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\* Illustrated.

Table listing regional and market information, including 'Personal', 'Obituaries', 'Industrial Notes', 'Mining News', 'Markets', 'Gold & Silver', 'Stock Quotations', etc.

We are officially advised that the Directors of The Joseph Ladue Gold Mining and Developing Company have had the criticisms which appeared in The Engineering and Mining Journal of November 27th under consideration and will, early next week, hold a meeting and make fitting reply, which we can refer to in our next issue.

In our last issue we gave an account of the Highland Boy mine, at Bingham, Utah, where a new, important and unexpected development is under way in one of the oldest districts in the West.

It is learned that there is a desire among many interested in Utah's mineral resources to have the United States Geological Survey map Bingham next season, largely owing to the uncoverings in the Highland Boy, and to issue a Bingham Folio as expeditiously as may be.

On another page we have given space to a very full statement of the plan of currency reform presented by the Secretary of the Treasury in his report to Congress. The experience of the last five years has shown how important the character of the national currency is to the mining industry, as well as to every other department of business.

It is to be hoped that our business men and manufacturers will take every opportunity to press upon the notice of Congress the necessity of action and to show the members that until these questions are settled beyond the possibility of disturbance there can be no permanent prosperity for any of us.

A Government Armor-Plate Plant.

The controversy between the armor-plate manufacturers, who claimed that they could not supply our own government with finished plates at less than \$400 a ton—though they sold them to other governments at a much lower price—and Congress, which limited the price to \$300, led some time ago to the appointment of a board of experts to consider and report on the cost of establishing a plant in which the government could manufacture the plates for itself.

The many economic objections to a government plant will suggest themselves at once. The cost of running it would certainly be higher than in private works; the plant itself would be always behind the times, since Congressional appropriations would be required for every improvement—and we all know what that means—while changes would constantly be needed.

Chief Justice Marshall laid down in the United States Bank case, in his usual clear and sagacious manner, the limits of governmental interference with the business and industries of the people. The government has no right—and it would be very unfortunate if it had—to engage in industry or trade that the citizens can do, and its encroachments in these

fields, which its enterprising servants are constantly urging it into, should be promptly stopped.

If the United States has been made to pay an exorbitant price for steel plates by any combination among the makers, the remedy is a very simple one. A few bids from Sheffield or Creusot under free entry of the goods would soon bring our makers to terms. It has not yet been proved, however, that, under all the circumstances, the prices asked by our mills were exorbitant, but if they were, the world's market is a large one, and open competition would soon bring fair prices.

#### The Klondike Gold-Fields.

The additional accounts from the Klondike region furnished by Mr. John D. McGillivray, the correspondent of the *New York Herald*, a mining man of much experience, and who has shown himself to be a careful observer, fully support the views which the *Engineering and Mining Journal* had previously expressed concerning the Klondike gold-fields and their present and prospective value. Mr. McGillivray fully confirms our statements that the value of the diggings has been vastly overrated, and the excitement of last summer and fall was quite unwarranted. The country is already overpopulated; there are not claims enough in any portion of it which is known to contain pay gravel to give newcomers any chance for fortune. The only effect of an additional influx of men into the country in the spring will be to provide an excessive amount of labor and to bring down its price to the bare cost of living. Many of those who are now there will come away as soon as it is possible for them to leave, and for the newcomers little or nothing remains except disappointment and suffering.

While the region was first brought prominently into notice by the Klondike discoveries, it must be remembered that the existence of gold in the Yukon basin has long been known. For ten years past there have been prospectors in the country, and while a few of them have done well the great majority have united in the opinion that the climate, the barren nature of the region, and the extraordinary difficulties in the way of prospecting rendered it almost valueless as a mining country. In a region where gravel must pay \$5 a cubic yard in order to meet the cost of working the prizes are necessarily extremely few.

The statements of the correspondents as well as those of the Alaska Trading Company have also fully corroborated our estimates that the gold thus far brought out this year does not exceed \$2,000,000. The wild estimates of \$9,000,000 or \$10,000,000 which were at first made have been gradually shrinking. How much will be obtained in the future is, of course, a matter of pure conjecture. Doubtless the region will be worked for years to come, and a considerable amount of gold obtained from it, but the labor and money expended will be out of all proportion to the return, and we have no hesitation in repeating our conclusion that far better opportunities for success and profit are offered in California, Colorado and our other mining States than in the Klondike.

Notwithstanding these discouraging reports, the transportation companies and other interested parties are doing their best to maintain the "boom," and are evidently encouraging in every possible way the adventurers who are ready to risk the dangers of the region in the hope of making a fortune. Possibly some of these over-sanguine adventurers will be deterred from making the attempt by the present gloomy accounts and by others of the same kind which will follow; but it is nevertheless possible that next spring will see a considerable number of men—many of them entirely without knowledge or experience which would qualify them for the work—on their way to the Klondike. Most of the more or less fantastic projects for transporting men and material from the outer world into that cemetery of hopes will fail; indeed, the present indications are that there will be comparatively little to carry there. The Klondike bubble has been pricked and is rapidly collapsing. That this has come so promptly and effectually will save much suffering and loss of capital, and will render it easier for those who were foolishly carried away by the fairy tales of vendors and other interested persons, to recover their sober common sense and return to their usual honorable business methods.

#### Another Transmutation Process—The Brice Conversion of Antimony into Gold.

For some time past paragraphs have been current in the papers regarding a concern known as the National Metallurgical Company, at the head of which was one E. C. Brice, who had invented a process for transmuting antimony into gold, or for producing gold from antimony ore. This company had constructed works in Chicago, that cherished home of wild cats, at a cost said to be \$25,000—though we are informed that a small part of that sum would cover the cost of everything visible about the premises. About November 1st it began the work which was to give the world a new source of supply of the yellow metal. It also made contracts with reputable parties in Salt Lake for a supply of antimony ore from Utah, which was to be gradually increased to at least 100

tons a month; though Utah has not been heretofore a producer of antimony, and a good deal of development work must be done before any such quantity could be furnished. This is not an important detail, however, for whenever antimony can be transmuted into gold there is no doubt that plenty of it will be forthcoming.

