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In the article on the possibility of future exports of iron ores in the *Engineering and Mining Journal* of September 26th, some reference was made to the shipment of ores from the Lake Champlain District in the early part of the year. We are now informed that the result of these shipments was satisfactory and that the ore was found to be entirely suitable to the German market, but that further exports were prevented by the rise in ocean freight rates. This obstacle might be overcome, as we pointed out, if a trade could be built up large enough to warrant the charter or purchase of steamers especially for the work.

The somewhat unusual condition is presented just now of pig-iron prices on a comparatively higher level in Great Britain than in this country. The prospect, moreover, is that this state of affairs may last for some time to come, since all departments of the iron trade there are active and the demand for raw material is rather on the increase. With Scotch pig warrants selling at over \$11 per ton, and Middlesboro iron at \$9.25 or \$9.50 at furnace, there ought to be an opportunity for extending the exports of Alabama iron, which have already been begun. The only obstacle to this seems to be the increase in ocean freight rates recently, but that may be only a temporary condition.

No better illustration of the condition now prevailing in the Western coal trade is offered than by an inspection of the rates paid for mining in Pennsylvania, Ohio, Indiana and Illinois. Pennsylvania has been struggling to maintain the 70-cent rate, Ohio and Indiana have been nominally working for the 60 cent rate, while Illinois has been paying 30 to 33 cents gross and 50 cents per ton net weight. Some of the better grades of coal in Illinois—indeed, most of them—can be bought for 70 cents per ton at the mine, the same price paid for mining one ton in Pennsylvania. Many mines are selling at 60 cents at the mine, and good screened coal can be had at 55 cents per ton at the mine. Some large railroad contracts have been made at this latter figure. Earlier in the season run-of-mine (un-screened coal used for steam and metallurgical purposes) has been sold for 45 cents per ton at the mine. It would seem impossible to go below these figures.

Among recent arrivals in San Francisco we note that of Mr. Rokuro Oshimo, general manager of the Hokkaido Colliery and Railroad Company of Sapporo, Japan, whose object is to inspect American methods of coal mining, to purchase the most improved coal-mining machinery, and if possible to introduce his company's coal in the San Francisco market. After visiting the Washington and California mines, it is his intention to make a complete tour of the mines in the East and South. The mines of the Hokkaido Company are among the largest in Japan, producing some 600,000 tons of coal yearly. Japanese coal has heretofore come to San Francisco occasionally, but has not found much favor there, its quality not being considered equal to that of Australian or of the Puget Sound coals, which supply a large part of the Pacific Coast demand. It is quite possible, however, that Mr. Oshimo's visit may give some of our manufacturers an opportunity to place mining machinery in Japan.

The receipt of 4,000 ounces of gold from the placer workings in the island of New Guinea, which is reported by the Australian papers, marks the progress made in a new field, the full extent and value of which have yet to be ascertained. Miners from Australia have been going to New Guinea for some time past, attracted by reports of rich placers discovered in the island, and there must be now quite a number at work. The gold so far found, we believe, has been taken entirely from the beds of the streams and the alluvial deposits on their banks. The country is under British protection, and what settlements have been made are entirely from Australia. It is one of the group which includes New Caledonia and the New Hebrides and is divided from the northern point of Australia only by Torres Strait. Gold as well as nickel has been reported to exist in New Caledonia, but we are not aware that any appreciable amount has been recovered there. The development of the resources of that island, however, have been checked by its use as a penal colony by the French government, free settlers being unwilling to go there with a convict population.

Gold is known to exist on some of the larger islands of the Indian Ocean, especially Borneo and Celebes, but very little prospecting has been done by white men. It is not impossible that the next new developments in gold production may be in these far eastern islands, of which so small a part has really been explored, notwithstanding the centuries which have passed since they were first known to Europeans.

Tin prices in New York last week reached the lowest point on record, the quotation on Friday, October 2d, being 13 cents per pound for spot sales and 12½ cents for future deliveries. The average quotations for parallel dates have been 14½ cents in 1895, 16½ cents in 1894, 20½ cents in

1893, and 20½ cents in 1892. The fall in five years has therefore been 7½ cents per pound, or 36.2 per cent. The present prospect is that the price will continue low, even if there should be no further decrease.

Various causes have contributed to the reduction in the values of this metal. The opening of new sources of supply in the Dutch East Indies, and the fall in the price of silver cheapening the cost of production, which is now chiefly from silver-using countries, have largely increased the output of the metal, which has grown a little faster than the demand. Just at the present time also the tin-plate manufacture in Great Britain is in a state of great depression, largely because the exports to this country have been cut off by the competition of our new plants, while these works are also suffering from the general depression of trade.

We may add that the British production of metallic tin, which has long ceased to be a factor in the trade, continues to decrease. With the exception of the small quantities which come from Australia and Bolivia the market is now supplied from the old districts of the Malay Peninsula and the more recently opened mines of the Dutch islands. It is a curious fact that the mining of tin is at the present day very largely in the hands of the Chinese, who are spreading so rapidly over the far East, and are obtaining control of the mines in the Straits Settlements and elsewhere, because they are there the only race of steady laborers.

One of the misfortunes of the gold-mining industry in the Transvaal has been the subordination of its real interests to the purposes of the speculators who control so many of the mines, and whose great gains have come rather from the manipulation of the stocks in Europe than from the exploitation of the mines themselves, profitable as that has been in many cases. Last year the bull movement was in full progress and predictions of the most brilliant future for the Witwatersrand especially and for all the Transvaal mines were heard on all sides and printed everywhere. Just at present the tendency is all the other way, and gloomy predictions are in order. Both from London and Johannesburg we hear talk only of ores decreasing in grade, of high expenses and of the bad condition of some of the newer companies.

Part of this talk is doubtless intended to influence the Transvaal government and to aid in securing concessions in the way of lower duties, the suppression of monopolies, better railroad rates and the regulation of native labor. Part of it also seems to be due to an organized movement to depress the value of stocks and probably to enable the speculators to buy in some of the stocks which they sold during the period of inflation. The dark side is as much overdrawn at present as was the bright side a year ago. The real value of the Transvaal mines has not changed. While we have sometimes taken occasion to point out over-statements and exaggerated estimates of values, we have never doubted, and do not now doubt, the great value of the gold-bearing deposits of the Witwatersrand. We believe that there, as elsewhere, careful engineering and close economy in working are necessary, but we also believe that those deposits will continue to be the basis of a great mining industry for many years to come.

#### The Mollie Gibson Report.

The recently issued report of the Mollie Gibson Consolidated Mining Company, an abstract of which will be found elsewhere, shows that the company is still steadily at work searching for the vein which at one time yielded such rich returns. This vein, as is well known, was cut off below the sixth level by a complicated system of faulting, and it is now hoped that the main ore-body may be recovered on the twelfth or thirteenth level. Those levels are to be opened from the main shaft, which is now being sunk from the eleventh, at present the lowest level in the mine. The work done has not been barren of results, however, for smaller ore-bodies have been encountered, which have enabled the mine to support itself and to pay for the new development which has been carried on. It has done little more, for we find that during the period of 18 months covered by the present report—which includes the full year 1895 and the first half of 1896—the net returns from the mine amounted to only \$31,883, and the revenue from interest, etc., to \$3,446, a total of \$35,329. With this and a small draft on the reserve, dividends amounting to \$50,000, or 1 per cent. on the stock, were paid. It is, perhaps, encouraging that the mine has been able to do so much, when the low prices of silver and lead are considered; but it shows how entirely its future depends on the developments in the lower levels. So far they are encouraging enough to warrant the continuance of the work on the line which has been adopted.

The report deserves commendation both because it gives apparently a full and fair statement of the condition of the mine, and because it contains a full detailed statement of the mine costs, including in them, very properly, development and improvements. The total amount of the expenses in mine and mill reached an average of \$41.69 per ton of ore worked; the railroad freight on this ore was \$7.18, the smelting charges \$6.64, and the sampling \$0.34, so that the total expenditures were \$55.85. As the average return was \$60.93, the net profit obtained was \$5.08 per ton only.

An interesting statement in the report shows that a gross return of \$382,493 was obtained from 6,278 tons of ore shipped, the average assay of which was 2.72 per cent. lead and 94.51 ounces silver per ton; the value being, as stated above, \$60.93 per ton, of which \$59.97, or 98.4 per cent., was in silver and \$0.96, or 1.6 per cent., in lead. Taking as a basis the silver product, it is found that the gross receipts, including the value of the lead, averaged 64.47 cents per ounce of silver, against which are charged 14.97 cents for freight, smelting and sampling and 44.12 cents for mine expenses, a total of 59.09 cents, leaving a profit of 5.38 cents per ounce of silver.

In other words, regarding the lead as a by-product, an ounce of the silver produced brought the company 64.47 cents, and 91.7 per cent. of this was absorbed by the various expenses, leaving a profit of only 5.38 cents, or 8.3 per cent. of the gross return, on each ounce of silver from the mine. As the lead supplied only 1.6 per cent. of the gross value, the average cost and profit would be changed by only a very small fraction were the lead receipts deducted in making this statement.

While, as we have said, it is encouraging that a profit should be shown under all the existing circumstances, it is clear that there must be an advance in prices or a large increase in the yield of the mine before the famous Aspen producer can return to its old time-prosperity.

#### The Philadelphia & Reading Reorganization.

The recent sale of the properties of the Philadelphia & Reading Railroad Company under foreclosure of the general mortgage is the first step toward the completion of the reorganization of the company, and the placing of its affairs once more upon a basis which, it may be hoped, will be stable. Our readers who are interested in the anthracite coal business will recall the more recent history of the company; the former reorganizations, which were simply the loading down of the company with additional debt and were followed by new bankruptcies, as was inevitable; the unsuccessful attempts to carry through a plan of reorganization without foreclosure, and finally the assumption of control by certain powerful interests, chiefly for the purpose of restoring some semblance of order and profit to the anthracite coal trade generally, which had become more demoralized than ever while the leading company concerned in it was either under reckless and incompetent management, or in the charge of receivers who were under no obligation to pay dividends on the stock or even interest on the bonds.

Under the former bankruptcies the objection to foreclosure and a real readjustment of the company's burdens was that the valuable special privileges conferred by the original charter would be lost, and could not, under the terms of the present constitution of Pennsylvania, be reacquired by a new company. That objection, of course, still held at the present time, and there were predictions that the managers of the present plan would hesitate when it came to the point. The actual sale of the property and its prompt confirmation by the court have disproved these, and have shown their determination to carry through the plan. This placed the control entirely in the hands of the general mortgage bondholders, since that mortgage was the first lien covering the entire property, and under which it could be sold as a whole. The prior obligations were all secured upon portions only of the great estate which was nominally owned by the company, but at the mercy of its creditors. Without going too greatly into details it may be said that the foreclosure has cut off a great mass of junior securities—income and other bonds and stocks—whose owners have, however, been allowed to retain their interests upon the condition of paying cash assessments which were expected to—and probably will—provide the money required to put the new company upon its feet, for the present at least, and to provide the funds needed at the start, or the working capital.

The new company, however, will be capitalized more heavily in proportion than any other in this country, for the securities will have a face or nominal value of \$254,000,000. Of these \$70,000,000 will be common stock; \$42,000,000 second-preferred and \$28,000,000 first-preferred stocks, both entitled to 4 per cent., if earned, in their respective order; and finally \$114,000,000 bonds issued under a new general mortgage and entitled to 4 per cent. interest yearly. The new common and preferred stocks will replace the old stocks and income bonds. The general mortgage bonds will be applied, \$44,550,000 to provide for the various prior liens as they mature; \$44,575,000 to replace the old general mortgage bonds: \$4,875,000 for contingencies, for reorganization expenses and to compensate the syndicate which has guaranteed and carried through the reorganization; and finally \$20,000,000 as a fund to be drawn upon hereafter for additions to and improvements of property as they are required.

With the prior liens all provided for and the new general mortgage bonds all issued the new company will have an obligatory interest charge of \$4,560,000 yearly; and \$7,360,000 yearly must be paid before any sur-

plus begins to accrue for the common stock. It is true that \$20,000,000 of the bonds will not be issued at present; but, on the other hand, a large part of the prior liens, including the old mortgages, purchase money mortgages, terminal and other special liens, carries a higher rate than 4 per cent. Moreover, experience shows that with such a company as the Reading, the improvement fund will be rapidly drawn upon, and it will be necessary to allow for the full amount of interest charges in any calculation for the future. The question to be considered is whether the property can carry them.

The total amount of the bonds of all classes having a lien on the property prior to the general mortgage was, by the last published balance sheet, \$45,414,533, including therein the receivers' certificates, amounting to \$3,503,882; these are generally held to be a first lien, at any rate on the earnings of the property. It must be remembered that the company must also provide for the interest and other needs of the Coal and Iron Company, and also for the rentals on its leased lines, most of which form a necessary part of its system, and cannot be given up.

An adequate judgment can hardly be formed from the operations of a single year, and we give below a condensed statement covering five years and including both good and bad years:

	1891.	1892.	1893.	1894.	1895.
Gross earnings .....	\$21,833,802	\$22,988,248	\$22,828,847	\$20,344,775	\$21,300,575
Working expenses .....	11,862,220	12,491,074	13,369,424	11,278,989	11,628,412
Net earnings .....	\$9,991,582	\$10,495,174	\$9,459,422	\$9,065,786	\$9,672,163
Other receipts .....	523,151	703,868	609,072	515,632	587,090
Total revenue .....	\$10,514,733	\$11,199,042	\$10,068,495	\$9,571,418	\$10,259,253
Lease rentals .....	2,838,351	2,540,098	3,263,786	2,888,316	2,881,852
Taxes, etc .....	580,700	531,803	2,138,638	2,511,678	1,978,436
Loss on Coal and Iron Co.	728,284	.....	195,649	1,025,602	1,538,875
Total charges .....	\$4,147,335	\$3,371,901	\$5,597,473	\$6,425,646	\$6,402,093
Balance .....	\$6,367,398	\$7,827,141	\$4,471,022	\$3,145,772	\$3,857,160

In 1892 there was no loss on the Coal and Iron Company, but the profit amounted to only \$24,339, or practically nothing. It will be seen that only in an exceptionally prosperous year would the company have been able to pay anything upon the new income bonds; while in three years out of the five given, the balance was not sufficient to pay the interest on the new general mortgage bonds.

The great coal estate held under the organization of the Coal and Iron Company not only returned no direct profit to the railroad company, but, in four years out of the five given above, it failed to earn its own charges and showed a deficit to be made good. This has been the history of the company almost from the beginning: this property, in the acquisition of which almost one-half of the Reading liabilities have been incurred, has made no return, but on the contrary has been a constant drain on the treasury, and will in all probability continue to be.

The Reading road has a large and generally profitable traffic outside of its coal trade; but the anthracite business furnishes the more important part of its earnings, and in any forecasts of the future full account must be taken of its great investments in coal lands and collieries. That these have never been, and are not now, a source of profit, as shown above, but a continuous burden upon the railroad, is at once a striking illustration and a confirmation of the conclusions drawn in the chapter on the "Evolution of the Anthracite Coal Trade" in Volume IV. of *The Mineral Industry*, that the anthracite coal business has never been a source of profit to the operators, and that the companies which have survived in the struggle have been those whose borrowing powers were greatest.

It is within the memory of many, and probably of some who are still stockholders, that the Reading was once a steady dividend-payer, and its stock was regarded as one of the safest investments to be found in the railroad field. The company's fall from that position dates from the investments in coal lands through the medium of the Coal and Iron Company and the general expansion which was begun under the brilliant administration of Mr. Franklin B. Gowen. It is too late now to discuss the wisdom of the policy then adopted; to a great extent it was forced upon the company by its competitors, and the only thing to be done now is to accept the results as they stand, and to make the best of the situation. Whatever opinions may now be entertained of the line of action referred to, in the light of events, it certainly seemed a necessity then; and while Mr. Gowen was often misled by his sanguine disposition, probably few men could have carried it out as he did.

It seems almost certain that the present reorganization, though in plan and method a great advance upon the previous ones, has not gone far enough, and that a radical cutting off of securities and diminution of the company's load should have been made, to put it upon such a basis as to enable it to continue operations and improve its property without another break-down, which is now possible before many years. If it was considered expedient to allow interest in the property to be retained, at least the obligatory interest charge should have been put at a much lower point. All experience, however, shows that it is an injury to a company to have in existence a great mass of so-called securities having a merely nominal or speculative value. Either a new receivership in a few years, or the transfer of the Reading to a stronger company on the purchaser's own terms, at present seems the probable result.

NEW PUBLICATIONS.

POOR'S MANUAL OF THE RAILROADS OF THE UNITED STATES: 1896. Twenty-ninth annual number. New York; H. V. & H. W. Poor. Pages, 1,670; with maps. Price, \$7.50.

We have frequently had occasion to speak of the excellence of this well-known book of reference, the care with which its statements are compiled, and the enterprise of its publishers in making improvements. The change made this year has been in merging into the *Manual the Directory of Railroad Officials*, formerly published as a separate volume.

In 1893 *Poor's Handbook of Investment Securities* was consolidated with the *Manual*, thereby extending its scope to cover State and municipal investments, industrial securities, etc. As a result of these consolidations the *Manual* this year contains 258 pages more than the edition of 1895, embracing statements of 4,399 corporations, of which there are 2,040 steam railroad companies, 1,208 street railroad companies, 143 industrial corporations, and 1,008 States, counties, cities, towns, etc., in all representing aggregate investments of \$16,475,000,000.

The *Manual* presents this year the feature of great detail and labor in the statements of the principal companies. These statements, it is believed, will prove of unusual public interest. It is, of course, of great value to those interested to have the affairs of all the companies set out in one volume. Those who know the labor required for the analysis of the report of a single company will understand what is involved in the publication of a book containing statements of more than 4,000 companies.

THE DEVELOPMENT OF THE PERIODIC LAW. By Dr. F. P. Venable, Easton, Pa.; The Chemical Publishing Company. Pages, 321. Price, \$2.50.

As the author justly remarks, the literature of the atomic weights and related constants is of an out-of-the-way sort, scattered through the transactions of scientific societies, lectures, addresses, articles in chemical periodicals, and often masked and concealed under discussions of other topics. Professor Venable has made a patient and very thorough search throughout this literature and has arranged the substance of it chronologically, beginning with the announcement of Prout's hypothesis of integral multiples of hydrogen and the unity of matter, and carrying the record of discoveries and discussions down to the present year. A chronological bibliography is appended, which will increase the value of the work as a reference book. The history of the development of modern theories as to the constitution of matter amply justifies the preparation of this interesting résumé, by showing how important researches and publications have escaped notice, and how frequently investigators have repeated the efforts of predecessors whose work they were ignorant of.

The periodic law, or rather the "natural system," is of course by no means a finality, and its bearing is still imperfectly understood, but it is evidently a great step in the direction of solving some of the most important secrets of nature. Not only Mendeléef and Meyer, but also De Chancourtois, Newlands and other forerunners of the two chemists who first clearly enunciated the periodic law are entitled to great credit, which the author accords them with impartiality. He also brings out very plainly the extraordinary attempts to prove curious and often fanciful numerical relations between the atomic weights, which have fascinated so many chemists and led to endless and improvable speculations; and he presents a true picture of the theoretic and experimental situation of the present, with the old problem of the unity of matter and the compound nature of the so-called elements still unsolved, but with glimpses of light to encourage fresh efforts in this line of research. Altogether the book is a valuable addition to chemical literature, and is particularly noteworthy because of the fairness with which delicate controversial questions are handled, in contrast with the wrangles over priority of discovery and the acrimonious disputes as to fact and theory which have too often occurred.

THE CYANIDE PROCESS OF GOLD EXTRACTION. By James Park, Auckland, New Zealand; Champtaloup & Cooper, Melbourne, Australia; George Robertson & Co., 1896. Pages, 142; with diagrams and illustrations.

This book, which has reached a second edition, is chiefly interesting on account of the description it contains of the cyanide mills in New Zealand. Much has been written on the treatment of tailings in South Africa and elsewhere, but very little is to be found in current literature on the direct application of the cyanide process, and we believe that it is only in the United States and New Zealand that this application has been successfully accomplished on a large scale. Mr. Park has, in 132 pages, fairly covered the ground both as to laboratory tests and the general working of the process in the mills. Exception might be taken to the broad statement of Mr. Park that all the common ores of silver are soluble in dilute solutions of cyanide; partly soluble is more correct, for the extraction on silver ores is invariably low, and quite uncertain, except on chlorides and here cyanide offers no advantage over hyposulphite solutions unless gold is also present. The phrase "weak solution" is rather indefinite and we notice Mr. Park follows the MacArthur-Forrest people in claiming a peculiar selective action for weak solutions, a claim that is by no means proven. It is only the electrical cyanide processes that use weak solutions in the modern acceptance of the term; for example, Mr. Park shows that in New Zealand practice, solutions varying from 0.30% to 0.8% are classed as strong, and 0.1% to 0.2% as weak solution, while in his description of the Siemens-Halske process 0.05% solutions are classed as strong and 0.01% as weak solutions. Neither of these latter solutions are practicable in the MacArthur-Forrest process even were they otherwise desirable for these so-called selective action.

Among the various causes given for the loss of cyanide, that due to the presence of charcoal in the ore strikes one as curious. The presence of charcoal and partially carbonized wood in the ore is traceable to the peculiar method of drying practiced in some of the New Zealand mills in which the drying kilns consist of open circular holes excavated in the solid rock to a depth of about 37 ft. and diameter of 20 ft. Into these holes the ore and wood are charged in alternate layers, the ore charge usually amounting to 100 tons. In working these kilns 50 tons of ore are drawn off from the bottom every third day and 50 tons of wet ore with the necessary wood added on top. One ton of wood will dry about three tons of ore and the total cost of wood and labor is 2s. per ton of ore dried.

At one of the New Zealand mills it is claimed that it pays to employ labor to pick out the charcoal from the dried ore and thus prevent loss of gold and cyanide in the subsequent leaching process. To us, it appears that the substitution of a modern revolving dryer for the "hole in the ground" is the correct remedy, as the ore could then be dried continuously and at one-fourth the expense and be entirely free from charcoal.

The chapter on testing and assaying solutions, etc., though very elementary is lucid and good. It is proper, however, to note that the book has been written for the information of students and intelligent workmen, and must necessarily be elementary. In our opinion, however, none of the tests for gold in cyanide solutions are at all comparable with that in general use in our mills here. It is to evaporate an assay ton of solution in a tray of lead foil, roll up tight when dry, and scorify with test lead, cupel, part and weigh the gold.

Stamps appear to be used exclusively in the New Zealand dry crushing mills, producing a product containing much dust, with a consequently slow leaching rate, even with their very shallow charges of 3 ft. The general arrangements of the New Zealand mills, illustrated and described by Mr. Park, are not at all up to American practice, while their tanks, filters, discharge valves and piping are quite inconvenient and often clumsy from our point of view. The plates and description of these mills are, however, useful if only to show "how not to do it."

On the whole, however, Mr. Park's book is a good treatise on the actual working of the cyanide process, and it should have a place in the library of every one interested in or desiring a knowledge of this newest of the successful gold-extracting processes.

#### BOOKS RECEIVED.

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

*Report of the Commissioner of Education for the Year 1893-94. Volume II.* Washington, D. C.; Government Printing Office. Pages, 2,290.

*Mine Drainage, Pumps, etc.* By Hans C. Behr. Sacramento, Cal.: California State Mining Bureau. Pages, 210; with diagram and illustrations.

*Manual of Assaying: Gold, Silver, Lead and Copper.* By Walter Lee Brown. Chicago, Ill.; E. H. Sargent & Company. Pages, 533; illustrated.

*The Detection and Measurement of Inflammable Gas and Vapor in the Air.* By Frank Clowes. With a chapter on the Detection and Measurement of Petroleum Vapor. By Boverton Redwood. London, Eng.; Crosby, Lockwood & Son. Pages, 206; illustrated. Price, in New York, \$2.80.

#### 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.

Tin in Guanajuato, Mexico.

Sir: I have seen quoted an article credited to your journal in reference to the production of tin in the vicinity of Guanajuato. I would say, for your information, that tin is produced in the mountains in the north-western part of the State of Guanajuato in sufficient quantities and with enough regularity to supply the requirements of the cities of Guanajuato, Lagos, Leon and San Luis Potosi. A small amount is also exported to other parts of the Republic. This is known as stream tin.

A. V. TEMPLE,

Manager Bureau of Information, Mexican Central Railway.  
MEXICO, Sept. 19, 1896.

Pyritic Smelting.

Sir: Your issue of September 19th contains an article by Mr. T. A. Rickard, entitled "Colorado, 1889-1896," where he says: "Pyritic smelting, in its ideal form, remains yet an iridescent dream, but the work done by Austin and others has been of great benefit to the lead smelters in proving that desulphurization can take place in the ordinary blast furnace to a degree previously unsuspected. This has been a great aid in overcoming the very serious diminution in the supply of oxidized ores and in permitting of the utilization of low-grade iron sulphides too poor to bear the cost of roasting."

That increasing quantities of low-grade sulphides are used by the lead smelters in Colorado is true, but in no case have they utilized the principle of pyritic or semi-pyritic smelting. That they have been able to use such sulphides is due to the fact that they contain a large iron excess, and can accordingly, when roasted, be used as iron flux, replacing the iron ore, which would otherwise have to be bought in place of it. Even in the concentration of the lead-bearing copper matte produced by the lead smelters an oxidizing smelting is avoided, which, if used, would give an unreduced slag, a leady matte, and higher losses of lead by volatilization. It is not intended by the writer to depreciate the work which has been done by Dr. W. L. Austin and others and which has its application in copper matting, but only to indicate some of its limitations.

That pyritic smelting is not altogether "an iridescent dream," as Mr. Rickard so depreciatingly calls it, is shown in Mr. James Douglas' article on "Copper Smelting in the United States," Vol. IV. of *The Mineral Industry*, on page 286. He says: "In Newfoundland are probably the only furnaces in the world which make a matte without any carbonaceous fuel. The Cape Copper Company, at Tilt Cove, runs its lower-grade cuprififerous pyrites, which carry 8% of silica, into matte, concentrating a 2% ore into a 6% matte. It is claimed that the furnaces run more uniformly than with coke; that the addition of coke in quantity is distinctly deleterious; that the furnaces, though of brick, are not unduly corroded, and that the addition of silica has not been found to raise the matte or improve the working of the furnace."

L. S. ACSTIN,

DENVER, Colo., Sept. 25, 1896.

Mr. H. H. Campbell on Alabama Iron Ores.

Sir: By the preparation of his excellent book on the "Manufacture and Properties of Structural Steel," Mr. H. H. Campbell has placed the entire engineering and chemical professions under the deepest obligations. No such treatise has yet appeared in the English language or indeed in any language. For conciseness and clearness of statement, and for the evident spirit of fairness and desire to reach the truth, it is to be most highly recommended. It includes results hitherto inaccessible to those not directly concerned with steel making, and is at once argumentative and authoritative. Upon the much-vexed question of the interdependence, perhaps one should say the correlation, of physical qualities and chemical composition, it throws a chastened light, most pleasing to those who still grope in darkness. It is narrated of a famous lecturer on the metallurgy of iron and steel that when he reached that point in the course which was ordinarily supposed to afford more or less of a prospect over this shadowy land, he would say to his pupils: "Gentlemen, here are a number of analyses, and here are the physical tests of the bars. I turn them over to you with my best wishes." Probably the story is not true, but it ought to be. Mr. Campbell has taken us a long way forward, and we may hope for more light as we grow older. His book is decidedly the best book of the year in technical matters. I only wish he had been more happy in his references to this part of the world. On page 15, in speaking of the fossiliferous red hematite in Alabama, he says: "Another kind of hematite, known as fossiliferous ore, occurs for the most part in Alabama, and is supposed to have been formed by the action of sulphate of iron upon fossiliferous carbonate of lime. Oftentimes a considerable portion of the limestone remains undecomposed, and the insoluble organic phosphates are a decidedly objectionable characteristic." Objectionable to whom? To the maker of Bessemer steel, naturally, but not to the foundry-man, the mill-man, the pipe-man and the maker of basic open-hearth steel. From these ores during the last ten years there have been made more than 5,500,000 tons of coke iron alone, and during the last 12 months more than 40,000 tons have been sold to makers of basic open-hearth steel in the Pittsburg District. So far as concerns the iron made from these ores, the product of Alabama in 1895 was 835,851 tons.

