by forwarding requisite price, plus postage.

The department for the determination of minerals during August examined over 200 samples. Field Assistant F. M. Anderson is now collecting data on copper in Siskiyou County, after which he will proceed to Del Norte. He will also examine the quicksilver deposits of Shasta, Trinity, Siskiyou and Del Norte counties. Assistant P. C. DuBois has finished the copper mines of Madera, Tulare and Fresno, and is now at work with his assistant in Kern County. State Mineralogist Lewis E. Aubury has returned from a trip to Mariposa County, where he has completed arrangements for the compilation of a map and register of that county and will visit other counties for the same purpose when opportunity offers.

Butte County.

(From Our Special Correspondent.)

J. W. Goodwin, president of the Lava Beds Dredger Company, has purchased 40 acres of land adjoining the company's dredger land from C. E. Kusel. Price is said to be \$10,000.

Calaveras County.

(From Our Special Correspondent.)

Anglo Saxon Mining Company.—The drift on the Tiger Vein on the old Ibez property, south of Rich Gulch, is in 350 ft. The ore body is from 2½ to 7 ft. wide.

Calaveras.—This group of mines north of Murphys is to be worked on a large scale. A large cyanide plant will be installed to treat the old tailings and the ore on the dump.

California Mining, Water and Power Company.—This company has been incorporated with the following directors: Dr. A. Schloss, C. J. Pence, R. Ostrom, D. Fricot, G. Ostrom and L. Pence.

The company has secured water rights on the San Antone, O'Neils, Murray and other creeks. Fifty men are enlarging the old Table Mountain Ditch. Work will start first on the Round Butte gravel claim, which was purchased by the company. Five thousand inches of water will be brought to the claims through the ditch and 3,500 ft. of pipe, giving a 340-ft. head. This pipe has been contracted for. Among other claims to be worked are the Johnson & Scott Hill. All the regulations of the Debris Committee have been complied with. W. S. Coulter is engineer.

Gwin.—The main 3-compartment shaft is down 1,665 ft. and stoping is in progress on the 1,000, 1,400 and 1,600-ft. levels. No work is being done on the South Shaft. The 80-stamp mill is crushing about 9,000 tons of ore per month, which averages \$4.50 free gold. The sulphurets, averaging \$95 per ton, are shipped to the Selby Smelting Works. The compressor plant is being increased. About 200 men are employed. F. F. Thomas is superintendent. The mine is 4 miles southwest from Mokeleumne Hill.

Keystone.—This mine at Railroad Flat is idle, but the tailings are being treated by G. W. Paymal, who holds a lease. He has erected a plant consisting of 1 stock tank, 3 leaching tanks of 20 tons capacity each, and the other necessary machinery. The 20 tons treated daily are said to yield about \$3 per ton.

South Extension of Petticoat.—This mine near Railroad Flat is owned and operated by the Boire Brothers. The shaft is down 70 ft. and the tunnel has been run 200 ft. Drifts are now being run in ore said to assay \$10 in free gold per ton.

El Dorado County.

(From Our Special Correspondent.)

Stillwagon.—This mine, 7 miles east of Fairplay, being developed by Boston parties, is equipped with electric drills and a 5-stamp mill is being installed. The developments consist of a 700-ft. tunnel, which will be continued several hundred feet before stoping begins. A. M. Attwood is superintendent.

Nevada County.

(From Our Special Correspondent.)

California.—The shaft at this mine on Deer Creek has been retimbered for 60 ft. The water is being lowered and the incline put in good condition. E. Lawrence is superintendent.

De Noon.—A San Francisco company, headed by A. D. Gassaway, formerly of the West Harmony Mine of Grass Valley, has bonded this ground above North Bloomfield and arrangements are being made to run a bed-rock tunnel to tap the channel where the Derbec Blue Gravel Company left off. It is estimated the tunnel will be 5,000 ft. long and will enable the company to work the channel at low cost. The same company has also bonded the Watt, Peninsula and McKillican claims in the same locality.

Meadow Lake District.—The machinery and lumber for a 10-stamp mill to be erected by G. H. Nihell on the Hartley Ledge is on its way to the property. The only other mill in the district is said to be doing well. Most of the workings are shallow.

Yuba.—The purchase of this old mine near Mabert by the Yuba Mining Company is completed. Price said to be \$30,000, most of which was taken out of the mine while worked under bond since it was reopened.

Orange County.

(From Our Special Correspondent.)

Santa Ana Tin Mining Company.—The officers and directors are Gail Borden, president; M. Phillips, vice-president; L. C. Comer, secretary and treasurer; J. A. Comer, general manager, and B. W. Lee, attorney. Capital stock, \$2,000,000. The company is developing a tin property located in the Santa Ana Range. The management states that a tunnel has been run 200 ft. and a large amount of ore blocked out, the values being disseminated through the entire mass so far as prospect work has gone. The intention of the company is to at once install a plant consisting of a 10-stamp mill, cyanide plant, roaster and smelter. Samples assayed at Los Angeles are said to show gold, tin and bismuth.

Riverside County.

(From an Occasional Correspondent.)

Needles Smelting Company.—The plant shut down for 6 weeks on account of the intense heat, but will resume work September 16th. Chas. S. Corning is general manager.

Red Cloud.—Considerable progress has been made at this mine recently. The company has arranged for a Worthington triple-expansion pump, 3 Lane slow-process mills, 3 concentrators and 9 miles of water pipe. As soon as the new machinery is set in place 150 men will be put at work. S. R. Creasinger, of Los Angeles, is president.

Shasta County.

(From Our Special Correspondent.)

Midas Gold Mining Company.—J. Combs, W. R. Bigelow and M. C. Jordan, residents of Trinity County, have brought an injunction suit against this company, restraining the diverting

of water from Brown's Creek into the defendant's ditch and for \$4,000 damages and costs. The creek rises near the county line and flows west into Trinity County. The plaintiffs claim that more than 30 years ago they legally appropriated the water of this creek for mining and irrigation purposes. The Midas Mine is producing from \$30,000 to \$50,000 per month, employing 250 men, and the suit will seriously interfere with it, as it can get water from no other source.

Minnesota.—Work on this old mine 1 mile below the Iron Mountain Railway bridge will be resumed by J. W. Parmalee and A. Longstreet. There are 4 drifts on the ore body, aggregating 2,000 ft. in length. At a point 600 ft. in on the lowest drift good ore was taken out by the former lessees, valued at \$20,000. A 10-stamp mill is on the property. The ore taken out will be shipped.

Minnesota Mountain.—It is reported that the group of claims on this mountain owned by Moer & Small has been purchased by a Leadville, Colo., company.

Siskiyou County.

(From Our Special Correspondent.)

Cherry Hill Gold Mining Company.—This company has been reorganized with a capital stock of \$1,000,000, and \$30,000 is now in the treasury for development purposes. New machinery has arrived for the air compressor and a tunnel will be driven at least 1,500 ft., to cross all 4 veins and to be completed in 6 months.

Trinity County.

(From Our Special Correspondent.)

Bloss & McClary.—This old hydraulic mine near Trinity Center has had a good season's run under the management of the McDonald Brothers. The cleaning up is in progress.

Tom O'Keefe & Company.—It is reported that this firm has developed some very rich ore on its property opposite Van Matre's Ranch, at Minersville. Considerable work has been done. The ore is worked in an arrastra.

Tuolumne County.

(From Our Special Correspondent.)

Clio.—The new tunnel started near the mill as an adit will be run about 200 ft. to connect with the shaft. The mill is running steadily and 12 men are working. The property is ½ mile south of Jacksonville.

Contact.—This property on Bald Mountain, near Mensen's, has been opened and a 5-stamp mill is to be erected. The ledge carries 20 in. of high-grade ore.

Contention.—The tunnel on this mine on Knight's Creek is being extended and an upraise to the surface has been started at the 180-ft. point. Ore is being stoped for a test run. L. M. Howe, who holds a bond on the property at \$11,000, is in charge.

Densmore.—The 14 stamps at this mine, 2 miles from Parrott's Ferry, are crushing about 40 tons of ore per day. The cyanide plant is doing good work and considerable ore is shipped with the concentrates to the Selby Smelting Works for treatment. The mill and hoist are operated by water power. All ore from the slopes above is run out through the big tunnel.

Draper.—The shaft at this mine is down 470 ft. and arrangements are being made to drive a tunnel to cross-cut and run drifts. Three shifts are worked.

Jumper.—This mine, near Stent, is producing steadily. The shaft is down 1,500 ft., and levels are being opened at every 100 ft. downward from the 700-ft., where stoping is in progress.

Rawhide-App.—These mines are being worked on a large scale. The 60-stamp mill on the App is crushing good rock, while a great deal of timbering has been done in the mine and the machinery has been generally overhauled. The Rawhide's 40 stamps are crushing good rock day and night. A. McDonald is superintendent of both mines.

Star King.—At this mine on the south side of North Fork Canyon of Tuolumne River, the shaft is down 400 ft. and drifts have been started both ways. Stoping will start soon. Rich ore is said to have been developed. A Boston company is working the property.

Washington.—This copper mine, about 9 miles east from La Grange, is being developed by the owners, Hensley & Son. The main shaft is down 150 ft. Below the 90 ft. very little timber is required. Drifts have been run on the 30 and 65-ft. levels about 30 ft. each way. At the 90-ft. a drift run 23 ft. shows a 3-ft. ledge of yellow sulphides which average 20% copper and \$3 in gold and silver. At the 140-ft. a drift has been run 15 ft., showing the ledge to have widened to 10 ft. The owners intend to sink to the 500-ft. and drift both ways.

Ventura County.

(From Our Special Correspondent.)

R. S. Beaverstock reports that he has located a large ledge of molybdenite on Alamo Mountains on the property of D. McDonald. The vein is from 8 to 15 ft. in width. A lot has been sent to Los Angeles for concentration tests.

Frazier Borate Company.—Regular shipments of from 8 to 10 car-loads of borax are being made from the property of this company in the northeast corner of this county, to San Francisco, every month. The company is running a tunnel and has installed a pumping plant to clean the water out of the shafts and determine the extent of the deposit.

COLORADO.

Clear Creek County.

(From Our Special Correspondent.)

Centennial.—This property in Georgetown has 4 ft. of ore in the heading of the 600-ft. level, with good gold values. New machinery has been added by the Eastern men, who are working the mine under option. Application has been made to the city council of Georgetown to drive levels under the streets.

Comstock Leasing Company.—A nice body of good ore has been encountered in the Comstock Mine at Idaho Springs. C. J. Hughes, of Denver, is operating the property.

Covode Tunnel Company.—New York men have resumed work on this cross-cut at Empire. Air drills are in use. The tunnel has been driven 500 ft., but has not reached the lodes.

Edgardine.—This property at Idaho Springs has just been sold by W. H. Smith and associates to R. B. Ragland, representing Tennessee capital. The consideration is close to \$20,000. The shaft is down 300 ft. and the Newhouse Tunnel has cut one of the veins at a depth of 900 ft. Contracts are to be made with the tunnel company.

John Owen Mining and Milling Company.—The Aduddell Vein has been cut in the Newhouse Tunnel. The solid streak of ore is 12 in. wide. Between the walls are 6 ft. of vein matter. Just before coming to this mineral the tunnel passed through 100 ft. of gouge. Manager Hanchett, of the tunnel company, is now in New York.

Little Superior Gold Mining and Milling Company.—Philadelphia men have taken this property at Dumont, consisting of 20 patented claims and several locations. Shaft sinking and drifting are to begin. H. L. Tourny is manager.

Red Oak Mining Company.—At the annual meeting the following board was elected: M. Bonham, president; W. H. Smith, of Des Moines, Ia., vice-president; A. B. Montgomery and Geo. W. Teagarden, Denver; Smith McPherson, Red Oak, Ia.; J. E. Tusant and Gus Butfreund, Des Moines, Ia. The annual report shows the new mill working nicely and the mine in shape for heavier production. An application has been made to the railroad company to build a spur from the Georgetown yards to the mine. The ore bodies have opened into the biggest strike made in the upper end of the county for several years.

Gilpin County.

(From Our Special Correspondent.)

Adudell.—It is reported that this vein has been cut by the Newhouse Tunnel at about 2 miles in from South Clear Creek. This is one of the largest and strongest veins in the Russell District and its cutting will drain other properties.

Camp Grove.—Phillip Mixsell, of Idaho Springs, has a shaft down 220 ft., with some copper showing in the crevice. He has also taken hold of the Ute property, which will be worked in conjunction.

Gettysburg Mining Development, and Milling Company.—The affairs of this company, operating at Camp Independence, have been straightened out and arrangements are being perfected for resuming work. E. M. Willard, Gilpin, is superintendent.

Gomero Mines Syndicate, Limited.—The monthly shipments from the Running Lode average 125 to 150 tons of concentrating ores, and from 35 to 40 tons of smelting ores, both of uniform good grade. The mine employs 35 men and on September 1st day's wages were increased from \$2.50 to \$2.75. The property is paying good profits. English parties are interested. T. Dunstone, Black Hawk, is manager.

Lutz.—Iowa men are interested and a report is current that outside parties will soon start up this property in Russell District.

Old Town Gold Mining and Milling Company.—This property in Russell District is paying about \$2,000 per month in dividends, notwithstanding the new machinery and surface improvements. The ores are all shipped to the concentrators and give values of \$25 per ton. G. K. Kimball, Russell Gulch, is manager.

Ridgewood Gold Mining Company.—A No. 15 Janesville station pump, with capacity of 1,000 gal. per minute, is being installed at the 600 station and the company is preparing to sink 200 ft. deeper. B. P. Hamond, Central City, is in charge.

Robert Emmet Gold Mining Company.—A strike is reported in cross-cutting at the Robert Emmet at 525 ft. depth, the crevice being 5 ft. wide, with from 12 to 15 in. of iron, carrying good values. A contract for drifting 200 ft. has been given and the property is expected to open

on a large scale. W. H. Nicholls, Central City, is manager.

Saratoga & Cyclops Gold and Silver Mining Company.—On account of ill health Ernest Le Neve Foster has resigned, after several years of skillful management, and Frank C. Carpenter, formerly of Deadwood, S. Dak., succeeds him. R. E. Nelson, for a number of years foreman, is superintendent. The company has put in an aerial tramway to the tracks of the Gilpin Tramway Company and will ship the entire dump of the No. 1 shaft, estimated at about 40,000 tons, to the Carpenter Smelter at Golden. The company is averaging from 65 to 75 tons daily from its No. 2 shaft.

Tucker.—Eastern parties have opened up lead ore carrying values of \$80 per ton and are building an addition of 24 by 34 ft., working 2 shifts. W. Woods, Central City, is in charge.

Gunnison County.

An Eastern syndicate, organized by C. L. Arzeno, of Cripple Creek, has purchased a group of 125 acres of ground on Augusta Mountain, near Pittsburg, 8 miles north of Crested Butte. The purchase price is said to be \$250,000. The Augusta Mine is included in the transfer, it having been purchased of S. C. Robinson, who has operated it for a number of years under bond and lease. It is shipping from 2 to 3 cars of high grade lead-silver-gold ore a week. The purchasers have taken charge and are preparing to move in machinery and make necessary improvements to permit a deep drainage tunnel to be driven from the south side of Augusta Mountain during the winter.

Carbonate Tunnel.—This tunnel at Gunnison is being pushed ahead by a good force of men. The Hoffman Smelter at Marble is running on ores of the district.