In interviews published in some of the Chicago papers Brice, the president of the company and the inventor of the so-called "process," embroidered his statements with some picturesque details. His process was a "volcanic" one and reproduced the volcanic method by which gold was originally produced and injected into the veins wherever it is now obtained with so much labor and cost. The metal, sublimed or vaporized from the ore, was to be passed through a system of tubes and finally collected on condensers and pressed into ingots. The exact amount—\$2,650 in pure gold—to be obtained from a ton of antimony ore was stated; and finally the reporters were informed that the company had made arrangements to ship its gold output directly to the Bank of England, since there it could most readily be turned into money. We have not, by the way, yet heard of anyone in this country, fortunate enough to possess any quantity of pure gold, who has had any difficulty in turning it into coin at our mints; but this again is a detail of minor importance.

Mr. Brice further asserted that he had not patented his process, because he desired to keep the details secret. It happens to be on record, however, that early in the present year he did make application for a patent. His specifications were at that time submitted to the Director of the Mint, who, at the request of the Commissioner of Patents, had the "process" investigated by experts in the service of the Mint Bureau. After very careful investigations, both with Brice's assistance and independently, these gentlemen reported that—as is generally known—nearly all antimony and antimony ores contain a small amount of gold; and that, so far from transmuting antimony into gold the inventor had simply stumbled upon a clumsy and tedious process for saving from 60 to 75 per cent. of the gold already contained in the antimony. On this report the Commissioner of Patents rejected finally Mr. Brice's application.

Meantime matters do not seem to be working smoothly at the Chicago gold factory. The work which was begun on November 1st, and which was to turn out bullion in seven days, is not yet completed—at least no gold has been shipped. On November 28th a sample of Brice bullion, obtained from one of his assistants, assayed, according to the *Chicago Chronicle*, 0.04 ounce gold and 23.70 ounces silver to the ton; and it contained only a part of the precious metals originally in the antimony.

Doubtless there will be protests, changes in machinery and other postponements, as long as money can be obtained from deluded people; but the end is inevitable, and the \$25,000, or whatever other sum has been put into the National Metallurgical Company, has been thrown away. We have given some space to the affair, not because of its special importance, but because it is a type of schemes which are constantly coming up to defraud ignorant and credulous people, and which sometimes catch those who ought to know better.

#### The Proposed Revision of the United States Mining Law.

The *Engineering and Mining Journal* of October 30th contains the proceedings of the Sixth Annual Convention of the California State Miners' Association. This association has a Committee on Revision of Mining Laws, and this committee submitted to the convention a report of somewhat disappointing character, to the effect that, although originally appointed to suggest amendments to the Federal law, it had really taken no action in that matter, except to request Mr. W. S. Keyes, one of its members, to present for the consideration of the convention a report of his own, for which this particular committee seems to disclaim responsibility. Mr. Keyes having been a delegate to the mining conventions at Denver and Salt Lake last July, and being a member of the Denver committee on the revision of the Federal law, presented a series of resolutions as expressing the sense of the Denver convention, and accompanied them with an argument showing forcibly the evils of the present law, but not explaining in detail the grounds, nature and operation of the changes proposed.

The resolutions then offered were referred by the convention without debate to its Committee on Resolutions, which subsequently recommended "non-action" on the subject, "without expressing any opinion upon the merits of the question," stating as the ground of its recommendation that "the Association should bend its energies to the completion of unfinished business already engaging the attention of Congress at its request, before proceeding to the consideration of new matters, covering so vast a field of discussion and probable contention." This outcome of the matter was quietly accepted by the convention; and the general impression produced by the whole episode is, that the proposition for a radical reform in the United States mining law will encounter in California serious opposition.

On the other hand, it must be confessed that the resolutions offered by



Mr. Keyes did not present a clean and clear issue. There were two ways of stating the question. A complete and carefully elaborated code might have been suggested—as was done by the Public Lands Commission of 1879. Or simple propositions for the abolition of the extra-lateral right and the substitution of vertical boundary planes; the abolition of local regulations affecting acquisition of mining title, and the substitution of uniform Federal rules, etc., might have been formulated, without any attempt to prescribe, at this stage, detailed particulars. These resolutions took neither course, but mingled the two, in a somewhat confusing manner. They declared the necessity of reform; called upon Congress to formulate a complete mining code, covering all proceedings for title; called upon the convention to create a committee to prepare such a code for Congress to act upon; and specified several features which it ought to contain—such as a new tunnel clause, a method of fixing the width of claims, and a provision for cutting off proceedings under the present law by a certain date. Every one of these distinctly specified features might fairly be opposed by persons friendly to the general reform desired; and it would have been impossible to get an intelligent and decisive vote on the matter at the convention without fighting over each resolution in detail. It is possible that a simpler proposition might have received attention, and, perhaps, favor. But I must frankly confess that I do not think this would have been the case.

In the *Engineering and Mining Journal* for October 30th, page 512, I criticised the propositions made by Mr. Freeland, and I do not now intend to discuss them again. The significant point at present is that nearly every one of them is vigorously and plausibly (though in my judgment erroneously) opposed by a few who see in them measures for the benefit of "large corporations" or "syndicates." It is somewhat amusing to note the way in which the average miner of the Pacific Coast schemes and labors to secure the aid of capital, and then denounces it for its grasping greed in trying to hold what it has bought, and make its investment profitable. But whether this anti-capitalistic sentiment be consistent or not, it is a factor which must be dealt with; and the only practicable way of dealing with it is to enlighten it.

The heart of the difficulty is the extra-lateral right, the abolition of which is indispensable to any effective reform of the Federal law. Opposition has been made to this abolition, and the substitution of vertical boundaries, on the ground that the latter are suitable only to certain classes of ore deposits, such as the "sensibly level" copper deposits of Michigan and "some of the carbonate deposits of Idaho and Colorado," but not to large systems of parallel fissures like the Butte deposits. It would be interesting to know where these parties get their knowledge of the "sensibly level" character of the Michigan copper-bearing beds, and how they would explain the fact that on these sensibly level beds operations have been carried to the greatest depth below the surface ever reached in mining. The idea which underlies the objection is the not uncommon delusion that there is something exceptional about the form of mineral deposits of California, etc., rendering inapplicable to them the simple laws of title which have been found quite satisfactory everywhere else. This delusion is merely honest ignorance, and a wider knowledge of the actual facts should dispel it.