Then, again, Mr. Campbell seems to think that the phosphorus in these ores is due to the undecomposed carbonate of lime, losing sight of the fact that the "soft" ore, resulting from the removal of the carbonate of lime from the upper portion of the seams, contains as much of this element as the hard or limey ore, under cover. Whatever may have been the origin of the fossiliferous ores, a much disputed point, the phosphorus they carry is not dependent on the presence or absence of carbonate of lime. The limey ores are extremely valuable, because in many cases they carry their own flux. The presence of phosphorus can not be so very objectionable when we consider that these ores now furnish nearly a million tons of pig iron annually, and that the cost of making iron in Alabama is less than anywhere in the world. This latter statement is certainly comprehensive, but can be abundantly substantiated. Then, again, on page 19, Mr. Campbell "has it in for us" in respect of our coke. He says: "The Birmingham District in Alabama has certain great advantages, for there are few places in the world where fuel and ore are so near together, although, unfortunately, both are of inferior quality, the ore being low in iron and high in phosphorus, and the coal giving a weak and impure coke." Now, Brother Campbell, we freely and fully acknowledge your authority on steel making, but you really must "tote fair" on ore and coke and pig iron! It is true that our ores are low in iron and high in phosphorus, the pig iron carrying from 0.60 to 0.80 phosphorus, and that our coke is not what we could wish. But all this does not hinder us from making nearly a million tons of coke iron annually at a less cost than maintains in any other district in this or any other country.

Inferiority is a relative term. While our ores are not as rich in iron as those from the Lakes, or as some magnetites, they yield very good iron, and very cheap iron. Now a word as to the coke. It has been the custom in some quarters for several years to speak disparagingly of Alabama coke, and doubtless a good part of it deserves the abuse. But there is coke and coke. There lie before me records of coke analyses covering a period of nearly three years, during which the samples were taken from the stock-houses as the coke was unloaded. They represent hundreds of thousands of tons, and the ash is a trifle over 10%, and the sulphur a trifle over 1%. The percentage of cells by volume is about 45, the volume of cells in 100 parts by weight is about 50, and the ultimate strength of a 1-in. cube is about 2,000 lbs. By the use of this coke one of the furnaces here has made from these "inferior ores" 269 tons of iron in one day, and has averaged for the last two years about 180 tons per day. Now, I submit, can a coke of this composition, cell structure, strength and actual performance be fairly considered inferior?

I have a large number of analyses of coke made here, including not only the ordinary proximate analysis, which amounts to little or nothing in the valuation of coke, but also the apparent and the true specific gravity, cell space, size of cells, strength, composition of the ash and action of carbonic acid at red heat. These, with the actual performance of the coke in the furnace, will be sufficient to convince any one that by far the greater part of the coke made here is of very good quality. But enough. With my very best compliments to Mr. Campbell agent his excellent book.

BIRMINGHAM, Ala., Sept. 19, 1896.

WM. B. PHILLIPS.

[With reference to Mr. Campbell's book, we have to note that the first edition has already been exhausted and it has been necessary to print a second to meet the demand.—Ed. E. & M. J.]

Opening of the Danube.—The great engineering work of removing the obstruction of the Danube, known as the Iron Gate, between Alt-Orsova, in Hungary, and Gladova, in Serbia, has been finally accomplished, and the river was recently opened to navigation with elaborate ceremonies by Emperor Francis Joseph, accompanied by King Carl of Roumania, and King Alexander of Serbia. Included in the programme was a procession of steamers through the Iron Gate, which afforded proof of how successfully the work of removing the obstacles to navigation has been accomplished. Great crowds from the neighboring towns, were present, as also a large number of troops.

ABSTRACTS OF OFFICIAL REPORTS.

Mollie Gibson Consolidated Mining and Milling Company, Colorado.

The report of this company covers, for the mining operations, a period of 18 months, from January 1st, 1895, to June 30th, 1896; and the financial statements are made up for a month later, to July 31st, 1896. The condensed balance sheet is as follows, as of the last given date:

Assets:		Liabilities:	
Property.....	\$5,681,103	Capital stock.....	\$5,000,000
Aspen Bank Bld'g Ass'n stock..	21,060	Accounts payable.....	10,415
Accounts receivable.....	15,125	(July bills and pay roll)	
Improve. and supplies at mine..	176,481	Profit and loss.....	374,375
Cash.....	91,018		
Total.....	\$5,344,790	Total.....	\$5,384,790

The profit and loss account for 19 months is made up as follows: Surplus January 1st, 1895, \$464,133; net profit of mine for 18 months, as per statement given below, \$31,883; net profit for July, 1896 (\$24,002 receipts less \$18,677 expenses), \$5,325; interest, transfer fees, etc., \$3,445; total, \$504,786. From this are to be deducted the following: Salaries, office expenses and general expenses at Colorado Springs, \$46,781; legal expenses, \$13,107; taxes, \$14,627; royalty on Silver King ore, \$5,500; assessment work, \$396; dividends paid, \$50,000; total, \$130,411, leaving a balance on July 31st of \$374,375, as above.

The mine account shows that the total value of ore shipped was \$382,493, of which \$376,482 was in silver and \$6,011 in lead. The deductions were: Railroad freight, \$45,049; smelting charges, \$41,686; sampling charges, \$2,110; total, \$88,845, leaving net cash returns of \$293,648. The construction and mine-operating expenses amounted to \$261,765, leaving a net profit at the mine of \$31,883.

The gross weight of ore shipped was 6,508 tons, and the average moisture 3.54%, leaving a net weight of 6,278 tons. The total contents of this ore were 593,310 oz. silver and 341,356 lbs. lead. The average returns per ton of ore were \$60.93, of which \$59.97 was in silver and \$0.96 in lead. The charges per ton of ore were: Railroad freight, \$7.18; smelting charges, \$6.64; sampling charges, \$0.34; total, \$14.16, leaving a net return at the mine of \$46.77 per ton. The mine costs were \$41.69, leaving a profit of \$5.08 per ton of ore. The average assay of the ore shipped, net weight, was 94.51 oz. silver and 2.72% lead per ton. The average New York quotations on which the metals were sold were 66.79c. per oz. for silver and 3.01c. per lb. for lead; the average prices realized were 63.45c. per oz. for the silver and 35.21c. per unit (20 lbs.) for the lead.

The gross receipts for ore at the mine (including value of lead) were equal to 64.47c. per oz. of silver shipped; freight, smelting and sampling charges were 14.97c. on the same basis, leaving net cash returns at mine of 49.50c. per oz. Mine expenses amounted to 44.12c., leaving a net profit of 5.38c. per oz. of silver shipped. The silver was 98.4%, and the lead 1.6% of the gross value of the ore shipped.

The mine expenses are given in very full detail in the following table, the second column showing the proportion which each item of expense bears to the total:

	Amount.	Per cent.		Amount.	Per cent.
Surface plant.....	\$11,227	4.29	Lighting.....	3,178	1.21
Underground plant.....	5,546	2.12	Watchman.....	2,468	0.94
Buildings.....	564	0.22	Demurrage.....	29	0.01
Tools and implements....	4,199	1.60	Insurance.....	1,059	0.40
Assaying.....	2,714	1.04	Mine expense.....	4,189	1.60
Explosives.....	12,083	4.62	Payments to lessees....	37,798	14.44
Development.....	48,573	18.56	Sampling.....	2,910	1.11
Breaking ore.....	6,841	2.61	Class C.....	74	0.03
Floiting and tramming....	28,738	10.98	Assaying.....	8	0.00
Power and pumping labor	12,328	4.71	Storehouse.....	18	0.01
Ore sorting and loading..	2,882	1.10	Total.....	\$267,503	102.19
Ore roasting expense.....	12,431	4.75	Less premiums on leases..	3,596	1.37
Dump ore expense.....	15,836	6.05	unclaimed wages....	2	0.00
Timbering and tracking....	2,295	0.88	" mill expense - gain		
Surveying.....	629	0.24	in sales.....	133	0.05
Telegraph and telephone	729	0.28	Less pipe and pipe lines..	2,007	0.77
Stable.....	31,791	12.14	Total credits.....	\$5,738	2.19
Fuel.....	1,875	0.72	Net total.....	\$261,765	100.00
Lubricating.....	8,109	3.09			
Superintendence.....	6,078	2.32			
Office expense.....	313	0.12			
General expense.....					

The statement of development work shows a total of 11,866 ft. run. There were 1,304 sets of timbers placed. The diamond drill work shows 1,710 ft. of holes bored. In addition a large amount of work was done in stoping, timbering stopes, etc.

A new storehouse was built, the old hoisting engines removed and a new double hoister, 16 x 20, with 7-ft. drum put in; it will lift 10,000 lbs. at a speed of 800 ft. per minute. A new Cameron sinking pump was put in for the 11th level.

The report of the general manager, Mr. C. E. Palmer, says that until May, 1896, the output of the mine was made from a large number of showings scattered from the third level to the 10th level, the proportion taken from ground above the seventh level since October, 1895, having been produced principally by lessees. Since May, the production has been made almost entirely from the 11th level and stopes therefrom. That level was opened in February, 1896, after sinking the main shaft 91 ft., which was accomplished between December 18th, 1895, and February 16th, 1896. The leasing system in force on the property was inaugurated in October, 1895, with a view to the final prospecting of ground which could no longer be worked profitably by the company. The system established has been satisfactory in the results. A considerable amount has been received in the form of premiums paid for lease ground, and the company has received approximately 50% of the net cash returns for ores mined by lessees. The ore showings in ground worked by lessees are at this time not so favorable as they were two months ago. The 11th level stope No. 1 shows a face of ore in the north end, 8 ft. x 10 ft., which runs as shipped, 100 to 150 oz. This showing is supplemented by a prospect of further production from the south end of the stope and by a showing in the trend of the stope ore above the 10th level.

The report of President J. J. Hagerman says: "The old Mollie Gibson main ore chute was, as is well known, cut off in the neighborhood of the sixth level by a complicated system of faulting. The development of the lower levels has yielded a large amount of ore, but up to the present

time the continuation of the main ore body, in place, which produced so richly above the sixth level, has not been found. Irregular and sometimes large bodies of ore have been encountered in the various fault-planes, and all indications have pointed to the fact that the main body has been carried down by the faulting to a depth greater than has yet been attained by the workings of the mine. The developments of the last few months in the 10th and 11th levels north have been highly encouraging, and it is firmly believed that the main ore body will be found not far from the shaft and not far below the 11th level, the lowest present workings in the mine. The shaft is now being sunk as rapidly as possible to the 12th and 13th levels."

Iowa Gold Mining and Milling Company, Colorado.

The report gives the following statement of the results obtained during the period of eight months from December 1st, 1895, to August 3d, 1896: Crude ore shipped, 7,765; value per ton, \$16; net quantity of concentrates obtained from same, 1,710 tons; total receipts from sale of concentrates and gold from plates, \$97,547; average value of concentrates, \$57.04 per ton; average value saved from crude ore, \$12.56 per ton. The mine is located near Silverton, in San Juan County, Colorado.

During a part of the time the mill was incomplete and the loss heavy. With experience better results have been obtained and the loss reduced, but it is still near 16%. A contract has been made with J. H. King to put up a plant for saving the values contained in the tailings. This is expected to save at least \$2 per ton, and the contractor is to receive 25% of the net amount recovered.

The company has, since its organization, spent \$10,000 for new machinery to increase the capacity of the mill from 30 to 65 tons a day. On completion it was found that the mill capacity was 85 tons, and more power was needed. The company has therefore put in a Corliss engine of 100 H. P., and a Fraser & Chalmers boiler of the same capacity; also a small electric plant for lighting the mill. A Bleichert rope tramway has been completed, which carries to the mill 8 tons of ore an hour, at a cost of \$15 per day, including the wages of three men who operate it. The terminus of this tramway was put at the point where the fourth and lowest level can be run on the mine. This level will not be started till next year, and meantime there is a gap between the tramway and the third level of 450 ft. This has been covered by a gravity road, built of wood, the loaded car hauling up the empty one.

A Leyner air compressor and air drills have been bought for the third level. It has taken 10 months to drive this level 450 ft. with hand drills, but it is expected that from 100 to 150 ft. a month can be made with the new plant. This work must be pushed to open up the ore bodies on this level before those on the second level are exhausted; they are now about three-fourths worked out.

The manager, Mr. J. H. Robin, says: "In the second level I estimate 40,000 tons in sight of \$16 ore, and this will run the mill over a year. The third level will reach the ore bodies in 300 ft., about 200 ft. below the second level. Two winzes sunk from second level show that the ore bodies go down and increase in width. This is the experience of the Silver Lake mine, which has worked up to the end-line of the Iowa at a greater depth still. In my opinion, after all improvements are paid for and a surplus acquired, say January 1st, 1897, the mine should easily pay from 1 1/2 to 1 3/4 on the stock monthly. Until then it will continue to pay 1 1/2 monthly."

Experiments with Argon.—M. P. Villard recently communicated to the French Academy of Sciences the results of some experiments with argon. He has found that when argon was compressed to 150 atmospheres in the presence of water cooled to 0°, local cooling at a point in the tube causes the separation of crystals, probably a hydrate, the dissociation tension of which at 0° is 105 atmospheres.

Electricity at a Blast Furnace Plant.—Two new blast furnaces which are at present in course of erection near Stettin, in Germany, are not only to be lighted by electricity, but all the machinery and apparatus connected with the furnaces are to be operated by means of electro-motors, the contract for the supply and erection of which has just been placed with Messrs. Schuckert & Company, of Nuremberg.

Manufacture of Briquettes.—In a recent number of the *Papier Zeitung*, a method of manufacture of briquettes from small coal and concentrated waste sulphite liquors was described. The experiments were conducted at the iron smelting furnaces at Kemit, in Hungary. The waste sulphite liquors employed were obtained from a pulp mill in the vicinity, and then concentrated to a suitable consistency in a series of open tanks heated by the waste gases from the furnaces. The thick syrup-like residue was mixed with the coal dust in the briquette making machine. The briquettes, when dried, were hard, and formed an excellent fuel, giving off practically no sulphurous odor when burnt. It is stated that these briquettes not only form good fuel upon ordinary grates, but also in the smelting furnace.

Upper Silesian Iron Trade.—The iron industry in Upper Silesia is just now undergoing a great development. At the Königshütte a new fine iron rolling mill has just been completed, and is about to be started; a battery of coke ovens and waste product recovery plant is in course of erection, while the wagon-building shops are being largely extended. The Laurahütte is extending its steel plant, and the erection of another blast furnace is contemplated. At the Fälvahütte a large amount of new plant is being added to the rolling mill department, while the Huldachinsky Hüttenwerke of Gleiwitz are erecting new Bessemer steel plant and rolling mill. The Friedenshütte is at present putting down a battery of coke ovens with waste product recovery plant, while at the Juliahütte of the Upper Silesian Iron Industry Company a similar plant is being erected, as also a new blast furnace.

## COST OF EUROPEAN GEOLOGICAL SURVEYS.

Written for the Engineering and Mining Journal by E. A. Schneider.

## RUSSIA.

The geological survey of Russia is carried on by a "Geological Committee," which was established in 1892. The duties of the committee are very clearly defined in 22 law paragraphs (collection of laws of the Russian empire, Volume I., Book V., Sec. 680-692). We quote the fundamental ones:

Sec. 680. For the purpose of a thorough investigation of the geology of Russia, a geological committee has been established as a part of the Imperial department of mines.

Sec. 681. The duties of the geological committee are: 1. The systematic study of the geological structure of Russia. 2. The scientific discussion of geological facts and the publication of scientific treatises pertaining to the geology of Russia. 3. The publication of a detailed geological map of the empire. 4. The gathering of rock specimens and useful minerals for the purpose of forming a systematic collection with the help of this material. 5. Assistance to other government departments and to private persons as far as the subjects are concerned, which constitute the business and duties of the committee.

Sec. 682. The geological committee consists of: 1. The director. 2. A board. 3. Chief geologists, geologists, assistant geologists, collectors and a curator.

The first great piece of work which was accomplished by the geological committee since its establishment was in 1891, the publication of a general geological map of the empire, scale 1:2,500,000. A very complete explanatory memoir to this map has been published by the chief collaborators to this map, Karpinski, Nikitin, Tschernischeff, Sokoloff, Michalski (St. Petersburg, 1893). The price of this map is 7 roubles, about \$3.50. Up to 1891 there existed only a few incomplete geological maps of European Russia, drawn to a small scale. Among this number deserve to be mentioned the maps of Helmersen (1841), Murchison (1845), Helmersen-Murchison (1870).

At present the geological committee is preparing a map of European Russia to the scale 1:420,000, consisting of nearly 150 sheets. Twelve sheets of this new map have been already published. According to a Russian newspaper it is expected that this map will be finished within 37 years, assuming that the same amount of work is devoted every year to this purpose. Each sheet is accompanied by an explanatory volume. Everything of importance is provided on this map with inscriptions in the Russian and the French languages. The scientific memoirs of the committee and its other publications appear in the Russian language, but are always provided with an abstract of the contents in the French or German languages. These abstracts are frequently almost as complete as the Russian text; in the "Russian Geological Library" the French and Russian texts run parallel.

The geological committee has published since its establishment 14 volumes (quarto). Besides the committee publishes a journal *Tzvestia* (from 1 to 10 issues per annum), and since 1885 a small bibliographical volume, "Russian Geological Library." Mr. Nikitin has contributed 3 sheets of the new map. We owe to him besides the interesting memoirs on "The Evidences of the Cretaceous Period in Central Russia," Vol. V, 2; on the "Coal Measures and Artesian Waters of the Moscow Region," a report of the expedition which was fitted out to investigate the condition of the sources of the Volga, the Dneper, and other rivers, and a number of other publications. Mr. Tschernischeff, well known to many American geologists, has devoted his particular attention to the Devonian formation, particularly in the Ural. Space does not permit to mention the individual efforts of the members of the geological committee; so much may be said, however, that in general the work of the Russian geologists is most conscientious and of undoubted scientific value.

The publications of the committee are sold by Eggers & Company and Iljin, booksellers, St. Petersburg, also by Bécus & Company, Paris, Rue M. le Prince 53.

Up to this time the attention of the committee has been mainly devoted to the Ural and to Central Russia, although other parts of the country have not been neglected; at present a great deal of work is done in southern Russia, chiefly in the coal measures of the Donetz region. Owing to the lesson learned through the last famine, which resulted in many places only from a lack of irrigation, the Russian Government has turned its attention to this question and to the condition of the sources of the great rivers of the empire. The geological committee has done very useful work in this direction as well as in the exploration of the country through which the new Siberian railroad is to pass. The soils of these regions have been studied also from the agricultural point of view.

Very full information as to the progress of the geological survey can be gathered from the annual report of the geological committee. This report is written in a strictly scientific tone and differs in this respect very much to its advantage from the former reports of the Director of the U. S. Geological Survey, which abounded in pretty pictures and a good deal of desultory talk.

In the report for the year 1894 a complete list of the members of the Russian Geological Survey is given. The permanent force consisted of the Director, Professor Karpinski, member of the Imperial Academy of Sciences, 3 chief geologists, 3 geologists and a curator of the collections. The duties of the librarian were performed by one of the chief geologists and those of a secretary by one of the assistant geologists. On the temporary force were employed 15 geologists and government mining engineers—total 23 persons, 8 on the permanent force and 15 on temporary.

The means of the geological committee cannot be called large, if we take into account the immense extent of the Russian Empire in Europe alone. The ordinary annual appropriation has been up to date about \$16,000, but almost every year the committee has received besides from \$7,000 to \$10,000 from the department of agriculture and about \$1,500 from other government departments. The total of the annual appropriation of the geological committee may be, therefore, expressed in a round sum as amounting to \$25,000. At present new estimates for a geological appropriation are under consideration by the Imperial Council. These estimates call for an annual appropriation of 65,000 roubles (\$34,000-\$35,000). The committee has also in its charge the scientific part of the mining survey along the Siberian Railroad. An annual appropriation of

more than \$41,000 is assigned for this work, but the committee does not have the right to dispose of these sums.

It should not be forgotten that there exists besides the geological committee an Imperial department of mines in Russia. The business of this department is of a practical and administrative character. Still, men of high scientific ability are as a rule managing the affairs of this department. Thus the late Rchette, whose furnace is well known to Colorado lead-smelters, was at the head of this department. The Imperial department of mines publishes also an annual report.

American geologists who desire any information concerning Russian geological matters should address their letters to Prof. Karpinski, director of the committee, or any other member, Geological Committee, Wasili Ostrow, 4 L., No. 15, St. Petersburg.

The total surface of the Russian Empire covers an area of 22,429,998 sq. kilom. ters. According to the census of 1891 the population amounted to 119,032,750. In the budget for 1893 the total expenditure was fixed at 1,040,458,000 roubles (\$545,000,000).

## GERMANY.

The German empire is a federation of States similar to the United States of America. The Imperial Government takes charge of the army, navy, foreign affairs and of many other things, but it leaves Geology severely alone. In this respect the lawmakers in Washington could learn a great deal from Germany.

The various surveys of Germany have been lately described very thoroughly by eminent German specialists in the *Zeitschrift für Praktische Geologie*. A detailed description of all these surveys would hardly be of sufficient interest to American readers. An attempt will be made therefore to give only a brief review of the work, organization and scientific staff of these surveys.

None of the directors of the various German surveys is what may be termed a politician, but all are men of undoubted scientific reputation. The affairs of the largest of these institutions, the Prussian survey, are conducted by Professor Beyschlag. The building of the survey is located in Berlin, Invalidenstrasse 44. The directors of the other German surveys are Herman Credner (Saxony), Gumbel (Bavaria), Leopold von Wrucke (Alsace-Lorraine), Dr. Sauer (Baden), Professor Lepsius (Hessen). The geological map in all these States is carried out to the scale 1:25,000. The map of Wurtemberg has been completed to the scale 1:50,000, but soon another map, scale 1:25,000, is to be begun.

The Prussian geological survey had for 1894 an appropriation of 450,000 marks (\$107,142). A part of this appropriation, however, is used for the royal school of mines (Bergakademie) in Berlin. As the library, laboratories, buildings, teaching force, administration, belong to both institutions in common, it is difficult to estimate accurately the sum which is expended for the survey proper.

There are at present about 22 geologists engaged in fieldwork. The Geological Survey publishes *Abhandlungen Zur Geologischen Spezialkarte* (explanatory notes to the geological map) there is also *The Jahrbucher der Geologischen Landesanstalt und Bergakademie* (Annual of the Geological Survey and of the School of Mines), which is devoted to short papers. Larger papers, monographies, etc., are published separately. A perusal of the titles of these publications shows that they are dealing with strictly geological subjects—only last year a tendency was shown to branch out into agricultural geology.

The annual report of the director of the survey is characterized by its conciseness and simplicity. This document is not even printed, but simply lithographed and is not adorned by any unnecessary and expensive phototypes. The last report informs us that 348 sheets of the map, scale 1:25,000, are already published and 341 partly completed; 1484 sheets were sold during the year 1894 and 30,340 sheets in all since the beginning of the survey, showing that the work of the survey meets an actual demand. The number of the other publications which were sold during the year is also given. No mention is made of giving away any maps or publications to members of the Parliament or to politicians.

The appropriations for geology in the other German States for the last year are given below:

Saxony, 37,300 marks.....	\$8,880
Hessen, 24,220 ".....	5,766
Bavaria, about 18,000 marks.....	4,285
Alsace-Lorraine, about 30,000 marks.....	7,142
Wurtemberg, about 5,000 marks.....	1,190
Prussia, 450,000 marks.....	\$107,142
	\$134,465

\$134,405 a year spent for geology is a considerable sum of money in Germany, but it is well spent money. The painstaking methods of the German Government geologists become particularly apparent in the surveys of the smaller States. In this respect the survey of Saxony, which is so ably conducted by Dr. Herman Credner, takes perhaps the lead. The intention of the government of Saxony was that the survey should be directly useful to the agricultural, mining and other practical interests of the country. This aim has been fully reached, thanks to the ability of Dr. Credner and to the existing favorable conditions, among which, as the chief one, the already completed topographic exploration of the country should be mentioned.

The present geological map of Saxony is at the same time a perfect agricultural map. The petrographic composition of the surface strata is indicated by the geological coloring and by black alphabetical symbols—the thickness of these strata by red numbers—the perviousness or imperviousness of the subsoil to water by a system of vertical or horizontal lines, and lastly the inclination of the surface by the variation in the distance of the equidistant surface curve lines. To determine the thickness of the surface layers and the condition of the subsoil in some sections, several thousands of boreholes to the depth of 1-1.5 meters were drilled.

The geological map of Saxony consists of 123 sheets, scale 1:25,000, and was completed within 23 years. The total cost of the survey, including expenses for printing and publication expenses, amounted to 840,000 marks (\$200,119). Consequently each sheet of the map scale 1:25,000, representing according to Dr. Credner one year's work, has cost the government about \$1,545. That there exists an actual demand for such a detailed map is shown by the fact that altogether 18,000 single sheets of the geological map of Saxony were sold to the public.

(To be continued.)

## TEXAS BROWN COAL.

Written for the Engineering and Mining Journal by E.T. Dumble.

At the beginning of the work of the Geological Survey, when attention was called to the deposits of Texas brown coal as a possible source of fuel supply for a portion of the State, one of the leading geological magazines sarcastically remarked, "It is very refreshing to be told that the worthless woody lignites can be made available," and, indeed, among many of the people of the State it was regarded as a wild idea. The extent of the deposits and lack of other adequate fuel supply in the southern portion of the State were, however, sufficient grounds for carrying on an investigation into the possibility of utilizing it, and the results of this inquiry were published by the Survey in 1892, under the title of "Brown Coal and Lignite." This report, after a general description of brown coal and its relations to other fossil fuels, gave the results of investigations into the methods of use of similar fuel in different parts of Europe. The Texas deposits were then described and compared with the European and with those bituminous coals with which they would have to come in competition, and the report closed with a statement of experiments made in using Texas brown coal, and suggestions as to the best methods of utilizing it.

The facts being known, it was not long before there were attempts made to open the deposits and put the fuel on the market, but it made headway slowly for a year or two. As the mines were opened up and

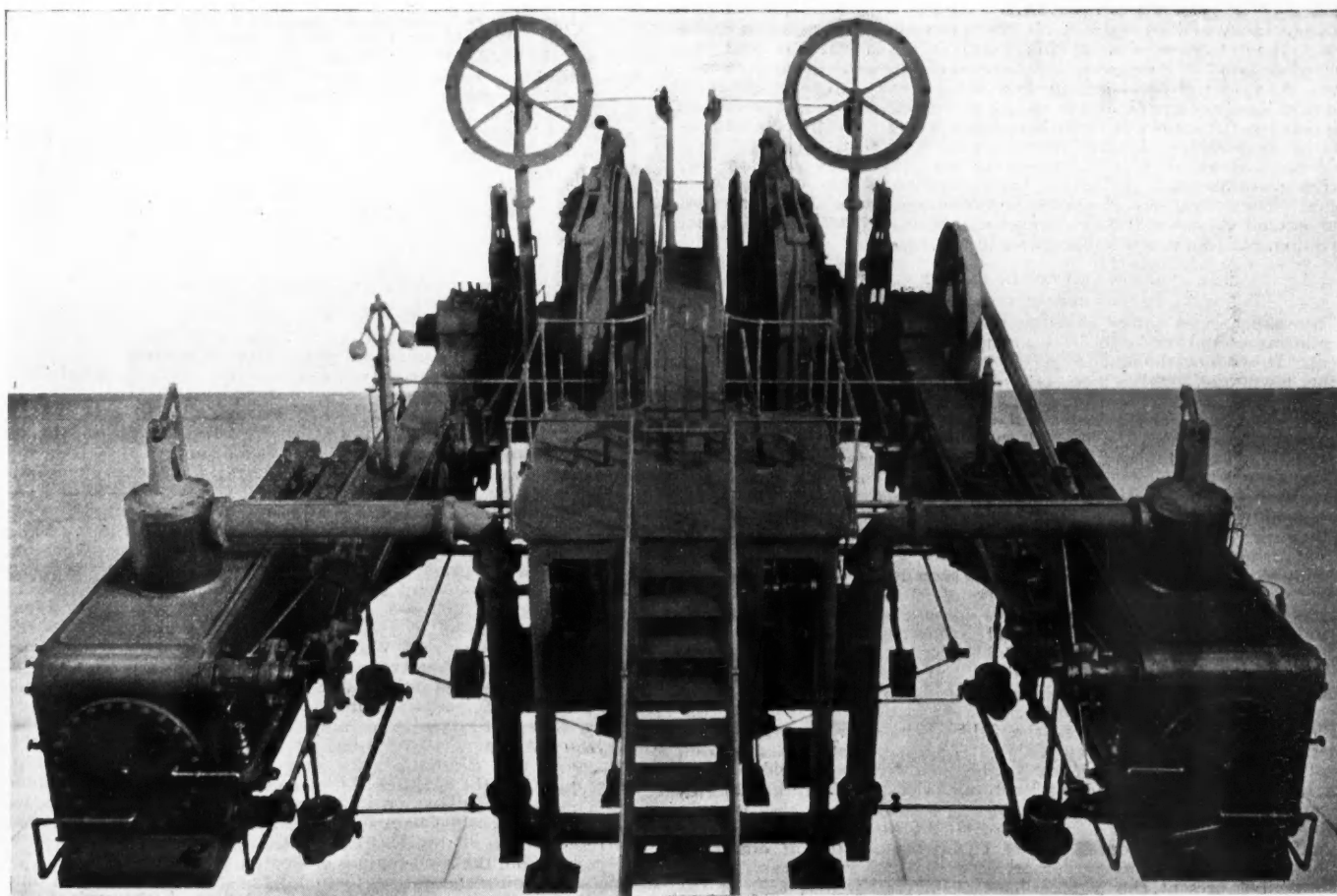
sideration, this means a saving of fully one-third of the former fuel bills by using brown coal, an item worth working for.