Sulphide Copper Company.—This company is pushing work on the Hard Cash Tunnel near Elko, which has encountered a body of ore carrying silver and copper. A car-load of good grade copper ore has been shipped to the smelter at Canon City.

Tin Cup.—This mine, which has not been operated since 1893, has been started up by a company of Detroit men, with I. L. Johnson in charge. The mine is showing 4 ft. of good ore running well in lead and silver, as high as 50% lead. Considerable ore is being taken out and shipments will follow soon. The mine has been a heavy producer.

Lake County—Leadville.

(From Our Special Correspondent.)

Leadville Ore Production.—The August output shows an increase over July, and amounted to 70,000 tons of all classes of ore with an estimated valuation of \$1,120,000.

Leadville Zinc Tonnage.—The Moyer and A. M. W. are furnishing most of the zinc ore shipments now averaging but about 200 tons a day. The camp can easily supply 700 to 800 tons a day.

A. M. W. Combination.—About 250 tons a day of sulphides are handled. The drift to connect with the Mahala ground is nearly completed. The mill is handling 100 tons a day of zinciferous stuff from the Maid shaft. Some very fine lead ore is extracted from the upper workings.

Banker Mining Company.—Manager Guth reports that ore has been opened in both the 2d and 5th levels; in the 2d a streak of hard carbonate and in the 5th level a vein of high-grade sulphide.

Boston Gold-Copper Smelting Company.—This company built a pyritic smelter, but lacked successful management. The process on low-grade Leadville ores has proven successful. A. A. Wyman, of Boston, has just filed a mortgage on the plant for \$100,000, given to the International Trust Company, of Boston. It is given to sell bonds to pay off the indebtedness and make important improvements. A prominent local mining man is to be the new manager in place of Mr. Duvall, who has resigned.

California Gulch Mining Company.—At a special meeting on September 14th it is hoped to form a plan to raise more money.

Cloud City Mining Company.—At 550 ft. drifts have cut an 8-in. streak of carbonate.

Diamond Gold Mining Company.—This new gold belt shaft in Big Evans Gulch is down 1,000 ft., where drifts are being run. Philadelphia people are interested.

Dinero Leasing Company.—This concern is developing the old Dinero Mine after sinking 60 ft. to a total depth of 400 ft. The ore will average \$100 to the ton.

Fortune.—This gold belt property starts its 670-ft. shaft to the lower zones this week, and with 300 ft. of sinking should encounter the Resurrection ore-body.

Golden Eagle Mining Company.—Most of the work is done by lessees, one of the main points being the Vinnie. The company has a large amount of good territory on the gold belt. On September 10th a dividend was paid of 1c. a share on the outstanding stock, 500,000 shares.

Long & Derry Leasing Company.—The com-

pany is capitalized at 20,000 shares. L. A. Reynolds is president; John Groberg, vice-president, and N. M. Estey, secretary-treasurer. Machinery is being erected. In one hole just cleaned out the company has found 5-ft. of ore, which assays from 30 to 200 oz. silver and a good per cent. of lead. In another place a fine iron outcrop samples 12 oz. silver. The company has 60 acres of well-mineralized territory.

New Leadville Home Mining Company.—The Penrose is now shipping 400 tons a day, while the other shafts are preparing for a production of 200 tons a day. A fine body of ore has been opened up in new workings in the Bon Air shaft, while very high-grade ore has been opened in the Starr shaft. The iron of the Penrose nets \$5 a ton.

Thespian.—This group, worked for the past 20 years with varied success by the owner, Capt. Jenks, is likely to be started up and a number of capitalists are investigating the proposition. The property lies near the Evelyn, where the big find of sulphides was recently made, and this strike has called attention to the Thespian group, which has much virgin territory to be explored.

Valentine Mining Company.—No action has yet been taken relative to resuming work. This is a new downtown property, many shares of stock being held by local people. A difference among the stockholders seems to prevent an arrangement for raising money to continue operations.

Virginus.—This Fryer Hill property, which has been idle for years, has been secured by N. M. Estey. Machinery is being put in. The territory lies near the Bangkok-Cora-Belle, where the Esteyes developed large iron deposits some years ago.

San Juan County.

George Washington.—This mine, near the Sunnyside, has been sold by County Judge R. J. McNutt to R. W. Watson, E. P. Watson, G. H. Stoiber and M. B. Holt, the consideration being \$15,000 for a 5-6 interest. The vein, at the point where the cross-cut was run from the bottom of the 100-ft. shaft, is said to measure over 100 ft. from wall to wall.

Little Maud.—On this claim, in Maggie Gulch, near Silverton, owned by Born & Abbey, an ore body is opened that is over 16 in. wide and assays well in gold and silver. The ore contains chlorides and brittle silver and the values in gold and silver are about in equal proportion. A new cross-cut tunnel will be started at a point 200 ft. lower down the mountain.

San Juan Queen Group.—This group in Picayune Gulch was lately purchased by S. G. Usher et al. from Henry Sherman. In past years this mine has a record of high-grade shipments of silver and gold ore. A systematic mode of development will be started under the charge of W. C. Fisher, a former owner.

Sioux Mining Company.—This company has let a contract to Jos. Satore et al., to drive a cross-cut tunnel 5 by 7 ft., 500 ft. to cut the Mogul and Grand Mogul veins above Eureka near the mouth of Picayune Gulch. This company has put in a new power plant, pipe line and other needed improvements this season. E. C. Condit is manager.

San Miguel County.

Liberty Bell.—At this company's mills near Telluride 65 stamps are now running steadily and the new 15 stamps will be put in operation very soon.

(From Our Special Correspondent.)

Ajax.—This mine in Ingram Basin, after 15 years of idleness, is now receiving some attention from its Eastern owners. The old workings have been cleaned out and a 20-ton lot of ore sent down for treatment. J. R. Grant, local manager, states that if profitable returns are received from this lot the property will be steadily worked in the future.

Contention Group.—This group on Bear Creek, a recent purchase of the Smuggler-Union Company, will soon be connected with the mills of that company at Pandora by the longest aerial tramway in the State. The order to the wire cable manufacturers called for 54,000 ft. Construction is rapidly advancing, and it will be running by the time the new mill and cyanide plant are in operation.

Teller County—Cripple Creek.

(From Our Special Correspondent.)

Acacia Gold Mining Company.—A new hoist is being installed on the old Wrockloff Lease on the Burns Claim. It is understood that this shaft, now about 600 ft. down, is to be deepened. This part of the property is worked by Ownbey & McFarland, who are also working the north block on the Pharmacist.

Doctor-Jack Pot.—Rumors are afloat that the usual monthly dividends will be passed. While no definite information can be obtained, it is the general impression that the property has not been doing nearly so well the past few months as when first organized. Then it made a phenomenal record and shipped a large amount of very rich ore. The ground owned is quite large

and in an excellent neighborhood. It is controlled by the Woods Investment Company.

Eclipse-Sunset Consolidation.—A meeting of the stockholders of the Eclipse Consolidated Company is to be held September 26th to vote on the proposition to consolidate with that of the Sunset on Battle and Squaw mountains. It is understood a new company may be formed, to be incorporated under the laws of Wyoming, with a capitalization of 3,000,000 shares: 1,135,000 shares are to go to the Eclipse Company and 1,365,000 to the Sunset Company, leaving 500,000 shares in the treasury. The Eclipse is situated on the north side of Battle Mountain, and has at times shipped considerable ore and much work has been done on it. The Sunset Company owns a number of claims, situated on Squaw and Battle mountains. The property is in a very promising neighborhood.

Elkton Consolidated Gold Mining Company.—The regular quarterly dividend has been distributed. The mine is understood to be in excellent condition.

Golden Cycle.—It is understood that the shaft is now retimbered and development work is being pushed on the lower level. The new ore house is not completed.

Pharmacist Consolidated Mining Company.—At the annual meeting the following directors were elected: W. J. Chambers, Albert Wagner, E. P. Arthur, G. M. Fay and E. R. Whitmarsh. The property was shown to be in good condition and creating a fair reserve in the treasury. It is at present worked by several lessees, chief of which are the T. H. C. Mitchell consolidations on the old workings and Ownbey & McFarland on the north end, who are shipping some ore. Dr. Chambers was elected president; Mr. Wagner, vice-president; Mr. Arthur, treasurer, and Mr. Fay, secretary. This property is one of the oldest shippers in the district and is situated on Bull Hill in the town of Altman. The prospects of the company are better than for some time past.

Wild Horse.—A large amount of good ore is being taken from this property on Bull Hill, and the very rich strike is understood to be holding out well. The property belongs to the Mines Consolidated Company, which is controlled by the Woods Investment Company.

GEORGIA.

Lumpkin County.

(From Our Special Correspondent.)

Bird Brothers.—The gold dredger and mineral privileges on the Chestatee River, 10 miles from Dahlonega, has been sold at public auction to Capt. Geo. H. Breymann, vice-president and general manager of the Consolidated Gold Mining Company, for \$1,515. The boat has been in operation for about 5 years, and the proprietors have, in that time, cleared between \$25,000 and \$30,000. The price is regarded as exceedingly low.

Georgia Dredging Company.—This company has been working for several months a gold dredge boat on the Chestatee River, within 2 miles of Dahlonega, with such success that the company is building a second boat.

IDAHO.

Boise County.

Copeland Valley Placers.—Lawler & Blood, of Denver, Colo., have taken possession of these properties, embracing a large area of rich placer ground. The old owners were Stover & Norther, who have made legal transfer. There is a small dredge on one portion of the property. The new owners have started this, and are now having plans drawn for another of much larger capacity, and have sent in a drilling machine, with which the valley is to be thoroughly tested. The Copeland Valley is not over 50 miles from Boise. Bedrock is at an average of 20 ft. in depth. The gold is reported usually in nugget form, with very little fine, and is easily saved.

Washington.—Charles Balbach, principal owner of this mine in the Boise Basin, has given a contract for sinking another 100 ft., besides ordering the continuation of the 600-ft. tunnel contract. The property is equipped with a 5-stamp mill.

Idaho County.

Branham and Bohndel.—A Mr. Hathaway, of Denver, Colo., has taken an option on this and several other interests 23 miles east of Warrens, on Grouse Creek, comprising a large tract of rich ground.

Jumbo.—There is now a stamp mill at this Buffalo Hump Mine with which 6 tons of ore are crushed daily. Frank Brown, the manager, has ordered from San Francisco 5 new stamps. Ten men are now busy at the Jumbo and more will be put to work as soon as the new stamps arrive.

Lucky Ben.—Jay Cizek is working 4 men on this claim at Warrens.

Kootenai County.

(From Our Special Correspondent.)

Continental Group.—This property in the Priest Lake District on Continental Mountain, consisting of 3 claims, owned by A. Klockman, of Rosslund, B. C., is about sold to Duluth parties for a reported price of \$300,000. The group is 18 miles

from Port Hill, its nearest railroad point. The property has been under development for several years and is said to have \$1,500,000 gross in sight. The ore is a silver-lead and has a gross value of about \$46 per ton for the first-class, with a large tonnage of concentrating ore. The ore shoot is claimed to be 3,500 ft. long on the surface. The property crosses the vein for 4,500 ft. and is opened up by a shaft 80 ft. deep, 2 tunnels and several openings across the outcrop. The ledge is between 40 and 50 ft. wide, with a streak of shipping ore on either wall, with the intervening vein filling having a good concentrating value. The property is in an isolated district, with the cost of a wagon road to the railroad estimated at \$25,000.

Lemhi County.

(From Our Special Correspondent.)

Pacific Dredging Company.—The boiler at this company's dredge exploded recently, killing Superintendent Dunlop and seriously wounding several of the men. This company's operations are at the old McNutt diggings on Moose Creek, 80 miles from Salmon City. The dredge was owned by W. E. Jollette, of Chicago, and is a total wreck. The explosion followed a series of mishaps that have hampered the enterprise since its start. At the close of last season the bucket chain broke and the buckets were lost in 30 ft. of water, where they remained until this spring.

Washington County.

(From Our Special Correspondent.)

Weiser Smelter.—The new smelter of the Boston & Seven Devils Copper Company, near Weiser, is progressing finely. Besides the smelter proper the machine shop, carpenter shop, assay and superintendent's office, boarding house and lodging house are nearly completed. Men are excavating for two 50,000-gal. tanks on a hill 50 ft. above the smelter. Water will be pumped from a well near the river to these tanks and thence distributed. The side track is about finished and the unloading and placing of machinery will begin immediately. There are now between 30 and 40 car-loads of ore stored in the bins at Council.

KANSAS.

Crawford County.

(From Our Special Correspondent.)

Pittsburg Coal Miners' Strike.—The strike of miners of the Big Four coal companies in Kansas, aggregating 4,000 men, is now in effect. The strike is to compel a recognition of the union and was called by the United Mine Workers. The companies have agents out soliciting non-union labor. They have built stockades to protect non-union men and are working only the mines at Fleming. Several years ago in a similar strike the attempt to use negro labor was unsuccessful.

KENTUCKY.

Federal Asphalt Company.—This company, said to control asphalt deposits in 4 counties of Kentucky, has been organized, with a capital stock of \$5,000,000, \$3,500,000 of which has been paid in. The company is to be incorporated under the laws of West Virginia, and it has put men at work on the property in Grayson County. The officers are: M. D. Coffeen, president; Joseph Huffaker, vice-president; A. H. Loeb, treasurer; F. L. Warner, secretary, and Azel F. Hatch, general counsel. The board of directors are: Gilbert B. Shaw, Chicago; Geo. E. Spry, Chicago; J. R. Pruyne, Chicago; Joseph Huffaker, Louisville; A. H. Loeb, Chicago; Azel F. Hatch, Chicago; M. D. Coffeen, Chicago. The company owns 23,000 acres of land in Hardin, Grayson, Edmondson, Hart and Warren counties, which it purchased about 6 weeks ago.

MICHIGAN.

Copper—Houghton County.

Isle Royale.—The strike at this mine near Houghton has been settled. By the settlement the men will be raised hereafter as soon as possible after 5 o'clock P. M., coming up ahead of the drills, while Saturdays they will come up at 12 o'clock. All contracts will be measured up monthly and the men will be allowed what their contracts call for.

Tamarack.—The product for August is said to have been a trifle less than 1,800 tons of mineral.

(From Our Special Correspondent.)

Arcadian.—The Douglass shaft continues in good ground.

Copper—Keweenaw County.

(From Our Special Correspondent.)

Allouez.—This company holds options on 2 of the best sections of the Ahmeek property.

Mohawk.—The fissure vein of Mohawkite has been opened at the 4th level in No. 1 shaft. It is stated that there are now about 5,000 tons of this mineral blocked out.

Phoenix.—About 60,000 lbs. of copper, the product of the past 6 months, have been sold and there are said to be still 21,000 lbs. on hand.

Copper—Ontonagon County.

(From Our Special Correspondent.)

Archie T. McNaughton, of Minneapolis, and J. J. Healy, of Houghton, have taken an option on

160 acres of land, about 4 miles southeast of the Winona, for a syndicate of Minnesota men, including the Pillsburys and Senator Washburn. Within 30 days camps will be built and preparations made for several months work. The property under option is located in section 6, T. 51, R. 36. The Baltic lode is thought to traverse the property. What is thought to be an outcrop of the vein has already been found. It contains copper.