The report of the Denver committee, which was published in the *Engineering and Mining Journal* for December 4th, as it now stands, recommends a code consisting of a part of the one proposed 20 years ago by the Public Lands Commission, with certain amendments and additions. It would be unfair to criticize this code as if it had been finally proposed by the committee. I will merely mention, therefore, one or two points which seem worthy of consideration.

Of course, it is proposed that all mining claims located after a certain date shall be bounded by straight lines on the surface, and that the mineral rights thereof should be bounded by vertical planes passing through said surface lines. In the report of the Public Lands Commission, the dimensions of such claims were not stated, blanks being left to be filled after discussion by Congress. In the present report, these blanks have been filled, and it is proposed that a mining claim may equal, but not exceed, a square of 1,320 feet on the side, and may be in any shape, so that its width shall not be less than 330 feet, nor the aggregate area greater than that of the square aforesaid. This would permit a claim nearly twice the size of the maximum under the present law (to speak precisely, 40 acres instead of 20.66). I do not think such a size too large, in the nature of the case; and I suppose it is suggested in the belief that an additional area should be granted to the locator, to compensate him for the loss of the extra-lateral right. The possible applications of these dimensions to ore bodies of various dips are innumerable. Pointing out that it is not required that an apex shall pass in any particular direction through the claim, but assuming that such a claim is to be located upon a regular outcropping lode (the case in which the opponents of the reform apprehend the most serious wrong to the locator), I may indicate a few of the possible applications of the square location principle, as here limited.

If the lode dips 45° it is possible to locate so as to get 1,320 feet (one-fourth mile) in length upon it by a vertical depth of 1,320 feet, or an

inclined depth of 1,866 feet. Or (the ground being free from conflicting claims) a greater depth could be secured by accepting a smaller length, the extreme being 330 feet in length, with a depth of one mile vertical, or 7,466 feet inclined.

On the other hand, if the lode dips still more steeply, say 60, then every foot of width of claim may give as a maximum 2 feet of inclined or 1.73 ft. of vertical, depth. It is quite likely that the locator would prefer here to secure as great a length as possible consistent with a reasonable depth. The maximum would be one mile in length, with a depth of 571 feet vertical, or 660 feet inclined. As these depths are far within those now regularly reached in mining, a locator might, perhaps, prefer to sacrifice some length so as to gain depth of mine. A compromise might be made, for instance, at 2,640 feet length by 660 feet width, which would give a maximum depth of 1,142 feet vertical, or 1,320 feet inclined.

All the foregoing instances are based on the assumption that the location is so made as to lie wholly over the dip of the lode; that is, that the outcrop runs along one edge of the claim. This is, of course, an extreme supposition, representing rather the ideal which a locator would be glad to realize than what he could certainly secure before extensive developments. But it would be a fatal mistake to permit his legal rights to be altered by such subsequent developments. The one thing sought in the reform of the law is simplicity, certainty and definiteness of title from the beginning; and the only road to this end is the holding of the locator to the boundaries he himself prescribes. I do not think it would be well to vary the width of claims granted by law according to the observed or reported dip of the discovered lode. That provision of the Mexican law is permissible where the claim is practically leased only, and not sold outright. It involves the official determination of a geological fact, probably by an incompetent authority, and almost always upon insufficient evidence.

The only use that I can see in the committee's proviso that a claim shall be nowhere narrower than 330 feet is that it prevents the length from exceeding a mile. But it would be much better to prescribe a maximum length. For it may often be the case that earlier locations leave less than 330 feet free at some point; and if a purchaser is willing to take that smaller width, who is harmed thereby, except himself?

I notice that the committee has retained the requirement of discovery as the ground of location. This is a pity; everybody knows that the requirement is a mockery, and is easily evaded by dishonest adventurers, while it serves to hamper honest ones. And I may repeat here the question so often asked before, and not satisfactorily answered: If any one desires to buy from the United States a piece of land, officially classed as "mineral," but not yet shown to contain any valuable mineral deposit, why should he not be allowed to pay his money and take the land?

But this article has already grown too long. I must postpone further comments on the general question, and on the committee's provisional report.

R. W. R.

#### NEW PUBLICATIONS.

REPORT ON CEMENT ADMIXTURES, WITH EVIDENCE OF EXPERTS. Issued by the Cement Trade Section of the London Chamber of Commerce. London, England, 1897; pages 197.

This report, a volume of 197 pages, contains data of experiments and testimony, received up to May, 1896, which relate chiefly to the admixture of Kentish ragstone with Portland cement clinker, and to the admixture of gypsum. The latter the English experts do not seem to favor, because the same results (slower setting) can be attained by keeping the cement longer in store. Moreover, nearly all Portland cement clinker contains naturally an appreciable percentage of sulphate of lime, and the addition of 2%—which is allowed under the German rules—is apt to bring the total contents up so high (sometimes to 4%) that they may become absolutely injurious.

On the admixture of ragstone—an argillaceous limestone that contains about 80% of  $\text{CaCO}_3$ —the opinion of the English experts seems to be still divided. Dr. W. Michaelis, of Berlin, whose report forms the concluding chapter of the volume, admits that even this very best Stettin cement is somewhat improved by admixture with from 15 to 20% of ragstone, provided the mixture is gauged without sand; he does not, however, favor the use of ragstone because such mixtures do not give as good results as the neat cement when tested with sand. But according to the doctor's own showing, the mixture, consisting of 85 parts cement, 15 parts ragstone and 300 parts sand, gave 392 lbs. tensile strength per square inch after 365 days, which is only 8 lbs. less than what the mixture of one part of neat cement and three parts sand attained (400 lbs.); hence, it will be rather hard to convince people, who believe more in economy than in abstract theory, that such admixtures should be condemned, unless still better ones are available. It seems, however, evident that a cement that contains a large proportion of carbonate of lime must behave badly when it is subjected to the action of water that contains a good deal of  $\text{CO}_2$ .