While these results are eminently satisfactory and promise a rapid advance in brown-coal mining in the State, I am still of the opinion that before it can attain its best development plants must be erected for converting it into compressed fuel in order to decrease its present tendency to slack and fall to pieces on exposure to the air.

## A LARGE HOISTING ENGINE.

The Anaconda Copper Mining Company has recently been adding largely to its operating plant in Montana, a number of new machines having been erected. Among these are several large hoisting engines, one of which is represented in the accompanying engravings, which are from photographs, one showing a rear view and the other a front view with the hoisting drum. These engines are among the largest of their class in this country.

The engine is a double one, the cylinders being placed parallel, and the connecting rods work on crank pins in face-plates keyed on each end of the drum shaft. The cylinders are 30 in. in diameter and 72-in. stroke, and the valve gear is of the Corliss type. The brakes and all the operating parts of the engine are handled by small auxiliary steam engines,



CORLISS HOISTING ENGINE, ANACONDA MINES, MONTANA.

better coal obtained, it came more and more into use until to-day it may be said to have fairly won a place as one of the most valuable sources of fuel supply of the State. Its first use was under stationary boilers, and when the firemen became accustomed to it, and where the conditions of the fire-box were at all favorable, it was pronounced a success. Small changes were made in the grate-bars to increase its efficiency, and during last year it found ready sale to the various cotton-seed oil mills, water works, electric light and power works, and even cotton compresses. Cotton gins and many small manufacturing plants found in it the cheap fuel they wanted, and its adaptability as a fuel for burning brick was proved beyond question.

During the past three months its use has been extended to railroad purposes. The Houston & Texas Central Railroad, after testing it in the stationary boilers, concluded to try it on the switch engines, and, after a thorough trial, brown coal is now used exclusively by this road for such engines. Satisfactory trials have also been made on passenger engines. Some of the freight engines have been altered to admit of its use by slight re-arrangements of grate and draft, and modifications of the smokestacks, and on these engines it is giving good results. Successful tests have also been made of the fuel on freight locomotives on other railroads of the State.

The comparative value of the brown coal and bituminous coal, as stated by the writer, in the report above referred to (page 218), is fully borne out in practice. It is there given as 7 to 10. In engine performance it is found that 1.4 tons of brown coal yield the same results as one ton Indian Territory coal. Taking the cost of the two fuels into con-

sideration, this means a saving of fully one-third of the former fuel bills by using brown coal, an item worth working for.

As will be seen by the illustration showing the hoisting drum, flat rope is used. The brakes controlling the movement of the drum are also operated by the small auxiliary steam engines, and the motion of the hoist can be very quickly stopped.

The order for this large engine was given to the Risdon Iron and Locomotive Works of San Francisco. That company both designed and constructed the engines, and they were completed within four months from the receipt of the order. The engines were delivered in Butte early in September and were rapidly placed in position, so that they are already at work.

The plant deserves notice, not only from its size and importance, but because of the application of the Corliss valve gear and the long stroke. The plant is a compact and well-arranged one, and excellently adapted to its purpose.

New Coke Ovens in Russia.—Work is at present in hand on the construction of 20 new coke ovens at the Pavlovsky colliery, of the Societe Miniere d'Alexievka, in Russia, while a battery of 60 new Coppee ovens and a coal-washing and screening plant are being laid down at the collieries at Kamenka, belonging to the same company.

THE COLORADO MEETING OF THE AMERICAN INSTITUTE OF MINING ENGINEERS.

The report of the proceedings of the meeting in Denver and elsewhere was given very fully in our last number. We conclude below the summaries of the papers presented at the meeting:

THE ENTERPRISE MINE, RICO, COLORADO.

BY F. A. RICKARD.

This paper describes the Enterprise mine historically in a few pages, and then goes very fully into the question of vein structure and formation, making comparison with other districts. The author believes that the succession of the various minerals composing the ore points to the following conclusions: When the fractures were first formed they consisted of lines of crushed country rock, afterward heated by a deposit of carbonate of manganese. The latter (rhodochrosite) is likely to have been derived from limestone occurring at a horizon not necessarily very far below the place of the present ore-deposits. Then came a fresh fracturing, accompanied by the deposition of baryta and the sulphides of lead and zinc. Later still the earlier vein stuff became shattered by fissuring on the old lines of movement, and along the water-way thus created there came siliceous solutions, which replaced baryta and rhodochrosites with crystalline quartz. Finally, the vein was riven along its centers, and waters rich in the salts of gold and silver found their way upward to undergo precipitation through the agency of the rhodochrosite and the shattered portions of the carbonaceous country rock enclosed within the vein walls. We are driven in this case to the hypothesis of ascending solutions. A lateral flow must be a part of an upward or downward movement of the underground circulation. As a general phenomenon it is inconceivable. The deposition of ore from descending solutions is in this case chemically possible through the reduction of sulphates by carbonaceous matter. But for the hypothesis of descending sulphates there is no basis of fact. The geological evidence is all against it. The structure and environment of the ore bodies point to their derivation from solutions which came up from below. The passage-ways open to the circulating waters cease upward and extend downward; they connect with no available origin in one direction, but lead to a possible source in the other.

THE CYANIDE PROCESS IN THE UNITED STATES.

BY GEORGE A. PACKARD.

This paper gives tables showing the character of the ore treated by cyanide at a number of mills in this country, and the details of the treatment. It says that the process has been applied on a large scale only to rather low-grade, highly siliceous ores, containing but a small percentage of base metals and having their value principally in gold. It gives one instance in which cyanide competed successfully with the smelters on ore carrying as high as 4 oz. in gold, the ore being one in which the value was easily extracted to a high percentage. In the Cripple Creek District, where an extraction of 90% is obtained in from four to six days, and where the smelting-charges were from \$5 to \$7 per ton, ore running as high as \$40 was in 1895 bought by the cyanide mills. With silver-ores, while some very good results have been obtained, the length of time required for treatment has usually been too long, and the consumption of cyanide too high, for the process to give economical results. There are, however, several plants in the vicinity of Tombstone, Ariz., working on silver ores. In the case of ores containing from 1 to 10 oz. of silver, in addition to a commercial gold-value, the process has been advantageously employed. Thus the Golden Reward Company, in South Dakota, having certain ores containing from 1 to 5 oz. of silver which was lost in chlorination, has built an addition to the plant in which such ores are treated with cyanide.

Chlorination is the only process the field of which the cyanide method is seriously invading. For mines located at a considerable distance from a railroad the cost of transportation of the chemicals used in chlorination has been hitherto high, and at least until the use of liquid chlorine becomes a practical success, cyanide has the advantage in this respect. At the Golden Reward plant, in South Dakota, early in 1895, they were using for chlorination about 35 lbs. of chemicals per ton of ore, while only 2½ lbs. were necessary for treating one ton with cyanide. If there is silver present, the cyanide has the advantage that part of the silver is recovered; but the gold extraction is usually higher by chlorination than by cyanide. With amalgamation, cyanide enters into competition only in the case of very finely divided gold, which is saved more or less successfully in pans. The cost of cyaniding varies largely with the character of the ore. There are a number of mills which crush and cyanide ore for less than \$2 a ton, exclusive of royalty paid to the company owning the patents. The lowest cost reported is 85c. a ton, at the Mercur. No company has yet been able to reduce the cost of treating tailings to the minimum reached in South Africa, 59c. per ton; but one plant operating under exceptionally favorable conditions is working at a cost of 69c. a ton. In general, the tailing-plants working in this country do not obtain a high extraction. There are a large number of tailing-plants in the United States, especially in the Southwest, where the hot, dry climate renders expensive buildings and drying-machinery unnecessary. Including the output of these mills, I find that nearly 200,000 tons of ore and tailings were treated by cyanide in 1895, producing over \$1,000,000 in bullion value.

THE DEVELOPMENT OF COLORADO'S MINING INDUSTRY.

BY T. A. RICKARD.

In this paper the author traces the growth of the mining industry in the State from the year 1849, when a party of seven Georgians penetrated the wild West to Cherry Creek and found gold in the sands of that stream. That party went on to California, but the story they told was the beginning of the Colorado gold excitement. Mr. Rickard followed the history of mining in the State from that time on, saying, in conclusion, that the history of the last decade centers around the discovery of Aspen, the stories of Creede and of Cripple Creek, the collapse of silver mining and the development of new gold fields.

N. C. Creede found the float of the Holy Moses vein, on West Willow Creek, a tributary of the Rio Grande, in 1889. As a consequence, the King Solomon District, as it was then called, began to attract the

prospectors scattered in the mountains above Del Norte. No important results ensued until June, 1891, when D. H. Moffat and Captain L. E. Campbell came to Wagon Wheel Gap and Creede was engaged to prospect for them. Creede saw an outcrop, at a depth of 2 ft. found very good ore, and located the Amethyst claim. A very little work opened up a magnificent vein and as a consequence the camp sprang into tremendous activity, culminating in the boom of 1892. The immediate extension of the railroad from Wagon Wheel, stimulated a production which reached its maximum in an output of \$3,100,000. Then in the summer of 1893 came the sudden fall in silver and a collapse from which Creede has not yet recovered. Creede and Cripple Creek were rivals in attracting attention during 1891. Both have had strange vicissitudes. Our new gold field lies on the southern slope of Pike's Peak, whose snowclad crest was the guide of the pioneers in 1858. The first recorded locations were made in February, 1891. During the spring of 1891 Cripple Creek began to receive mention in mining circles, but the discoveries made at Creede during that summer diverted attention from the district. When, however, the silver market collapsed in June, 1893, and mining seemed prostrated, the men of Aspen and Leadville turned to the new gold-field which previously had been pooh-poohed, and the concentrated activities of the State were directed to the development of Cripple Creek. With a rare good fortune the new camp answered to the call, and as explorations extended there came a swift succession of rich discoveries, which caused the output to spring from \$583,000 in 1892 to \$2,100,000 in 1893. This growth continued, so that in 1894 the yield was \$3,900,000, and in 1895 it reached \$7,800,000. During the past three years discoveries in other parts of the State have received attention and large claims have been made in behalf of several new districts. West Creek, Cottonwood, Hahn's Peak and the Gunnison region may be cited. Of these the last named is much the most important.

Colorado has yielded to date gold valued at \$137,475,000 and silver having a coinage value of nearly \$400,000,000. Thus from humble beginnings a great industry has been created. Its development may be summarized in four periods, the discoveries in Gilpin County and the adjoining camps in the granitic rocks of the Front range; the era of silver mining in the carboniferous limestones of Leadville, Aspen and Rico; the development of the fissure veins in the andesites of the San Juan, and lastly the revival of gold mining consequent upon the uncovering of a great series of ore deposits in the volcanic complex of the Pike's Peak region.

THE ALABAMA AND GEORGIA GOLD-FIELDS.

BY WILLIAM M. BREWER.

In this paper the author continues the observations made in previous papers submitted on the same subject. After describing some prospecting operations recently carried on, and referring to the gold-belts of Alabama and Georgia as previously described, and to the lenticular form of many of the ore-deposits so far opened, he says that the two main questions affecting gold-mining in the South are: 1. Whether, in the large, low-grade bodies, the ore is sufficiently rich; and 2. Whether, in the small, higher-grade bodies, the ore is sufficiently abundant for profitable mining.

As to the first question, there are no mines now in operation in Georgia or Alabama from which definite conclusions can be drawn. But preparations are in progress at two or three localities to mine, on a limited scale, extensive low-grade deposits. As to the second question, there are in Georgia two examples of successful mining upon the narrower but richer ore bodies. The first is the Creighton mine, which has been described at considerable length in Dr. Becker's monograph and in the paper of Messrs. Nitze and Wilkens. The second is the Walker mine, situated in McDuffy County, about 31 miles northwest from Augusta, and owned and operated by Mrs. J. Sep. Smith, who has been conducting it with profit for the past eight or ten years.

The number of deposits of auriferous gravel and quartz-veins in Georgia and Alabama is very large. In the upper gold-belt of Alabama there are mentioned at some length occurrences of gold-bearing quartz in the counties of Cleburne, Randolph, Clay, Talladega, Elmore, Coosa and Tallapoosa. The lower gold-belt is continuous across a portion of Tallapoosa, Chambers and Randolph counties in Alabama, and from the latter enters the State of Georgia.

In considering the gold-regions of Georgia and Alabama from a commercial standpoint, the statistics which have been gathered from time to time in the past have been anything but satisfactory. The general rule is that the ore is very refractory. Much of it is so closely associated with graphitic slate and graphite that it is economically impracticable to mine it and separate it from the graphite before sending it to the mill. This graphite is usually in the nature of graphitic slate, in which the lenses of auriferous quartz occur, and through which much free gold has been disseminated—in fact the slate shows by panning about the same value as the quartz. Other ore, which otherwise would be considered free-milling, has a talcoid micaceous schist closely associated with it, and a large portion of the gold is disseminated through the schist. The structure of the ore body in these instances is such that it cannot be profitably mined if sorting is attempted. In many of the ore-bodies a considerable quantity of wad or bog-manganese is associated with the ore. But the greatest amount of the refractory ore is rendered so because of the iron pyrites with which the gold is associated.

There are, however, in the South many advantages over the West, making it possible to mine and mill profitably ore which otherwise would have to be sent to the waste-dump. It is possible at several localities, and especially in portions of Alabama, to mine and mill for 75c. per ton, with a crushing capacity of less than 50 tons per day. The thickness of the ore-bodies where this can be done is about 40 ft.; their structure is such that they can be mined by the open-cut or quarry system to a depth of about 100 ft., and the ore is comparatively free-milling in character. Even in localities where the natural conditions are such as to render mining more expensive, ore can be worked for from 50 to 60% less cost than is required in the West under the same conditions. This will be readily understood from the statement that in these States the following are the rates of wages: Mine foreman, \$1.50 to \$2 per day; miners, underground, \$1 to \$1.25; miners, on surface and in open cuts, 75c.; timbermen, \$1 to \$1.25; amalgamators, \$1.50 to \$2; general mill labor, including feeders, oilers, etc., 75c.; general labor, 60c. to 80c.; cord-wood for fuel, 75c. to \$1.25 per cord; mining timbers, 10c. to 50c. per set.



FORMULAS FOR DETERMINING THE VALUE OF IRON ORES.

By G. Teichgraber.

New formulas for the different elements affecting the cost of pig iron have been worked out in this paper, which is translated from *Stahl und Eisen*. It is well understood that the object of the blast furnace manager is to secure the largest possible production of pig iron at the lowest possible cost. The elements of cost are first, the raw materials which are iron ore, limestone and coke; second, the general expenses, in which are included labor, repairs, depreciation of plant and interest on the first cost of furnace and machinery.

The consumption of coke varies within certain limits, which are comparatively narrow when the furnace management is good. The chief elements to be considered are the cost of ore and limestone. As to the flux, it is probable that most furnaces can obtain stone approaching 100% in CaCO<sub>3</sub>, but the price varies considerably. It may be fairly assumed on this point that the variable element is in the cost rather than the quality of the limestone.

It is quite a common practice to estimate the value of an iron ore entirely by the proportion of metallic iron, or of iron and manganese, which it carries; but under certain conditions a lower grade ore may be of more value than one of higher grade, as the contents of the ore in lime and silica will affect the cost of making iron very materially. One part of silica requires on an average the addition of 2.5 parts of limestone, form-

grams of limestone required per ton of iron will be expressed by the formula:

$$\frac{1,000}{100 e} \times 100 \times (2.5 r - k) = \frac{1,000}{e} \times (2.5 r - k).$$

The cost of the limestone would then be represented by the following formula:

$$\frac{1,000}{e} \times (2.5 r - k) \times \frac{K}{10,000} = (2.5 r - k) \times \frac{K}{10 e} \text{ dollars.}$$

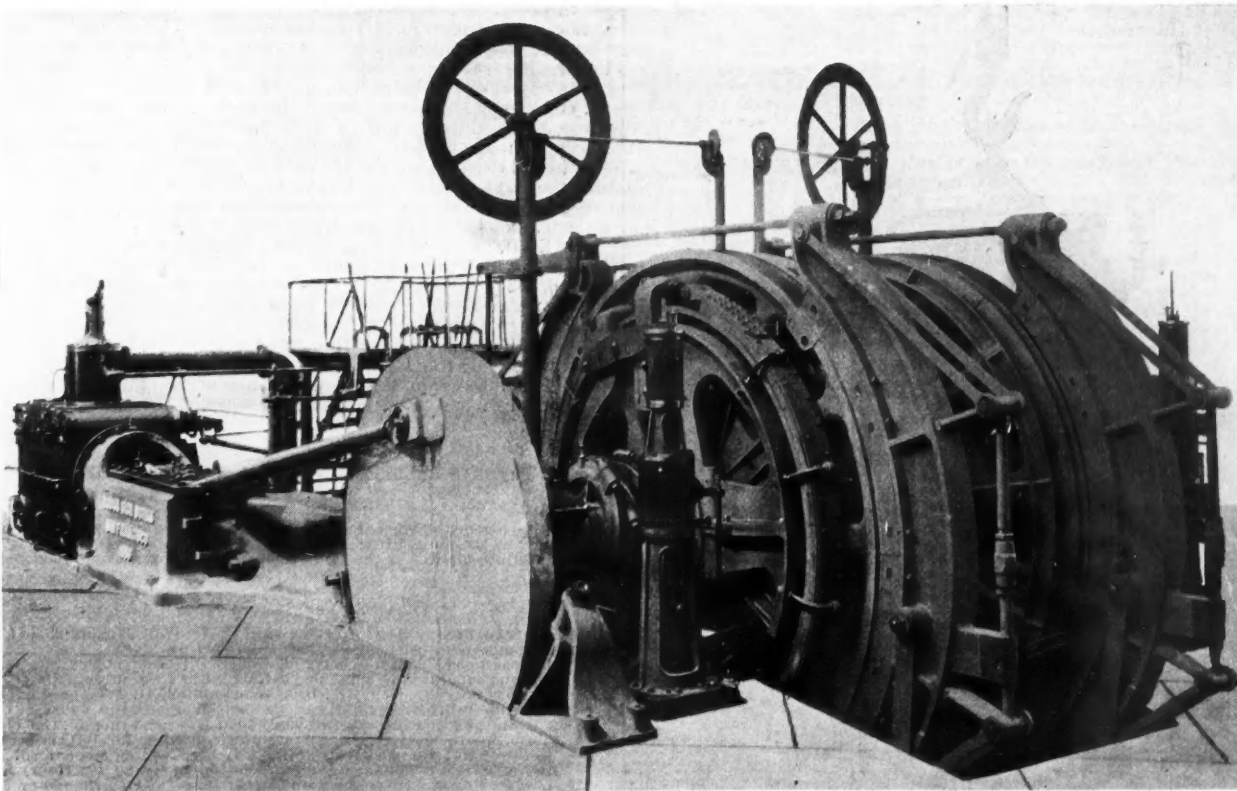
3. *Cost of Coke.*—In producing one ton of iron there will be consumed  $v$  kg. of coke, the cost of which will be expressed by  $v \times \frac{G + F}{10,000}$

4. *General Expenses.*—The elements making up these expenses cannot be combined in any formula, and the value of  $g$  must therefore be considered a variable to be determined by calculation or experience in each case.

*General Formulas.*—Combining the elements of cost as given above, and representing the cost of production of 1 ton (1,000 kg.) of iron by  $P$ , we have the following general formula:

$$P = 0.1 e (x + f) + (2.5 r - k) \frac{K}{10e} + v \frac{G + F}{10,000} + g$$

The value of  $P$ , or the cost per ton of pig iron, being obtained, we can



CORLISS HOISTING ENGINE, ANACONDA MINES, MONTANA.

ing about 3 parts of slag, which absorbs time, fuel and wages. In this light it would seem that the most profitable result could be obtained from ore having the lowest contents of silica in proportion to its tenor in metallic iron. The quotient silica + iron indicates the quantity of slag which will be produced, and this must be considered in determining the true value of an ore.

In obtaining the formulas for estimating the value of our iron ore, the different elements are represented as follows, the metric weights being used throughout:  $x$ , cost of ore per 10,000 kg. or 10 tons, f. o. b. at mine or shipping point;  $f$ , freight on the same to the furnace;  $e$ , per cent. of iron yield;  $r$ , per cent. of silica contained in the ore;  $k$ , per cent. of carbonate of lime in the ore;  $G$ , price of coke per 10,000 kg., or 10 tons, f. o. b. shipping point;  $F$ , freight charges on the same to the furnace;  $K$ , price of limestone per 10,000 kg., or 10 tons, at the furnace;  $v$ , consumption of coke per 1,000 kg. (1 ton) of pig iron produced;  $g$ , general expenses per 1,000 kg. (1 ton) pig iron produced.

The cost of producing one ton of pig iron is made up of four elements, cost of ore, cost of limestone, cost of coke and general expenses. These are considered in turn.

1. *Cost of Ore.*—From 10,000 kg. of ore, costing at the furnace  $x + f$  dollars there will be produced  $10,000 \times \frac{e}{100} = 100 e$  kg., or  $0.1 e$  ton of pig iron. The cost of ore required to make one ton of iron will therefore be  $(x + f) \times 0.1 e$  dollars.

2. *Cost of Limestone.*—As a rule the addition of limestone must be 2.5 parts to each part or unit of silica, deducting the quantity of carbonate of lime in the ore. The quantity of limestone to each 10 tons (10,000 kg.) of ore will therefore be expressed by  $100 \times (2.5 r - k)$  kg. As 10,000 kg. of ore will produce  $100 e$  kg., or  $0.1 e$  ton of iron, the number of kilo-

calculate from it the value of any ore, which can then be expressed in the following formula:

$$x = 0.1 P e - f - 0.01 K (2.5 r - k) - 0.1 e \left( v \frac{G + F}{10,000} + g \right)$$

To illustrate the working of this formula we may take two hematite ores, No. 1 containing 48% iron, 25% silica, and 3% carbonate of lime; No. 2 containing 30% iron, 12% silica, and 25% carbonate of lime. We may assume  $f = 250$ ;  $G = 2,000$ ;  $F = 100$ ;  $K = 750$ ;  $V = 900$ ;  $g = 2$ , and  $P = 750$ , all the money values being here expressed in cents.

Substituting these values in the formula, we have for ore No. 1, carrying 48% Fe, 25% SiO<sub>2</sub>, and 3% CaCO<sub>3</sub>, the following:

$$x = 0.1 \times 750 \times 48 - 250 - 0.01 \times 750 (2.5 \times 25 - 3) - 0.1 \times 48 \left( 900 \times \frac{2,000 + 100}{10,000} + 2 \right)$$

From this we obtain the result  $x = 1,986.95$ ; that is, the value of this ore at shipping point would be \$19.87 for 10 tons, or approximately \$1.99 per ton.

For No. 2 ore, carrying 30% Fe, 12% SiO<sub>2</sub>, and 25% CaCO<sub>3</sub>, if we work out the formula in the same way, we have the following result:

$$x = 0.1 \times 750 \times 30 - 250 - 0.01 \times 750 (2.5 \times 12 - 25) - 0.1 \times 30 \left( 900 \times \frac{2,000 + 100}{10,000} + 2 \right)$$

From this we obtain the value  $x = 1,389.50$ ; the value of this ore at mine would, therefore, be \$13.90 for 10 tons, or \$1.39 per ton. The figures

for value used are, of course, simply assumed for the sake of the illustration, and are given here in United States currency.

At a corresponding price the lower grade ore may be quite as valuable a material as one of higher tenor in iron. Setting aside the fact that ores higher in carbon are more easily fusible than those having more silica, the ore No. 2 given above for illustration would produce less slag than No. 1, since the quotient  $r + e$  would be 0.52, while for No. 2 it would be only 0.40. It will be seen also that for No. 2 the consumption of coke would probably be lower, so that a lower value for  $v$  could be assumed, which would increase the relative value as given in the result. For purposes of comparison, however, this value has been taken to be equal in both cases. The value of  $f$ , the freight on the ore to the furnace, has also been assumed as equal in both cases.

It is believed that this formula can be applied with advantage in many cases and will be of assistance to the furnace manager who has to select the ore most advantageous for his use, where a choice is possible.

#### THE DEAN SINKING PUMP.

The accompanying illustration shows a sinking pump of a simple and compact pattern. Like all pumps of its type, it is always arranged so that it can be suspended in the shaft during the operation of sinking and can be lowered as the work progresses. It is double-acting, throwing a continuous stream. The valve gear is noiseless and positive. The frame is of wrought iron, made to withstand a great deal of rough usage. The cylinders are made with bronze linings or of solid bronze, according to the size. The capacity of the sizes made varies from 10 gals. to 1,500



THE DEAN SINKING PUMP.

gals. per minute. The pump shown in the cut has 14-in. steam cylinder, 8-in. pump cylinder, 12-in. stroke, 6-in. suction and 5-in. discharge. They can be easily repacked by removing the upper cylinder head of pump. All the valves are accessible by removing a single plate. The pump is made by the Dean Brothers' Steam Pump Works, of Indianapolis, and is their latest pump of this type.

**German Pig-Iron Production.**—The output of pig-iron in Germany (including Luxembourg) during July last comprised 46,808 tons of Bessemer pig, 140,096 tons of forge pig and spiegeleisen, 270,266 tons of Thomas pig, and 73,651 tons of foundry pig, a total of 539,776 tons, as compared with 515,181 tons in June last, and 472,003 tons in July, 1895. The aggregate production during the first seven months of the year amounted to 3,635,581 tons, as compared with 3,307,367 tons in the corresponding period of 1895.

**American Locomotives for China.**—What seems to be authentic news from Tientsin, says the *Philadelphia Ledger*, states that the tender of the Baldwin Locomotive Works to furnish engines for the new railway from Tientsin to Peking, has been accepted against the competition of all the other great engine builders of the world. If so, it is a distinct triumph for American enterprise, unimportant in itself as the road is a small one, but highly important as a leader toward securing contracts for furnishing the great system of railroads which China is about to undertake.

**Alloys of Aluminum.**—According to a writer in *London Engineering*, the properties of the alloys of aluminum depend on the purity of the metal employed, and also on the homogeneity of the alloy. It has been found that an alloy of aluminum absolutely free from sodium, with 6% of tin, was attacked by water with disengagement of gas. After two months the metal was punctured in parts, with an efflorescence of alumina. But in presence of a considerable amount of tin, the decomposition is much stronger; hence tin solder for aluminum should be absolutely rejected.