It is expected that active work will soon be done on land located in section 5, T. 52, R. 36. A lode, outcropping on section 7, will be sought.

Copper Range Railroad.—Trains will be running into Greenland in a few days.

National.—It is reported that this old mine will be reopened at an early date. There are 9 shafts on the property, all in fair condition.

Penn.—This property is under option to Pickands, Mather & Company, of Cleveland, O., who will explore it under Robert Murray. The Penn was worked a number of years ago when a part of the Belt mines, now under option to the Standard Oil interests. The property has an area of 1,440 acres, all on the mineral range.

MINNESOTA.

(From Our Special Correspondent.)

In August the Minnesota roads shipped 1,959,773 gross tons, as follows:

	August.	Season.
Duluth & Iron Range.....	907,979	3,612,655
Duluth, Mesabi & Northern.....	638,291	2,191,400
Eastern Minnesota Railway.....	413,503	1,841,711
	1,959,773	7,145,766

This is nearly 500 tons greater than for the corresponding month of 1900, and for the season 850,000 tons. This compares with a decrease at the Michigan ports of Marquette and Escanaba, so that it is evident that Minnesota this year will for the first time ship more ore than both Michigan and Wisconsin combined. The first ore shipment was made from Minnesota in 1884, and nothing large was done till 1894.

During the month there passed out of Lake Superior, this including all Lake ore except that from Escanaba, 2,920,700 gross tons, compared with 2,285,572 for the corresponding month of 1900, about the same in 1899 and 1,728,509 in 1898.

The Duluth & Iron Range road has filed an amendment to its articles of incorporation that will permit it to build a line to the Canadian boundary northeast of Ely, which is taken to mean that connection with the Canadian Northern and its branch to the Gunflint Lake Region is under serious consideration.

Iron—Mesabi Range.

(From Our Special Correspondent.)

M. L. Fay is sinking pits and starting drills in lands near Biwabik. The work now is on the w. ½ of the s. e. ¼ of section 3, T. 58, R. 16. He has a large acreage near there.

Most of the stockpiles will be cleaned up during September, and the late shipments of the year will be from daily hoisting.

Belliton Iron Mining Company.—This company has taken a lease upon all the Stevens lands in section 58, R. 20, with an annual output the first year of 25,000, 50,000 the second and 100,000 tons the third and after from each description.

Biwabik Mining Company.—The 8-ton Gates crusher is now working full time on the hard ore at the west side of the mine. A large amount of this ore is shipped daily.

Genoa Iron Company.—This company has attacked the 60,000-ton stock pile at No. 2 shaft and is loading about 3,000 tons a day there.

Sparta Iron Company.—The steam shovel has been moved to the Elba and shipments at Sparta are confined to the hoist from 2 shafts. The mine can deliver more ore than it has yet sold.

Iron—Vermilion Range.

(From Our Special Correspondent.)

Pioneer.—This mine in August produced 662,530 gross tons from the single shaft, probably a record-breaking figure. The shaft is 4-compartment, with ladder and pipe ways and 2 skipways, holding a pair of balanced 6-ton skips. The record of last month is a source of the highest gratification to President Cole. A second shaft will be ready to hoist the coming year. The mine is expected to ship about 50,000 tons

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The lead and zinc ore market in the Missouri-Kansas mining district is unchanged, but while sales were heavy zinc ore still remains weak. Apprehension was occasioned by a report that a smelter trust was being formed by J. Pierpont Morgan and associates and that Morgan has desired the zinc smelters ever since the formation of the steel combine, since the use of spelter is so extensive in that industry.

The highest price paid for zinc ore during the week was \$26 per ton, on a basis of \$23 per ton for 60% ore. Lead ore brought \$23.25 per 1,000 lbs. delivered, and the entire product was cleaned up. During the corresponding week of

last year zinc ore's top price was \$23 per ton and lead ore brought \$23 per 1,000 lbs.

Following are the sales of lead and zinc ore by camps for the week ending August 7th.

Camps.	Zinc, lbs.	Lead, lbs.	Value.
Joplin	3,325,890	668,830	\$57,124
Galena-Empire	1,052,000	85,090	14,076
Cartersville	1,336,020	361,170	23,093
Aurora	744,930	15,750	7,058
Webb City	640,780	18,950	7,538
Oronogo	511,910	57,460	7,354
Zincite	343,060	7,210	4,455
Duenweg	221,770	32,020	2,961
Cave Springs	182,540	2,850	2,162
Central City	106,340	3,550	1,678
Granby	287,000	30,000	3,141
Roaring Springs	88,700	7,710	1,066
Badger	198,210	27,060	3,008
Carl Junction	485,340	.....	6,066
Neck City	112,620	.....	1,408
Carthage	111,520	.....	1,394
Total	9,752,630	1,317,650	\$143,577
Total for 33 weeks.....	359,470,970	47,647,680	5,434,176
Total for week of 1900.....	9,738,620	1,038,490	143,814
Zinc ore value for week, \$112,964; lead ore, \$30,613.			

Bollinger County.

(From Our Special Correspondent.)

Pennsylvania Lead and Oil Company.—A rich strike of lead ore is reported by this company in a drill hole near the line dividing Bollinger and Cape Girardeau counties. The drill went through about 8 ft. of almost pure ore.

Wright County.

(From Our Special Correspondent.)

Dodson Lead and Zinc Company.—This company has transferred its holdings to the Anglo-American Zinc and Lead Company, which will begin operations at once. A complete concentrating plant is built close to 4 shafts already in zinc ore and other shafts are being sunk to determine the dimensions of the ore body.

Midland Lead and Zinc Company.—About a year ago some old workings, together with 600 acres of adjoining land, were purchased by this company, of Philadelphia, Pa., which recently erected a concentrating plant that is turning out lead regularly in large quantities.

Red Bird.—This mine, owned by Kansas and New York capitalists, has developed into a fine property.

MONTANA.

Fergus County.

Kendall.—Finch & Campbell have made, it is said, a final payment of \$300,000 on the bond which they took on these mines. The deed to the properties has been filed in the office of the county clerk and recorder. Work on the 2 cyanide mills will be pushed rapidly so that operations may begin before snow flies.

New Year Gold Mines Company.—This company has purchased of J. L. Harmon for \$10,500 cash the old Bach and the Kid Lodes in Warm Spring District, near Lewistown. All the property is patented ground and joins the mines of the New York Company.

Jefferson County.

(From Our Special Correspondent.)

New State Mining Company.—This company, composed of O. A. Koetitz & Brothers, of California, and A. P. Ming & Brothers, of Pennsylvania, has bought the New Stake Mine at Clancy. It intends to sink the shaft to 500 ft. and continue the main tunnel 1,000 ft. The tunnel is now 200 ft. in. A full plant of machinery has been ordered. A new shaft house is under construction. A. P. Ming is manager.

Old Alta.—After about 20 years of activity this property was closed in October, 1896, the management concluding it to be worked out completely, but a lease was given to Pat. Manning, who had been a mine boss. He has shipped sufficient ore during the 6 years to net himself and associates a good yearly income. Mr. Manning has recently opened a new ore body, 30 ft. wide, of silver-lead ore. The ore as far as opened indicates a much larger body than was discovered during all the operations on Alta Hill.

Lewis & Clarke County.

Empire.—Three car-loads of heavy timber and one car-load of tank material have arrived for the 500-ton cyanide plant at Marysville. The plant will treat about 150,000 tons of tailings and afterward the ore bodies in the Empire Mines. The construction work is being pushed. Cyaniding will be under the control of J. L. Malm & Company. The mines are managed by Owen Byrnes.

Sunrise.—A cyanide plant is being erected by Madden & Sullivan at this mine on Weazel Gulch, near the East Pacific Mine, about 20 miles east of Helena. It will consist of rolls, amalgamating tables and cyanide tanks. Two car-loads of machinery have been received at Winston and are being hauled to the mine. The Sunrise is the oldest property in the Winston District, having been worked first in the '70s by Small & Rogers, who still own it. It is developed by one 400-ft. tunnel and several shorter tunnels. In the early days it had an arrastra.

Madison County.

Agitator.—Wherry & Smith are shipping stead-

ily from this mine in Ramshorn Gulch, where they have 10 miners at work.

Braham.—Haviland & Lindfors are keeping the old arrastra busy. The ore in the mine is of good value and the shoot continues of good size.

Lester.—Joe Armour and Bob Jeffries, of Twin Bridges, have bonded this mine, in Hulbert Canyon, to parties that formerly operated the Drum Lummon. The owners have been at work there for 3 years and have driven 3 tunnels into the mountain. Machinery will be put on the property, with which to treat the ore.

Watseca.—This company, at Rochester, has about 120 men on its mining payroll and about 30 at the mill. It is getting ready to start the Buffalo Mine.

(From Our Special Correspondent.)

Pole Creek Placers.—This ground, belonging to A. W. Tanner, of Red Bluff, who has owned it for 25 years, is to be worked by a party of Butte men under bond. The deal was made by G. W. Turner. The ground is noted for the garnets it produces. Several pounds of these stones are often found to the yard of gravel, some being of large size and of a rich color. Forty pounds of garnet sand and crystals have been recovered from one yard.

Silver Bow County.

(From Our Special Correspondent.)

The district southeast of Butte on the flat and adjacent foothills near Columbia Gardens is showing considerable activity and a number of shafts are being sunk. Franklin Farrell, of Ansonia, Conn., is sinking 3. The bedrock is anywhere from 70 to 200 ft. deep, and the ground being largely a quicksand the shafts need careful handling. The deepest shaft at present is the Sinbad, which is 500 ft. deep. In this property is a vein 7 ft. wide, with good copper ore, most of which is sacked in the mine. It is too early to say what success will be met by the various exploration schemes. The most sanguine people are the owners of the claims, most of which are patented, and though few have produced any ore to speak of, they are held at from \$100,000 to \$150,000 each.

Amazon.—This property east of Butte near Columbia Gardens is about to be sold for \$50,000 cash, it is stated. The money is to be paid by September 20th. Fred Potting, of Butte, owns ½ and Barrett & Jacky and others, of Butte, the balance. This claim has never shipped much, but shows a good strong vein in the surface carrying copper as a red oxide. The prospective purchasers announce that they intend to sink to the 1,000-ft. level.

Butte-Anaconda Copper Development Company.—This organization has been formed to develop the Carlisle Claim near Columbia Gardens, with R. A. Bell, of Helena, as president; Patrick Mullins, of Butte, vice-president; G. R. Nickey, of Butte, secretary and treasurer.

Ella.—David J. Charles, of South Butte, and others are working this claim near Meadville with a crew of 18 men. The shaft is nearly 600 ft. deep and as soon as a large pump, recently purchased, is put in a cross-cut will be driven to the vein.

Snohomish & Tramway.—Judge Knowles, of United States Circuit Court, has ordered the sale in partition of these properties at public auction and appointed Henry N. Blake master to conduct the sale. For the past 18 months the properties have been operated by John I. Harris as receiver. F. A. Heinze owns ½ of the Tramway and 1/3 of the Snohomish. The Butte & Boston Company owns ½ of the Tramway and 2/3 of the Snohomish. Both interests have been fighting for the control. The mines are surrounded by the property of the contending interests and are considered very valuable. During Receiver Harris' administration, while the operations have been quite conservative, he has on deposit as net profit nearly \$200,000.

OHIO.

Belmont County.

Darrah.—These coal mines near St. Clairsville have been sold to Joseph Coburn, representing Pittsburg persons who will develop extensively. The price was over \$10,000.

PENNSYLVANIA.

Anthracite Coal.

Delaware & Hudson Coal Company.—A large new breaker will be erected east of Wilkes-Barre, in place of the one recently burnt. It will be ready about January 1st.

Draper.—An extensive mine fire is raging in the 5th lift of this colliery at Gilberton, west of Mahanoy City. The fire is supposed to have originated from a blast. The colliery is owned by the Philadelphia & Reading Coal and Iron Company. It is being flooded.

Pennsylvania Coal Company.—This company is preparing to open the abandoned No. 14 slope near Pittston, which has been idle nearly 10 years. The coal from the slope will be shipped by locomotive in small mine cars. A new road is being surveyed, which will connect to the branch at No. 4 shaft, which runs to the Ewen

breaker. The company expects in the beginning to ship about 600 tons a day.

Sandy Run.—This colliery, at Hazleton, operated by M. S. Kemmerer & Company, has closed down indefinitely. Three hundred men are thrown out of employment.

Bituminous Coal.

A syndicate, said to be working in the interest of the Pennsylvania Railroad, has bought 6,000 acres of coal land in Derry Township.

Port Royal.—At this colliery, where a series of explosions entombed a number of miners and several mine officials some weeks ago, the damaged workings are being repaired and the bodies of many of the victims have been recovered.

Somerset Colliery Company.—John A. Clark, late of Lonaconing, Md., who recently sold his mines in the Fairmont field, has organized this company, having purchased the holdings of the Somerset Coal Company and the Stonycreek Coal Company on the Somerset & Cambria Branch of the Baltimore & Ohio.

SOUTH DAKOTA.

Lawrence County.

(From Our Special Correspondent.)

O. U. Pryce, of Deadwood, has turned over to Colorado parties a large block of ground in the Ragged Top District, adjoining the Spearfish Company's mine. A contract for a shaft has been let and a cyanide plant may be erected.

Bear Gulch Mining and Milling Company.—Chas. Hoxie, of Deadwood, general superintendent, has gone to consult with the officers of the company at Aurora, Ill. A complete hoisting plant is to be installed.

Deadwood-Standard Company.—The foundations have been laid for the 100-ton cyanide plant at Ragged Top. The machinery and tanks have been ordered. The company will pipe water ½ a mile from Calamity Gulch, over a divide 300 ft. high. Colorado City, Colo., men associated with Ed. Hanska, of Deadwood, are furnishing the money.

Edna Exploration Company.—The directors are F. J. Washabaugh, W. S. Elder, Sol Burns, Jacob Goldberg and John Treber, all of Deadwood. The officers are: President, F. J. Washabaugh; vice-president, John Treber; secretary, O. W. Matson; treasurer, Jacob Goldberg. The company is negotiating for a steam hoist plant to sink a shaft on the Edna and Eva groups of claims in Garden City District.

Pluma Mining Company.—Sinking is resumed at this company's shaft. A steam hoist and air compressor have been ordered. The company is developing by a shaft a property adjoining the Homestake on the east, and hopes to find the Caledonia Vein, which is worked by the Homestake Company farther north.

Titanic Company.—The shaft in the Carbonate District is down 191 ft. A new 120-H. P. boiler is being installed to furnish power.

Two Johns Mining Company.—A diamond drill is being installed at the Two Johns claim, at Crown Hill. The mine is owned by C. A. Hallam and associates, of Chicago.

Pennington County.

(From Our Special Correspondent.)

United States Tin Company.—Elmer J. Miller, of Columbus, O., and B. R. Noble, of Yale, Mich., have organized this company and purchased the Century and Tin King claims east of Hill City. The properties are alleged to contain tin.

TENNESSEE.

Coal Miners' Strike.—About 1,200 coal miners are on strike in the Coal Creek District. Of these 1,000 were at Coal Creek and Briceville and 200 at Oliver Springs. Only one mine in the district is running uninterruptedly, that of the Coal Creek Coal and Coke Company, which company signed the scale arbitration agreement proposed by the Jellico operators. The wage and hour scale is to be fixed by arbitration by October 1st.