Japanese Coal Production.—The total production of coal in Japan in 1896 is reported at 5,249,919 long tons, which compares with 4,772,654 tons in 1895 and 4,268,135 tons in 1894. The exports were 2,194,412 tons in 1896, against 1,844,815 tons in 1895 and 1,701,130 tons in 1894.

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.

- Manual of Hydraulic Mining.* By T. F. Van Wagenen. New York, 1897; D. Van Nostrand Company. Pages, 95. Price, \$1.
- Report of the Commission of Education for the year 1895-96. Volume 2, Containing Part II.* Washington, D. C.; Government Printing Office. Pages, 2,173.
- Die Silber-Zinnerzlagerstätten Boliviens.* Von Alfred Wilhelm Stelzner. Freiburg, Saxony, 1897; Craz & Gerlach. Pages 94; with Maps. Price in New York, \$1.
- Transactions of the Institution of Mining and Metallurgy, London. Sixth Session. Volume V.* Edited by Arthur C. Claudet. London, England; published by the institution. Pages, 346; with plates.

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.

A Cheap Cyanide Plant.

Sir: In your issue of October 30th is an account of a cheap cyanide plant, as described in the *New Zealand Mining Standard*. I would call your attention to the fact that this article is a verbatim copy of one published in a San Francisco paper about one year ago, descriptive of a small cyanide plant built by the writer at Hawthorne, Esmeralda County, Nev. Your criticisms of the plant and its novel construction are, in the main, justified; yet it answered the purpose of leaching several thousand tons of tailings (and very slimy ones) successfully. Recently, I hear, it is in bad shape; owing, I presume, to its not having been kept in proper repair.

Such cheap and frail construction is not to be recommended for plants that are expected to last 5 or 10 years, but when the amount of material in sight is small and will not justify an expensive plant it is a case of a cheap one or none.

ROSAIRO, MEXICO, Nov. 21, 1897.

M. A. KNAPP.

Gold in Sea Water.

Sir: Will you please inform me:  
 First—How much gold is held in solution in each ton of sea water?  
 Second—Is the amount in solution the same in different oceans?  
 Third—Is there any history of gold being obtained by any method from ocean waters?  
 Fourth—In what form or what chemical combination is the gold held in solution?  
 Fifth—Will the gold in solution in any form, but especially that in ocean waters, amalgamate on silvered plates, or on electrical plates?

An answer to above will be much appreciated.

SEASIDE, CAL., Dec. 1, 1897.

J. L. D. ROBERTS.

[Some of our correspondent's questions cannot be answered until the subject has been much more thoroughly investigated than it has been yet. A full and very careful statement of our knowledge as to the existence of gold in sea water will be found in the *Engineering and Mining Journal* for November 21st, 1896, and some suggestions for its recovery in the number for December 19th, 1896, page 580.—EDITOR E. & M. J.]

The Beam Process.

Sir: We notice in your valued journal of November 20th, 1897, an article from your special correspondent in Clear Creek County, Colo., claiming that the mining editor of the *Denver Republican* had made a thorough examination of the Beam process and intended to publish the same through his paper, but, for some unknown reason, failed to do so. We wish to deny emphatically that Capt. R. G. Dill, mining editor of the *Republican*, did, at any time, make any examination of our process, although he has been invited to do so.

CLAY B. STEELE.

DENVER, Colo., Dec. 4, 1897. President of the Beam Furnace Company.

Sir: In your issue of December 4th you give a reprint of an article relating to the experience of the St. Louis Sampling and Testing Works with the assay methods of Professor Aughey and Mr. Beam. In connection with this matter I may say that I was at that date chemist of the St. Louis Sampling and Testing Works and was witness to the whole procedure and can testify to the statements of Messrs. Thacher and Wheeler. I remember the incident with pleasure as a clever piece of work on the part of the sampling works.

H. AUG. HUNICKE,  
 WASHINGTON UNIVERSITY, ST. LOUIS, MO., Dec. 6, 1897.

Sir: In your issue of November 27th, page 634, portions of my report have been partially quoted, therefore unjustly, with reference to my opinion of the merit of the "Beam Process." I wish to make the following statement: The making of the test came to me in the line of business. The report, which I learn has now become public property, taken in its entirety, if carefully read, will prove that I have neither endorsed nor condemned the process, owing to the inadequate conditions prevailing for arriving at commercially possible results, so that for the present, so far as my opinion is concerned, I wish it to remain *in statu quo*.

DENVER, Dec. 2, 1897.]

GEO. C. MUNSON.

The Gold Mines of the Witwatersrand.

Sir: It is rather late to take up your editorial of April 10th last on the Witwatersrand mines, but there are two points in it of importance which I think should be commented upon in justice, as they materially affect the whole view of the position, and I think that you are mistaken in them. The first is where you state that the outcrop mines will just be worked out when the deep levels begin to produce, the latter, therefore, merely taking the place of the former and not increasing the gold output. This is not the case. It is just possible that when the third row of deep levels is in full swing a good many of the outcrops will be getting toward the end of their ore reserves, but that conjunction is many years ahead; the outcrop is nowhere near half worked out yet, and the first row of deep levels is gradually falling into producing stage month by month now. One-half at least of the outcrop mines whose grade is about 10 dwts., plate and cyanide, are shut down. The present average working costs of 35s. preclude their successful operation. With nominal working costs of about 15s. all these mines would be in operation, and some day they will be.

The second point on which I believe you are wrong is your statement that three-fourths of the 40 miles of Main Reef cannot be expected to pay. My reply to this is, that every mile of the Main Reef will pay, without exception, and pay handsomely, provided we have decent administration not otherwise. It is not the fault, therefore, of the Main Reef, but of the present government in Pretoria which has increased the burdens to be borne by the mines beyond any taxation yet applied by any civilized government to its chief industry. It is not fair to blame the grade of the ore for such a state of affairs.