**Mineral Exports and Imports of Spain.**—The *Revista Minera* gives the imports of coal into Spain for the seven months ending July 31st at 806,000 tons, and of coke at 158,827 tons. Imports of iron included 7,321 tons of pig iron, 7,274 tons of wrought iron and 11,269 tons of steel. Exports of minerals for the seven months were, in metric tons:

	1895.	1896.	Changes.
Iron ore.....	2,846,579	3,958,781	I. 1,112,202
Copper ore.....	332,251	421,096	I. 88,845
Lead ore.....	4,913	3,133	D. 1,780
Zinc ore.....	18,195	19,056	I. 861
Salt.....	126,565	108,417	I. 41,852

Exports of metals included 10,339 tons of pig iron, a decrease of 4,932 tons; 15,537 tons of copper, a decrease of 2,985 tons; 44,255 tons of lead, an increase of 8,082 tons as compared with last year.

**Ancient Egyptian Copper Mines.**—A note by M. Berthelot, recently published in *Comptes Rendus*, says that the copper mines of Sinai are the most ancient of which history makes mention. According to authentic documents, they were worked from about 5,000 years B. C., until the end of the Ramesseides (about 1,300 to 1,200 B. C.). Their possession had been the object of several wars, but they had been abandoned for 3,000 years, on account of the poverty of the ores. It was from these mines that was obtained the sceptre of Papi I., a king of the Sixth dynasty. This sceptre, made of pure copper, is preserved in the British Museum. The adits still exist, as well as the ruins of the furnaces, the crucibles, the huts of the miners, and some fragments of their tools. In the specimens obtained by M. de Morgan there occur three ores: turquoise, copper hydrosilicate, and sandstones impregnated with copper. These actual ores are superficial, and form a cap, derived from the alteration of deeper pyritic beds which the ancient miners failed to reach. The turquoises contained 3.32% cupric oxide; the cupriforous gritstones are equally poor. Among the debris have been found remains of furnaces and crucibles, slags and cinders, fragments of tools. Nor is there evidence of the use of fluxes. Some of the fragments of tools contain arsenic, which was used by the Greek and Egyptian alchemists for hardening copper. It is interesting to note that metallurgical procedures similar to those of our days had been reached empirically 7,000 years ago.

#### PATENTS RELATING TO MINING AND METALLURGY.

##### United States.

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

##### WEEK ENDING SEPTEMBER 29TH, 1896.

- 568,323. **MANUFACTURE OF GRAPHITE.** Edward G. Acheson, Monongahela City, Pa. The method consists in electrically subjecting a carbide to a temperature sufficiently high to drive off and volatilize the non-carbon constituent and separate the combined carbon in the form of graphite.
- 568,329. **MINING MACHINE.** Henry H. Bliss, Washington, D. C. The combination of the bed, the carriage sliding thereon, the cutters on the carriage, arranged to operate across the front end thereof, the chain for actuating the cutters, the slowing-down gearing for imparting motion to the chain, the positively-acting carriage-feeding mechanism having the stationary member secured to the bed, and the rotary member mounted on and traveling with the carriage, the electric motor secured to and traveling with the carriage and extending across the space above the carriage substantially from side to side thereof, and having its armature-shaft arranged in a longitudinal vertical plane between the sides of the carriage, the armature on the shaft being adapted to generate momentum and apply it to the chain-links.
- 568,334. **GRINDING OR CRUSHING MILL.** Philip A. Cook, Woodside, N. J. Assignor of one-half to J. Frank Emmons, Staten Island, N. Y. The combination with a cylinder, a screen set in the periphery of the cylinder, and the crushing-rolls, of revolving head-plates and journal-boxes carrying the shaft of the rolls set in the head-plates.
- 568,511. **MOLD FOR CASTING INGOTS.** George Brooke, Birdsborough, Pa. The combination of a crane or support and ladle attached thereto, with a movable runner having a channel therein, a series of molds each connected directly with the runner by a channel and means for connecting the runner with the crane.
- 568,596. **MACHINE FOR REDUCING BITUMINOUS OR ASPHALTIC COMPOUNDS.** Joseph W. Barnes, San Francisco, Cal. A machine comprising a perforated double shell, a reel mounted therein, and one or more fire-places whereby heat may be conveyed directly to the reel through the holes in the shell.
- 568,599. **METHOD OF AND APPARATUS FOR CALCINING CEMENT.** Clifford Bonnevillie, Allentown, Pa. The method consists in first combining raw cement material and cement proper with a combustible material; second, intimately mixing and dampening the mass to form it into a plastic state, and third, in subjecting the plastic mass to a concurrent rolling and calcining operation by which the mass is formed into separate lumps immediately prior to the setting of the cement proper and by which the combustible material is burned out upon and immediately after the setting of the cement proper.
- 568,657. **AUTOMATIC GOLD-COLLECTING APPARATUS.** John R. Brown, Harrison Hot Springs, Canada. An apparatus consisting of a series of amalgamated plates connected to a central shaft by means of which they may be suspended in the bed of a stream, in combination with a series of wings adapted to revolve on the shaft, and provided with ribbons to move over the plates and prevent accumulations of sand and light gravel.
- 568,662. **CRUSHING-ROLL.** Franz Cazin, Denver, Colo. Assignor to the Colorado Iron Works, same place. The combination of the main frame, a trunnion-box frame movable longitudinally, a trunnion-box movable transversely of the box-frame, and a roll journaled therein.
- 568,700. **PROCESS OF REDUCING AND REFINING COPPER.** Thomas Roberts, Baltimore, Md. The process consists in melting the compound, admitting steam and air upon the surface of the molten mass during the melting, in the presence of unburned gases and materials of combustion, and thereby effecting complete combustion, decomposition of the steam and reduction of the copper.

## PERSONAL.

Mr. C. L. CLEMANS is secretary of the Snohomish Mining Association, at Snohomish, Washington.

Mr. JOHN R. TOOLE, a representative of Marcus Daly, is making a trip through the mining camps of Utah.

Mr. E. B. COLEMAN, of Salt Lake City, has gone to Elko County, Nevada, where he has valuable mining interests.

HON. RICHARD MACKINTOSH has returned to Salt Lake City from his visit to California and to Eureka, Nev., where he has extensive mining interests.

CAPT. THOMAS COUCH, superintendent of the Boston & Montana properties, has returned to Butte, Mont., after an absence of three months in England.

Mr. FRANK M. SMITH, of San Francisco, Cal., has returned from Europe where he succeeded in floating a borax syndicate, retaining a controlling interest.

Mr. FRANK B. TURNER, of Butte, Mont., has returned from a visit to Boise, Idaho, where he was engaged in making an examination of some mining properties.

Mr. JOSEPH T. GILBERT, who has been in Juneau, Alaska, for several months looking after his mining property interests, has returned to his home in Milwaukee, Wis.

Mr. C. R. HOLMES, of Anaconda, Mont., has been in Chicago for the past few weeks. Mr. Holmes is interested in mining and metallurgy. He will return to Anaconda shortly.

Mr. HERBERT CUTHBERT, of the Gold Fields Mining Company, has gone West for the purpose of seeing to the development of some of the Trail Creek properties belonging to the company.

Mr. GEORGE RECKHART has accepted a position as assayer with the Commonwealth Mining and Milling Company, of Pearce, Ariz. Mr. Reckhart is a graduate of the Columbia School of Mines.

Mr. J. B. HOBSON, formerly of Iowa Hill, Placer County, Cal., is now superintendent of the Cariboo Hydraulic mine, B. C. Quite a number of Placer County miners are also employed at this mine.

MESSRS. GREEN AND MCVICHELIE, representatives of parties prominently identified with the Standard Oil Company, are at Salt Lake City compiling their reports of various mining camps of Utah which they have been inspecting.

Mr. T. R. WALLACE, of Montana, is in Ophir, Colo., where he, with others, has a lease on the Attica mine. After the crosscut now being driven has cut the ore vein he expects to go East to interest capital in the property.

Mr. H. BURRELL, superintendent of the Sand Coulee (Mont.) Coal Company, has resigned his position and has accepted the position of general manager of the American Development and Mining Company's Gold mines at Gibbonsville, Idaho.

Mr. ADAM HARKNESS, of Pittston, Pa., for the past 20 years an employee of the Pennsylvania Coal Company, has by them been appointed division superintendent, with headquarters at Dunmore, to fill the vacancy caused by the death of Mr. Anthony Horan.

Mr. S. S. GATES, a well-known mining man who has spent a good many years in mining in Old Mexico, has gone to the land of the Montezumas, accompanied by his family. Mr. Gates will spend the immediate future in looking after his mining interests near El Paso and Chihuahua.

Mr. EDWIN M. CLARK, chemist and metallurgist for the Parrot (Mont.) Mining Company for a number of years, has resigned his position. He has been succeeded by Mr. HOWARD J. WRIGHT. Mr. Clark was one of the owners of the Mayflower. He will spend the winter with his brother on the Snake River, Idaho.

BARON DE BOUFRAÏ, who has been examining gold mining properties in Trinity, Siskiyou and Calaveras counties, Cal., has left San Francisco on his way to France. He is favorably impressed with California and her people and expresses his intention to return in a few months and make some mining investments for himself and friends.

Mr. W. H. FERGUSON, superintendent of the Dayton Coal and Iron Company at Dayton, Tenn., has tendered his resignation to the directors of that company. It is rumored that GENERAL MANAGER JAMME, of the Sloss Iron Company, at Birmingham, Ala., who was formerly manager at Dayton, has been asked by the directors to return to his former position.

MESSRS. ROKWIO OSHIMS, general manager of the Hokkaido Colliery and Railway Company, of Saporu, Japan, and M. SUZUKI, general manager of the Sunistoma Company, of Osaka, have arrived on the Pacific coast, the former to inspect American methods of coal mining, and the latter to study the improved methods in cotton manufactories in the interests of his company.

Mr. Jos. G. ALLYN, mining engineer, of Chicago, has returned from a three-weeks' trip, during

which time he examined a number of quartz gold mines in the vicinity of Baker City, Ore. The examinations were made for Messrs. Mariner & Hoskins, assayers and chemists of Chicago. Mr. Allyn will soon go to McDuffy County, Georgia, to examine gold mines there.

## OBITUARY.

FRANK ANDERSON, one of the oldest pioneers of Downieville, Cal., died at that place September 26th, aged 67 years. Mr. Anderson was years ago District Attorney of Sierra County. With Philo Haven and Albert Callis, both deceased, he went to Downieville in 1849, and discovered the first gold there.

JAMES WOOD, proprietor of the Duquesne Tin Plate Works, Pittsburg, Pa., died October 2d at Leetsdale, Pa., aged 35 years. He was a graduate of the Western University, and had been engaged in commercial pursuits all of his life. A number of years ago he established the Duquesne Tin Plate Mills and manufactured trunk plates.

ROBERT LEWIS HARRIS, a member of the American Society of Civil Engineers, and of the Institution of Civil Engineers of Great Britain, died September 29th at Kearsarge, N. H., aged 62 years. He had a long career as an engineer and railroad builder, and was connected at different times with 40 railroads, of which six were Pacific and one inter-oceanic. His profession took him through Canada, Mexico and Central America, as well as the United States.

WILLIAM G. HEILIG died October 6th. He was born in New Hanover township, Montgomery County, Pa., in 1824. He was a bricklayer by trade, and later a furnace contractor, and in that capacity built over 50 furnaces during the days when iron was booming. Among the furnaces he erected are those at Reddington, Durham, Hellertown, Emaus and Pottstown. He also erected furnaces in New Jersey and New York States.

## SOCIETIES AND TECHNICAL SCHOOLS.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—At the first meeting of the season, held in Montreal, October 8th, a paper on the "Storage of Water in Earthen Reservoirs," by Prof. Samuel Fortier was read and briefly discussed by the members present.

NEW YORK ACADEMY OF SCIENCES.—At the meeting of the Section of Geology and Mineralogy, to be held on October 19th, the following papers will be read: "Geological Notes from Long Island and Block Island," by Arthur Hollick; "On the Glacial or Post-glacial Diversion of the Bronx River from Its Old Channel," by J. F. Kemp; "On the Eclogites of Bavaria," by D. H. Newland.

CALIFORNIA MINERS' ASSOCIATION.—The annual session of this association will be held in San Francisco on November 10th, and will probably last three days. The principal subjects for consideration will be the securing of an appropriation from the Congress of the United States for the building of dams for the restraining of debris from hydraulic mining, and the attaching of a Secretary of Mines and Mining to the President's cabinet. The association is in good condition, having cleared its entire indebtedness, and now numbers 500,000 members throughout California.

FRANKLIN INSTITUTE, PHILADELPHIA.—A course of lectures on subjects of a scientific and technical character is provided each year by the Committee on Instruction, with the co-operation of the several professors. The Institute lectures number about 25 in all, and are held usually on Friday evenings, at 8 o'clock, beginning in November and ending in March or April. The programme for the season of 1896-1897 includes the following lectures: November 27th, "The Cyanide Process for the Treatment of Gold Ores," by Dr. Joseph W. Richards. December 11th, "Manufacture and Development of Carborundum at Niagara Falls," by Mr. Francis A. Fitzgerald. December 18th, "Applications of Electricity in Gold Mining," by Mr. H. M. Chance. January 29th, "Chemistry in the Pottery Industry, and Some Recent Improvements in Imperishable Decorations in Clay Tiling," by Mr. Karl Langenbeck. March 5th, "The Tin Plate Industry in the United States," by Col. Ira Ayer. March 26th, "The Development of the Use of Aluminum in the Arts," by Mr. Alfred E. Hunt. April 9th, "Precious Stones as They have Influenced Geography," by Mr. George F. Kunz.

## INDUSTRIAL NOTES.

The Bettendorf Metal Works, at Davenport, Ia., resumed active work last week, after a short shutdown making repairs. This company has all the work it can handle.

The Oliver Coke and Furnace Company, of Uniontown, Pa., is preparing to fire up 150 ovens at the No. 1 plant. The two large plants of this company, employing nearly 700 men, have been idle since July.

The Monarch Iron Company, of Duluth, Minn., has filed articles of incorporation. The capital stock is placed at \$200,000. The incorporators are S. W. Eckman, Arthur Howell and T. W. Wahl, all of Duluth.

The National Tin Plate Company, of Anderson, Ind., has decided to erect another plant, probably in Pennsylvania. It will be a nine-mill concern. The company invites bids of bonus for the location of the plant.

The Andrews & Hitchcock Iron Company's No. 1 furnace, at Hubbard, O., which has been banked down since June 15, is being blown out. From present indications both furnaces will remain idle for some time.

The E. Morewood Tin Plate Works, at Gas City, Ind., the largest concern of the kind in the West, notified their employees on October 1st that their services would not be required for some time. The stagnation in trade is assigned as a reason for closing down.

The Cambria Iron Company's plant at Johnstown, Pa., which shut down October 7th, will resume next Monday. The temporary suspension, it is said, was due to preparations in connection with adjusting machinery and matters incident to the operating department and not to trade conditions.

The Ashland Coal and Iron Railway Company, at Ashland Ky., has recently increased the capacity of its twin blast furnaces at least one-third by the addition of a new 250-H. P. engine, the largest piece of machinery of its kind in the State. The output of the furnace now will reach 300 tons per day.

The Sloss Iron and Steel Company, of Birmingham, will blow in its No. 2 furnace at an early date and the Tennessee Coal, Iron and Railway Company will put another of its Bessemer furnaces in blast. Business is increasing in activity in the iron districts of Alabama and the outlook is considered encouraging.

The Valley mill plant at Youngstown, O., which has undergone some improvements and reorganization, started up in full on October 7th. Both puddle mills, the nail, plate mill, big bar mill, 12-in., 9 in., and 7-in. mills and the shafting works are in operation. The blast furnace and little bar mill will soon resume.

The Metropolitan Fuel Gas Company, of New York City, has presented a petition to the Board of Aldermen seeking permission to lay pipes for fuel gas purposes, the price to be 50c. per 1,000 cu. ft. to consumers and 25c. per lineal foot of pipe laid to the city for the privilege. The matter was referred to the Lamps and Gas Committee.

The Warwick Iron Company's blast furnace at Pottstown, Pa., has just been put out of blast, and a force of men is now engaged in making necessary repairs. A number of improvements will be made and the capacity increased. The plant will resume operations in about two months with an increased working force.

Miller Brothers & Company, contractors, of Pittsburg, Pa., have secured the contract for a steel plant at Mariopol, in Southeastern Russia. The location is near the Sea of Azof. The plant will be for the manufacture of piping for the Russian oil fields, for locomotives and for boilers. A member of the firm states that the capital for the enterprise comes principally from Philadelphia men.

The Canonsburg (Pa.) Iron and Steel Company held its annual meeting of stockholders a few days ago. The old Board of Directors was re-elected, consisting of H. H. Nieman, H. S. Duncau, John F. Budke, Samuel Munnell, W. A. Scott, Wm. H. Paxton, Mrs. S. Meyran. The report showed the company to be in a prosperous condition. The board has been organized as follows: President, H. H. Nieman; vice-president, Harry Duncau; secretary-treasurer, L. A. Meyran; general superintendent, John F. Budke; auditor, Robert Herrosee.

I. S. Van Winkle & Company, of San Francisco, Cal., have just received a most unique prospectors' portable five stamp mill, which weighs about 1,000 lbs. complete, with water tank, ore bin, foundation timbers, battery, stamps, pulley, silver plates, apron and belt. It can be transported into the most inaccessible places and requires only 3 H. P. in its operation. There are already 50 of them in operation in California, Arizona, Mexico, Africa and New Guinea. They sell complete, boxed and ready for shipment, for \$400, including plates, and are capable of handling from four to five tons of quartz per day.

West Superior Iron and Steel Company stockholders have organized a committee and will endeavor to obtain control of the property in order that it may be reorganized and put on a paying basis. John D. Rockefeller is one of the heaviest bondholders. This is one of the properties that suffered from the maladministration of Francis H. Weeks, who is now in State prison. The greater part of the stock of the company is owned by the Land and River Improvement Company, of which Weeks was president, and which is now one of the largest creditors of the West Superior Company. The bondholders' proposition to settle with the creditors and take full possession of the property is opposed by the Improvement Company in its capacity of stockholder.

The Wellman Iron and Steel Company's officials have closed negotiations with agents of Russia, who are in this country buying up machinery for their government, for the purchase of the large plate mill and engine of these works at Chester, Pa. As the Wellman went into the hands of a receiver some

years ago, and the court now has jurisdiction over its disposal, J. Hampton Barnes, of Philadelphia, representing the owners and trustees, J. Tatnall Lea and William Burnham, the syndicate, appeared in the interest of the sale. The price agreed upon is, it is said, about \$36,175. The Wellman was originally built at a cost of nearly \$1,500,000, and the plate mill consists of the largest three high train of rolls in the world. The engine originally cost \$16,500. The plant will not be dismantled. The only uncertain element in the proposed sale is the attitude likely to be assumed by Samuel A. Crozer, the millionaire manufacturer, who is one of the largest bondholders, and is now on his way home from Europe.

In New York there is now one case wherein compressed air is one of the commodities on the list of conveniences of the modern office building. The Ingersoll Sergeant Drill Company, whose offices are on the tenth floor of the Havemeyer Building, in that city, has placed an air compressor in the engine-room of the building, and air power will be supplied to all the tenants of the building who desire it. The compressor is run by steam, and compresses the air into a receiver, where it stands until ready for use. The building is piped throughout, pipes being run up through the shaft and branches off at the floor. The Ingersoll Company will probably be the largest user, operating tools and machines of all descriptions for exhibition; and in addition air will open the doors, ring the call bells, operate the letter presses, dust the furniture and clean the carpets, rugs and other furnishings. The Ingersoll Sergeant Company exhibits these appliances for all who wish to see them, and it serves the purpose of bringing into such conspicuous notice the numerous uses that may be applied to the office buildings or residences.

#### TRADE CATALOGUES.

The Stilwell-Bierce & Smith-Vaile Company, Dayton, O., manufacture special machinery for heating and purifying feed water for steam boilers, and the catalogue on the subject goes into the matter in considerable detail. The Stilwell lime-extracting heater and filter combined is in use by a great many establishments who are always willing to give testimony as to the efficiency of the apparatus. The Smith-Vaile steam pumps, pumping-engines, condensers and artesian-well machinery are no less important productions of this company, which are thoroughly illustrated and described in a catalogue devoted especially to them.

The Robins Conveying Belt Company of New York City, manufacturers of belt conveyors, has sent us a pamphlet illustrating and describing the Robins belt, which they make in many types and sizes. A continuous moving trough is formed by a specially constructed endless belt, which runs over and between small pulleys so placed as to raise its sides to an angle of 45°. The material carried lies in this trough until it reaches the end of the conveyor, where it is dumped off, as the belt, bending around a large horizontal pulley, returns to the starting point to be loaded. The belt, idlers and other elements are fully described in the catalogue, which should be obtained by all parties interested.

#### MACHINERY AND SUPPLIES WANTED.

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

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line.

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

#### GENERAL MINING NEWS.

##### ALABAMA.

###### COLBERT COUNTY.

**IRON MINES.**—Iron mines will shortly be opened at a point a few miles south of Sheffield by Charles Allen and John Foster.

**POTTERS' FLINT COMPANY.**—An industry that is attracting some attention is the potters' flint mines at Riverton, which are yet in their primitive state. The potters' flint is used in the manufacture of queensware and floor tiling, and, it is said, experts have pronounced the flint equal to the best imported. To-day it commands a price three times as great as it did six months ago. The management have orders from Eastern potteries that will keep the mines working for some time. The company is managed by F. A. Howard, president; C. E. Malone, vice-president and manager; J. D. Wyker, secretary and treasurer, all of Decatur, Ala.

###### ETOWAH COUNTY.

**PIONEER IRON COMPANY.**—This company, at Gadsden, is developing a section of Red Mountain that contains a seam of the best hematite ore 9 ft. thick.

###### TUSCALOOSA COUNTY.

**MOBILE & TUSCALOOSA COAL AND TRANSPORTATION COMPANY.**—This corporation has been formed in Mobile by C. W. Ruth and others, with a capital

of \$50,000 to develop the coal trade with the Tuscaloosa mines, says the *Chattanooga Tradesman*. It has arranged to construct 30 immense barges for the transportation of coal, and 30,000 tons will be brought from the mines to Mobile at each tow. It is estimated that the company will be enabled to deliver the coal at Mobile at a freight cost of less than 25c. per ton. Just above Tuscaloosa, on the Warrior River, there are immense deposits of coal, which, on account of the lack of transportation facilities, have not been developed. A year or two ago one or two of the seams were opened, and only a few months ago the first shipment to Mobile was made. The coal has been found to be of the best quality and wealthy corporations have, it is said, taken hold of the matter and will develop the coal deposits above Tuscaloosa on a large scale. The coal is floated down the water to the Mobile River and down that river to the gulf. A big export business to New Orleans is expected to be established.

##### ALASKA.

Mr. S. H. Cumming recently returned from the Inlet, says the *Alaska Mining Record*, bringing a fine specimen of hard coal differing vastly from the lignite found in such abundance at Coal Bay, and of which he has discovered an 8-ft. vein at Chignik Bay, on the west side of Cook Inlet, a short distance from available tidewater. The sample appears to be of a superior quality of steam coal and burns readily with but little ash.

##### ARIZONA.

###### COCHISE COUNTY.

**COMMONWEALTH MINING AND MILLING COMPANY.**—This company, operating the Pearce mine, near Wilcox, is shipping 100 carloads of ore per month. The ore is sent to El Paso and Pueblo, where it is treated at the smelters. The company employs about 50 men and the ore they extract shows in its treatment about half and half of silver and gold.

###### GILA COUNTY.

**OLD DOMINION COPPER MINING AND SMELTING COMPANY.**—Wm. B. Pollock & Company, Youngstown, O., last month shipped the new 100-ton furnaces for this company, of Globe, to be used at Germimo.

###### GRAHAM COUNTY.

**DETROIT COPPER COMPANY.**—This company recently bought from the E. P. Allis Company a copper furnace, 42x60 in., which is to be erected upon the company's property, at Morenci. This is the fourth large furnace that has been erected on the Detroit Company's veins. William Church, of Denver, is president of the company.

##### CALIFORNIA.

###### (From Our Special Correspondent.)

An old California law requiring the payment of 10c. for every certificate of stock issued by any corporation in the State is to be enforced by the State officials in so far as mining companies are concerned. (In the city of San Francisco this tax has always been collected.) This will give the State Mining Bureau pretty nearly all the funds required to pay all the expense of its maintenance. The Mining Bureau costs the State about \$20,000 a year besides the printing.

###### AMADOR COUNTY.

###### (From Our Special Correspondent.)

**KENNEDY.**—This mine, on the Mother Lode, 1 mile north of Jackson, has opened up a new level at a depth of 2,150 ft. The ore body is found to be equal in size and richness to that in the upper levels.

**UNION CONSOLIDATED MINING COMPANY.**—A rich strike of free gold was recently reported on this company's property, 7 miles southeast of Jackson. About three years ago the property was bought by a number of San Francisco Germans, and in December last they resumed sinking a new shaft, which is now down to a depth of 425 ft. There is a mill of 30 stamps on the property, which is to be at once repaired and its capacity doubled.

###### BUTTE COUNTY.

###### (From an Occasional Correspondent.)

Statistics show that mining for gold in Butte County has nearly doubled this year, both in the number of mines operated, and also in the number of men employed, over that of last year, notwithstanding the fact that last year's increase was greater than for any single year during the previous 20 years. Uncovering ancient river channels and opening up new quartz mines are the chief directions taken by the new operators, though the foothills, mountains, ravines and gulches all have their prospectors, and very many of them are yielding returns that are almost incredible. For many years the silver fields of other States drew the best prospectors from California, but owing to the low price of silver these men have gradually returned to this State and entered upon the work of finding new gold mines.

Just across Feather River, at the old Banner mine, opened up in the fifties by Smith & Sparks, who took out about \$1,000,000 in a short time, an English syndicate is at work taking out rich rock. For many years this mine was idle, the report having gone forth that it had been worked out, but its present owners sunk a shaft to the depth of 1,000 ft., with the result of finding the lode better than ever. This has been an important lesson to the quartz miners of this county, for they had been led

into the belief from the former history of this mine that our ledges did not extend to any great depth.

The Gold Bank mine at Forbestown, the property of H. P. Stow, is another of the quartz mines that is being operated on a large scale. Over 100 men are at work now and have been for five years past. He is tapping his ledge at a depth of about 800 ft. by means of a tunnel, but at the same time is taking out paying rock through the shafts. This is a valuable piece of property. In its immediate vicinity are the Shakespeare, the Big Betsey and the Carlyle, and five miles distant the Mount Ida Mine, now being opened up on the lands of Judge Gray by Mr. James Pullen, who has it bonded, and who claims to have the continuation of the Banner. Certainly he has found a remarkable deposit of rich ore, but his mine is yet too young to give any results.

Over on the Magalia ridge, the old Persbacher (now called the Magalia) is being worked with astonishing results. This is an ancient river channel and has for years yielded large returns. It has been worked down stream, and it became difficult to keep it clear of water. Water and litigation caused it to be closed down for a number of years, but this year a shaft sunk through 400 ft. of lava rock reached the face of the drift, and the mine was soon pumped out and the work of mining began in earnest. The mine is owned by Rideout, one of the wealthiest bankers in the State, and by Mr. Haggin, and is not for sale. The Princess mine, on the same channel and just above, owned by Detroit, Mich., parties, is being opened and worked with most satisfactory results.

Hardly a day passes but that some new discovery is made, and as the news gets abroad old miners return and new ones come to see if they cannot be of those with whom fortune has found favor. The old Spring Valley mine, from which more than \$5,000,000 in gold dust has been taken, is about to pass into other hands, and to be worked again by the drift process. When well worked this has never failed to pay. Our bank counters and express offices show the rich returns made by our mines. The new developments are chiefly in the ancient river beds, and in the deep quartz deposits, and in these respects mining has but just begun in Butte County.

###### CALAVERAS COUNTY.

**BOSTON.**—This mine has shut down pending some necessary development work. They have been operating through a single compartment shaft and have concluded to increase its size. They have placed an order for timbers to construct 800 ft. of shaft, and when that is on the ground they will probably renew operations at the mine.

###### (From Our Special Correspondent.)

**ALCYONE.**—The California Debris Commissioners have granted the owners of this mine, near Angels, permission to build restraining dams across San Domingo Creek, which is tributary to the Calaveras River.