Hiwassee Mining Company.—This company has been thrown into the hands of a receiver by the Chancery Court's action sustaining a general creditors' bill filed by John Dempster. Russell Adams Clapp was made receiver and ordered to dispose of the property at public auction on November 2d. This is one of the largest barytes companies in the South.

UTAH.

Juab County.

Boston & Tintic.—It is reported that the drift is out 75 ft. from the shaft on the 130-ft. level, with a portion of the face in nice ledge matter.

Carisa.—Clarence K. McCormick has made final payment on the \$625,000 purchase price of this and Northern Spy groups at Tintic and the property has been transferred by H. E. Carey, acting for himself and Eben Smith, of Denver. Mr. McCormick has perfected the organization of the Carisa Gold and Copper Mining Company and began the issuance of stock.

West Morning Glory.—Manager Smith states that the mine looks encouraging. Where the vein was cut on the 250 level, between 2 and 3 ft. of a bluish gray quartz carrying small val-

ues in copper and silver. On the 200 level 2 shifts are working in nice ore. On the 300 level the face of the drift shows iron-stained quartz. The water flow has increased from about 3,000 to 7,500 gal. per 24 hours, but is causing no inconvenience. Two shifts are at work on the 300 level.

Summit County.

Ajax.—The ore body in the north drift is reported 5½ ft. wide. Assays are said to show 50 oz. silver, 40% lead and from \$2 to \$3 gold.

Ontario.—Manager Charles L. Rood has stated that the 1,700-ft. level is showing considerable improvement. Ore now comes out through the tunnel, making a material difference in the expense of hauling and the quantity of the output. Kopp Brothers have the contract, and it is similar to the one they have with the Daly-West.

Utah & Eastern.—This company, which owns the old Dixie copper mine at St. George, had a car of copper bullion last week. It is the second lot from the August clean-up at the little smelter, and 2 more cars are to come. The shaft is now down 500 ft. below the tunnel level.

Wolverine.—This company, which owns property near Park City, has placed an order with the Mine and Smelter Supply Company for a boiler, dynamo and electric drill equipment with which to run the new 500-ft. tunnel to connect with the ledge outcrops in the company's territory. The tunnel will tap the vein between 500 and 600 ft. deep.

Wasatch County.

Pearl Silver Mining Company.—This company has been incorporated, with Heber as the principal place of business. The ground comprises 3 patented claims, adjoining the Glencoe on the west, on which no work of consequence has been done for 10 years. The incorporators are Heath and Joseph Hatch, William Waldon and Mrs. Waldon, William Harwood and William Horner. The incorporation is for 150,000 shares at par value of \$1 each. Joe Hatch is president and superintendent, and H. Hatch secretary.

Washington County.

West Point Copper Mining Company.—Judge Marioneaux, District Attorney Greenwood, Brigham Jarvis, Mr. Chisholm and Julius C. Keate have organized this company, which has acquired 8 claims north of the Apex or Dixie Mine and between that and the Enterprise group. Development will begin at once.

FOREIGN MINING NEWS.

AFRICA.

Transvaal.

Bonanza Limited.—A cablegram has been received from the head office at Johannesburg to the following effect: Bonanza recommenced crushing August 24th. Fifteen new stamps are being erected, as development of lower levels promises longer life than originally estimated. It is expected that the whole 55 stamps will be running within two months, when increased profits may be anticipated.

AUSTRALIA.

Queensland.

The gold production in July is reported by the Mines Department at 59,654 oz. crude, equal to 42,416 oz. fine gold. As compared with the same month last year the output shows a falling off of about 25%.

Tasmania.

Mount Lyell Mining Company.—For the four weeks ending August 21st this company reports 20,915 tons company's ore smelted, with 7,153 tons purchased ore, the yield being 816 tons blister copper, containing 806 tons fine copper, 52,487 oz. silver, and 1,778 oz. gold. The average yield was therefore 2.87% copper, 1.87 oz. silver and 0.06 oz. gold to the ton.

NEW CALEDONIA.

Exports of minerals from New Caledonia for the month of May included 12,938 metric tons of nickel ore; 285 tons cobalt ore; 1,154 tons chrome ore.

Two steamers arrived at Nepoui early in July to load nickel ore for New York. They were expected to take together about 9,000 tons. The freight rate on this ore is about \$7.50 per ton.

NEW ZEALAND.

The Mines Department reports the exports of gold and silver from the Colony for June and the six months ending June 30th as below, in ounces:

	Gold.		Silver.	
	1900.	1901.	1900.	1901.
June	33,833	43,067	21,992	38,796
Six months.....	179,303	217,478	144,782	216,267

For the six months there was an increase of 38,175 oz., or 21.2%, in gold, and of 71,485 oz., or 49.3%, in silver. The gold is reported in crude or bullion ounces; the total for the six months this year was equal to 198,925 oz. fine gold, or \$4,111,788.

(From Our Special Correspondent.)

Dredging.—During the first 6 months of 1901 the Otago dredges produced 25,695 crude oz. of

gold, as against 26,866 oz. for the same period of 1900. The decrease is due to the Clutha River having been unusually high. During July the river fell to its usual winter level, and the weekly returns rose to 2,000 oz. and over. During the week ending August 5th the returns from 67 dredges totalled 2,365 oz., the electric dredge "Cromwell" heading the list with 214 oz. On the West Coast 12 dredges, with returns varying from 30 oz. downward, during the same week totalled 207 oz.

West Coast Goldfield.—The Progress, Wealth of Nations and Golden Fleece mines, Reefton, which are all under the control of one company, the Consolidated Goldfields of New Zealand, during July treated 6,861 tons of quartz for a return valued at £12,002 \$60,010).

Hauraki Goldfields.—The chief returns during July are: Waihi, £46,452 (\$182,260) from 11,878 tons; New Zealand Crown, £5,575 (\$27,875) from 2,656 tons; Waitakauri, £5,004 (\$25,020) from 3,082 tons; Union-Waihi, £2,869 (\$14,345) from 1,596 tons; Barrier Reefs, £2,596 (\$12,980) from 1,554 tons; May Queen tributaries, £1,210 (\$6,050) from 156½ tons; Komata Reefs, £1,120 (\$5,600) from 780 tons.

Waihi Company.—This company continues to increase its output, the last return being the largest on record.

COAL TRADE REVIEW.

New York. Anthracite.

Sept. 13.

In spite of the rumors published in the daily press there is no reason to suppose that there will be any serious labor troubles at the anthracite mines before next spring. The miners are having the steadiest year's work in a long time and the total production is pretty sure to be the heaviest on record.

In the Northwest, though retail buying is very light, dealers are getting very anxious about supplies for next winter, as receipts by lake continue small. The present outlook favors a greater shortage of coal this winter than last. At Chicago, following the advance of prices to the regular winter figures, trade is rather slack and awaits the touch of cooler weather. The movement to country points is, however, sufficient to keep coal from accumulating on the docks to any extent. Total lake receipts to date are fully 200,000 tons below last season's figures. The supply of cars for all-rail shipments is reported rather short and does not seem likely to improve for some time. At lower lake ports the trade shows little change from last week. Along the Atlantic seaboard retail demand is not brisk, though the larger consumers are slowly laying in winter supplies. Cooler weather is needed to bring out the small buyers. Dealers at shoal water ports are steadily stocking up for the winter. At New York, Philadelphia and Boston the market is fairly strong. Egg coal is the size most wanted. Prices generally are well-maintained at the full circular prices. There are reports of coal selling for less, but these sales, if made, are for special grades and conditions and have no particular effect on the market as a whole. A touch of cooler weather should make the market strong enough to suit all dealers.

Bituminous.

The Atlantic seaboard soft coal trade shows a slow, but fairly steady, improvement in market conditions. The generally abundant rainfall of the present year has greatly reduced coal consumption by those manufacturing concerns using both steam and water power, but as labor troubles subside there is a continued gain in industrial activity and this is responsible for a considerable increase in coal buying.

In the far East arrivals of coal continue quite heavy, while the demand from the shoal-water ports is good. There is still some delay in unloading at certain ports, owing to the number of vessels awaiting their turns, but this delay is, on the whole, no worse than last week. Along Long Island Sound demand is larger than last week and is approaching the normal fall volume. In that territory and at points beyond Cape Cod the lower-grade coals frequently sell at below regular quotations, but there is not such a glut of low-priced coal as some months ago. New York Harbor trade as yet shows but slight improvement as regards orders from the smaller consumers. All-rail trade maintains its standing and is taking a good tonnage in a regular way.

Transportation from mines to tidewater is good. Car supply at the collieries still causes complaint in many instances. In the coastwise vessel market smaller craft are in short supply, while large vessels for ordinary ports take charters at a slight discount, but generally coastwise freights are firm, at 60¢/65¢ from Philadelphia to Providence, New Bedford and the Long Island Sound ports and 75¢ to Boston, Salem and Portland.

Birmingham.

Sept. 9.

(From Our Special Correspondent.)

The Alabama coal market continues to improve; there is an active demand for domestic coal and the production is increasing. The de-

mand for steam coal is not as active as it might be, but the market as a whole is encouraging. The railroads are supplying all demands for cars.

During the past week Mr. Elmer E. Wood, of the firm of B. D. Wood & Son, wholesale coal dealers in New Orleans, was in Birmingham looking after contracts given for a large amount of coal. He said that the discovery of oil in Texas was interfering a little with the coal trade, but so far there was no startling disturbance from this source.

The Sloss-Sheffield Steel and Iron Company is opening new mines in Walker County and will employ convict labor, removing its convict labor from Coalburg, in Jefferson County. The Walker County mines will have a large daily capacity. The company employs several hundred convicts.

The Empire Coal and Coke Company of Alabama, with mines in Walker County, near the Frisco Line, is pushing work in its mines and has a good demand for the product.

Cleveland. Sept. 10.
(From Our Special Correspondent.)

The coal shippers are face to face this week with a peculiar situation. All of the bickering between the shippers and the vessel owners as to rates has come to an end and the trade was on a foundation where considerable business was possible, when a shortage of coal appeared. This is due to the presence in Cleveland this week of the national encampment of the G. A. R., which has caused such a heavy passenger movement on the railroads as to preclude almost the possibility of any freight movement on the principal lines entering this city. The general suspension of freight traffic has cut the coal shippers short, and while boats are being offered freely the cargoes cannot be obtained. As a consequence a number of boats will be sent up the lakes light, which might have been engaged in the coal-carrying trade. The advantageous conditions for the shippers are therefore lost. The down-bound business from Lake Superior and Lake Michigan is now very brisk, there being a good demand for boats both in the ore and the grain trade. This has brought about such a distribution of tonnage as to make it easy for the coal shippers to find boats for almost any port. Such a condition was almost essential to the shippers, who are far behind in their movement. It has been estimated that up to September 1st they were almost 30% short of their normal shipment to that date. This goes to emphasize the prediction that the coal shippers are to be heavy and insistent bidders for tonnage all through the fall and prophesies a season of high carrying rates later in the season. At present all charters are made at 50c. to Milwaukee and 35c. to Duluth.

Pittsburg. Sept. 11.
(From Our Special Correspondent.)

Coal.—Trade continues dull, owing to the continued idleness of the steel and tin-plate mills, and many of the railroad mines are closed. The river mines are almost all idle, but the Monongahela River Consolidated Coal and Coke Company has 20,000,000 bu. of coal loaded and ready to be sent out to the Southern markets. The demand for domestic coal is beginning and it is expected that a new schedule of prices will soon be announced.

Connellsville Coke.—There was a slump in production last week and a slight decrease in the shipments. The leading producer continues to quote furnace coke at \$2 and foundry at \$2.50@ \$2.75. Of the 21,747 ovens in the region 19,567 are active and 2,180 are idle. Compared with the previous week there are 351 additional idle ovens. The production for the week was 207,299 tons, a decrease of 12,425 tons. The shipments for the week aggregated 10,084 cars, distributed as follows: To Pittsburg and river tipples, 3,631 cars; to points west of Pittsburg, 4,495 cars; to points east of Connellsville, 1,958 cars. This was a decrease of 364 cars compared with the previous week.

Foreign Coal Trade. Sept. 13.

Shipments for the West Indies and South America continue good. For European ports few new contracts are reported, though negotiations are in progress for some orders for Marseilles and Genoa. The Mediterranean ports continue to be the largest takers of American coal. A plan for the shipment of coal to Switzerland is said to be under discussion. The railroad rates from French ports are the chief obstacle to such an arrangement.

There has been freer chartering for early shipment at easier rates. Bookings include 10s. (\$2.40) from Baltimore and 9s. 6d. (\$2.28) from Newport News to the Mediterranean, 8s. 6d. (\$2.04) from Philadelphia to Bordeaux, France, all prompt sailing, and 14s. 6d. (\$3.48) from Norfolk to Rio Janeiro. Another charter is reported from Norfolk to Manila, option Baltimore to Yokohama, Japan, at \$6.60, sailing September-October.

Messrs. Hull, Blyth & Company, of London and Cardiff, report under date of August 31st, that the Cardiff market during the week has been fairly steady at previous week's prices, smalls being, if anything, a little weaker. Quotations are: Best Welsh steam coal, \$5.04@ \$5.16; sec-

onds, \$4.68; thirds, \$4.32; dry coals, \$4.08; best Monmouthshire, \$4.20@ \$4.32; seconds, \$3.84@ \$3.96; best small steam coal, \$2.88; seconds, \$2.52; other sorts, \$2.16.

The above prices for Cardiff coals are all f. o. b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f. o. b. Newport, exclusive of wharfage, and are for cash in 30 days, less 2½% discount.

The freight market still continues very weak, especially toward the Mediterranean. Some rates quoted are, from Cardiff: Marseilles, \$1.20; Genoa, \$1.44; Naples, \$1.44; Port Said, \$1.56; Singapore, \$3.96; Las Palmas, \$1.44; St. Vincent, \$1.62; Rio Janeiro, \$3.48; Santos, \$3.78; Buenos Aires, \$3.72.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 350.)

New York. Sept. 13.
With few exceptions deliveries are chiefly on contracts taken some time ago at lower prices than are ruling now.

Heavy Chemicals.—Quiet. Bleaching powder is firm, as offerings are necessarily moderate owing to smaller imports. Domestic high-test caustic soda for next year and early 1903 delivery has been booked on contract at quotations below, but makers show care not to take too many late orders, as they expect higher prices, and, in fact, are already asking more money for 1903 deliveries. Foreign caustic soda shows a heavy falling off in consumption here. In the 7 months ended July 31st the United States imports were only 2,029,413 lbs., as against 5,206,553 lbs. last year, a decrease of 3,177,140 lbs., or 61%, in the present year. Moreover, we have re-exported 586,623 lbs. of this year's imports, leaving only 1,442,790 lbs. to be consumed. A still more marked decrease in the consumption of foreign heavy chemicals is shown in soda ash. The imports into the United States in the 7 months ended July 31st were only 15,696,250 lbs., whereas last year they footed up the big total of 51,119,865 lbs. Of this year's imports we re-shipped 224,062 lbs., while only 24,659 lbs. were exported last year. Perhaps the best explanation of the great depreciation in our consumption of foreign heavy chemicals can be found in the growing production of our own works. Not only do we supply much of the demand for soda ash in this country, but we are also building up a promising export trade. Prices per 100 lbs. are as below:

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York.	In New York.
Alkali 58%	75@82½	.....	.....
" 48%	82½@87½	.....	.....
Caustic Soda, high test	\$1.90@ \$1.92½	.....	2.25@2.50
" 60% .....	.....	2.75	.....
" 70@71% .....	.....	2.85@3.00	.....
" 98% .....	.....	3.25	3.75@4.00
Sal Soda .....	.55	.65	65@87½
" conc.	1.25@1.50	.....	1.75
Bicarb. Soda	1.05@1.10	.....	1.37½@1.75
" extra	3.25@3.50	.....	.....
Bleach. Pdr., Eng. prime .....	.....	.....	2.10@ 2.25
" other brands .....	.....	.....	1.90@ 2.00
Chl. Pot. cryst. .....	.....	8.37½@8.50	9.75@10.00
" powd. .....	.....	8.50@8.75	10.25@10.75

Acids.—Deliveries on contract are normal. Sulphuric acid has quieted down. Some export orders for blue vitriol have been booked on the basis of \$4.75 per 100 lbs., though it is understood \$4.50 has been quoted. Makers, however, are firm in their views, asking up to \$5 for forward shipments. Consumers abroad are making freer inquiry for early next year supplies, but owing to the high prices ruling, large orders cannot be taken.

