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Mr. Ogilvie, Canadian land surveyor, is acquiring the injurious reputation of being a "boomer" through the newspaper interviews published at Toronto and elsewhere which credit him with stating that there are "30 claims on the Eldorado Creek, Klondike, that will average \$1,000,000 each, and 100 claims on Bonanza Creek that are capable of yielding \$250,000 to \$500,000 each, and that these two creeks with their \$70,000,000 "form but a small percentage of the rich placers already discovered."

Of course, neither Mr. Ogilvie nor anyone else has any facts to justify these silly but injurious estimates, and we trust that for the sake of his own reputation and the credit of the Canadian government, whose employee he is, and in the interests of legitimate mining, Mr. Ogilvie will contradict these newspaper stories and refrain from making statements that can be interpreted as meaning such absurd figures.

The lead and zinc region of Southeastern Missouri has been unusually active and prosperous this year, reporting a large output of ores, which have generally been sold at fair prices. The production, as gathered from our reports of the Joplin ore market, reached up to October 31st totals of 297,844,500 pounds of zinc ores and 50,673,760 pounds of lead ore, and the total selling value amounted to \$3,825,801.

As might be expected from the prices of the metal, there has been no special change in selling prices of zinc ore, which rule now at \$23 to \$23 per ton, being about \$1 higher than at the same time last year. Lead ore, however, shows a very marked increase, the present price ranging about \$24 per thousand pounds, while a year ago it was selling for \$15. The ore sales for ten months given above approach nearly the totals for the entire year 1896, which were 306,164,640 pounds of zinc ore and 53,853,920 pounds of lead ore.

No canal in the world—not even the Suez—approaches the Sault Ste. Marie, between lakes Superior and Huron, in the quantity of freight which passes through it. The total, from the opening of navigation in May up to November 1st this year was 16,593,726 short tons, an increase of 14 per cent. over last season.

The total tonnage of iron ore from Lake Superior was 9,879,341 short tons, or 8,820,840 long tons. This will be increased before close of navigation to at least 9,000,000 tons—probably a little more—by the November shipments. If to this tonnage are added the shipments from Escanaba and Gladstone, which do not pass through the Sault, and which amount to at least 2,500,000 tons, we will have a total shipment from the Lake Superior region this year of 11,500,000 tons of iron ore, a quantity greater by 1,000,000 tons than has ever before been reached in a season. The present indications are that this output will all be taken up by the furnaces.

The latest plan for promoting the revival of hydraulic mining in California is brought forward by one J. A. Filcher, of San Francisco, who proposes to transport the tailings from the mines by pipe lines, and to use the sand and gravel for filling in the tule lands, or low marsh lands, along the Sacramento and San Joaquin rivers. The inventor does not enter into any special details of his scheme, and, of course, he gives only very vague and general estimates of cost and power required. On one point he is clear, however, and that is that a modest appropriation of \$5,000,000 or \$6,000,000 will be sufficient to give the plan a trial and show its merits. The prospect of largely increasing the gold output of the State and at the same time increasing the area of arable land by filling swamp lands with tailings sand, he thinks, ought to be quite sufficient to warrant any appropriation required. This is, however, no wilder and is less vicious than some other schemes on which great appropriations have been thrown away.

In a land case against the Southern Pacific Company the Interior Department has recently given a decision to the effect that lands containing petroleum are properly mineral lands under the meaning of the statute, and as such cannot be included in a railroad land grant, but are open to location under the mining laws. They come under the head of placer deposits, and the location is governed accordingly. This decision is in line with that in a case against the Northern Pacific Company, which affected a deposit of marble, and which was referred to in the Engineering and Mining Journal of September 25th last. In the California petroleum case the railroad company claimed that the oil-bearing lands within the limits of its grant were not mineral land properly, and were consequently subject to its ownership. This decision and that in the Washington marble case reverse the more recent action of the Land Office, but find sufficient precedent in earlier rulings of the department. They also appear to be certainly in accordance with common sense and with the generally accepted meaning of the term "mineral." Some decisions given by the late secretary would seem to imply his belief that the word could only be applied to metal-bearing veins or deposits, but this is entirely too narrow a definition. There can be no doubt whatever that petroleum is a

mineral, and the ruling now established that lands containing it are mineral lands seems to be entirely in accordance with the true intent of the law, which does or should cover any mineral whose exploitation is of economic importance.

Revision of the United States Mining Law.

The letter of Mr. Charles J. Moore, the chairman of the Denver Convention Committee on the revision of the United States mining law, which appears in another column, calls attention to a mistake in my recent article on that subject. I erroneously spoke of Mr. Francis T. Freeland as a member of the committee referred to, whereas, as I now find upon a more careful reading of Mr. Freeland's article, he was merely a delegate to the convention, and was even called away from there before he had an opportunity to present the views embodied in his letter to the *Mining and Scientific Press*.

Mr. Moore points out also that the principal propositions advanced by Mr. Freeland, and discussed by me in my article of October 30th, were covered by the report of the Public Lands Commission of 1879 (published in 1880). Of this fact I was aware, in a somewhat uncertain way. That is, I thought I remembered it, but was not sufficiently certain to warrant me in making a positive assertion without consulting the report of that Commission, which was not at hand when I wrote.

It is, of course, immaterial who first suggested these amendments. In principle they are not at all original, but simply repeat the well-settled elements of English and American land law in general. I wish that the present endeavor to secure a practical reform of our mining law may be more successful than was that of the Public Lands Commission; and if this wish shall be gratified it will be because the interests which opposed and defeated the plan of that commission have been either converted or greatly weakened in influence since 1879.

Mr. Moore's call for correspondence from those who have experienced the evils of the present system deserves to be abundantly answered. There is certainly no lack of witnesses who would, if they could, give testimony of that kind.

R. W. R.

The Recent Course of Copper Stocks.

The stocks of the copper companies, which are principally owned and dealt in in Boston, have shown some remarkable variations. In August an upward movement began, which was slow at first, but gradually gathered momentum and culminated about the third week in September, when prices reached a level which, for some of the stocks, was the highest ever reported. After a short period of high quotations a fall began, which has continued up to the present time, with some slight reactions. The leader in the speculation was Centennial, a stock heretofore little considered in the market, and selling uniformly at a low price. The company was, in fact, almost bankrupt a year ago, and its property was only saved by an assessment which, many then considered, represented the full value of the stock.

The following table shows the selling prices of a few of the representative copper stocks in Boston on the dates given.

	Aug. 7.	Sept. 25.	Nov. 12.		Aug. 7.	Sept. 25.	Nov. 12.
Atlantic	\$22.00	\$27.00	\$21.50	Quincy	\$111.00	\$121.00	\$112.00
Calumet & Hecla	400.00	480.00	452.00	Tamarack	130.00	144.00	127.00
Centennial	7.00	25.00	15.75	Boston & Mont.	134.75	152.00	132.00
Osceola	37.00	42.00	34.00	Butte & Boston.	25.00	31.00	19.75

The investment stocks, which have a certain recognized value, have naturally shown less extreme fluctuations, and some of them have retained a considerable part of their advance. Thus Calumet & Hecla stands now \$75 per share above the ruling price three months ago, though nothing has occurred to materially change its value. The purely speculative stocks show a considerable variation in results, Butte & Boston having lost 20 per cent. of its August price, while Centennial stands at nearly twice the quotation of three months ago.

There has been no change in the price of copper which would warrant any such speculation in the copper stocks as that which has just subsided. Lake copper was quoted at 11 cents a pound in New York on August 7th, but on September 25th it had risen only to 11½ and 11¢ cents, and on November 12th it had fallen to about 10½ cents. It is true that at the present time the tendency of the price is downward, but no considerable fall is to be anticipated, and any decrease which may occur will probably be slow as well as moderate in its amount. The movement in the copper stocks, however, seems to have been based only to a very small extent on the copper situation; it was entirely speculative, and outside considerations, such as the ease or tightness of the money market, had more to do with it than any reasons connected with actual values.

It is to be noted that most of the stocks which play a leading part in the Boston market are entirely speculative in one sense, the shareholders and public being permitted to know little or nothing of the operations which affect their earnings and their present or prospective values. We have often criticised the policy of the managements in this respect, and

it is not necessary to enlarge upon it further here. The Boston Stock Exchange might effect a considerable improvement in this respect if it would insist upon the publication of reports, as the New York Exchange has insisted upon the issue of statements of railroad earnings, with excellent results. The managers of the Boston Exchange, however, apparently lack the courage and decision of their New York brethren; or else they sympathize with a course which, to say the least, is not fair treatment of the public.

Investments on the Names of Directors.

Eminence in directors is a far less safe and satisfactory basis for investment in mining property than the professional opinion—and the grounds on which this is based—of a competent, disinterested mining engineer. This truism is again suggested on reading the "Official Prospectus of the Joseph Ladue Gold Mining and Development Company of Yukon," whose board of directors includes the following well-known gentlemen: Hon. Chauncey M. Depew, New York; Lieut.-Gov. C. H. MacIntosh, of Regina, Can.; Hon. Thos. L. James, New York; Eli A. Gage, of Chicago; H. Walter Webb, New York; Wm. J. Arkell, New York; Hon. Smith M. Weed, Plattsburg, N. Y.; John Carstensen, New York; J. Nesbit Kirchoffer, Manitoba; Irwin C. Stump, New York; Edwin C. Maturin, Jersey City; Elmer F. Bottsford, Plattsburg; Mr. Joseph Ladue, Dawson City; Thos. W. Kirkpatrick, Dawson City, and others. The capital of the company is put at \$5,000,000, of which \$2,500,000 is offered for subscription; \$1,000,000 in cash is to be the working capital; the remaining \$4,000,000 goes for the property.

The investment of such an immense sum of money should be based only upon well-ascertained value, and the evidence of this value should be accessible to every proposing investor. The respectability of the directors, even if they did not carefully disclaim any knowledge of the value of what they are selling or buying, as they do here, should be no equivalent for practical evidence of value. When these eminent directors are obliged to disclaim specifically any personal knowledge of or responsibility for the truth of the statements made in their prospectus, the investing public should more than ever require proof of value before subscribing.

This is what the official prospectus claims:

1. A placer deposit 1,000 feet long by 200 feet or possibly 400 feet wide, 4 feet thick, which will yield \$12 per cubic foot, or \$9,600,000 and possibly \$19,200,000.
2. Other placers—no particulars given.
3. Quartz property, 1,500 feet long by 600 feet wide, with a vein—width not specified—which gives an average return of \$300 to the ton.
4. A timber "limit" 15 miles long, no width mentioned.
5. A sawmill, capacity not mentioned.
6. Eighty town lots, each 25 feet wide, in Dawson City.
7. A charter from the Canadian government allowing the company to carry on any kind of business.
8. The services of the vendors as president and superintendent, salaries not mentioned.

Every particular of extent and value of the property rests exclusively on the statement of the vendor, Mr. Ladue, though the prospectus asserts, without giving any particulars, that these statements and estimates of Mr. Ladue are "materially confirmed in essential particulars by high Canadian official and record authorities." It would be interesting to have this confirmatory evidence printed.

No expert or disinterested evidence is cited, and probably no one at all familiar with placer mining will give any credit to the estimate of \$12 a cubic foot for 800,000 or 1,600,000 cubic feet asserted by the vendor to be in the placer claim. Nor will anyone believe in any considerable body of quartz that averages \$300 in gold per ton without much more evidence than the prospectus gives. No mining engineer would be willing to recommend any considerable investment on the statements contained in this prospectus, and everyone knows that "it is not business" to make large investments on the sole estimates of vendors or interested parties.

Any investor can decide for himself whether he wishes to go into Klondike timber "limits," Dawson town lots, or Canadian charters to do anything. The *Engineering and Mining Journal* confines its criticism to the absence of any disinterested evidence as to the value of the mineral property.

The testimony we have received concerning Klondike from engineers and miners who have examined it flatly contradicts the estimates contained in this prospectus; moreover, we believe that all who desire to see mining firmly established in public estimation as a safe and profitable field for the investment of capital will regret to see an enterprise of this kind floated solely on the names of well-known estimable gentlemen, without giving any of the expert and disinterested evidence which every investor should insist on getting before parting with his money. Of the presumably disinterested members of the board of directors there is, we believe,

but one who is familiar with mining, but they are all business men who would resent as a reflection on their intelligence and business sanity a suggestion that they invest their own money in anything but a mine on evidence similar to that presented in the prospectus, which they offer as sufficient to justify the investment of the money of other people. We might say much more, but this is sufficient to make proposing investors reflect before subscribing. We again particularly commend to their attention the explicit disclaimer of these directors that they personally know any of the facts in the case or that they take any responsibility for the statements and estimates made in their official prospectus.

The testimony we have concerning Klondike in general, and some of these "assets" in particular, is sufficient to utterly condemn this as an investment of \$4,000,000.

NEW PUBLICATION.

PRINCIPLES AND PRACTICE OF AGRICULTURAL ANALYSIS; A MANUAL FOR THE EXAMINATION OF SOILS, FERTILIZERS AND AGRICULTURAL PRODUCTS. VOLUME III., AGRICULTURAL PRODUCTS. By Harvey M. Wiley, Chemist to the United States Department of Agriculture. Easton, Pa.; The Chemical Publishing Company. In seven parts, with copious index and 125 figures in text; 665 pages. Price \$3.75.

This is the third and last volume of Doctor Wiley's truly remarkable work, the first and second volumes of which have already been exhaustively reviewed in the *Engineering and Mining Journal*. In accordance with his original design, this last volume of Doctor Wiley's has been divided into seven parts, Part I. dealing with sampling, drying, incineration and extraction; Part II. with starches and sugars; Part III. with the separation and determination of carbo-hydrates in crude and manufactured agricultural products; Part IV. with fats and oils; Part V. with the separation and estimation of products containing oxygen; Part VI. with dairy products, and Part VII. with miscellaneous agricultural products, such as cereal foods, meats, digestive ferments, fruits, vegetables, tea, coffee, tobacco, beers and wines. He has incorporated 125 cuts or figures in his text, most of them illustrating the various modern apparatus for carrying out modern analytical methods; and it is certainly no exaggeration to say that by doing so he has greatly enhanced the value of the volume.

We notice that in his prefatory remarks Doctor Wiley has been careful to reiterate that the chief object of his work has been to place before the student and the chemist all the best methods of determining the composition of agricultural products, relying upon the good judgment and experience of the analyst for the selection of such processes as may suggest themselves to him as being the most appropriate. This does not appeal to our sympathies, and while it may be deemed ungracious to carp at Doctor Wiley for having taken such a stand, we cannot refrain from expressing our dissent. We believe that it would have been better, in the interest not only of those who come under the head of students, but of the profession at large, if he had given some indication of his own preference for any of the many methods he has so carefully collected. No one is better able, nor more fittingly provided than he, with all the facilities for carrying out the necessary experiments, and no one could express more authoritative opinions. To merely place side by side a number of methods of estimating starch in the cereals, for example, without any reference to the best and most reliable of them, is to invite the student and the chemist to make an indefinite number of experimental determinations; all of which might lead to slightly differing results, and none of which is backed up by a single friendly suggestion. We think it would have been far more useful and satisfactory, if Doctor Wiley, under whose guidance so many exhaustive estimations of the starch in our cereals have been carried out in our National laboratory could have said, in a sort of resumé of all the methods he has quoted, "Of all these processes, the one which has afforded me the most concordant results is (—?) and I have consequently adopted it in my practice?" It is true that he would have thus committed himself in a very unmistakable manner, and probably might have involved himself in a great many fierce discussions, encroaching on his time, and trying to his temper, but he would certainly have found a compensation in having simplified the work of a great number of analytical chemists, who do not enjoy the same opportunities as himself for making comparisons and passing judgment. That he must have felt the weakness of his position; that some glimmer of his short-comings must have been present in his own mind is made evident by the fact of his promise to produce at some later date the ideal work we have attempted to outline. The sooner he recovers from the fatigues of his recent labors and enters upon this new task with characteristic enthusiasm the better for us all.

Having thus generally relieved our feelings, we may proceed to notice that throughout Doctor Wiley's work he clings philologically to the new phonetic terminology—oxid, sulfur, sulfuric acid, bromin, cyanid. Is this an advantage? Even if it is, why should gelatine lose its e? Surely this is not, strictly speaking, a chemical term. Another of his philological peculiarities, which crops out on page 116, is the use of the word "gyrodynat" in lieu of the words "specific rotatory power." Is this word going to become popular and if so will it serve any useful purpose? We fancy that there are a great many young men in our chemical laboratories who are perfectly well aware that the specific rotatory power of a body changes with its degree of concentration, but who would be utterly non-plussed if asked about the influence of its degree of concentration upon its gyrodynat.

In the section which he has devoted to sugars Doctor Wiley has carefully compiled, and presented in a condensed and very intelligible form, a large number of well-known methods for gravimetric and volumetric determination. As a very remarkable matter of fact, however, he has altogether omitted to mention two volumetric methods of the greatest value—we allude to those of Reischauer and of Soxhlet, the latter of which, if our memory is not treacherous, was pronounced by the official meeting of 1893, in Chicago, to be the most exact of any yet put forth. This omission is the more regrettable because, in the Reischauer method,

which we ourselves prefer and which is now coming into use in many industrial laboratories abroad, the requirements are very simple, and the whole operations are rapidly and very easily carried out. Another omission, almost equal in importance, is that of a method which relates to the clarifying or bleaching of sugar solutions before their polarization. We refer to the method suggested by Heron in the *Journal of the Federated Institute of Brewing*, in 1895.

It will be seen from our very mild indictment that the sins of commission and omission with which we charge Doctor Wiley are very small and insignificant when compared with the extent and value of his work, but is precisely because of this value that small errors and blemishes attain so much importance. In any event, we have endeavored to be impartial, and whatever we have said has been meant in the kindest spirit. We consider that the whole of the three volumes must be taken collectively, and judged of as a whole, for no single one of the set—taken by itself—can be properly judged alone, or would be complete without the others. This will be seen by a mere reference to the important chapter comprising Part V. of the volume we have been reviewing, and which treats of nitrogenous bodies and covers 52 pages. In this chapter there are no less than 11 references to Volumes I. and II., some of them being of paramount importance to a proper understanding of the subject. It contains no description of Kjeldahl's Moist Combustion Method, now almost universally employed in commercial and scientific laboratories, for the determination of nitrogen, the method being very fully described in Volume II.

Every chemist and every teacher of chemistry should possess Doctor Wiley's three volumes, and no modern chemical library can be regarded as complete without them. None but chemists constantly engaged in, and earning a living by the practice of their profession, can tell how difficult a task Doctor Wiley has accomplished, and the thanks of every one of them should be tendered to him without stint. He has unselfishly devoted his leisure moments to labors that can never be adequately remunerated.

F. W.

BOOKS RECEIVED.

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

The Science of Brick-Making. By George F. Harris. London, England; H. Greville Montgomery. Pages, 160; illustrated.

Die Koksfeuerung als Lösung der Rauchfrage. By Oscar Simmersbach. Gilsenkirchen, Germany; Karl Bertenburg. Pages, 52.

Report of the Maryland Geological Survey. Volume I., 1897. William Bullock Clark, State Geologist. Baltimore; the Johns Hopkins Press. Pages, 540; illustrated.

Placers Aurifères de la Sibirie Orientale. By Theodore Sabachnikoff and Edouard David Levat. Paris, France; Bureaux de la Revue Scientifique. Pages, 80; illustrated.

Annual Report of the Chief of the Bureau of Steam Engineering, 1897. George W. Melville, Engineer-in-Chief, U. S. N. Washington; Government Printing Office. Pages, 34.

Technical Drawing Series. The Essentials of Gearing. By Gardner C. Anthony. Boston, Mass., 1897; D. C. Heath & Company. Pages, 84; with 15 plates and illustrations. Price, \$1.50.

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.

Placer Mining in the United States.

SIR: Will you kindly inform me at what points in the United States the greatest placer mining industry is to be found, that is, at what localities in California, Idaho, Colorado, etc.

OSCAR FOOTE.

WASHINGTON, October 23, 1897.

[The production of gold from alluvial deposits in the United States is now comparatively small. California is by far the most important State in this respect. Extensive placer mines are in operation there in the valleys of the American, Feather and Klamath rivers and these are perhaps the most important in that State. In Montana, the old placers in Alder Gulch in the neighborhood of Bannack are still worked. In Idaho, there is some placer work done along the Snake River. In Colorado, there is practically no placer mining at present. There are small undertakings in the vicinity of Breckenridge and at Twin Lakes.—EDITOR E. & M. J.]

Revision of the United States Mining Law.

SIR: Referring to the article by Prof. R. W. Raymond in your issue of October 30th, I beg to state that the principal propositions mentioned in that article were covered by the report of the Public Lands Commission as long ago as 1879. Even at that date, only seven years after the passage of the Mining Act of May, 1872, so much dissatisfaction had arisen from its operation and the necessity of a revision became so urgent as to result in the appointment of a Commission to reopen the whole question of the mining code for the public lands of the United States, and Professor Raymond took an active interest in the work of that Commission.

All who feel interested in this revision, and I hope that the term includes all the mining engineers and mining lawyers of the Western States and Territories, as well as the principal mine owners, operators and owners of mining property, are referred to the report aforesaid, which was published in the year 1880, and is most voluminous and exhaustive in the questions examined, the testimony taken both for and against the propositions which came before the Commission, and which resulted in a report of the highest interest proposing changes of the most radical

character, so radical, in fact, that those in favor failed to secure the passage of the proposed act through Congress.

I am glad Mr. Freeland has resuscitated some of the leading changes advocated by the Public Lands Commission, and hope that an active public discussion of the whole question in its various features will speedily commence, while our committee is still deliberating and discussing the various features of the report.

I may remind your readers that the first International Mining Congress was held in the city of Denver, Colo., July 7th, 8th and 9th last, the delegates being called together at first to discuss especially the interests of gold mining. It was speedily found on the organization of the convention that the term "Gold Mining Convention" was too narrow to include all the interests represented by the delegates, and by a large majority the resolution was passed changing the name of the Congress to the "International Mining Congress," the intention being to meet hereafter once a year for the discussion of all matters pertaining to all the mining interests of the United States.

Besides a number of important papers that were read and partially discussed, and a number of important resolutions discussed and passed, two committees were appointed; the one to memorialize Congress in favor of the creation of a Department of Mines and Mining, and the appointment of a Secretary of Mines as a member of the President's Cabinet, and of this committee the Hon. Lafe Pence, former member of Congress from Colorado, was appointed chairman. The other committee was appointed on the general question of the revision of the United States mining laws, and the writer appointed chairman. This latter committee met and organized during the convention, and once subsequently on the call of the chairman in the city of Denver, September 22d to 24th, inclusive. The result of the latter meeting was embodied in a provisional report containing a proposed new mining act, the various provisions of which are now under discussion by the members of the committee.

By resolution in the Congress, members of the committee were appointed by the Hon. L. Bradford Prince, ex-Governor of New Mexico, and President of the Convention, and it is composed of one member from each of the mining States and Territories west of the Missouri River. Certain members have not yet indicated their acceptance of the appointments, namely in the States and Territories of Oregon, Nevada, Idaho and Wyoming.

The members who have accepted and who are discussing the revision are as follows: California, W. S. Keyes; Washington, G. B. Dennis; Montana, W. A. Clark; Arizona, R. A. F. Penrose, Jr.; New Mexico, F. A. Reynolds; South Dakota, J. E. Todd; Colorado, C. J. Moore.

The committee will be glad to consider the views of anyone having experienced the difficulties and incongruities arising from the present law, and all communications on these questions may be sent to the undersigned, whose address is P. O. Box 548, Cripple Creek, Colo.

CRIPPLE CREEK, COLO., Nov. 4, 1897.

CHAS. J. MOORE,
Chairman Committee.

The Beam Process.

Sir: In an editorial published in a recent number of the *Engineering and Mining Journal*, you took occasion to call attention to the claims of the Beam process which is operating in Denver under the style of the Beam Furnace Company. As one among your many readers, I have been looking for some correspondence in reply to your remarks, but see no signs of a controversy. The October number of a monthly publication, entitled *Ores and Metals*, edited in Denver and covered on the back cover with a full-page advertisement, gives some details of this process which are quite interesting. In the article referred to, the Beam process is described as a roasting process, which, by admixture of salt and sawdust with the raw ores to be treated and certain peculiar conditions in regard to air currents, brings about a state of things which enables the furnace charge to be worked up so as to make it possible to "regularly recover over 100% of the fire assay of the raw ore." After describing the Beam roast as preparatory to treatment of the roast product by other amalgamation or by the cyanide process—with some provision for the recovery of copper values in the ore—this article goes on to quote the astonishing recoveries that are credited to this process of salt and sawdust, giving results showing a net saving ranging from the relatively modest figure of 9% to that of 166% in the instance of an ore from Boulder County, Colorado. In this latter case the ore came in one lot of 2,736 lbs. of tellurium ore from the John Jay mine, Boulder. The raw assay gave its value as \$7 per ton; the roasted assay gave its value as \$9.60; the recovery by pan-amalgamation was \$11.67 (weight of button).

This writer again quotes the recovery, mentioned in your remarks on this subject, of several dollars per ton from rock assaying only a trace in gold per ton, and I note that these "by weight of button" results are on lots weighing from one to two tons. In this connection I would suggest that the Beam process people turn their attention and apply the same methods to the many thousand of tons of so-called waste rock in the mine dumps of this and other districts, which will assay more than a trace, and can be had for the asking.

Why is there not in this an opportunity to repeat these feats on a large scale? Do these people believe or expect to persuade anyone else that such results, if they were obtained, could be accounted for in any other way but by gross errors in sampling ore in assaying and sometimes, perhaps in both?

The Beam process people would like the public to believe that this sort of thing is nothing in the way of their accomplishments. All these things, they claim, are done through the merits of their process beyond any other metallurgical process, not surely through any new merits of the chloridizing roast, the cyanide or amalgamation processes, but we are left to infer by virtue of the sawdust roast and the oxidizing of the charge beyond the usual habit in smelting practice. The author styles "ignorant detractors" all the unbelieving and quotes his professional authority as saying "practical tests convince; prejudice amounts to nothing." Does this gentleman suppose that the meagre record of such tests as are given out by the Beam Furnace Company will be accepted as practical tests? If the Beam, or any other process, had the greatest merits such claims as are put forward would condemn it in the minds of practical men.

In my observation the Beam process, in various press reports describing mining property, has been invariably connected with the most hopeless prospects, the owners of which, though they have little or no prospect of ever shipping, are ever on the point of erecting a mill of the Beam type, and of a capacity of 200 tons daily and upward, in the hope, I have always thought, of thereby working a miracle in the transmutation of rock into gold. Occasionally a luckless miner, who has heard of the remarkable saving of values where none existed, and cannot get anything for his shipment, makes threats of making all future shipments to the Beam process establishment and indulges in wholesale abuse against assayers, ore buyers and smelters, but we do not hear of his doing anything of the sort.

I would like to ask, through these columns, if there is anywhere, after the years that this process has been before the public, one single mill operating the Beam process on a commercial scale, that is successfully competing, in the open market, with mills of the stamp, cyanide, chlorination or concentration pattern—or mills of any other sort? Such inquiry as I have been able to make fails to reveal an instance. And when have such claims, as are referred to in the foregoing, received endorsement from a single trained metallurgist?

FORBES RICKARD.

CENTRAL CITY, COLO., Nov. 1, 1897.

ABSTRACTS OF OFFICIAL REPORTS.

Eureka Consolidated Mining Company, Nevada.

The report of this company for the year ending September 30th shows that prospecting has continued in a small way, with some encouragement, though no new ore body has been discovered. During the year there were shipped to the Salt Lake Smelting Works 1,121 tons tribute ore, 15 tons company ore and 70 tons of material from the furnace dumps. Most of this ore was from the surface workings and tunnel, all the work having been done by tributaries.

The total receipts for the year were \$33,861, of which \$23,713 was from sales of ore, \$9,716 from assessments collected, and the balance from miscellaneous sources. The payments were \$31,321, of which \$24,086 was for ore freights and mine expenses, the balance for office expenses and salaries. The surplus was \$2,540, which, added to \$2,524 carried over from previous year, left \$5,064 on hand at the close of the year.

BLOWING IN A LEAD FURNACE.

W. B. Devereux, in the *School of Mines Quarterly*, XVIII., No. 4 (July, 1897), describes a method of blowing in a lead furnace, which, he states, starts the furnace in good condition and with ordinary care gives very little trouble. The crucible is heated with cord-wood, and as soon as the walls are fairly hot a 2-in. pipe bent at an angle is inserted through the breast to the bottom of the wood fire and air is blown in. The crucible is filled with cord wood and, as soon as it is blazing well, several bars of bullion are shoved in on a plank and tipped off on the wood. This bullion melts and runs down through the hot fire to the bottom, becoming red-hot. This process is continued until the crucible is full of lead, when the fire is raked out and the lead thoroughly stirred up from the bottom and skimmed. The crucible and siphon are then full of red-hot lead perfectly clean. Brands and wood are then put back on the lead to form a support for the coke and to kindle it; the breast is put in and the furnace filled with coke to about 18 in. above the tuyeres; then light slag charges and coke to the top of the jackets; then charges part ore and slag and finally normal ore charges to the top.

A light blast is turned on until the slag begins to show at the slag taps and it can then be raised gradually to normal pressure. In this way the fusion zone is kept from rising and the furnace starts off with cool walls and a cool top. If lead makes too slowly and shows a tendency to cool in the well, a few bars can be dipped out and charged into the furnace again.

Russian Petroleum in Germany.—United States Consul Germain sends the following information from Zurich to the State Department: "From a Russian source I learn that a traffic arrangement has just been completed between the German and Russian State railways whereby Russian oil producers will henceforth be enabled to compete against United States coal oil in the German markets. As soon as the new tariff is in force, direct oil shipments, without the burdensome and expensive transfers on the frontier and at a low rate of freight, will be made from Petrovsk, on the Caspian Sea, as well as from the Volga ports of Campelim, Tsaratov, Zoryzin and Nijni-Novgorod to the principal German cities, as Berlin, Dresden, Leipsic, Hamburg, Bremen, Lübeck, Thorn, Breslau. The question of direct shipments to Königsberg and Dantsic is open as yet."

Cost of Producing Coal in the Pittsburg Region.—In the recent discussion over coal mining differentials in the pools, or groups of mines, on the Monongahela, the following figures were submitted by Mr. John H. Jones, who represented a number of operators: "Coal in the first and second pool is from 4 to 5 ft. thick; in the third pool, 5 to 6½ ft., and in the fourth pool it varies from 5 to 7 ft. The mining capacity of the miners in the third pool is nearly equal to the miners in the fourth pool. The expense of mining and marketing fourth pool coal is estimated as follows: Mining, \$1.97 per 100 bu.; margin, hauling, royalties, profit to producer, etc., 75c.; towing to Pittsburg and returning empties, 25c.; towing from Pittsburg to Cincinnati and returning empties, \$1.25; gauging, 4c.; pumping, 25c.; interest and depreciation, large repairs, 50c.; total cost of placing of fourth pool coal at Cincinnati and Louisville, \$5.01 per 100 bu." In the estimate for third pool coal Mr. Jones based his mining on \$2.05 per 100 bu., and towing to Pittsburg and returning empties, 17c., the remainder of the figures being the same as those in the fourth pool, and the total is the same, \$5.01. Mining for first and second pools placed at \$2.47, and towing at 12c., together with the other figures, making a total of \$5.36.

THE BLADRAY ELECTRIC DRILL.

Messrs. C. A. Denny and E. J. Way, in the *South African Mining Journal* of August 28th, describe a new electric drill with which experiments have been made at Johannesburg. The drill belongs to that class of electric rock drills which are known as motor electric drills. It consists essentially of the attachment to the bar, or shaft of the drill, of a cylindrical cam or hollow cylindrical piece formed with a spiral cam or screw surface in combination with an electrical motor, to which a corresponding cylindrical cam or hollow cylindrical piece formed with a spiral (or approximately spiral) cam or screw surface is affixed. The cam attached to the drill shaft is connected with a spiral, helical or other suitable spring, to impart the requisite percussive motion to the drill immediately the cam fixed to the shaft reaches the limit of its throw or maximum point of expansion.

Fig. 1 is a longitudinal sectional elevation of the machine. Fig. 2 is an elevation from the motor end of drill. Fig. 3 is a detached view of a portion of the cylindrical cams, C.C', drawn asunder, showing the cam surfaces.

In Fig. 1 A is the drill-bar or shaft upon the shank or extremity of which is a boss, a, which is of approximately the same diameter as the internal diameter of the cylindrical casing B, and in which it may freely slide to and fro.

The boss, a, is turned down at A and A', forming shoulders, one of which (A') is screwed to receive the cylindrical cam, C, shown clearly in detail in Fig. 1—itsself tapped to fit on to the screwed shoulder aforesaid. The cam, C, is screwed home to the shoulder, which latter, therefore, takes up the thrust, and prevents the possibility of the stripping of the screw thread.

Between the shoulder, a', on the drill shank, and the cover, b', on the end of the cylindrical casing, B, a spiral spring, D, is inserted. The

4. The motor is constructed on the polyphase system; therefore the armature or rotor is devoid of windings, commutator and brushes, and is consequently not liable to damage in any way.

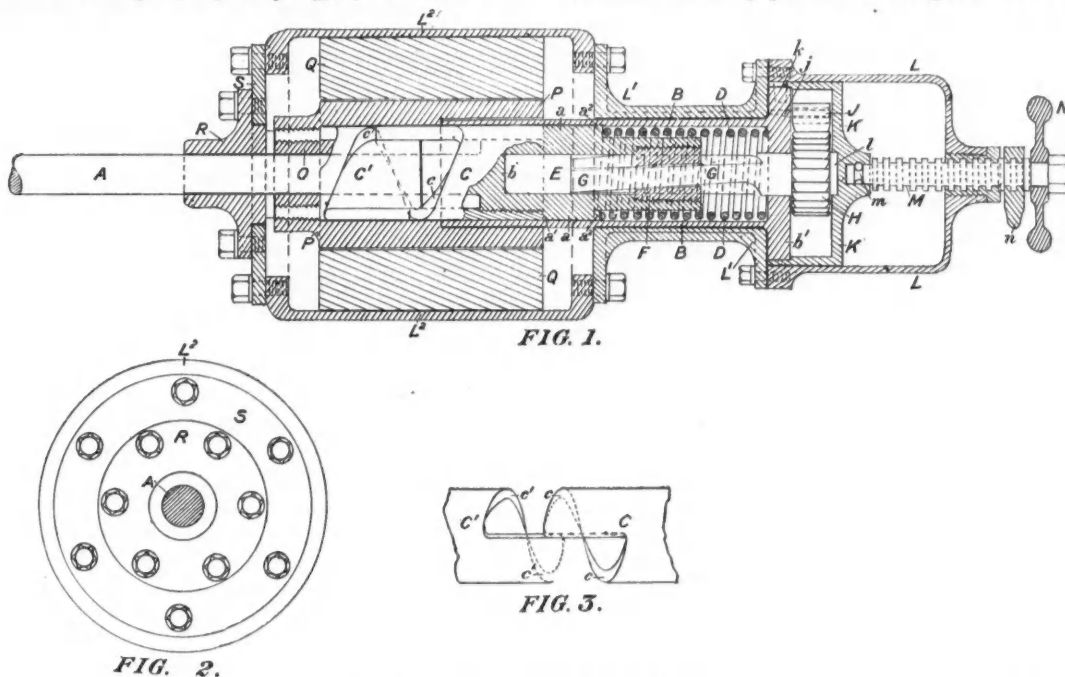
5. The carriage and feed of the machine are almost identical with those of the best known air drills.

A machine designed for tunneling purposes weighs about 225 lbs. when complete with cradle and automatic feed gear. The whole of the framework is built of aluminum bronze (90% aluminum and 10% copper) giving lightness and strength. This machine has a stroke of 3 in. and is capable of delivering 700 blows a minute, each of 400 lbs., with an expenditure of 2.04 I. H. P. at the engine driving the dynamo.

The work performed by the experimental machine was not under favorable conditions, as the type of motor used was most unsuitable, being employed because it was the simplest to construct. Drilling in sandstone on the outcrop the first hole drilled was 17 in. in 2½ minutes, with chisel bits of ¼-in. steel. In a second hole 7 ft. was made in 13 minutes, including stoppages for change of drills. On this work the drill made 720 blows per minute on a stroke of 2 inches with the spring at 300 lbs. A volt and ammeter were attached near the motor, and indicated 70 volts at 19 amperes, equal to about 1.78 electrical horse power.

The object of this first test on such comparatively soft rock was to ascertain whether with such a short stroke the drill would clear the "sludge," which it did. Underground, in the George Goch mine, in presence of many of the leading mine managers and engineers of the Transvaal, several holes were drilled in the hardest blue rock, with the results that rates of 3 in. a minute were recorded, which was considered by those witnessing the tests as entirely satisfactory, taking into account the unsuitableness of the motor. Careful calculations, based on these results, led to the conclusion that from 4 to 6 in. a minute will be attained in hard granite under proper conditions.