JOHANNESBURG, S.A.R.

W. Y. CAMPBELL.

THE IRON ORE PRODUCTION OF MINNESOTA IN 1897.

Written for the Engineering and Mining Journal by Our Special Correspondent.

As navigation is now closed, and the shipping season is over, we are able to give approximately the output of iron ore in Minnesota for the year 1897. This production, by mines, was as follows:

Mine.	Tons.	Mine.	Tons.
Mountain Iron.....	765,000	Oliver.....	609,612
Fayal.....	642,939	Minnesota.....	592,106
Chandler.....	432,366	Mahoning.....	519,892
Biwabik.....	427,466	Genoa.....	309,514
Lake Superior.....	259,910	Pioneer.....	207,103
Adams.....	175,800	Auburn.....	175,263
Norman.....	101,000	Sparta.....	66,700
Commodore.....	60,797	Ohio.....	47,309
Zenith.....	40,817	Cincinnati.....	32,720
Roberts.....	18,614	Hale.....	13,728
Cloquet.....	12,215	Penobscot.....	11,933

There are in this list 22 mines, the three of the Lake Superior group being counted as one mine. A comparison by ranges with 1896 is as follows:

	1896.	1897.	Increase.	P.c.
Vermilion range.....	1,088,090	1,278,542	191,452	14.9
Mesabi range.....	2,882,079	4,280,619	1,398,540	32.7
Totals.....	3,970,169	5,559,161	1,588,992	28.6

The first mining in Minnesota was on the Vermilion range in 1884, and till the close of 1892 there were but three mines in the State, all being on that range. Mining was begun on the Mesabi range in 1892, and that range now leads the five Lake Superior districts with an output for this year of 4,280,600 tons. The Vermilion range, with an output of 1,278,542 tons, leads all its previous records. The greatest iron mining totals ever reached by any corporation in the world were made by the Minnesota Iron Company this year, its hoist and shipment being 2,259,248 tons.

The tonnages handled by the railroads this year have been as follows: Duluth & Iron Range, 2,651,273; Duluth, Missabe & Northern, 2,376,063; Duluth, Superior & Western, 531,825 tons.

The total shipments of iron ore from Minnesota since mining began in the State have been as follows:

1881 ...	62,124	1888 ...	511,953	1892 ...	1,171,895	1896 ...	3,970,169
1885 ...	225,484	1889 ...	844,682	1893 ...	1,434,241	1897 ...	5,559,161
1886 ...	304,396	1890 ...	880,894	1894 ...	2,734,352		
1887 ...	394,252	1891 ...	894,618	1895 ...	3,859,415	Totals...	22,817,646

There is every prospect at present for a large business next year, and all the companies are making preparations for it.

**Galvanizing Wire.**—At a recent meeting of the Franklin Institute, of Philadelphia, a paper was read by George C. Reese describing a new process of galvanizing wire, by which the wire is coated without the necessity of unwinding the coils. The coils or bundles of wire are first cleaned by acid. The whole bundle is then dipped into the bath of melted spelter, and when it has received a thorough coating it is quickly dropped into the basket of a centrifugal machine. For small or light coils the machine may be already in motion, while for heavier wire it must be started after the wire is put in. The surplus coating is almost instantly thrown off from the wire and an excessive speed is not required. The machine is stopped and the bundle of wire is removed as quickly as possible and is jarred upon a block to prevent the wires from soldering together. Parbed wire has been successfully treated by the new process after it has been twisted into shape and formed into bundles. When wire is galvanized before being barbed and twisted much of the coating cracks and peels off and the points quickly rust. Treated by the new process, the wire is more durable and retains its efficiency much longer. Wire cloth finer than eight meshes to the inch cannot be galvanized by the old method, while by the new process cloth of any fineness may be coated, if the speed of rotation is increased according to the fineness. Samples were shown of 12 x 13 fly wire 16 mesh, believed to be the first of the kind ever successfully galvanized after weaving.



**MATTE SMELTING AT THE HALL MINES, BRITISH COLUMBIA.**

Written for the Engineering and Mining Journal by Robert E. Hedley.