Acetic acid makers are cutting prices notably, and though \$1.60 per 100 lbs. is the market quotation, purchases can be made at less, even as low as \$1.50, some say. Demand for this acid just now is small, and as production keeps up, competition increases and prices must naturally suffer.

Quotations are per 100 lbs. as below, unless otherwise specified, for large lots in carboys or bulk (in tank cars), delivered in New York and vicinity:

Acetic	\$1.55@ \$1.60	Nitric, 42°	\$1.37½
Blue Vitriol	4.75@5.00	Oxalic	5.50@6.00
Muriatic, 15°	1.25	Sulphuric, 50% bulk, ton	12.00@14.00
Muriatic, 20°	1.37½	" 60°	9.00
Muriatic, 22°	1.50	" bulk, ton	16.00@18.00
Nitric, 38°	3.62½	Sulphuric, 66°	1.10
Nitric, 38°	3.87½	" bulk, ton	19.00@21.00
Nitric, 40°	4.12½		

Brimstone.—The imports at New York this week were 1,696 tons. Abroad the market is firm, as the syndicate has the output well under control, and with stocks smaller than last year, prices continue satisfactory to the producer. In New York spot supplies are held at \$22.50 per ton for best unmixed seconds, while shipments are worth \$22@ \$22.25, according to position. Best thirds continue at \$19¼@ \$19½.

Pyrites.—New York imports this week were 3,056 tons Spanish pyrites. Demand is brisk, and

prices on all pyrites continue firm. Domestic production is active, and it is expected that an increase will be shown in the new Gaston County, N. C., field, where the Carolina Pyrites Company mined 4,500 tons last year. We quote, per ton, as follows: Mineral City, Va., lump ore, \$4.90 per long ton, and fines, 10c. per unit; Charle-mont, Mass., lump, \$5, and fines, \$4.75. Spanish pyrites, 12@14c. per unit delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46@51% of sulphur; American from 42@44%.

Sulphate of Ammonia.—This market is quiet, as fertilizer makers have enough stock to keep them going for the present at least. Immediate shipments are quoted on the basis of \$2.75 per 100 lbs. for 24@25% gas liquor. Foreign exports to America are only moderate, but domestic production is increasing.

Nitrate of Soda.—Spot is worth \$1.92½ per 100 lbs. and shipments \$1.95@ \$1.97½, according to position. Market quiet.

Salt-peter.—The market is fractionally lower than last year. Crude on spot is quoted to-day at \$3.37½@ \$3.50 per 100 lbs., and shipments at \$3.30. Refined, however, continues at \$4.25 up per 100 lbs. The United States imports in the 8 months ended August 31st aggregated 44,195 bags, which is 1,871 bags less than last year. Deliveries this year at New York and Boston amounted to 44,595 bags, showing an increase of 4,971 bags as compared with the corresponding 8 months last year. Stocks at New York and Boston on August 31st were 3,000 bags, against 7,500 bags a year ago. Adding 1,200 bags on the way to the United States, we have a visible supply of 4,200 bags, which is a falling off from last year of 8,100 bags.

Phosphates.—Orders for late shipment are more frequent, but miners of good merchantable grades are slow in booking, expecting better prices, especially from foreign consumers. Just now freight rates are low, but in another month or so it is likely they will commence to rise. Therefore exporters are not willing to base orders on present c. i. f. quotations.

The exports of Florida high grade rock in July and the 7 months ended July 31st are reported by Messrs. Auchincloss Brothers as below, in long tons of 2,240 lbs.:

Destination.	July.	Seven Months.
Austria .....	.....	2,800
Belgium	4,078	31,125
England	4,210	11,360
Germany	10,059	104,618
Holland	5,000	42,753
Ireland .....	.....	1,975
Italy	4,304	7,344
Norway & Sweden .....	.....	8,660
Scotland .....	.....	4,275
Total, tons	27,651	214,910

In the corresponding 7 months last year the total exports of this grade phosphate amounted to 234,982 tons, showing that the movement this year has depreciated 20,072 tons, or nearly 9%. This decrease is due in part to the smaller shipments to Germany.

Exports of Florida high grade rock through Savannah, Ga., in the 8 months ended August 31st aggregated 95,255 tons, against 75,659 tons in the corresponding period last year. Of this year's total Germany received direct about 55%, not counting the quantity re-shipped from Holland.

Tennessee exports from Pensacola in August are given as 13,728 long tons, showing an increase over the same month last year.

The coastwise shipments of South Carolina phosphates from Charleston show a falling off from last year. Export business keeps up, but competition with the Algerian and other grades of foreign phosphates is very keen. Great Britain is one of our best customers.

Abroad foreign phosphates show little change in either business or prices. In West Australia the Government is again advertising a reward of £500 (\$2,500) for the discovery of mineral phosphates upon Crown lands, and £250 (\$1,250) upon private lands. Last year our Florida high-grade rock miners sent a cargo of 1,660 tons to Australia, the third since 1898, and making a total of 5,617 tons. More would have been exported but freight rates are prohibitive. We quote current prices as follows:

Phosphates.	Per Ton F. o. b.	C. i. f. Un'd Kingdom or European Ports.	
		Unit.	Long ton.
* Fla. hard rock (77 @ 80%)	\$6.50@7.00	7 @ 7½d	\$10.92@11.70
* Fla. land pebble (68 @ 73%)	3.85@4.00	6 @ 8¼d	8.40@ 8.57
* Fla. Peace River (68 @ 63%)	2.50@2.75	5 @ 5¼d	6.00@ 6.60
* Tenn. ... 78@80%, export	3.25@3.50	6¼@7d	10.43@10.92
* Tenn. ... 78% domestic	3.00	.....	.....
* Tenn. ... 75%	2.75	.....	.....
* Tenn. ... 70@72%	2.25@2.40	.....	.....
* So. Car. rock, dried rock	3.50	.....	.....
Algerian, rock	6@6½d	.....	8.04@8.70
Algerian, rock	5¼@6d	.....	6.60@7.20
Tunis, Gafsa	5¼@5½d	.....	6.30@6.60

* Fernandina, † Mt Pleasant. § On vessels, Ashley River.

Freight rates from Florida ports are about as follows: To Baltic ports, \$5; Continental \$3.24@

\$3.60. Mediterranean, \$4.20@4.56; United Kingdom, \$3.84.

From Savannah, Ga., to Continental port, \$3.18. Charters taken this week include 1,391 tons from Fernandina, Fla., to Ghent, Belgium, at 13s. 6d. (\$3.24), and 1,201 tons from Coosaw, S. C., to Nantes, France, at 12s. 6d. (\$3), both September sailing.

Messrs. Jackson Brothers, of Valparaiso, Chile, write us under date of August 10th as follows: A perfect calm has prevailed in the nitrate market; exporters have shown no interest in absence of encouragement from consuming quarters; holders, however, maintain their former pretensions and no variation has taken place in prices. The exports for the first 7 months of this year reached 14,076,800 qtls., as against 13,283,000 qtls. in 1900. We quote 95% at 6s. 5d., and 96%, 6s. 7½d., ordinary terms for any delivery this year, sellers, while 95% January-March shipments can be had at 6s. 4d. same terms. The price of 6s. 5d., with an all-round freight of 26s. 9d., stands in 8s. 5¼d. per cwt. net cost and freight without purchasing commission. Sales for the fortnight ended August 10th were 77,000 qtls.

Messrs. Mortimer & Wisner's monthly statement of nitrate of soda, dated New York, September 3d., gives the following statistics:

	1901.	1900.	1899.
	Bags.	Bags.	Bags.
Imp. into Atlantic ports from West Coast S. A., from Jan. 1, 1901, to date	917,236	717,826	601,403
Imp. from Jan. 15 from Europe	.....	2,063	.....
Total	917,236	719,889	601,403
Stock in store and afloat Sept. 1, 1901, in New York.	72,808	9,438	39,012
Boston	.....	.....	.....
Philadelphia	.....	.....	40,250
Baltimore	41,510	1,000	759
Norfolk, Va.	.....	.....	.....
Charleston	.....	.....	.....
To arrive, due Dec. 15, 1901	413,690	524,000	335,000
Vis. supply to Dec. 15, 1901	528,046	531,498	415,012
Stock on hand Jan. 1	13,416	9,586	58,406
Deliveries past month	122,303	166,855	134,069
Del. since Jan. 1, to date.	846,331	719,977	579,797
Total yearly deliveries	.....	1,176,651	976,592
Prices current, Sept. 1	\$1.92¼	\$1.72¼	\$1.6 @ \$1.62¼

Liverpool. Sept. 4.

(Special Report of Joseph P. Brunner & Co.)
The spot business in heavy chemicals is rather quiet, but buyers are evincing more interest and an improved demand is expected in the near future.

Soda ash is moving off pretty freely at usual prices as to market. For tierces the nearest spot range is about as follows: Leblanc ash, 48%, £5 15s. @ £6; 58%, £6 2s. 6d. per ton net cash. Ammonia ash, 48%, £4 10s. @ £4 15s.; 58%, £4 15s. @ £5 per ton net cash. Bags, 5s. per ton under price for tierces. Soda crystals are fairly active at generally £3 7s. 6d. per ton, less 5% for barrels, or 7s. less for bags, with special terms for certain export markets. Caustic soda is in moderate demand at late rates. We quote: 60%, £9 @ £9 5s.; 70%, £10 @ £10 5s.; 74%, £10 10s.; 76%, £10 17s. 6d. per ton net cash.

Bleaching powder is still nominally quoted at £7 per ton net cash for hardwood with special quotations for Continental and other export markets, but orders are not very plentiful.

Chlorate of potash is reported by makers as being in better demand and is quoted at about 3¼@d. per lb. net cash.

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

Sulphate of ammonia is stationary at £10 17s. 6d. @ £11 per ton, less 2½% for good gray, 24@25%, in double bags f. o. b. here.

Nitrate of soda has improved and for spot lots holders now ask £9 5s. @ £9 10s. per ton, less 2½% for double bags f. o. b. here, as to quantity and quality.

IRON MARKET REVIEW.

NEW YORK, Sept. 13, 1901.

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending		From Jan., '00.	From Jan., '01
	Sept. 14, 1900	Sept. 13, 1901.		
	F'ces.	Tons.	Tons.	Tons.
An'racite & Coke	197	225,425	233	293,375
Charcoal	31	8,225	22	6,650
Totals	228	233,650	255	300,025
			10,447,157	10,956,152

While the strike continues to be discussed, there is a general belief that it is practically ended, and that the only thing remaining is for the Association men to make the best terms possible.

The riot at McKeesport has not helped the strikers.

There is still scarcity in a few lines, such as some classes of sheets and in pipes and tubes. In most kinds of finished material there is no trouble, though demand continues very large, and prices are firm.

It was reported from Pittsburg that a meeting of the steel rail makers was to be held this week; but no record of such a meeting can be found. There has been no intimation of any change in prices.

The reports of the blast furnaces on September 1st, as collected by the "Iron Age," show a drop of about 3,000 tons in weekly capacity. Several furnaces went out on account of the strike, but several new ones started up. Unsold stocks of pig iron were about 10,000 tons less than on August 1st, and 100,000 tons less than on April 1st last.

Birmingham. Sept. 9.

(From Our Special Correspondent.)

The production of pig iron is about holding its own. The local demand is brisk. Some domestic business is being done, while export shipments, though yet comparatively light, have started. There are a number of inquiries being received and the demand is improving. During this week the report of the Southern Iron Committee for August will be made public.

Announcement was made during the past week that Col. J. W. Woolfolk, of the Woodstock Iron Company at Anniston, will let the contract for repairing of the No. 3 furnace at that place, now out of blast.

There are some good shipments of pig iron being made on old and on recent orders. Nos. 1 and 2 foundry and No. 1 soft are the grades most in demand. The following prices are given: No. 1 foundry, \$11 @ \$11.25; No. 2 foundry, \$10.25 @ \$10.50; No. 3 foundry, \$9.50 @ \$10; No. 4 foundry, \$9.50; gray forge, \$9 @ \$9.25; No. 1 soft, \$11 @ \$11.25; No. 2 soft, \$10.25 @ \$10.50.

The steel plant at Ensley has had 6 of its 10 open-hearth furnaces in blast and the steel finds a ready demand. The little plant of the Republic Iron and Steel Company at the Birmingham rolling mills is in full operation, but it is not making as much steel as is needed in the mills. The steel rail mill will go into operation in October.

Buffalo. Sept. 11.

(Special Report of Rogers, Brown & Co.)

The pig iron market in this vicinity has a decidedly healthy look at the present writing. The larger buyers are taking an active interest in the market and most of them have either already purchased or are figuring on placing orders. A review of the week's business shows a number of good-sized sales at full market prices. Furnaces tributary to this territory are very firm in prices, while buyers take an active interested position and seem to realize the increasing demand and the shortage of iron in furnace and foundry yards. The situation which blast furnaces are facing in endeavoring to meet the very heavy demands for shipments on old contracts has never before been equaled excepting in the time of a boom, and these urgent requests for deliveries continue to increase with surprising rapidity. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$15.50; No. 2, \$15; Southern soft, No. 1, \$15.25; No. 2, \$14.75; Lake Superior charcoal, \$17.50; coke malleable, \$15.

Cleveland. Sept. 10.

(From Our Special Correspondent.)

Iron Ore.—A statement recently compiled by the ore shippers shows that the shipment of ore to Lake Erie ports during the month of August amounted to 3,602,005 tons, as against 2,911,622 tons for the same month of 1900. The total receipts to September 1st, 1901, were 12,263,436 tons, as against 12,366,022 tons to the corresponding date in 1900, showing, therefore, a decrease of 102,586 tons. The heavy shipment for August of this year enabled the shippers to reduce the early shortage by almost 700,000 tons. It is expected that it will be more than wiped out during the month of September. At present the chartering of wild boats continues at a heavy pace, with better dispatch being obtained at all of the receiving docks, although the railroads are so congested as to make any heavy direct movement to the stock piles of the furnaces almost impossible. The rates do not change from 80c. from Duluth; 70c. from Marquette, and 60c. from Escanaba. The prices of ore continue as they have been quoted during the year at \$4.25 for bessemer and \$3 for non-bessemer and Mesabi ores.