The authors of this paper claim a saving of £10,549 in first cost on an



THE BLADRAY ELECTRIC ROCK DRILL.

extremity of the drill shank is bored out centrally at E, as shown in Fig. 1, and is partially tapped to receive the rifle nut F, through which the rifle bar G works, and obtains the requisite twist or rotary motion for the drilling bit. The cavity E is made sufficiently deep to allow for the stroke of the drill. The end of the rifle bar G projects through the flanged cover b' of casing B, and has keyed or otherwise attached to it the ratchet or leaf-wheel H, the casing B forming a bearing for the end of the rifle bar. The pawls J are pivoted in gear with wheel H on pins j.

Passing into the flange of cover b' is a cup-shaped piece K, which slides in the cylindrical casing L. It is pinned or keyed as at k to the flange b', and forms a bearing at l for the extremity of the rifle bar G. A screw M passes from the end of casing L, the purpose of which is the adjustment of the tension of the spring D. M is attached to the cup-shaped piece K by means of the pin m. A hand wheel N is attached to the screw M, and a locking device n is provided for locking the screw in any desired position.

In drawing the parts attached to the screw M backward or forward during regulation of the spring tension, the casing B slides freely within the part L' of the exterior casing of the drill.

The cylindrical cam: C' is screwed into the hollow armature or rotor P of the motor, and is provided with a bush O, which forms the bearing for the rotating part of the motor.

P is the rotor and Q the stator of a polyphase electric motor, which is connected by wires to a dynamo or other electrical generator. The motor is enclosed by the part L' of the exterior casing. The cap R, which forms the bearing for the drill bar A, is affixed to an annular piece S, bolted to the casing L'.

The advantages claimed for this drill over others of this class hitherto constructed are:

1. All the parts of the machine are either in line or concentric with the drill shaft or "chuck bar."
2. It contains no differential gearing, and is therefore free from accident and waste of power attaching to such apparatus.
3. Working parts are only five in number: (a) Armature and cam attached; (b) drill shaft with cam attached; (c) rifle bar; (d) pawls; (e) coil spring.

electric tunneling plant, against a compressed air plant of the same capacity, the figures being stated by them as £16,085 for the latter and £5,535 for the former. The monthly cost of running the electric plant is set down at £310, against £1,043 for the compressed air plants.

The Bladray people have tried, and they claim with success, to design a stopping drill which shall not weigh more than 130 lbs., to deliver 900 blows a minute, of about 120 to 200 lbs., with an expenditure of about 1½ I. H. P. on the plant driving the dynamo. Being light, it can be rigged in a well ordered stope to put in four holes without shifting the column. It can and has been safely run by an unskilled laborer. It is expected that with some improvements, now under way, one man will be able to run two or three drills. The cross-bar is made extra long to give a large working area without changing position of column.

Spontaneous Combustion of Briquettes.—The danger of spontaneous combustion in briquettes forms the subject of an article in the *Organ* of the Central Union of the Prussian Steam Boiler Inspection Association abstracted by the *Colliery Guardian*; and instances are mentioned in which briquette stores have kindled spontaneously after having been exposed for a long time to the sun's rays. In this connection a competent authority has written to *Glückauf* that such spontaneous ignition is unknown in the Ruhr district, continuing as follows: "On leaving the press, the briquettes show a high degree of heat, about 50° C. (122° F.) or more; and, in order to hasten the cooling, they were sprinkled with water while being loaded on the railway cars. If the loaded cars have remained standing for some hours, the cooling of the briquettes will be so far advanced that they can be forwarded at once; but, if they be sent off too soon, ignition may under certain circumstances take place during the transport to destination." The idea of spontaneous combustion in briquettes that have been completely cooled, is, however, quite repudiated by the correspondent of *Glückauf*, no such case having come before his notice; but he presumes that the coal made up into patent fuel is first freed from all foreign substances, so as to contain no pyrites, and also that a large portion of the volatile gases are driven off in the process of manufacture.

MINING AND METALLURGY AT THE TENNESSEE CENTENNIAL EXPOSITION
AT NASHVILLE.

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

Mine operators and furnace managers have missed a great opportunity for setting forth the progress in mining and metallurgy that so distinguishes the new South from the old South. While this progress has not been so well marked in Tennessee, Georgia, Virginia and Kentucky as in Alabama, yet enough has been done to have acted as an incentive to the officials of these States and others concerned in the Exposition to prepare exhibits that would have been great object lessons to visitors. Alabama itself, easily first among the Southern States in mining and the attendant industries, has done almost nothing. It is not the purpose of this article to discuss the causes of all these failures to grasp the true inwardness of the exposition, nor to press the point of criticism too strongly. What is to be said will be said in the most friendly spirit, and for the sole purpose of indicating wherein the exposition has not been what it might have been, and what a progressive public spirit would have made it.

Expositions are costly affairs. It takes a great deal of time, a great deal of patience, a great deal of trained intelligence, and above all a great deal of money to make them successful even from the standpoint of the ordinary observer. This applies not only to the actual display of the various materials exhibited, but also particularly to their original collection. It is here that the first and the most important work is to be done. Not everything is fit to be sent to a great exposition; in fact most things are positively unfit, and should be rejected by the authorities. Huge blocks of ore, unlabeled and with no analyses attached, and no information as to whether they really come into use; piles of pig iron, not graded, with no analyses, and no mark upon them save that they came from a certain county; great pieces of limestone and dolomite with only one analysis to show for the lot; stacks of coke, with a chemical analysis, but no information as to the crushing strain, porosity and cell space, and nothing to specify whether it is really used for furnace or foundry purposes. Rarely, very rarely, indeed, one comes upon a display of pig iron that really means something.

The full series of irons are well shown in a glass case, properly labeled and analyses attached, with tests of tensile strength and the bars that were actually broken. A sound and a broken mine car-wheel made of the iron is in the case with a certificate of the manner of blows required from a hammer of a certain weight. Such an exhibit goes far to relieve the dreary monotony of unlabeled, unmarked piles of iron, good-looking, it is true, but devoid of any special interest because there is no information to be derived from studying them. If there is any one thing that distinguishes the South of late years, speaking industrially, it is the wonderful growth of the production of pig iron, and one would naturally suppose that at an exposition in honor of the centennial of one of the best of the Southern States, and one too of no mean rank as an iron producer, there would have been a special effort to illustrate what has been done in this direction. It is true that some individual attempts have been made, and that one or two of them are worthy of comment, but on the whole no effort has been made commensurate with the importance of the subject. The displays of agricultural products are excellent; it is difficult to see wherein they could be improved.

The displays of raw materials for iron and steel making are very good as far as they go, but they do not go far enough. One has to discriminate between minerals for cabinet specimens and ores for commercial use.

Magnificent specimens of hematite, magnetite or limonite that would adorn any museum are not ores of iron, and do not illustrate the character of the ores from which Southern iron is made. Mineral specimens that are merely specimens should not be placed among the ores, since they simply mislead the observer and serve no useful purpose. With one single exception there is no iron in the South that contains as much as 60% of iron, and this particular ore is not used in the South to any marked extent, but is shipped to Eastern furnaces. It is a Southern iron in the sense of being mined in the South, but not in the sense of being used here for iron making, except on a small scale.

To be instructive, to get at the very kernel of the matter, a display of iron ores should be a display of what is used now. The other specimens are for the class-room. They serve a most honorable purpose, but in an exposition for commercial ends—and really, if it does not subserve such ends, it cannot be held at all—they should be shown, if at all, in separate departments. And so for ores of gold, copper, lead, silver and zinc. Some of the specimens at Nashville are most beautiful, but they do not represent anything but cabinet specimens. As such they are useful and valuable, but economically they need not detain us.

A single good specimen of ore taken from the stockhouse, properly labeled, with analysis attached, and a statement that it is used in such and such a district is worth a case full of beautiful cabinet specimens to the practical man in search of information. If, in addition to this, a complete series of the products from the ore is shown, properly arranged and classified, the display becomes of the highest interest. But where this was attempted at Nashville there seemed to be no regard for the principles of attractive installation. The various articles were not properly arranged, and the value of the exhibit was seriously impaired.

One could not spend a week at the exposition without having it impressed upon his attention in numberless ways that so far as concerns raw materials the South has been bountifully blessed. There is no lack of ores of iron, copper, zinc, manganese, gold and aluminum, and in a less degree of silver and lead. All the different ores are shown, and in one or two cases most impressively. Where the exhibits have failed to seize the opportunity is in the proper classification, installation and labeling. If the time and money given had been spent under the supervision of persons acquainted not only with the scientific but particularly with the commercial aspects of the exposition its value would have been greatly enhanced. And this brings us naturally to ask why there should not be juries of reception as well as juries of awards. Doubtless there are persons who receive articles, but why should not a certain standard of excellence be insisted upon when the exhibits are being prepared? Instead of allowing all sorts of things to come in, good and bad, why

should it not be required that a certain system be followed? Take, for instance, the iron ores, and what is to be seen at Nashville was seen also at New Orleans and Atlanta, the other two great Southern expositions. One has to walk pretty much over the entire grounds to see what should be seen in one building. Whatever principle of classification is adopted should be carried out consistently.

The iron ores should be grouped according to their kind, as hematites, limonites, magnetites, etc. They should be typical specimens of what is actually used, should be plainly labeled, in distinct print, and have the signed analyses attached. With each kind there should be shown a complete set of the irons made, labeled according to grade, with full analyses, and tests of tensile strength, shrinkage, chilling, etc. There are five questions that should be asked and answered in respect to an ore—what is it, what is it used for, where does it occur, where is it used, and how much is it used? No exhibit of ores is complete unless these questions are answered. Along with the ores and the products should be shown as well as the fluxes, limestone and dolomite, and the coke, and full information should be given on every point.

This would be an ideal exposition, and would cost a good deal of money, but one would visit it with the liveliest satisfaction.

The criticism has been made that expositions are gradually losing their value as object lessons in progress, that the manufactured articles especially are fewer in number and of inferior quality, showing less care in preparation and installation. If this is true it merely proves that manufacturers do not consider them good advertisements, and prefer to spend money in some other way.

This untoward tendency may be corrected in great measure by insisting upon a high degree of excellence before the exhibits are accepted, and to a lesser extent by wholesome criticism of what is actually shown.

In mining, metallurgy and geology the Nashville Exposition has some really good things, but it is also true that, on the whole, no proper attempt at displaying them has been made. The raw materials are there, and a few products, but they have not been systematically classified or arranged.

The Willson Patents in New Zealand.—An application for an injunction has been made by E. F. Green and W. C. Clark against W. Taine, of Dunedin, for manufacturing and selling calcium carbide in infringement of T. L. Willson's Australasian patent rights. The matter has not gone beyond an agreement to keep account of sales pending the trial.

German Iron Production.—The total production of pig iron reported by the German blast furnaces for the eight months ending August 31st was: Foundry iron, 714,270 metric tons; forge iron, 1,081,994 tons; Bessemer pig, 381,593 tons; Thomas pig, 2,306,172 tons; total, 4,484,034 tons, showing an increase of 309,013 tons, or 6.3%, over the corresponding period in 1896.

The Salt Industry of Rumania.—The production and sale of salt in Rumania is a State monopoly as in Austria. The salt is produced at Slanic, Dofiana, Tirgu-Ocna and Ocnele Mari, of which the first is by far the most important. During the last ten years it has produced about 350,000 tons of salt, the output of the other three salines in the same period having been about 520,000 metric tons. In 1896 the exportation of salt from Rumania to Bulgaria became important.

The British Columbia Corporation Law.—A decision of much importance to those interested in commercial and mining ventures in British Columbia has just been given by the courts of British Columbia. Questions having arisen as to the rights of certain companies holding foreign charters, the courts have ruled that such charters held by companies operating in British Columbia do not absolve their holders from compliance with the requirements of the company laws of the province.

Large Lake Ore Carriers.—The Bessemer Steamship Company, of Cleveland, has contracted with F. W. Wheeler & Company, of Bay City, Mich., for three vessels which will be the largest ore carriers on the Lakes. These are a steamer and two barges, which will have a carrying capacity of 20,000 tons of iron ore, the steamer taking 6,000 tons and the barges 7,000 tons each. The steamer will be 475 ft. over all, 455 ft. keel, 50 ft. beam and 29 ft. deep. She will have quadruple expansion engines, cylinders 28, 40, 59 and 85 in., with 42-in. stroke. Steam will be furnished by four Scotch boilers, to be allowed 200 lbs. working pressure to the square inch. Her water bottom will be 6 ft. deep. The barges will each be 450 ft. over all, 435 ft. between perpendiculars, 50 ft. beam and 28½ ft. depth. The water bottoms will be 5½ ft. deep. The barges will have towing machines, and will each have two windlasses, one forward and one aft. On account of their great size, these vessels will each have 14 cargo hatches, 24-ft. centers.

The Stora Kopparbergs Bergslags Aktiebolag.—At the Scandinavian Exposition in Stockholm this year a noteworthy exhibit was made by the Stora Kopparbergs Bergslags Aktiebolag, which is not only the leading company in Sweden, but claims to be the oldest mining company in the world. There is in existence a charter granting certain privileges to the company which is dated 1347, and in which the company is mentioned as already old. The records show its continued existence since that time. The company has issued pamphlets in English and Swedish describing its exhibits and giving some account of its operations. At the present time the principal branch of these is the iron works; the oldest of these dates from 1735, and their yearly production amounts to 55,000 tons of pig iron, 61,000 tons of steel ingots and 4,000 tons of charcoal blooms; from these 48,000 tons of bar and other finished iron and steel were made. The copper mines at Falun, the original property of the company, produced last year 400 tons of fine copper, besides 1,600 tons of copper sulphate, 400 kilograms of silver, 100 kilograms of gold and a large quantity of by-products, such as mineral paint and sulphuric acid. The company also has a large trade in lumber from its woodland properties. The production of this mine yearly since 1633 was published in Vol. I, page 584, of *The Mineral Industry*.

AN ELECTRICAL STOVE FOR LABORATORY USE.

An electrical stove intended to replace economically, as far as possible, the ordinary water-baths and gas burners used in the laboratory is described by M. D. Gohon in the *Journal of the American Chemical Society*. Fig. 1 is a perspective view of this stove, and Fig. 2 a section. It is of copper, preferably cylindrical, about 3 in. in height, exclusive of legs, and 7½ in. in diameter. The top consists of the usual concentric rings; the bottom is open. The heating plate A is placed 2 in. from the top, allowing ordinary flasks and casseroles to rest securely on the rings without touching the bottom. There is a clearance of ¼ in. between the plate and the sides of the stove, allowing anything falling into the stove to pass through. The heating plate and body are independently fastened to the legs and may be quickly detached.

The heat is generated by the coils, B, of ordinary rheostat alloy, imbedded in silicate insulation; ½-in. asbestos board, C, supports this and prevents the radiation of heat downward. A copper plate, D, turned over the edges, protects the coils and insulation from materials falling upon them, and strengthens the plate. Copper is preferable to the iron plate usually employed in rheostats, heating more rapidly and being less quickly attacked by reagents, and is easily replaced if destroyed. The heating coil is in two parts of unequal size, either or both of which may be brought into use by means of the switch E, thus permitting of three variations of temperature without the use of other apparatus. The most convenient size of coils are such as to maintain the plate at about 90° C., 110° C., and 125° C.

Compared with the water-bath it is clean and dry and requires no attention; it supplies a constant and dry heat. The heat can be varied, and it is not affected by draft as are gas stoves, nor does it unnecessarily heat the laboratory. By the use of suitable coils or interposing resistance, the stove may be used with more volatile liquids. It especially recom-

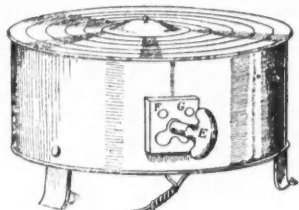


FIG. 1.

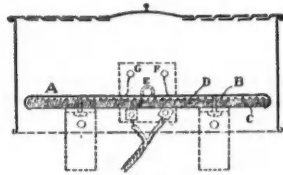


FIG. 2.

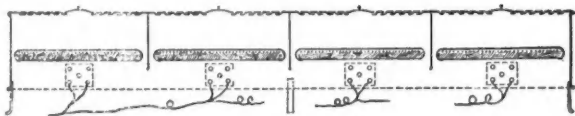


FIG. 3.

ELECTRIC STOVE FOR LABORATORY USE.

mends itself in connection with the distillation of inflammable liquids, extractions, etc., where danger from fire is to be avoided.

A group of the stoves, independently connected as shown in Fig. 3, is much to be preferred to the large water or steam baths generally used.

NOTES ON SELENIUM AND TELLURIUM.

Edward Keller in the *Journal of the American Chemical Society*, Vol. XIX, No. 10, October, 1897, states that no analysis of any of the western crude copper is now complete without the joint, or separate determination of selenium and tellurium. It has long been known that many acid-forming elements are precipitated by ferric hydroxide as insoluble salts from ammoniacal solution. The elements of this group which occur, or may occur, in copper are phosphorus, arsenic, antimony, tin, selenium, and tellurium. With all these elements this method may be most successfully employed when they are present in small quantity and the precipitation of the copper becomes impracticable. When the proper conditions are observed it is most efficient, rapid and simple. From five to many hundred grams of copper, with a comparatively very small amount of iron, are dissolved in nitric acid, enough ammonia added to hold all copper in solution, boiled, and the ferric hydroxide filtered and washed. From this precipitate the enumerated elements can easily be separated by known methods. Thus the ferric hydroxide precipitate may be dissolved in hydrochloric acid of the proper strength, and the selenium precipitated with ferrous sulphate, the tellurium with sulphur dioxide, and determine iron tared filters, but this reaction is quantitative only when a certain excess of iron is present, which for selenium must be many times greater than for tellurium.

The best precipitant for both elements is declared to be sulphur dioxide. To obtain the metallic precipitates by any reducing agents the two elements must be in solution as selenous and tellurous acids. The same is true if the sulphides are desired by precipitation with hydrogen sulphide. Selenic and telluric acids are only reduced to the lower form by strong boiling hydrochloric acid. In the reaction of selenous and tellurous acids with sulphur dioxide the two show characteristic differences. When precipitated by that gas no heavy metals must be present, since they are also, at least partially, precipitated.

A series of experiments showed that even with sulphur dioxide in a hydrochloric acid solution of over 80% acid a separation is possible, but to obtain a total precipitation of the two elements together in this way, the acidity must be confined to definite limits, safely between 30 and 50%; otherwise one or the other of the two will remain wholly or partially in solution.

If, after saturation with sulphur dioxide of a selenous acid solution of insufficient acidity, the necessary amount of hydrochloric acid be added, the precipitation becomes total. The same is the case with tellurium in case of insufficient acidity. In case of too high acidity, diluting to the

required strength calls forth total precipitation. Both elements are more voluminous when precipitated from weak acid solutions than when precipitated from stronger ones. Ferrous sulphate does not precipitate tellurium.

A series of determinations of selenium, precipitated from solutions of various acidity by ferrous sulphate, showed that the reaction is rapid and quantitative in strong hydrochloric acid. The degree of rapidity of precipitation diminishes as the acidity is reduced. It is total within 24 hours, as long as the acid is 30% or more. In fact, the reactions of ferrous sulphate and selenous acid are almost identical with those of that acid and sulphur dioxide.

These facts furnish a simple method to separate selenium from tellurium, or any other of the ordinary elements for analytical or industrial purposes. Gold and silver only, of the metals usually present, interfere. Gold may previously be precipitated by oxalic acid, which does not affect selenium, and silver is so readily separated as chloride that it is no obstacle. Or gold may be precipitated with the selenium and weighed together and the latter dissolved with nitric acid, leaving the gold in weighable form. Selenium is then obtained by difference.

A GAS GENERATOR FOR THE LABORATORY.

In a recent number of the *Journal of the American Chemical Society*, Mr. A. E. Knorr describes a gas generator, which, he says, has been found a source of great comfort in metallurgical work, where, as in the analysis of refined copper, it is not an infrequent occurrence to precipitate 50 to 100 g. of metal at a time in the form of sulphide. Fig. 1

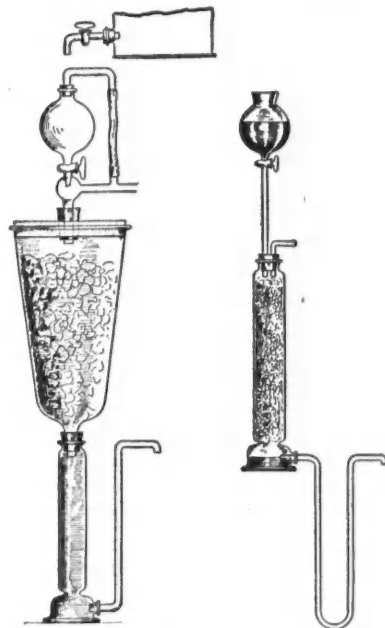


FIG. 2.

FIG. 1.

GAS GENERATORS.

represents the apparatus in its simplest form. The iron sulphide is contained in a calcium chloride jar and is decomposed by allowing hydrochloric acid, diluted with its own bulk of water, to trickle over it drop by drop. The spent acid collects at the bottom, and reaching the level of the U-shaped siphon, it will run out as fast as supplied. It may be discharged directly into the sewer, or a large bottle may be placed under the overflow, to be emptied from time to time. The siphon tube is the novel and essential feature of the apparatus, allowing no spent acid to foul the iron sulphide, while at the same time forming a perfect hydraulic seal against any escape of gas. It must be made sufficiently long for the column of liquor contained in it to overcome the pressure of the liquor in any precipitating vessel of ordinary size. For the same reason the stem of the acid bulb must be at least 6 or 8 in. long.

Fig. 2 shows a larger and somewhat more elaborate form of this generator made for the special purpose of supplying very large quantities of hydrogen sulphide, where the smaller apparatus would require refilling every day or two. A large druggist's percolator of heavy glass, holding 20 or 30 lbs. of iron sulphide, was fitted into a calcium chloride jar, acting as a support and at the same time forming one limb of the siphon. The other limb was made of glass tubing appropriately bent. In order to avoid an inconvenient length of the stem of the acid bulb, the top of the latter was made to communicate with the interior of the generator through a T in the delivery tube and proper rubber connections. This equalizes the pressure above and below the acid and allows it to fall by its own gravity. In an apparatus of this size the flow of acid does not immediately answer changes in the speed of acid supply. In order to regulate it it was found convenient to observe the flow of acid through a small bulb blown on just below the stop-cock and containing a projecting nipple, because after a short time the glass of the generator becomes covered with a black coating through which it is impossible to observe the drops of acid. The top of the percolator was closed with a 6-in. rubber stopper permanently sealed in, while the stem of the acid bulb passed through a second rubber stopper, 1 in. in diameter, fitted into the first. In filling the apparatus only the small stopper is removed, and it was found advisable to use only coarse pieces of sulphide powder and finer particles having a tendency to wash down and choke the throat of the percolator in a short time. A large acid reservoir placed on a shelf above the acid bulb is a convenience but not a necessity. The

whole apparatus was securely clamped against the outside of the hood, only the delivery tube projecting into it.

This generator in daily use has been found to work without refilling or other attention for three months at a time. It can also be advantageously used for generating carbon dioxide, hydrogen and other gases.

REPUTED NICKEL MINES IN MINNESOTA.

Written for the Engineering and Mining Journal by Horace V. Winchell.

For many years it has been a matter of common knowledge to those familiar with the economic geology of the Lake Superior region that iron ore occurs in large bodies on the north shore of the lake and especially in certain localities about 30 miles north of Grand Marais. These deposits attracted attention at least 30 years ago, and much of the land was purchased for the ore it contained. Analyses of these ores, however, showed them to contain titanium in deleterious amount, and on that account the district and its ores were condemned by iron experts. A few years later it was discovered that certain black magnetic ores from the same region were free from titanium, and immediately other large tracts of land were taken up. This was about 20 years ago.

It was not until 1887, however, that the line was drawn between the titaniferous and non-titaniferous ores. In that year a Minnesota Geological Survey party under the direction of the present writer ascertained that the titaniferous ores are confined to and contained in the eruptive gabbros of the Keweenaw period, and that the non-titaniferous magnetites belong in the underlying and older sedimentary rocks of the Animikie, which constitute the Mesabi Range. The distinction was clearly made and the line separating these two formations was sharply drawn during that season's work. Traces of nickel were found at the same time in the titaniferous ore.

In the vicinity of Gunflint Lake, in Townships 64 and 65, Ranges 3, 4 and 5 W., ores of both varieties are found. The Animikie or Mesabi ores are hard, black, shiny magnetites, occurring in thin seams or strata, interbedded with silicious and sometimes olivinitic layers. In places the good ore has a thickness of 5 or 6 ft.; but it is usually much less. It is of fair grade in iron and low in phosphorus. The iron-bearing formation is thin, and the underlying rocks come to the surface in many places. The titaniferous ores occur along the north edge of the gabbro sheet where it lies upon the Mesabi strata, and it is not always an easy matter to distinguish between the two except for the duller luster and more massive structure of the gabbro ore.

In 1890, when iron ore was selling for \$6.50 per ton in Cleveland, this surface ore, for it lies just under the moss, could have been quarried, hand-picked or otherwise concentrated and transported to market at such a cost as to leave a very fair margin of profit. To-day it has no commercial value whatever.

About the year 1892, when the soft-ore deposits of the Mesabi were being discovered, a company called the American Realty Company was organized by citizens of Minneapolis and acquired interests in several thousand acres of this land, including indiscriminately both titaniferous and non-titaniferous ores. Buildings were erected, shafts were sunk, and work on a large scale was begun near Gunflint Lake. A contract was made with the Port Arthur, Duluth & Western Railroad for the shipment of 100,000 tons of ore per year for a period of 10 years, from the mine to Port Arthur, and bonds were given to insure specific performance of contract. The railroad was forthwith extended 30 or 40 miles through a rough country to the mine, which was only reached by means of steep grades and a switchback or two. Not one car-load of ore was ever shipped over the railroad. The panic of 1893 caused a suspension of the banks which were presided over by the chief stockholders of the American Realty Company, and that company passed into the hands of a receiver; and now my story really begins.

These lands were sold for \$41,000 to the representative of a broker of Minneapolis named George W. Jenks. Jenks turned these and other lands over to the American Nickel Mining Company and announced in newspaper advertisements and circular letters, as well as in the columns of the press, the discovery of "the most valuable nickel properties in the world." Analyses were published purporting to be made by Oliver G. Seward, then of Minneapolis, now of Spokane, and samples of titaniferous iron ore labeled "nickel ore" were displayed in the windows of a sumptuous office where stock in the new company was offered for sale.

Inquiries as to the newly found nickel deposits poured in to the writer from all sections of the country and he was kept busy telling what he knew of the company and their lands. Among these letters of inquiry was one from Mr. D. H. Browne, of Cleveland, the well-known chemist and metallurgist of the Canadian Copper Company, chief owner of the nickel mines at Sudbury, Ontario. Correspondence with him led to some interesting disclosures, which can best be stated in Mr. Browne's own words, as follows:

"In the spring of 1896 Mr. S. P. Hovey, of Detroit, brought to the notice of the Canadian Copper Company certain samples of titaniferous iron ore said to contain large quantities of nickel. These samples consisted of unbroken pieces of heavy iron ore, which had been taken from the deposits by Mr. Hovey, and of powdered ore in envelopes, said to be the powder obtained by crushing these ore samples for analysis. These powders were accompanied by certificates of analysis from Mr. Seward, of Minneapolis, which certificates stated that Mr. Seward found the powdered ore to contain certain percentages of nickel, varying from about 2 to 10%. These samples of powdered ore were submitted to me by the Canadian Copper Company for analysis, and were found to contain substantially the same amounts of nickel as were reported by Mr. Seward. Analysis of the unbroken pieces of ore said to be from the same deposits as the powdered ore failed to reveal more than the merest trace of nickel.

"In order to give this matter a thorough investigation I accompanied Mr. Hovey on May 21st, 1896, to the Gunflint Lake region in Minnesota, and there spent a week or 10 days in examining and sampling the ore *in situ*. We were accompanied by Mr. Phillips, who was formerly interested with Mr. Johnson, of Grand Marais, but who was at the time of my visit acting as an explorer for Mr. Hovey. [The Johnson Nickel Mining Company is another Minnesota corporation interested in these same lands and promoted by the same people as the American Nickel Mining Com-

pany. The Johnson referred to is claimed to be the original discoverer of the "nickel" . . . Mr. Hovey took from each deposit a small bag of ore. I did the same, taking my sample in the presence of Mr. Hovey and immediately sealing the bags with wax and my private seal. Mr. Hovey afforded me every opportunity of examining these deposits, and was entirely honest in his endeavor to ascertain the value of the ore. I brought with me to Cleveland 28 sealed samples of these ores, and then analyzed them. I did not observe any physical signs of nickel in the ore. Analysis showed various small amounts of nickel—as a rule, merely a trace, in a few cases two or three-tenths of 1%. None of the samples had any economic value whatever as a nickel ore. Analytical certificates from Mr. Seward showed the samples taken by Mr. Hovey to contain as before large amounts of nickel. As a comparison of these analyses I give below Mr. Seward's certificates and my own.

Seward's Analyses.		Browne's Analyses.	
Lot 8, Section 5, T. 64, R. 1, nickel 3%.		Sample 17, same place, nickel, none.	
Lot 1, Section 2, T. 64, R. 3, " 3 2%.		" 6, " " " trace.	
Section 1, T. 64, R. 2, " 6 6%.		" 21, " " " "	
Island Lot 12, Section 7, 64-2, " 2 5%.		" 29, " " " none.	
Lot 5, Section 2, T. 64, R. 3, " 2 6%.		" 5, " " " trace.	
Lot 8, Section 8, T. 64, R. 1, " 8 4%.		" 14, " " " 0 37%.	
N.W. ¼, S.W. ¼, T. 64, R. 3, " 6 5%.		" 11, " " " 0 37%.	

"Mr. Hovey then procured from Mr. Seward the method of analysis used by him and told me that if I used the same method of analysis I would probably find the same amount of nickel. This method of analysis was a fire-assay method and was utterly useless as a method of analysis. Any nickel made by this method would be exceedingly crude. Mr. Hovey showed me a small phial containing beads of nickel said to have been obtained by this method of analysis. I obtained one of these beads and found it to be exceptionally pure. On one side was a small indentation or hollow exactly like the hollow which is produced when molten nickel is shotted in water. Otherwise the bead was perfectly spherical. A bead produced by assaying and cupellation almost invariably has a rough flattened foot at the point where the bead has cooled on the cupel. The beads shown me looked remarkably like the shot nickel made for the market by the Orford Copper Compauv. Mr. Hovey then supplied me with the powdered ore returned by Mr. Seward and purporting to be crushed ore from the localities mentioned. I analyzed a number of these powdered samples and found an average of 6.22% nickel. I again took an average sample of all the ore I had myself powdered and found therein 0.28% nickel."

Further analyses made by Mr. Browne and by Ledoux & Company, of New York, confirmed the work already mentioned. In conclusion Mr. Browne's letter says:

"The opinion of the Canadian Company is that Mr. Hovey has acted in this matter with absolute integrity and that he has been made the victim of a carefully planned system of 'salting,' the object of which was to induce him to purchase for a large amount absolutely worthless properties. Upon whom the responsibility rests is not at present clear to me, but it is very evident that at some point after the ore was taken from the deposit by Mr. Hovey, nickel oxide was introduced into the sample with intent to deceive and defraud."

Mr. Browne also mentions the fact that the nickel in the powdered samples returned by Seward was largely soluble in ammonia, which is rather peculiar in a natural ore of nickel, to say the least.

Stock in these nickel companies has been sold to gullible and uninformed people and is still for sale. It is such transactions as these that make it difficult to interest the more intelligent and cautious man of business in mining enterprises.

An Electrical Anniversary.—The fiftieth anniversary of the establishment of the firm of Siemens & Halske, the electrical engineers, was celebrated at Berlin recently, by the presentation to the heads of the firm of numerous congratulatory addresses, and a portrait of Herr Werner Siemens. Herr Carl Siemens read a deed establishing a fund of 1,300,000 marks (\$238,000) for the benefit of the workmen and officials of the firm.

Siberian Coal Deposits.—For exploring the vast imperial domains in the Altai and Nertchinsk districts of Russia, a special geological section of the Cabinet has been organized under the direction of M. Inostrantsev, assisted by Mining Engineer Pletner and also Professor Venukoff, of the St. Vladimir University, who was specially charged with studying the coal deposits. The latter observes, in his report on the carboniferous deposits of the Kouznetzk basin, that its limits are defined by the outcrops of the infra-carboniferous limestones and Devonian deposits. Above these limestones a series of beds, formed of sandstones and very hard black clays, constitute the littoral zone of the basin. There is no doubt, considers the professor, that the coal deposits belong to the carboniferous system, which is proved, first, by the general stratigraphical conditions of the basin, and, secondly, by the organic remains of the schistose clays intercalated with the coal.

The Pneumatophor in German Coal Mines.—In connection with the increasing use of the pneumatophor, or oxygen rescue apparatus, in Silesian mines, the subject of erecting depots for the necessary store of oxygen bottles was lately discussed at a committee meeting of the Upper Silesian Berg- und Hüttenmännische Verein. It was reported that a large number of collieries in that district now possess pneumatophors, the most important part of which is a bomb filled with compressed oxygen, which can only afford the required supply of oxygen for a comparatively short time, and must then be replaced by a new one, these bombs being filled from large steel cylinders containing from 500 to 1,000 liters of oxygen by means of special filling apparatus. It was decided that, as all the large collieries are now provided with the necessary bombs, steel cylinders and filling apparatus in sufficient number, or will be so shortly, it is sufficient for the present to provide a central store for supplying small mines, as well as a large one in case of special need and this central station, required at once, should be erected in connection with the Tarnowitz Mining School. The pneumatophor was illustrated and described in the *Engineering and Mining Journal* for July 31st, 1897, page 129.

THE IMPROVED SIMON-CARVES COKE OVEN.

The Simon-Carves type of by-product coke oven is well known and has been frequently described. Recently a number of minor improvements have been made, and the accompanying illustrations show the oven as now built, Fig. 1 being a section through the center of the oven, and Fig. 2 a section through the partition walls, showing the arrangement of the flues. The latest ovens of this type built are 70 at the Malton colliery, Durham, England, where a block of 70 had already been in operation for three years.

In the Simon-Carves system the coal is coked by heat transmitted through the oven walls. This heat is obtained by burning the gases distilled from the coal, after the tar, benzole and ammonia have been collected. The gases are burned as they circulate through the flues at the side and bottom of the oven. All air is excluded from the oven itself.

Each oven is a long, high, narrow chamber of brickwork, and a number of these are built side by side, with partition walls between them, containing the horizontal flues. Flues are also arranged underneath the floor of each oven. The flame and its products of combustion pass from the tuyeres along the whole length of flue under the oven floor; these then ascend by a vertical flue to the uppermost of several horizontal flues and descend in a zig-zag direction along each side of each oven, finally passing into the heat recuperator in which the air supply necessary for the combustion of the gases is heated by means of the waste heat of the gaseous products of combustion and which are intercepted and used on their way from the ovens to the chimney. By this means the coke oven is heated at the bottom and also evenly at the sides, and the coal rapidly and completely coked. Provision is also made for extra admissions of gas and air at intermediate points of the flues if the quality of the coal makes it desirable to thus further equalize the heat at every point of the surface of the coke ovens. The waste gases, after having on their way to the chimney, heated the cold atmospheric air for combustion, are further utilized, for producing the necessary steam in the boilers for extracting and treating the by-products and for other purposes. The recuperator is entirely self-acting and consists of five flues

causing the gas in the scrubbers to flow upward, while the ammonia liquor, finely distributed by means of the material in the scrubber, flows from the circulating tank downward, and this circulation being repeated a number of times, the ammonia liquor gradually becomes stronger and stronger until suitable for distillation and manufacture into sulphate of ammonia.

The gases, after being passed through the ammonia scrubbers, are conducted through another series of similarly constructed scrubbers, but they are here brought into contact with oils which absorb all the light hydro-carbons or benzols contained in the gases. These oils are circulated through the scrubbers many times over until such a state of concentration has been obtained that they are ready for distillation for the subsequent manufacture of refined benzols. These by-products having been recovered, the gases are led by pipes back to the oven flues to serve as fuel for making coke, as has already been described. The discharge of coke from the oven is made by a ram in the usual way.

HEALTH OF ZINC WORKS EMPLOYEES.

A recent paper by Dr. Seiffert, which is abstracted in the *Proceedings* of the Institution of Civil Engineers, gives the results of 12 years' experience while employed as the medical officer of a zinc manufactory, during which time 1,300 workpeople came under the writer's observation. Of these 1,000 were males and 300 females. The relative numbers of the sexes engaged at one time were 641 males and 145 females, the latter being thus in the proportion of 22.6% of the whole. An account is given of the career of the operatives from the beginning of their working life, formerly at 12 but now at 16 years of age, to their retirement from active labor, after an average length of service of about 29 years.