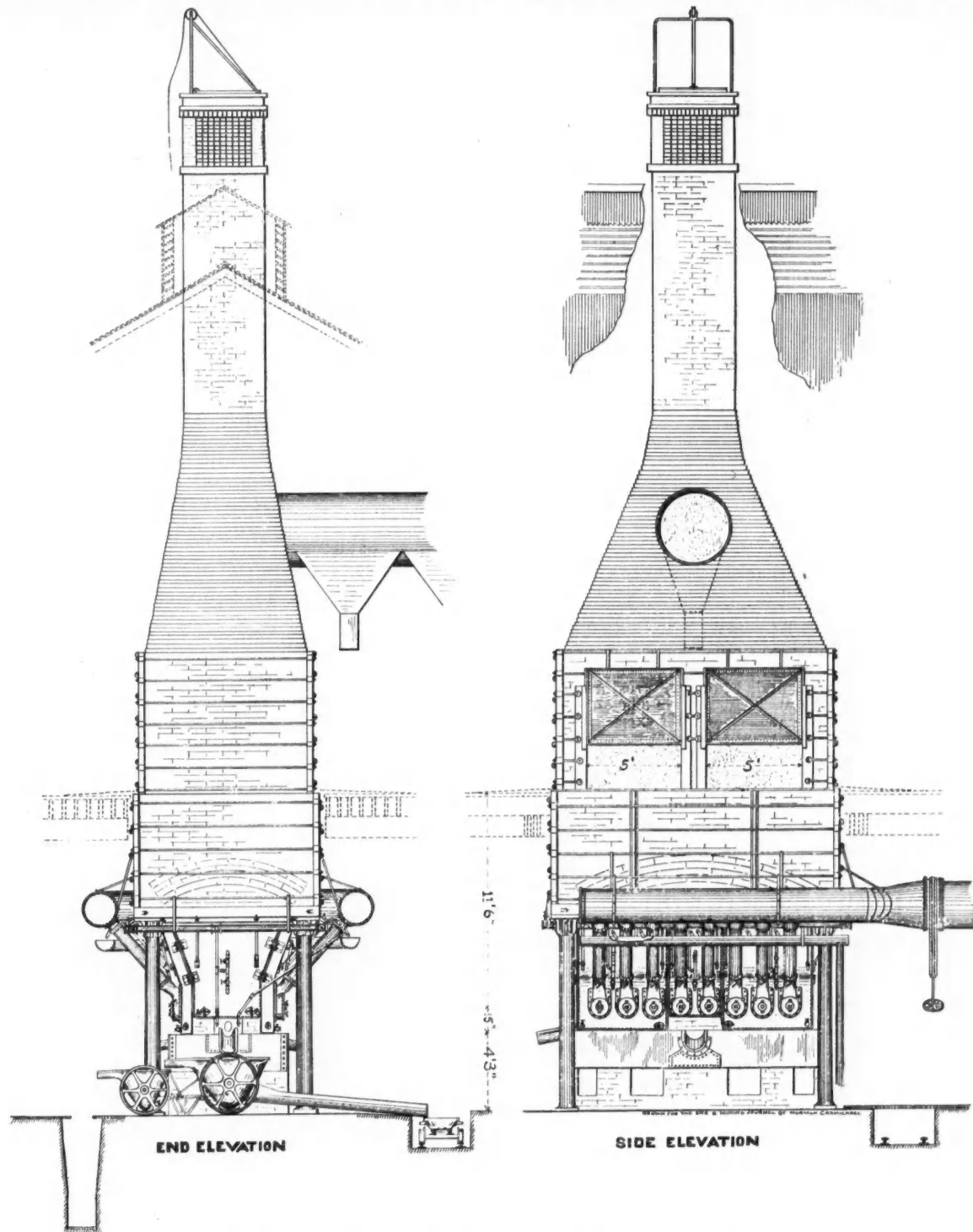
The matte smelting blast furnace in use at the works connected with the Hall mines in British Columbia is probably the largest furnace of its kind in North America, which is equivalent to saying in the world. It has now been in blast sufficiently long to demonstrate its capability, and the following description will be undoubtedly of interest:

The furnace was blown in September 4th and had worked to November 5th, the date of writing, 60 days. During that time it smelted 14,676 tons

of charge into one of matte, but the furnace has run successfully with a concentration of over 20 to 1. A great point in favor of this furnace is that it will handle a very large proportion of fine ore.

The character of the ore is chalcopyrite, bornite, tetrahedrite and kindred minerals in variable gangue, which gives an average composition of silica 33%, ferrous oxide, 9.5%, manganese oxide 8%, lime 7.5%, magnesia 4%, alumina 15%, copper 4%, sulphur 3.2%. Limestone, the only flux generally used, carries about 10% silica, and the resultant slag has a composition of silica 43%, lime 15%, ferrous oxide 12%, manganese oxide 9%, alumina 18%, slags have averaged for two months 0.345% copper and 1.15 oz. silver per ton.

This furnace was designed and erected by Mr. Paul Johnson, late su-



**BLAST FURNACE AT THE HALL MINES SMELTING WORKS, BRITISH COLUMBIA.**

of charge, of which 1 587 tons was barren flux, chiefly limestone. This shows an average of 244.9 tons smelted daily. Under favorable circumstances, it is possible to smelt 300 tons per day, as proven by the 24 hours ending 6 a. m., November 5th, the actual tonnage passed through the furnace being 273.9 tons ore and 30.1 tons limestone; and again on October 30th 277.2 tons of Silver King ore and 30.8 tons limestone. The average tonnage for the seven days ending November 5th was 282.5 of charge. In addition to this, note may be taken of the fact that 200 lbs. of slag is added to every ton of charge.

The percentage of coke used varies between 14½ and 16%, according to the quality of coke, and amount of sulphur in the charge. The matte produced during the period of 60 days mentioned was 1,029 tons, averaging about 49% copper, wet assay. The concentration is about 14.25 parts

per hundred of the works. Its dimensions are: area at tuyeres, 144 in. by 44 in. at top of jackets—which are 5 ft. 6 in. high—144 in. by 64 in., and at feed floor 160 in. by 72 in. The total height of columns is 12 ft. 6 in., but charge is generally maintained 4 ft. lower, varying, however, with conditions of charge, etc. The tuyeres, eight in number on each side, are reduced from 6 in. to 4½ in. The center of tuyere is 24 in. above the bottom, as originally constructed. The bottom is supported by a cast-iron plate resting on six jack-screws carried by a truck, and consists of a coil of 2-in. water pipe bedded in steep (brasque), and a course of firebrick on end. On this the furnace makes its own bottom, which probably is now about 4 in. higher.

Provision is made for tapping on the side, but the end tap only is used. The flow is practically continuous, separation being made in a large con-

ical pot of special manufacture. A second settler is used of similar form, but smaller, and thence the slag flows into a powerful stream of water. It would be interesting to know if there are other furnaces in service that have dimensions similar to this, and what their capacity is.

#### THE NEW SMELTING RATES IN COLORADO.

While the recent meetings of the smelters have not, it is claimed, resulted in the formation of any trust or combination, such as has been reported, there has been a general adjustment of business and a partial division of territory, which will result in a more even distribution of ores. For Colorado ores a new schedule of charges has been adopted, and while this has not been officially published, the statement below, our correspondent learns, is substantially correct. The rates are not binding on the smelting companies, but give the basis to figure on for payments made to the samplers for ores. The large producers have usually their own standing contracts with the smelters. The schedule is substantially as follows:

**Gilpin and Clear Creek County Ores.**—The charges on these ores are substantially unchanged. For dry and copper ores the following are the rates fixed: Gold is paid for at the rate of \$19.50 per ounce when the ore contains 0.05 oz. or more in gold; for silver, 95% of the New York quotation is paid; copper, dry, is paid for at \$1 per unit. Treatment charge, Denver delivery, \$7.50 per ton; no extra charge is made for silica when the ore contains no more than 40%, the excess above 40% being charged for at the rate of 10c. for each per cent, and an allowance of 5c. for each per cent. below 40% being made up to a maximum treatment charge of \$9.50 per ton for ores not exceeding \$25 per ton gross value and \$11 for ores exceeding \$25 gross value; ores containing zinc not to exceed 5%. no extra charge, and 30c. extra charge for each per cent. of zinc above 5%.