**BUENA VISTA.**—A five-eighth interest in this mine, near Rich Gulch, has been sold through J. F. Crosett, of San Francisco, to G. W. Wise for \$10,000.

**CALIFORNIA EXPLORATION COMPANY.**—Richard A. Parker, general manager, and W. L. Honnold, superintendent of this company, have entered upon the discharge of their duties. The work on the electric plant on the Mokelumne River and on the transmission line is being pushed vigorously. Connections with some of the mines will probably be made early in January. Work on the Garibaldi, Gottschalk, Swiss Ranch, Bund and Maloney mines is receiving special attention. A 40-ft. ledge has been cut in the Garibaldi; at the Maloney a tunnel is being run to tap the main ledge; the shaft at the Bund is down 80 ft., and at the Gottschalk they are drifting to the west in good ore.

**WIN.**—At this mine, 3 miles west of Mokelumne Hill, all the timber and machinery for the new 40-stamp mill is on the ground and the mill will, says Superintendent Thomas, be at work by November 1st. This mill will cover an area of 76 ft. by 90 ft. The plant will be operated by water-power, the water being taken from Campo Seco and Mokelumne Hill Company's ditch at a point 800 ft. from the mill, having a fall of over 400 ft. in that distance.

###### ELDORADO COUNTY.

**UNCLE SAM.**—It is reported that this mine will soon be shut down permanently. The pay ore bodies have run out, and the discovery shafts and tunnels have failed to develop others.

###### PLACER COUNTY.

###### (From Our Special Correspondent.)

**BLACK HAWK.**—This gravel mine, near Forest Hill, was recently purchased by H. S. Crocker, F. A. Smith and Dr. Brewer, of San Francisco, for \$40,000. A tunnel is being run, working two shafts, under the superintendency of Mr. Greenwood. A rich lot of gravel was struck in this mine a few weeks ago.

**DR. BARTON'S MINE.**—This quartz mine, at Deadwood Ridge, will soon start the new tunnel.

**GLEN.**—At this mine, at Duncan camp, a tunnel is being run in which rich ore has been encountered, which shows up well.

**HORSE SHOE BAR CONSOLIDATED MINING COMPANY.**—The claim of this company is located on the middle fork of the American River, near Michigan Bluff. Preparations are being made to work the big bend bar at Horse Shoe Bar under the hydraulic

elevator system. Water will be obtained through a ditch five miles long which is being built from the north fork of the middle fork of the American River. This will give a fall of 400 ft. A tunnel 30 ft. wide, 12 ft. high and 200 ft. long will drain the bar. The mine when in operation will give employment to 150 men.

**LARKIN RANCH.**—J. B. Silby, of San Francisco, has bought the north half of this ranch, which contains six well defined quartz ledges, on which development work on a large scale will begin at once. Mr. Silby organized the Larkin Mining Company several months ago and spent \$20,000 in development work. A mill is in course of construction.

**MAYFLOWER.**—At this drift mine, 3 miles north of Forest Hill, surveys are in progress for a new ditch. The future prospects are encouraging.

## SHASTA COUNTY.

(From Our Special Correspondent.)

**SIERRA BUTTES COMPANY.**—The Uncle Sam mine, the property of this company, located five miles from Kennett, is about to shut down for want of ore. It is reported that two men, who have been prospecting for an extension of this mine, have struck a 3-ft. ledge of quartz in their prospect tunnel.

## SIERRA COUNTY.

(From Our Special Correspondent.)

**YOUNG AMERICA.**—This mine, seven miles north of Sierra City, has been operated on a large scale for some years, producing about \$1,500,000 in bullion. A cyanide plant of 150 tons capacity daily has been erected at the mine and will be started up very soon. The tailings run from \$16 to \$20 per ton.

## SISKIYOU COUNTY.

(From Our Special Correspondent.)

**HIATT GARRETT & CO. MINING COMPANY.**—This company has finished a large wing dam in the Klamath River, just below the mouth of the Scott River. A force of 25 men is working day and night washing the top gravel, which pays well. A rich clean up is expected when bed rock is reached.

**MABEL.**—This mine, seven miles east of Scotts' Bar, has 200 tons of fine-looking ore on the dump which will be crushed by the Chamberlain & Timmon's mill, on Mill Creek, which has just been completed.

## TRINITY COUNTY.

(From Our Special Correspondent.)

**LA GRANGE.**—This hydraulic claim, on Oregon Gulch, four miles west of Weaverville, comprises over 400 acres. McLean Bros. have about 100 men employed on the tunnel, ditch and flumes of the company, and it will probably take all next year to complete their contract.

## TUOLUMNE COUNTY.

(From Our Special Correspondent.)

**ALAMEDA.**—This mine, one mile northwest of Jamestown, on the Mother Lode, employs eight men; B. McDonnell is superintendent. The upraise from the tunnel to the surface, a distance of 230 ft., will be through in about 10 days, when an inclined shaft is to be started and sunk 400 ft.

**APP.**—This mine, on Quartz Mountain, one mile southeast of Jamestown, is now dry for the first time in years. The new air compressor is running and the premises have been put in complete working order. Sixty tons of ore per day are being crushed.

**DUTCH.**—This claim, in the village of Quartz Mountain, is 1,400 ft. x 300 ft. While excavating for the foundations of the new double hoist, a pocket of very rich ore was struck on a chute that was not known to exist. Work on the foundations for a new 10-stamp mill has been commenced.

**JUMPER.**—This mine, at Sonora, was bought over a year ago by George P. Gaw for \$65,000. At a depth of 240 ft. a fine body of \$20 ore was developed. An electric hoist and a 40-stamp mill are now in operation. Sixty tons of ore per day are milled and the pay-roll amounts to \$8,000 per month. The ore from the New Era drift is high grade. Some large shipments of bullion have been made recently. At present Mr. Gaw is on his way home from Glasgow, Scotland, where he organized a strong company to enable him to increase the plant and work on a larger scale.

**MOUNT ZION MINING COMPANY.**—The Kanaka mine, six miles east of Groveland, is being worked under bond by this company, under the management of N. W. Moody. Steam boilers and engine are being put in to provide power to run the 10-stamp mill during the three or four months when the water is low. New concentrators are also being put in.

**RAWHIDE GOLD MINING COMPANY.**—C. W. Norton, of Boston, in his action against W. A. Nevills, W. H. Martin and John Ballard, who were the original owners of the Rawhide property, to recover \$750,000 damages, was heard in equity session of Superior Court by Judge Dunbar, September 23d, on a demurrer which the defendants filed to plaintiff's declaration. Judge Dunbar reserved his decision.

## COLORADO.

## BOULDER COUNTY.

**MELVINA.**—This mine, in Sugar Loaf District, has come into a vein of ore 8 ft. wide. A carload taken from entirely across the vein has been shipped to the Denver Public Sampling Works to get a test of the average value.

## CHAFFEE COUNTY.

**CLIMAX.**—This property, three miles southeast of Salida, from which some good paying ore has already been shipped, gives promise of developing into a producer of silver. The property is owned by Warner Bros., and is under bond and lease to Messrs. Lisman, Whitehurst, Locke, Weber and Ramsey. Three months' work has been done on the property, the development consisting of a 75 ft. tunnel and cabins, etc., for the accommodation of the workmen. The vein matter is 2-ft. in width with a 6-in. streak of gray copper, from which encouraging assays have been received. There is now on the dump good ore to the amount of several tons and the property is in good shape.

## CLEAR CREEK COUNTY.

## DUMONT GOLD MINING AND MILLING COMPANY.

—At the depth of 100 ft. on the Little Emma, ore running \$176.90 was struck containing 6½ oz. in gold and the balance in lead, copper and silver. The vein is 8 in. wide.

## EL PASO COUNTY.

**MOUNT ROSA MINING, MILLING AND LAND COMPANY.**—The directors of this company held a meeting at Colorado Springs on September 28th. A. M. Ripley was elected secretary in place of B. K. Walker, deceased. The president and secretary of the company were authorized to make the transfer of the Gold Coin lode, or such portion of it as was bonded, to the Gold Coin Mining Company, the consideration being \$55,000. The property sold is about two-thirds of the Gold Coin claim, namely, all that portion of the Gold Coin claim north of the south line of Victor avenue, Victor, and contains about six acres. The company has about 124 acres left. Work is now going to be pushed on block 12, where a shaft is being sunk and is now 70 ft. deep, and a steam plant is being used. A. L. Dickerman, mining engineer of Colorado Springs, is supervising the work.

## EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

(From Our Special Correspondent.)

**ABE LINCOLN.**—This mine, in Poverty Gulch, owned by the Mariette Company, and worked under lease by De Witt & Company, ships about six tons of ore per day, which averages \$100 per ton. It is reported that De Witt sold one-fourth interest in the lease, which expires next June, for \$12,500. There is considerable ore blocked out.

**ANCHORIA-LELAND.**—This property, on Gold Hill, still keeps fairly well to the front. The gross production for the month of September is estimated at over \$40,000, with 10 stoping below the 1st or 257-ft. level. The shaft has reached a depth of 690 ft., and is the quickest shaft sinking done in the district. The shaft was sunk by hand labor.

**ARCADIA AND ABE LINCOLN.**—The legal troubles between these companies have been compromised. The two claims are located in Poverty Gulch, almost within the town boundaries. The Lone Star, the claim owned by the Arcadia Company, was located in 1891 by a Mr. Kelly, who sold it to the Lone Star Company, which company transferred it to the Anaconda Company, who last year sold it to the Arcadia Company, the claim being isolated from any of their properties. The Abe Lincoln claim was located in 1895 on a fraction between the Lone Star and the Lillie claims and a full claim was surveyed and patent applied and mineral was shipped by lessees. When the Arcadia Company commenced working on ground which both claims owned a rich ore chute was found on the disputed territory and the court was called on to settle the differences. A receiver was appointed and discharged, a temporary injunction was prayed for and granted, but when asked to be dissolved was also granted. The Arcadia by the compromise receives the whole of the disputed territory, comprising an area of 125 acres, for which the Abe Lincoln, owned by the Marinette Company, receives 300,000 shares and 400,000 shares are to be placed in the treasury. The capital stock of the company is increased from \$1,250,000 to \$2,000,000. The Arcadia will soon be actively at work and increased shipments will be the result. The disputed ground is considered very valuable, as the major portion of the chute is within its lines. Shipments are being made of the ore on hand at the rate of 120 tons a day.

**BANKERS' MINING COMPANY.**—At the Garfield, Grouse, owned by this company of Denver, a new shaft house and suitable and commodious ore bins are about to be erected. The mine steadily improves. A recent shipment of five tons sampled over 20 oz., while the second grade samples from 2 to 3 oz. About 18 men are employed.

**CITY VIEW.**—This mine, under the superintendence of Mr. Bradford, is being stoped between the second and third levels, and the rate of development is rapid. The claim is worked under lease.

**ELKTON.**—This mine gives employment to 86 men. The output for the last half of September was not very great, as early in the month, about the 10th, some ten men who were engaged in stoping were put on development. The 3d level is opening into what looks like a good body of ore. There is now in the treasury \$115,000, and it is anticipated that on or before December 1st there will be \$150,000 in the treasury, when an increased dividend will be declared. Preparations are being made to resume work at the 400-ft. level next month, and pipes and columns will soon be in place. A new pump has been ordered from Massachusetts, weight 70,000 lbs., and this, it is anticipated, will be adequate to handle the water from a depth of 1,000 ft.

**ELIZABETH MAY WELLS.**—This mine, on Tenderfoot Hill, north of Cripple Creek, has made four shipments from a 60-ft. shaft. It looks as if there might be a continuous ore chute in this section of the camp; hitherto ore shipment has, as a rule, exhausted the supply.

**FAVORITE.**—This mine, on Bull Hill, is shipping ore occasionally to one of the local samplers. Recently it shipped 25 tons of \$42 ore which was broken at the first level.

**IDA MAY.**—This mine, on Raven Hill, owned largely by Messrs. Lilliebridge, Hayes, Shields and Ehrich, of Colorado Springs, and on which some \$30,000 has been expended, bids fair to become a permanent shipper. The shipments for the past three years have been spasmodic. The shaft will in the course of a few days reach a depth of 200 ft.

**INDEPENDENCE.**—Last month this mine shipped 800 tons of about \$75 ore, which was not sorted, but was shipped as broken. The property now gives employment to 60 men. The mill has not yet resumed work. It is stated that all the mechanical defects will soon be remedied, and that concentrates will be turned out at the rate of one car a day.

**LITTLE MAY.**—This mine on Beacon Hill under lease and bond to Judge Bunis, has made an 8-ton shipment to the Cripple Creek sampler. The shaft has been sunk 110 ft. The prospects are quite encouraging.

**LUCKY GUSS.**—This claim, on Bull Hill, is making good progress toward becoming a mine, the output for September having been 150 tons. This property has made great improvements during the past three months, and is now more than self-supporting, whereas formerly it was not. If this mine should prove a success, it will undoubtedly stimulate other English capitalists to speculate in other mines in this district. Development is being pushed at all times.

**MAY BELLE.**—This mine, on the Lawrence town-site, has made one or two small shipments, but from now on the lessees claim that a carload per day can be broken and shipped; they claim they have stripped the vein for 30 lin. ft.

**PRINCE ALBERT.**—This mine, on Beacon Hill, is doing well. The Babbitt Lease shipped during September 300 tons of a medium-grade ore—about 3 oz.—from a surface deposit. The water is now being hoisted out below the 100-ft. level when a stationary pump will be fixed at the 150-ft. level. The Doyle lease on this claim shipped 12 tons of ore last month from a winze.

**SHERIFF.**—This mine, on Raven Hill, has made its first shipment from the recent strike on the north end of the claim to the Brodie Cyanide Mill. The property is worked by Mr. Lem Jackson, one of the owners.

## GILPIN COUNTY.

(From Our Special Correspondent.)

**BLACK HAWK DAISY.**—Endeavors are being made by the lessees of this property to sell to outside parties. The mine is situated on Winnebago Hill; it is about 110 ft. deep, but does not present any features of much promise, and most, if not all, of the ore shipped does not pay the cost of hauling and crushing.

**COLUMBUS.**—A small steam hoist has been placed on this property, and the shaft is being retimbered so as to commence sinking.

**FORFAR.**—This mine, in Russell District, near the Pewabic, is being worked on lease and bond. It is said to have given good returns to tributaries, who were obliged to quit the summer before last on striking a stream of water in the bottom of the shaft. The workings consist of a shaft 92 ft. deep, with levels east and west 60 ft. from the surface. Both these drift are being extended, the vein averaging 18 in. in width, and of good appearance. The water has been hoisted from the shaft, and sinking will be recommenced.

**GOLD COLLAR.**—At this mine, in Prosser Gulch, a new boiler and hoist have been placed in position. Underground work has been suspended for the past six months.

**MINNESOTA.**—Denver parties have leased and bonded this claim, on Winnebago Hill, and have drifted in an adit tunnel about 100 ft., without meeting with anything of much value.

**WATERBERRY.**—The Mammoth Mining Company, of Chicago, is drifting a tunnel from Packard Gulch on this vein, a spur of the Mammoth, to connect with the deep Mammoth shaft on the other side of the hill. The tunnel is being driven by air drills, and is now in over 300 ft., but the results so far have been disappointing, the vein being small and pinched, and the little ore met with quite worthless. The tunnel, if continued, would meet the Mammoth shaft in about 1,500 ft. at a depth of 350 ft. from the surface. A much better plan would have been to drift up the main Bobtail tunnel, now 350 ft. below Packard Gulch. This would have necessitated only the same length of drift, would have opened up the Mammoth vein all the way, and have unbottomed the shaft, securing the drainage and ventilation of the mine.

## PARK COUNTY.

**HARD TO BEAT.**—Joseph Hurtzen has opened a lead near Puma City that promises well. The vein is about 18 in. between walls, and contains a good per cent. of galena. A mill run was obtained from some of the ore and the result was such that the

property was bonded and leased to Cripple Creek parties for the sum of \$10,000.

**HOCK HOCKING.**—This mine, in the Alma District, is being rapidly put in shape for shipments. The shaft is being extended another 50 ft. under contract. Ore is being taken from the Weston shaft to the cars by a pack train. The shafts are free from water, the ore body is increasing in size as development progresses and the quality is entirely satisfactory. About 20 men are employed.

#### PITKIN COUNTY.

**PARK REGENT MINING COMPANY.**—It was announced, October 1st, that this company had passed another pay day and that the men employed on the mine, 65 in number, had quit work, leaving only the engineers and pumpmen at their posts. E. Dunbar Wright, manager of the property, stated that the company had not paid off for two months, but he expected to be able to meet the pay rolls within about 30 days. Only about 20 men, he said, instead of 65, had quit, and these were on the night shift. The trouble is due principally to the fact that the ore that is coming from the mine is low grade, and at the present price of silver and lead it does not pay to ship it.

#### SAN MIGUEL COUNTY.

**COPPER CHIEF.**—A strike was made on this property in Bridal Veil basin by Perkins, Palmer & Jones, the owners. The ore assayed well in gold, silver and copper. The streak is small, being only about 4 in. wide.

**TOM BOY.**—The new tramway on this mine is expected to be in operation shortly. It will be between 1,500 ft. and 1,600 ft. in length and will have a capacity of several hundred tons per day. The seven Huntington mills are treating 175 tons per day, which yields more than a carload of concentrates running upward of \$65 per ton.

**VALLEY VIEW.**—This mine has an adit tunnel run on the vein between the upper and lower tunnels, with which connections have been made by a winze and an upraise. This permits the amount of shipments to be increased while development is also pushed ahead without an increase of the working force. From 30 to 40 men are employed. The ore shipped to the smelter last fall averaged \$42.50 per ton.

#### FLORIDA.

##### ALACHUA COUNTY.

**CAMP PHOSPHATE COMPANY.**—This company, of Wade, has at one of its mines 12,000 tons of phosphate ready for shipment. This is probably the largest quantity at any mine in the State. The company has been holding it for better prices.

#### IDAHO.

##### BOISE COUNTY.

**POPULIST.**—Some weeks ago this mine, in Gambrius District, is reported to have cleaned up nearly \$400 from four tons of ore. Since then the bar has been cast. It was ascertained that five tons turned out \$525. The owners are now extracting ore for another run.

**SUMMIT.**—The shaft at this mine, at the head of Deer Creek, is down 122 ft., and a 14-ft. cut into the vein does not find the opposite wall. The company which has been sinking with a whim, will immediately put in hoisting works and a pump. The company is now hoisting 80 bbls. of water per day.

##### CUSTER COUNTY.

**LUCKY BOY.**—The Norwalk air-compressor recently ordered for this mine, at Custer City, is on the ground and five air-drills will be in operation as soon as it can be set up.

##### SHOSHONE COUNTY.

**MORNING.**—This mine, at Mullan, continues at work, and the mill is turning out three cars of concentrates a day. Both sides of the mill are in operation. The mine is well developed by four tunnels. No. 1 is in 1,200 ft., No. 2 1,500 ft., No. 3 1,800 ft., No. 4 1,900 ft. These tunnels are connected from No. 4 up. Messrs. Larson & Greenough, who have a lease on the property, have just started a new tunnel.

#### ILLINOIS.

##### MADISON COUNTY.

(From Our Special Correspondent.)

**ILLINOIS HYDRAULIC PRESSED BRICK COMPANY.**—This company, whose headquarters are in St. Louis, Mo., has lately sunk a shaft 400 ft. deep, to reach a bed of shale underlying the plant, at Collinsville. The bed is 18 ft. in depth and is overlaid by a seam of coal 2½ ft. in thickness. The coal is left to afford a roof for the mine, and only the first 10 ft. is mined. The shale is used in the manufacture of buff brick, and this is the only shaft in Illinois, so far as we have been able to learn, sunk for the sole purpose of mining clay. In Indiana the underlying clay of the coal measures have been used for some years in the manufacture of paving brick.

##### MONTGOMERY COUNTY.

**HILLSBORO COAL COMPANY.**—The 150 miners employed by this company have taken their tools from the mine, after a strike of two weeks, in an endeavor to secure a higher price for mining. The men demanded 50c. a ton, net weight, and 40c. gross. The pay has been 40 cents net.

#### INDIANA.

##### RANDOLPH COUNTY.

**STANDARD OIL COMPANY.**—This company, in drilling for oil on the farm of George Welbourn, 7

miles north of Union City, is reported to have struck a 3,000,000-ft. flow of gas at the depth of 435 ft.

#### KANSAS.

##### CHEROKEE COUNTY.

(From Our Special Correspondent.)

**AMOS FREEMAN.**—The steam jig plant will start up this week and will give an output of 40 tons of zinc ore and 40,000 lbs. of lead each week. This plant was shut down on account of the low price of ore, and is now starting up because the price of ore is advancing.

**CAVE SPRING LAND.**—A. T. Lea, who is superintendent of the S. J. Vance lease of 14 acres of the Cave Springs tract, reports that in four shafts they have struck good pay dirt at from 40 ft. to 60 ft. All four shafts are on lots held by Douglas, Farrel & Gardner, formerly interested in mining at Aurora, Mo. Other miners from Aurora have taken lots and are prospecting them. This tract is easily drained with a steam hoister and each prospect has developed a 15-ft. face of ore.

**CROWN POINT COMPANY.**—This company's plant is mining steadily on rich dirt and is producing about 60 tons of high-grade zinc ore each week.

**DANSINGBERG COMPANY.**—The Dansingberg plant started up the first of last week and ran double shifts all this week. They made more than five carloads of zinc ore and 50,000 lbs. of lead from dirt hoisted from only two shafts. They have another shaft which contains very rich dirt.

**LAUD & COMPANY.**—This company opened up a rich body of lead and jack in open ground at 70 ft. The company has been prospecting for over a year and will make the first output of ore this week.

**MINING DEALS.**—James Luke, of Carthage, Mo., has bought a half-interest in the Ihseng lease of 22 acres on the Brinkerhoff and Herrin lands. The price paid was \$2,500. This land has recently shown big prospects of zinc ore at from 45 ft. to 90 ft. in open ground. Mr. Luke has also bought a one-fourth interest in a 12-acre lease in the same locality known as the Whiteside lease, paying for the same \$1,000.

**OLIVER MATHEWS.**—A new 40-H. P. boiler has been added to his mining machinery to run the pumps. He has been making 60 tons to 75 tons of high-grade zinc ore each week from the dirt hoisted from the pump-shaft, and the dirt in the new shaft is equally as rich in zinc ore.

**RUBY MINING COMPANY.**—A big strike was made at 30 ft. on this company's lease on the Bonanza land. Free ore was developed in large quantities. This is the third shaft that has developed good pay dirt.

##### MONTGOMERY COUNTY.

**INDEPENDENCE GAS COMPANY.**—This company struck another gas well on the Greer farm west of Independence last week. This gives an abundant supply of gas for that city.

#### MICHIGAN.

##### COPPER.

**ATLANTIC MINING COMPANY.**—The output reported for September was 258 tons, against 269½ tons in August and 252 tons in September of last year.

**FRANKLIN MINING COMPANY.**—The September output was 151½ tons, as against 151½ tons in August.

**QUINCY MINING COMPANY.**—The production reported for the month of September was 850½ tons mineral, as compared with 851 tons in August and 850 tons in September, 1895.

**WOLVERINE MINING COMPANY.**—The output of this mine for September was 105½ tons, which compares with 107 tons in August and 83½ tons in September of last year.

##### IRON—MENOMINEE RANGE.

**MANSFIELD.**—Water has been turned into the new channel dredged for the Michigamme River, for the purpose of reclaiming this mine, which was flooded several years ago, drowning 27 men. The enterprise has proved even a greater success than the projectors anticipated, for a large body of Bessemer ore has been discovered in the old channel.

#### MINNESOTA.

(From Our Special Correspondent.)

Six of the steel ships of the Minnesota Iron Company have been dismantled for the winter, this being the first time on record that the company has put its fleet in ordinary so early in the year. Only the largest vessels of the company are to remain in service. If the Minnesota Iron Company, with quick dispatch at both ends of the route and with the very best facilities for carrying on business at low cost, is putting its ships in ordinary there is not much use for the most of the lake fleet to remain in commission.

Iron ore shipments out of Lake Superior for the past month have been larger than was expected, being 880,000 gross tons, making for the season to date a total movement from the lake of 6,083,870 tons. Add to this the ore shipped from Lake Michigan and the total shipped from mines to lower lakes amounts to about 8,350,000 tons. A total for the year of about 9,000,000 tons is not out of the way, despite the gloomy predictions made from Cleveland.

Simcoe Chapman, a lumber and land operator of Michigan and Minnesota, has brought suit for \$50,000 against the rich Saginaw land and iron firm of

Wright, Davis & Company. Mr. Chapman claims that it was through his efforts that the Mahoning Ore Company was induced to look over the Mesabi range and as a result the vast deposits mined by that company were opened, on lands belonging to the defendants. He figures that by this the value of these lands was made many times greater than before, and that the returns to the defendants in the way of royalties will be enormous. He thinks \$50,000 none too much for his services in the deals that resulted in getting the defendants and the Mahoning people together.

##### IRON—MESABI RANGE.

(From Our Special Correspondent.)

**CINCINNATI ORE COMPANY.**—This company has resumed work at its Biwabik properties, contrary to expectations, and is employing about 90 men, with a fair prospect of work all winter.

**COMMODORE MINING COMPANY.**—This company has received notice of the sale of a small block of ore, and has put a few additional men at work, making a force of 55, and is sending out about 200 tons of ore daily. The mine will probably be worked all winter.

**GENOA IRON COMPANY.**—This company, a branch of the Minnesota Iron Company, is still employing about 90 men and is getting ready for a heavy output next season. It has now developed one of the very finest properties on the range, and has done it all since the beginning of the present season, sinking shafts, clearing sites for buildings and erecting them, putting in machinery and building a railroad. The mine will be a fine one, and of a high grade.

**HALE MINING COMPANY.**—This company has stopped work for the season, with a total output of about 70,000 tons. Some little work about the mine will be carried on before the opening of the next season.

**NORMAN IRON COMPANY.**—This Minnesota company property has closed for the season, throwing a few men out of employment.

##### IRON—VERMILION RANGE.

(From Our Special Correspondent.)

**MINNESOTA IRON COMPANY.**—This company has added about 100 men to its force in the hard ore mines at Tower, and the indications are that it will give employment to a considerable force all winter.

#### MISSOURI.

##### JASPER COUNTY.

(From Our Special Correspondent.)

**JOPLIN ORE MARKET.**—The output of ore from the mines in the different camps was larger last week than the week before and the sales of ore increased. The surplus of zinc ore in the district is only about 600 tons, which is very light for this season of the year, when it usually is about 1,500 tons. The price paid for zinc ore varied in different camps. Joplin producers get the top prices for their ore. Eight carloads of Joplin zinc ore sold at \$20.50 and considerable for \$20 per ton. At Webb City and Cartersville a few choice lots sold for \$20 per ton, with an average of \$18.50. At Galena, Kan., some ore brought \$19, and at Aurora \$18.50 was the top price. The output of lead ore was about the same as last week, but the sales were larger. The price paid for lead ore was \$14 per 1,000 lbs., with 50c. added for hauling. The following was the turn-in for the week ending October 3d, 1896: Joplin zinc, 1,633,790 lbs.; lead, 211,110 lbs.; value, \$19,283; Webb City zinc, 356,550 lbs.; lead, 39,750 lbs.; value, \$3,854. Cartersville zinc, 897,930 lbs.; lead, 204,930 lbs.; value, \$11,816. Galena, Kan., zinc, 2,840,000 lbs.; lead, 494,000 lbs.; value, \$31,056. Aurora zinc, 495,000 lbs.; lead, 40,000 lbs.; value, \$3,553. Alva, 158,000 lbs.; value, \$1,410. Stott City, zinc, 40,510 lbs.; value, \$405. Oronogo lead, 14,790 lbs.; value, \$184. Zincite zinc, 12,760 lbs.; value, \$115. Totals for the district: Zinc, 6,435,540 lbs.; lead, 1,094,600 lbs.; value, \$71,284.