The most noticeable attack is the rapid advent of anæmic symptoms, loss of appetite, disturbance of the digestion, muscular and nerve pains, failure of the extremities, severe diarrhoea and the fatal blue line in the gums, all pointing to lead poisoning. At 40 years of age the workpeople have, as a rule, lost all interest in labor, and it is only the dire necessity

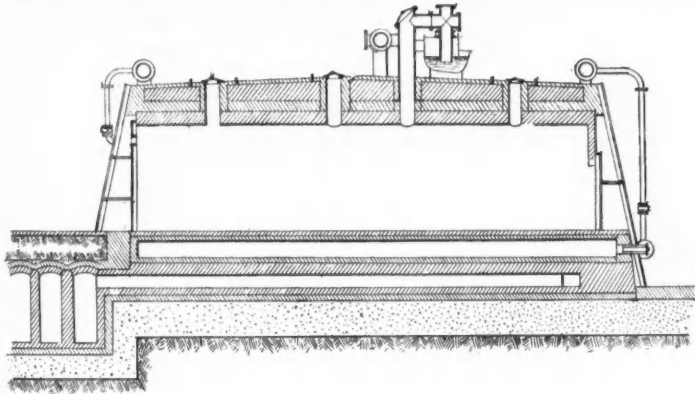


FIG. 1.

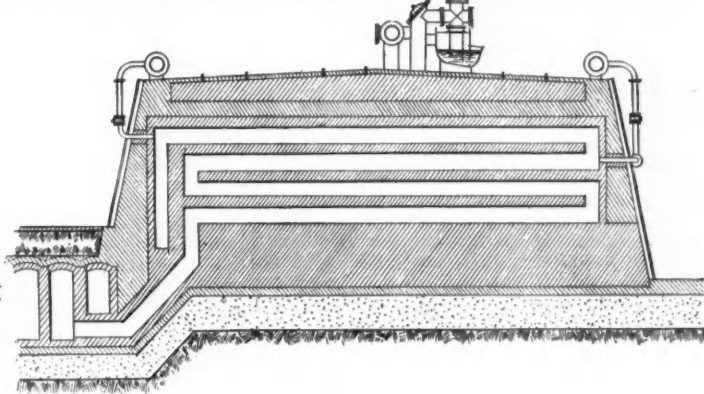


FIG. 2.

THE IMPROVED SIMON-CARVES COKE OVEN.

arranged side by side underneath the coke platform, and parallel with the range of ovens, three of these flues serving for the conduct of the air for combustion to be heated and between these are sandwiched two flues conveying the hot waste gases of combustion coming from the oven flues. The arrangement is therefore such that the heating of the air to a high temperature is effected in flues that are entirely out of contact with the brickwork of the ovens proper.

In operation the ovens are charged with coal through openings on top; the coal is evenly distributed by rakes introduced through suitable openings in the doors, the latter being kept closed and tightly luted while the coal charge is being coked. The charging holes on the top of the oven are also provided with covers. From the top of the oven rises a gas ascension pipe, through which the gases are aspirated from the ovens by means of exhausters. Gas valves of special construction are provided for the purpose of isolating each oven during the time of discharging coke and charging coal. When the ovens are at work the gases have to pass through these valves after having deposited any coal dust or pitchy matters they may contain at the commencement of their passage from the ovens to the exhausters. These deposits are collected in hydraulic mains containing division plates, thus affording facility for cleaning them out while the ovens are at work. These hydraulic mains also further serve the purpose of catching a certain portion of weak ammoniacal liquor and any tar which may have condensed out of the gases. Both these products are immediately and continuously run out of the mains into a deposit tank specially provided for the purpose of allowing them to separate by specific gravity. The gases, after passing through the valves and hydraulic mains on their way (under suction) to the exhausters, first pass through a condenser of simple construction for the purpose of still further condensing and cooling the gases. A further quantity of tar and weak ammoniacal liquor are thus obtained, which are likewise run into the deposit tank for settling by specific gravity. The gases, after leaving the condenser, pass through the exhausters and are now forced, under pressure, first through ammonia scrubber and then through oil scrubbers, for recovery of benzols.

The tar and weak ammoniacal liquor in the deposit tank having separated, they are pumped out, the tar into the tar tank and the ammoniacal liquor into the ammoniacal liquor circulating tank. Up to this point the only source of water for absorbing the ammonia from the gases has been the moisture contained in the coal. At this stage water from the main in suitable quantities is admitted for the purpose of washing the gases in the ammonia scrubbers. This is done by

of earning a living which enables them to continue in their occupations. There can be no doubt that slow and subtle lead poisoning is the chief factor in these chronic ailments, but there is still a possibility that other metallic poisons, notably zinc, may lead to certain of these injuries to health, chiefly in attacking the muscles and nerves. Both the blende and the calamine, employed as ores, contain from 1 to 2% of lead, and since even the minutest traces of this metal when once introduced accumulate in the system, there is here sufficient evidence of the probable origin of the grave symptoms mentioned. It is quite possible, however, that the sublimed zinc, if inhaled, may cause similar injuries to those which arise from the lead fumes, and it is known that sulphate of zinc, sulphide of zinc, and even acetate of zinc may give rise to poisonous action in the system. Many other metals are present in the fumes and dust of the zinc works, such as cadmium, antimony, and arsenic, which are all most dangerous poisons. Even the sulphurous acid, carbonic oxide, and carbonic acid gas, constantly breathed as they must be in small quantities, may prove highly injurious. Some reports of the chemical investigations of Mr. Brandhorst indicate the existence in different parts of the bodies and in the secretions of the zinc-workers, of antimony and zinc. It is shown that these substances must enter the system mainly through the lungs along with the dust and fumes, and various remedial and sanitary precautions, based upon the experience gained during these investigations, are embodied in a series of recommendations.

British Iron Ore Imports.—The imports of iron ore from Spain into Great Britain in the first nine months of 1897 amounted to 3,867,833 gross tons, compared with 3,781,139 tons in the corresponding period of 1896, and 2,863,915 tons in the same months of 1895.

A Machinery Exhibition in Peru.—Consul-General Bergmann, of Peru, has received word from his government that a permanent exposition of machinery, such as agricultural implements, mining machinery, electrical appliances of every description and labor-saving machinery, will be opened at Lima on December 9th. Mr. Bergmann has also been notified that all machinery sent to Lima by American exhibitors will be exempt from custom-house duties and consular fees. Exhibitors are permitted to show their wares for a period of six months, and each exhibitor is allowed a space of 250 ft. The exposition is to be established by the Peruvian government for the purpose of increasing its trade with manufacturing countries, especially with the United States.

CYANIDING SULPHIDE GOLD ORES.

Written for the Engineering and Mining Journal by R. Recknagel.

In the *Engineering and Mining Journal* of August 14th Mr. W. McGregor contributed an article on "Roasting Previous to Cyaniding," which we hope will start the discussion of a very important, but also a very much neglected, subject of a more general character—the treatment of sulphide gold ores by cyanidation. The importance of the subject need not be pointed out here; it is apparent to every one who knows that the refractory character of gold ores is due, in most instances, to the presence of sulphides of heavy metals. But in spite of its importance very little has been contributed so far in technical literature toward a solution of this problem. We are generally kept in ignorance of what has been done or is being done in practice successfully, and we know nothing at all of the many failures, which perhaps would be even more instructive than the successes. It is uncertain how much this is due to the fact that the use of cyanide for the extraction of gold is covered by letters patent, but it does not seem unlikely that it is mostly responsible for the want of information on the subject. Those who know of the proclamation of cyanide as the process for refractory gold ores, and who remember the scores of failures which, particularly in the United States, marked the introduction of the process into practice will understand the reluctance of the patentees to relate their experiences, and at present, where undoubtedly, in some places at least, sulphide ores are successfully treated by cyanide, the patentees may yet be loath to give detailed information to the scientific world, fearing undue encouragement to infringements on their patent. All information on the subject will undoubtedly be of interest to the mining public, and on this ground the following remarks, of a somewhat general character, are offered.

Whatever the detailed results may have been of the many attempts to treat sulphide ores in their original state by cyanidation, it is apparent that in most instances they turned out to be failures. At the present time South Africa is the only place where such ores are treated on a large scale, the surest proof that cyanidation will not answer generally. It is, of course, of the greatest importance to know what the causes are of the inefficiency of the cyanide process with these ores, as it is only by an accurate knowledge of them that we may hope to find a remedy if one does exist, or at least save time and money in not attempting the impossible. In using the word failures, it is here given in its commercial sense, and this of course involves some uncertainty, as failure or success depends so much on other conditions foreign to the main points at issue; but as these are in the first instances practical problems we cannot eliminate their uncertainty.

Reviewing what has come under my notice of outside cases as well as my own experience, it seems to me that the failures in treating sulphide ores by cyanide may be attributed to one of the following causes.

1. The decomposition of cyanide, making the cost of treatment too high, although a satisfactory extraction can be achieved.

2. The extraction of gold is unsatisfactory. It is not uncommon to find sulphide ores, or even concentrates, scarcely acting at all on cyanide, or to such a degree that the cost of treatment remains so low that the percentage of extraction is of paramount importance. Such is the case, for example, with concentrates of the Rand mines, and according to the writer's experience with the concentrates of most mines on the Mother Lode in California. In the first instance cyanidation can and does successfully compete with chlorination, and in the latter chlorination could not be superseded by cyanidation in spite of the very much higher working expenses, as a higher extraction more than made up for it.

3. A border case, where both causes mentioned, although not as intensified as in 1 and 2, act together. It is clear that in this instance, more than in others, the local conditions and the value of the material have a greater influence on the final result. If we have no choice of processes, and we can only make a small profit by cyanidation, it will be a success even if the extraction should be low and the working expenses high. In the majority of practical cases I believe that such mixed causes exist, but a general discussion is scarcely possible as each case will depend largely on the outward conditions and will have to be considered accordingly. The general principles underlying we shall discuss when treating of causes.

When we inquire into the causes of the difference in extraction we find that they are either of mechanical or chemical nature. As to the latter point, we have to consider, although it is proved that most of the gold contained in metallic sulphides is in a free state, that it is by no means certain that all of it is, and that some of it might exist as a compound either with sulphur, arsenic, antimony, etc., as the case may be, or as a silicate. Although we know now very well what the action of cyanide on metallic gold is, we know nothing regarding its action on silicate of gold, and very little of its action on a sulphide or a similar compound. Of course, we know that the artificial sulphide of gold is soluble in cyanide, but we know also that we cannot draw from this the conclusion that the natural sulphide would be soluble, too; in fact, judging from the behavior of the telluride of gold to weak cyanide solution, it is quite possible that the natural sulphide of gold, if it does exist, will not be soluble in the cyanide solution we apply in practice. If the natural silicate of gold should exist, it is more than likely that it would not be soluble in this solution. It is therefore not impossible that in some instances a part of the gold contained in a sulphide ore cannot be extracted on account of it being in compound with another element.

Regarding the action of cyanide on tellurium gold compounds, it would be very useful to know what the exact process is, considering the practical importance tellurium gold ores represent. I have never had an opportunity of experimenting with pure tellurides, but practical results with mixed telluride and sulphide ores of Boulder County, Colo., seemed to prove that at least some tellurides containing gold do not yield their gold readily to cyanide.

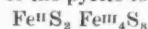
In most cases, however, the mechanical conditions under which gold is contained in the ores rather than chemical differences will determine the percentage of extraction. I do not wish to speak of those cases where the gold particles are too coarse to be dissolved by cyanide within a reasonable time; it is evident that the amalgamation will have to supplement

cyanidation in such cases. But too fine a state of division may have the same effect as a too coarse one—a low extraction. In nearly every one of the cases under my observation a higher percentage could be extracted by finer pulverization of the ore, and that in some cases less than 100% can be extracted is undoubtedly due to the extremely fine state of division of the gold in the ore, and its physical character, which prevent the cyanide solution from reaching and dissolving particles of gold enclosed in the grains of the material after it had been pulverized to the greatest practical fineness.

These conditions are simple enough and can be easily distinguished in practice. But when we come to the cases mentioned under No. 1, when the high consumption of cyanide prevents the use of the cyanide process, we are confronted with very complex problems. It is of course not difficult to account for a high consumption of cyanide when a partial oxidation of the sulphides has taken place, and when acid and basic salts have been formed. In the rest of the cases some of the sulphides must have been dissolved, but which and how is the problem.

We know the reaction of cyanide on artificially formed sulphides, but we find that the natural sulphides are not acted upon in the same way, and when we come to experiment with the natural sulphides, we are confronted with the most puzzling fact, that apparently the same material is acted upon in different degrees of intensity. This explains at least to some extent the very contradictory statements which have so far been made on the subject. It has been asserted that copper pyrites is so easily soluble in cyanide that the presence of a small percentage in any ore will make cyanidation impossible. Yet in one case the writer is familiar with, the presence of up to 25% of that sulphide did not prevent its successful application. Zincblende, arsenical pyrites, antimonite and galena have all been described as easily soluble by some, and by others as not preventing the use of cyanide for extraction. I am quite aware that the difference in outward conditions, strength of solution used, the vagueness as to what constitutes a satisfactory result will be responsible for some of the contradictory statements, but I am quite certain that this will not explain all cases. Another explanation suggests itself—natural sulphides, even in a crystallized state, are not simple chemical compounds, but as a rule are mixtures of such compounds; and the admixture of an easily soluble compound with one which is scarcely soluble at all may cause apparent discrepancies. This I believe explains most of the apparently contradictory statements. Let us take a concrete example. The iron protosulphide, FeS, in its pure natural state, is most likely easily soluble in cyanide; sulphide of zinc, ZnS, is insoluble; the natural zincblende is in many cases a mixture of both, containing from 0 to 20% Fe, and in consequence the solubility will change from practically nothing to a very high degree. If the admixture were always the sulphide of another metal, a simple analysis would reveal to us the cause of any discrepancy. But the matter might be much more complicated, and will be so when a metal forms different compounds with sulphur, which, of course, will be acted upon differently by cyanide. For example, the empirical formula for copper pyrites is CuFeS_2 , which might mean either that CuS and FeS, or Cu_2SFeS_2 combine together. In either case the resulting compound will show a different character if some of the iron sulphide is present either as Fe_2S_3 , besides FeS which might form the bulk of it, or if some FeS should represent some of the iron sulphide which is in the state of Fe_2S_3 . The same replacement might take place among the two possible copper sulphides. Large interchanges of that kind could, of course, be detected by chemical analysis, but small ones would escape detection.

The most puzzling fact to me so far has been that the natural bisulphide of iron FeS_2 shows very considerable difference toward cyanide and the mystery became scarcely more intelligible when I noticed that, quite apart from any admixtures, the kind of FeS which crystallizes in the rhombic system, the marcasite, is always attacked by cyanide to a considerable degree, whereas the isometric iron pyrites is not at all or very little acted upon. In one extreme case where FeS_2 was present mostly in the form of marcasite, cyanidation of a gold ore was made impossible both on account of low extraction as well as very high consumption of cyanide, whereas in numbers of cases where pyrite only was present the consumption of cyanide was hardly noticeable. It is of course plain that the substance of the dimorphous FeS_2 cannot be the same in the two different forms, a fact which might be already implied from the different behavior of the two kinds toward the oxygen of the atmosphere. It is very well known that marcasite very rapidly oxidizes into a proto-sulphate of iron, whereas the cubic pyrite withstands the influence of the atmosphere very much longer, and then usually forms ferric sulphates and oxides, besides ferrous sulphate. The investigations of Mr. A. P. Brown in that respect, published in the *Proceedings of the American Philosophical Society* (Philadelphia, 1894, Vol. XXXIII., pp. 225-243), seem to have cleared up the mystery. He was able to prove that there not only actually existed a chemical difference between pyrite and marcasite, but he also proved the cause of the difference. As the main result of his investigations he could state the real formula of the pyrite to be



Whereas the marcasite experimented upon corresponded to the formula $\text{Fe}^{\text{II}}\text{S}_2$. In the marcasite the iron is in its bivalent form as ferrous only, whereas in pyrite four-fifths of it is trivalent, is present as ferric and only one fifth as ferrous. The difference of KCN acting on $\text{Fe}^{\text{II}}\text{S}_2$ or $\text{Fe}^{\text{III}}\text{S}_2$ seems to correspond with the difference of action on $\text{Fe}^{\text{II}}\text{O}$ and $\text{Fe}^{\text{III}}\text{O}_3$; the first is easily soluble, whereas the latter is insoluble. It is quite likely that the proportion of one-fifth and four-fifths in the pyrite is not stationary, and that other combined proportions of the two substances occur, which will explain fully all the differences of solubility of FeS_2 in KCN.

It is more than likely that similar conditions prevail regarding the dimorphous substances Ag_2S , Cu_2S and ZnS , and taking into account the occurrence of simple sulphides in sulpharsenites, sulphantimonites, etc., and the frequent partial substitution of one by another, it is most likely that the natural sulphides of heavy metals are not only polymorphous but that they also exhibit in accordance with it different chemical characters. The chemical difference of the dimorphous FeS_2 has been discovered by the difference of certain solvents, especially copper sulphate, exhibited with them. Although weak cyanide solution was not one of the solvents applied in the experiments above referred to, it seems to be certain that it too has a different action on sulphides of apparently

the same chemical composition, but of a proven or suspected different internal constitution.

If this be true, we need not be surprised that the sulphide ores show pronounced differences in their behavior toward cyanide solution, where we first expected uniformity. In fact, we have to draw a conclusion to the contrary, and assume that neither the same mineralogical character nor the same chemical composition as proven by analysis can be taken as guidance to foretell the actual behavior of natural sulphides toward cyanide solution. We have to experiment with the ore from every new locality before we are entitled to say if the decomposition of cyanide by the metallic sulphides will or will not allow the use of the cyanide process. To know that iron pyrites ores in nine different cases were only slightly acted upon by cyanide does not warrant our saying that in the tenth case the same action would result, nor are we entitled to state dogmatically that copper pyrites will always be acted on by cyanide to such a degree as to exclude cyanidation, because we know that this has been observed in a number of cases.

The main practical question in regard to cyanidation of sulphide ores is whether we have any means of obviating or removing the causes which otherwise prevent its application. Leaving out the simple case where a finer pulverization might better extraction and also the possible case where gold is in insoluble compounds, the question is narrowed down to how we can prevent cyanide from being decomposed by soluble sulphides. The answer can only be to turn them into insoluble sulphides or change their chemical composition into an indifferent compound. Even if the first condition should be possible, we have at present no known means of achieving such a change, and therefore it may remain undiscussed.

Regarding the second proposition, a radical remedy is known, to turn soluble and insoluble sulphides into insoluble oxides by roasting them, and an intermediate stage would be roasting to sulphates and removing by water the soluble sulphates previous to cyanidation.

It is of course not impossible that a means could be discovered by which in a cheap and efficient way the soluble sulphides only could be removed previous to cyanidation and where the harmless insoluble sulphides would remain unaltered. This would have to be a compound possessing very similar qualities to cyanide, but much cheaper than it is. I am not aware that so far such a compound has been made known. Strong bases, as caustic alkalis, which one might think fit to achieve the desired effect will not answer.

In some cases where the consumption of cyanide was not too high to prevent cyanidation, and where also the percentage of extraction was satisfactory in the beginning, cyanidation had to be abandoned on account of a gradual falling off in extraction. One case came under my observation where the percentage of extraction fell within short time from 80% to about 30% of the value. It was apparent that this result was due to an accumulation of products of decomposition of sulphides and cyanide. With every new operation a fresh quantity of sulphide of potassium was formed which, being a precipitant for the precious metals, gradually prevented their solution by cyanide. Soluble lead or zinc salts could be used in such instances to remove the sulphur from the working solutions by causing it to form an insoluble metallic sulphide. I believe this has been prepared and done in practice already, and I see no reason why it should not answer in certain cases.

The effects of roasting sulphides are threefold. 1. An alteration of obnoxious compounds into indifferent ones. 2. The removal of sulphur, by which the ore grains become porous and with it the fine gold and silver particles become accessible to solvents, and thirdly a certain amount of fritting of the fine ore grains which allows more rapid leaching afterward. If we do not roast "dead" the effects of course will be different. The last named point will be the same, but instead of insoluble oxides we have a mixture of sulphates and oxides as well as undecomposed sulphides and therefore also a less porous product. If we could transform all sulphides into sulphates at the same time little could be said against adopting such a method preparatory to cyanidation.

The soluble sulphates could be easily removed by a water wash almost without any extra expense, and the considerable gain in time and saving in fuel over a dead roast would very much speak in favor of such a method, and the inconvenience caused by the constant gaining in volume of working solution would not be such a serious drawback as to make the process impracticable. However, the fact is that, especially with sulphide ores, not concentrates, the complete oxidation of sulphides into sulphates is an ideal state which is never reached, and that the nearest approach to it is only gained in the course of a thorough dead roast. If roasting is interrupted when the bulk of the sulphides has been turned into sulphates, usually quite an appreciable amount of sulphides in the finest state of division, enclosed by gangue or sulphates and oxides, remains unaltered, and in the subsequent leaching by cyanide it will be found not only that the consumption of cyanide will be higher, but also that the percentage of extraction will not be as high as with dead-roasted ore. In one case, where the writer had changed from a dead-roasting to a roasting for sulphates in order to increase the capacity of a mill and to reduce roasting expenses, he had to go back to a thorough roasting on account of the reason stated.

It seems to hold true quite universally that dead-roasted sulphide ores and concentrates are amenable to cyanidation, and that the consumption of cyanide is always low. If it were not for the reasons incidental to all roasting operations, cost of fuel and labor and partial loss of the precious metals, I believe we would have in roasting and cyanidation a process which would be rapidly adopted with a great many ores which remain now unworked. Unlike the chlorination process, cyanidation of roasted ores is always cheap. As it is, cyanidation of roasted material will be the process of sulphide ores of lower grade than hitherto could be worked by chlorination, and besides be more economical with some kind of concentrates or sulphide ores worked hitherto by chlorination. What would be the lowest grade ore which could be treated in that way is of course quite impossible to say, depending as it does on local conditions. If the material is high grade enough to be treated either by chlorination or cyanidation, experiments will have to decide which process should be adopted. It seems that the extraction by chlorination is usually somewhat higher than by cyanidation, most likely because of the gaseous state and therefore greater penetrative power of the reagent. It will therefore depend on the relation between the difference in extrac-

tion and the difference in working expenses as to which process is the more economical, and all other conditions being the same, it will be found that the lower grade sulphides now treated by chlorination are more adapted to cyanidation, whereas the higher grade concentrates will remain to be the especial domain of the chlorination process.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

MINE-OWNER BOUND BY PRIOR REPRESENTATIONS.—A mine-owner who points out to an intending purchaser of the adjoining claim certain monuments as indicating the dividing line is thereby prevented, as are also his subsequent grantees, from denying the truth of such representations after the other party, in reliance upon such representations as to boundaries, has purchased such adjoining claim.—*Schultz v. Allyn* (48 Pacific Reporter 960), Supreme Court of Arizona.

THE MANHES COPPER CONVERTER PATENTS.—The United States patent granted to Pierre Manhes, under date of July 21st, 1891, for improvements in the process of treating copper matte, and the patent granted March 8th, 1892, for an improvement in converters and process for reducing copper matte, are both held good and valid. The defendant, the Nichols Chemical Company, has infringed the patents and is perpetually enjoined from using the converters or process for reducing copper.—*Franklin Farrel and Achille F. Migron vs. the Nichols Chemical Company*; United States Circuit Court, Southern District of New York.

WHEN MINING COMPANY IS NOT INSOLVENT.—Where a company operating mines, with good assets exceeding its liabilities by at least 25%, with approved machinery, and a favorable contract for the sale of its whole output, executes a deed of trust on its entire property to secure \$6,000, of which \$4,000 is money advanced to it for the purchase of machinery and improving the works, the principal part of the residue being \$1,500 for royalty due to that date, the \$6,000 being a part of its liabilities, is not insolvent, and such deed of trust cannot be declared a general assignment for the benefit of its creditors.—*Coaldale Mining and Manufacturing Company vs. Clark* (27 Southeastern Reporter 294); Supreme Court of West Virginia.

EFFECT OF LAND OFFICE DECISIONS ON MINING CLAIMS.—Under the laws of the United States (Secs. 2325-6), a decision of the Land Office awarding a patent for a mining claim, after due publication of notice, is binding and conclusive upon an adverse claimant, who has failed to file his claim, except for such reasons as a court of equity might allow to be urged against an action at law. And the question as to the true boundary of such claim, for which a patent is asked, is a question of fact, coming properly within the jurisdiction of the land department, and its action upon the same is conclusive, in the absence of fraud.—*Golden Reward Mining Company vs. Buxton Mining Company* (79 Federal Reporter 868); United States Circuit Court.

WHAT IS NOT AN ILLEGAL COMBINATION OF MINING INTERESTS.—Where litigation between rival companies interested in the same mineral deposits is incapable of satisfactory judicial determination, a contract entered into between them in good faith, for the purpose of ending such litigation, whereby their rival interests are consolidated, the contract involving the purchase of other mines and plants in different parts of the country, such combination is not illegal, as tending to create a monopoly, the companies exercising no public franchises, but being simply the owners of a species of property which in its natural state is of no use to mankind, and their output comprising but a small portion of the product of the country.—*Meredith vs. New Jersey Zinc and Iron Company* (37 Atlantic Reporter 539); New Jersey Court of Chancery.

PETROLEUM LANDS ARE MINERAL LANDS.—In Washington, November 6th, Acting Secretary Ryan, of the Interior Department, handed down a decision which is based on the opinion of Secretary Bliss, reversing the decisions of Secretary Smith that oil is not a mineral. The Southern Pacific Railroad has contended that large tracts yielding petroleum came within the provisions of that company's grant. It was sought to take these lands from the railroad on the contention that they were mineral and not agricultural lands. The decision of Acting Secretary Ryan is made on an application to review. Secretary Smith held that lands containing petroleum are not subject to location and entry under the mining laws, and that even if they were a discovery of mineral on each 20 acres of the claim is a legal prerequisite to a valid location. The Acting Secretary assumes, in the absence of any showing to the contrary, that the lands are chiefly valuable for the deposits of petroleum, and quotes a department circular, issued by Commissioner Drummond in 1873, which says "that whatever is recognized as a mineral by the standard authorities on the subject, where the same is found in quantity and quality to render the lands sought to be patented more valuable on this account than for purposes of agriculture, shall be treated by this office as coming within the purview of the mining act of 1872."

Following this circular, on January 30th, 1875, it was held by Commissioner Burdett that lands containing valuable deposits of petroleum may be entered under the mining act of 1872, and in 1882 Commissioner McFarland held that lands of that character are subject to entry according to the law and regulations relating to placer claims.

The decision then says that from an examination of the records of the Land Office, it is ascertained that ever since the circular of 1873 until the date of the decision complained of the practice of allowing patents for lands chiefly valuable for their deposits of petroleum under the law relating to placer claims have been continuous and uniform. Under this practice a large number of patents have been issued, and very large and valuable property interests acquired. As to the contention raised by the railroad company that the mineral claimants should show a discovery of oil on each 20 acres, the Acting Secretary holds that a single location of mineral, no matter of what extent, is all that is required by the statute,

PERSONAL.

MR. J. PARKE CHANNING, of New York, is at present examining mines in Utah.

MR. J. H. MCMANUS, a Michigan lumberman, has been examining mining properties in Utah.

MR. GEORGE H. ROBINSON was in Salt Lake last week returning from a fortnight's trip in Nevada.

MR. FRANK CAFFEE, of Sydney, New South Wales, has been investigating the mines of Cripple Creek, Colo.

MR. J. W. YOUNG devoted the first 10 days of November to Utah, where he has not been for several months.

MR. P. J. DONOHUE is in Salt Lake after a month's outing examining gold properties in Colorado, Arizona and Idaho.

MR. WILLIAM C. BULLITT, president of the Norfolk & Western Railroad, has resigned. His successor has not yet been chosen.

MR. CLAUD SACHS, of Colorado, and Mr. W. WESTON, have visited the reported gold-fields near Grand Encampment, Wyo.

MR. W. B. MILLIKEN has taken charge of the mill of the Colorado Ore Sampling and Reduction Company, at Arequa Gulch, Colo.

MR. R. C. CHAMBERS, manager of the Ontario and Daly mines, was in San Francisco last week and has probably returned to Salt Lake.

COL. L. H. MITCHELL, of Salt Lake City, recently spent several weeks examining the northern portion of the Black Hills, in South Dakota.

MR. C. W. CLARK and Mr. J. B. WELLCOME, of Butte, Mont., have been in Spokane, Wash., negotiating for properties in the Slocan district.

MR. G. W. TIBBITS, now a resident of Chihuahua, Mex., is visiting Denver, after four years spent in Mexico, examining mines and buying ores.

PROFESSOR KISLINGBURY, of Salt Lake City, has been examining the Gold Queen mine, in the Blue Mountain District, Utah, for intending purchasers.

MR. GEORGE P. SANDMEYER, formerly with Sandmeyer & Co., of Peoria, has been made general manager of the Brookside Coal Mining Company at Danville, Ill.

STATE SENATOR F. W. MOTT, of St. Louis, Mo., has been in Joplin, Mo., looking after his mining interests. He is interested in the Becky Sharp lease at Tuckahoe.

MR. J. P. CALP, formerly superintendent of the Silver Pick mine, San Miguel County, Colo., is now superintendent of the property of the Chihuahua Mining Company, near Chihuahua, Mex.

MR. STEPHEN W. DORSEY, formerly United States Senator from Arkansas, and now of Denver, has been in San Francisco. He is interested in a group of claims near Picacho, in San Diego County, Cal.

MR. R. N. DICKMAN, of Dickman & McKenzie, mining engineers of Chicago, has returned to that city from the Estrella mine in Chihuahua, Mexico. Mr. Dickman will return to Mexico in a few weeks.

MR. GEORGE HUMMER has taken charge of the Gold Dollar mine on Beacon Hill at Cripple Creek, Colo., succeeding Mr. J. S. LAWRENCE, who has severed his connections with the company operating it.

MR. C. M. ALLEN, formerly with the Butte & Boston Mining Company, at Butte, has resigned and is now erecting a concentrator and smelter for the Basin and Bay State Company, at the Katie mine, in Montana.

PROF. R. A. F. PENROSE, President of the Commonwealth Gold Mining Company of Arizona, has been elected a director of the Colorado-Philadelphia Reduction Company to fill the vacancy caused by the resignation of Mr. George W. Pierce.

MR. G. F. DITTMER, for several years superintendent of the phosphate mines of the Bradley Fertilizer Company, at Bulow, S. C., and Pemberton, Fla., is now in charge of the Bradley Company's salt works at Warsaw and Watkins, N. Y.

MR. W. H. CORBOULD, head of the Canadian Pacific Exploration, Limited, has left Rossland, B. C., on an extended visit to London. Mr. A. B. MANAGER, local manager of the British Columbia office, is in charge of the office at Rossland.

MR. THOMAS F. COLE, who has held the position of general manager of the Queen group of mines, at Negaunee, Mich., for some time past, has resigned, and has accepted the position of superintendent of the Oliver Mining Company's properties on the Gogebic Range.

MR. STEPHEN J. BURKE, engineer, of Sydney, New South Wales, is now visiting the United States with a view to developing the trade in mining and other machinery between this country and the Australasian Colonies. His address for the present is at 332 Broadway, New York.

MR. ED. F. SOMMERS, JR., for many years in the employ of the New Jersey Fire Brick and Tile Company, at Atlantic Highlands, N. J., is on an extended

tour of the Pacific Northwest. He has visited the fireclay deposits near Red Bluff, and will investigate the merits of the recently uncovered deposit of fireclay near Big Hole Basin, Montana.

DR. ROBERT BELL, of the Geological Survey of Canada, has been elected a Fellow of the Royal Society of London. We congratulate him on receiving this honor, which is so much coveted by scientists throughout the British empire. Dr. Bell has been connected with the Canadian Survey longer than any other man and he has done an immense amount of work for it in the last 40 years.

MR. T. D. PETTY, mining engineer, who has been during the past two years much of the time in the Kootenay district of British Columbia, for the Pyramid Mining and Development Company, of London, sails November 13th from New York for London. He has stopped work at Pyramid, B. C., for the winter and expects to return in April to continue his developments, which have been quite successful.

MR. A. W. WARWICK, formerly superintendent of the Minah Consolidated Mining Company at Wickes, Mont., resigned that position in August last on account of the closing of the mine by legal complications. He has been engaged for the past three months in examining various properties in the Black Hills and in Colorado, and has now taken hold of a group of mines in Arizona for an Eastern syndicate.

OBITUARY.

COL. HENRY T. RUSSELL, vice-president and general manager of the Union Drop Forge Company, of Chicago, died suddenly of heart disease on November 5th. Colonel Russell was 64 years old.

M. ANDRE CHEVANNE, a native of Omplepuis, France, but for 40 years a native of California, died at Grass Valley, October 27th. He was a mining engineer, a graduate of the Ecole des Mines, and amassed a comfortable fortune in the pursuit of his profession.

JOSEPH HUNT, civilian inspector of armor plate, appointed during the term of Secretary of the Navy Herbert, died suddenly of heart disease, at Allentown, Pa., on November 2d, aged 54 years. He was formerly superintendent of blast furnaces at Bingen, Catasauqua and Emporium, and of the Allentown Foundry and Machine Works.

GEN. JAMES C. DUANE, who died in New York, November 8th, aged 73 years, was a graduate of West Point and served in the United States Engineer Corps from 1848 to 1888, when he was retired. In the same year he was appointed a member of the New York Aqueduct Commission and was chosen president of the board, serving in that capacity until his death.

P. J. BENBOW, manager and president of the Otis Steel Company, Limited, of Cleveland, died on November 5th from injuries sustained by being struck by a train on the Lake Shore Railroad, near his home at Glenville, the preceding Wednesday. Four years ago he came from England to take charge of the company's works when they were bought by an English syndicate.

PAUL ROSSIGNIEUX, who died recently, aged 44 years, was considered one of the most promising of the younger generation of French mining engineers. He graduated from the Ecole des Mines de St. Etienne, and from 1874 to 1882 he was engaged as engineer at the St. Etienne collieries. He subsequently held important positions at the coal mines at Anzin and at Dourges, and at the time of his death he was acting as general secretary to the Portman iron mines in Spain. He was the author of numerous important papers on mining subjects.

CAPT. JOHN DENITHORNE, one of the most prominent citizens of Phoenixville, Pa., died at his home in that place on November 3. Captain Denithorne was born in Cornwall, England, and with his parents removed to Minersville, Schuylkill County, Pa., when he was a boy. When a young man he learned to build bridges, but in 1863, having removed to Phoenixville, he assumed the management of the cannon-making department of the Phoenix Iron Works, and during the remainder of the war he made the famous Griffen guns. After the war he established, in connection with his brother Richard, the Schuylkill Bridge Works, of which he was the proprietor at the time of his death.

SOCIETIES AND TECHNICAL SCHOOLS.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—A regular meeting was held November 1st. The secretary read a paper on "Paint Tests," by Mr. W. J. Wilgus, and a vote of thanks for the same was accorded Mr. Wilgus. President Hilyard then read a few notes on the "Development of Water Power." Mr. Estabrook spoke of the relative cost of steam and water power at the Minneapolis mills.

UNIVERSITY OF MINNESOTA.—Prof. C. W. Hall, who holds the chair of geology and mineralogy, has been granted leave of absence for the present academic year. The department is left in charge of Dr. C. P. Berkey, who has been for several years instructor in mineralogy; the work in general geology is conducted by Dr. U. S. Grant, and that in paleontology by Dr. F. W. Sardeson.

AMERICAN CHEMICAL SOCIETY, NEW YORK SECTION.—The latest monthly meeting was held on November 5th at the College of the City of New York, Dr. William McMurtrie presiding. During the meeting the following papers were read: "Corrected Assays," by E. H. Miller; "The Chemistry of Formaldehyde in Disinfection, with Exhibits," by Dr. E. J. Lederle. Dr. Lederle was unable to be present, but was represented by Mr. J. A. Deghuel, who read the paper, described the exhibits, and took part in the interesting discussion which followed. Methods of estimating the percentage of formaldehyde were described and discussed.

HARVARD UNIVERSITY.—Dr. Hans Reusch, director of the geological survey of Norway, has secured leave of absence from his home duties to accept an appointment for 1897-98 to the Sturza-Hooper professorship of geology in Harvard University, left vacant since the death of Prof. J. D. Whitney, a year ago. He will lecture on vulcanism during the first half year, treating volcanoes and eruptive rocks in general; earthquakes and the movements of the earth's crust. In the second half-year he will lecture on the geology of northern Europe, and its relation to general geology. A part of each week will be given to work with advanced students. In the spring Professor Reusch proposes to take part in instruction in the field.