Lead ores are paid for as follows: Gold, when ores contain 0.05 oz. or more \$19.50 per ounce; silver, 95% of the New York quotation; lead on the basis of \$4 per 100 lbs.; no charge for zinc up to 10% and 50c. for each per cent. in excess of 10%. Lead contained in the ores is settled for as follows: For 5 to 10%, 40c. per unit and \$11 treatment charge; 10 to 15%, 40c. per unit and \$9.50 treatment charge; 15 to 20%, 40c. per unit and \$7.50 for treatment; 20 to 25%, 40c. per unit and \$5.50 for treatment; 25 to 30%, 45c. per unit and \$5 for treatment; 30 to 35%, 45c. per unit and \$3.50 for treatment; 35 to 40%, 45c. per unit and \$2 for treatment; 40 to 45%, 47c. per unit and \$1 for treatment; 45 to 50%, 50c. per unit and \$1 for treatment; over 50%, 55c. per unit and \$1 for treatment. All treatment charges Denver delivery.

Tailings and concentrates: Gold, when ores contain 0.05 of an ounce or more, \$19 per ounce; silver 95% of the New York quotation; lead in concentrates and tailings upon a \$4 basis, 40c. per unit if ore contains 5% or more; 10% of silica allowed without extra charge, 10c. charged for each per cent. above 10.5% of zinc allowed without extra charge, 30c. charged for each per cent. in excess of 5; treatment charge, \$3.50 per ton in carload lots, Denver delivery.

The Gilpin and Clear Creek schedule refers only to carload lots shipped directly from the mines.

**Aspen Ores.**—In the Aspen district the following schedule was made: For silver, 95% of the New York quotation; lead, 55c. per unit upon the basis of \$4 per 100, when the ores contain 3% or over; treatment charge, \$4 per ton, delivery at Pueblo or Denver; for excess of silica over iron, a charge of 10c. for each per cent. of such excess; for excess of iron over silica, an allowance of 10c. for each per cent. of such excess; an allowance of 10c. for each per cent. of lime; a charge of 20c. for each per cent. of sulphur; a charge of 30c. for each per cent. of zinc in excess of 5%. All contracts for Aspen ores to be made directly with the mines.

**Leadville Ores.**—The Leadville carbonate schedule is as follows: On all ores up to and including \$8 in value, gold, silver and lead—from 0 to 5% lead, no allowance for lead, \$7.50 per ton for treatment; 5 to 10% lead, 35c. per unit, \$7 for treatment; over 10 to 15% lead, 35c. per unit and \$5 for treatment; over 15 to 20% lead, 40c. per unit and \$3 for treatment; over 20 to 25% lead, 42c. per unit and \$2 for treatment; over 25 to 30% lead, 43c. per unit and \$1 for treatment; over 30 to 35% lead, 45c. per unit and no charge for treatment; over 35 to 40% lead, 47c. per unit and no charge for treatment; over 40 to 45% lead, 50c. per unit and no charge for treatment; over 45 to 50% lead, 52c. per unit and no charge for treatment; over 50 to 55% lead, 55c. per unit and no charge for treatment; gold is to be paid for at \$19 per ounce if the ore contains 0.05 or over; silver at 95% of New York quotation; lead on the basis of \$4 per 100 lbs.; no charge is made for zinc or sulphur up to 5% of each, but when in excess of 5%, 50c. is charged for each per cent. of such excess of zinc and 25c. for each per cent. of such excess of sulphur.

On ores carrying more than \$8 and up to \$20 inclusive, all values, there is a reduction of 50c. per ton from the above schedule of treatment charges; on ores running over \$20 and up to \$35 inclusive, the schedule charge for treatment will be made; on all ores carrying over \$35 in value, \$1 will be added to the schedule charge for treatment. For all excess of iron over silica, an allowance of 15c. for each per cent. of such excess; for all excess of silica over iron a charge of 15c. for each per cent. of such excess. Ores containing less than 5% lead and more than 30% iron are classed as iron ores. No allowance shall be made for the lead contained in oxidized iron.

Oxidized silicious ores carrying under 5% lead and having a value of \$12 and under, \$7 treatment; over \$12 to \$20 inclusive, \$8 treatment; over \$20, \$9 treatment; 95% of New York quotation for silver; \$19 per ounce for gold, if the ore contains 0.05 oz. or over.

Silicious lead ores containing 5% of lead and over the rates for carbonate ores are charged until the treatment charge reaches the rates upon dry silicious ores, after which the latter treatment charges will be made.

Dry sulphide ores of the value of \$12 and under, \$9 treatment; over \$12 to 30 oz. silver per ton inclusive, \$10 treatment; over 30 to 50 oz. inclusive, \$10.50 treatment; over 50 oz., \$11.50 treatment; dry copper, \$1 per unit; no extra charge made for zinc up to 10%, 50c. charged for each per cent. in excess of 10% up to 15%, and 30c. for each per cent. above 15%; 95% of the New York quotation for silver and \$19 per ounce for gold if the ore carries 0.05 oz. per ton or over.

All Leadville charges are based on Leadville delivery on cars.

**Cripple Creek Ores.**—The schedule for the process mills is as follows: For milling ores carrying 2 oz. per ton or under, \$19 per oz. is paid for

the gold and 95% of the New York quotation for silver. The charges are, for ore of  $\frac{1}{2}$  oz. or under, \$8 per ton;  $\frac{3}{4}$  oz. to 1 oz. per ton, \$9; 1 to  $1\frac{1}{2}$  oz. per ton, \$10;  $1\frac{1}{2}$  to 2 oz. per ton, \$11;  $2\frac{1}{2}$  to 3 oz. per ton, \$12.