**BUTTONHOLE MINING COMPANY.**—This company is composed of J. G. Troutman, J. W. Allen, Frank Cowan, Si. Crane, Thos. Kinmonth, Elmer Webster, J. W. McAntire and Sam. McKee. Mr. Cowan, the superintendent, did the prospecting with a steam drill that showed up good zinc ore in three locations, 600 ft. apart (in the shape of a triangle). The company has leased 160 acres of Elmer Webster and 80 acres of Mr. Gray, of St. Louis, Mo. Several holes proved fruitless until the drill was set to work in a natural basin, near the summit of the divide, between Shoal Creek and the head of Short Creek Valley. In the first hole zinc ore was struck at 100 ft., the drill passing through 12 ft. of it, then through 30 ft. of flint and again through 25 ft. of zinc ore. In the second hole zinc ore was struck at 95 ft., and the drill was still in ore when it stopped at 119 ft. In the third hole they struck zinc ore at 104 ft. The lease was laid out in mining lots last Monday, and 81 lots have been registered on and 13 shafts started.

**COLLINS & CHURCH.**—They have leased 40 acres of the Jackson land in Chitwood Hollow that is beginning to look well. A drill showed good ore at from 45 ft. to 75 ft. A shaft is being put down by Campbell, Patton & Company and is down 40 ft. This shaft is just west of the Minnie F. mine, that has been a large producer, and north of Clay Gregory's big strike. Glover, Coulter & Company are sinking another shaft that is down 80 ft. in soap-

stone on a drill hole that found a good face of zinc ore at 115 ft.

**MONTANA.**

**BEAVERHEAD COUNTY.**

**OLD FAITHFUL.**—E. S. Thurston, general manager of this mine, a few miles from Bannock, reports that an important discovery has been made there recently. A ledge of ore of unknown width was opened up which is richer than anything yet discovered there.

**FLATHEAD COUNTY.**

(From an Occasional Correspondent.)

**CHICAGO & MONTANA MINING COMPANY.**—This company has bought the Snowshoe group of mines at Libby, including the Rustler, Snowshoe and Porcupine, and is turning out one car of concentrates a day, which average 55% in lead, 23 oz. in silver and \$3 in gold. The company employs 80 men, and is able to make money even at the low price of lead and silver. This property has been of great assistance to the business men of Libby, and the town, which a year ago was almost dead, is now the scene of much activity.

**LEWIS & CLARKE COUNTY.**

**DIAMOND HILL.**—The second payment of \$100,000 was made to the owners of the Diamond Hill mine last week, and the deeds were delivered transferring the property to the Diamond Hill Gold Mines Company (Limited), of Glasgow, Scotland. Construction work will be commenced at once. The new plant will be run by electricity, and every appliance for cheap mining and milling of the ores of these mines will be added, as well as a sampling works for the purchase of the ores from other mines in the vicinity.

**MISSOULA COUNTY.**

**IRON MOUNTAIN MINING COMPANY.**—The directors of this company met recently at Helena and declared the usual \$5,000 monthly dividend which will be paid October 13th. The directors let a contract to sink the shaft 125 ft. from the sixteenth level and authorized the president of the company to purchase a new compressor, which will be used instead of steam power in sinking. The president was also authorized to buy a new pump if he thinks it is needed.

**NEW JERSEY.**

**MORRIS COUNTY.**

**WHARTON IRON MINE.**—The Morris County Machine and Iron Company at Dover has nearly completed a hoisting engine for this mine, which will be the largest in New Jersey except the big engine at the Sterling mine. The new engine is a double-cylinder, single-drum, second-motion hoist of 450 H. P. The cylinders are 18 in. in diameter, with a stroke of 24 in., and are placed upon engine beds of the box pattern. The engines are placed one on each side of the drum, and are connected by heavy cast-iron tie-pieces at right angles to beds and bolted to them. The pillow blocks of the drum are bolted to extensions on the engine beds, thus virtually making the whole bed of the hoister one continuous piece. The power from the engines is transmitted to the drum by means of a steel clutch and pinion on the crank shaft, working into a cast-iron gear attached to the drum. The gear wheel is 8 ft. in diameter and has a face of 11 in. The drum is of cast iron, cast in one piece, and has a diameter of 7½ ft. and a grooved face of 6 ft. The drum will hold 1,200 ft. of 1¼-in. steel rope. The drum shaft is 9 in. in diameter and 11 ft. long, and the crank shaft 7½ in. in diameter and 12 ft. long. The hoister is equipped with a beam brake and link-reversing gear, and is built to hoist 10,000 lbs. at a speed of 600 ft. per minute. The total weight of the engine complete is 60,000 lbs. A foundation of solid concrete, 12 ft. in depth, is being built for this engine at the mine under the supervision of Andrew Roderer, Jr.

**NEW MEXICO.**

**SIERRA COUNTY.**

**CLIFF MINING AND SMELTING COMPANY.**—This company, with place of business at Chloride, has been organized with a capital of \$2,500,000 paid up non-assessable stock. The officers of the company are: Daniel Braymer, president; Charles F. Smith, vice-president; S. D. Felt, treasurer; Jno. Creighton, secretary; J. St. Clare Mack, manager. The company has purchased the old lixiviation plant, which will be refitted for a smelter. The smelter will be of 100 tons' capacity, with blowing power for four additional stacks. The machinery in detail for the plant has been purchased from the Pueblo Iron Works.

**OREGON.**

**BAKER COUNTY.**

**FLAGSTAFF.**—A double compartment shaft has attained a depth of 300 ft. in this mine, and deep sinking will continue until at least water is reached. For most of the way down the shaft a strong vein of ore can be seen, and also in the crosscuts wherever explorations have been made.

**GRANT COUNTY.**

**ELK CREEK MINING COMPANY.**—The third clean-up for the year was taken to Baker City recently by Horace Sloan, manager of the mines operated by this company. The clean-up amounted to 100 oz., or about \$1,750, the fineness of the gold being \$17.50 to the ounce.

**PENNSYLVANIA.**

**BITUMINOUS COAL.**

**PENNSYLVANIA BITUMINOUS COAL ASSOCIATION.**—This association was formed last spring for the purpose of fixing a uniform price and to prevent cutting of rates. At that time the price was fixed at 90c. gross, and on the strength of the agreement the wages of the miners were raised. Some two months ago it was learned that W. H. Piper & Company, who operate at Sonman, and Col. J. L. Spangler, of the firm of Duncan & Spangler, operating in the vicinity of Hastings, Northern Cambria County, were violating the agreement by taking contracts at a lower rate. At a meeting of the association, held October 2d, W. H. Piper, who was present, was expelled from membership. Colonel Spangler had been notified to be present, but remained away. His resignation was asked for. W. H. Piper was one of the organizers and a director in the association.

**TENNESSEE.**

**JEFFERSON COUNTY.**

**INGLES ZINC COMPANY.**—This company, at New Market, has commenced getting out ore to fill its \$40,000 contract in Europe.

**SCOTT COUNTY.**

Oil has been struck in a well about one mile west of Winfield, and bids fair to be a big producer. It is a rich, black, lubricating oil of fine quality.

**UTAH.**

**JUAB COUNTY.**

**FOUR ACES.**—A new discovery is reported in this property at a depth of 335 ft. from the surface, and is said to consist of 18 in. of ore, showing from 71 oz. to 100 oz. silver and 28% to 50% lead per ton.

**NEW JOHANNESBURG.**—This is the name given to a group of claims lying south of the Yankee Girl. The owners are now putting down a shaft and expect to encounter the ore upon the same level as that at which it appeared in the Yankee Girl. The same parties are developing the Primrose.

**UTAH COUNTY.**

**MARBLE QUARRIES.**—It is reported that Montana and Missouri capitalists are making arrangements to work the marble quarries near Springville in order to determine the value and quality of the deposit.

**WASHINGTON.**

**KIITITAS COUNTY.**

**BLEWITT.**—In 12 days this mill on the Peshastin crushed 532 tons of ore, and 88,000 was cleaned up from the plates, besides a large quantity of concentrates.

**STEVENS COUNTY.**

**CHEWLAH MINING COMPANY.**—At the annual meeting of this company, held September 28th, the following officers were elected: A. B. Adams, president; R. E. Porterfield, vice-president; G. M. Wadhams, secretary; J. Melvin Thomas, treasurer and manager, and the following trustees: A. B. Adams, R. E. Porterfield, T. K. Clark, G. M. Wadhams, J. Melvin Thomas. The company owns seven mineral claims about 1½ miles from the Spokane Falls & Northern Railway. They are known as the Echo, Cobalt, Juno, Ajax, Muldoon, O. K. and I. O. U. All show well-defined contacts. Already over 422 ft. of shaft has been sunk, 400 ft. of tunnel run and 330 ft. of open cuts. The largest amount of development work has been done on the Echo and Juno claims. The vein on the former shows mineral for a width of 80 ft. on the surface. The Juno vein comes to the surface 1 to 2 ft. wide, and shows a width of 4 ft. at a depth of 50 ft. in the lower tunnel. The ore is sulphide of copper, carrying gold and silver.

**I. X. L.**—This group is owned by H. J. Earnest, John Kleidosty and F. B. Goetler. This was formerly known as the Iron property. Under the heavy iron surface, at a depth of 125 ft., a ledge 50 ft. in width, lying between slate and lime, carries both gold and silver. The plans are complete for the sinking of a shaft 400 ft. from the lower tunnel and cross-cuts run from the shaft.

**SILVER MAID.**—Work on this claim is now in full progress. This property is owned by H. J. Earnest and C. S. Eltinge, of Spokane, and the vein of solid ore covers a width of 3 ft., carrying lead and silver. About \$6,000 has been expended on the mine in development work.

**WEST VIRGINIA.**

**KANAWHA COUNTY.**

**MONARCH COAL COMPANY.**—This company, operating in the Kanawha Valley field, and with offices at Charleston, is reported to have secured a contract for furnishing 3,000,000 bu. of coal to Cincinnati parties, associated with Captain Collins, of that place.

**WAYNE COUNTY.**

**VIRGINIA ORE COMPANY.**—This company, backed by Ironton parties, with H. L. Amos as general manager, is preparing to develop a tract of what is said to be extra fine red hematite iron-ore land along the line of the Norfolk & Western railway. A market will be found at Ironton, O., and Ashland, Ky.

**WYOMING.**

**ALBANY COUNTY.**

**RICHMOND.**—A good assay has just been received from some ore from this mine, on Cooper Hill. The

owners of the property are now running a working tunnel into this claim, the old shafts and connecting tunnel not being in a condition for satisfactory work. They have a large amount of ore on the dump.

**CARBON COUNTY.**

**BOSTON GOLD HILL MINING COMPANY.**—It is reported that this company has floated \$2,000,000 worth of bonds in London to build a line of railway from Wolcott, on the Union Pacific, up the Platte Valley, to Saratoga.

**LARAMIE COUNTY.**

**HOSMER GOLD MINING AND MILLING COMPANY.**—This company was incorporated recently with a capital stock of \$2,000,000. The incorporators are H. A. Sims, W. Barlow, J. H. McGee, James Hoffman and W. H. Abbott, all of Cripple Creek, Colo.

**IRON MINES.**—The owners of the iron mines at Hartville have secured satisfactory freight rates from the railroads and will make experimental shipments of ore to Denver and Pueblo. The ore will be hauled by teams from the mines to Badger station, on the Cheyenne & Northern branch of the Denver & Gulf, a distance of 30 miles.

**FOREIGN MINING NEWS.**

**BRAZIL.**

**OURO PRETO GOLD MINING COMPANY.**—The return for August shows that from the Raposos mine 130 tons of ore were worked, yielding 22 oz. gold, 0.17 oz. per ton. From the Passagen mine 3,954 tons of ore produced 1,603 oz. gold, or 0.41 oz. per ton. The total product for the month was 1,625 oz. gold.

**ST. JOHN DEL REY GOLD MINING COMPANY.**—The return for August shows a recovery of 2,824 crude oz. gold, an average of 6.5 oz. per ton; this is a decrease of 749 oz. from July. The gold was equivalent to 2,235 fine oz. or \$46,204 in value.

**BRITISH COLUMBIA.**

**TRAIL CREEK DISTRICT.**

(From Our Special Correspondent.)

**ANNIE.**—Messrs. Coover Bros., who have charge of this fractional property, are pushing development work with much vigor. Besides stripping the ledges a shaft 12 ft. deep has been sunk, a night shift will be added to the present force, and the depth of the shaft increased. The Annie joins the California on the east.

**BIG CHIEF.**—The location of this property is on the west side of O. K. Mountain, about a mile and a half south of the O. K. mine. The ledges on this property are large and well defined, and the gossan is well mineralized. A shaft has been sunk on the highest level 26 ft., and there appears to be a well defined footwall. The original locator of the Big Chief is Mr. H. P. McGarvey, who is the present manager. Mr. J. J. Banfield, of Valcouver, recently purchased an interest in the mine. Three men are employed in development work in the shaft, and a night shift will shortly be put on. Messrs. Coover Bros. are the agents of the Silver Bell in Rossland.

**SILVER BELL MINING COMPANY.**—This company was recently organized under the laws of British Columbia, with a capital stock of \$1,000,000. It comprises the following mineral claims: Nancy Lee, Lone Jack and Silver Bell fractions. These properties are situated on the west slope of the Deer Park Mountain, about ½ mile from the Lily May and about 2 miles from the town of Rossland. The ledges are said to be 20 ft. in width and a considerable body of ore is in sight. The character of this ore is a fine-grained steel galena and lead carbonate, carrying arsenical iron and hematite, with brown oxidized cappings, which are much lighter than those of Red Mountain. In some places galena ore appears at the surface in a solid body, having a width of from 2 ft. to 12 ft., while at other points it is capped with iron oxides. Four assays of the property have been made of gold, silver and lead and the total reaches \$85.26.

So far only preliminary work has been done. This consists of the stripping of veins and numerous cuts, but it is now decided to begin actual development work.

The capital of the Silver Bell Mining Company comprises 1,000,000 shares, the par value of each is \$1. Of these shares 250,000 have been placed in the treasury, to be used for development purposes. The balance of the stock is held by the owners and it is not for sale.

The officers of the company are: G. A. Pounder, president; M. O. Tibbits, secretary-treasurer; James P. Pounder, managing director; Forin & Forin, solicitors; bankers, the Bank of British North America.

**WALLINGFORD.**—This property, which has recently attracted some attention, is situated on Record Mountain. It is the second location on Record Mountain, and is about 2½ miles west of the Jumbo mine. The location was made, it is said, on account of a large body of white arsenical iron capping, which has been traced from 40 to 500 ft. along the surface. A quantity of oxidized copper float has been found, and also the ledge from which this has been derived. There is a tunnel on the Wallingford extending 130 ft., and a shaft has been sunk for a distance of 40 ft. Another shaft about 15 ft. has been sunk on the arsenical iron capping, which is well mineralized. About \$2,000 have been expended in developing work on the copper ledge, in addition to cuts and stripping in other portions





tons to Manitowoc, 14,800 tons to Gladstone, 400 tons to Ontonagon, 100 tons to Alpena, 300 tons to Manistique, 500 tons to Huron, O.; 1,070 tons to Portage, and about 36,500 tons to various ports by vessels loading here, but clearing from Tonawanda light.

**Chicago.** Oct. 7.  
(From Our Special Correspondent.)

**Anthracite.**—There has been no improvement in the anthracite coal trade. There is, of course, a small increase in sales due to the near approach of winter, but the business is behind that of an ordinary year. The decrease of hard coal carrying rates to Missouri River points and the Northwest has not yet materially affected the market. The fact of the matter is that hard coal is entirely too high priced for these abnormal times and the constant threats of further increases in price have little influence. The retail price of hard coal is now from \$6.75 to \$7. This is an advance of almost \$2 over the price of coal at this time last year, and the average buyer was better able to pay \$7 last year than he is to-day. Circular prices are f. o. b. Chicago, grate \$5.60; egg, stove and chestnut \$5.85.

**Bituminous Coal.**—The sales of soft coal for fuel purposes are increasing from week to week, while the demand for steam purposes has increased somewhat during the past week. Prices are firmer, though as yet they have no great strength.

**Coke.**—Sales continue very light.

**Pittsburg.** Oct. 8.  
(From Our Special Correspondent.)

**Coal.**—The promised rise in our rivers arrived on time, causing the shipment of about 4,500,000 bu. coal to Cincinnati and Louisville, principally to Louisville, where it will await a rise in the lower Ohio and then take its departure for the Southern markets. The ports and harbor are run bare of coal; there are and will be plenty of empties to give the miners all the work they want for some time to come. The coal run was one of the most successful ever made; only one barge was lost, the coal—14,000 bu.—will be saved when the river falls. The local demand has been very active, as consumers are and have been laying in their fall and winter supply. Gas is now such a luxury that only those owning a bank can use it. The business of railroad mines has improved during the week, and shipments have increased fully 20%. The majority of mines are now running and miners are able to get in four to five days a week.

**Connellsville Coke.**—The trade manages to keep in the neighborhood of 60,000 tons weekly, which is about a third of the capacity of the region. The production fell off to about 1,500 tons. There are indications that more ovens will soon be fired. The Oliver Coke and Furnace Company is firing its plants at Oliver Nos. 1 and 2; all the ovens of their works have been out of blast for several weeks. The improvement in the iron business is responsible for this move. There are now about 6,000 ovens in operation in the Connellsville District, out of a total of 17,978. Fully 500 ovens have been started, giving employment to 700 men that have been idle since July. In the running order of the 5,990 ovens in blast, 1,730 ovens made six days; 3,190 ovens five days; 1,041 ovens four days, an average of 5.13 days, against 5.10 days the preceding week. The shipment of coke from the region for the week amounted to 3,380 cars, as against 3,180 the week previous, distributed as follows: To Pittsburg and river points, 1,578 cars; to points west of Pittsburg, 1,104 cars; to points east, 698 cars; total, 3,380 cars.

**Shanghai, China.** Aug. 28.  
(Special Report of Wheelock & Co.)

**Coal.**—There is a better feeling in Japan coal since we last wrote and we have to record business in good Moji at 4.35 taels per ton, and Miike, small, upon private terms. Cardiff has improved and a fairly large quantity has changed hands at 12.50 taels; there is still a demand, but stocks are small and present holders prefer to hold for actual consumption. Large sales of Sydney Wollongong have taken place at 7.50 taels per ton and as the deliveries have been good we should soon see things in a healthier condition. August 14th there was an arrival with 1,500 tons, which was placed previous to arrival, but terms are private. We quote: Cardiff, 11.25 taels per ton; American anthracite, 9 taels per ton; Sydney Wollongong, 7.50 taels per ton. Japan coal is quoted at 5.75 taels for Takasima lump; 4 taels for Namazuta lump, and 3.63 taels per ton for other sorts.

**Kerosene Oil.**—There has been a fair business, but at slightly reduced prices. Devoes has been sold at 1.60 taels per case and Russian at 1.55 taels per case, but large quantities have not changed hands at any one time. The *S. D. Carleton*, bound for this port, stranded in the Straits of Sunda; on getting off she proceeded to Hongkong, where she will discharge her whole cargo. The arrivals during the past fortnight have been: August 24th, 111,500 cases; August 25th, 150,000 cases, and on same date 109,000 cases Batoum. Stocks in godown are now 544,000 cases Devoes, 429,000 cases Russian and 14,000 cases Langkat.

Quotations are as follows per case: American Devoes, 1.60 taels; Russian Batoum, 1.55 taels; Russian Batoum, bulk, 1.50 taels; Langkat, 1.52½ taels.

**IRON MARKET REVIEW.**

NEW YORK, Friday Evening, Oct. 9, 1896.

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

Fuel used.	Week ending				From	
	Oct. 11, 1895.	Oct. 9, 1896.	Oct. 11, 1895.	Oct. 9, 1896.	Jan., '95.	Jan., '96.
Anthracite.	56	34,250	26	15,150	879,368	981,910
Coke....	150	172,450	81	94,650	5,823,344	6,014,154
Charcoal...	22	4,830	24	6,750	168,115	231,815
Totals ...	228	211,530	131	116,550	6,870,757	7,227,879

Stocks of pig iron reported unsold on October 1st were about 928,000 tons, a decrease of 36,000 tons as compared with September 1st.

While there is again a little more confident and hopeful feeling, the change in actual business is small, and the markets continue generally dull. The main differences noted are a little more buying of foundry irons and some tendency to buy Bessemer pig for speculation. The makers of that class of iron, however, are generally disposed to ask speculators a price fully up to the market, and to insist on pretty strict terms of payment.

There are reports of another order for 11,000 tons for steel rails to go to Japan. The price is said to be the lowest yet quoted, not far from \$17.50 per ton at mill. It is understood that Alabama furnaces have sold some 3,000 tons of pig iron to go to Japan.

There has been some starting up of mills and also some stopping. The big rolling mills seem to be willing to go to work on a moderate amount of business, probably considering it policy to hold their customers and to run without profit than to let work go.

A conference in Chicago between representatives of the Carnegie Steel Company and the Illinois Steel Company, Mr. Rockefeller also being called in according to one report, has set every one to guessing at the object of this meeting. Those who were present decline to speak, and only say that nothing was said or done about raising the price of billets. The more general impression is that some agreement with the big ore producers of the Mesabi Range is under negotiation. This may be correct—and it may not—but at least it looks probable.

**NOTES OF THE WEEK.**

Recently cards were posted in the Homestead Steel Works, Homestead, Pa., notifying the employees that the present wage scale would expire on December 31st, 1896, and that readjustment of existing rates was desired. Under the agreement existing between the Carnegie Steel Company, Limited, and their employees, which has been in force since the strike four years ago, 90 days notice must be given by either side before a change can be made in existing scale rates. All scales expire on December 31st of each year, and unless notice is given prior to October 1st the scales are in force the year following. The notice is therefore a formal one and does not necessarily imply any general change in wages.

A reduction in certain iron rates has been agreed on by the railroads, and on October 1st the following rates of freight took effect from Pittsburg, and points taking Pittsburg rates, to points named below, on pig and scrap iron, billets and articles taking same rates, in carloads of 12 gross tons or over, to points named below:

	Group 1. Per ton.	Group 2. Per ton.	Group 3. Per ton.
Cairo, Ill	\$3.20	\$3.50	\$3.80
Chicago, Ill	2.20	2.50	2.95
Cincinnati, Ohio	1.70	1.90	2.20
Cleveland, Ohio	1.15	1.15	1.25
Columbus, Ohio	1.50	1.60	1.80
East St. Louis, Ill	2.80	3.10	3.49
Evansville, Ind	2.80	3.10	3.50
Indianapolis, Ind	1.90	2.60	3.00
Louisville, Ky	2.40	2.70	3.25
Oil City, Pa	1.15	1.20	1.30
Rock Island, Ill	2.80	3.10	3.49
Terre Haute, Ind	2.20	2.50	2.95

Rates shown under head of group 1 will apply on pig iron, cinder and scale per gross ton, in carload lots of 12 gross tons and over. Group 2 includes borings (iron or steel), crop ends (iron or steel), old car wheels and axles, old rails, scrap iron, scrap steel and scrap tin, per gross ton, in carloads of 12 gross tons and over. Group 3 includes billets (iron or steel), blooms (iron or steel), ingots (iron or steel), muck or puddle bars, per gross ton, in carloads of 12 gross tons or over; billets, bloom and slabs to be not less than 1½ in. in thickness.

**New York.** Oct. 9.

The local market is an uneasy condition. On the one hand people are beginning to think that the opportunity to put in stocks at current prices is a good one; but on the other they are restrained by doubt as to the future and by the continued difficulty of placing commercial paper. There is a better feeling and the money market is less restricted, but it is not yet in a condition to favor any great extension of business. The amount of work put out on buildings and on street railroads for the season has been so small as to disappoint expectation and to keep down the local shops to a very small business.

**Pig Iron.**—There has been some small buying by local foundries, and an increasing disposition to put in stocks at present prices is indicated by current inquiries. There is a moderate speculative tend-

ency also, but few actual sales. One of Southern iron, low-grade foundry, is reported at a price said to be about \$6.50 at furnace. Prices are unchanged and moderately firm.

We quote for Northern iron: No. 1 foundry, \$12@ \$12.75; No. 2, \$11.25@ \$11.75; gray forge, \$10.50@ \$11. For Southern iron we quote: No. 1 foundry, \$11@ \$11.50; No. 2 foundry, \$10.50@ \$11; No. 1 soft, \$10.50@ \$11; No. 2 soft, \$10@ \$10.50; forge, \$9.75@ \$10.25. Basic pig is offered at \$10.75@ \$11. All prices are for tidewater delivery.

**Cast-Iron Pipe.**—No home orders are quoted, but negotiations are reported on for a good-sized lot of pipe for export. There is talk of one or two large contracts for spring delivery, but nothing definite.

**Spiegeleisen and Ferro-Manganese.**—No business of consequence is reported. Ferro-manganese is quoted at \$46.50@ \$47 for imported 80%, New York.

**Steel Billets and Rods.**—The pool prices are \$21.75, New York, for Bessemer billets, and \$23.75, New York, for open-hearth billets. Very little business is noted. Rods are \$28@ \$29, with few sales.

**Merchant Iron and Steel.**—The market is quiet. While no change in prices is noted, two or three large orders would stir up a competition that would certainly result in cutting. For bars we quote: Common, 1"10@1"15c.; refined, 1"20@1"45c.; soft steel bars, 1"20@1"30c. Other quotations are: Steel hoops, 1"50@1"60c.; steel axles, 1"60@1"75c.; links and pins, 1"60@1"70c.; tire steel, 1"80@1"90c.; spring steel, 1"95@2"15c. All prices are for delivery on dock, New York.

**Plates.**—Sales are slow, but there is no change in prices. We quote for universal mill plates, 1"30@1"40c. For steel plates we quote: Tank, 1"35@1"45c.; boiler shell, 1"45@1"55c.; good flange, 1"60@1"75c.; firebox, 1"90@2"40c. Charcoal iron plates are quoted 2"25c. for shell, 2"75c. for flange, and 3"25c. for firebox. Rivets are 2"15@2"25c. for steel and 3"3"25c. for iron.

**Structural Iron and Steel.**—New orders are few, and little interest is felt in the market. There is no change in prices. We quote for angles, 1"35@1"40c.; channels, 1"70@1"75c.; tees, 1"65@1"70c.; beams, 1"70@1"75c. for large orders, and 1"80@1"90c. for small lots.

**Wrought-Iron Pipe.**—Small orders make up the business. Discounts are as follows for plain pipe, out of store: 1½ in. and over, 67, 10, 10, 10 and 5%; 1¼ in. and under, 57, 10, 10, 10 and 5%. Galvanized pipe, 1½ in. and over, 55, 10, 10, 10 and 5%; 1¼ in. and under, 52, 10, 10, 10 and 5%. Boiler tubes, 1 in. to 2¼ in., 70, 10 and 5%; 2½ in. up, 70 and 5%. Cold-drawn seamless steel tubes, 60%.

**Nails.**—The pool price continues \$2.55 per keg f. o. b. Pittsburg for steel wire nails, and \$2.30 per keg f. o. b. Pittsburg for cut nails. Business is very light and there is a great deal of talk over the situation. The latest report is that the representatives of the pool have persuaded the Chicago jobbers to withdraw their cut prices, but this needs confirmation.

**Steel Rails and Rail Fastenings.**—The combination price is still \$23.75 per ton at tidewater or \$28 at mill, for heavy sections. Girder rails are \$29@ \$31, tidewater. No business is reported here, and no more is expected this season.

Little is doing in rail fastenings. Angle-bars are 1"15@1"25c. and spikes 1"60@1.65c., tidewater delivery. Bolts are 1"85@1"95c. for square nuts, and 1"95@2"05c. for hexagon nuts.

**Old Rails.**—Old iron rails are quoted \$12.50@ \$13.50, New York. Old steel rails are quoted \$10@ \$11.50, with a sale reported of several small lots. Old steel rails fit to relay, standard sections, can be had at \$20@ \$22, New York harbor, according to conditions. A small sale is, however, reported of 68-lb. rails, Sound port, said to be for South America, at \$19 f. o. b.

**Scrap Iron.**—Demand is moderate, but buyers are found for good lots. Prices depend on size or nature of lots. We continue to quote \$10@ \$11.50 for good machinery; \$8.50@ \$9.50 for ordinary cast scrap; \$6@ \$7.50 for stove-plate and mixed.