INSTITUTION OF MINING AND METALLURGY, LONDON.—At the seventh session of the Institution, which opened on October 20th, at the Geological Museum, London, the papers open for discussion were: "Notes on Sump Solutions, Extractor-box Work, and Cleaning Up, in the Cyanide Process," by Alfred James. "Notes on the Sampling of Argentiferous and Auriferous Lead, with Diagrams Illustrating the Unequal Distribution (Segregation) of the Precious Metals," by Arthur C. Claudet. New papers presented were: "The so-called Lode Formations of Hannan's, and the Telluride Deposits," by H. P. Woodward. "Mining in Perak," by Frank Owen. "A Sketch of the West Australian Goldfields," by Sidney Fawns. "Note on the so-called Selective Action of Cyanide of Potassium for Gold," by W. A. Dixon.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.—The trustee of the Lowell Institute has established, in the Institute of Technology, free courses of instruction in literary, scientific and technical subjects. The conditions of attendance on these gratuitous courses are as follows: 1. Candidates must have attained the age of 18 years. 2. Their applications must be made in writing, addressed to Prof. H. W. Tyler, Secretary of the Institute of Technology, specifying the course or courses they desire to attend, mentioning their present or prospective occupations, and, when the course is of a nature demanding preparation, stating the extent of their preliminary training. There are 20 of these courses in all, of which we note especially the following:

No. 4. "The Fundamental Principles of Chemical Theory and Their Historical Development." Twelve lectures by Associate Professor H. P. Talbot.

No. 7. "The Elements of Organic Chemistry." Twelve lectures (illustrated by experiments) by Associate Professor A. A. Noyes.

No. 8. "The Technology and Analysis of Gases." Twelve lectures by Assistant Professor A. H. Gill.

No. 12. "Electro-Chemistry." Twelve lectures by Assistant Professor H. M. Goodwin.

No. 14. "Metallurgy of the Minor Metals, II: Arsenic, Antimony, Bismuth, Tin, Quicksilver, Platinum." Twelve lectures by Associate Professor H. O. Hofman.

No. 16. "The Chemistry of the Less Frequently Considered Elements." Twelve lectures by Assistant Professor F. L. Bardwell.

INDUSTRIAL NOTES.

Star Furnace, of the Star Furnace Company, at Jackson, O., has been put in blast.

The Riverside Iron Works, at Wheeling, W. Va., are being operated to their fullest capacity.

The Wellston Furnace Company, of Wellston, O., has advanced the wages of its blast furnace employees 10%.

The Isabella Furnace Company, of Pittsburg, Pa., has all three of its blast furnaces at Etna, Pa., in active operation.

The Morgan Engineering Company, of Alliance, O., is rushed with work, and is running its plant to its fullest capacity.

Ground has been broken for the erection of the new tin plate plant at Johnstown, Pa., for the Johnstown Tin Plate Company.

Fannie Furnace, at West Middlesex, Pa., is being put in readiness to resume operations shortly. The stack has been idle for about two years.

The owners of the rolling mill at Peoria, Ill., which has been idle for many months, have decided to build several open-hearth steel furnaces.

The plant of the Wilkes Rolling Mill Company, at Sharon, Pa., which has been idle for several years, is being repaired and will soon be put in operation.

The Middlesboro Foundry and Machine Works at Middlesboro, Ky., was burned to the ground November 10th. It is not probable that they will be rebuilt. The estimated loss is very heavy.

The John Rohan & Son Boiler Works, St. Louis, have contracted to build several boilers for shipment to Seattle, Wash., whence they will be shipped to a concern in the Klondike country.

The factories of the Wilmot & Hobbs Manufacturing Company, at Bridgeport, Mass., are running night and day in all departments, with good prospects for a continuance through the winter.

The Sullivan Machinery Company, of Chicago, has opened an office in Pittsburg for the sale of its machinery. This office is in the Schmidt Building, Fifth avenue, and Mr. George W. Favor is in charge.

The new Metcalf Steel Company, at Braeburn, Pa., is almost ready to begin operations, and it will probably commence turning out high-grade and tool steel by December 1st. About 200 men will be employed.

The Union Chemical Company of Philadelphia has been incorporated by E. Russell Purvis, W. Frederick Snyder, William M. Singerly, Edson D. Scofield, Charles K. Mount, Charles H. Willetts and Percy H. Willmott.

The Fink Chemical Company has been incorporated at Milwaukee, Wis., with a capital stock of \$15,000. The officers are Edward Fink, president; Albert Blankenhorn, vice-president and treasurer; Martin Anderson, secretary.

The Neshannock Steel and Tin-Plate Company, of New Castle, Pa., is about to purchase the Wampum Run Coal Company's mines. The Neshannock Company intends to mine coal to reduce further the cost of turning out tin-plate.

The furnaces of the new skelp mill of the Reading Iron Company, at Reading, Pa., have started. It is an entirely new industrial plant, and cost \$125,000 to build. It will employ 150 hands. The product will be used in the manufacture of iron pipe.

The St. Louis Iron and Machine works are building a cross-compound heavy duty Corliss engine, with two compressors, for the Ice and Cold Machine Company; also an engine and compressor for the packing establishment of Jeremiah Murphy, at St. Louis.

A. R. Whitnev & Company, of New York City, owners of the Portage Iron Works, at Duncansville, Pa., are adding a new hoop mill and steel wire mill to their plant. One hundred skilled workmen will be brought from the Brooklyn steel mill of this company.

The plant of the National Tube Works Company, McKeesport, Pa., is being operated to its utmost capacity in all departments and the output is considerably larger than ever before in the history of this company. The concern has recently successfully made pipe up to 35 in. in diameter.

The Common Council of Philadelphia on November 8th voted, by 78 to 52, to lease the city gas-works to the United Gas Improvement Company. It is stated that the public received the action of the Council with disapproval, and some of the citizens have retained counsel to try and prevent the lease.

It is reported that Philadelphia capitalists are negotiating for the erection of a steel plant at Birdsboro, Berks County, Pa. The proposed capital of the company is to be \$250,000. The E. & G. Brooke Iron Company has offered a free site and will also take stock. It is intended to make the highest grade of steel.

It is reported from Middlesboro, Ky., that preparations are being made to start furnace 1 of the Watts Steel and Iron Syndicate. Furnace 2 will be prepared soon for operation, and the large basic steel plant will be operated for the first time since its erection seven years ago. Employment will be given to more than 800 men.

The Siebel Suesdorf Copper and Iron Manufacturing Company, of St. Louis, Mo., is manufacturing six new drying pans, each 50 ft. long and 5 ft. wide, the outer shell being of iron and the inner shell of copper, for the Southern Lead Works. Among their other contracts, they have two calling for complete equipments of new breweries, and partial outfits for several old ones.

The Dickinson Chemical Company of Detroit, Mich., has been formally organized by the election of Dr. A. E. Dickinson as president and general manager and Henry A. Haigh, secretary. The company will develop Prof. Meiers' new process for the manufacture of caustic soda and glycerine, and, although it may never manufacture either of these articles, it will be in a position to either lease or sell the right to make them.

The Clayton Air Compressor Works, Brooklyn, N. Y., report that their volume of sales for the month of October is larger than any preceding month in the history of the business and three times greater than their average sales for five years past. These works are now constructing one 25-H. P. compressor for 3,500 lbs. pressure and one 50-H. P. compressor for 2,500 lbs. pressure for the Western Manufacturing & Oil Company, Newark, N. J. They also have orders in hand for a compound air compressor ordered by Fraser & Chalmers, of Chicago; a duplex air compressor for the Deane Steam Pump Company, Holyoke, Mass.; three duplex air compressors for compressed air shop plants; two air

compressors for the Consolidated Pneumatic Tool Company; one air compressor for sand-blast work; five for various purposes, and one large duplex compressor for the Consolidated Gas Company, New York.

The J. & E. Stevens Company, of Cromwell, Conn., manufacturers of toys of all descriptions, have decided to rebuild their foundry building recently burned. The new building will be constructed as near fireproof as possible. The framework of the building will be steel and the covering will be corrugated iron. The Berlin Iron Bridge Company, of East Berlin, Conn., has the contract for furnishing and erecting these buildings in accordance with their designs. The main foundry portion is 40 ft. wide and about 200 ft. long. The trusses have a clear span. The sides have been designed so that it is well lighted by large mullion windows. On the roof are placed at suitable intervals ventilators arranged with shutters, so that they can be readily opened and closed for the purpose of ventilation. The cupola platform and floor are built of steel framework and covered with steel plates. Besides the foundry building proper there are two small brick buildings having a steel roof, one a boiler shop and the other a plating room. All the buildings are lined with Berlin patent lining.

Some particulars of the orders for locomotives which the Baldwin Works have just secured from foreign countries have been received from Philadelphia. The contracts, which call for 58 locomotives of various types, are from abroad. The most significant point with these orders is that similar contracts, in a number of instances, have heretofore been awarded to foreign makers, and in the present instance these manufacturers were active competitors against the Baldwin Company for the orders. The largest single foreign contract that the Philadelphia concern received, preceding this, was recorded early last winter from Japan, when one order calling for 44 locomotives was placed for the Japan Railway Company. These engines were shipped some months ago. The orders just taken are as follows: Ten passenger and 12 freight locomotives for the Finland State Railway; 16 freight and 8 passenger engines for the Central Railway of Brazil; 10 freight locomotives for the Grand Trunk Railway of Canada; 1 passenger locomotive for the Norwegian State Railway, and 1 rack engine, Abt system, for La Compania Penoles, of Mexico. More than 25 years have elapsed since the Baldwin Company had obtained a contract for locomotives from the Finland government. On account of having closed these foreign contracts, it is said that the Baldwin Company will have to make an immediate expenditure of about \$600,000 for new material, etc.

TRADE CATALOGUES.

The Murray Iron Works Company, Burlington, Ia., issues a well illustrated catalogue of ice and refrigerating machines, which also includes descriptions of the "Sioux" Corliss engine, and of boilers and other machinery made by the company.

The Fabrik Arthur Koppel, of Berlin, Germany, issues a very attractive catalogue, giving photographs of work on industrial railroads built by the works for mines, contractors, plantations and other establishments in various countries. Light railroads and their equipment are the specialty of these works, which supply material for such roads, both of temporary and permanent character. Nothing need be said of the uses of such roads, which are well known in this country, where they have been extensively built by the Hunt Company and others. The Fabrik Arthur Koppel has lately established a branch office at 78 Broad street, New York.

NEW PATENTS.

UNITED STATES.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any one of these will be mailed by the Scientific Publishing Company upon receipt of 35 cents.

WEEK ENDING NOVEMBER 2ND, 1897.

- 592,768. APPARATUS FOR WELDING. Emil Einfeldt Davenport, Iowa, Assignor to the Bettendorf Metal Wheel Company, of Iowa. Combination with a supporting-anvil having one face inclined in one direction and curved to correspond to the curvature of the tire and adapted to give support to a portion of the tread and having its other face inclined in the opposite direction, and adapted to give support to the overlapped flanges at one side of the tire, of a recessed coating pre-stress-head adapted to contact with the sustained parts and subject the same to pressure.
- 592,802. ELECTRIC DIAPHRAGM. Nicolas Marchal, Dieuze, Germany. Assignor to the Anciennes Salines Domaniales de l'Est, Actien-Gesellschaft, same place. Patented in Germany, August 28, 1894. An electrolytic diaphragm in the form of a plate cut from limestone or equivalent integral natural alkaline-earth carbonate.
- 592,828. GRINDING MILL. Edwin Reynolds, Milwaukee, Wis. Combination of a bed; a power-shaft; a roll traveling upon the bed; and a connection between the roll and shaft whereby the roll is free to rise and fall vertically and to swing in a horizontal plane irrespective of the movement imparted by the shaft.
- 592,842. KILN FOR BURNING BRICK. Hannah Thomas,

Canal Dover, O., administratrix of William J. Thomas, deceased. A circular kiln having two chambers in open relation with each other at the top; flues or furnaces arranged radially at intervals entirely around the kiln; upright flues in open relation with the furnaces, combustion chambers and discharging into the kiln; a transversely arranged wall for dividing the chambers, the flues arranged parallel with the wall and communicating with the chambers, a chimney with two flues, and means for interrupting communication between either one of these flues and the chimney.

592,860. METHOD OF AND APPARATUS FOR MAKING SUBLIMED METALLIC PIGMENTS. Eayre O. Bartlett, Joplin, Mo. This method consists in constantly charging fresh ore or fuel onto the front end of the grate of the furnace, moving the ignited charge progressively from the front to the rear of the grate, supplying a substantially uniform air-blast to the charge, maintaining thereby a substantially uniform furnace temperature, maintaining the charge composition within the furnace as a substantially constant factor, and obtaining a resultant fume product of substantial uniformity.

592,973. ELECTROLYTIC APPARATUS. Emanuel Motz, Brewer Mine, S. C. Assignor of one-half to Henry F. Welch, Charleston, S. C. Combination with a trough of a series of curved communicating passages each passage being tapering from its inlet to its outlet end and the opposing walls of each passage being formed by cathode and anode plates respectively.

593,049. APPARATUS FOR COMPRESSING AIR OR GAS. Ebenezer Hill, South Norwalk, Conn. A charging-stand for use in conjunction with an apparatus for charging tanks, etc., with compressed air or gas, the stand being adapted to be connected with an air-compressor, and also with one or more similar charging-stands, and containing two independent valved passage-ways, one of which has a check-valve and the other two manual valves between which the check-valve is interposed.

593,062. MACHINE FOR HANDLING COAL, ORE, ETC. Richard Thew, Cleveland O. Combination of a traction carriage, a rotatable platform mounted thereon, upright track-frames secured to the platform and supporting elevated track, a trolley movable thereon, a depending sweep-arm pivoted to the trolley, and a feed-screw rigidly fixed to the trolley, with a nut on the feed-screw having sprocket teeth on its periphery, fixed shoulders engaging on both sides of the nut preventing its longitudinal movement, a driven sprocket wheel, and a chain running over the sprocket wheel and not transmitting motion from the one to the other.

593,122. ACETYLENE GAS GENERATOR. John M. Raymond and Louis E. Lemley, New Orleans, La. Assignor of one-third to William Thomas Coats, same place. Combination with an outer tank; a gas holder within this tank; a liquid reservoir in the center of this tank, and a leading-in pipe for supplying liquid to the reservoir; a cylinder entering the top of the outer tank concentric with the reservoir, and enclosing the latter; a perforated receptacle for the gas-generating material mounted in the cylinder and extending downward into the reservoir; a pipe leading from the upper portion of the cylinder into the lower portion of the gas-holder; a supply pipe leading from the gas holder, and a removable cover for the cylinder and receptacle.

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.

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GENERAL MINING NEWS.

ALABAMA.

CLEBURNE COUNTY.

(From Our Special Correspondent.)

KEMP MOUNTAIN DISTRICT.—Within the last two months three or four discoveries of gold-bearing ore have been made in this district 10 miles south of Heflin. At one of these I visited a shaft was sunk 30 ft. through decomposed schists enclosing stringers of quartz. Good prospects were obtained by panning from the bottom. The ore which yields value is found in the strata which contain the quartz stringers. The line of strike is N. 60° E. and the dip at an angle of 35°, S. 30° E. The aggregate thickness represented by these pay strata is about 12 ft., but the schist lying between is apparently gold-bearing to sufficient extent to warrant the treatment of the entire thickness of material.

ARBACOOCHEE PLACER MINES.—On two tracts in this district the parties are ready to commence hydraulic mining as soon as winter rains increase the water supply. Considerable prospecting has been done the past summer. The company who purchased a portion of Section 7, after a rich discovery was made in 1895 by the Hilton brothers, propose to hydraulic the surface from the valley in which this find was made and also to lay bare the bedrock and determine whether any regular veins occur. This company spent several thousand dollars in the summer of 1895 prospecting at haphazard, exposing some thin lenticular stringer veins which appeared to have been faulted and could not be followed any considerable distance in a direct line.

On Section 6 Messrs. Roberts & Houston prospected for about three or four months during the past summer. It is not generally known what results were obtained.

On another portion of Section 6, known as the

Cremer prospect, work has been done during the summer by a syndicate of Anniston capitalists who bonded the property. This property was prospected in 1895 by T. H. Aldrich, of Birmingham. Twenty thousand dollars was the price asked for the property at that time, but since then the owner, Mr. Cremer, having died, the heirs have, I understand, agreed to take very much less.

ECHOLS MINE.—This mine was recently sold to a capitalist of Chattanooga. Local attorneys commenced a suit on behalf of minor heirs of a claimant to the property years ago. In consequence Mr. Echols is holding possession against guards working in behalf of the claimants. This mine is in the same formation as are some of the extensive bodies of low-grade ore in Clay County. The ore body is large and is composed of auriferous hornblende and mica schists inclosing lenses of quartz. The purchase price is \$12,000, to be made in three payments. The property consists of 80 acres on the summit of Kemp Mountain and was purchased previous to the discovery of gold in 1893 for \$125. Some time before then a man had refused to trade a Texas pony for it. No question as to title had been raised until the recent sale was consummated. A compromise has been proposed by which Chicago capitalists purchase the property from the Chattanooga man, and are to give the attorneys who are representing the adverse claims one-half interest.

HICKS-WISE GOLD MINE.—The inclined shaft is sunk to the 128-ft. level. A drift has been run in both directions from the bottom and in the west a crosscut made in the ore body. Work of cleaning out the drift on the 72-ft. level, which was filled up by the caving of the surface some two years back, is being pushed for the purpose of crosscutting the ore body in virgin ground on that level. A quantity of ore is on the dump which was taken out from the inclined shaft and the drifts on the lower level. No mill tests have yet been made on this, but by panning it would appear to carry a large proportion of its value free. This ore body has recently been traced both to the northeast and southwest from the main working shaft. The line of strike conforms with that of the slate country rock. It is not a straight line, but wavy. It is noticeable that this ore body is immediately adjacent on the southeast side to the Hillabee schists, an altered eruptive, but is itself inclosed in a semi-crystalline slate which appears of sedimentary origin.

ALASKA.

Press reports state that contracts for the construction of 12 river steamers, 24 freight barges, and two towboats, have been let by the Yukon Company to the shipbuilding firm of Moran Brothers, of Seattle, Wash. The boats are to be finished and ready as soon as navigation opens next spring. The Yukon Company was organized in Philadelphia and New York by Andrew F. Burleigh, of Seattle, formerly receiver of the Northern Pacific Railroad. Mr. Burleigh is president and William H. Andrews of Allegheny, Pa., vice-president. The capital stock is \$10,000,000, owned by well-known Eastern capitalists. J. Cokingham, of Seattle, is secretary, and G. W. Dickinson, formerly General Western Passenger Agent of the Northern Pacific, will be general manager, with headquarters in Seattle. Four large steamers owned by the Cramps, of Philadelphia, will be used in establishing a line of ocean steamships between Seattle and St. Michael, at the mouth of the Yukon. Six of the river steamers will be larger than any heretofore constructed for Yukon travel. The specifications for these call for modern river steamers capable of carrying 1,400 tons of freight each and 800 passengers. They will not draw to exceed 4 ft. of water, will be 260 ft. long and 50 ft. beam.

The company will apply to Congress for a franchise and charter to build a line of railway across the Chilkoot Pass and over the Dalton Trail to Five Fingers. The line will be constructed as soon as the franchise is granted. The smaller of the ocean steamers to be sent out by the Cramps will ultimately be used between Seattle and Chilkat Inlet, where the road begins. From Five Fingers river steamers will carry freight and passengers to Dawson. It is believed that a man can be sent to Dawson City, by the steamer railroad route in three days, in 70 hours to Chilkat, in 20 hours over the 200 miles of road, and in 12 hours down the river to Dawson. It is the evident intention of the company to secure control as far as possible of Alaskan travel by operating the two separate routes.

YUKON DISTRICT.

A dispatch from Seattle, dated November 10th, says that C. C. Burns left Dawson City September 23d, poled up the Yukon and came out over the Chilkoot trail. He stated that when he left Dawson no one had started down the Yukon for provisions.

According to Burns, the only new gold discoveries made this year were on Sulphur Creek, and that field was not proving as rich as Eldorado or Bonanza creeks.

MINOOK CREEK.—Reports from Seattle and San Francisco state that hydraulic mining is to be attempted on a large scale in the Minook Creek district next spring and summer. A company of capitalists has sent prospectors and agents into the country to locate claims and buy tracts of land. It is also stated that the majority of the prospectors of experience believe that they have a better chance of making money through the working of the claims by a big company, with plenty of capital, than by

shifting for themselves. As the claims are held now—generally 500 ft. in length—it would be impracticable to work them separately, but under one ownership a large number of claims would pay for bringing in water and laying pipes.

BIRCH CREEK.—The season's work in the Birch Creek mines is about over, and the yield for the number of men in the district is large. It will exceed \$500,000, and possibly will reach \$600,000, according to newspaper estimates. Of this sum, \$80,000 comes from one mine and \$60,000 each from two others, all on Mastodon, a tributary of Birch Creek. About a dozen other mines on the same creek produced from \$4,000 to \$15,000 each.

ARIZONA.

GRAHAM COUNTY.

COPPER QUEEN CONSOLIDATED MINING COMPANY.—At Nacosari, this company is building a narrow-gauge road, four miles long, to connect the mine and smelter site. It is said a tunnel 5,000 ft. long will carry the road right under the mine, and the ore will go down to the car in chutes.

YAVAPAI COUNTY.

Lewis B. Kent, of Jamestown, N. Y., recently acquired a one-half interest in the Postmaster, Vigilante and New Era mines of the Big Bug District.

ARDATH GOLD MINING COMPANY.—The directors of the company are Frank C. White, Allen A. Bowser, Louis H. Renkert, Anders Larsen and Sanford E. Thomas, all of Indianapolis, Ind. Frank C. White is general manager. It is the intention of the directors to put in a stamp mill immediately. The vein is about 30 in. wide and of varying value.

CALIFORNIA.

CALIFORNIA STATE MINERS' ASSOCIATION.—The association at the recent meeting in San Francisco ordered the appointment of a committee to urge the construction of restraining dams to impound the debris from the hydraulic mines which endangers the Sacramento and other rivers. Pursuant to these instructions President J. H. Neff and Secretary Julian Sonntag have appointed the following committee, of which they are to be ex officio members: Ex-Congressman A. Caminetti, of Amador County; George H. Ten Broeck, El Dorado; John Spaulding, Placer; J. M. Walling, Nevada; A. M. McDonald, Tuolumne; J. F. Cowdery, Sierra; Louis Conrath, Yuba; J. M. Glaves, Shasta; W. E. Duncan, Sr., Butte; George C. Sargent, San Francisco; S. P. Lunt, Sacramento; A. B. White, Plumas; and Mark B. Kerr, of Calaveras. At the present time \$500,000 is available for the construction of dams to prevent the debris from hydraulic mines flowing into and damaging the navigable streams of the State, and particularly the Sacramento River. The United States engineers and the California Debris Commissioners are charged with the expenditure of this money. The United States engineers have been busy for some months past preparing plans for dams, but as yet have not progressed far enough with their work to be able to select sites for the proposed restraining dams.

AMADOR COUNTY.

(From Our Special Correspondent.)

CENTENNIAL.—This mine, on Dry Creek, is being reopened and the old shaft, down 500 ft., is being retimbered and is to be continued to a depth of 1,000 ft.

ONEIDA.—The three-compartment shaft at this mine, two miles north of Jackson, has reached a depth of 1,400 ft. The old shaft is to be pumped out, repaired and retimbered, so that by the time the new shaft has reached the depth at which it is intended to commence drifting no danger need be feared from tapping the old works.

BUTTE COUNTY.

(From Our Special Correspondent.)

Crouch & Sutherland, who own about 1,200 acres of placer ground on the west side of Feather River, about five miles southwest of Oroville, are having a large dredge built. Estimates have been made that the ground will yield 35c. per cubic yard or \$10,000 per acre and can be worked for 5c. per cubic yard. If the dredger now in course of erection is successful others will be built.

CARTER.—At this mine, one mile below Nimshaw, the Butte Creek Power and Gold Mining Company is sinking and running a tunnel and upraise. A ditch and an 8-ft. flume are also being constructed.

CONSOLIDATED GOLD MINES OF CALIFORNIA, LIMITED.—The Golden Feather Dam, which cost \$100,000 to construct, was blown up on the 2d inst. by this company, to enable it to work the bed of the Feather River above the dam. Surveys are being made on a site for another dam higher up the river. Water for running the hydraulic elevators will be brought in by a big ditch from Big Bend, and a large force of men will be put at work surveying the site of the reservoir and the route of the ditch. It is reported that the company will expend about \$250,000 on this project.

MAGALIA.—This drift mine three miles northeast of Magalia, near Butte Creek, has started up the new 10-stamp mill. Seventy-five men are employed under the management of J. F. Marlill.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

CALIFORNIA EXPLORATION COMPANY.—This company is now developing five mines in this county. The shaft at the Bund, down 300 ft., will be continued to the 600-ft. level. In drifting a small body of

good ore about 7 ft. in width and 120 ft. in length has been developed.

At the Burgess, sinking still progresses below the 200-ft. level. The shaft at the Gold Hill is down over 300 ft. and will be continued.

The shaft at the Gottschalk will be sunk at least 200 ft. below the 220 ft. level. Two stations have been cut below the tunnel level, 193 ft. below the surface. The electric lighting and hoisting plant works very smoothly.

The Vair tunnel is now in 1,090 ft., and an upraise, on an incline 150 ft., has struck the lava cap, under which a drift was run through the rim of the channel into good pay gravel. The management are about to run another drift lower down in the incline to get under the bedrock.

OLD PETTICOAT.—This mine, together with the Clary, Pantaloon and Blossom quartz mines, and a right of way through Boire Brothers' gravel claim, has been sold to Louis Rosenfeld, of San Francisco, for \$10,000. All these properties are located at Railroad Flat, and will be worked under the management of W. H. Clary, Jr.

SHENANDOAH.—This mine, in the Mill Valley district, above Jesus Maria, 2½ miles northwest of El Dorado, is to resume operations under the management of William P. Wrixon. The property is owned by an Oakland, Cal., company.

KERN COUNTY.

(From Our Special Correspondent.)

HARD-CASH MINING COMPANY.—This company has been incorporated with a capital of \$1,000,000. Directors: A. T. Stewart, president; B. O. Webb, vice-president; I. N. Inskip, secretary and treasurer; Jay E. Hunter and N. F. Wiltshire. The Hard-Cash claim, and four others adjacent, about three miles southwest of Randsburg, are being developed. Fifty tons of ore shipped milled \$18 per ton.

WEDGE MINING COMPANY.—This company has been reorganized and the following officers and directors were elected: N. F. Wiltshire, president; G. S. Beck, vice-president; H. J. Fleishman, secretary; C. T. Pepper and B. Falkenberg. A 10-H. P. gasoline hoist is to be put in and extensive development work commenced under the superintendency of Percy McMahon.

MARIPOSA COUNTY.

(From Our Special Correspondent.)

VIRGINIA.—Development work on this property, four miles south of Coulterville, still continues with satisfactory results. The old shaft, down 400 ft., has been cleaned out and retimbered. After drifting west about 90 ft. a short crosscut was run which crossed two veins, one 30 in. in width, assaying \$18, and the other, 8½ ft. in width, assaying \$10 per ton. The old mill is being repaired, but a new one will probably be erected very soon. There is a fine steam hoist on the property. Twenty-five men are employed. This mine is owned by the California Exploration Company.

MONO COUNTY.

STANDARD CONSOLIDATED MINING COMPANY.—The latest weekly official statement says that raise 1, Black vein, 265 level, had 36 in. ore in top. Raise 2, same vein and level, had 40 in. ore. South drift in middle ledge, 380 level, was following two small seams containing some good ore. Raise 1, Fortuna vein, 600 level, showed 8 in. lower grade ore. Winze 2, same vein and level, had 6 in. fair grade ore. The quantity of fair to good ore was extracted from the stopes on the 150, 245, 265, 318, 336, 380 and 600 levels. The mill statement shows ore crushed for the week, 265 tons; average assay vanner tailings, \$6.83; tons concentrates produced, 2½; assay value, \$63.80; plate amalgam produced, 789 oz.; value per ounce, \$2.48. Tailings plant No. 1 treated 45½ tons tailings for the week; plant No. 2 treated 363 tons tailings. At the mill a cam shaft broke on October 27th, after which date the mill ran with only 19 stamps.

NEVADA COUNTY.

NEVADA CITY.—This mine was recently again sold at sheriff's sale. Geo. Gaylord for himself and the assigned claims bid it in at \$12,440. Thos. S. Ford, representing Eastern holders of the company's bonds, protested against the sale without effect.

(From Our Special Correspondent.)

EMPIRE.—The main working shaft at this mine, one mile east of Gras Valley, has been started for the 2,200-ft. level. The two pay chutes have been worked over 1,800 ft. in length on the Ophir and Rich Hill claims. The plant, which consists of a 40-stamp mill, 16 concentrators and two Rand drills, is operated by water power. About 40 tons of sulphurets, high-grade, are sold monthly; 150 men are employed.

RED DOG.—At this drift mine in Missouri Canyon, one mile north of You Bet, the blue lead gravel has been struck in a shaft. The claim comprises 200 acres on the Blue Lead Channel. The hoist is run by water power from a 5-ft. wheel, taking water through Old Chalk Bluff ditch from the head of Deer Creek.

PLACER COUNTY.

(From Our Special Correspondent.)

SAILOR CONSOLIDATED GOLD MINING COMPANY.—This drift gravel mine on the west bank of Sailor Canyon, in the Canada Hill mining district, 20 miles from Forest Hill, embraces three adjoining claims, the Sailor, Sally Alma and Hazel. This property is located on the ancient Canada Hill Channel, which is a large deposit of rich gravel, lava-capped. A

900-ft. tunnel and several spur drifts have been run; besides, several upraises have been made. The tunnel will be pushed northwest to tap the main channel. Over \$2,000 in coarse gold have been taken out.

SAN BERNARDINO COUNTY.

(From Our Special Correspondent.)

SAM TEMPLE MINE.—This claim, 2½ miles from Twenty nine Palms, is said to be very rich. Last reports say the vein is 3 ft. wide and that the ore assays very high. The ledge is easily traced 1,800 ft.

SIERRA COUNTY.

(From an Occasional Correspondent.)

SIERRA.—There are three parallel ledges on this property, known as the Ackley, Crouse and Mexican veins, all of which are being developed by tunnels. The ores, which carry 5% arsenical pyrites, have been tested at the Pioneer Reduction Works, averaging over \$6 per ton, \$4 being free gold. The company owns a water right which can furnish 3,000 miners inches of water.

SISKIYOU COUNTY.

(From Our Special Correspondent.)

BALLOCHMYLE COPPER.—This company is making progress upon a 40-ft. ledge of sulphides; recent assays made by Selby Smelting Company show high in copper, with \$2.50 gold and 8 oz. silver. The owners are badly handicapped for the want of a small smelter, but hope soon to get the means to construct one.

BLACK BEAR QUARTZ MINE.—John Daggett, the ex-superintendent of the United States Mint at San Francisco, is owner of this property. He has just arrived at the mine and proposes to enlarge the force employed, as the recent output is encouraging.

MYERS QUARTZ MINE.—The ore taken from tunnel 3 has just been crushed and recovered into bullion; the yield was \$23 to the ton. The last previous crushing was in June, when the ore yielded \$20 to the ton. In addition to the above, \$4,000 was recovered from this tunnel by hand mortar. Tunnel 2 has a fine lot of quartz now on its dump.

SCHROEDER MINE.—Since the striking of the large body of rich ore at the 1,200-ft. level, extensive preparations are being made to enlarge the mill and increase the force of miners.

TRINITY COUNTY.

(From Our Special Correspondent.)

JOHNSON & McLEOD.—At this mine, nine miles from Trinity Center, two new ledges have been uncovered. Previous to this 260 ft. of tunneling and 200 ft. of crosscuts had been run. The foot wall is slate and the hanging wall is porphyry, the vein matter between being 200 ft. in width. The pay streaks are of white and blue quartz, free-milling. The mine is equipped with a small plant that will handle about 10 tons per day; 25 men are employed; R. R. McLeod is superintendent.

MINERSVILLE HYDRAULIC GOLD MINING COMPANY.—This company owns over 2,800 acres, including the town site of Minersville. A system of ditches has been constructed. The principal one, nine miles in length, taps the east fork of Stewart's Fork, and has a capacity of 5,000 miner's inches. Four giants are in operation under a pressure of 350 ft. One of these giants weighs about two tons and is probably one of the largest in the world. The gravel deposits are terraced, being from 80 to 100 ft. in depth and from 1,000 to 3,000 ft. in width, extending for about three miles. The gold is coarse. The electric light plant at Minersville is owned by this company.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

BALD MOUNTAIN.—At this mine, one-half mile northeast of Sonora, now being worked under lease by Munroe & Wainwright, a pocket has been struck which has already yielded \$2,000.

BELLE.—At this mine, south of Carson Hill, near the Stanislaus River, a 32-ft. vein of quartz has been developed. The superintendent says it will average \$15 per ton. A 40-stamp mill is to be erected. George Blake is superintendent.

BELLEVUE.—The shaft at this mine, seven miles east of Sonora, has reached a depth of 765 ft., and after a drift had been run 414 ft. a crosscut has been driven 68 ft.; this will be continued until the ore body developed on the 565-ft. level is reached. There are two pay shoots on this property, both of which look very promising. The 10-stamp mill is kept busy on test lots of ore from the upper levels. This property is owned by the California Exploration Company.

GOLDEN GATE.—This property, consisting of 4,400 ft. on the ledge and about 75 acres of placer ground, all located one mile southwest of Sonora, is being operated on a large scale. There are three pay chutes, but only one is being worked. The main shaft is down 700 ft., but no ore has been stoped lower than the 500-ft. level. The present plant is very complete, saving, it is claimed, 90% of the assay value of the ore. All the machinery is operated by water power and all the buildings are lighted by electricity.

GRIZZLY.—The old shaft at this mine, one mile southeast of Carters and 12 miles east of Sonora, is down 200 ft. and will be continued to the 400-ft. level.

COLORADO.

Press dispatches report that a deal has been consummated whereby the Northern Coal Company becomes the absolute owners of 18 of the large coal mines in the northern part of this State and controls the remainder of the mines in that district except the Enterprise. The Northern Coal Company is reported to have paid \$500,000 for the mines, and the deal is said to involve \$1,000,000 of Eastern money. James Connor, Jr., formerly president of the United Coal Company, manipulated the Eastern end of the transaction, while Charles T. Brown, attorney for the Northern Coal Company, looked after the legal part of the Denver end.

EL PASO COUNTY—CRIPPLE CREEK.

(From Our Special Correspondent.)

The output of the camp for the month of October will run over the \$1,000,000 mark, notwithstanding the setback from the severe blizzard of October 26th, which effectually stopped all hauling for two or three days. The present estimate places the production for the month (more accurate figures will be supplied later on) at about 30,200 tons. Of this 8,000 tons are smelting ore at an average of \$70 per ton, 21,000 tons are credited to the various cyanide and chlorination mills in the district, which will average between \$23 and \$24 per ton, and 1,200 tons treated by the various stamp mills averaging \$10 per ton, giving a gross production of considerably over \$1,000,000.

Shipments are being retarded this month so far by the scarcity of cars. This is true of both roads running into the camp. The railroad companies are making strenuous efforts to overcome this and no doubt in a few days there will be a full supply. The wagon roads with which the storm played such havoc are gradually drying out and getting back into their normal state.

Dividends have been declared so far this month by the Victor Gold Mining Company, amounting to \$30,000; on the Portland Gold Mining Company, \$30,000, and by the Anchoria-Leland \$6,000.

C. C. Vaughn has lately purchased a half interest in this lease. He was one of the lucky leasers on the Orizaba property on Beacon Hill, and will push this lease, which has 11 months to run, for all it is worth. The Fox lease has also begun to ship. This shaft was sunk to a depth of 150 ft. before ore was reached, probably the same vein as the White. The property is laid off in 26 blocks, of which 22 are leased. All the lessees are sinking on their respective blocks.

CHRISTMAS.—This mine, worked under lease by C. D. Wood, is showing up well. The shaft has been retimbered, and surface improvements made in the way of ore bins, etc. It is now producing about 15 tons daily of 2-oz. ore, with some high-grade smelting ore.

COLORADO ORE SAMPLING AND REDUCTION COMPANY.—Mr. W. B. Milliken, a well-known mining man, has been appointed to succeed Mr. R. B. Turner as manager of this company in Arequa Gulch, and has entered upon his duties. He has just returned from New York, where he went to confer with the directors of the company. He will commence at once the overhauling and enlargement of the present mill in conformity with plans agreed upon to accommodate the new machinery that is to be placed in it, which includes another powerful engine and extra boiler, one plate crusher, two sets of rolls, two cylindrical dryers, one air compressor, two 30-ft. leaching tanks for the cyanide department, with a capacity of 120 tons each; two 10 ft. solution tanks, with a capacity of nine tons each; three more five-ton chlorination barrels for the chlorination department, and two double sets of screens. A dynamo to furnish electricity for lighting the mill and ample ore bin capacity will also be added. When all these improvements are carried out the Arequa mill will be the largest and most complete in the district, and will have a capacity of 125 to 135 tons of ore daily. It is situated on Raven Hill between Beacon Hill and Squaw Mountain, close to the railroad, in a district that produces a very large tonnage of ore at a minimum expense. A spur from the Florence & Cripple Creek road is in contemplation, which would connect the mill with most of the large producers in the district. Mr. W. B. Milliken is a graduate of the School of Mines in this State, and from several years' residence in the camp has made himself thoroughly familiar with the ores of the camp.