Pig Iron.—The pig iron trade has not changed in the last week other than to show more quiet conditions in the foundry grades. The sales for immediate delivery have not been quite as heavy as they were before, but have not eased up enough to relieve the furnaces. They are still behind their contracts and are selling more iron than is being produced. The prices have not changed. No sales of basic are announced for this week and the quotations are nominal. There is not a great demand for the material. Bes-

semer iron is not in demand just now and the furnaces are adding to their stocks in the material now being produced. The quotations hold as follows: No. 1 and No. 2 foundry, \$14 @ \$14.50 and \$13.50 @ \$13.75 respectively, Valley furnace.

Finished Material.—Structural steel continues to be one of the leading features of the market, with heavy sales reported in addition to the application on former contracts. The mills are now so filled with orders that they cannot promise deliveries before November. The price continues at 1.70c. This week one large order for steel rails was reported, together with several smaller ones that have aggregated a tonnage of 7,000 tons and better. The price is still \$28, no disposition being noted to change that figure any. Sheets and bars are in demand beyond the ability of the active capacity to care for and most of the sales at present reported are out of stock. There is no indication of an immediate addition to the producing capacity. The prices of sheets remain as formerly quoted, at 3.95c. on No. 28 and 2.50c. on No. 10 blue annealed. Bars are still heavily in demand, iron bars bringing 1.52½c. at Pittsburg and steel bars 1.50c. at the mills. Quotations out of stock vary, but approximate 1.70c. Billets are also in good demand and the prices hold firm. Small billets are especially active, with the supply limited. Premiums are being paid on both large and small billets. The plate trade is not quite as active as it was, as the ship-building orders have been taken. The price on plates remains, as it was, at 1.70c. Some indication was noted this week of a possible change in the price of plates, although nothing definite came of it.

Old Iron.—The scrap trade has been very quiet, with no change in the quotations. The mills in the steel corporation have been the principal buyers, but these have not been on the market during the past week.

Philadelphia. Sept. 12.

(From Our Special Correspondent.)

Pig Iron.—The week's developments throw very little light on the probable future of the pig iron market for the rest of the year. Our people are quite indifferent on the selling side. The impression is gaining ground that on the first signs of settled conditions at Pittsburg large contracts will be placed for the rest of the year. Leading buyers are ready to add to their holdings where concessions are offered, but not otherwise, excepting on best grades of No. 1 foundry. This kind of iron appears to either be scarce or to be held for better prices. The consumption of forge of course continues very heavy and business is being done all the time, but only a few makers admit being held far ahead. Whatever may be the reason, there is a general disposition to buy in a halting way, though all foundry and mill men keep a safe supply ahead. There have been no changes in quotations.

Muck Bars.—More bars have been asked for this week than could be had. Prices continue at top notch and quotations are nominally 50c. higher.

Billets.—Parties in the East have very quietly made terms for a billet supply at prices not imparted to outsiders. The absorption of billet material continues at the extreme limit and buyers are glad to get their orders accepted.

Merchant Bars.—Store stocks are low and local agents give a stronger coloring to demand than last week. The mill people are doing all the business they can handle and are selling more iron at premium rates than at any time. A further general advance is spoken of.

Nails.—The activity in building operations is maintaining a steady demand for nails, both cut and wire.

Skepl.—The representative of a large skepl mill stated to-day that as soon as they would be in a position to definitely promise certain deliveries the Eastern skepl mills would have a rush of orders. Actual selling prices for early delivery are a trifle above quotations.

Sheets.—Sheets, where orders are taken for them, are sold at an advance above quoted prices. The only way to get sheets now is to bid enough.

Tubes.—A further marking up of selling prices occurred this week on some orders taken for early delivery. Most of the summer orders are now filled and mill men have managed to keep September and October capacity pretty open. Just now there are a number of urgent buyers who are virtually crowding prices up on themselves.

Merchant Steel.—Agents have sent a big week's business to mills, some of the orders being exceptionally large. All New England consumers appear to be buying or arranging for future deliveries, as well as customers nearer home, and the effect is to harden prices on kinds most in request.

Plate.—Small buyers, like boiler-makers, are making a good deal of fuss because of delay in shipments. Manufacturers using plate keep a very close eye on the mills. None of them are able to get any steel ahead. The new business booked since Monday averaged from 25 to 200-

ton lots. Prices unchanged, although there are statements on the street that plates are on the point of a general marking up of at least 0.2c.

Structural Material.—The situation is most gratifying to manufacturers. The only feature developed since last week is the uncovering of a number of requirements from places where it was supposed no new demands would come—the bridge builders. It appears that certain railroad interests have suddenly determined upon extensive work. The coming months will be very active. It was said to-day orders are being taken at an advance of 0.2c.

Steel Rails.—The inquiries to-day and yesterday were for trolley lines and if everything goes as is expected, orders running into 20,000 tons will be placed to cover some large enterprises.

Scrap.—All heavy scrap commands 50c. more for quick delivery. Other kinds are strong, but not higher. There is no choice railroad scrap in this market.

Pittsburg. Sept. 11.

(From Our Special Correspondent.)

While the United States Steel Corporation has not placed any orders for bessemer pig iron this month, it has taken this week the balance of the iron ordered for August. Prices of pig iron are being well maintained. The first new business in three weeks was an order for 1,000 tons of bessemer pig iron for delivery this month at \$15.25, Valley furnaces, or \$16, Pittsburg. The demand for gray forge and foundry iron is good and several thousand tons were sold. Prices remain unchanged. No more furnaces have been put out of blast, as it is expected the steel mills will all be in operation in a short time. Bessemer steel billets continue to be scarce; no sales have been noted. There is not much demand for open-hearth billets. Steel bars continue firm and about 3,000 tons were sold. Specifications are being received from manufacturers of agricultural implements on orders placed during the past two months. The mills are all busy except those affected by the strike. The American Sheet Steel Company, despite the strike, is making fair deliveries and has taken some new business. Prices are lower this week than at any time since the strike began. Galvanized sheets are lower than the quotations of a week ago.

The bar iron market during the past two months has been unusually good and prices have been higher. As a result the wages to be paid in the union rolling mills of the country which are based on a sliding scale have been increased for the months of September and October. The bi-monthly examination of the sales sheets of the Republic Iron and Steel Company, the bar iron combination, was held yesterday at Youngstown by a committee of the Amalgamated Association and Secretary James H. Nutt, of the labor bureau of the combination. The result showed that the average of the sales made was 1.4c. a pound, an increase of 0.1c. over the price average at the previous bi-monthly examination. This will give the puddlers an advance of 25c. a ton, making the new rate \$5.50, and the wages of the finishers are increased 2%. The new puddling rate is 50c. above the base of the scale, which went into effect on July 1st. All the Republic Company's mills and the independent union rolling mills are governed by the Amalgamated Association sliding scale.

There were all kinds of rumors of a settlement of the big steel strike during the week, but both sides continue to deny that an agreement has been reached. The general executive board of the Amalgamated Association held a three days' session here, adjourning on Monday night. It is said that the national officers were authorized to settle the strike on the latest terms offered by the corporation officers if possible. A settlement on these terms will give the association a less number of mills than it controlled last year. The United States Steel Corporation put a number of additional mills in partial operation, making individual contracts with the men. The most important of these were the Bayview Works of the Federal Steel Company at Milwaukee, which are running almost full with Amalgamated men; the Demmler tin-plate plant, and the sheet works at Canal Dover. The Crescent tin-plate works at Cleveland and the Star tin-plate plant in this city are being operated satisfactorily. The attempt of the National Tube Company to operate its big plant at McKeesport yesterday resulted in a small riot and several men were badly hurt. It is said that fully two-thirds of the men are anxious to return to work, but are prevented by the strikers. Arrangements are being made to start the Monongahela tin-plate plant in this city. Cots are being taken into the works for the accommodation of the new men engaged. One wagon-load was destroyed by fire last night by a number of women, wives of strikers, who poured oil on the cots and bed clothing. Several arrests have been made.

Pig Iron.—Prices are firm. One sale of 1,000 tons of bessemer pig iron at \$15.25, Valley furnace, was made this week. About 2,000 tons of foundry No. 2 were sold at \$14@14.25, Pittsburg,

and about 3,000 tons of gray forge at \$13.60@ \$13.75, Pittsburg.

Steel.—There were no sales of bessemer steel billets this week and \$25 is offered. Several small lots of open-hearth billets were made at \$25.50@26. Steel bars remain at 1.50@1.60c. and 3,000 tons were sold. The demand for steel plates continues good and the price of tank plates remains at 1.60c.

Sheets.—The market is in more satisfactory condition than at any time since the strike was ordered. The American Sheet Steel Company accepted some new business for future delivery at the rate of 3.10c. for No. 28 gauge. Independent manufacturers quote 3.25@3.35c. The price for prompt shipment has dropped to 3.85c. Galvanized sheets are quoted at 65 and 5% for spot shipment and 75 and 5% off for future delivery.

Ferro-manganese.—A few sales of domestic 80% have been made at \$55. The foreign product is quoted at \$53.50@55.

New York. [Sept. 13.]

Pig Iron.—The demand for foundry irons is increasing. Some orders have been taken for delivery into next year. We quote for tidewater delivery: No. 1 X foundry, \$15.15@15.65; No. 2 X, \$14.65@15.15; No. 1 plain, \$15.15@15.65; No. 2 plain, \$14.15@14.65; gray forge, \$14@14.50. For Southern iron on dock, New York, No. 1 foundry, \$14.75@15.25; No. 2, \$14.25@14.75; No. 3, \$13.50@14; No. 4, \$13@13.50; No. 1 soft, \$14.75@15.25; No. 2, \$14@14.50.

Bar Iron and Steel.—Business is good, with prices firm. We quote 1.48c. for common bars in large lots on dock; refined bars, 1.58c.; soft steel bars, 1.65c.

Plates.—Demand is very good. Prices are unchanged. We quote for tidewater delivery in car-loads: Tank, 1/4-in. and heavier, 1.78c.; flange, 1.88c.; marine, 1.98c.; universals, 1.78c.

Steel Rails and Rail Fastenings.—The market shows no changes from last week. Standard sections are quoted at \$28 at Eastern mills; light rails at \$28@30, according to weight. Spikes are 1.80c.; splice bars, 1.55c.; bolts, 2.60@2.70c.

Structural Material.—Local business continues good and the outlook is still bright. We quote for large lots at tidewater as follows: Beams, 1.75c.; channels, 1.75c.; tees, 1.80c.; angles, 1.75c.

METAL MARKET.

New York. Sept. 13.

Gold and Silver.

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

Metal.	July.		Year.	
	1900.	1901.	1900.	1901.
GOLD.				
Exports	\$3,272,759	\$2,785,571	\$33,713,411	\$32,276,797
Imports	11,263,332	1,653,808	27,889,199	17,586,778
Excess	E. \$7,990,593	E. \$1,126,763	E. \$5,824,212	E. \$14,690,019
SILVER.				
Exports	4,913,658	3,838,447	35,284,144	32,272,449
Imports	3,344,093	2,217,112	22,193,181	17,352,378
Excess	E. \$1,569,565	E. \$1,621,335	E. \$13,090,963	E. \$14,920,071

These figures include the exports and imports at all United States ports, and are furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York
For the week ending Sept. 12th, 1901, and for years from January 1st, 1901, 1900, 1899 and 1898.

Per-iod.	Gold.		Silver.		Total Ex-cess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	\$1,450	\$98,108	\$653,737	\$69,064	E. \$496,995
1901..	25,803,269	2,208,574	22,601,811	2,704,070	E. 43,492,436
1900..	36,405,169	1,760,807	27,427,219	3,544,138	E. 58,627,443
1899..	11,554,661	8,389,237	19,559,753	2,545,549	E. 19,578,581
1898..	2,748,808	77,056,211	25,594,056	2,257,394	I. 51,010,745

The gold exported this week went to the West Indies, and of the silver \$1,187 was in Mexican dollars, which went to the West Indies also, the remainder being silver bullion for London. Imports were largely from Central and South America.

The United States Assay Office in New York reports the total receipts of silver at 90,000 oz. for the week. This makes a total of 2,385,000 oz. from January 1st.

Prices of Foreign Coins.

	Bid.	Asked.
Mexican dollars	\$.45%	\$.48
Peruvian soles and Chilean pesos	.42	.45
Victoria sovereigns	4.85	4.89
Twenty francs	3.86	3.88
Twenty marks	4.74	4.85
Spanish 25 pesetas	4.78	4.82

Financial Notes of the Week.

Nothing has shown the present strength of the business situation better than the way in which the attempt to assassinate the President was

received. The effect produced was only slight, and even that soon passed away, as favorable reports were received and a general expectation of the President's recovery began to be entertained.

The silver market during the week has fluctuated without special feature, and the price has fluctuated within very narrow limits. The outside quotations have been 26 15/16d. and 27d. in London, 53 1/2c. and 53 3/4c. in New York.

Gold imports are still discussed as a possible relief to the pressure on the money market, which is usual at this season. A further relief in the offer of the Treasury to buy bonds was not unexpected. Offers to sell, however, are not yet as freely made as was anticipated. Meanwhile, the Eastern banks are generally contracting loans, and must continue to do so until money begins to come back from the West and South.

The statement of the United States Treasury on Wednesday, September 11th, shows balances in excess of outstanding certificates as below, compared with the corresponding day last week:

	Sept. 4.	Sept. 11.	Changes.
Gold	\$109,330,812	\$116,789,514	I. \$7,458,702
Silver	23,176,044	22,773,858	D. 402,186
Legal tenders	12,539,034	11,838,012	D. 701,022
Treas. notes, etc.	80,442	74,666	D. 5,776

Totals \$145,116,332 \$151,476,050 I. \$6,359,718
Treasury deposits with national banks amounting to \$102,709,888, showing a decrease of \$172,897 from last week.

The statement of the New York banks, including the 63 banks represented in the Clearing House—for the week ending September 7th, gives the following totals, comparison being made with the corresponding week in 1900 and 1899:

	1899.	1900.	1901.
Loans and discounts	\$747,646,300	\$818,808,000	\$885,145,800
Deposits	834,439,100	906,281,400	947,602,100
Circulation	14,667,000	29,106,400	30,668,400
Specie	161,083,200	179,291,900	170,135,100
Legal tenders	49,985,500	73,334,700	73,703,800
Total reserve	\$211,068,700	\$252,626,600	\$243,838,900
Legal requirements	208,609,775	226,570,350	236,900,525
Balance, surplus	\$2,458,925	\$26,056,250	\$6,938,375

Changes for the week, this year, were an increase of \$571,000 in circulation; decreases of \$10,040,800 in loans and discounts, \$20,519,800 in deposits, \$6,656,300 in specie, \$3,455,200 in legal tenders, and \$4,971,350 in surplus reserve.

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

Banks:	1900.	1901.
N. Y. Ass'd	\$179,291,900	\$170,135,100
England	180,333,755	195,433,550
France	449,864,700	\$227,144,830
Germany	138,920,000	71,565,000
Aus.-Hun.	188,680,000	49,115,000
Spain	68,445,000	84,480,000
Neth'l'ds.	24,350,000	28,940,000
Belgium	13,950,000	6,975,000
Italy	77,190,000	8,345,000
Russia	394,490,000	38,275,000

The returns of the Associated Banks of New York are of date September 7th, and the others September 5th, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold. The Bank of England reports gold only.