**Buffalo.** Oct. 7.

(Special Report of Rogers, Brown & Co.) There is a large increase in the volume of business as compared with a few weeks ago and this is mainly made up by transactions with the larger consumers, who are stocking up at what they consider, and what undoubtedly are, bargain prices. A large share of the business is brought about by the inducements of immediate delivery and cash payment. Except for the advances heretofore noticed in Southern iron, there have been no changes in price, figures on Northern makes ruling at the low level of a month ago. Confidence in the future is growing and as that sentiment spreads, business increases. We quote below the prices f. o. b. Buffalo on the cash basis: No. 1 strong foundry coke iron, Lake Superior ore, \$12.25; No. 2 strong foundry coke iron, Lake Superior ore, \$11.75; Ohio strong softener No. 1, \$12.25; Ohio strong softener No. 2, \$11.75; Jackson County silvery No. 1, \$15.25; Southern soft No. 1, \$11.40; Southern soft No. 2, \$11.40; Lake Superior charcoal, \$14@ \$14.50.

**Chicago.** Oct. 7.

(From Our Special Correspondent.) There has been considerable buying in a number of lines. The sales, though not of any great size, are in the aggregate quite considerable and show that there is undoubtedly more confidence. The buying of pig iron continues of large proportions. Structural steel is in better demand for building purposes,

Billets are inactive and in consequence the bill mill of the Illinois Steel Company, at Joliet, will close down for an indefinite period beginning with Thursday night.

Pig Iron.—Pig iron sales have aggregated fully 10,000 tons during the week. Prices are very firm and there is some talk of an advance in the Northern material. As a rule, dealers do not care to book business beyond the present year. Southern pig iron advanced 25 to 50c. per ton, only to fall back again because of a reduction in freight rates. Inquiry is quite brisk. We quote: Lake Superior charcoal, \$13.70@14; local coke foundry No. 1, \$11.25@11.75; No. 2, \$10.75@11.25; No. 3, \$10.25@10.75; local Scotch foundry No. 1, \$11.25@11.75; No. 2, \$10.75@11.25; Southern coke No. 1, \$11.10@11.35; No. 2, \$10.85@11.10; Southern No. 1, soft, \$10.85@11.10; No. 2, soft, \$10.60@10.85; Southern silveries No. 1, \$11.35@11.85; No. 2, \$11.10@11.35; Jackson County silveries, \$14@16; Ohio strong softeners, \$14@14.25; Alabama car-wheel, \$16.25@16.75; malleable Bessemer, \$12.25@12.50.

Bar Iron.—Small lots have been in good demand but few sales of any large proportions are observed. Bar iron prices are, common 1.30@1.35c.; guaranteed, 1.35@1.40c.

Steel Rails.—Orders are coming in freely, but they are small. Steel rails are quoted \$29.

Billets and Rods.—Both billets and rods are in poor demand. Billets are still quoted \$21.25, and rods \$27.50.

Structural Material.—Contracts for steel for large buildings are hanging fire. Prevailing business has increased somewhat, the bridge business still taking most of the output. Quotations are as follows: Beams and channels, 1.70@1.75c.; angles, 1.30@1.35c.; plates, 1.35@1.40c.; tees, 1.50@1.55c.

Old Rails and Wheels.—There is no better demand, and prices are weak. Old iron rails are quoted \$11@12, and old wheels, \$12.

Scrap.—Demand is limited to buying in very small lots, and prices are lower than usual. Quotations are: Railroad forge, \$8.50@9; iron axles, \$11.25@11.50; cast borings, \$2.50@2.75; wrought turnings, \$3.25; axle turnings, \$5.25.

Cleveland. Oct. 7.

(From Our Special Correspondent.)

Iron Ores.—The iron-ore dealers to-day report a number of inquiries made during the past week, indicating a resumption of business in the near future. Many of the inquiries were made by speculators. It was said, thus showing a better feeling in the trade. Several small sales of Bessemer and non-Bessemer were reported, and it was thought that during the next week some large purchases would be made. Notwithstanding the number of seekers for information regarding prices of ores, the quotations remain practically the same, as follows: Standard hard specular, Bessemer quality, \$4.50@5; standard hematites, Bessemer quality, \$4@4.25; standard hard hematites, non-Bessemer quality, \$3@3.50; standard soft hematites, non-Bessemer quality, \$2.40@3.

There is absolutely no change in the lake-freight situation this week, so far as it applies to ores.

Pig Iron.—Speculators have purchased some pig iron during the past week, and the market is in an easier condition in consequence. Stock piles in furnace yards are not large and they will not be increased in size, it is said, until there is an assurance of better prices than can be obtained at present. Following are the quotations: Lake Superior charcoal, \$13.50; Bessemer pig, \$10.75@11.2; No. 1 foundry, 12.25; No. 2 foundry, \$11.75; No. 1 Ohio Scotch, 12.25; No. 2 Ohio Scotch, \$11.75; Mahoning and Shenango Valley neutral mill iron, \$10; Mahoning and Shenango Valley red short mills, \$10.25.

Philadelphia. Oct. 9.

(From Our Special Correspondent.)

Pig Iron.—The chief thing buyers of pig iron are keeping in view is the possibility of a reaction in the market in consequence of the decline in production. There are those who fear an advance of a speculative character after the winter demand sets in. Another thing is noticed; though there is considerable iron in hand, there is less pressure to sell, and some parties here have refused to accept orders or optional delivery inside of four months at present prices. These are about the points of the market, cut short. No. 1 Foundry is, as usual, \$12.50@12.75; No. 2, \$11.25@12; forge, \$10.25@11; low phosphorus, \$15; Bessemer, \$13.

Steel Billets.—There is no news, but a good deal of talk. Prices are \$21.50.

Bars.—Our mill people have no news, and their local representatives do not complain much over the necessary wait. They all say there must be more business next month. Some little demand is maintained for steel bars. Stocks in stores have been further added to.

Skelp.—The current requirements are very light. Business prospects are good if projected enterprises are prosecuted, but nothing definite can be ascertained on this point.

Sheets.—There is little improvement for common sheets and certain weights of galvanized for immediate delivery. Manufacturers do not exhibit

any desire to book late delivery orders. Prices are weak, but it is said that the bottom of the market has been reached.

Pipes and Tubes.—No new work has come up this week. Manufacturers are in a yielding frame of mind as to prices for quick delivery.

Merchant Steel.—Some of the shop and factory people, who use a good deal of steel, have been trying to arrange for some steel for the next two or three months and will probably do so. One or two large buyers are in the market, but they cannot get terms to suit. Manufacturers indulge in big expectations.

Plate and Tank.—An honest report necessitates a reiteration of former opinions and statements. If all the business half promised for next month and December comes there will be something bordering on a rush for stuff. Everybody is in a hopeful mood and the outlook from that standpoint is rather encouraging. Tank plates, 1.30; Universals 1.40; shell, 1.45; flange, 1.60; firebox, 1.80 and up.

Structural Material.—It is impossible to catch any new points. The condition at mills is practically the same from week to week. On early deliveries favorable terms can be had. Angles are 1.30.

Steel Rails.—No new business to report, but there are two or three inquiries for Eastern delivery for small lots.

Old Rails.—It looks probable that there will be some large sales of old rails late in the season, one or two by way of trade.

Scrap.—Axles are scarce at \$16. Heavy steel scrap brings \$11 when it sells. Choice railroad is scarce at \$12@13. Odd lots of stuff are being hunted up and have no quotable prices. There will probably be a liberal movement of scrap next month.

Pittsburg. Oct. 8.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business during the week showed up fairly well in volume and there has been a steady accession of confidence. Moderately increased activity and a decidedly better feeling has characterized the iron trade. Bessemer pig iron has advanced 25c. to 50c. per ton compared with prices a short time ago, and producers views are generally higher for deliveries extending into December and January. The market is both firm and steady. Reports from the West are satisfactory, with a steadily increasing demand.

There is trouble in the nail pool. Chicago hardware jobbers have declared war. The Wells & Nellingar Company, of Chicago, has served notice on John H. Park, treasurer of the wire and cut-nail pool, that the firm will not pay the price demanded by the pool, and will start a dozen machines to manufacture their own product. The house has been a buyer of 500 kegs a day. The Chicago buyers allege that Iowa and Minnesota buyers can purchase nails for \$2.25, while they are charged \$2.80 for the same.

The sales of foundry irons last week were the largest for some time. The volume of transactions in muck bar shows an increase without any change in values.

Table with columns: COKE, SMELTED, LAKE AND NATIVE ORE; BLOOMS, BILLETS AND SLABS AT MILL; SKELP IRON; SKELP STEEL; MUCK BAR; BLOOMS, BILLETS AND BAR ENDS; SHEET BARS; STEEL WIRE RODS; SCRAP MATERIAL.

METAL MARKET.

NEW YORK, Friday Evening, October 9, 1896. Gold and Silver.

Prices of Silver per Ounce Troy.

Table with columns: October, St. Ex., London, N. Y. Cta., Value of sil. in \$., and similar columns for another date.

Special orders having been filled, and the Indian Bazaars finding themselves overstocked, buying has been limited, and the price has receded to 29 1/2. At this price there were no sellers to-day.

The United States Assay Office in New York reports the total receipts of silver at 100,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, August, 1896, and years from January 1st, 1896 and 1895:

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

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

Gold and Silver Exports and Imports, New York For the week ending October 9th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

Table with columns: Week, Gold, Exports, Imports, Silver, Exports, Imports, Total Excess, Exp. or Imp.

The gold exported for the week went to the West Indies; of the silver \$1,040 went to the West Indies, and the remainder to London. The gold and silver imported came chiefly from Europe.

Average Monthly Prices of Silver

in New York and London, per ounce Troy, from January 1st, 1896, and for the years 1895 and 1894.

Table with columns: Month, 1896, 1895, 1894, and sub-columns for London and New York prices.

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

FINANCIAL NOTES OF THE WEEK.

There is very little change in the general situation. The continued imports of gold and the greater ease of money have combined to produce an improved feeling, though the doubt as to the future and the disposition to wait have not yet been overcome. People generally feel and express more confidence, but when it comes to action, the majority are still inclined to be conservative.

The rise in sterling exchange last week led to some anticipations that the gold imports were at an end. This week, however, exchange has fallen again below the profitable importing point, and more engagements of gold in London and Paris are



Table with columns: Baltimore, Week, Oct. 8, Year, 1896. Sub-columns: Exp., Imp., Exp., Imp. Lists various commodities like Bismuth metal, Chrome ore, Copper, etc.

\*\*From our special correspondent.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Oct. 9.

Heavy Chemicals.—A canvass of the trade this week shows it to be unchanged materially. Business in heavy chemicals consists principally of deliveries on old contracts.

There have been some moderately large contracts placed for soda ash during the week, but it is not expected that many more will be given out until later in the season.

Acids.—The trade in general continues as good as last reported. The cotton and like mills in the New England States are working quite satisfactorily; hence there is a much better outlook for the acid manufacturer than was anticipated a few months ago.

Brimstone.—Very little that is definite is heard on this side of the Atlantic concerning the Societa Anglo-Siciliana, the Italian sulphur trust that intends to rule the market for brimstone.

Fertilizing Chemicals.—There has been a better inquiry for the leading ammoniates this week from Southern sources, and some good round sales have taken place, close to the prices quoted.

Muriate of potash: prices are 1.75c. at New York and Boston; 1.79c. at Philadelphia, Baltimore and Norfolk.

and Boston; 1.79c. at Philadelphia, Baltimore and Norfolk, and 1.81c. at New Orleans for 80@85% (basis of 80%), in lots of 50 tons and upward.

Nitrate of Soda.—At the close this week we find that the market is easier on spot and sales slow. We quote 1.75c. for spot, according to quantity, and 1.77c. @ 1.82c. to arrive.

NOTES OF THE WEEK.

The plant of the Southern Fertilizer Company, formerly Comer, Hull & Company, of Savannah, Ga., was partly demolished by the recent cyclone which swept that part of the country.

Charleston, S. C.

(From Our Special Correspondent.)

The fertilizer trade continues very much depressed; purchases and sales are very light. The financial condition of the country causes general distrust in all branches of trade, and is likely to continue so until the question is settled.

Shipments of fertilizers from Charleston, S. C., September, 1894 to April, 1895, and September, 1895 to April, 1896, both inclusive, were, in tons:

Table with columns: Month, 1894, 1895, 1896. Lists monthly shipment data for fertilizers.

Totals..... 21,375 159,882 235,778

Liverpool.

Sept. 29.

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

The chemical market is still inanimate and buyers are indifferent.

Soda ash is inactive, and nearest range for tierces, according to market, is about as follows: Leblanc ash, 48%, £4 @ £1 5s.; 58%, £4 5s. @ £4 10s. per ton, net cash; ammonia ash, 48%, £3 @ £3 10s.; 58%, £3 5s. @ £3 15s. per ton, net cash; bags, 5s. per ton under price for tierces.

Soda crystals are rather easier, at £2 5s. @ £2 7s. 6d. per ton, less 5% for barrels, and 7s. less for bags.

Caustic soda is difficult to move. We quote nearest spot value, as to market, about as follows: 60%, £6 5s. @ £6 7s. 6d.; 70%, £7 5s. @ £7 7s. 6d.; 74%, £8 2s. 6d. @ £8 5s.; 76%, £8 15s. @ £9 per ton, net cash.

Bleaching powder is in limited demand, but hardwood is still quoted at from £6 12s. 6d. @ £7 per ton, net cash, as to destination.

Chlorate of potash is quite idle; 4 1/2 d. per lb. is the nominal quotation, but there is nothing doing to test the market.

Bicarb. soda is quite steady at £6 15s. per ton, less 2 1/2% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is dull on spot, at about £7 15s. @ £8 per ton, less 2 1/2% for good gray, 2 1/2% @ 2 1/2% in double bags f. o. b. here, as to quality.

Nitrate of soda is in retail request at £8 2s. 6d. @ £8 5s. per ton, less 2 1/2% for double bags f. o. b. here, according to quality.

Carb. ammonia, lump, 3d. per lb.; powdered, 3 1/2 d. per lb., net cash.

MINING STOCKS.

Complete quotations will be found on pages 360 and 361 of mining stocks listed and dealt in at:

Table listing mining stock locations: New York, Colorado Springs, Paris, France, Boston, Duluth, Minn., Mexico, Philadelphia, Helena, Mont., Shanghai, China, Baltimore, Salt Lake, Utah, Valparaiso, Chile, Pittsburgh, San Francisco, London, England, Cleveland, page 37, Denver, Colo.

NEW YORK, Friday Evening, Oct. 9.

The local mining stock market shows little change as regards the disposition of the public to invest in these shares this week. However, speculators themselves have paid some attention to the market, and the prices of the majority of the stocks quoted in our table have been better than they were last week.

More "inside" activity was manifest in the Comstocks, and prices have been a little higher all round. A sale of a \$2,000 Comstock bond was made at 7%.

The Colorado stocks shared in what little business has been done during the week, and we note a few of the "quiet" Cripple Creek stocks have again made their appearance on the board.

In the California stocks a rather quiet week has been experienced. Syndicate was again traded in,

and sales are noted of Quicksilver. Brunswick Consolidated, which sold for 25c. on Saturday of last week, broke in price this week, as low as 19c. being bid. It is rumored on the exchange that a certain quantity of this stock was unloaded on the market to be sold at any realizable price; insiders apparently not caring to support it, the bid of 19c. whereas the stock was selling as high as 25c. a few weeks ago.

Boston.

Oct. 8.

(From Our Special Correspondent.)

The market this week has been fairly active in copper stocks, but prices have materially declined, closing at or very near to the lowest for the week. Boston & Montana sold early in the week at \$89 1/2, and at one time later touched \$89 1/4; a reaction followed, causing a drop of \$5 to \$84 1/4 to-day, with the closing sale at \$85 1/4.

Kearsarge, which last week sold up to \$14, declined to \$9 1/4, with a slight rally to-day to \$10 1/2. Operations at the mines have been discontinued for the present, which is said to be the cause of the break. The dividend-payers were fairly steady except Montana. Quincy sold at \$112 and later at \$110, closing at \$111.

The gold stocks were heavy. Pioneer advanced from \$4 1/2 to \$6 1/2 on good news from the mine, but later was weak and declined to \$5 1/2, closing at \$5 1/2. Santa Ysabel sold at \$10 for 10 shares only. Merced declined \$ 1/2 to \$8, and Gold Coins was steady at \$2 1/2.

3 p. m.—The market closed with a slightly improved feeling, and prices were a shade higher for the speculative numbers.

Cleveland.

Oct. 7.

(From Our Special Correspondent.)

The closing down of several of the iron mines and threatened labor troubles in one or two others had an enervating effect on the stock market. As a result there were no sales and bids were withdrawn for several of the stocks posted for sale. The quotations follow:

Table with columns: Name of Company, Par val., Bid., Ask. Lists various mining companies like Aurora, Biwabik, Champion Iron Company, etc.

Salt Lake City.

Oct. 3.

(Special Report of James A. Pollock.)

While there was no special change in the local mining stock market during the week just closed, a slight improvement in the general feeling was noticeable and the impression exists that the low prices that have prevailed for some time past will soon be replaced by material advances.



STOCK QUOTATIONS.

BOSTON, MASS.\*

Table with columns: NAME OF COMPANY, Location, Par val, Oct. 2, Oct. 3, Oct. 5, Oct. 6, Oct. 7, Oct. 8, Sales. Lists various companies like Allouez, Arnold, Atlantic, etc.

\* Official quotations Boston Stock Exchange. Total sales, 33,991.

INDUSTRIAL COAL AND COAL RAILROAD.\*

Table with columns: NAME OF COMPANY, Par value, Oct. 3, Oct. 5, Oct. 6, Oct. 7, Oct. 8, Oct. 9, Sales. Lists companies like Balt. & Ohio, Ches. & Ohio, etc.

\* Official quotations N. Y. Stock Exchange. Total shares sold, 151,099.

NEW YORK.\*

Table with columns: NAME OF COMPANY, Location, Par val, Oct. 3, Oct. 5, Oct. 6, Oct. 7, Oct. 8, Oct. 9, Sales. Lists companies like Adams, Ajax, Alamo, etc.

\* Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. Total shares sold, 14,290.

COLORADO SPRINGS, COLO.†

Table with columns: NAME OF COMPANY, Par val, Sept. 28, Sept. 29, Sept. 31, Oct. 1, Oct. 2, Oct. 3, Sales.† Sales.\*. Lists companies like Ajax, Alamo, Am'rican, etc.

† Official quotations and sales Colo. Springs Mg. Stock Assoc. \* Board of Trade Exchange.

SAN FRANCISCO, CAL.\*

Table with columns: NAME OF COMPANY, Location, Par. value, Oct. 2, Oct. 3, Oct. 5, Oct. 6, Oct. 7, Oct. 8. Lists companies like Alta, Becher, Best & Belcher, etc.

\* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.\* Week ending Oct. 8.

Table with columns: NAME OF COMPANY, Location, Par value, Bid, Ask, NAME OF COMPANY, Location, Par value, Bid, Ask. Lists companies like Balt. M. & S. N. C., Con. Hill, etc.

\* Official quotations Baltimore Stock Exchange.

BRITISH COLUMBIA.\* Week ending Oct. 3.

Table with columns: NAME, Selling price, NAME, Selling price, NAME, Selling price. Lists companies like Bonny Creek, G. Hester District, etc.

Par val.: Hall Mines, Jumbo and Le Roi, \$5; Slocan Star, .50; other stocks, \$1.

LONDON.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations (Buyers, Sellers), and various company names like Nth American, Alaska, De Lamar, etc.

\* Dividend pending. † Reconstruction or increase of capital pending.

PARIS.

Week ending Sept. 25.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Div. last year, Prices (Op'n'g., Closing), and various company names like Acieries de Creusot, Firminy, etc.

MEXICO.

Week ending Sept. 24.

Table with columns: NAME OF COMPANY, State, No. of shares, Last dividend, Last assessment, Prices (Opening, Closing), and various company names like Amistad y Concordia, Artur y Anexas, etc.

NOTE: In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

VALPARAISO, CHILE.\*

Aug. 13.

Table with columns: NAME OF COMPANY, Capital, Share value, Last Dividend, Prices (Bid, Asked, Last sale), and various company names like Arturo Prat, Caracoles, etc.

\* Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

SHANGHAI, CHINA.\*

Aug. 28.

Table with columns: NAME OF COMPANY, Country, No. of shares, Par, Paid up, Last dividend, Price, and various company names like Jelebu M. & Trad., etc.

\* Special Report of J. F. Bisset & Co. The prices quoted are in Shanghai taels.

DENVER, COLO.\*

Table with columns: NAME OF COMPANY, Par val, Sept. 28, Sept. 29, Sept. 30, Oct. 1, Oct. 2, Oct. 3, Sales, and various company names like L'd Mines, Anaconda, etc.

\* Official quotations Colo. Mt. St'k Exch. Sales, listed, 5,177,620; unlisted, 893,100; total, 6,067,700

SALT LAKE CITY, UTAH.\*

Week ending Oct. 3.

Table with columns: STOCKS, Par value, Bids, Asked, Actual selling price, and various company names like Alliance, Annie, etc.

\* Special Report of James A. Pollock. † All the companies are located in Utah.

PHILADELPHIA PA.\*

Table with columns: NAME OF COMPANY, Location, Par value, Bids, Asked, Shares sold, Price, and various company names like A. C. Leno, etc.

\* Official quotations Phila. Stock Exchange. † Ex-dividend. Total sales, 5,538.

HELENA, MONT.\*

Week ending Sept. 19.

Table with columns: NAME OF COMPANY, Location, Company's office, Par value, Bids, Asked, Shares sold, Price, and various company names like Am. Dev. & M. Co., etc.

\* Special Report of Samuel K. Davis. Total shares sold, 28,470.

PITTSBURG, PA.\*

Week ending Oct. 5.

Table with columns: NAME OF COMPANY, Location, Par val, Bids, Ask, Selling price, and various company names like Nat. Gas, etc.

\* Official quotations Pittsburg Stock Exchange.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns: Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last), Dividends (Total Paid, Date and Amount of Last), Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last).

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. \* Non-assessable. † The Deadwood previously paid \$375,000 in eleven dividends and the Terra \$75,000. ‡ Previous to the consolidation in August, 1884, the California had paid \$31,330,000 in dividends and the Cons. Virginia \$42,390,000. § Dividends paid since consolidation. NOTE.—Corrections to this table are made monthly. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.



CLASSIFIED LIST OF ADVERTISERS.

**Air Compressors and Rock Drills.**  
 American Diamond Rock Drill Co.  
 B. C. Mfg. Co.  
 Burlington Rock Drill Co.  
 Clayton Air Compressor Works.  
 Fraser & Chalmers.  
 Ingersoll-Sergeant Drill Co.  
 (See Diamond Drills.)

**Air Hoists.**  
 Waiting Foundry Equipment Co.

**Amalgamators.**  
 Bucyrus Steam Shovel & Dredge Co.  
 Fraser & Chalmers.

**Amalgam Plates.**  
 Western Plating and Mfg. Co.

**Anti-Friction Metals.**  
 Besley, Chas. H., & Co.  
 Chester Steel Cast. Co.

**Architects and Builders.**  
 Berlin Iron Bridge Co.  
 Pittsburgh Bridge Co.  
 Pollock, Wm. B., & Co.

**Assays and Chemists' Supplies.**  
 Assay, Wm. Baker & Adamson.  
 Baker & Co.  
 Becker, Christian.  
 Bullock & Crenshaw.  
 Denver Fire Clay Co.  
 Elmer & Amend.  
 Henry Bell Chem. Co.  
 Neiden Judson Drug Co.  
 Penn. Salt Mfg. Co.  
 Penn. Salt Ref. Wks.  
 Roeseler & Haaslach.  
 Chemical Co.  
 Sargent, E. H., & Co.  
 Solvay Process Co.  
 Stand'd Fire Brick Co.  
 Taylor, John, & Co.  
 Troemner, Henry.  
 Western Chemical Co.

**Attorneys, Corporation.**  
 Endicott & Hamilton.

**Automatic Boiler Feeds.**  
 Penberthy Injector Co.

**Babbitt's Metal.**  
 Besley, Chas. H., & Co.

**Bankers and Broker.**  
 Arkel, E., & Co.  
 Bartlett & Co.  
 Sonbright, W. P., & Co.  
 Breitung, E. N.  
 Crooks, E. E.  
 Dorsey Investment Co.  
 Grant, E. R.  
 Handy & Hartman.  
 Hendrickson, W. J.  
 Heron Bros.  
 Kinney, M.  
 Lelpheimer, N.  
 Mayer, Andrew.  
 Miller, J. W., & Co.  
 Morath Investment Co.  
 Northwest Mfg. & Investment Co.

**Belting.**  
 Hendrie & Bolthoff Mfg. Co.  
 Jeffrey Mfg. Co.  
 New York Belting & Packing Co., Ltd.

**Belt Lacing.**  
 Bristol Co.

**Blasting Caps.**  
 Metallic Cap Mfg. Co.  
 Rhenish Westphalian Explosive Co.  
 Schroeder, Fr.

**Blasting Batteries, Caps and Fuse.**  
 Climax Fuse Co.  
 Lau, J. H., & Co.  
 Macbeth, James, & Co.

**Blowers, Pressure.**  
 Connorsville Blower Co.

**Boilers.**  
 Denver Eng. Wks. Co.  
 Fraser & Chalmers.  
 Philadelphia Eng. Wks., Ltd.  
 (See Machinery.)

**Brattice Cloth.**  
 Besley, Chas. H., & Co.

**Brick Machinery.**  
 Fresse, E. M., & Co.

**Bridges.**  
 Berlin Iron Bridge Co.  
 Shiffler Bridge Co.  
 (See Machinery.)

**Car Wheels.**  
 Waiting Foundry Equipment Co.

**Carburens.**  
 New York Diamond Drill Co.  
 Lexow, Theodor.

**Chain and Link Belting (See Belting.)**

**Chemicals.**  
 Baker & Adamson.  
 Bullock & Crenshaw.  
 Elmer & Amend.  
 Henry Bell Chem. Co.  
 Roeseler & Haaslach.  
 Chemical Co.  
 Solvay Process Co.  
 Western Chemical Co.

**Chemists.**  
 Smouds & Wainwright.

**Chilled Castings.**  
 Waiting Foundry Equipment Co.

**Coal.**  
 Maryland Coal Co.  
 Potts, F. A., & Co.  
 Stickney, Conyngham & Co.  
 Ward & Olyphant.

**Coal Cutters (See Machinery.)**  
 Ingersoll-Sergeant Drill Co.  
 Jeffrey Mfg. Co.  
 Leyner, J. Geo.  
 Link Belt Machinery Co.

**Coal Washing Machinery.**  
 Cuninghame & Co.  
 Jeffrey Mfg. Co.

**Compressors.**  
 Clayton Air Compressor Works.  
 Laddlaw-Dunn-Gordon Co.  
 Norwalk Iron Works Co.  
 Rand Drill Co.

**Concentrators, Crushers, Pulverizers, Separators, Etc.**  
 Allis, Edw. P., & Co.  
 Blake, Theo. A.  
 Bradley Pulverizer Co.  
 Colorado Iron Works.  
 Denver Eng. Works Co.  
 Fraser & Chalmers.  
 Free Banner Concentrator.  
 Hendrie & Bolthoff Mfg. Co.  
 Krupp, F.  
 Link Belt Machinery Co.  
 McCully, R.  
 Stedman Foundry & Mach. Co.  
 Walburn-Swenson Co.  
 (See Machinery.)

**Contractors (See Machinery.)**  
 Robins Conveying Belt Co.

**Copper Dealers and Producers.**  
 American Metal Co.  
 Arizona Copper Co.  
 Atlantic Mining Co.  
 Balbach S. & Ref. Co.  
 Baltimore Cop. Wks.  
 Bath, H., & Son.  
 Bridgeport Copper Co.  
 Canadian Copper Co.  
 Copper Queen Mfg. Co.  
 Detroit Cop'r Mfg. Co.  
 Elliott's Metal Co., Ltd.  
 James & Shakspeare.  
 Lambert's Wharf. Co.  
 Lewishorn Bros.  
 Orford Copper Co.  
 Pass, C., & Son, Ltd.  
 Penn. & Salt Co.  
 Phelps, Dodge & Co.  
 Vivian, Younger & Bond.