HULL CITY PLACER.—This property comprises nearly 40 acres. The local Land Office has rendered a decision on the special hearing of protests against the entry of this tract by W. S. Montgomery and others in their favor. This decision is final and the entry will now go forward for patent, which will shortly be issued, thus settling a long and vexatious series of litigations. The property now belongs to the Independence Town and Mining Company. This property is being developed by lessees. The principal of these lessees is that of A. G. White & Company, on Block B. They are now sinking from the 200-ft. level, and will start a new level at 250 ft., which they will soon reach. A crosscut cut the same vein as the vein in the 200-ft. level, which is upward of 5 ft. wide, averaging \$30 per ton, and it is expected when the vein is reached in the lower level it will be of a higher grade.

KELTON GOLD REDUCTION COMPANY.—This company, which has a sampler at Goldfield, will start up Monday purchasing ore. This is a strong company and will have the advantage over most samplers from the fact that it will send all the low-grade ore

to the plant at Florence, thus finding a ready market for what it buys.

MAY QUEEN.—Simmons & Barbee, on their lease on the May Queen, have opened up a vein of ore near the surface that should run well in value. They will shortly make a shipment, and will also ship some float taken from the surface which shows more or less free gold all through it. This vein that they have struck is evidently the same as that opened up by Chambers & Crow on their lease on the same property. Both parties are working very near to each other. Simmons & Barbee have commenced sinking a new shaft from which to work, as the vein is found to be dipping back from the old shaft. This vein is now thought to be the northwest extension of the Granite Hill vein.

ORPHAN BELL.—The Parker & Gardner lease, on part of the Orphan Bell property, on Bull Hill, has struck the Maloney vein in their 350-ft. level. The vein here is about 3 ft. wide, of very rich ore, sylvanite, free and rusty gold. They struck this same vein in their 250 ft. level, and having it again in the 350. It gives them 100 ft. of stoping ground as they run their drifts. This will enable them to take out a large lot of ore.

FREMONT COUNTY.

(From Our Special Correspondent.)

METCALF.—These prospects, on Badger Creek, show on the surface, from 10 to 20 ft. of fair looking quartz, for a distance of about 3,000 ft., cut by two cross gulches at a depth of 100 and 400 ft., respectively. No information has yet been given out as to the assay values. There is considerable interest displayed in this district and a number of parties from Cripple Creek are getting claims.

GILPIN COUNTY.

(From Our Special Correspondent.)

EAST CENTENNIAL.—This property, situated in Russell Gulch district, is producing a good grade of ore, the last shipments of smelting ore giving returns of \$196 per ton for first-class and \$76 per ton for second-class ore. The mill ore is also of a fair grade.

GOLDEN STAR.—This property, situated in Stewart Gulch, about five miles north of Central City, has been taken hold of by Eastern parties, and operations are at once to be commenced under the superintendency of Professor Lindeman. A new plant of machinery is to be installed, and it is the intention of the interested parties to build a Beam process mill with a capacity of 50 tons per day. The ore in this property is of a low grade character.

GREGORY BOBTAIL.—This week workmen were busy placing electric lights in the Gregory incline, intending to light it down to the 900-ft. level, where the big pump is situated. Improvements are also being made in the compressor and engine rooms on surface.

HAYES & WHEELER.—This property on Quartz Hill has been taken hold of by Clear Creek parties, who have put up a small plant, and intend to do considerable development work this winter. The ore body in this property is large but low grade, which the operators believe they can handle profitably when once they get in working shape.

HERBERT.—The Woodberry Gold Mining Company is putting up a new shaft house 18 by 40 ft. dimensions, and a new plant of machinery over this, the main claim of the group, on which the shaft is down nearly 100 ft. After the building is finished, sinking operations will be resumed, as the management is well satisfied with present conditions in this property.

PEWABIC.—It is reported that this well-known property, in Russell Gulch district, will be soon started up by capitalists on a bond and lease proposition. It has been a good producer in its past history, the ore being of a satisfactory grade, but on account of water difficulties operations were suspended. The water, however, could be easily handled with a Cornish pump, in the estimation of reputable mining men.

RIO GRANDE.—Russell Gulch parties have formed a pool to operate this property, which lies just over the Gilpin County lines and adjoins the Crown Point & Virginia mine. A new plant of machinery has been already installed and the lessees are taking out pay ore.

SLEEPY HOLLOW.—Sinking operations have been resumed at this property, on Bobtail Hill, on a 100-ft. lift, which, when completed, will make the shaft a total depth of 1,000 ft. A force of 40 to 50 men are at work, mostly leasers, and the milling output of this property is close to 40 tons per day.

WOOD.—Local parties have leased this property and intend to develop it this winter. This mine is well known on account of its having produced considerable uranium, a metal found in but very few mines in this State.

GRAND COUNTY.

It is reported that extensive beds of asphalt have been found in this county by A. A. West, of Walden.

LAKE COUNTY.

NEW ELKHORN MINING COMPANY.—From the monthly report of this company, dated London, October 23rd, it appears that though some exploration work was done, no ore bodies were encountered. Unexpected delays and difficulties having arisen, the board of directors decided to stop all work at Leadville November 1st, and await the results of developments on adjoining properties.

(From Our Special Correspondent.)

It is well known that at the time of the strike here much Eastern capital was figuring on coming into Lake County, but the labor troubles gave this a setback. It has been frequently claimed since that there was a lack of confidence among capitalists in conditions here on account of these troubles and the strength of the union. At the recent county election the ticket fought for by the Miners' Union was defeated by pluralities ranging from 300 to 1,200. To accomplish this it was necessary for many of the old members of the union to vote against the Populist ticket. The result speaks for itself.

ATLANTIC-PACIFIC GROUP.—This combination, including the Atlantic, Pacific and Silver Lake properties on North Star mountain has just broken into a body of sulphide ore. It is claimed, however, that part of this stuff is of a good grade and a part very low. Arrangements are now being made to begin regular shipments from the strike.

DOLLIE B.—In this property, operated by P. K. Connolly, a strike is reported, but no particulars have yet been given.

JAY BIRD GROUP.—This includes 31 acres of ground, including the Jay Bird, Grover Cleveland, Eurydice, and the Frank claims. The Jay Bird group is well located on Breese hill east of the old Antioch property, and it is owned and operated by Dr. J. J. Crook who also is leasing a portion of the ground. The operations on the Jay Bird extend over a period of nearly 18 years. This shows a tunnel over 1,000 ft., drifting of 800 ft., and a main shaft of 480 ft. Also three shafts averaging over 150 ft. each and other tunnel in some 300 ft. It was but a short time ago that a streak of \$80 ore was opened up and at the present time sinking is being prosecuted on this streak with the hope of catching the main ore body. This find was made in the Cleveland. In the meantime a good set of lessees have taken hold of the Frank and are prepared to sink it to mineral. They have their shaft down 225 ft. and have just let a contract for a further sinking of 125 ft.

LADY ALICE.—In this property, where an ore find has been expected for some time, I understand that a big strike has been made, but no information has been given out.

LITTLE CHIEF GROUP.—Manager Austin Blakey of the Little Chief Mining Company has some four leases now running on the company's ground which he is looking after. The combined tonnage of the leases is from 600 to 700 tons of iron per month. About 75 to 100 tons of this ore is a first class lead ore, the best grade averaging from 200 to 300 oz. silver per ton and about 50% lead. The best ore is coming from the McCrea shaft of the Little Pittsburg while most of the iron comes from the Pittsburg No. 6. The shafts of the company now operating are No. 1 Discovery, No. 6 Pittsburg, McCrea shaft on the Pittsburg, and the Daly shaft.

LILLIAN MINING COMPANY.—Assistant Manager T. C. Wood is looking after the interests of the Lillian Company and is shipping 25 to 30 tons daily of a fair grade gold ore. All work, however, is being prosecuted by lessees, who are operating some 19 different blocks of ground of this combination.

LITTLE STAR.—This property, in the Horseshoe, being operated under lease with deed in escrow, comes to the front this week with a big strike of fine lead and copper ore. The shaft was sunk by Lessee Dyat some 150 ft. and then a drift was started. After going in 6 ft. ore was encountered and the full extent of the strike is not yet known. The first carload of the ore has just been sent to the smelter. It is heavily copper stained, runs a trifle in gold, about 20 oz. silver and a big lead value.

MAB MINING COMPANY.—Manager Nicholson, who is also one of the principal owners of this property, is working a big force of men getting his new machinery into place at the station where the water rushed in after the ore body was cut. The flow of water is not very large and no more trouble is anticipated after the machinery is in place.

SEDALIA.—Captain Yankee is prosecuting extensive work on the Sedalia and is opening up some good ore bodies. Shipments now average 60 tons per day. About six weeks ago Mr. Yankee, who had been sinking to catch the ore body found on the upper levels, ceased shaft work and began two drifts from the shaft bottom, a depth of 760 ft. One of these drifts went in 80 ft. and the other 140 ft. when the old ore bodies were opened up in an extension from the upper workings. Manager Yankee, who is also the owner of this ground, is well pleased with the outlook and another increase in shipments is promised. The ore carries silver, gold and lead varying in its gold value from $\frac{1}{2}$ to 4 oz. to the ton.

WINAN.—Sinking operations are being pushed on this property located on Printer Boy hill. They have a fine plant of machinery on the ground and down over 300 ft. They have returns from a recent find which show 68 oz. silver, 67% copper, $\frac{1}{2}$ -oz. gold and 10% lead. This was found in a streak and although not as rich all the way through, is said to be valuable ore. The find was made by drifting in some 80 ft. from the 300-ft. level.

MONTEZUMA COUNTY.

(From Our Special Correspondent.)

AUSTIN PROCESS.—W. L. Austin, inventor of the Austin process of treating pyritic ores, has lately

been looking over the district with the view of putting in a smelter.

LITTLE JANE.—Contracts have just been awarded for packing the output this winter to Durango. Another carload of high grade ore is about ready for shipment.

MARSHALL PLACERS.—These claims are the property of an Omaha syndicate, who are expending considerable money in improving and putting them in shape to begin active development next spring. A force of men will be employed all winter in the construction of flumes and ditches.

NEGLECTED.—Fairfield & Co., the operators, are erecting a large shaft house. A large influx of water recently stopped operations, but pumps will be put in as soon as possible. A Wilfley concentrator is to be added to the mill equipment at an early date.

OUT OF SIGHT.—The last contract is nearing completion and another will soon be let to sink an additional 100 ft.

SENATOR.—W. S. Cheesman has employed a large force of men on this tunnel and is taking out some good ore.

SMALL HOPE.—Trachsler & Company will shortly ship another carload of high-grade gold ore.

PITKIN COUNTY.

The report is circulated that the \$78,000 option held by a Boston syndicate on the Farwell group of gold claims at Independence will be taken up. The terms under which the property is purchased are \$35,000 November 5th, 1897; \$25,000 March 10th, 1898, and \$18,125 September 10th, 1898. The syndicate has had a force of about 50 men at work for the past three months.

SAN JUAN COUNTY.

(From Our Special Correspondent.)

DELAWARE MINING AND PROSPECTING COMPANY.—This company owns six claims in Ice Lake basin and five claims in Boulder Gulch. On the Ranchman one of the latter named, a streak of ore has lately been opened up which it is said averages from 18 to 24 in. in width. In order to carry on development next spring the company will sell 100,000 shares of treasury stock.

DIVES & SHENANDOAH.—This property, in Dives Basin, is being worked under lease by Bennett *et al.* A car of ore recently shipped gave high returns in silver, \$3 gold and 17% lead. With favorable weather, a shipment of 100 tons will be made before snow blocks the trail.

GOLD BUG AND REPEAL COMPANY.—A force of 18 men is employed, which will be increased shortly.

GOLD KING MINING AND MILLING COMPANY.—Four carloads of machinery have been received for enlarging the mill, and its capacity will be increased to 60 tons. Two large boilers and steam power will also be put in for use during the winter months.

LITTLE RAY.—This property is situated in Deer Park. The tunnel is in 190 ft., with a crosscut of 22 ft. The Little Ray is shortly to be worked by an Ohio company now in process of organization.

MABLE.—A new contract has been let, and the tunnel will be pushed forward an additional 200 ft., where it is expected to cut the gold vein.

MINNEHAHA.—A force of seven men is extracting a carload per week of lead carbonates, which is shipped to the Durango smelters.

MONTANA.—Work will be resumed in a few days by a new company headed by John Lambert, the owner.

ORO TUNNEL.—Enough stock has been disposed of to insure the immediate purchase of necessary machinery, which is expected to be on the ground within 30 days. The big tunnel is now in 90 ft.

RED & BONITA MINING COMPANY.—The foundation for this company's new mill has been completed, but operations have been postponed until spring.

SILVER LEDGE MINING AND MILLING COMPANY.—Ten cars of concentrates were recently shipped, which ran 70% lead. The ore concentrates 5 into 1. Development work will be continued all winter and ground is blocked out to furnish the mill all next summer.

SILVER LION.—This property, in Picayune Gulch, is to be started up by a strong company, headed by Dr. Newman, of Durango.

GEORGIA.

(From Our Special Correspondent.)

The Georgia Mining, Manufacturing and Investment Company has been reorganized since the sale of the assets under decree of court to Capt. Clifford L. Anderson, who represents the creditors. The property of this company embraces the coal mines of Dade County, brown iron ore and manganese mines in Bartow County, red fossiliferous ore mines and Rising Fawn furnaces in Dade County, Chattanooga furnaces at Chattanooga and manganese mines near Cartersville. This company was organized by the late Gov. Joseph E. Brown several years ago and was managed by him. The furnaces of this company at one time were run successfully. Lately the operations have not resulted satisfactorily, and the property has depreciated in value so that the first sale by order of the court failing to realize the price set as the lowest bid to be accepted, a second order was obtained and the knock-down price reduced. Convicts have always been

worked in the mines of this company, but what the future policy will be cannot be ascertained. Although all the raw materials needed for iron-making are on the company's lands, yet they are so scattered that the haulage from the mines to the furnaces has to be made over two lines of railroad, which adds materially to the cost. The shipment of ore manganese by this company during the past few years has been very considerable and resulted profitably. The bulk of these shipments were to the Carnegie works in Pennsylvania.

LUMPKIN COUNTY.

SINGLETON MINE.—Mr. John B. Atkinson, of Earlington, Ky., has bought this property and is working it actively. A 10-stamp mill is about ready to mill ore. Tunnels and shafts are being driven, and as soon as development warrants another battery of 10 stamps will be put up.

MERRIWETHER COUNTY.

(From Our Special Correspondent.)

POST MINE.—This property, held under lease for the past year by a Western miner and associates has, I am informed, been bonded by Atlanta parties who are endeavoring to sell in New York. The lessees during the past year have performed a good deal of prospecting work and exposed the ore body, from which they made some mill tests in a temporary plant. They also did considerable placer mining, how successfully is not known.

WILKES MINES.—This property has recently been sold to a syndicate in New Haven, Conn., and arrangements have been made to operate it. It was discovered early in the '70's and was leased from the owner, Mr. Wilkes, by a Mr. Cross, of Atlanta. A stamp mill was erected and operated until 1875. During the period of active work Mr. Cross claimed to have taken out \$50,000, but he soon after suspended operations and the property remained idle until 1895, when he again leased from the heirs to estate, Mr. Wilkes having died. Work continued at irregular intervals by Mr. Cross and by other parties who bonded the property in the fall of 1896 after the lease had expired. The ore body is in mica gneiss formation and probably belongs to a South Carolina formation rather than the Dahlonega or any of the North Georgia formations.

TALLAPOOSA COUNTY.

BONNER-TERRELL MINE.—A company has recently been organized in Atlanta for the purpose of operating this property, which is located about 10 miles south from Dadeville, on the Central of Georgia Railway. It was discovered several years ago and worked to some extent, how successfully cannot now be ascertained. The new owners, I understand, propose thoroughly prospecting the property before erecting a mill.

IDAHO.

BLAINE COUNTY.

CAMAS.—The cyanide works at the Camas No. 2 have shut down for the winter. Manager J. B. Frank gives as a reason that ice on the tanks made the process too slow and the cost is too heavy.

IDAHO COUNTY.

A rich find of placer gold is reported from Elk City.

John B. Reno, of Pittsburg, and several associates have taken hold of the Luck Boy claim, eight miles from Idaho City.

It is reported that J. T. Keegan has interested Pittsburg and New York people in a group of claims near Quartsburg.

OWYHEE COUNTY.

DE LAMAR MINING COMPANY.—From the monthly report of this company submitted to the English directors by Manager D. B. Huntley, it appears that the average amount of exploration work was carried on during September, and the vein showed no great change in character. The returns of the milling department show the following results: Ore treated in pan amalgamation mill, 2,677 dry tons; in Pelatan-Clerici process plant, 1,241 $\frac{1}{4}$ dry tons; total, 3,919 tons. The percentage saved by pan amalgamation was 71.68%; by Pelatan-Clerici process, 76.27%. The gold produced was 1,579 oz.; silver, 14,379 oz. The total value of gold produced was \$31,590; silver, \$7,190; shipping produced (estimated value), \$180; this with \$140 miscellaneous made \$39,400. The estimated profit for September was \$2,314. The manager announces that owing to the decreasing price it has been thought best to change the basis of estimating silver values from 60c. to 50c. per oz.

MICHIGAN.

COPPER.

ARNOLD.—President Fitzgerald reports of this property: "The rumors that an assessment of \$3 a share would be levied on the Arnold stock undoubtedly arose from the fact that the agent and myself had determined to advise the directors to take such steps as would put the mine among the list of producing mines of Lake Superior. A shaft has been sunk to a depth of about 735 ft. The management has plans under way which may enable the Arnold to become a producing mine without the outlay of any large sum of money. To equip the mine and build a stamp mill would take at least \$250,000."

CALUMET & HECLA.—No. 15 shaft, the first started on the amygdaloid lode, has attained a depth of about 200 ft., at which point drifts have been started north and south.

CENTRAL.—The shaft at the Central mine, which caught fire over a week ago, was opened, when it was found that the fire had run its course. Work was resumed there November 8th.

OSCEOLA.—The working force of the Osceola Mining Company was reduced to the extent of 50 men recently. Now that the consolidation has been effected, it is understood that a falling off may be looked for from the Osceola output. The rock from the Kearsarge and the Tamarack, Jr., carries a higher percentage of mineral so that a combined increased production will be the result.

WOLVERINE.—The compressor for this company, which has been so long delayed, arrived at the mine last week. With this received, all the equipment for No. 4 shaft is on the ground.

IRON—MARQUETTE RANGE.

ROLLING MILL MINE.—Mining operations at this property have been discontinued for this season. During the past two months from 20 to 30 men have been working there mining and filling cars for a special order. This was the first work of any consequence done at this mine in a number of years. The ore is mined there as it is at most of the properties on the Cascade Range. There is a slope of solid ore about 30 ft. in height and very little stripping is necessary. The ore can be mined at a small cost, so that the owners of the property have been able to get a profit even with the low price received.

IRON—MENOMINEE RANGE.

COLUMBIA.—Frank Scadden, superintendent of this property, reports that miners are scarce and hard to get. The logging camps are paying good wages, and the men work in the woods rather than at the mines.

DUNN.—This mine at Crystal Falls has resumed operations with a small force, which will be gradually increased as the mine is put into working condition.

HAMILTON AND CHAPIN.—The foundation walls have been laid and the machinery is being erected for a new rope haulage plant at the Hamilton shaft. Work has been resumed on the drift which is to connect Hamilton and Chapin D. shafts. About 35 ft. now separates the two properties and connections can be made in a couple of weeks. The new stock dock at Hamilton shaft is about finished. It is as level as any ordinary floor and is covered with heavy hemlock planks. General Manager MacNaughton expects to continue shipping one to the docks until about November 20th.

HEMLOCK.—The prospects at this mine near Amara are reported brighter than at any time since the shut-down in 1893. The vein has been traced over 1,000 ft. to the Michigan property. Shaft A has been abandoned and all the ore, about 20 railroad cars a day, comes from the fourth level on shaft B.

LUDINGTON.—Many changes are being made in and about the Ludington property. No. 2 B and the old mine shaft houses, together with the sawmill and many other buildings, are being dismantled and torn down. The shafts named collapsed and will never be used again.

MANSFIELD.—The ore body at this property has been shown by recent developments to be much larger than anticipated. The output is now about 400 tons per day.

MICHIGAN.—The Hemlock River Mining Company's option in this property expired recently and has not been extended.

MINNEHAHA.—Messrs. George Maas, L. F. Johnson, C. Aberle and R. Wehse, who have been prospecting south of the Mansfield mine, near Crystal Falls, have struck a good body of iron ore. A drill hole driven at an angle of 80° went through ore from 117 to 194 ft. The average analysis of the hole was 62% iron, and 0.051 phosphorus. As the ore body in the Mansfield is but 25 ft. wide, the new find is considered very promising, and developing work will go ahead rapidly. The new find is near the river and half a mile south of Mansfield.

POOR-FISHER EXPLORATION.—A small body of good iron ore has been shown up, and further development work will be carried on.

MINNESOTA.

(From Our Special Correspondent.)

The docks of the Duluth & Iron Range road at Two Harbors have handled this season to November 1st 2,460,000 tons of ore, and are yet shipping at the rate of about 5,000 tons a day. The Minnesota hard ore mines, the Fayal, Genoa and Sparta, will continue at work till the close of navigation. The good weather of the month is postponing this, as it has not been cold enough yet to freeze the ore in cars or dock pockets. Of mines that ship over that road, the Chandler, Pioneer and Zenith, of the Vermilion, and the Auburn, Norman and Cloquet, of the Mesabi, have finished for the season. Any night may be cold enough to put so much frost into the ores in cars as to necessitate steaming, and that will soon end ore shipments, but the indications are that not far from 2,550,000 tons will be sent forward. Shipments for the season to November 1st from all Lake Superior ports have been 8,798,000 gross tons and about 2,100,000 more from Escanaba and Gladstone, leaving only some 600,000 tons to go down to make the year's total 11,500,000 tons, as predicted early in the year in this correspondence. From Lake Superior, aside from Minnesota forwardings, Ashland has shipped about 1,950,000 tons and Marquette some 1,650,000.

The monthly report of the Sault canals for November shows traffic for the month of 2,040,000 tons, and for the season to date of 15,629,000 tons. The total traffic for the entire year 1896, the greatest in the canal's history, was 16,339,000 tons, and this will be considerably surpassed this year.

Messrs. A. W. Wright and C. H. Davis, of the firm of Wright & Davis, were in Duluth this week and admitted that they were surveying for a rail road to their mines at Hibbing. They stated that the line, if built, would be put through direct from the mines to Duluth, but they were unwilling to make any statement as to what they had decided to do, if anything. Their traffic contract with the Duluth, Superior & Western road does not expire for another year, and there would be no advantage in having a road completed before the spring of 1899. But this they will probably have.

Work on a steel ship for the Minnesota Iron Company will begin in a few days at the yard of the American Steel Barge Company, the whaleback constructors, but the new ship will not be in any sense a whaleback model. She will be 390 ft. long over all, 370 ft. keel, 46 ft. beam and 26 ft. deep. The ship will carry no engines and is good for a cargo of about 5,500 tons.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

MAHONING ORE COMPANY.—At the stripping operations carried on at this mine by Winston & Dear there are about 12 miles of tracks and 300 dump cars in use. Two shovels are now stripping, but will be abandoned with freezing weather and hand labor substituted. The mine is now being stripped on all sides except on the north, where it has reached the line of the property.

OLIVER MINING COMPANY.—The Oliver mine has closed down once more, this time for the season, with a record for the year of 602,000 tons. Most of the present force will be continued for a large part of the winter in stripping at the mine, as there will have to be considerable addition to the present stripped area if mining operations are to be carried on as heavily as this year without going down.

PENOBSCOT MINING COMPANY.—Preparatory work at this mine has been steadily continued during the year, until now there is proved an ore body some 200 ft. deep, 500 ft. wide and more than 1,000 ft. long, and the end of the ore is not yet in sight. The mine has shipped only 12,000 tons, all taken out in the course of development, of a very high-grade Bessemer ore, and is preparing to be a heavy shipper next year. Two 80-H. P. boilers are now being added to the mine's equipment, and the daily output of water is 3,500,000 gals. The mine is excellently developed underground for the length of time that operations have been carried on there.

IRON—VERMILION RANGE.

(From Our Special Correspondent.)

Negotiations for the purchase of the Pioneer mine at Ely have not been broken off, it is understood at Superior, where part of the owners of the fee to the mine reside, but are in abeyance, with both sides anxious to come to terms, and only the lessees standing between them. The present lease to Messrs. Spooner, Phipps & Humbird, Wisconsin capitalists, expires in June, 1906, and is on a 20,000-ton minimum output and a royalty of 35 and 40c. The Carnegie interests simply demand a 24-year lease, which neither party can give, and neither is willing to let the other make the money Carnegie offers as a bonus for the mine. The owners are now hustling to get a relinquishment from the Wisconsin lessees, and may have to put up a pretty sum; for the latter hold the key to the situation.

MISSOURI.

From advance sheets of the report of Mr. George E. Quinby, State mine inspector of lead, zinc, iron, barytes and tripoli, the following abstract of the report for the year ending June 30th last is given. The lead ore production for the fiscal year ending June 30th, 1896, was 65,504 tons, and the output of zinc ore for the same period was 92,754 tons. For the year ending June 30th, 1897, the lead product was 67,404 tons, showing an increase over 1896 of 1,900 tons; and for the same period the production of zinc ore was 93,184 tons, an increase of 304 tons. For the year ending June 30th, 1896, the money value of both lead and zinc produced in the State was \$3,819,011.67, and for the year ending June 30th, 1897, \$3,569,070.16, showing a decrease in the money value of 6 1/2%. The average price paid for all grades of lead ore for 1897 was \$27.62 per ton, and for 1896, \$30.33, a decrease of \$2.71 per ton. For 1897 the average price of zinc was \$18.32, and for 1896, \$19.37, a decrease of \$1.43 per ton. In Jasper County, where high-grade ore prevails, the difference was slight. In 1897 lead ore averaged \$33.08 per ton, and in 1896, \$33.85, a decrease of but 77c. per ton. During the year ending June 30th, 1897, 547 shafts were operated, 5,347 men were employed, 386 boilers were in use, 235 pumps were used, 19 air compressors were in use, 163 crushers operated, 407 steam jigs and 590 hand jigs were in use. At the end of the fiscal year 990 men were engaged in prospecting for ore.

The fiscal year just closed has witnessed a larger foreign demand for ore than at any time in the lead and zinc mining industry, and for the first time in the history of zinc mining there has been a very heavy foreign demand for American spelter, due, mainly, to the Cherokee-Lanyon Company's efforts to find a market abroad for their metal. Since January 1st 1897, they have shipped to Liverpool three-

fourths of their entire production, amounting to 14,000 tons. The superiority of American metal has caused Vivian & Sons, of Swansea, Wales, to establish an agency in this country, and in June last loaded in one shipment at Galveston, Tex., 1,638,000 lbs. of zinc blende. It is confidently believed that the export demand for both ore and metal will continue to increase.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—During the past week the weather was favorable for mining operations, with good market conditions, and there was made a large output of both lead and zinc ore, which was taken up readily by the ore buyers. The top price for zinc ore was \$23 per ton. Six cars of Joplin, one at Springfield, three at Mt. Vernon, and one each at Oronogo and Carthage brought \$23, but the ruling price in the district was \$22. The price paid for lead ore was \$24 per 1,000 lbs. in the bin.

For the corresponding week last year lead ore sold at \$15 per 1,000 lbs. delivered, and zinc ore brought \$23 per ton, with eight cars sold at that price, but the average was \$21 per ton. The shipments that week were less than those of last week by 1,700,520 lbs. of zinc and 494,720 lbs. of lead ore, and the value was \$38,735 under last week's big total. The shipments for the week just past was an increase of zinc ore by 326,620 lbs., and lead ore by 22,930 lbs., and the value by \$3,921.

There was not much zinc ore left over, and about eight carloads of lead ore. Following are the sales of lead and zinc ore from the different camps for the week ending November 6th, 1897: Joplin, zinc, 1,491,350 lbs.; lead, 382,770 lbs.; value, \$25,782. Carthage, zinc, 1,304,080 lbs.; lead, 269,440 lbs.; value, \$19,643. Webb City, zinc, 559,160 lbs.; lead, 48,430 lbs.; value, \$6,779. Galena, zinc, 3,030,000 lbs.; lead, 533,760 lbs.; value, \$40,838. Aurora, zinc, 630,000 lbs.; lead, 25,000 lbs.; value, \$5,745. Mt. Vernon, zinc, 268,760 lbs.; value, \$3,023. Oronogo, zinc, 217,110 lbs.; lead, 14,080 lbs.; value, \$2,712. Springfield, zinc, 88,000 lbs.; value, \$990. Carthage, zinc, 65,540 lbs.; value, \$720. Belleville, zinc, 5,920 lbs.; lead, 6,730 lbs.; value, \$218. District totals for last week: Zinc, 7,659,820 lbs.; lead, 1,280,210 lbs.; value, \$106,450. District totals for 45 weeks: Zinc, 297,844,500 lbs.; lead, 50,673,760 lbs. value, \$3,825,801.

CANTON MINING COMPANY.—On the Mohaska land this company is drifting at 58 ft. on a large face of lead and zinc ore in open ground. They have made three tons of zinc ore and 6,500 lbs. of lead ore.

COVEY & SMITH.—This company has opened a good body of drybone, an ore of lead, and are taking out about 11,000 lbs. of this every day. Drybone is worth \$12 per 1,000 lbs.

DORSEY & CO.—On the Rex land this company is drifting at 80 ft. on a large face of lead and zinc ore in open ground. Last week they turned in 10 tons of zinc ore and 3,000 lbs. of lead ore.

E. N. PERRY LEASE.—Colonel McGeehee has a lease of five acres on the E. N. Perry lease, near Lone Elm. He has gone through 5 ft. of good lead ore, and is preparing to work his five acres thoroughly. He has pulled out his two 10 in. lift pumps and will substitute a 6-in. discharge Miracle pump, which handles the water more easily and with less steam power.

MANHATTAN MINING COMPANY.—A large Cameron pump with tandem engines is being installed. Brass workings are supplied wherever needed. The column pipe is of wood, brass-bound, with a coating of asphalt and gravel on the outside. The company are adding also another 100 H.-P. boiler. This is the largest pump in the entire district. The company has a lease on 40 acres of the Connor land, near Webb City, which was formerly owned by the Victor Company, who took out large quantities of fine ore to the depth of 225 ft., when the water stopped work.

PLUNKETT & COMPANY.—On the Robb land near Bleudsville, which was formerly operated by the Bolen Lead and Zinc Company, these parties have developed a good zinc and lead ore prospect, and made their first turnin last week of 10,800 lbs. of zinc ore, and 14,130 of lead ore.

REEVES MINING COMPANY.—A consolidation of the Reeves and Bramstetter & Company's properties on the Kohinoor tract is showing up in fine shape. They have developed a 25-ft. face of high-grade zinc ore and are producing over 20 tons of zinc ore weekly.

RUBY MINING COMPANY.—The old Ruby mines south of Joplin will reopen at once, Henry Digby, of St. Louis, being here making arrangements for active operations. Pumps will be put in to drain the ground and drills will be started to develop it.

TYLER MINING COMPANY.—On the Rex land this company last week made over 22 tons of zinc ore. They have opened up a large face at 130 ft. in timbering ground, with strong water.

VERNON COMPANY.—T. J. Steers has bought the Vernon Company's property on the Troup company's land at Prosperity. It consists of a first-class steam concentrating plant and a lease on three lots. The plant will be thoroughly overhauled and a large air compressor will be put in to run the air drills. This mine has been a large producer, but the ground is very hard.

MONTANA.

FERGUS COUNTY.

Reports are current about a very rich find of gold ore in Upper Sage Creek near Utica.

GRANITE COUNTY.

GOLDEN SCEPTRE MINING COMPANY.—On November 7th Judge Henry N. Blake, Master in Chancery at Phillipsburg, sold all the property of this company at Quigley, including mines, 100-stamp mill, electric tramway, water rights and town site to J. M. Keith, of Missoula, as trustee for the Reorganization Committee for \$450,329. The property will be operated by a new company recently incorporated, composed principally of creditors of the old corporation.

There were judgments against the entire property amounting to \$430,000, for machinery, money advanced, for wages and material and supplies and nearly everything else that could be imagined in connection with a large mining enterprise. Fraser & Chalmers had judgments amounting to between \$40,000 and \$50,000. Arthur D. Colburn, of Wilmington, was a judgment creditor for something like \$230,000. Recently all the parties to the action agreed to a reorganization plan, by which, although the details are not made public, it is said that the creditors will receive a certain percentage of their claims in cash and the remainder in stock or bonds of the new company, except the material and labor claimants, who will receive the full satisfaction of their claims in cash. Many of the claims for labor have been purchased during the pendency of the litigation.

JEFFERSON COUNTY.

GOLD COIN.—This mine, owned by L. O. Loomis, is said to have cleared up \$18,300 as the result of a week's run recently.

KATIE.—The Basin & Bay State Mining Company now owns this property, including a valuable water right. The price paid is said to have been \$105,000. A new smelter and concentrator plant will soon be erected. The officers of the company, G. A. Russell, of Springfield, Mass., president; W. O. Day, of Springfield, assistant treasurer, and W. E. Colley, of Providence, R. I., secretary, inspected the property recently. James Glass is general manager.

NEW ELKHORN MINING COMPANY.—The report of W. S. Kelly, manager, to the directors of the company, states that the total amount of ore taken from the mine in September was 1,821 cars. The average amount of exploration work was done. The table of mill work shows: Dry ore panned, 1,180 tons; average assay value, \$45.92; proportion saved, 93.74%; silver produced, 48,078 oz.; gold produced, 44 oz. The estimated value of bullion shipped was \$24,015; surplus on August shipments, \$424; net value of bullion, \$24,469. Current expenses were \$22,901, leaving profit in September, \$1,568.

MADISON COUNTY.

On Pole Creek, near Red Bluff, Mr. C. W. Tanner reports extensive deposits containing garnets of good quality and in sufficient quantity to be of value as a supply of abrasive material.

NEVADA.

STOREY COUNTY—COMSTOCK LODE.

The Canyon tailings plant which is being constructed by Harris, Blood & Co. is nearly completed, says the *Virginia Chronicle*. By the middle of November, if nothing causes a delay, the plant will be finished and ready for business. The management hopes for a continuance of fine weather, so that a test run may be made before the winter sets in. There are between 20 and 30 men employed at the plant. When the working of tailings by the plant has become an established industry the plant will add decidedly to the material welfare of this section.

WHITE PINE COUNTY.

Hermann Bress has bonded a claim on Deep Creek to Messrs. M. Cullen and A. G. Campbell, of Salt Lake City.

GOLD CROWN MINING COMPANY.—E. H. Osborne and Simon Davis have transferred to this company lodes 1, 2 and 3 in the Shell Creek District.

GRAY EAGLE AND STAR.—The first payment on the deal by which the Glasgow Mining Company acquires possession of the Gray Eagle and Star mines at Cherry Creek was made in Salt Lake City November 5th. The purchasers were represented by Otta Stalmann, the general manager for the company, and Joe Farron, its general superintendent. The vendors were represented by Hon. A. C. Cleveland of Nevada, who was also a co-owner in the ground. The other interests in the property were held by the Hobart estate, and Mr. Hayward, of the Utica mine in California. For these interests Mr. Cleveland received the moneys. The sum paid over has not been made public.

NEW JERSEY.

MORRIS COUNTY.

The old Hurd mine is working in a small way, employing about 40 men. The Richards employs about 250. The Andover Iron Company is shipping about 300 tons of ore a day from its mine at Hibernia, and the Wharton mine at Upper Hibernia is doing about the same amount of work.

MEW MEXICO.

An interesting case has just been decided by the Supreme Court of New Mexico regarding the rights

of those who grub-stake mining prospectors. Henry Lockhart, of Albuquerque, grub-staked the original locators of the Washington mine at Cochiti, which property, when it proved valuable, became the subject of litigation between Lockhart and the locators whom he had grub-staked. It has been in the courts for several years, the result finally being in favor of Lockhart.

TAOS COUNTY.

ALBEMARLE.—It is reported that O. P. Posey and William Cartan, mining men from Denver, expect to close a deal for the purchase of the Albemarle group of mines in the Cochiti district. The price is said to be \$240,000. A cyanide process mill of 400 tons daily capacity is among the contemplated improvements. Charles H. Toll and Thomas Lowthian, of Denver, are the principal owners of the Albemarle property.

OHIO.

ADAMS COUNTY.

A deposit of coal found on the Shoemaker farm, four miles north of Peebles, has caused some excitement. According to reports, the State Geologist says that the coal is in paying quantities.

PENNSYLVANIA.

ANTHRACITE COAL.

On November 8th an explosion of gas, due to the tapping of a "feeder" in the Chamberlain colliery near St. Clair, frightfully burnt three miners.

BITUMINOUS COAL.

William H. Saam, of Irwin, Pa., closed an option on the Walthour & Marchand tract, near Manor, on November 10th. This is a gas coal deposit, and the purchase price may be close to \$200,000.