Specie shipments from San Francisco by water in August included \$1,597,504 silver and \$93,048 gold, a total of \$1,690,552. For the eight months ending August 31st the shipments were:

	Gold.	Silver.	Totals.
U. S. coin	\$1,161,317	\$166,611	\$1,327,928
Mexican dollars	2,132,021	2,132,021	
S. Am. dollars	9,765	9,765	
Bars	219,319	2,499,120	2,718,439

Totals \$1,380,636 \$4,807,517 \$6,188,153
Totals, 1900 3,783,887 8,981,633 12,765,520

The destinations of the shipments this year were as follows: China, \$4,618,492; Japan, \$2,280; India, \$30,000; Central America, \$720; Mexico, \$100,000; New York, \$1,436,661.

Shipments of silver from London to the East for the year up to August 29th, 1901, are reported by Messrs. Pixley & Abell's circular as follows:

	1900.	1901.	Changes.
India	£3,695,372	£5,095,410	I. £1,400,038
China	567,548	525,512	D. 42,036
The Straits	406,744	81,526	D. 325,218

Totals £4,669,664 £5,702,448 I. £1,032,784

Arrivals for the week, this year, were £170,000 in bar silver from New York, £38,000 from the West Indies, £2,800 from Australia, and £2,000 from Chile; total, £213,700. Shipments were

£112,500 in bar silver to China and £70,000 to Bombay; total, £182,500.

Indian exchange continues strong, and all the Council bills offered in London were taken at an average of 15.97d. per rupee.

Average Prices of Silver per oz. Troy.

Table with columns for Month, 1901, 1900, and 1899, and sub-columns for London Pence, N.Y. Cents, and London Pence, N.Y. Cents.

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

Average Prices of Metals per lb., New York.

Table with columns for Month, COPPER, TIN, LEAD, and SPELTER, and sub-columns for 1901 and 1900.

The prices given in the table for copper are the averages for electrolytic copper. The average price for Lake copper for the year 1900 was 16.52c.

UNITED STATES.

Table with columns for Articles Long tons, July, and Seven months, with sub-columns for Imports, Exports, and Domestic.

The figures for copper are those given by the Treasury Department. The statement made by Mr. John Stanton for the Associated Copper Companies will be found monthly in our metal market.

Import Duties.

Metals.—The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, 3/4c. a lb.

Other Metals.

Daily Prices of Metals in New York.

Table with columns for September, Sterling Exchange, Silver, Copper, and Spelter, with various sub-columns for prices.

London quotations are per long ton (2,240 lbs.) standard copper, which is now the equivalent of the former g m. b.s.

Copper.—Consumption in this country is very good. The demand from abroad has also improved somewhat.

We quote Lake copper 16 1/2@16 3/4c.; electrolytic in cakes, bars or ingots, 16 1/4c.; cathodes, 16c.; casting copper, 15 1/2c.

The market for standard copper in London has ruled somewhat firmer. Last week it closed at £67 for spot and £67 2s. 6d. for three months.

Imports of copper were 1,255 tons in New York and 399 tons at Baltimore; total, 1,654 tons. Some talk has been caused by the publication of a statement that the United Metals Selling Company was carrying extraordinarily large stocks of copper.

Tin.—The market has not been very active during the week, and the business transacted was of a retail character.

The foreign market has not fluctuated very much. It closed last week at £114 15s. for spot and £111 15s. for three months.

Lead is quiet and prices remain unchanged at 4.27 1/2@4.32 1/2c. St. Louis, and 4.32 1/2@4.37 1/2c. New York.

Spanish lead is firm, being cabled at £12@£12 2s. 6d. and English lead 2s. 6d. higher.

Spelter.—The demand has improved somewhat and prices are slightly higher. We quote 3.90c. St. Louis and 4.05c. New York.

The foreign market is a shade lower, good ordinaries being cabled as £16 17s. 6d. and specials 5s. higher.

The statement of the Missouri & Kansas Zinc Miners' Association, which is given in our editorial columns, has much interest for those who are concerned in the spelter market.

Silesian Spelter Market.—Herr Paul Speier writes from Breslau, Germany, under date of August 31st, that the market is somewhat stronger and current quotations are 33.50@35 marks per 100 kgs., f. o. b. cars at Breslau.

Antimony has been in fair demand. We quote Cookson's 10@10 1/2c.; Hallett's 8 1/2c.; Italian, Hungarian, Japanese and U. S. Star, 8 3/4c.

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

Platinum.—Consumption continues good and prices are strong. Ingot platinum in large lots now commands \$20.50 per ounce in New York.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 80c. per gram.

Quicksilver.—The nominal quotation in New York continues \$51 per flask, but the metal can still be had for somewhat less, \$49.50 for large orders.

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

Table listing prices for Aluminum, Ferro-Tungsten, Magnesium, Manganese, Molybdenum, Phosphorus, Sodium metal, and Tungsten.

Variations in prices depend chiefly on the size of the order. The fall in bismuth is due to competition which has suddenly arisen.

LATE NEWS.

At the annual meeting of the Republic Iron and Steel Company in Jersey City, N. J., the number of directors was reduced from 18 to 15 and the board was divided into 3 classes of 5 members each.

Juab County—Utah.

(From Our Special Correspondent.) Tintic Ore Shipments.—Shipments for the week ending September 7th have been light, being 50 cars of ore, 3 cars of concentrates and 1 bar of bullion.

San Miguel County—Colorado.

(From Our Special Correspondent.) Fraction.—A short lode claim of 285 ft. between Argentine No. 2 and Red Cloud in Savage Fork of Marshall Basin has been sold to the Tomboy Gold Mines Company for \$24,000.

SLATE TRADE REVIEW.

New York.

Sept. 13.

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

Size, inches	Monson or Br'n ville.	Bangor.	Bangor Ribbon.	Alb'n or Jackson Bangor.	Chap'n Key's ne	Peach Bottom.	Sea Gr'n	Unfad's Green.	Red.
24 x 14	6.50	3.50	3.00	3.00	3.80	5.10	3.00	3.75	.....
24 x 12	6.80	3.50	3.00	3.00	3.80	5.25	3.00	3.75	.....
22 x 11	6.80	3.50	3.25	3.00	4.00	5.25	3.00	4.00	.....
20 x 12	6.90	3.75	3.00	3.00	4.00	5.25	3.00	3.75	.....
20 x 10	6.80	3.75	3.50	3.25	4.00	5.35	3.00	4.25	10.50
18 x 12	6.80	3.75	3.00	3.00	4.00	5.25	3.00	3.50	.....
18 x 11	7.00	4.25	3.00	3.00	4.00	5.25	3.00	3.75	.....
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	3.00	4.00	10.50
18 x 9	7.00	4.50	3.50	3.25	4.00	5.35	3.00	4.25	10.50
16 x 12	6.80	3.75	3.00	3.00	4.00	5.25	2.90	3.50	.....
16 x 10	7.00	4.00	3.50	3.25	4.00	5.25	2.90	4.00	10.50
16 x 9	7.00	4.25	3.50	3.25	4.00	5.35	2.90	4.25	10.50
16 x 8	7.00	4.50	3.50	3.25	4.25	5.35	2.90	4.25	10.50
14 x 10	6.60	3.75	3.25	3.00	4.00	5.25	2.70	3.75	10.50
14 x 9	6.50	3.75	3.25	3.00	4.00	5.10	2.70	3.75	10.50
14 x 8	6.60	3.75	3.25	3.00	4.00	5.10	2.70	4.25	10.50
14 x 7	6.40	3.75	3.25	3.00	3.75	5.10	2.50	4.25	10.50
12 x 10	5.75	3.50	3.00	3.00	3.50	4.85	2.50	3.25	.....
12 x 9	5.60	3.50	3.00	3.00	3.50	4.85	2.50	3.50	9.00
12 x 8	5.50	3.50	3.00	3.00	3.50	4.85	2.50	3.50	9.00
12 x 7	5.00	3.25	3.00	3.00	3.25	4.85	2.00	3.50	9.00
12 x 6	4.80	3.25	3.00	3.00	3.25	4.75	2.00	3.50	8.50

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

There is a material increase in the shipments of roofing slate from Pennsylvania this year as compared with last, owing partly to the freer movement to export market resulting from lower freight rates. The shipments of school slates also show an improvement, chiefly for domestic use, but blackboards were not so fortunate. On the other hand, prices were well regulated by a smaller production of rough slate at the quarries. Of course there have been shaded prices here and there, but on the whole the trade has been in good condition, judging from the returns for the past 8 months.

Recently some mill stock was exported to Belgium, while a fairly large quantity of roofing slate went to Great Britain. Further shipments have been made to Denmark, and it looks as though this trade has become permanent. Australia continues to purchase moderate quantities of roofing slate, and some mill stock has also been sent to New Zealand. With present low freight rates exporters can do business abroad more satisfactorily.

MINING STOCKS.

Complete quotations will be found on page 346, 347 and 348 of mining stocks listed and dealt in at.

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

New York.

Sept. 13.

The coppers were noticeably weak, and sales were comparatively large. Amalgamated was most prominent, as there have been some large selling orders in the market when the stock touched \$116 on Tuesday. On Monday over 30,000 shares changed hands between \$112½ and \$114½, while on Tuesday over 62,000 shares were sold at \$114 and \$116, and on Wednesday over 53,000 shares moved at \$112 and \$114. Notwithstanding this heavy trading it looks as if the stock was "pegged" at \$110. Some pressure was brought to bear on the price when it was rumored that a large issue of new stock is to be made to acquire additional property. At present the company has listed on 'change 1,538,879 shares of its 1,550,000 capital, showing that there still remain to be issued 11,121 shares.

Anaconda copper shares also showed larger trading at \$44 and \$47.

Ontario Silver, of Utah, is strong and advancing. Sales show an increase over last week at prices varying from \$10 and \$11½, the latter figure being the highest this year.

Quicksilver common, of California, made further sales at \$3 and \$4.

Cripple Creek, Colo., shares are firmly held, as the output of the district in August was most satisfactory. Isabella experienced more fluctuations than any other stock, advancing from 52c. to 55c., and later declining to 53c. Anaconda holds steady at 35c., Mollie Gibson at 36c., Fanny Rawlings at 21c., and Argentum-Juniata at 12½c. A sale of Little Chief is reported at 13c.

Comstock shares showed some recovery. Consolidated California & Virginia rose from \$1.85 to \$1.90, and Ophir to 95c.

An auction sale was made of 39 shares Lykens Valley Railroad and Coal Company (\$20 per) at \$80.

Boston.

Sept. 12.

(From Our Special Correspondent.)

The sensation of the week here, as everywhere, was the attack on the President. The way in which it was received showed the general strength of the business position. There was at first some reaction and prices fell all along the line, but generally only to a small extent. Old-timers, who recall the general break which followed the shooting of President Garfield, could not help contrasting the situation now. The favorable news since received from Buffalo has, of course, helped, but even if it had not there would have been no serious fall.

The market rallied very quickly from the break, and on Monday opened very well. Today, however, it was somewhat irregular and the volume of business was less; though there was no perceptible weakness in prices, and the recovery was generally held.

Calumet & Hecla hangs around \$730, with very little trading. Among the other standard Lake coppers Tamarack was quoted at \$351; Quincy, \$175; Osceola, \$115; Wolverine, \$70; Baltic, \$52½; Atlantic, \$40; Isle Royale, \$38. Trading in all of these was good, but with some falling off today.

The South Range stocks continue high, Copper Range selling at \$75 and Trimountain at \$55. Mass was quoted at \$33.

The smaller coppers were active early in the week, but demand fell off later, with no special changes.

In the outside coppers British Columbia was quoted at \$14½. Old Dominion was off \$1, selling at \$33. Utah, on the other hand, was higher, bringing \$29½, while Santa Fe also gained, selling at \$7. Trinity sold at \$35 and \$35½.

The gold stocks were in better demand, and a fair business was done in them. Centennial-Eureka sold at \$28 and \$29, and Cochit was firm at \$5 and \$5½. Mercur was a little weaker, at \$2½. United States Mining closed at \$19½.

The miscellaneous stocks were quiet, with few changes. Shawmut Oil was \$16 asked, while United States Oil was quoted at \$12 and \$13. Dominion Coal sold at \$43 and \$43½, and New England Gas and Coke was \$8, with very little business.

Upon the whole, the week has shown the strength of the Boston market. The position is good, and when money begins to return from the West and South—as it will in a few weeks—most of our people look for an active period; not a boom, but a time of wealth and activity.

Colorado Springs.

Sept. 7.

(From Our Special Correspondent.)

The stock market is about the same as last week, with little or no change for the better, but some weakness for part of the week. There has been a fair demand for the more active stocks, but there seemed to be a great deal of selling, due probably to the erroneous impressions which have gone forth as to the Cripple Creek labor situation, and which it is very hard to counteract by the publication of truthful reports. There is evidence, however, of strong buying in certain quarters, and it is understood that those who are closest to the situation are advising heavy investments now rather than realization. The trading was not so heavy this week as last but this was on account of Monday being a holiday with no calls, but nevertheless trading was fairly good during the week, and the large amounts of stock offered in different instances were taken care of in a way which not only testified to the demand which is still in force for the more active of Cripple Creek stocks, but to the support which is given to many of the shares.

The principal features for the week were: Anaconda, Doctor-Jack Pot, Elkton, El Paso, Gold Dollar, Isabella, Lexington, Pharmacist, Pointer, in the mines; Bob Lee, Eclipse, Midway, Mollie Dwyre, Morning Star in preferred prospects; Agnes, Gold Hill, Gold Knob, Helen B., Mary Nevins and O. K. in the prospects, and Acacia, Colorado City and Manitou and Reno in the unclassified.

Anaconda has shown some activity this week, although it declined and the sales were comparatively light; it opened at 35c. and declined to 31c. bid, with 34c. asked. Doctor-Jack Pot has been very active and the stock has been in great demand, opening at 64½c., and then declined to 59½c., but advanced to 62c. and closed at 60½c. The trading has been very good, although there was a good deal of stock shorted. Elkton opened at 179½c., but declined to 174½c., thus showing some activity, even if it did decline, and the trading was fair on this stock. El Paso has shown a great deal of activity this week and stock was in good demand and sales were very heavy; it opened at 59½c., but declined to 55½c. bid with 55½c. asked. Gold Dollar has shown considerable activity this week, although it declined somewhat, nevertheless the demand for this stock was very good and the sales were extra heavy; it opened at 21½c. and declined to 20c., but regained and advanced to 20½c. bid, with 20½c. asked, some stock selling at 22c., buyer 30. Isabella has also been very active and has not only declined, but advanced under good trading both ways, opening at 53½c.,

then declined to 49c., but advanced to 52½c. under good trading, although there were some shorts. Pharmacist has shown some activity, but declined continually during the past week, opening at 9½c., and declined to 8½c., weakening a little each day; the sales were fairly good, with some sales at 10c., buyer 30. Pointer opened at 8c. and declined to 7c. bid, with 7½c. asked; thus the stock has been somewhat active this week, although it declined under fair sales. Bob Lee has been very active this week, especially the fore part of the week, opening at 4½c. bid, and advanced to 6c. bid with 7c. asked in one day; then it started to decline as the week passed, and closed at 4½c. The trading was very good on this stock, although some shorting was done. Eclipse opened at 11½c. and advanced to 11½c., but closed at its opening price, 11½c.; although this stock declined, it was active and sales were comparatively heavy and considerable shorting was done. Midway has shown some activity this week, opening at 3½c., and closed at 3½c., with fair trading and few shorts. Mollie Dwyre opened at 6½c. and advanced to 6½c., but declined to 6½c., and finally closed at its opening price, 6½c.; the sales have been good on this stock, with some shorts. Morning Star has shown considerable activity this week, opening at 4c. and advancing to 4½c., with very good sales. Agnes opened at 5½c., and advanced to 6c. bid with 6½c. asked, although the sales were rather light. Gold Hill has been active; it opened at 1½c. and advanced to 1½c., with good trading and no shorts. Gold Knob opened at 5½c. and advanced to 5½c. and closed at 5½c. bid with 6½c. asked; the sales have been comparatively good. Helen B., a late sensation, has not shown very much activity this week, although it weakened and sales were good; it opened at 4½c. and declined to 3½c. and closed at 3½c. bid with 3½c. asked. Mary Nevins has shown some activity this week and the sales have been fairly good, opening at 3c. and advanced to 3½c., then declined to 2½c. bid with 2½c. asked.