**Corrugated Iron.**  
 Berlin Iron Bridge Co.  
 Cincinnati Roofing Co.  
 Sykes Steel Corrugating Co.

**Cranes.**  
 Whiting Foundry Equipment Co.

**Crucibles, Graphite, Etc.**  
 Denver Fire Clay Co.  
 Dixon, Jos. Crucible Co.  
 Standard Fire Brick Co.

**Cyanide.**  
 Roeseler & Haaslach Chemical Co.

**Cyanide Potash.**  
 Gas Light & Coke Co.  
 Roeseler & Haaslach Chem. Co.  
 Schoelkopf, Hartford & MacLagan.

**Diamonds.**  
 Lexow, Theodor.  
 New York Diamond Drill Co.

**Diamond Drills.**  
 Bullock Mfg. Co., M.C.  
 Lexow, Theodor.  
 New York Diamond Drill Co.  
 Sullivan Machinery Co.

**Diesel Air Compressors and Rock Drills.)**  
 Draughtsmen.  
 Young, Wm. R.

**Drawing Materials.**  
 Aloe, A. S. Co.  
 Besley, Chas. H., & Co.  
 Buff & Berger.  
 Gurley, W. & L. E.  
 Heer, Peter.  
 Keuffel & Esser Co.  
 Lalle, J. S. J.  
 Lietz Co.  
 Mann & Co.  
 Saegmuller, G. N.  
 Stieren, W. E.

**Dredges.**  
 Bucyrus Steam Shovel & Dredge Co.  
 Marion Steam Shovel Co.

**Dryers.**  
 Brown, Horace F.  
 Cummer, F. D., & Son Co.

**Dump Cars.**  
 Denver Eng. Works Co.  
 Hendrie & Bolthoff Mfg. Co.

**Educational Institutions.**  
 Arizona School of Mines.  
 Columbia University.  
 Columbian University.  
 Chicago School of Assaying.  
 International Correspondence Schools.  
 Lehigh University.  
 Mass. Inst. of Technology.  
 Michigan Mining School.  
 Missouri School of Mines.  
 Pennsylvania State College.  
 Polytechnic Institute.  
 University of Arizona.

**Electrical Batteries.**  
 Macbeth, James, & Co.

**Electrical Machinery and Supplies.**  
 American Engine Co.  
 Besley, Chas. H., & Co.  
 Card Electric Co.  
 Denver Eng. Wks. Co.  
 Electrical Engineer-Ing Co.  
 General Electric Co.  
 Jeffrey Mfg. Co.

**Elevators, Conveyors and Hoisting Machines.**  
 Brown Holst. & Conv. Mach. Co.  
 Caldwell, H. W., & Co.  
 California Wire Wks.  
 Cooper, Hewitt & Co.  
 Crook, W. A., & Bros. Co.  
 Denver Eng. Wks. Co.  
 Electrical Engineer-Ing Co.  
 (See Wire Rope Tramway and Machinery.)

**Emery Wheels.**  
 Besley, Chas. H., & Co.  
 New York Belting & Packing Co., Ltd.

**Engineers, Chemists, Metallurgists.**  
 See Directory Pages 4, 5 and 6.

**Engineer's Instruments and Supplies.**  
 Aloe, A. S. Co.  
 Buff & Berger.  
 Bullock & Crenshaw.  
 Faith & Co.  
 Gurley, W. & L. E.  
 Heer, Peter.  
 Keuffel & Esser Co.  
 Lietz Co.  
 Mann & Co.

**Engines.**  
 American Engine Co.  
 Bullock, M. C. Mfg. Co.  
 Fraser & Chalmers.  
 Lidgerwood Mfg. Co.  
 Philadelphia Eng. Works, Ltd.  
 Prouty Co.  
 (See Machinery.)

**Excavators.**  
 Bucyrus Steam Shovel & Dredge Co.  
 Marion Steam Shovel Co.  
 Vulcan Iron Works.

**Fire-Brick and Clay.**  
 Clair, A. T.  
 Standard Fire Brick Co.

**Fusibles.**  
 Brown, Horace F.  
 Denver Fire Clay Co.  
 Pollock, Wm. B., & Co.  
 (See Machinery.)

**Fuses.**  
 Climax Fuse Co.  
 Ingersoll-Sergeant Drill Co.  
 Standard Fuse Co.

**Gas Engines.**  
 Norman, J. J., & Co.  
 Prouty Co.  
 Union Gas Engine Co.

**Gas Works.**  
 Pollock, Wm. B., & Co. | Wood, R. D. & Co.  
 Glasgow, Recording, etc.  
 Bristol Co.

**Gearing.**  
 Besley, Chas. H., & Co. | Denver Eng. Wks. Co.  
 Chester Steel Cast. Co. | Fraser & Chalmers.  
 (See Machinery.)

**Grease, Graphite, Etc.**  
 Besley, Chas. H., & Co. | Dixon, Jos. Cruc. Co.

**Heavy Machinery.**  
 Denver Eng. Works Co.  
 Fraser & Chalmers.

**Hose, Rubber, Etc.**  
 New York Belting & Packing Co., Ltd.

**Injectors.**  
 Jenkins Bros.  
 Penberthy Injector Co.

**Insulated Wires and Cables.**  
 Okonite Co., Ltd.

**Insurance Companies.**  
 Hartford Steam Boiler Inspect' and Ins. Co.  
 Mutual Life Insurance Co.

**Joint Fittings.**  
 Tight Joint Co.

**Lead Linings for Chlorination Tubs.**  
 Raymond Lead Co.

**Locomotives.**  
 General Electric Co.  
 Hunt, C. W., & Co.  
 Porter, H. K., & Co.

**Lubricators.**  
 Asbestos Paraffine Co.  
 Detroit Lubricator Co.

**Machinery.**  
**Dealers in Mining, Milling and Other Machinery.**  
 Allis, Edw. P., & Co.  
 American Diamond Rock Drill Co.  
 Bacon, K. C.  
 Besley, Chas. H., & Co.  
 Blake, T. A.  
 Bradley Pulverizer Co.  
 Bullock, M. C. Mfg. Co.  
 Caldwell, H. W., & Co.  
 Card Electric Co.  
 Colorado Iron Works.  
 Connorsville Blower Co.  
 Crook, W. A., & Bros. Co.  
 Cuninghame & Co.  
 Denver Eng. Wks. Co.  
 Fraser & Chalmers.  
 Hammond, Mfg. Co.  
 Hendrie & Bolthoff Mfg. Co.  
 Ingersoll-Sergeant Drill Co.  
 Jeffrey Mfg. Co.  
 Jessop, W. A., & Sons, Ltd.  
 Leyner, J. Geo.  
 Lidgerwood Mfg. Co.  
 McCully, R.  
 McKiernan Drill Co.  
 Mecklenburg Ir. Wks.  
 Merralls' Mill Co.  
 Johnson, Matthey & Co.  
 Lambert's Wharf Co.  
 Lawison Bros.  
 Mathieson & Hegeler.  
 Mathieson & Hegeler Zinc Co.  
 Mathieson & Hegeler Zinc Co.  
 Montana Ore Purchasing Co.  
 Orford Copper Co.  
 Pass, C., & Son, Ltd.  
 Phelps, Dodge & Co.  
 Picher Lead Co.  
 Raymond Lead Co.  
 State Ore Sampling Co.  
 Tod, William & Co.  
 Vivian, Younger & Bond.  
 Fraser & Chalmers.  
 Kendall Gold & Silver Extraction Co.  
 Mathieson & Hegeler Zinc Co.  
 Leoux & Co.  
 Montana Ore Purchasing Co.  
 Newark Pulverizing Wks.  
 Orford Copper Co.  
 Pennyl. Salt Mfg. Co.  
 Ricketts & Banks.  
 Russell Process Co.  
 State Ore Sampling Co.  
 Walburn-Swenson Co.  
 American Dev. & Mg. Co.  
 Amer. Zinc Lead Co.  
 Baker & Co.  
 Balbach S. & Ref. Co.  
 Baltimore Copper Wks.  
 Bridgeport Copper Co.  
 Canadian Copper Co.  
 Con. Kas. City S. & Mfg. Co.  
 Cookson & Co.  
 Denver Eng. Wks. Co.  
 Elliott's Metal Co., Ltd.  
 Electro Cyanide Gold & Silver Ref. Co.  
 Foster, Blackett & Wilson.  
 James & Shakspeare.  
 American Dev. & Mg. Co.  
 Amer. Zinc Lead Co.  
 Baker & Co.  
 Balbach S. & Ref. Co.  
 Baltimore Copper Wks.  
 Bridgeport Copper Co.  
 Canadian Copper Co.  
 Con. Kas. City S. & Mfg. Co.  
 Cookson & Co.  
 Denver Eng. Wks. Co.  
 Elliott's Metal Co., Ltd.  
 Electro Cyanide Gold & Silver Ref. Co.  
 Foster, Blackett & Wilson.  
 Denver Eng. Wks. Co.  
 Hendrie & Bolthoff Mfg. Co.  
 Hunt, C. W., & Co.  
 Nelsonville Foundry & Machine Co.  
 Whiting Foundry Equipment Co.  
 (See Machinery.)

**Mine Cars.**  
 Denver Eng. Wks. Co.  
 Hendrie & Bolthoff Mfg. Co.  
 Hunt, C. W., & Co.  
 Nelsonville Foundry & Machine Co.  
 Whiting Foundry Equipment Co.  
 (See Machinery.)

**Mine, Mill and Smelters' Supplies.**  
 Cuninghame & Co.  
 Denver Eng. Wks. Co.  
 Gates Iron works.  
 Park's & Wilkinson.  
 Roeseler & Haaslach Chemical Co.  
 (See Machinery.)

**Mining and Land Companies.**  
 American Dev. & Mg. Co.  
 Atlas Mfg. Co.  
 Arizona Copper Co.  
 Copper Queen Con. Mfg. Co.  
 Canadian Copper Co.  
 Ore Cars.  
 Trux Mfg. Co.  
 Ore Hoppers.  
 Brown, Horace F.  
 Cummer, F. D., & Sons Co.  
 Ricketts & Banks.  
 Robertson, W. F.  
 Simonds & Wainwright State Ore Sampling Co.  
 Wyckoff & Son, A.

**Packing and Pipe Coverings.**  
 Asbestos Paraffine Co.  
 Braudt, Randolph.  
 Jenkins Bros.  
 Hine & Robertson.  
 Perforated Metals.  
 Aitchison, R., Perf. Metal Co.  
 Fraser & Chalmers.  
 Harrington & King Perforating Co.  
 Peroxide of Sodium.  
 Roeseler & Haaslach Chemical Co.  
 Phosphor-Bronze.  
 Phosphor-Bronze Smelting Co.  
 Pile Drivers.  
 Bucyrus Steam Shovel and Dredge Co.  
 Ingersoll-Sergeant Drill Co.  
 Pipes.  
 Pollock, Wm. B., & Co. | Wyckoff, A., & Sons.  
 Platinum.  
 Baker & Co.  
 Johnson, Matthey & Co.  
 Powder.  
 Atlantic Dynamite Co.  
 Ingersoll-Sergeant Drill Co.  
 Pressure Blowers.  
 Connorsville Blower Co.

**Publications.**  
 American Fertilizer.  
 Arms & Explosives.  
 Australian Mg. Stand.  
 Bullionist.  
 Denver Republican.  
 El Minero Mexicano.  
 Electrical Plant & Electrical Industry.  
 Financial Times.  
 Indian Engineering.  
 Iron & C. Trade Review.  
 McNeill's Code.  
 Mining Journal.  
 Scientific Pub. Co.  
 So. African Mg. Jour.  
 Zeitschrift fur Praktische Geologie.  
 Wall Street Reporter.

**Pumps.**  
 Blake, Geo. F. Mfg. Co.  
 Cameron, A. S., Steam Pump Works.  
 Denver Eng. Wks. Co.  
 Fraser & Chalmers.  
 Jeannette Iron Works.  
 Snow Steam Pump Co.  
 Stillwell-Bierce & Smith-Valle Co.  
 Tod, Wm., & Co.  
 Worthington, Henry R.

**Quarrying Machines.**  
 Ingersoll-Sergeant Drill Co.  
 Rand Drill Co.  
 Sullivan Machinery Co.

**Quicksilver.**  
 Eureka Co.

**Railroads.**  
 Aitchison, Topeka & Santa Fe Ry.  
 Chicago & N. West. R. R.  
 C. B. & Quincy R. R.  
 Denver & Rio Grande R. R.  
 Denver, Leadville & Gunnison Ry.  
 Florence & Cripple Creek R. R.  
 Illinois Central R. R.  
 Midland R. R. of Kentucky.  
 Rio Grande Southern R. R.  
 U. P. D. & G. R. R.

**Railroad Supplies and Equipment.**  
 Hunt, C. W., & Co.  
 Porter, H. K., & Co.  
 (See Machinery.)

**Regulators, Dampers, Heat, Etc.**  
 Eddy Valve Co.  
 Jenkins Bros.

**Rock Drills. (See Air Compressors.)**

**Roofing.**  
 Berlin Iron Bridge Co.  
 Cincinnati Corrugating Co.  
 Sykes Steel Roofing Co.

**Rubber Goods.**  
 New York Belting & Packing Co., Ltd.

**Screeners.**  
 Aitchison, R., Perf. Metal Co.  
 Denver Eng. Wks. Co.  
 Fraser & Chalmers.  
 Harrington & King Perforating Co.  
 Link Belt Machinery Co.  
 Ludlow-Saylor Wire Co. (See Machinery)

**Second Hand Machinery.**  
 Hine & Robertson.  
 Robinson & Orr.

**Shoes and Dies.**  
 Chester Steel Cast. Co.  
 Chroms Steel Works.  
 Crescent Steel Co.  
 Denver Eng. Wks. Co.  
 Fraser & Chalmers.

**Shovels (Steam).**  
 Bucyrus Steam Shovel & Dredge Co.  
 Marion Steam Shovel Co.

**Smelting and Refining Works.**  
 Balbach S. & Ref. Co.  
 Baltimore Cop'r Wks.  
 Bridgeport Copper Co.  
 Con. Kas. City S. & Mfg. Co.  
 Elliott's Metal Co., Ltd.  
 Mathison Smelting Co.  
 Orford Copper Co.  
 Penna. Salt Mfg. Co.  
 Penn. Smelting and Refining Works.  
 Phosphor Bronze Smelting Co.

**Steel Rails, Castings, Rolls, Drill Steel.**  
 Bethlehem Iron Co.  
 Chester Steel Cast. Co.  
 Chroms Steel Works.  
 Crescent Steel Co.  
 Moore, S. L., & Sons Co.  
 (See Metal Dealers)

**Tanks.**  
 Denver Eng. Wks. Co.  
 Gates Iron Works.  
 Walker Co.  
 Williams Mfg. Co.

**Telegraph Wires and Cables.**  
 Okonite Co., Ltd.

**Tools.**  
 Besley, Chas. H., & Co.  
 Pratt & Whitney Co.  
 Besley, Chas. H., & Co. | Pollock, Wm. B. & Co.  
 Williams Bros.

**Tubes.**  
 Besley, Chas. H., & Co. | Pollock, Wm. B. & Co.  
 Williams Bros.

**Tubing-Rubber.**  
 New York Belting and Packing Co., Ltd.

**Turbine Water-Wheels.**  
 Leffel, James, & Co.  
 Pelton Water Wheel Co.  
 Stillwell-Bierce & Smith-Valle Co.

**Valves.**  
 Eddy Valve Co.  
 Jenkins Bros.

**Ventilators.**  
 Bullock, M. C. Mfg. Co. | Tod, Wm., & Co.  
 Fraser & Chalmers.

**Voltmeters.**  
 Weston Electrical Instrument Co.

**Vulcanite Emery Wheels.**  
 New York Belting and Packing Co., Ltd.

**Water-Wheels.**  
 Leffel, James, & Co.  
 Pelton Water Wheel Co.  
 Stillwell-Bierce & Smith-Valle Co.

**Well Drilling Machinery.**  
 Sullivan Mach'ry Co. | Williams Bros.

**Wharfage.**  
 Lambert's Wharfage Co.

**Wheels, Car.**  
 Chester Steel Cast. Co.  
 Taylor Iron & Steel Co.

**White Lead.**  
 Cookson & Co.  
 Foster, Blackett & Co.

**Wire Cloth.**  
 Aitchison, R., Perf. Metal Co.  
 Harrington & King Perforating Co.

**Wire Rope and Wire.**  
 Besley, Chas. H., & Co.  
 Broderick & Bascom.  
 Rope Co.  
 California Wire Wks.  
 Cooper Hewitt & Co.  
 Hunt, C. W., Co.  
 Phelps, Dodge & Co.  
 Hunt, C. W., & Co.  
 Robinson, J. A., & Son.  
 Trenton Iron Co.

**Wire Rope Tramway.**  
 Brown Holst. & Conv. | Fraser & Chalmers.  
 Machine Co. | Hunt, C. W., Co.  
 California Wire Wks. | Roebbing, J. A., Son  
 Colorado Iron Works. & Co.  
 Denver Eng. Wks. Co. | Vulcan Iron Works.

POSITIONS VACANT.

FREE ADVERTISING

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

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

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

1482 WANTED—TWO TECHNICALLY educated young men for electric furnace work residing in or near New York City. Work is hard and exacting, but chances good for right men. Reply fully. Address ELECTRON, ENGINEERING AND MINING JOURNAL.

1483 WANTED—A SUPERINTENDENT to erect and manage a dynamite factory. Must have had successful practical experience in this line. Address DYNAMITE, ENGINEERING AND MINING JOURNAL.

1484 WANTED.—A MILL MAN WITH some experience, who understands concentrating ores by Cornish Jig process, to act as night foreman in small concentrating plant in northern part of Mexico; must speak Spanish. State salary, which must be moderate to commence with. Address CONCENTRATOR, ENGINEERING AND MINING JOURNAL.

1485 WANTED.—A CHEMIST TO TAKE charge of a small chlorination mill treating pyritic concentrates containing gold, silver and a little copper. Address OREGON, ENGINEERING AND MINING JOURNAL.

1486 WANTED.—A MAN TO TAKE ENTIRE charge of a mining property in Mexico; must be a first-class man and thoroughly conversant with the management of Huntington Mills and chlorination; one who speaks Spanish preferred; permanent engagement, with good prospects, given to first-class man. Address INDEPENDENCIA, ENGINEERING AND MINING JOURNAL.

1487 WANTED—FOR A SOUTH AMERICAN Copper-Silver Smelting Works, a thoroughly competent manager, to erect and superintend the same. While it is proposed to smelt only to a matte at first, the manager should be thoroughly conversant with all the processes used in the treatment of copper and silver ores; conditions—water power, cheap wood, dear coke, good climate, altitude 3,000 feet above sea. ARGENTINA, ENGINEERING AND MINING JOURNAL.

1488 WANTED—AN ENGINEER AND Assayer who has had experience in the mines of the Ouro Preto District, Brazil. Address with full particulars, F. F. F., ENGINEERING AND MINING JOURNAL.

1489 WANTED—A MAN ACQUAINTED with lead smelting, sweep smelting, cupellation and refining and desilverizing processes, to run a small blast furnace and refinery in South Africa. A technical graduate preferred, but practical experience absolutely necessary, as well as tact and ability to manage men. A man between 30 and 40 years of age preferred. A good salary will be paid to the right party, who will be expected to return it in a responsible position. Address TRANSVAAL, ENGINEERING AND MINING JOURNAL.

1491 WANTED—A FIRST-CLASS MILLMAN who thoroughly understands amalgamation and concentration of gold ores and assaying; state experience, age and wages expected; mine in one of the Southern States. Address THOROUGH, ENGINEERING AND MINING JOURNAL.

1492 WANTED—A YOUNG MAN WHO is competent as an analytical chemist, with some experience as an engineer, can find a situation at a moderate salary with a mining company in Virginia, by furnishing satisfactory testimonials of his character, ability and experience. Address MINING COMPANY, ENGINEERING AND MINING JOURNAL.

1493 WANTED—BY AN IRON COMPANY —A General Superintendent to take charge of a blast furnace plant, with coal mines and coke ovens. Applicant must be thoroughly qualified in modern blast furnace practice. Preference will be given to a man of technical education. Good position for a man of thorough experience and ability. Address IRON, ENGINEERING AND MINING JOURNAL.

1494 UNITED STATES CIVIL SERVICE Commission, Washington, D. C.—An examination will be held by this Commission on October 28th, 29th, 30th and 31st for the positions of junior architectural draftsman, architectural draftsman, structural iron draftsman, heating and ventilating draftsman, computer, and senior architectural draftsman, in the office of the Supervising Architect of the Treasury. The subjects of these examinations will be as follows:

JUNIOR ARCHITECTURAL DRAFTSMAN.—(1) Orthography; (2) letterwriting; (3) mathematics (elementary), including arithmetic, plain geometry, algebra and trigonometry; (4) theoretical and applied mechanics; (5) knowledge of materials and construction; (6) orthographical projection and free-hand drawing; (7) architectural drawing and design. Time allowed for examination: Subjects 1 to 3, six hours; subjects 4 to 5, two days of eight hours each. The salaries of these positions are \$600 to \$1,000 per annum.

ARCHITECTURAL DRAFTSMAN.—(1) Orthography; (2) letterwriting; (3) mathematics (elementary), including arithmetic, plain geometry, algebra and trigonometry; (4) higher mathematics and mechanics; (5) knowledge of materials and construction; (6) architectural drawing and design; (7) free-hand drawing and orthographi-

cal projection, and (8) specifications. Time allowed for examination. Subjects 1 to 3, six hours; subjects 4 to 5, three days of eight hours each. The salaries of these positions are \$1,200 to \$1,400 per annum.

STRUCTURAL IRON DRAFTSMAN.—Subjects (1), (2) and (3) as above specified; (4) higher mathematics and mechanics; (5) knowledge of materials; (6) drawing and design. Time allowed: Subjects 1 to 3, six hours; subjects 4 to 5, three days of eight hours each. The salary of this position is \$1,600 per annum.

HEATING AND VENTILATING DRAFTSMAN.—Subjects (1), (2) and (3) as above specified; (4) practical knowledge of heating and ventilating construction; (5) drawing and design. Time allowed: Subjects 1 to 3, six hours; subjects 4 and 5, two days of eight hours each. The salary of this position is \$1,200 per annum.

COMPUTER.—Subjects (1), (2) and (3) as above specified; (4) knowledge of materials and construction; (5) mensuration and mechanics; (6) specifications, contracts, etc.; and (7) computing quantities. Time allowed: Subjects 1 to 3, six hours; subjects 4 to 7, three days of eight hours each. The salaries of these positions are \$1,200 to \$1,800 per annum.

SENIOR ARCHITECTURAL DRAFTSMAN.—The subjects of this examination are practically the same as those for architectural draftsman, except that competitors will be required to show a more thorough knowledge in regard to subjects 5, 6, 7 and 8. Time allowed: Subjects 1 to 3, six hours; subjects 4 to 8, three days, eight hours each. The salaries of these positions are \$1,600 to \$2,000 per annum.

These examinations will be given on the dates mentioned at Washington, D. C., and at other points where the Commission has competent boards of examiners. Competitors will be supplied with all necessary writing paper, drawing paper and tracing linen, for the examination, but must bring pen and ink and all the instruments and other materials likely to be used in connection with the examinations.

Applicants for these positions will be required to file at the Civil Service Commission with their applications certificates or letters from present or former employers to show that such applicants have had practical office experience with some reputable firm of architects or engineers. The experience required before admission to the examinations is as follows: Senior architectural draftsman, six years; architectural draftsman, four years; junior architectural draftsman, none; structural iron draftsman, and heating and ventilating draftsman, two years at his special class of work; computer, none. Persons desiring to be examined should write to the Commission for application blanks and file them with this Commission at the earliest possible date.

SITUATIONS WANTED.

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

ASSAYER AND CHEMIST, GRADUATE of Northwestern University, '95, desires position; experience limited; best of references. Address N. W. U. No. 14,827, Oct. 24.

AN EXPERIENCED ORE BUYER AND assayer is open for engagement; speaks Spanish. Address SAMPLER, ENGINEERING AND MINING JOURNAL. No. 14,832, Nov. 7.

WANTED—POSITION AS MINING SUPERINTENDENT, assayer or mill man; nine years' experience; amalgamation or concentration. Address M. D. S., 38 So. Grant Ave., Denver, Colo. No. 14,833, Oct. 31.

WANTED—A POSITION AS ASSISTANT to chemist in laboratory, by young man holding similar position at present; seven years' experience; highest references. Address X. Y. Z., ENGINEERING AND MINING JOURNAL. No. 14,834, Oct. 17.

EXPERIENCED MAN ON DESIGN, CONSTRUCTION, erection and repairs of coal-mine machinery and locomotives wants work. Address I. J. G. ENGINEERING AND MINING JOURNAL. No. 14,829, Oct. 17.

WANTED—POSITION—A GRADUATE Chemist, Assayer and Metallurgist; acquainted with the cyanide and chlorination processes; first-class references; speaks five languages; 30 years old. Address E. de G., 206 Boston Building, Denver, Colo. No. 14,835, Oct. 31.

MINING AND MECHANICAL ENGINEER of executive ability and 20 years' experience is open for engagement with first-class company, as superintendent or resident manager; specialty, erection and treatment of low-grade ores; speaks German and Spanish; references the best. Address A. L., ENGINEERING AND MINING JOURNAL. No. 14,829, Nov. 7.

CHEMIST, GRADUATE STATE UNIVERSITY, desires employment in works, foundry or office; has had two years' experience clay and iron laboratories; can invest several hundred dollars, together with services, in small chemical business. Address JOURNAL, 737 Monadnock Block, Chicago, Ill. No. 14,826, Oct. 31.

AS CHEMIST AT BLAST FURNACE, IRON mine, steel works or foundry, by a chemist of thorough experience and education, with good knowledge of metallurgy of iron and steel; neat, accurate and reliable; accustomed to conduct work of laboratory in first-class manner; good references. Address AC-CURATE, ENGINEERING AND MINING JOURNAL. No. 14,828, Oct. 17.

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Contracts Open.

TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, Washington, D. C., October 14th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m., on the 30th day of October, 1896, and opened immediately thereafter, for all the labor and materials required for placing intermediate floors, etc., in certain court and office rooms in the U. S. Court House and Post-Office Building, New York, N. Y., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at New York, N. Y. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the Government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for Intermediate Floors, etc., in the U. S. Court House and Post-Office Building at New York, N. Y.," and addressed to WM. MARTIN AIKEN, Supervising Architect, Orig.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., September 28th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m., on October 23d, 1896, and opened immediately thereafter, for all the labor and materials required for the low pressure, return circulation, steam heating and ventilating apparatus, for the U. S. Post Office, Court House and Custom House building at Newbern, N. C., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Newbern, N. C. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the government to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for the Heating and Ventilating Apparatus for the U. S. Post Office, Court House and Custom House Building at Newbern, N. C.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

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**DIVIDENDS.**

**HOMESTAKE MINING COMPANY,**  
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NEW YORK, Oct. 15, 1896.  
DIVIDEND NO. 219.

The regular monthly dividend, TWENTY-FIVE (25)  
CENTS PER SHARE, has been declared for Septem-  
ber, payable at the office of the company, San Fran-  
cisco, or at the transfer agency in New York, on the  
26th inst.  
Transfer books close on the 20th inst.  
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**ISABELLA GOLD MINING COMPANY.**  
COLORADO SPRINGS, Colo., September 10th, 1896.  
DIVIDEND NO. 2.

A dividend of ONE CENT PER SHARE (\$22,500) has  
been declared, payable September 25th, 1896, to stock  
holders of record September 18th, 1896.  
The stock transfer books will be closed September  
18th, 1896, at 3 o'clock p. m., and will be re-opened on  
the morning of September 26th, 1896.  
PERCY HAGERMAN,  
Vice-President and Treasurer.

**NEW YORK AND HONDURAS ROSARIO MINING COMPANY,**  
No. 18 BROADWAY,  
NEW YORK, Oct. 14, 1896.  
DIVIDEND NO. 28.

The Trustees of this company have this day declared  
a dividend of TEN CENTS PER SHARE on its capi-  
tal stock, payable November 5th, at this office.  
The transfer books will be closed from October 26th  
to November 6th.  
S. JACOBY, Treasurer.

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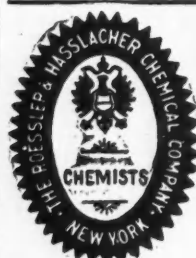
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