On November 8th the boiler at No. 2 mine of the Mercer Iron and Coal Company, at Stoneboro, Pa., exploded. The engineer was killed and five men were wounded, two of them fatally. The engine-house and every building near at hand was leveled to the ground.

It is stated that the coal mines of Munhall Bros., at Homestead, have been sold to the Carnegie Steel Company, consideration private. The property consists of 1,000 acres, about half of which has been worked out. The Carnegie Company has leased the property to the firm of Jutte & Munhall, who will operate the works for a year. This is a new firm composed of W. C. Jutte and Michael Munhall, the latter formerly part owner of the mines. John Munhall, the senior member of the firm of Munhall Bros., has retired from active business.

SOUTH DAKOTA.

LAWRENCE COUNTY.

Many reports are circulated about rich strikes in the Two Bit district. The latest strike reported is on the Gold Hill property at a depth of 150 ft. It is said to be very rich.

UTAH.

(From Our Special Correspondent.)

General mining conditions are unchanged, with the ore supply continuing to well hold up. Bullion and ore tonnage figures for October, just made public through the railroad freight offices, furnish a surprise, as the total equals that of the corresponding month in 1896. However, Bingham changes places with Tintic; the latter was the largest shipper of ore and concentrates in October a year ago. The lead-silver bullion product was 6,861,103 lbs.; copper bullion, 46,460 lbs.; Pascoe slag, 24,000 lbs.; ores, 8,705,555 lbs.

Possibly Utah takes the lead in the yield of cyaniding plants, and the October consignments were among the largest ever sent out. These aggregate a little over 5,000 lbs., carrying \$10 to \$32 gold per pound. With the exception of a few small lots from Nevada and Idaho they were all from the Mercur mills. The Consolidated Kansas City Smelting and Refining Company makes a specialty of marketing cyanides and its Salt Lake office has fitted up perfected sample rooms, through which pass all the mill products tributary to this center, save one or two which reduce their cyanides to bullion at home. It is noteworthy that to-day, under improved conditions, the gold contents, as shown by assay, are uniformly settled for at the rate of \$20 per ounce, while formerly, in the early stages of Utah cyaniding, they sometimes brought but \$16.50 per ounce, and from that point to \$18.50 and \$19. This has grown to be an important feature of gold metallurgy in the West, of which but little is generally known and it is certain to attract more and more attention. In this connection it is significant that the De La Mar mine, Nevada, which heretofore reduced cyanides to bullion at its mill, purposes in future to market these products, like those of Mercur, evidently as there is a margin of profit in so doing.

SHIPMENTS FROM SALT LAKE.—During the week ending November 6th there were sent East 35 cars, or 1,288,260 lbs., lead-silver bullion; 40 cars, or 860 tons, lead-silver ore.

BEAVER COUNTY.

(From Our Special Correspondent.)

CACTUS MINING COMPANY.—On October 30th the postponed stockholders' meeting, to be held at the office of Marshall & Royle in Salt Lake, in accordance with the written request of absent shareholders, was again put off to December 30th. The control is owned in Paris, France. Some development work was carried on at mine the past season.

COPPER MATTING PLANT.—Recent favorable copper uncoverings in the Beaver Lake, Copper Mountain, Skylark and other tracts have about determined the putting in of a copper matting smelter. An investigation to this end is now being made.

JUAB COUNTY.

(From Our Special Correspondent.)

TINTIC SHIPMENTS.—During the week ending November 6th the following lots of ore were forwarded from the district: Gemini, 6 cars; Eureka Hill, 5 cars; Centennial-Eureka, 2 cars; Swansea, 6 cars; South Swansea, 4 cars; Mammoth, 9 cars; Joe Bowers, No. 2, 1 car; Boss Tweed, 2 cars. Shipments of concentrate products were: Eureka Hill, 5 cars; Mammoth, 8 cars; Sioux Mill, 3 cars, also 3 bars bullion. The Dragon Iron sent out 7 cars of hematite for fluxing.

BLACK DRAGON.—A new shaft, started last week, broke into copper ore within less than 5 ft. from surface. The vein is well marked and the find is causing quite a stir.

BUCKEYE MINING COMPANY.—An assessment of 1c. per share is levied payable at once, delinquent November 30th, and all stock on which payment is not made will be sold December 15th.

CENTENNIAL-EUREKA.—Lately much has been said in type of building a mill, which is an old story. The management states nothing will be determined on this head till next spring. Probably there is no mine in the West which has larger reserves of milling ore, and a model plant of 200-ton daily capacity in due time will record a long and notable career. The best ore-treating skill obtainable is being drawn upon to achieve the highest percentage saving possible when the mill is a completed reality.

EUREKA HILL.—An order is just placed with Fraser & Chalmers for 20 Frues of 6-ft. pattern. This addition to the mill will make 60 vanners. All signs point to this Tintic property continuing operating as heretofore.

FISH SPRINGS DISTRICT.—Prospect of a railroad within a year, to the Deep Creek region, has recently aroused fresh enthusiasm among mine owners in Fish Springs. They allege, if the long wagon haul is obviated, 300 to 500 tons of ore per diem can be relied on from the properties already exploited: Utah, Galena, Emma, Vulcan, Meteor, Early Harvest; while numerous promising claims would be immediately developed. Lack of water has been the serious drawback to the industrial advance of Deep Creek. It is claimed, by those who have recently investigated the matter, that this can be overcome with a far smaller outlay than hitherto was believed possible.

FISSURE MINING COMPANY.—Incorporation articles were filed with the Secretary of State November 31; capitalization, \$200,000; shares \$1; stock assessable; no one assessment to exceed 1% of capital stock, nor shall assessments be levied oftener than once in 60 days. Principal office in Salt Lake; annual meeting first Monday in October. Officers and directors are: S. J. Lynn, president; T. A. Williams, vice-president; H. Green, treasurer-secretary; David Midgley and John R. Reeve, all of Salt Lake. Realty consists of Fissure, Contrary, Fissure Nos. 1 and 2 lode claims in Tintic mining district.

GALENA.—Last week Superintendent E. Hoffman went to Salt Lake with a 22-ton shipment, carrying 60% lead and 150 oz. silver; shaft is 500 ft. deep, from which point a drift reaches the ore body that supplied this latest consignment. It is said the mine is showing its best. A naphtha hoist is to be installed jointly with the Utah, and the machinery for the new plant is ordered.

UTAH.—Since the Utah and Galena have had separate managements each property has shown almost a steady improvement. Utah's November yield will probably be the largest of any month for the year.

MILLARD COUNTY.

(From Our Special Correspondent.)

IBEX SMELTER.—Under a foreclosure sale, on November 3d, the Ibex Smelter came into the possession of the W. S. McCormick Co., bankers, Salt Lake, being bid in for \$20,000. This plant was built by F. E. Underwood, of New York, at a cost of \$60,000. The local ore supply proved inadequate for steady operating. An intimation is out of a plan to remodel the plant next season and give it a new lease of life.

PIUTE COUNTY.

(From Our Special Correspondent.)

BELKNAP.—A. E. Smith and W. G. C. Morrison believe they have succeeded in opening a paying vein on Shale mountain. There is showing a 3 ft. seam of \$5 gold rock.

BUTLER-BECK.—Judge W. W. Wallace, trustee, has put a force at work sinking and drifting, after an idleness of over a year. Within the past month the property was examined by three well informed mining men, and it is said something pleasing may be looked for.

GOLD MOUNTAIN DISTRICT.—Never before were there so many properties at work in November, notwithstanding the fact that the ground is covered with 2 to 3 ft. of snow. Old timers predict that such a heavy snowfall on the threshold of winter means bright clear weather during December and part of January. Mines now operating are:

Reckenridge, Mammoth, Sevier, Blue Bird, Holland, Annie Laurie, Silver King and Butler-Beck.

OUT OF SIGHT.—In the Horse Heaven section the most important development for the season now drawing to a close is brought to view in the Out of Sight. At surface the vein is 1½ ft., which at 70 ft. depth has widened to 4 ft., with a well-marked pay seam 1 to 2 ft. wide, carrying \$60 to \$200 gold. Tom Gillan, the locator, has succeeded in interesting men of means with him. Horse Heaven reaches to the summit of the range, and now has a covering of 3½ ft. of snow, most of which will remain for the winter.

SEVIER.—A sensational find is reported from the lower tunnel, fully 350 ft. vertical below surface, where a 10-in. seam of \$700 to \$1,200 ore is cut. Values are two-thirds silver, one-third gold. It is the talk of the hour in Plute and Sevier counties.

SALT LAKE COUNTY.

(From Our Special Correspondent.)

A MICA STR.—Specimens of mica measuring 8 in. square, said to have been found near the head of City Creek, above Salt Lake, occasioned a stir recently among the few informed of the discovery. One of the Walker Brothers immediately headed a party now investigating the ground, which, if as represented, is capable of yielding considerable quantities.

BINGHAM OCTOBER SHIPMENTS.—As predicted, the output of the mines for last month shows a substantial increase over September, and the total is the largest of any month of the year. It was 1,722 tons, or 1,012 tons more than in September. The October yield of the different mines is as follows: Old Jordan & Galena, 1,82½ tons; Old Telegraph, 486; Highland Boy, 369; Winnamuck, 350; Dalton & Lark, 350; Fortune, 250; Giant Chief, 200; Phoenix, 150; Storey, 142; Vindicator, 78; Spanish, 70; Golden Opportunity, 75; Eighty-nine, 60; Neptune, 40; Rough and Ready, 35; Lead Mine, 25; Keystone, 25; Levant, 16 tons and 150 tons in small lots from other properties.

FORTUNE.—Annual stockholders' meeting, held in Salt Lake last week, resulted in the selection of Elmer Hill, president-manager; John Schneider, vice-president; George Goss, treasurer; W. M. McGilvray, secretary, who with C. W. Peck and C. F. Loofturrow compose the directorate. President Hill's report shows the company in prosperous condition, the recent enlarged output paying expenses of former exploration. A concentrating mill is being considered, which will probably be built as early as possible next season.

HIGHLAND BOY.—The mill's experimental career is at an end. It is an unequivocal success, achieving all that was anticipated, which is saying a great deal. To reach this end only a very few minor changes were necessary, and now that the men are broken in so that each plays his allotted part, without prompting or delays, excellent results are to be counted on for the November run. Exploration of the huge copper ore zone continues as favorably as heretofore, affording nothing of special moment to chronicle.

LAST CHANCE GULCH (PLACER).—A lease is secured by Dunshee & Williams from the mouth of Last Chance Gulch to the site of the old Stewart No. 1 mill, where a water power jigging outfit is to be installed. They anticipate recovering much of the fine gold, amalgam and quicksilver lost in the milling campaigns of the flush early days.

OLD JORDAN & GALENA.—Had it not been necessary to close the mill during the month, October's output would have overtopped 2,000 tons. This is the one Bingham property, among all the old reliables, which comes well up to what was promised with a favorable lead market.

WINNAMUCK.—On the 400 level some 300 ft. of new drifting are complete, and face indicates near presence of an ore body. More exploration is on foot here than in any of the camp's old lead-silver mines.

SAN JUAN COUNTY.

(From Our Special Correspondent.)

BLUE MOUNTAINS.—The Dixon prospects, on the eastern slope near the south end of the Blue Mountains, are looking better as work progresses. The Blue Mountain tunnel is started at last, commencing on the eastern base of the range, in Queens Gulch, which will give a depth of about, 4,000 ft. from the surface, in about one mile driving cutting numerous deposits, now known to exist through surface development. The Viking (surface workings), on south end of Central Ridge, has closed down for the season.

SUMMIT COUNTY.

(From Our Special Correspondent.)

PARK CITY OCTOBER SHIPMENTS.—During the past month the following smelting products passed through the Macintosh sampler, which practically represents the output of the camp:

	Pounds.
Silver King, crude.....	2,322,525
Silver King, concentrates.....	1,439,140
Anchor, crude.....	29,250
Anchor, concentrates.....	507,790
S. Ford, ".....	54,359
Barnes, ".....	32,270
Daly, Lessee, concentrates.....	33,790
Creole, No. 1 ".....	3,770
Creole, No. 2 ".....	59,880
Total.....	4,685,765

In October the Ontario sent away 76,380 oz. silver, which rounds out the camp's yield for the month. Nearly all the loose ore on hand when the mine was closed is now milled, and, from present experiences as well as from all that can be learned from the management, both the Marsac and Ontario mills will soon show no evidence of life. The shipping mines promise to maintain their present production, and any change is liable to be an increase.

TOOELE COUNTY.

(From Our Special Correspondent.)

DE LA MAR'S MERCUR MINES.—Structural steel is arriving as rapidly as it can be handled and the mammoth structure is assuming form and shape. Mr. Horace T. Brown is the latest addition to the local staff, superintending the building of his patent roasting furnaces and Loomis gas producers.

GOLD DUST.—Exploration is in progress under the lease and bond recently secured by F. J. Gardner, of London and Paris. There seems to be better than an even chance of consummating the transfer. The stock is to be turned over at 60c.

LITTLE PITTSBURG.—At a meeting of the directors on November 3d an assessment of ¼c. a share was levied, payable December 6th, and if payment is not made the stock will be sold on December 23d. Exploration is to be advanced. Recent developments in neighboring ground is encouraging for Little Pittsburg shareholders, while the company management is all that can be desired.

MERCUR.—Another important uncovering has added a new and greatly enhanced value to Camp Floyd's pioneer gold mine. Two years or more ago it began to be generally talked about that there is more than one auriferous zone conformable to the strata of this region, and the lower, or second vein, was found in Mercur ground. If there are two, why not three? To answer this question a winze was put down from the Ruby tunnel, which on November 3d, after passing through 90 ft. of lime, cut a mineralized layer carrying good leaching values. As this is written it shows a thickness of 7 ft., and the foot wall is not reached. Naturally, this discovery has caused great rejoicing, and the camp's enthusiastic champions assert it adds 25 years, not only to the life of the Mercur, but to all near-by mines, for the rock formation throughout the belt is uniform and regular. While such a statement is highly optimistic, the third Mercur vein means a great deal to the district. On November 5th the company made the semi-monthly shipment of cyanides, approximating \$25,000.

SILVER LODGE.—W. C. B. Allen, who has charge of development work here, reports the cutting of a mineralized seam carrying paying gold values. This tract lies immediately above the Geysers-Marion ground.

WYOMING.

ALBANY COUNTY.

(From Our Special Correspondent.)

DECOMPOSED GRANITE QUARRIES.—These quarries have closed for the season. There have been two steam diggers at work all summer and from 70 to 90 cars of decomposed granite have been shipped per day. This product has been used largely for ballast on the railroad, but it is also good for road-making. The quarries are located about two miles east of Sherman.

BIG HORN COUNTY.

(From Our Special Correspondent.)

WOOD RIVER MINES.—At the head of Wood River, a tributary to Grey Butte River, prospecting has been going on for several seasons near Kirwin P. O. The work this season has uncovered ore of great richness. Assays are said to vary from 100 to 700 oz. of silver per ton and also carry good values in gold. The ore is of two classes, sulphides mixed with a silicious gangue and the oxidized ores. At present the camp is nearly 150 miles from a railroad or the owners would be shipping ore.

CARBON COUNTY.

Considerable excitement has arisen from finding numerous pieces of gold float near Grand Encampment. Local papers speak of the deposits as very rich and covering a mountain.

Several Colorado Springs and Cripple Creek men have looked over the ground and have obtained options on a number of claims. It is reported that the quartz seams from which the float came have been struck in one or two claims, and that Eastern parties will put in reduction works in the spring.

AZTEC PLACER.—It is reported from Cheyenne that Mr. J. C. Teller, nephew of Senator Teller, is at the head of a company of Colorado and Utah capitalists who have purchased the old deserted Aztec placer diggings on Brush Creek, about 17 miles south of Saratoga. Mr. Teller has just returned from the scene of the placer mines, where he has put a force of men at work cutting timber for fluming purposes. A number of cabins and store houses have been built and by spring fully 300 men will be at work. The company has about 2,000 acres of ground. The formation is of gravel and bedrock lies at a depth of from 10 to 100 ft. Brush Creek carries an immense volume of water the year round and having a fall of from 300 to 500 ft. to the mile, the ground can be easily worked by hydraulic pressure. The placers

consist of five claims, the Cortez, Desota, Saratoga, Ben Hur and Bloody Spaniard.

ELKHORN.—This mine has shipped another car of ore to Denver.

FREMONT COUNTY.

(From Our Special Correspondent.)

CARISSA GOLD MINES.—This property has, according to reports, changed hands and is now under the control of a Salt Lake company. The price paid has not been made public, but it is understood that it is between \$45,000 and \$75,000. The new company will introduce some new features in mining and push mining and milling as fast as possible.

MORMON GOLD MINES.—Some prospectors near Atlantic from a small decomposed pocket on the surface took out with a hand mortar a quantity of gold variously estimated from \$1,400 to \$1,700.

NATRONA COUNTY.

(From Our Special Correspondent.)

Recently a prospector discovered a ledge of decomposed ore in Casper Mountain, near Casper. Tests in this ore are reported to be from \$4 to \$8 per ton in gold. The ore body is claimed to be 40 ft. wide.

FOREIGN MINING NEWS.

AFRICA.

TRANSVAAL.

Advices from Pretoria state that the proposals of the sub-committee of the Volksraad upon the report of the Industrial Commission, advise the government to publish for consideration by the Raad next session the recommendations of the commission regarding (1) the keeping of accounts by companies in order to show the proportion of wages paid to laborers and officials; (2) the placing at the disposal of the companies of stands for building dwellings for the white laborers; and (3) regarding the drafting of a bill for amending the present master and servant law.

The committee agrees to assist all industries as far as possible, but declines to believe that any industry is obstructed or hindered by the government or the Raad. It recommends the government to correspond with other African governments with a view to the reduction or total abolition of transit duties, and, in the meantime, to reduce transit dues in the Transvaal from 3 to 1½ per cent.

The committee discredits the statement concerning the alleged high profits on dynamite, and insists that the government should compel the dynamite company to use ingredients found in the country under the terms of the concession as an experimental measure. It recommends a reduction of 10s. per case in the price of dynamite, thus effecting a saving of £120,000, and a reduction in the railway tariff, resulting in a decrease in the profits to the extent of £200,000 annually. The committee states that it has reason to believe that the Netherlands Railway Company will meet the industry in the matter of carriage of coal, and that a proposal for the construction of a railway line between Boksburg and Krugersdorp for transport of coal will shortly be laid before the Raad. Some modifications in the pass law are also recommended.

AUSTRALASIA.

TASMANIA.

Exports of ores and blister copper from the West Coast, for the seven months ending July 31st, are reported as follows: Silver lead ore from Zeehan and Dundas, 11,768 tons, value £130,303; blister copper from Mount Lyell, 2,400 tons, value £192,000; other minerals, value, £534; total value, £322,837.

CANADA.

BRITISH COLUMBIA—NELSON DISTRICT.

(From Our Special Correspondent.)

DUNDEE.—This company has made its first shipment of 100 tons of ore to the Trail Creek smelter. The ore, it is stated, on disinterested authority, will average about \$30 to the ton. Shipments, it is said, will be continued throughout the winter. A streak of galena has also been found on the Dundee. It assays well in silver.

ELISE.—A special meeting of the stockholders of the Elise Gold Mining Company has been called for November 20th for the purpose of empowering the directors to sell the property of the company.

HALL MINES.—The management of this company recently reported the result of the company's smelting operations during a period of 32 days, ending September 30th. The quantity of ore smelted amounted to 6,210 tons, which yielded 522 tons of matte, which contained about 249 tons of copper, 141,860 oz. of silver and 98 oz. of gold. The directors of this company have given notice of the payment of a dividend on the preference shares of the company for the year ending September 30th at 7% per annum.

HALL MINES SMELTER.—The new roaster and reverberatory furnaces at the Hall mines smelter will be completed in about two months. The old 130-ton furnace has been altered for the treatment of lead ores, and a trial run of Slocan lead ores is about to be made.

SILVER KING.—The smelter in connection with this mine recently turned out in one day 26 tons of matte from Silver King ore.

SLOCAN STAR.—This company having declared a dividend of \$50,000 on September, the total of its dividends to date amounts to \$400,000. The condition of the mine is reported satisfactory. The ore in the fifth or lower tunnel has been tapped and the workings are now down 600 ft. The last ledge is stated to be stronger than the others, but the values continue as formerly.

BRITISH COLUMBIA—SLOCAN DISTRICT.
(From Our Special Correspondent.)

The shipments of ore from Slocan, via Kaslo, from January 1st to October 30th, 1897, amounted to 27,200 tons and via Nakusp 4,150 tons, being in all 31,350 tons. The total shipments for all the divisions of the West Kootenay district, Slocan, Ainsworth, Nelson and Kaslo, amounted to 98,350 tons, valued at a little above \$6,500,000. The metal shipped during the same period to Nelson and Trail smelters amounted to 6,863 tons, the value of which is placed at \$3,600,000, which is included in the first named total valuations.

ADAMS BRITISH COLUMBIA, LIMITED.—The first car shipment of ore from the Mount Adams group has been run through the Kaslo sampler. The average was 95.5 oz. of silver and 65.5% lead. The ore has been shipped to the Grant Smelter at Omaha.

BRITISH COLUMBIA—TRAIL CREEK DISTRICT.
VIRGINIA GOLD MINING COMPANY.—A controlling interest, 300,000 shares, in the Virginia, in Rossland Camp, has been sold to a syndicate of Montreal capitalists, headed by Mr. C. R. Hosmer, Manager of the Canadian Pacific Telegraph Company, who also owns the Monte Cristo. The price paid is said to have been 12½¢ per share, one-third being paid cash, the balance in 60 and 90 days. The sellers were Patrick Clark and J. H. Finch. The Virginia was one of the claims owned by the original War Eagle Company.

(From Our Special Correspondent.)

ORE SHIPMENTS.—The total quantity of ore shipped from Rossland mines to local and outside smelters to November 31 amounted to about 67,000 tons. It is now estimated that the total ore shipments for the Trail Creek district will be about 80,000 tons.

COLONUA.—This company is installing a compressor.

GOOD HOPE.—A special general meeting of this company has been called November 12th at Rossland for the purpose of selling the property of the company.

JUMBO.—Development work continues in the lower tunnel of this property.

LILY MAY.—Since the compressor plant was installed on this property development work has opened a good sized ore vein.

SUNSET NO. 2.—The tunnel on No. 1 vein is 265 ft. long. The shaft on the No. 3 vein is down 45 ft. and this shaft has been connected with the other workings. It is proposed to sink to the 200-foot level, machinery for this particular purpose having been introduced. It is the intention to sink the main shaft to the 500-ft. level. The distance from the main tunnel to a point under the shaft is 320 ft. and this is to be connected at once by an upraise. The main shaft is on solid ore, which assays \$47.60 to the ton. No. 2 shaft is down about 60 ft. About 20 men are employed. The officers of this company are Mr. Howard C. Walters, vice-president and managing director, with whom is associated Mr. J. C. Drewry, who also acts as secretary-treasurer. The vice-president is Mr. J. C. McLogan. The mine superintendent is Mr. Joseph Trainer, for a long time underground superintendent of the Le Roi. The second vice-president is Mr. James Clark, late superintendent of the old War Eagle Mining Company.

SILVER BELL.—The annual meeting of the stockholders of this company takes place in Rossland, November 17th, for the purpose of electing directors and for the transaction of other business.

VIRGINIA.—It is reported that this property has changed hands but particulars are wanting.

ONTARIO.

Mr. D. G. Boyd, who has been acting as the Ontario government's land agent at Michipicoten reports that a hundred and seventy claims have been taken up. There are very few prospectors now on the ground, and he will not return to reopen his office till next spring.

SAW BILL DISTRICT.—The first brick from the Hammond Reef mine recently went east. The brick weighed 5 lbs. and was the result, it is said, of a run of 304 hours on 259 tons of ore.

MEXICO.
SONORA.

The Copper Queen Company has been granted a concession to erect a smelter at Hermosillo, the company having deposited a guarantee of \$10,000 gold coin to comply with the concession, which carries with it exemption from taxation and special low rates on custom ores hauled over the Sonora Railroad. The plant will treat copper, silver and lead ores.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, November 12.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending November 5th, 1897, compared with the corresponding period last year:

	1897.		1896.
	Week.	Year.	Year.
Pennsylvania Railroad.....	74,063	3,077,954	3,106,945

PRODUCTION OF BITUMINOUS COAL in tons of 2,000 lbs.* for week ending November 5th, and for years from January 1st, 1897 and 1896.

	1897.		1896.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	49,711	2,067,762	2,379,470
Barclay, Pa.....	766	36,033	38,681
Beech Creek, Pa.....	76,524	3,190,300	2,545,815
Broad Top, Pa.....	18,310	388,504	305,043
Clearfield, Pa.....	80,417	2,244,279	3,784,591
Cumberland, Md.....	119,981	3,261,123	2,916,675
Kanawha, W. Va.....	113,212	3,303,479	3,167,903
Phila. & Erie.....	738	196,008	68,588
Pocahontas Flat Top.....	*	*	*
Totals.....	449,859	14,687,488	15,206,796

	1897.		1896.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	39,431	957,913	1,071,178
Pittsburg, Pa.....	36,689	1,638,266	1,603,634
Westmoreland, Pa.....	41,555	1,862,504	1,612,221
Totals.....	120,675	4,458,683	4,287,033

† Grand totals..... 570,534 19,146,171 19,493,802

Production of coke on line of Pennsylvania Railroad for the week ending November 5th, 1897, and year from January 1st, 1897, in tons of 2,000 lbs.: Week, 118,446 tons; year, 3,987,259; year to corresponding date in 1896, 3,327,653 tons.

† For 10 days ending October 31st. † For week ending October 30th. * Returns not received.

Anthracite.

The tidewater market for anthracite coal was slightly stimulated this week owing to the few frosty days, but the orders that came forward were not enough to cause the sales agents to believe that better times were coming. In fact, they seem to look the other way, and it appears now as though the trade is steadily drifting on to demoralization. Too much coal is being shipped from the mines, and at present it does not look as though there would be any let-up, as the collieries are working from four to five days a week. It is true that considerable coal is being sent to Buffalo for transportation to the Western market, and for a week or so relief can be looked for from this source, but after that a congested market will undoubtedly prevail until the close of the year. To such an extent is this noticeable that one authority in the trade ventured to say that unless a timely change in the policy of production is made we shall see coal near the \$3 mark before January 1st. This may seem encouraging to the consumer, but it must look very gloomy to the operators and carrying companies.

It is very difficult to get down to the actual level of prices; they are so shaded that they bear no relation to the last official circular. In fact, they are almost on a par with those ruling in 1895. Stove coal is below the \$4 point, and is openly quoted at \$3.95, free on board. Chestnut, one of the weakest coals just now, is down to about \$3.25 per ton; whole broken, which is also dull, can doubtless be had for \$3.35, on board. What is more, Lehigh broken coal was sold recently at \$3.35, and chestnut at \$3.40 per ton, free on board. Of course these coals were not of the finest grade, but they were of good enough quality to satisfy the requirements of the purchaser. Quotations on some steam sizes are about as follows: Pea, \$1.95@2.50, according to quality; buckwheat, \$1.50@2 per ton; rice, \$1.20@1.65, all free on board. We are aware of a sale of 2,000 tons of Lehigh buckwheat at \$1.55 per ton. This contract was taken in a competitive way, and as the other man wanted to sell 15c. less than the one that secured it, the contract was closed at the price as given above. To illustrate how rapidly we are approaching the status of the coal trade in 1895 we give the following prices of that year, which compare with those that are generally current to-day: Stove, \$3.85 per ton; egg and chestnut, \$3.50; broken, \$3.10; all net on board. If we go much lower with our prices we can compare them very properly with those that were quoted at about this time in 1894, namely, \$3.20@3.25 per ton for stove; \$3@3.25 for chestnut; \$3.15@3.30 for egg; \$3@3.20 per ton for broken; \$2 and upward for pea, and \$1.25 and upward for buckwheat. It need not be thought by the bulls that the trade can tide over such a demoralization in prices without some rational step being taken by the higher authorities to stop cutting and over-production. As yet sales-agents are at sea as to what will be done by their superiors toward placing the market on a stable basis.

As yet the majority of the coal mined is going westward; only enough is being sent to the tidewater market to fill orders in hand. We understand also that those companies that can be stocking up as much coal in steam sizes at the tidewater points as possible so as to meet the usual winter demand at this end. To fulfill contracts for steam sizes during the winter one large company has 54,000 tons of coal now at tidewater ports, of which but 5,000 tons are of pea, the greater part of the bal-

ance being rice. It is customary for those who have customers for steam sizes to carry the coal on hand until required. Of the other sizes this same company has 2,500 tons of broken, 800 tons of egg, 3,600 tons of chestnut and 9,000 tons of stove. Other companies have also proportionately large amounts of coal on hand.

More or less commotion has been caused in the trade owing to the scarcity of vessels to transport coal to the Eastern market. The weather has been rather unfavorable for coal carrying craft, and so shipments have been delayed for the last week or so. Freight rates have also been advanced, which has added to the troubles of shippers.

The supply of stove coal at present is plentiful, while broken and chestnut are also very heavy with some sellers.

The shipments of coal to Providence, R. I., during the year from May 1st, 1896, to May 1st, 1897, amounted to 1,300,000 tons in round numbers. Of this amount about 500,000 tons were anthracite, the balance bituminous. Stocks at that place have grown slightly less within the last week, but dealers are still pretty well supplied.

Mention was made by the daily press that the Lehigh Valley Railroad Company had decided to return to hard coal for use in its engines. We learn from a direct source that the reason this company adopted the use of bituminous was because it had at the time only a limited supply of its broken anthracite coal, and because it could burn the soft coal at less cost.

The Anti-Trust law business has come to an end, at least for the present. The Appellate Division of the Supreme Court has affirmed the decision of Judge Chester with regard to the examination of the coal trust officials on the ground that the law is unconstitutional. An appeal may be taken to the Court of Appeals by the State.

Bituminous.

The Atlantic seaboard soft-coal trade is dull with but a poor business doing. New business is small in proportions, and the greater part of the tonnage going forward is on old contracts. There is talk at times of a combination looking toward better things in the future, but it would seem to be impossible until the main-line roads themselves had stopped quarreling and reached some definite understanding. What business is going forward at present it is difficult to ship on account of the vessel market, which is still in a booming condition with no boats sufficient to take care of even the smaller tonnage in orders received. The main-line roads are even encroaching on this market by insisting on the relief of some of the great number of cars which are banked up at and on the way to the shipping ports. The condition at some of the shipping ports is such that the quantity of coal interferes greatly with free shipment, there not being room enough to drill out cars for the vessels waiting.

Trade in the far East is slow, and new orders are scarce. Sound business is quiet and what there is of it is transferred to the New York Harbor shipping ports on account of the advance in ocean freights at the lower ports. New York Harbor trade is fair, but nothing over the regular calls for coals is heard at this time. All-rail trade is slightly reduced from what it has been. Transportation from mines to tide is impeded directly by the coal standing on the sidings on the way. The car supply to those people who have not large quantities of coal standing is fairly good, but the large number of cars thus standing must create a shortage in the supply. In the coastwise market vessels are very scarce, and in great demand, and are taken generally before they arrive. Freights are strong and advancing.

We quote current rates of freight from Philadelphia as follows: To Boston, Salem, Portland and Wareham, 85c.; Providence, New Bedford and the Sound, 70c.; Lynn and Newburyport, 95c. @ \$1; Portsmouth, 85@90c.; Bath, 90@95c.; Dover, \$1.15 @ 1.25 and towage; Saco, \$1.05@1.10 and towage; Gardiner, \$1 and towage. Five to 10c. above these rates are asked to the further lower ports.

With regard to the prices of coal we would say that it is rather difficult to give exact quotations as there are so many different kinds and grades, but we give approximate figures as follows: Baltimore, \$1.75 to \$1.85; Norfolk and Newport News, \$1.70 to \$1.85; Philadelphia, \$1.50 to \$1.85; New York Harbor shipping ports, \$1.85 to \$2.35; alongside New York Harbor in towing limits, \$2 to \$2.6; all free on board.

NOTES OF THE WEEK.

Coal receipts at San Francisco in October were 134,294 tons, against 119,601 tons last year. For the 10 months ending October 31st, 1897, the receipts were: Eastern, anthracite and Cumberland, 12,047 tons; Oregon and Washington, 477,660 tons; Alaska, 1,060 tons; British Columbia, 352,977 tons; Australia, 203,102 tons; Japan and Tonkin, 2,207 tons; Great Britain, 101,386 tons; total, 1,150,399 tons, against 1,060,535 tons in 1896.

Birmingham, Ala.

Nov. 8.

(From Our Special Correspondent.)

The condition of the coal industry has improved very much since the colder weather set in, and it has become evident that the rigid quarantine will be lifted very soon. So far as the State of Alabama north of Calera is concerned, the quarantine regulations which have been in force for the past two months have been removed and we are again allowed free egress and ingress. The quarantine

has occasioned great loss to the commerce of this section during the yellow fever scare. It is to be hoped that Congress will pass a national quarantine law which will do away with the capricious enforcement of quarantine regulations by nervous communities with a total disregard to the dangers from antediluvian sanitary systems, and the disturbance to commerce. It is almost certain that the production of coal from now until the end of the year will be much more than has been the case during any two months previously.

The committee appointed by the miners' organization to examine the sales of the companies and report as to the rate of wages per ton, has reported that the price paid for pig iron has not yet reached a sufficiently high figure to entitle the miners to any further increase in wages. Most of the mines in the district have been running on full time during the past week, and some which have been idle have resumed operations.

Buffalo. Nov. 11.

(From Our Special Correspondent.)

The anthracite and bituminous coal trades are without new features. Business is only fairly active and prices nominally unchanged. Lake freights on coal have advanced 10c. to Michigan ports and 5c. to Superior ports, with a good demand for vessels, as indications point to an early close of navigation this year. Severe storms with great loss of lives and property have prevailed. Snow has fallen in Buffalo and quite heavily at Western ports. Complaints exist of shortage of cars and trade is considerably lessened thereby. To-day the weather is cloudy and very cold; probably snow later in afternoon.

The shipments of coal westward by lake from Buffalo from October 31st to November 6th, both days inclusive, aggregated 101,920 net tons, distributed as follows: 40,650 tons to Chicago; 26,401 tons to Milwaukee; 11,950 tons to Duluth; 3,130 tons to Toledo; 12,500 tons to Superior; 600 tons to Racine; 2,050 tons to Gladstone; 800 tons to Green Bay; 2,200 tons to Manitowoc; 400 tons to Sault Ste. Marie; 639 tons to port Stanley and 609 tons to Windsor. The rates of freight advanced; shipments were made at the following rates: 50c. to Chicago, Milwaukee, Manitowoc, Sault Ste. Marie, Port Stanley, Green Bay and Racine; 30c. to Duluth, Superior, Gladstone and Windsor, and 25c. to Toledo and Detroit. Closing strong.

The following statistics of the coal trade of Buffalo from January 1st to October 31st, 1897, with comparisons of previous years, were compiled by Mr. William Thurstone, secretary of the Merchants' Exchange:

Receipts of coal by railroads not reported by request. Receipts by lake for October none for several years past. The shipments by lake for October, 409,313 net tons, as compared with 378,977 net tons in 1896 and 426,144 net tons in 1895; for the season to November 1st, 1,619,614 net tons, as compared with 1,354,058 net tons in 1896 and 1,962,325 net tons in 1895. Receipts by canal for month of October, 3,064 net tons, as compared with 12,818 net tons in 1896 and 983 net tons in 1895; for the season to November 1st, 8,812 net tons, as compared with 37,078 net tons in 1896 and 11,154 net tons in 1895. Shipments by canal in October none, as compared with 411 net tons in 1896 and none in 1895; for the season to November 1st none, as compared with 1,196 net tons in 1896 and 4,289 net tons in 1895. The aggregate shipments of coal this season to November 1st show a decrease from 1896 of 333,444 net tons; for 1895 of 342,711 net tons. Lake freights on coal from Buffalo for October this year were 30@40c. to Chicago and Milwaukee, 20@25c. to Duluth and Lake Superior ports, 40c. to Green Bay, 20@25c. to Toledo, 30c. to Detroit, 45c. to Racine and 25@30c. to Bay City. A year since the rates were in October 20@30c. to Chicago and Milwaukee, 20c. to Duluth and Lake Superior ports, 30@40c. to Green Bay, 2@25c. to Toledo, 25c. to Detroit, 40@50c. to Racine, 40c. to Saginaw and 25@30c. to Bay City. The shipments of coal by lake thus far this year to November were distributed about as follows: 675,723 net tons to Chicago; 319,387 tons to Milwaukee; 223,622 tons to Duluth; 13,650 tons to Racine; 500 tons to Kelly Island; 800 tons to Menominee; 20,275 tons to Green Bay; 1,100 tons to Grand Haven; 300 tons to St. Ignace; 163,514 tons to Superior; 6,710 tons to Saginaw; 350 tons to Vermillion; 2,200 tons to Cleveland; 850 tons to Marinette; 2,225 tons to Osceola; 179 tons to Penetanguishene; 53,555 tons to Toledo; 3,771 tons to Lake Linden; 400 tons to Marine City; 360 tons to East Tawas; 8,700 tons to Bay City; 1,728 tons to Amherstburg; 330 tons to Sand Beach; 3,420 tons to Port Huron; 7,300 tons to Marquette; 300 tons to Mackinac City; 1,250 tons to St. Clair; 18,750 tons to Gladstone; 4,600 tons to Washburn; 1,200 tons to Port Arthur; 100 tons to Traverse Bay; 12,028 tons to Port William; 1,208 tons to Port Stanley; 600 tons to Portage; 2,200 tons to Ashland; 500 tons to Byng Inlet; 7,250 tons to Detroit; 1,130 tons to Windsor; 700 tons to St. Joseph; 800 tons to Michigan City; 5,650 tons to Hancock; 3,900 tons to Sault Ste. Marie; 26,600 tons to Manitowoc; 1,300 tons to Muskegon; 6,275 tons to Kenosha; 1,400 tons to Escanaba; 195 tons to Alpena; 700 tons to Benton Harbor; 580 tons to Sturgeon Bay, and about 18,000 tons to ports not stated.