The total amount of sales for the week was 1,983,967 shares with a cash value of \$372,430, which is somewhat lighter than last week. Monday was a holiday, and there was no call on that day.

San Francisco.

Sept. 7.

(From Our Special Correspondent.)

While the market was rather depressed in the earlier days of the week, it brightened up toward the close; more business was done and quotations were better. Trading, however, continues on the old basis of small insiders.

Some quotations noted are: Consolidated California & Virginia, \$1.85; Ophir, 81c.; Mexican, 24c.; Best & Belcher, 22c.; Sierra Nevada, 16c.; Yellow Jacket, 14c.; Gould & Curry, 9c.; Chollar, 5c.

The Consolidated California & Virginia Mining Company received \$8,137 in gold coin to-day as the proceeds of the sale of concentrates that were recently shipped to the Selby Smelter.

The Savage Mining Company has levied an assessment of 10c. per share, delinquent October 5th.

On the Producer's Oil Exchange business was somewhat quieter than last week, but still fairly active; while prices continued strong. Some quotations noted are: Hanford, \$120; Peerless, \$5 and \$5.25; San Joaquin Oil and Development, \$8.50; Home, \$3.80; Sterling, \$1.40; Junction, 28c.; California Standard, 23 and 24c.; Lion, 11c. The leading stocks were Junction, California Standard and Lion.

London.

Sept. 3.

(From Our Special Correspondent.)

There has been a great deal of activity this week in the shares of the De Beers Company, due to the announcement that the syndicate that controls the sale of the diamonds has arranged for an increase in price. The stoppage of work during the war left the European and American diamond market very short and prices advanced considerably. The demand has not slackened off at all on account of this rise, and the syndicate has been able to maintain the higher price for the coming year. The advantage to the company will be considerable and the shares are therefore in demand. Following on the publication of this item of news came a rumor that the Chancellor of the Exchequer intends to levy a tax on diamonds, and the boom in De Beers was checked for a time. The tax would be an excellent one in theory, but its collection would entail great difficulties. It could be collected easily enough from the big producing companies in South Africa, but the product of all other districts would escape taxation entirely, for there is no way of tracing their import into this country. Another cause of depression was the receipt of selling orders from Paris where adverse political rumors had been circulated, chiefly with regard to a possible rupture between France and Turkey. Altogether the advance in De Beers was not so great as it would have been.

To some extent there has been a little more life in South African gold shares, and there is an inclination to buy shares in companies on the Rand that have started work. The Ginsberg, one of the Barnato mines in the East Rand, has obtained leave to start this week, and the shares

have been in considerable demand. The arrival of Lord Milner at the Cape has also been used for market purposes, as it is generally expected that after his arrival the Rand will be more rapidly re-opened, in spite of the fact that the war is still going on.

A good deal of interest has been aroused in the West Australian market by the expressed desire of the group which now controls Lake View Consols and Ivanhoe to acquire other mines adjoining. This group already has a leading interest in Golden Horseshoe, and is desirous of acquiring the Great Boulder Perseverance, which is one of Mr. Frank Gardner's mines. Their object is to amalgamate the whole group and have one management right through. The scheme is an admirable one if the interests of the various shareholders can be adjusted in a satisfactory manner. The mines all lie together and the mining and metallurgical problems are identical, and it will put the controllers in a very strong position both in London and in West Australia.

Mr. Whitaker Wright and his friends have suffered the severest defeat this week that they have yet experienced. At the meeting called for the purpose of removing them from the board of the Le Roi Company the overwhelming support given by the shareholders to the motion was quite a surprise. Out of 200,000 shares 130,000 voted for the motion, while only 15,000 were given to Mr. Wright. Mr. Wright and his friends resigned when they had ascertained from the reports coming in how the land lay, so the only business of the meeting was to elect new directors. After the resignation of Mr. Wright and his friends the board consisted of only two members, but it was considered advisable not to proceed with the election of a new board until the condition of the company and the mine was looked into thoroughly. The meeting elected one new director, Mr. R. J. Frecheville, a mining engineer of repute in London, and his duty will be to go to the mine and make the necessary examination. Until his report is received no further action will be taken.

The newly constituted firm of Guest, Keen & Company, Limited, which was formed a year ago to take over the Dowlais Iron Works in South Wales, has had a very prosperous first year's working, the net profits amounting to over £380,000. The new business management introduced by Mr. Arthur Keen, of Birmingham, the present controller of the company, has had good results, and the promise for the future is excellent. I understand that the company is about to absorb the business of Crawshaw Brothers, of Cyfartha, near Merthyr Tydvil, which consists of the manufacture of steel rails and other bessemer products. The business is an old established one and has remained in the hands of the Crawshaw family up to the present time. New shares in Guest, Keen & Company will be issued to effect the purchase, and some of them will be offered to the public for subscription. It is probable, however, that present shareholders in the two companies will provide all the necessary cash, and the outside public will not have much chance of acquiring any of the shares.

Paris. Sept. 2.

There is but little new to report from the Bourse. The mining stock section continues quiet and rather weak, and speculation is notably absent. Buyers of stocks are lacking in most cases, and prospective sellers are discouraged. The metallurgical stocks are nearly station-

ary. It is admitted that new orders are not coming in freely; but most companies have contracts to fill that will keep the mills busy for some time yet. Generally their position is stronger than it was two years ago.

The Russian group of stocks, both coal and metallurgical companies, continue to be a disturbing element in the market. It is altogether probable that holders who are content to wait the passing of the present crisis will receive good dividends on their investments. There are, however, a number of holders who cannot or will not wait. At every symptom of recovery these holders press their shares for sale, with the usual consequence of still further reactions. No relief from these conditions is possible, as long as this pressure to sell continues.

The zinc and lead shares are weak, as a result of the falling prices of the metals. The Spanish lead companies have been especially affected by the downward movement of the metals.

The market for the Transvaal gold stocks continues dead, in spite of attempts from London to revive it. It is past the point where anything but the close of the war could have much effect.

There is much discussion about the copper market and those who are operating for the decline in Rio Tintos and other stocks point to the decline in standard copper in London. It shows the tenacity of trade traditions that many are still inclined to accept that quotation as the index to the condition of the market. They do not realize that, while standard, or g. m. bs. are the cards with which the speculators play, this quotation no longer represents the true price, which must be looked for in the quotations for refined copper. They do not realize, moreover, that the control of the market has passed from London, and rests practically with New York. Speculators may settle their differences by the London Metal Exchange quotations, but the consumer has practically to pay what New York demands.

A report recently issued, which is—like most of our official reports—a year or more behind time, relates to joint stock companies. According to this report there were in France at the beginning of 1900 a total of 7,939 of these societies, and their aggregate capital stocks were 13,620,000,000 fr. The value, as judged by the selling prices, amounted to 14,475,000,000 fr. The groups which especially interest us, as given in the report, are No. 4, which includes mines and quarries; in this there were 408 companies, the value of whose stocks in round figures was 1,700,000,000 fr., besides 110,000,000 of bonds. Group 7, metallurgical companies, includes 437 societies, whose issues aggregate 955,000,000 fr. in stock and 230,000,000 fr. in bonds. Group 6, the chemical industries—which includes gas companies—comprises 496 societies, with total issues of 900,000,000 fr. in stock and 320,000,000 fr. in bonds. These three groups represent, therefore, about 33% of the total capital invested in joint stock enterprises.

Some efforts are being made to push two African colonization companies—Mossamedes and Mozambique—but with little success. No companies of this class have been successful, except where discoveries of gold have drawn attention and men to their territories. Such discoveries have not been made on the lands of these companies as yet.

A return of the gold production in Madagascar for the last three years shows that the exports rose in value from 338,522 fr. in 1898, and 1,070,825 fr. in 1899, to 3,009,160 fr. in 1900. About

half the production of 1,114 kilograms was obtained from the district of Ampasary.

The white man, as a rule, is not drawn to Africa without some special inducement, such as gold. For simple agriculture the conditions are not inviting enough. Azote.

ANNUAL MEETINGS.

Table with columns: Name of Co., L'cation, Date, Place of Meeting. Rows include Horn Silver, Moon Anchor, Pleasant Valley Coal, Saylor Con.

ASSESSMENTS.

Table with columns: NAME OF COMPANY, Loca-tion, No, Delinq., Sale, Amt. Rows include Andes, Belcher, Best & Belcher, Butte Basin, Caledonia, Chollar, Confidence, Crown Point, Dalton, Daylight, Little Bell, Madsen, Mayflower, Mexican, Occidental, Osceola Con., Potasi, Savage, Seg. Belcher & M. Con, Sierra Nevada, Skagit Cumberland C, Sonora Quartz, Union Con, Victor, Willietta, Yuba Con.

DIVIDENDS.

Table with columns: NAME OF COMPANY, Date, Per share, Total, Total to date. Rows include Adams, Consolidated, Daily West, Elkton Con., Gold Coin, Golden Eagle, Gwin, Helena, Homestake, Modoc, New Leadville Home, N. Y. & Hond Rosario, Republic I. & S. pf, Santa Maria, Guadalupe, Mex., Sless-Sheld S. & I. pf, Standard, Idaho, Uncle Sam, U. S. Marble.

STOCK QUOTATIONS.

PHILADELPHIA, PA. § Table with columns: NAME OF COMPANY, L'cation, Par Val, Sept. 5, Sept. 6, Sept. 7, Sept. 9, Sept. 10, Sept. 11, Sales. Rows include Am. Alkali, Am. Cement, Bethlehem Iron, Bethlehem Steel, Cambria Iron, Cambria Steel, Susg. I. & S., United Gas I.

Total shares sold, 46,861. § Reported by Townsend, Whelen & Co., 399 Walnut St., Philadelphia.

SALT LAKE CITY, UTAH. Sept. 7. Table with columns: STOCKS, Shares, Par val, Bid, Asked. Rows include Ajax, Albion, Alice, Anchor, Ben Butler, Boss Tweed, Bullion Beck & Ch., Centennial Eureka, Con. Mercur, Dalton, Daly, Daly-West, Dexter, Eagle & Blue Bell, Galena, Grand Central, Homestake, Horn Silver, Joe Bowers, Lower Mammoth, Mammoth, May Day, Northern Light, Ontario, Sacramento, Shower Con., Silver King, Silver Shield, Star Consolidated, Sunbeam, Swasea, South Swasea, Tesora, Tetra, Uncle Sam Con., Utah, Valco, Yankee Con.

ST. LOUIS, MO.* Sept. 10. Table with columns: NAME, Shares, Par, Bid, Ask. Rows include Am.-Nettle, Catherine Lead, Central Lead, Columbia Lead, Con. Coal, Doe Run Lead, Granite Bimetallurg, Kan. & Tex. Coal, Renault Lead, St. Joe Lead.

* From our special correspondent.

TORONTO, ONT.

Table with columns: NAME OF COMPANY, Sept. 3, Sept. 4, Sept. 5, Sept. 6, Sept. 7, Sept. 9, Sales. Rows include Ontario: Golden Star, Ham Reef, British Col., Cariboo MK, Center Star, Crow's N. C., Deer Trail, Fairview, Mont & Lon, Morrison, Noble Five, North Star, Payne, Rambler, Republic, Virtue, War Egl Con, Winnipeg, Wonderful, Develop Co., Can. G. F. S.

Total sales, 25,500 shares.

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing companies like Amalgamated c., Anaconda, Argentinum, etc., with columns for location, par value, and sales.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stock quotations, listing companies like Am. Agr. Chem., Col. Fuel & I., etc., with columns for location, par value, and sales.

On Pittsburg, Pa. Exchange. Total sales, 694,532 shares.

BOSTON, MASS.

Table of stock quotations for Boston, listing companies like Adventure Conc., Amalgamated, etc., with columns for par value, shares listed, and sales.

Official quotations Boston Stock Exchange. Total sales, 241,837 shares.

MONTREAL, CANADA.

Table of stock quotations for Montreal, Canada, listing companies like Big Three, California, etc., with columns for par value, shares, and sales.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, listing companies like Acacia, Alamo, Am. Con., etc., with columns for par value, sales, and various price points.

*Colorado Springs Mining Stock Exchange. Total sales, 1,027,572 shares. *Holiday.

COLORADO SPRINGS, BY TELEGRAPH.

Table of stock quotations for Colorado Springs by telegraph, listing companies like Alamo, Argentinum, etc., with columns for par value and sales.

CALIFORNIA OIL STOCKS.

Table of California oil stock quotations, listing companies like Blue Goose, Buckhorn, etc., with columns for shares issued, par value, and sales.

*Producers' Oil and San Francisco Oil Exchanges. Total sales, 22,225 shares.

STOCK QUOTATIONS.

LONDON. Aug. 30. Table with columns: NAME OF COMPANY, Country, Authorized capital, Par value, Last dividend, Quotations (Buyers, Sellers).

SPOKANE, WASH. Week Sept. 7. Table with columns: NAME OF COMPANY, Par val., B., A., Sales, NAME OF COMPANY, Par val., B., A., Sales.

MEXICO. Sept. 7. Table with columns: NAME OF COMPANY, Shares, Last div'd, Prices (Op'g, Cl'g), NAME OF COMPANY, Shares, Last div'd, Prices (Op'g, Cl'g).

PARIS Aug. 22. Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Latest divs., Prices (Opening, Closing).

DIVIDENDS.

COAL, IRON, OIL, AND INDUSTRIAL COMPANIES.

Large table with columns: Name and Location of Company, Authorized Capital Stock, Shares (Issued, Par Val), Dividends (Paid, Total to Date, Latest), Name and Location of Company, Authorized Capital Stock, Shares (Issued, Par Val), Dividends (Paid, Total to Date, Latest).

This table is corrected up to Sept. 3d. Correspondents are requested to forward changes or additions.

DIVIDENDS.

GOLD, SILVER, COPPER, ZINC, LEAD AND QUICKSILVER COMPANIES-

Table with columns: Name and Location of Company, Authorized Capital Stock, Shares (Issued, Par Val), Dividends (Paid, Total to Date, Latest Date, Amt.), Name and Location of Company, Authorized Capital Stock, Shares (Issued, Par Val), Dividends (Paid, Total to Date, Latest Date, Amt.).

This table is corrected up to Sept. 3d. Correspondents are requested to forward changes or additions.

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

Table with multiple columns listing various chemicals and minerals such as Abrasives, Acids, Alkalis, and Rare Elements, along with their respective prices and units.

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