Chicago. Nov. 10.

(From Our Special Correspondent.)

Anthracite Coal.—The market for anthracite coal is decidedly quiet at the present time. There is but little coal being sold, and appearances are that there will be but little sold until we get some

real winter weather, which would undoubtedly be an incentive for the dealers both in and out of town to send in their orders. It is evident that stocks both in and out of the city are generally small, and when a buying demand sets in the market ought to take on a better aspect. Prices on hard coal are unsettled, and there is little disposition on the part of dealers to maintain them. The receipts of anthracite coal by lake at Chicago during the month of October almost doubled those of the same month of 1896, but so far this season the receipts from the same source have fallen below last season's total shipments by at least 100,000 tons. Circular prices are on grate \$5.35; egg, stove and chestnut, \$5.60.

Bituminous Coal.—Soft coal is in fair demand. The supply of the better grades is rather lighter than usual and of some kinds there is rather a scarcity. There is, however, considerable coal in the market and there would have to be an increased business to create any shortage. Prices on soft coal are not as strong as they have been.

Pittsburg. Nov. 11.

(From Our Special Correspondent.)

Coal.—When will the coal question be settled. This question is easier asked than answered. The board of arbitrators which has been dealing with the river mine differential question handed down its decision awarding rates of \$2.47 per 100 bu. for the First and Second Pools, \$2.15 for the Third Pool and \$2 for the Fourth Pool. It will be seen that the First and Second Pool prices remain untouched, while the old Third Pool rate was \$2.47 and the \$2.15 rate seems a cut of 32c.; but it is claimed that it is really an advance of 18c., since most of the Third Pool people have been working at \$1.97, the Fourth Pool price. In the Fourth Pool alone there has been an advance in price of 3c. per 100 bu., but the operators, claim the board had no jurisdiction over them and that they will not abide by the decision. All the mines in the railroad district are being run to their fullest capacity. The river mines also are running better than at any time since the strike. No coal shipments can be made until we have a rise.

The light rains have filled the pools, which will enable the coal men to fill their barges; there is plenty of coal loaded to make a big shipment when the rise comes, which according to appearance will not be long.

On November 11th the Third Pool miners went out on a strike. The arbitration commission was thus discountenanced by the miners, who are disposed to do as they please without regard to the leaders. About 2,200 men are in the Third Pool. They demand \$2.47 per 100 bu. being 32c. advance over the arbitration price.

Connellsville Coke.—Trade fell off a trifle since our last, and was below that of the previous week; there was also considerable falling off in production. The decrease in demand was only about 100 tons, which can be considered merely an ordinary fluctuation of the business of the week, showing really no reduction in the general coke trade. The decrease in production amounted to nearly 3,000 tons, and was due to the scarcity of water at several of the plants. Two of the plants were idle all the week and one made but one day. A few of the plants were compelled to close down entirely on account of the scarcity of the water. Week's summary of the region shows 14,959 ovens in blast, with 3,681 idle; production amounted to 145,057 tons against 147,911 tons the week previous. In the running order 5,346 ovens made six days, 9,012 ovens five days; 246 ovens one day, and 50 ovens, the Semet-Solvay by-product plant, seven days; an average of 5.22 days. The H. C. Frick Coke Company made even five days. The shipments in cars were 8,140, shipped as follows: To Pittsburgh, 3,025 cars; shipped West, 3,752 cars; sent East, 1,363 cars; total, 8,140 cars.

The light rains in the Connellsville region have been of great benefit to the coke producers, enabling them to start many plants that have been idle for the want of water. The next coke report will be a large one.

Mr. E. A. Humphreys, of Scottsdale, has been appointed superintendent of the Frick Company's Lemont Works to succeed Mr. P. Kerr, resigned. Mr. Humphreys has been identified with the coke business for years. He owns the Humphreys plant of 100 ovens at Vance Mills and was formerly superintendent of Leisenring No. 2 of the Frick Company.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Nov. 12, 1897.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From Jan., '96.	From Jan., '97.
	Nov. 13, 1896.	Nov. 12, 1897.		
Anthracite.	27	15,850	27	17,150
Coke.	85	106,200	137	191,850
Charcoal.	21	5,200	19	4,650
Totals	133	127,250	183	213,650
				7,831,979
				7,219,345

A waiting market still covers the situation in the iron trade. This does not mean that there is nothing doing, for the mills and furnaces are generally busy; but their engagements in most cases do not run beyond the year. It is now only seven weeks to the end of the year, but there is still a hesitation about contracts for 1898 delivery, and this applies to

both buyers and sellers. Most men in the trade anticipate a heavy consumption of iron and steel, but they are not prepared to name prices very far ahead. Furnacemen do not know yet what their ore and coke are going to cost them, while the buyers of pig are quite confident that they will be able to get all they want, and are not willing yet to concede any advances. The output of finished materials is steady, but new orders do not come in very freely yet, and the mills are in no hurry to bind themselves by contracts.

The pig iron production continues to increase, and is now at the rate of about 213,000 tons a week. While buyers point to this large output, the furnacemen have on their side the fact that from June 1st to November 1st unsold stocks decreased 410,000 tons, and there was a diminution of 34,000 tons during the month of October, when the output was very large.

Prices are somewhat irregular, and weakness is manifested in one or two directions, notably in steel billets. Generally it may be said that there is less firmness than has been shown recently.

There is the usual talk of new pools and combinations, which is chiefly unsupported rumor. The latest pool mentioned is a wire trust, which is to include all the companies. Negotiations are said to be in progress, but the matter needs confirmation.

A number of export orders continue to be reported and at present locomotives and railroad machinery seem to be in especial demand abroad. Some important orders have been placed here. Among other contracts, one for 800 tons of cast-iron pipe for England is reported.

The activity of pig iron production is shown by the statement from Pittsburg that every blast furnace in Allegheny County is now in operation, the last idle one having started this week.

NOTES OF THE WEEK.

The production of pig iron in Great Britain during the first half of the current year has been ascertained by the British Iron Trade Association to amount to 4,401,424 tons, which is at the rate of 8,802,848 tons per annum, or something more than the largest annual output ever recorded, which was 8,659,681 tons, in 1896. The next largest was 8,586,680 tons in 1882.

New York. Nov. 12.

There is little of note in the local market. This being the dull season of the year, sales in general are slow and the volume of business less. Producers are more inclined to shade prices and make concessions than last week. The export market, however, is in very good shape and the volume of that trade is steadily increasing. Were freights lower it is probable that the trade would make a very impressive showing.

Pig Iron.—The domestic market is generally dull and very slow. In warrant iron, a sale of 2,500 tons No. 3 at \$6.80 for spot delivery was recorded, and sales are reported of No. 3 at \$6.70. There is a considerable movement in warrants to meet export orders. The Southern furnaces handling their export trade through foreign agents, outside parties can frequently fill export orders for certain grades only by buying warrants. At prevailing freight rates export pig cannot be handled at a profit in cargo lots. It can be stowed in certain places on a ship, however, and carried for about \$3.85. All this space available is taken several months ahead. It is a fact that Southern pig can pay a duty in France and Germany and undersell the native product. It is also true that with the rate of \$3.85, Liverpool, there is more money for producers in the export than in the domestic market.

Local quotations are: No. 1 X foundry, Northern, \$11.50@12.25; No. 2 X foundry, Northern, \$11.00@11.25; No. 2 plain, Northern, \$10.50@10.75; Grey forge, Northern, \$10.00@10.50; No. 1 foundry, Southern, \$10.75@11.25; No. 2 foundry, Southern, \$10.50@10.70; No. 1 soft, Southern, \$10.50@10.75; No. 2 soft, Southern, \$10.25@10.50; No. 3 Southern, \$10.00@10.25.

Spiegeleisen and Ferro-Manganese.—The market is quiet, and prices show practically no change. Spiegeleisen, 20%, is \$19@19.50; ferro-manganese, 80%, domestic, \$45.50@46, at buyer's mill.

Cast-Iron Pipe.—A large contract for 8,500 tons for Japan has gone to the other side. The American firm that bid for the contract quoted a price considerably below the lowest foreign bid, but was unwilling to make 9-ft. lengths, as the specifications demanded. An average quotation would be for round pipe \$19 for large sizes and \$20.50 for small.

Steel Billets and Rods.—The market is not as firm as last week. Billets are quoted at tidewater at \$17.50@18, with rods \$22@22.50 at mills.

Plates.—The market is outwardly pretty firm, but it is probable that concessions from quotations will be made on impending contracts. Steel plates are quoted in large amounts at tidewater, 1'3@1'25c. for 1/4 in. or heavier, and 1'35@1'40c. for 3/8 in. Flange is 1'35@1'40c.; shell, 1'30@1'35c. Charcoal iron plates, 2'25c. for shell, 2'75c. for flange and 3'25c. for firebox. Rivets are 2'25@2'50c. for iron and 1'75@1'85c. for steel.

Structural Iron and Steel.—The market is dull and slow, and producers are making concessions. Quotations, however, are little changed: Angles, 1'15@1'20c.; tees, 1'35c.; channels, 1'25c. Beams, in

ordinary sizes, are 1'25c., New York delivery, in carload lots, 1'35c. for 20-in. and 1'45c. for 24-in.

Steel Rails and Rail Fastenings.—Representatives of the large rail mills speak of business as good and prices well maintained, with no desire to make concessions.

Standard sections are quoted at \$20, and girder rails at \$23. Lighter rails are quoted at \$22 for 16-lb., 20-lb., 25-lb., 30-lb., 35-lb.; and \$20 for 40-lb., and 45-lb., all f. o. b. mill.

Rail fastenings at tidewater are quoted: Fish plates, 1'15@1'25c.; angle bars, 1'20@1'25c.; spikes, 1'45@1'55c.; bolts, square nuts, 1'75@1'80c.; hexagon nuts, 1'80@1'90c.

Wrought Iron Pipe.—The market is steady and business is good. In the export market, in particular, conditions are excellent. There is a steady and increasing demand for boiler tubes, while several shipments of large-sized pipe have gone across and more are to follow. Discounts remain as last week: On black pipe, 72% for 1 1/4 in. or smaller and 78% for 1 1/2 in. or larger. On galvanized pipe 67% for 1 1/4 in. or smaller, and 70% for 1 1/2 in. or larger.

Nails.—Trade is fair, with prices easier. In carload lots at New York wire nails are quoted at \$1.60, and from store, \$1.65; cut nails at \$1.30@ \$1.33.

Old Material.—The market is easy and the demand not active. Prices quoted are: Railroad wrought scrap, delivered, \$11.50@ \$12.50; No. 1 yard wrought, f. o. b. Jersey City, 10@ \$11; machinery cast, delivered at works, \$9@ \$10; Hammered car axles, delivered New York, \$15.50@ \$17.50; wrought pipe and tubes, delivered New York, \$7@ \$8; burnt iron, buyers' works, \$5@ \$6.

Birmingham, Ala. Nov. 8.

(From Our Special Correspondent.)

The condition of the iron market is the same as has existed in the past three weeks; no change has been made in the quotations for the various grades, and the makers are firm in their demand for the prices quoted below: Silver gray, \$8; No. 1 foundry, \$7.75; No. 2 foundry, \$7.50; No. 3 foundry, \$7.25; No. 4 foundry, \$7; gray forge, \$7; No. 1 soft, \$7.75; No. 2 soft, \$7.50.

A large quantity of iron has been moved from the warrant yards, and the operators apprehend a general shrinkage in stocks. The prospects appear promising for an increase in prices because the supply is not increasing in comparison to the demand. Within the past four days warrants have been sent from Europe for iron which were purchased four years ago; in taking the iron from the yard now there is a loss of about \$3 per ton to the purchaser when it is considered that the price of iron was \$1 per ton more when the warrants were purchased than it is to-day, when the storage and interest on the investment are considered.

A leading operator informed me this week that two furnaces which have been idle for some months were ready to be blown in, but delay was occasioned by a temporary lack of common labor in the iron ore mines. With the large territory from which Birmingham has to draw on for her labor these deficiencies will be very quickly and cheaply relieved. There are certain moves on foot looking toward the blowing in of some of the other old furnaces in this district, which have been idle for years.

Buffalo. Nov. 11.

Special Report of Rogers, Brown & Co.)

The market is being watched by those most interested, as a peculiar and rather unusual state of affairs exists. Almost all the iron foundries in this section are quite busy, and furnaces are having their hands full to keep all supplied. This being the case, we could naturally look for a stiffening in price and general advance, but instead of this some iron has been offered at lower prices. The market has all the appearance of being a waiting one, so far as sales are concerned. There has been no pressure to sell on the part of producers and not much desire on the part of buyers to cover for next year's business. We quote below on the cash basis f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$11.25; No. 2 strong foundry coke iron, Lake Superior ore, \$10.75; Ohio strong softener No. 1, \$11.75; Ohio strong softener No. 2, \$11.25; Jackson County silvery No. 1, \$14; Southern soft No. 1, \$11.75; Southern soft No. 2, \$11.35; Niagara malleable, \$10.75.

Chicago. Nov. 10.

(From Our Special Correspondent.)

Pig Iron.—The buying of pig iron during the past week has been in small lots, the largest sale being one of 1,000 tons Northern iron. Most of the sales ran from carload lots up to a couple of hundred tons. General appearances look as though there would be no more extensive buying during the remaining portion of this year, as most of the consumers have bought in sufficient quantity for wants up to January next. The furnaces, both Northern and Southern, are seemingly not anxious to push trade beyond the first of the year as they expect an advance in prices may occur. Prices are held firmly and as the furnaces are shipping about all the iron they make, it does look as though an advance would be made in prices before long. Quotations are: Lake Superior charcoal, \$12.50 @ \$13; local coke foundry No. 1, \$11.50@ \$12; No. 2, \$11@ \$11.50; No. 3, \$10.50@ \$11; local Scotch foundry No. 1, \$11.50@ \$12; No. 2, \$11@ \$11.50; No. 3, \$10.50@

\$11; Southern coke No. 1, \$11@ \$11.25; No. 2, \$10.60 @ \$10.85; No. 3, \$10.35@ \$10.60; Southern No. 1, soft, \$11@ \$11.25; No. 2 soft, \$10.60@ \$10.85; Jackson County silveries, \$12.50@ \$14.50; Ohio strong softeners, \$12@ \$12.25; Alabama car wheel, \$16@ \$17; coke Bessemer, \$11.50@ \$12.

Bar Iron.—Most of the business transacted in bar iron during the week has been with car-builders, a great deal of iron having been disposed of to such concerns. Other business is good, a very fair run of orders coming in. Bar iron is quoted: Common iron, 1'15@1'20c.; guaranteed, 1'20@1'25c.

Steel Rails.—Light sections are in good demand, while orders for the heavier sections are few and as a rule for small quantities. Prices remain \$20.50@ \$22.50, according to specification.

Billets and Rods.—There is but a very light trade in both billets and rods, small sales being a rule. Prices on billets are \$18@ \$18.50; rods, \$25@ \$25.50.

Structural Material.—There was no business of any size transacted during the past week, sales having been wholly for small lots, with bridge material in more demand. Building shapes are in limited demand. There are some fair-sized contracts in the market, a number of which may be let within the next few weeks. Quotations are: Beams, 1'30@1'45c.; plates, 1'30@1.35c.; angles, 1'20@1'25c.; tees, 1'30@1'40c.

Cleveland. Nov. 10.

(From Our Special Correspondent.)

The mining stock market has been quiet during the past week and the changes in the quotations of stock listed for sale are few. The brokers say, however, that the fact that holders of stock are offered slight advances for their securities augurs well for the stocks and future transactions. Bidders offer 50c. more for Lake Superior and \$1 more for Cleveland Cliffs. The quotations on the other stocks remain unchanged.

Iron Ore.—Although as much business has been done during the past week as could be expected at this season, the sales made were small. They comprised both Bessemer and non-Bessemer. More attention is being paid now to the movement of ores than to sales. The end of the year, so far as shipments are concerned, is near, and the dealers say that the movements this year will be larger than in any year in the history of the business. The rates paid for the transportation of ore have weakened somewhat, the rate from Escanaba being 50c. instead of 55c. Sixty cents is still paid from Marquette and 65c. from Ashland. The following prices prevail, being the rate fixed at the beginning of the year: Specular and magnetic ores, Bessemer quality, \$3@ \$3.75; specular and magnetic ores, non-Bessemer quality, \$2.50@ \$2.75; hematite ores, Bessemer quality, \$2.50@ \$3; hematite ores, non-Bessemer quality, \$2@ \$3.50.

Pig Iron.—As the demand has been light and the sales few and of small size, only a moderate business has been done during the past week. The market is steady, as sellers have not been inclined to accept reduced prices, notwithstanding the light demand. Following are the quotations: Lake Superior charcoal, \$13.25; Bessemer, \$10.50@ \$10.75; No. 1 foundry, \$10.75@ \$11; No. 2, \$10.25@ \$10.50; No. 1 Ohio Scotch, \$11.15; No. 2, \$10.65; gray forge, \$9.75 @ \$10.

Philadelphia. Nov. 12.

(From Our Special Correspondent.)

Pig Iron.—The week has been quiet in crude iron and apart from two or three exceptionally large transactions nothing has been done to call for comment. A big lot (10,000 tons) of basic iron was taken. Forge iron developed weakness because two or three makers tried to force sales. But little is being done in foundry, though much iron is being melted. Prices are not weaker, but the trade recognizes that firmness is endangered by the increasing production. Quotations are: \$12@ \$12.50 for No. 1 X foundry; \$11.25@ \$11.75, for No. 2 X foundry, No. 2 plain, \$11; Standard mill irons, \$10.50; basic, \$11; low phosphorus, \$16; Bessemer, \$12.50.

Billets.—Buyers might pay \$18, but are not anxious enough for billets to try their luck in the market.

Merchant Bars.—Mills are doing less. Prospects are not particularly bright this week. Export orders have been booked within a few days for 630 tons, in four lots, most of it for steel bars.

Sheets.—The agents who look after business have been trying to close several transactions for heavy sheets, but the business is still hanging fire. One or two managers intimate some very encouraging business is close at hand.

Pipes and Tubes.—The pipe trade is not active, but our disappointment in this direction is made up in tubes, which everybody in that line wants. Prices are decidedly firmer than they were.

Merchant Steel.—The requirements this week have been of a particularly retail character.

Plates.—Near-by ship yards have secured contracts for ship building, which will result in large orders to our eastern mills. The report given out leads to the inference that December will be an active month at the plate mills, but this prediction rests on the presumption of steadily hardening prices, and this presumption is not being valiantly borne out. Tank plates are 1'20c.; universals, 1'25c.; flange, 1'30c.; firebox, 1'50@2c.

Structural Material.—This branch of the iron trade is feeling the influence of incoming winter business. A large amount of work is in sight, and brokers are confident that there will be a steady increase in business. Angles, 1'20c.; beams and channels, 1'25c. and up.

Steel Rails.—It is reported that small orders are being sent to market constantly.

Old Rails.—A good many old rails could be sold at once if buyers' offers were accepted. Iron are \$14; steel, \$11.

Scrap.—Sales of heavy steel scrap were made at \$11; choice railroad, \$13.25; old iron axles, \$15; steels, \$12; machinery cast, \$10.

Pittsburg. Nov. 11.

(From Our Special Correspondent.)

The situation presents but little change; there is, however, a good deal of inquiry for both iron and steel for next year's delivery. As the coke and ore prices have not yet been arranged many furnacesmen are disposed to defer fixing prices until they can be better informed on that subject. On the other hand there are producers who are willing to fix prices for the first three months in 1898, and sales of Bessemer pig were reported at \$10.10@ \$10.20 January, February, March. The rush of orders for certain products continues and the mills in many cases are obliged to refuse orders because unable to finish previous engagements soon enough; it is in every way fortunate for the industries and the would-be buyers, since speculative purchases would otherwise advance prices so fast as to make reaction probable. More works are continually joining the active lists, including many long idle, and the production in iron manufacture beats all previous records. There is nothing in sight likely to lead to a change in the immediate future. Order-books are full all along the line, so far as 1897 is concerned. New business will have to be done soon; it may be a month or it may be more than that before there is any great demand. It is not always the buying that is the true index of the market, but consumption can always be depended upon to tell the story correctly. It ought to be clearly understood that a slackening up at this season is no indication that the good times are over. On the contrary, the best opinions of the trade are that business is only just beginning to improve.

Steel Bars.—There is a continued good demand; in fact the demand exceeds the supply and prices are firm at \$19.25@ \$19.75.

Iron and Steel Skelp.—There is no falling off in the demand; the advance previously noted continues; supply limited.

Steel Billets.—Prices are weaker and sales range from \$16.35@ \$16.60. For steel wire rods the demand is less active; prices unchanged.

Wire Nails.—Prices are unchanged, but show a declining tendency.

Finished Material.—There is but little new business offering; the mills are fairly supplied with orders.

Wrought Iron and Steel Pipe.—The market firm and mills running full.

Latest.—The market remains quiet; at the same time the volume of transactions shows up fairly well. There is a good deal of inquiry for Bessemer for next year's delivery, and producers find it difficult to set the figures, as the prices of coke and ore have not yet been arranged. The demand for steel billets has fallen off, and prices are 25c. lower. Bessemer is also weaker, and buyers are evidently disposed to take a rest. Mill iron is scarce and firm; other articles show little change.

COKE SMELTED, LAKE AND NATIVE ORE.	Tons.	Cash.
10,000 Bess., N., D., V.	10,000	\$8.75
6,000 Bess., J., F., M., V.	6,000	10.15
5,000 Bess., D., J., V.	5,000	9.64
2,000 B., J., F., M., A., V.	2,000	10.15
4,000 Bess., N., D., P.	4,000	10.45
4,000 Bess., N., D., P.	4,000	10.50
3,000 Mill Ir., N., D., P.	3,000	9.90
3,000 Bess., N., D., V.	3,000	9.50
2,500 Bess., J., F., M., V.	2,500	10.10
2,000 Bess., N., D., V.	2,000	9.75
1,500 Bess., N., D., P.	1,500	10.50
1,500 Mill Ir., D., V.	1,500	9.10
1,000 Bess., N., D., P.	1,000	10.65
1,000 Bess., N., D., P.	1,000	10.65
1,000 Mill Ir., N., D., P.	1,000	9.75
300 Mill Ir., D., V.	300	9.10
CHARCOAL.		
500 Cold Blast, P.	500	21.00
200 Warm Blast, P.	200	14.55
50 No. 2 F., P.	50	15.25
25 No. 3 F., P.	25	15.00
25 C. B., extra, P.	25	27.40
ROOMS, BILLETS, SLABS.		
3,500 Bill., Pits.	3,500	\$16.45
1,000 Bill., Pits.	1,000	16.60
850 Bill., Pits.	850	16.40
830 Bill., Pits.	830	16.40
500 Bill., Pits.	500	16.60
300 Bill., Pits.	300	16.50
250 Bill., Pits.	250	16.45
650 Bill. Ends, Pits.	650	11.40
SHEET BARS.		
1,000 Delivered, Pits.	1,000	\$19.70
750 Delivered, Pits.	750	19.25
Tons. Cash.		
500 Delivered, Pits.	500	19.50
200 Delivered, Pits.	200	19.35
MUCK BAR.		
750 Neutral, D'd, P.	750	\$19.15
STEEL WIRE RODS.		
2,000 Delivered, Pits.	2,000	\$23.00
500 Delivered, Pits.	500	22.60
OLD RAILS.		
300 S. R., gr., Pits.	300	11.00
150 I. R., gr., Ind.	150	14.80
150 S. R., gr., S. P., P.	150	11.60
150 S. R., gr., I. P., P.	150	11.25
100 S. R., gr., Pits.	100	11.00
SKELP IRON.		
800 Sh'd, Pits.	800	\$1.35 4 m.
700 W. G., Pits.	700	1.25 4 m.
500 N. G., Pits.	500	1.25 4 m.
SKELP STEEL.		
900 W. G., Pits.	900	1.05 4 m.
750 N. G., Pits.	750	1.05 4 m.
600 Sh'd, Pits.	600	1.12 4 m.
500 W. G., Pits.	500	1.02 4 m.
500 N. G., Pits.	500	1.02 4 m.
SCRAP MATERIAL.		
350 H. S. S., gr., Pits.	350	\$11.00
200 Mal., gr., Pits.	200	11.25
200 Leaf S., gr., Pits.	200	12.50
200 W. S., net, Pits.	200	12.00
200 W. S., net, Pits.	200	12.00
200 No. 1 C. S., gr., P.	200	9.50
200 W. T., net, Pits.	200	7.40
100 W. S., net, Pits.	100	12.50
100 C. B., net, Pits.	100	6.00

METAL MARKET.

NEW YORK, Friday Evening, November 12, 1897. Gold and Silver.

Price of Silver per Ounce Troy.

Table showing silver prices for November 1897, with columns for London, N.Y. Cts., and Value of silver in \$.

No new features have developed in the silver market. There appears to be no pressure to sell, and amounts offering are gradually absorbed.

The United States Assay Office in New York reports the total receipts of silver at 128,000 oz. for the week.

Average Monthly Prices of Silver

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

Table showing average monthly prices of silver for 1897, 1896, and 1895, with 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.

Gold and Silver Exports and Imports

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

Table showing gold and silver exports and imports for September 1897 and previous years.

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 November 12th, 1897, and for years from January 1st, 1897, 1896, 1895, 1894:

Table showing gold and silver exports and imports for New York for the week ending Nov 12, 1897, and previous years.

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

FINANCIAL NOTES OF THE WEEK.

General business conditions remain substantially unchanged from last week. The volume of trade is large and manufacturers are doing well, except in a few special lines.

The unfavorable factor in business is the approaching meeting of Congress, and the apprehension, which is widely felt, of some precipitate action on the Cuban question, which may result in complications which cannot fail to have a disturbing effect on trade.

The situation with regard to gold imports remains unchanged. Rates for money are relatively higher all over Europe than in New York, and balances are kept there for the present, as they probably will be until the position changes.

Meantime exports continue large and the balance in our favor is increasing.

The Mints have been very busy turning out subsidiary silver coins to meet requisitions. There is always a demand for these coins at this season of the year as the time of active retail trade approaches.

The statement of the United States Treasury, on Thursday, November 11th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

Table comparing Treasury balances for Nov 4 and Nov 11, 1897, with columns for Gold, Silver, Legal tenders, and Treasury notes.

Treasury deposits with national banks amounted to \$17,729,066, a decrease of \$33,886 during the week.

The report of the Treasurer of the United States for the fiscal year ending June 30th gives the redemption of legal tender notes in gold, and the gold imports and exports of the United States for four fiscal years as below:

Table showing redemption of legal tender notes and gold imports/exports for 1893-94, 1894-95, 1895-96, and 1896-97.

The redemptions for the entire period since the resumption of specie payments included \$505,169,097 in United States notes and \$90,489,954 in Sherman Treasury notes. The redemptions of the latter have been limited to the six years since the Sherman law was in full operation.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending November 5th gives the following totals, comparison being made with the corresponding weeks in 1896 and 1895:

Table showing New York bank statements for 1895, 1896, and 1897, including loans and discounts, deposits, and circulation.

Changes for the week, this year, were increases of \$6,835,300 in loans and discounts, \$3,903,900 and \$564,700 in specie; decreases of \$21,300 in circulation, \$1,904,300 in legal tenders, and \$3,090,575 in surplus reserve.

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

Table showing specie holdings of leading banks worldwide for 1896 and 1897, with columns for Gold and Silver.

The returns for the Associated Banks of New York are of date November 6th; the Bank of Italy, October 10th; the Bank of Russia, October 13th-25th; the Banks of Spain and the Netherlands, October 23d; the Bank of Belgium, November 8th; the others are of date November 11th.

Shipments of silver from London to the East for the year up to October 28th are reported by Messrs. Pixley & Abell's circular as below:

Table showing silver shipments from London to the East for 1896, 1897, and changes.

Arrivals for the week, this year, were £140,000 in bar silver from New York, and £21,000 from the West Indies, a total of £161,000. Shipments for the

week were £91,200 in bar silver to India, also £11,600 in Mexican dollars to Penang, and £2,750 to Hong Kong; a total of £105,550.

Indian Exchange remains quiet, with only moderate sales of commercial bills at about 15% d. per rupee. Very little silver has been bought for Indian account, but larger shipments of the metal are anticipated when the season for exports from India opens.

According to a special dispatch from Shanghai, published in London, November 6th, the Emperor of China and the Board of Revenue have approved a memorial presented in favor of establishing a gold standard and prohibiting the export of gold.

Prices of Foreign Coins.

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

Table showing prices of foreign coins including Mexican dollars, Peruvian soles, Victoria sovereigns, etc.

Other Metals.

Copper.—Larger business has been transacted during the week, but again at somewhat lower prices. The flat reports received all along from Europe could not but influence holders here, who finally made some concessions.

In London the lowest prices for g. m. b. copper during the declining period were reached at the beginning of the week, when spot sold at £47 7s. 6d. After that a better feeling set in, partly owing to

Imports and Exports of Metals.

Large table showing imports and exports of various metals (Aluminum, Antimony, Brass, Chrome, Copper, Iron, Lead, Manganese, Nickel, etc.) for New York, Baltimore, and Philadelphia.

*New York Metal Exchange returns. †From our Special Correspondent. ‡Week ending Nov. 5. §Week ending Nov. 11.

the Marquis of Salisbury's speech at the Lord Mayor's banquet on the 9th inst., which affected especially the speculative brands, and g. m. b. copper advanced to £47 17s. 6d. @ £48 for spot, and £48 2s. 6d. @ £48 5s. for three months prompt. The finer grades of copper have so far been only slightly affected by this rise, and consumers are reported to be tempted to purchase only when concessions are made them. The quotations for refined and manufactured are: English tough, £49 10s. @ £50; best selected, £50 @ £50 15s.; strong sheets, £57 10s.; India sheets, £56 10s.; yellow metal, 4 1/2 d.

Tin has remained very firm, with hardly any fluctuations. There is a continued good demand from consumers, and deliveries are very satisfactory. We quote for spot and futures 13 7/8 @ 13 8/8c.

In London prices opened 2s. 6d. higher than the close of the previous week and hardened still further. The close is steady at £62 10s @ £62 12s. 6d. for spot and £63 2s. 6d. @ £63 5s. for three months prompt, with a good business doing.

Lead.—There was another heavy slump during the present week, and large quantities changed hands at continually declining prices. The pressure from Western producers has been remarkable, while consumers have been very cautious in their operations, and complain generally about an early falling off of business; also that they cannot get sufficient margin for manufacturing products at the higher prices at which lead has been recently quoted. Consequently, prices declined to 3 7/8c. New York, and business is reported from St. Louis at 3 5/8 @ 3 5/2c.

The foreign market also has been weak, and shows the heavy decline of 11s. 3d. for the week, Spanish lead being quoted £12 15s. @ £12 17s. 6d. and English £13 @ £13 2s. 6d. Heavy shipments from Australia are mainly given as the cause for this decline.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead continues weak and is on the down grade. Common is freely offered at 3 6/8c., but is not salable above 3 5/8c.

Spelter continues rather irregular, with an evident desire on the part of producers to effect sales. Prices, however, have not suffered, and we have still to quote 4 1/8c. New York and 3 5/8 @ 3 3/4c. St. Louis.

The English market is firm at £17 17s. 6d. for ordinary brands and £18 for specials.

Antimony has been somewhat pressed for sale, especially the finer grades, and we must quote Cookson's 7 1/2 @ 7 1/4c.; Hallett's, 7 1/4 @ 7 1/2c.; Japanese, @ 7 1/2c., and U. S. Star, 7 1/4 @ 7 1/2c.

Nickel.—Business is quiet, and no change in prices can be reported. We quote for ton lots 33 1/2 @ 36c. per lb., and for smaller orders 35 1/2 @ 38c. London prices are 14 @ 16d. per lb., according to size of order. The London price is about on a parity with New York, allowing for the duty of 6c. per lb.

Platinum.—Prices are still quoted at \$14 @ \$15 per oz. New York. The London quotation is 55s. @ 56s. per oz. Supplies are not large, however, and there is a strong upward tendency.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams, for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams; Crucibles and dishes, 57c., 58c., and 59c. per gram. Wire and foil are 55c., 56c. and 57c. per gram.

Quicksilver.—The New York price is unchanged at \$38 50 per flask. The London price is 47 per flask, with £6 18s. 9d. quoted from second hands.

Average Monthly Price of Metals in New York, for the years 1897 and 1896; in cents per pound.

Table with columns: Month, Copper (1897, 1896), Tin (1897, 1896), Lead (1897, 1896), Spelter (1897, 1896). Rows include Jan, Feb, March, April, May, June, July, August, Sept., October, Nov., Dec., and Year.

CHEMICALS AND MINERALS.

(For current prices of chemicals, minerals and rare elements see page 600.)

New York. Nov. 12.

Heavy Chemicals.—This market was quiet generally, with the exception of a few contracts being closed for some of the more important articles. We understand domestic alkali can be had for 55c. per 100 lbs. at works. We quote: Caustic soda, 60%, \$2.10 @ \$2.20 per 100 lbs. Alkali, domestic, 58%, 65 @ 67 1/2c. for 50-ton lots and over, and 70 @ 80c. for smaller quantities; 48%, \$1 @ \$1.20 for jobbing lots. Foreign, 82 1/2 @ 87 1/2c. Carbonated soda ash, 90 @ 95c. per 100 lbs., for 58%, basis of 48%. Bleaching powder prime brands,

\$1.85 @ \$2.00; Continental F brand, \$1.85 @ \$1.90; other brands, \$1.65 @ \$1.75 per 100 lbs. Bicarb. soda English, 1.75 @ 2c. per lb.; American, bulk, \$2 @ \$2.25 per 100 lbs. Sal-soda, English, 67 1/2 @ 75c. per 100 lbs.; American, 62 1/2 @ 65c. per 100 lbs. Chlorate of potash, \$9.50 @ \$9.75 per 100 lbs.

Acids.—Business has been quieter this week. In October orders were rather plentiful and trade better than in September. Quotations are per 100 lbs. in New York and vicinity, in lots of 50 carboys or over, as follows: Acetic acid, commercial No. 8 (in barrels), \$1.40 @ \$1.50; in carboys, \$1.50 @ \$1.65; redistilled, 28%, in bbls., \$1.70 @ \$1.80; in carboys, \$1.90 @ \$2.05. Muriatic acid, 18%, 75 @ 85c.; 20%, 85 @ 95c.; 22%, \$1.15 @ \$1.25, according to make and quantity. Nitric acid, 36%, \$3.50 @ \$4.40; 40%, \$4 @ \$4.50; 42%, \$4.50 @ \$5.50. Oxalic acid, \$7.25 ex-dock and \$7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 65%, 70 @ 85c. in carload lots, 10 @ 15c. higher for small quantities. Chamber acid, 50%, \$6 @ \$6.50 per ton at factory. Blue vitriol, \$3.62 1/2 @ \$3.75, according to grade and order.

Brimstone.—Quiet reigns in this market, and prices are: Best unmixed seconds, \$20.50 @ \$20.75 per ton on spot and \$20.50 to arrive; thirds, \$1 less.

Fertilizing Chemicals.—The market is quiet at present, as some large contracts were taken about 10 days ago. The packers are very firm in their views and stocks of the leading ammoniates are not heavy. We quote: Sulphate of ammonia, gas liquor, \$2.32 1/2 @ \$2.35; bone, \$2.20 @ \$2.25 per 100 lbs. Dried blood, high grade Western, \$2.20 @ \$2.25 per unit New York; \$1.90 per unit f. o. b. Chicago. Azotine, \$1.80 @ \$1.85 basis New York. Concentrated phosphate (30% available phosphoric acid), 57 1/2c. per unit. Acid phosphate, 13% @ 15%, av. P2O5, 55 @ 60c. per unit at sellers' works in bulk. Dissolved bone black, 17% @ 18% P2O5, \$16 @ \$16.50 per ton. Acidulated fish scrap, \$3.50 @ \$4.00, and dried scrap \$18 @ \$18.50 f. o. b. fish factory. Tankage, high grade, \$15.50 @ \$16 per ton, f. o. b. Chicago; concentrated tankage, \$1.55 per unit, f. o. b. Chicago; New York, \$2; low grade, \$13 @ \$13.50. Bone tankage, \$19 @ \$20; ground bone, \$21 @ \$23. Bonemeal, \$19.50 @ \$22.50.

Sulphate of Potash: 90%, New York and Boston, \$1.90; Philadelphia, Baltimore and Norfolk, \$2.01; Southern ports, \$2.03.

Double Manure-Salt: Quotations for 48 @ 49%, less than 2 1/2% chlorate, are 1 01 @ 1 01 1/2c., to arrive, and 1 02 @ 1 03c. on spot; basis of 48%. High grade, 90 @ 93% sulphate of potash, 1 06 1/2 @ 2 00 1/2c. to arrive; basis of 90%. In bulk 24 @ 36%, 36 1/2 @ 37 1/2c. per unit phosphate acid.

Muriate of Potash: We quote: New York and Boston, 1 75 @ 1 78c. Philadelphia and Norfolk, 1 76 @ 1 79 1/2c.; Charleston, Savannah, Wilmington and New Orleans, for 80 @ 85% basis of 80%, 1 78 1/2 @ 1 81c. in lots of 50 tons and upward.

Kaimit.—Invoice weights, as taken at port of shipment, per ton of 2,240 lbs., testing 12 1/4% actual potash, equivalent to 23% sulphate of potash, \$8.80 @ \$8.90.

Nitrate of Soda.—This market has become demoralized since the disruption of the combination, and it now seems as though buyers were making their own prices. It is clearly evident that the new officinas with their improved machinery will be able to compete very keenly with the other manufacturers on the coast. This will eventually cause much dissatisfaction among the producers, and there is no doubt that strong efforts will be made to place the market again on a stable basis by unification. From all appearances the production in the next year will aggregate 70,000,000 quintals, while the actual consumption will not possibly exceed 22,000,000 quintals. The demand in the United States comes principally from gun-powder manufacturers who consume about 60 or 70% of the total importations. As a fertilizer, nitrate of soda has been largely superseded by the ammoniates, especially sulphate of ammonia, which is a by-product of the coke-oven and can be put on the market very cheaply. However, it is expected that nitrate will regain some of its ground in this direction should it go much lower in price. Quotations to-day are \$1.50 per 100 lbs. for future delivery, and \$1.57 1/2 for spot or nearby delivery. Unless the combination is renewed much lower prices are looked for in 1898. The visible supply of nitrate in Europe on November 1st was 75,000 quintals more than at the same time a year ago, while the deliveries were 5,000 quintals more. Sailings for Europe in October aggregated 2,700,000 quintals, and loadings on November 1st to 2,000,000. The sailings to the United States last month amounted to 270,000 quintals, and loadings on November 1st to 140,000 quintals.

NOTES OF THE WEEK.

Shipments of phosphate rock from Fernandina, Fla., for October amounted to 9,458 tons, making a total of 155,477 tons since January 1st, most of which has gone to Hamburg, Germany.

Messrs. Brunner, Mond & Company, Limited, chemical manufacturers, of Widdowson, Northwich, England, have declared an interim dividend for the half year, ending September 30th, 1897, of 20% (free from income tax) on ordinary shares, and of 7% (subject to income tax) on preference shares.

The Association of Agricultural Chemists held its annual meeting in Washington last week. Following are the officers elected for the ensuing year: Prof. A. L. Winton, of New Haven, Conn., president; Prof. R. C. Kedzie, of Lansing, Mich., vice-president; Prof. H. W. Wiley, of the Department of

Agriculture, secretary, and Profs. M. A. Scoville, of Lexington, Ky., and J. L. Hills, of Burlington, Va., additional members of the executive committee.

According to Western advices, the United Alkali Company of England may build works near Detroit, Mich. It is stated by local papers that Dr. Ferdinand Hurter, chief chemist, and Edward J. Duff, chief engineer of the company, and E. P. Floyd-Jones, representative of the American agents, were in that city recently arranging for the building of a soda ash factory at Ecorse, where the company owns 100 acres of land. The plan is to erect a factory with a capacity of 500 tons a week. This will be what is called a unit. Other units will be added as required. Plants for the manufacture of hydrochloric acid, chloride of lime, chlorate of potash, bicarbonate of soda and caustic soda are contemplated. In all the company expects to employ about 700 men. The visiting officers and experts are said to have made a careful examination of freight rates, cost of labor and materials, the location of the limestone quarries and the quality of brine drawn from their test well in Ecorse.

Liverpool. Nov. 2.

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

There is not much stir in heavy chemicals at the moment, while at the same time there is little change to report as far as quotations are concerned. Soda ash is scarce, especially for Leblanc ash, and quotations are nominal at about the following range for tierces, as to market: Leblanc ash, 48%, £4 10s. @ £4 15s.; 58%, £4 15s. @ £5 per ton, net cash. Ammonia ash, 48%, £4 @ £4 2s. 6d.; 58%, £4 5s. @ £4 7s. 6d. per ton, net cash. Bags are 5s. per ton under price for tierces. Soda crystals are dearer and generally quoted at £2 17s. 6d. per ton, less 5% for barrels and 7s. less for bags. Special quotations for American orders.

Caustic soda is very steady, and a fair number of orders are being placed. We quote spot range, as to market about as follows: 60%, £6 5s. @ £6 10s.; 70%, £7 5s. @ £7 10s.; 74%, £8 2s. 6d. @ £8 5s.; 76%, £8 12s. 6d. @ £8 15s. per ton, net cash.

Bleaching powder is flat, and there is keen competition for orders. Hardwood packages are quoted at from £6 5s. @ £6 10s. per ton, net cash, as to market.

Chlorate of potash is quiet, at about 3 1/2 @ 3 3/4d. per pound for any position.

Bicarb. soda is firm, 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 in improved demand, and again dearer at £3 10s. @ £3 12s. 6d. per ton, less 2 1/2% for good gray; 24 @ 25% in double bags f. o. b. here as to quality.

Nitrate of soda is unchanged and quiet at £7 12s. 6d. @ £7 15s. per ton, less 2 1/2% for double bags f. o. b. here as to quantity and quality. Carb. ammonia, lump, 2 1/2 @ 3d. per pound; powdered, 3 1/2 @ 3 3/4d. per pound, less 2 1/2%.

MINING STOCKS.

Complete quotations will be found on pages 591 and 597 and 598 of mining stocks listed and dealt in at:

Table with columns: City (Aspen, Baltimore, Boston, Cleveland, Colo. Springs, Denver, Helena, Los Angeles, New York, Philadelphia, Pittsburg, Salt Lake, San Francisco, London, Mexico, Paris, Rossland, Shanghai, Valparaiso).

New York. Nov. 12.

Trading has been quiet this week. The Comstocks ruled somewhat lower, and it appears as though there will be further assessments on a number of them. Already levies have been made on Best & Belcher, Consolidated California & Virginia and Gould & Curry, and the 11th assessment on Hale & Norcross has been postponed until December 28th. It is believed that the old suit of the Hale & Norcross Company against some of the ex-directors for \$400,000 damages will soon come to a close.

The Colorado stocks were not in particular demand, although some realized slightly higher prices. Golden Fleece opened at 6 1/2 and rose to 6 1/4, against 5 9/8 and 60c. last week. There appears to be more demand for Lacrosse, and 12s. has been bid for it by insiders. The Cripple Creek securities were inactive.

The Californias were exceedingly dull. For the first time in many years North Star was bid for on the Consolidated Exchange. Sellers of this stock quoted \$6 while buyers offered \$1 less.

The South Dakota stock, Homestake, still retains its position at \$40. The October earnings have not yet been received, but it is said they will amount to about \$190,000. The extra dividend which was paid by the company a short time ago has helped to support the price of the stock.

Horn Silver of Utah is again selling at \$1.05, against the minimum price of \$1.05 at which some stock was sold several weeks ago. Ontario sold at \$4.50 on November 9th, against an asking price of \$7 six days ago.

Boston. Nov. 11.

(From Our Special Correspondent.)

The market for copper mining stocks has suffered this week in sympathy with the decline in the general market, and prices have reached a lower level than for some months past. The decline has not

been confined to the speculative list entirely, but investment stocks have been depressed also and many stop orders were reached.

Boston & Montana was hammered severely by the bears, and the stock yielded 10 points, from \$136 to \$126, recovering to-day to \$134, with the closing sale at the noon hour at \$133 1/2.

The gold stocks were not very active, but were affected more or less by the decline in coppers. Gold Coins sold at \$1 1/2, but was strong to-day, selling up to \$2 1/2.

Los Angeles, Cal. Nov. 4.

(From Our Special Correspondent.)

The market on the exchange is firm, active and looks well. During the past week N. F. Wilshire was elected president, and Mr. Fleischman, cashier of the Farmers' and Merchants' Bank, secretary and treasurer of the Wedge Mining Company;

The monthly reports from the different companies listed on the Exchange are nearly all in, and can be seen by members of the Exchange at any time.

The party of inspection which left for Randsburg early in the week reports through one of its members that the properties listed from the Randsburg District are in good condition.

The Exchange has moved into new and handsome quarters in the Henne Block, corner of Third and Spring streets. The offices of the exchange are fitted up in good shape and there is a large call-room where files of all the papers are kept.

Salt Lake City. Nov. 6.

(From Our Special Correspondent.)

After many days the unexpected has happened; this time it comes in the way of a sudden improvement. The week opened on a dull and inactive market, but Tuesday gave out signs of gaining strength, and each succeeding day brought a better demand for shares.

A still hunt for Mercur has been noticeable since Wednesday, the cause of which can hardly be adequately explained by the excellent news of the cutting of the third vein and the fine condition of the

property. While thus far nothing is as yet given out it is learned, semi-authoritatively, that an important deal is pending by which 5 acres of Mercur territory, joining the Golden Gate, may be acquired by Captain De Lamar.

Northern Light has moved up steadily since Wednesday. Striking the Kelly ore pipe and connecting the Woodruff tunnel with the vein promise a regular supply of mineral to the mill.

Chloride Point, though weak on Monday, fully made up for all shortcomings to-day, selling on the close at 39c., 40c. and 41c., some 1,600 shares changing hands.

Silver King pays its customary \$37,500 dividend next week. The shares are in demand. Daly, apparently, is stronger than last week.

Galena and Utah are higher, stronger and in greater demand, owing to recent uncoverings in the mines. Swansea responds to the more healthy tone of the market by advancing to \$1.55, which is the bid for small or large lots.

Little Pittsburg directors on Wednesday levied 1/2c. assessment, due December 6th and delinquent December 23d. An assessment of 1c. per share is levied on Buckeye, payable at once, delinquent November 30th; shares not paid up will be sold December 15th.

On the first of the month the Exchange moved from Commercial street to the basement floor of the Atlas Building. Apparently the change has operated like a charm, for if this week is any criterion of what is to follow the Salt Lake mining share market will soon be a reasonably fair index of the worth of the mines represented, which for some time past has not been the case.

San Francisco. Nov. 6.

(From Our Special Correspondent.)

The market opened very quietly with prices weak and transactions small. It was for the time given over entirely into the hands of the small traders who make their profits out of the fluctuations which can be worked up on little sales and street rumors.

The market remained much the same all the week, showing some fluctuations in prices on small sales and purchases. There was no important news from the mines, and the only thing which could be called an event was the levying of an assessment of 25c. a share on Consolidated California & Virginia stock—and that had been expected.

Some prices noted are as follows: Alpha, 12c.; Alta, 10c. 1/2; Andes, 28c. 3/4; Belcher, 48c.; Best & Belcher, 48c. 4/8; Bullion, 15c.; Caledonia, 20c.; Challenge Consolidated, 38c. 4/8; Chollar, 66c.; Consolidated California & Virginia, \$1.25 @ \$1.30; Confidence, \$1; Consolidated Imperial, 2c. 3/4; Consolidated New York, 2c.; Crown Point, 39c. 4/8; Gould & Curry, 37c.; Hale & Necross, \$1.65; Julia, 2c. 4/8; Justice, 20c. 2/8; Kentuck, 4c.; Lady Washington, 3c.; Mexican, 48c. 4/8; Occidental Consolidated, \$1.15; Ophir, 96c.; Overman, 15c.; Potosi, 71c.; Savage, 49c.; Scorpion, 5c.; Segregated Belcher, 9c.; Sierra Nevada, 78c. 7/8; Silver Hill, 5c. 6/8; Union Consolidated, 45c.; Utah, 13c. 1/2; Yellow Jacket, 51c. 5/8. For Standard Consolidated \$1.65 was bid.

The sales on regular call at the San Francisco Stock Exchange for the first ten months of the year were as follows:

Table with 3 columns: Month, 1896, 1897. Rows include January, February, March, April, May, June, July, August, September, October, and Total.

The sales this year have been smaller than in 1896, notwithstanding the heavy business in September and October. These two months furnished over one-third of the total sales this year.

The Pennsylvania Mining Company of Grass Valley has declared another dividend at the rates of 5c. per share.

The Morning Star Mining Company of Iowa Hill, Placer County, paid a dividend of \$6 per share this week.

The East Best & Belcher Mining Company has levied an assessment of 15c. per share, delinquent December 31.

The Richmond Gold Mining Company, of Butte County, has levied an assessment of 2c. per share, delinquent November 30th.

Paris.

Oct. 31.

(From Our Special Correspondent.)

There has been no remarkable change in stock speculation during the week just closed. The main objects of attention now are found in the international securities, and moreover dealings have been to some extent limited by the higher rates prevailing in the money market.

The Transvaal gold stocks continue very quiet, and few persons seem disposed to deal in them. We continue to hear of reforms and reduction in expenses, but they are not yet apparent in the returns of the companies.

The copper market has a lower tendency, and the shares of the copper companies are for the moment in less request. The consumption of the metal seems to be falling a little, and there is a prospect that the demand, which has been so large for the past year, will shrink for a time.

The report of the Société des Metaux for the year ending June 30th last shows that the gross profits were 4,909,113 fr., an increase of 405,000 fr. over the preceding year.

The Dombrowa Company, a Russian coal mining concern, which finds much favor here, has declared a dividend of 17.50 fr., which is 5 fr. more than in the preceding year.

Russian petroleum stocks have been dealt in here for some time, and I hear that there is a movement to extend these dealings, perhaps to bring forward some new companies to develop oil territory in Russia with French capital.

The Madagascar gold mining project is delayed, pending some further explorations, but it is not by any means abandoned, and will be brought up when the time is more favorable than it is just now.

The extraordinary rise in Nickel stock continues, and really seems to have very little support in the rumors of an American syndicate which is to increase prices. After all, the demand for the metal is very limited, and lower prices, not higher, are needed to develop its use.

The metallurgical shares show some reaction. This was to be expected, since trade shows some signs of diminution, and there are not wanting prophets who predict a period of dullness with the new year. It is possible, for there are some reasons for it in our light crops and the reduced purchasing power which will follow.

Rossland, B. C. Nov. 3.

(From Our Special Correspondent.)

The demand for mining stocks of good properties has been steadily increasing of late, and some of the brokerage firms report the sales of a good many blocks of shares, though the quotations have shown little advance.

It is not unlikely that before the winter sets in that one or two deals of first-class importance will take place within the camp. The sales will be to English capitalists. The negotiations have been carried on for several months past.

LATE NEWS.

THEOPHILUS D. HAZZARD, iron broker, 61 years old, died suddenly November 10th, at the Wall Street Ferry in Brooklyn while on his way to his office. He was apparently in his accustomed health when he left his home.

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing companies like Alamo, Anaconda, and others with columns for location, par value, and prices for various dates from Nov. 6 to Nov. 12.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stocks including American Coal, Col. & I. Dev, and others, with columns for company name, location, and prices.

Official quotations New York Stock Exchange, mining, 7,500 shares; other stocks, 28,020 shares; Consolidated Stock and Petroleum Exchange, mining, 18,500 shares; Mining Exchange, 95,700 shares. Total shares sold, 1,008,810. *Bid and ask quotations. †Ex-dividend.

PHILADELPHIA, PA.

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

Official quotations Philadelphia Stock Exchange. * Bid and ask quotations. Total sales, 13,328.

PITTSBURG, PA.

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

Official quotations Pittsburgh Stock Exchange.

BOSTON, MASS.

Table of stock quotations for Boston, Mass., listing companies like Aetna Con., Alouez, and others with columns for location, par value, and prices.

Official quotations Boston Stock Exchange. * Bid and ask quotations. Total sales, 70,442.

BALTIMORE, MD. Week ending Nov. 11.

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

Official quotations Baltimore Stock Exchange.

CLEVELAND, O.

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

From our special correspondent.

ASPEN, COLO.

Table of stock quotations for Aspen, Colo., listing companies like Agnes C, Alta Argent, and others with columns for location, capitalization, par value, and prices.

COLORADO SPRINGS, COLO.

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

Official quotations Colo. Springs Mining Stock Association. * Holiday. Total shares sold, listed, 289,189; unlisted, 53,700.

STOCK QUOTATIONS.

DENVER, COLO.

Table of stock quotations for Denver, Colorado, listing various companies and their share prices across multiple dates (Nov. 1, 3, 4, 5, 6).

LOS ANGELES, CAL.

Table of stock quotations for Los Angeles, California, listing various companies and their share prices across multiple dates (Oct. 23, 25, 26, 27, 28, 29).

Official quotations, Los Angeles Mining and Stock Exchange. * Bid and ask quotations. Total sales, 250,300 shares.

SALT LAKE CITY, UTAH.

Table of stock quotations for Salt Lake City, Utah, listing various companies and their share prices, including bid and asked prices.

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

ROSSLAND, BRITISH COLUMBIA.

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

* From Our Special Correspondent.

HELENA MONT.

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

* Special Report of Samuel K. Davis. Total shares sold, 2,600.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing various companies and their share prices across multiple dates (Nov. 5, 6, 8, 9, 10, 11).

* Official telegraphic quotations, San Francisco Stock Exchange.

MEXICO.

Table of stock quotations for Mexico, listing various companies and their share prices, including last dividend and last assessment.

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

STOCK QUOTATIONS.

LONDON Oct. 29. Table with columns: NAME OF COMPANY, Country, Authorized capital, Par value, Last dividend, Quotations. Lists companies like Alaska-Mexican, Alaska-Treadwell, Anaconda, etc.

PARIS. Week ending Oct. 22. Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Div. last year, Prices. Lists companies like Acleries de Creusot, Ansis, Blache-St. Vaast, etc.

VALPARAISO, CHILE. Sept. 25. Table with columns: NAME OF COMPANY, Location, Capital paid, Sh. Val. paid up, Last Dividend, Prices. Lists companies like Arturo Prat, Caracoles, Huantajaya, etc.

SHANGHAI, CHINA. Oct. 8. Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price. Lists companies like Fulebu & Trad., Puenjom Sig., Ltd., etc.

DIVIDENDS. Table with columns: NAME OF COMPANY, Current Dividends, Paid since Jan. 1, 1897, Total to date, NAME OF COMPANY, Current Dividends, Paid since Jan. 1, 1897, Total to date. Lists companies like Aetna Con. Co., Alaska-Mexican, etc.

ASSESSMENTS. Table with columns: NAME OF COMPANY, Location, No., Dlnq., Sale, Am. Lists companies like Alamo, Belcher, Best & Belcher, etc.

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

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for 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), and 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 \$275,000 in eleven dividends and the Terra \$75,000. ‡ Dividends paid since consolidation. § Dividends not been paid in several years. ¶ This table is corrected up to November 1. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.

RARE ELEMENTS, CHEMICALS AND MINERALS—CURRENT PRICES.

NOTE.—This table is revised up to October 12th. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable.

CHEMICALS AND MINERALS.

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

Table listing various chemicals and minerals such as Abrasives, Borax, Calcium, and others, with columns for quantity, unit, and price.

Table listing various minerals and chemicals such as Calcium, Charcoal, Clay, and others, with columns for quantity, unit, and price.

Table listing various oils, minerals, and chemicals such as Mica, Nickel, Oils, and others, with columns for quantity, unit, and price.

Table listing various rare elements and chemicals such as Potassium, Sodium, and others, with columns for quantity, unit, and price.

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

Table listing various rare elements such as Argon, Barium, Bismuth, and others, with columns for quantity, unit, and price.

ALPHABETICAL INDEX TO ADVERTISERS.

(-) Indicates every other week or monthly advertisements.

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WE ARE WATER CHEMISTS.

We manufacture the very best compound on earth for the prevention of scale in boilers, the **ALKALI WATER PURIFIER**. We will examine and report on Feed Water free of expense to you should you send us expressage prepaid a gallon jug of your Feed Water. **WE WANT YOUR BUSINESS. WE ARE AFTER MINE TRADE.**

1 WRITE US. THE J. H. PARSONS CHEMICAL CO., 1511-13-15 Masonic Temple, Chicago, Ill.

THE HARRINGTON & KING PERFORATING CO. CHICAGO.

METALS PERFORATED AS REQUIRED.
FOR MINING SCREENS OF ALL KINDS.
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THE DENVER REPUBLICAN.

The Largest and Best Daily Paper in Colorado.

The latest mining news from all Colorado mining camps, including Cripple Creek and Leadville.
 Subscription price, 65 cents per month.
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Address: DENVER REPUBLICAN, Denver, Colorado.

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FOR UNDERGROUND WORK THEY MUST BE DAMP-PROOF AND INCORRODIBLE.
 THAT'S THE KIND WE MAKE.

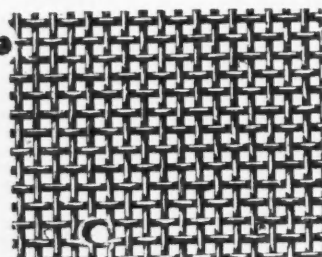
FOR ALL KINDS OF WORK THEY MUST "COME UP STRONG AND STAND UP LONG."
 THAT'S THE KIND WE MAKE.

FOR THE PROTECTION OF THE USER THEY MUST BE FREE FROM INFRINGEMENT.
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GET OUR CATALOG. CONNECT YOUR MINE, MILL AND OFFICE.

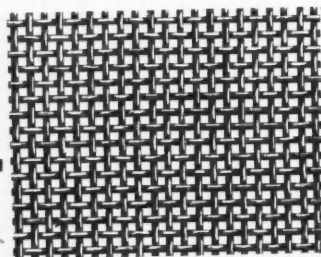
THE STROMBERG-CARLSON TELEPHONE MFG. CO.,
 76 W. JACKSON BOULEVARD, CHICAGO.

DON'T ORDER MINING SCREEN



Unless You Get

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 Double Crimped.
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ONLY MAKE



With the wires thoroughly crimped both ways. "We have originated," others have imitated.

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MANUFACTURERS OF

Extra Heavy Iron, Steel, Brass,
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Write us direct for information.

Colorado concerns will find a stock
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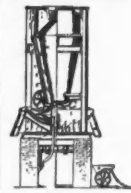
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 Lead Burners and Chemical Plumbers.

Practical experience in the erection of Acid Chambers, Glover and Gay Lussac Towers, and all lead work in connection with Chemical Works, Copper Works, Smelting Works, Chlorination Works, etc. Twenty years' experience.

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Industrial and Economic Engineering.

Responsible attention given to the planning, arranging and erection of buildings, the installation of machinery for mills, chemical and other manufacturing works. Plans and specifications for Furnaces, Retorts, Distilling or Subliming and other Process Apparatus.

Specialties: White's Evaporation Water Cooler; White's Brimstone and Sulphur Apparatus.

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Frankfort, Georgetown and Paris.

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POSITIONS VACANT

Free Advertising.

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

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

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

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

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

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

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

1552 WANTED-COMPETENT MAN TO take charge of a mill and cyanide plant in a high and healthy part of South America, 40 miles from navigation. State experience, references and salary required. Address J. E. B., ENGINEERING AND MINING JOURNAL.

1554 MILLMAN WANTED FOR TEN-stamp mill, wet crushing with vanners. Must have good record of successful amalgamation work and well up in concentration; also knowledge of the cyanide process. Send copy of testimonials and state salary expected. Address MILLMAN, ENGINEERING AND MINING JOURNAL.

1555 WANTED-HYDRAULIC ENGINEER to help perfect invention. Please state terms and references. Address F. S. C., ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

MINING ENGINEER, TECHNICAL EDUCATION, age 30, desires position; nine years' experience in responsible positions in the West; thorough assayer, surveyor and bookkeeper; references from all former employers. Address E. M., ENGINEERING AND MINING JOURNAL. No. 18,127, Nov. 20.

WANTED-POSITION AS SUPERINTENDENT of coal mines; 25 years' experience. Can furnish full edge references; open to engagement at once. Address FORT DODGE, ENGINEERING AND MINING JOURNAL. No. 18,128, Nov. 20.

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

MINING ENGINEER, ENERGETIC, TECHNICAL education, experienced in the management of men, 10 years' practice in charge of mines, desires position as manager or superintendent; speaks Spanish; excellent references. Address FLON, ENGINEERING AND MINING JOURNAL. No. 18,135, Jan. 22.

CHEMIST AND ASSAYER, WITH TECHNICAL education, age 27, formerly chemist for a large smelter, desires position with a mining, milling or smelting company; speaks Spanish; best references. Address M. K. K., ENGINEERING AND MINING JOURNAL. No. 18,125, Nov. 27.

EXPERT MINING ENGINEER, ASSOC. M. Inst. C. E., open to appointment. Properties examined or mines managed; 20 years' experience in England, France, Colorado and Mexico; milling gold and silver ores, concentration, lead, copper and coal mining, surveying and assaying. Excellent testimonials and references. Address EXPERT, ENGINEERING AND MINING JOURNAL. No. 18,123, Dec. 4.

BLACKSMITH, ABLE TO DO ANYTHING, from setting diamonds in a drill to the heaviest forging; a first rate man in every respect, steady and reliable, with very highest recommendations, desires employment where there are educational facilities for his children. Apply Al BLACKSMITH, ENGINEERING AND MINING JOURNAL.

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

ELECTRICAL ENGINEER AND DRAFTSMAN, with technical training, experienced in mining and mining machinery desires position as Assistant Engineer in mine. Address ELECTRICAL, ENGINEERING AND MINING JOURNAL. No. 18,131, Nov. 20.

A SUCCESSFUL SUPERINTENDENT, WHO has found ore in every mine and made all pay but one that he has had charge of, is open for engagement. Fifteen years' experience. Best references. Address GOLD MINER, ENGINEERING AND MINING JOURNAL. No. 18,132, Dec. 4.

CONTRACTS OPEN.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., November 15th, 1897. Notice is hereby given that the time for opening the bids for the completion of the interior finish of the U. S. Post Office building at Washington, D. C., is extended to 2 o'clock P. M. on the 10th day of December, 1897. JAMES KNOX TAYLOR, Supervising Architect.

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

PUMPING MACHINERY.-Sealed proposals will be received at the office of the Commissioners of Water-Works of the City of Cincinnati, O., until 12 o'clock noon of Tuesday, November 30th, 1897, for the construction, delivery and erection of three self-contained vertical triple-expansion crank-and-fly-wheel pumping engines, each of thirty million (30,000,000) U. S. gals. capacity in 24 hours, and boilers adequate in capacity for the operation of the three engines, in accordance with plans and specifications on file in the office of the Chief Engineer of the Commissioners of Water-Works. The same to be paid for as stipulated in the form of contract for the performance of the above work, and which form of contract is on file in the office of the Commissioners of Water-Works. Copies of the specifications, form of proposal, forms of bids and form of contract can be procured by application to the Chief Engineer. Proposals must be accompanied by general plans and specifications sufficient to fully and distinctly show and describe the proposed pumping machinery, boilers and their connections, as required by the specifications. Bidders must enclose their bids in sealed envelopes, and deposit the same with the Clerk of the Commissioners of Water-Works, before Tuesday, the 30th day of November, 1897, at 12 o'clock, m., and such sealed envelopes must have endorsed thereon the nature of the bid and the name and address of the bidder. Each bid shall be accompanied with a bond in the sum of \$10,000, signed by two sureties, for acceptance of the contract, if awarded by the Commissioners of Water-Works; or the bidder may deposit with the Commissioners of Water-Works, in lieu of such bond, a certified check or bank certificate of deposit, payable to the order of the Commissioners of Water-Works, or cash equal in amount to the bond as above required. Bidders must furnish satisfactory evidence of their ability to build the class of engines required. Bidders must use the printed forms, as none other will be received. The Commissioners of Water-Works reserve the right to reject any and all bids.

ELECTRIC LIGHT PLANT.-Sealed proposals for constructing an electric light plant will be received by J. P. Henninger, Corporation Clerk of the Village of Monroeville, Huron County, O., up to 7 o'clock, p. m. central standard time, Tuesday, November 23d, 1897, and opened immediately thereafter. Each bid must contain certified check, made payable to said village, for an amount equal to at least 5% of the bid. Plans may be seen and specifications and blank form of proposals procured at the office of the Corporation Clerk, Monroeville, O.; or at the office of the Engineer, Mr. Paul Voorhees, Room 1210 Guaranty Building, Buffalo, N. Y. The right is reserved to reject any and all bids.

ELECTRIC LIGHTS.-Sealed proposals for the construction of an electric light plant for the village of Freeport, Queens County, New York, will be received by the board of trustees at their office in said village, on Wednesday, November 24th, 1897, at 7:30 o'clock, p. m., of that day, at which time the bids will be publicly opened. Specifications, blank forms and all available information may be had on application at the office of Joseph T. Weyant, village clerk, in said village, on or after November 16th, 1897. All estimates shall be inclosed in sealed envelopes marked "Electric Light Bid," addressed to William G. Miller, president of the board, on or before the day and hour above mentioned. The board reserves the right to reject any and all bids which are not deemed to be for the best interests of the village.

BRIDGES.-U. S. Engineer Office, 1637 Indiana Avenue, Chicago, Ill.-Sealed proposals in triplicate for design, manufacture and erection of superstructure of five steel highway bridges across line of Illinois and Mississippi Canal, between Bureau and Wyandot, Ill., will be received here until 12 noon, Central time, December 20th, 1897, and then publicly opened. Information furnished on application here or to Assistant Engineer James C. Long, Tiskilwa, Ill. W. L. MARSHALL, Major Engineers.

CHAINS AND SHACKLES.-Office of Light-house Inspector, Third District, Tompkinsville, N. Y.-Proposals will be received at this office till 12 o'clock m., on Thursday, December 2d, 1897, for furnishing the Light-house E-shipment buoys and appendages and mooring chain required during the fiscal year ending June 30th, 1898. The articles to be furnished embrace nun, can, bell, gas, wooden spar and ice buoys, shackles, mooring chain, ballast balls, iron and stone sinkers, etc., all of which are enumerated in the specifications attached to the form of bid, which may be obtained on application to this office. Contracts will be awarded on entire numbered lots, and on each item in the miscellaneous lot. Bidders must state in the bids in the proper column the dates when the several articles will be delivered. The right is reserved to reject any or all bids, to strike out any item or items in the specifications, to waive any defects, and to require the delivery of a greater or less quantity of any item than the quantity stated in the specifications, at any time during the fiscal year. A clause to that effect will be inserted in the contract. Proposals will be subject to the above conditions.

SEWER SYSTEM.-Sealed proposals will be received by the Board of Sewer Commissioners of the Village of Depew, County of Erie and State of New York, for the construction and furnishing materials of a portion of the permanent sewer system of said village, aggregating six miles in length, average depth about 15 ft. and average size of tile 15 in. in diameter. Bids will be received until December 1st, 1897, at two o'clock p. m., subject to the terms, conditions, stipulations and contingencies as in the specifications contained. Address the sealed proposals to the undersigned, marked "Proposals for Sewer Construction, Etc." For details and inspection of specifications, etc., address Com. JAMES P. COAN, Sawyer avenue, Depew, Erie County, N. Y.

(Continued on Page 21.)

THE ENGINEERING AND MINING JOURNAL

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NOTICE OF ASSESSMENT.

(Civil Code of California.)

**CONSOLIDATED CALIFORNIA & VIRGINIA
MINING COMPANY;** location of principal place of
business, San Francisco, Cal.; location of works, Vir-
ginia Mining District, Storey County, Nevada.

Notice is hereby given that at a meeting of the
Board of Directors, held on the third day of November,
1897, an assessment, No. 10, of 25 cents per share, was
levied upon the capital stock of the corporation, pay-
able immediately in United States gold coin to the
Secretary, at the office of the company, Room 29,
Nevada Block, No. 309 Montgomery Street, San Fran-
cisco, Cal.

Any stock upon which this assessment shall remain
unpaid on the 29th day of December, 1897, will be delin-
quent, and advertised for sale at public auction; and
unless payment is made before, will be sold on Wednes-
day, the 29th day of December, 1897, to pay the delin-
quent assessment, together with the costs of adver-
tising and expenses of sale.

By order of the Board of Directors.
A. W. HAVENS, Secretary.
Office: Room 29 Nevada Block, 309 Montgomery Street,
San Francisco, Cal.

DIVIDENDS

ISABELLA GOLD MINING COMPANY.

COLORADO SPRINGS, COLO., June 10, 1897.

DIVIDEND NO. 11.

A dividend of **ONE-HALF CENT PER SHARE**
(\$11,250) has been declared, payable June 25th, 1897, to
stockholders of record June 15th, 1897.

The stock transfer books will be closed June 15th,
1897, at 3 o'clock p. m. and will be reopened on the
morning of June 26th, 1897.

PERCY HAGERMAN,
Vice-President and Treasurer.

HOMESTAKE MINING COMPANY,

MILLS BUILDING, 15 BROAD STREET, }
NEW YORK, NOV. 16, 1897.

DIVIDEND NO. 233

The regular monthly dividend, **TWENTY-FIVE (25)
CENTS PER SHARE,** has been declared for October,
payable at the office of the company, San Francisco, or
at the transfer agency in New York, on the 26th inst.
Transfer books close on the 26th inst.

LOUNSBERY & CO., Transfer Agents.

CONTRACTS OPEN.

Continued from Page 20.

IRON CAGE.—Sealed proposals will be received
by George W. Thorpe, Chairman Police Commissioners,
Lansdowne, Pa., until 5 p. m., Friday, December 3, 1897,
for an iron cage to be used as a lock-up, to hold 17½
prisoners. Bidders are to furnish specifications as to
size, weight of iron, etc. All bids must be marked on
outside of envelope, "Iron Cage Proposals," and must
be accompanied by a certified check for 10 per cent.
of the amount of the bid, in accordance with Ordinance
No. 49. Council reserves the right to reject any or
all bids.

BRIDGES.—Proposals for Supplying and Erect-
ing Certain Bridge Superstructures along the line of
the Main Drainage Canal will be received by the clerk
of the Sanitary District of Chicago, at room 1110 Se-
curity Building, Chicago, Ill., until 12 m. (standard
time), of Wednesday, the 22d day of December, A. D.
1897, and will be publicly opened by said Board of
Trustees at the regular meeting held that day, or at a
special meeting held for that purpose. The bridges
for which said tenders are invited are three
(3) in number, and their sites are as follows:
Pittsburg, Cincinnati, Chicago & St. Louis Railway
Company, Chicago and Northern Pacific Railroad Com-
pany, and the Union Stock Yards and Transit Com-
pany's bridge on Contract Section O, near Campbell
avenue. Atchison, Topeka and Santa Fe Railway
Company's bridge at west end of Contract Section N.
Atchison, Topeka and Santa Fe Railway Company's
bridge, near the east end of Contract Section G. Bids
for the P. C. C. and St. L. Ry. Co., C. & N. P. R. R.
Co., and U. S. Y. and T. Ry. Co.'s bridge must be
accompanied by a certified check or cash to the amount
of five thousand (\$5,000) dollars. Bids for the Atchison,
Topeka and Santa Fe Railway Co.'s bridges must be ac-
companied by a certified check or cash to the amount
of three thousand (\$3,000) dollars for each bridge.
Said amounts of five thousand (\$5,000) dollars or three
thousand (\$3,000) dollars respectively will be held by the
Sanitary District until all of said bids have been can-
vassed and the contract awarded and signed, the re-
turn of said check or cash being conditioned upon any
bidder to whom the award of said work may be made,
appearing within ten (10) days after notice of such
award being given, with bondsmen, and executing a
contract with the Sanitary District for the work so
awarded and giving a bond satisfactory to the said
Board of Trustees for the fulfillment of the contract
for the superstructure of the P. C. C. & St. L. Ry. Co.,
the C. & N. P. R. R. Co., and the U. S. Y. & T. Co.
bridge in the amount of forty thousand (\$40,000) dollars,
and of the contract for superstructures of the Atchison,
Topeka & Santa Fe Railway Co.'s bridges in the
amount of twenty thousand (\$20,000) dollars for each
bridge. All bids must be upon the blank forms fur-
nished by the Sanitary District.

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OF GOLD ORES.**

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Royal School of Mines, London; Member of
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- II. The Stamp Mills of Gilpin Co., Colorado.
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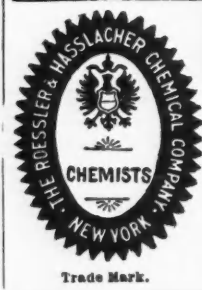
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