On smelting ores, carrying more than 2 oz. per ton in gold, \$20 per oz. is paid for the gold and 95% of the New York quotation for silver, if the ore contains 1 oz. or more per ton; treatment charge, \$10 per ton, Denver or Pueblo delivery.

**Other Districts.**—In Red Cliff, Belden and Gilman the ores are governed by agreements already made, and agreements will be made for all new shipments in the future. Creede shipments are determined by the general agreement governing the renewal of contracts.

No change is made in the Breckenridge and Park County districts.

#### A METHOD FOR DETERMINATION OF IRON IN ORES.

Written for the Engineering and Mining Journal by A. B. O. Davis.

The method given below for determining iron in ores has been used by the writer for smelter determinations at the Cleopatra Mines, Ouray, Colo., with much satisfaction, and it may be of use to many others. It may possibly be already in use elsewhere, but if so, he has no knowledge of it.

**Method.**—Digest 1 g. ore in 10 c. c. strong nitric acid, adding 5 c. c. hydrochloric if the substance is difficult to decompose (the latter is preferably added after the nitrous fumes are mostly expelled). When decomposition is complete, add, without removing from heat, 10 c. c. concentrated sulphuric acid, boil till nitric and hydrochloric acids are completely expelled; remove from source of heat, and when cool add 50 c. c. water and boil till all soluble sulphates are in solution, and filter into a copper flask, washing the filter thoroughly with hot water. To the solution in flask add three or four strips of heavy aluminum foil (free from iron) and boil till the iron is entirely reduced to the ferrous state, which may be determined by ammonium-sulpho-cyanate in the usual manner; when the solution is ready for decantation, and titration with standard solution of potassium permanganate. If copper is present in the sample, it will be found precipitated on the aluminum, and its percentage may be determined by either the cyanide or iodide method, if required.

#### MAGNETIC SEPARATION IN SWEDEN.

According to *Stahl und Eisen* Professor Wiborg, of Stockholm, has devised a method of magnetic separation which is now being tried on the high phosphorus ores of the Gellivara mines in Sweden. The iron is recovered or sorted out by powerful magnets, while the apatite is left and is utilized for its phosphoric acid contents. This method has been found successful with all ores in which the magnetite and apatite are not too intimately combined. In the Gellivara ore the two minerals are found in such distinct forms that separation by magnetism can easily be accomplished. At Gellivara the ore is assorted by hand into the following grades: A, 0.03 to 0.05% P; B, 0.05 to 0.10% P; C1, 0.10 to 0.50% P; C2, 0.50 to 0.80% P; D, 1.00 to 1.35% P; E, 1.50 to 3.00% P; F, nearly pure apatite. The last named is rare.

Only those Gellivara ores which run up to 65% iron, and are below 0.05% phosphorus are used in Sweden. The higher phosphorus ores are sent chiefly to Germany, where they are used in making Thomas (basic) pig iron.

Complaint has been made in Germany that a portion of the Gellivara ores reach the consumers in such a fine state of division that they do not work well in the furnace; just the same objection as is made to some of our own Mesabi ores. To obviate this a plant is being erected at Lulea, the shipping port for the Gellivara mines, where the fine ore will be treated by Professor Wiborg's process, and made into briquettes for shipment. The apatite separated will be worked up into commercial phosphate. This plant will have a capacity of 150,000 tons a years.

**A New Process for the Extraction of Nickel.**—Thos. Storer, of Glasgow in English patent 22,721, October 13th, 1896, proposes a new process for the treatment of New Caledonian ores. After being finely ground, the ore is treated in a closed vessel with a solution of ferric chloride at a temperature of 370° Fahr. for five to eight hours. The solution of nickel chloride is then run off, any traces of ferrous salt thrown down with chalk, and the nickel recovered in any suitable way. The insoluble ferric oxide is washed, and forms a red pigment. Ores containing 5 to 8% of nickel require about 1,700 lbs. of ferric chloride to the ton.

**The Electro-Chemical Company, Limited.**—At the recent annual meeting of this English company, the chairman pointed out that though the commencement of their business had been impeded owing to the inefficiency of the first machinery supplied, they now had excellent engines and dynamos, and good workable plant, giving the best possible results. The machinery of five installations, amounting to 3,500 E. H. P., were all fixed and in position on the premises, and arrangements had been made for a further 1,600 E. H. P., making in all 5,100 E. H. P., or over 6,000 S. H. P. They were now turning out in considerable quantities by their electrolytic process excellent 70% caustic soda and bleach ranging from 37.5% to 38%, as well as the purest chlorate of potash, 99.8%, at a cost, that, even in these days of low market prices, left them a fair margin of profit. Samples of these electrolytic products were produced, and carefully examined by those present. The chairman added that the business generally was being carried on profitably, the present weekly output being about 70 tons of 70% caustic soda, 130 tons of 37 to 38% bleach, and five or six tons of exceptionally pure chlorate of potash. It was hoped, however, that these amounts would shortly be very considerably increased, and there was a ready sale for all their products at good prices. The company had sold its Japan patent for £6,000, half of which amount had already been received in cash; the balance payable next January. It had also sold the French, Belgian and Russian patents for £37,000, and arrangements were being made for the sale of other foreign patents.



## THE LATEST NEWS FROM THE KLONDIKE-YUKON COUNTRY.

We referred in our issue of last week to the letters sent from the Klondike country by Mr. John D. McGillivray, the special correspondent of the *New York Herald*, as the first sent to the daily press by a mining man of experience; though an expert opinion on the region was given by Mr. H. Bratnuber in the *Engineering and Mining Journal* of October 23d last. Mr. McGillivray's accounts are so evidently truthful and carefully prepared that we give below some extracts from his latest letter published in the *Herald*, which is dated at Dawson City, October 17th:

"Nine out of ten of the numbers who have come to the Yukon in the rush now wish they were back home. They have learned that there are no mines for them and that wages at \$15 a day is a myth. It should be borne in mind by all who think of coming here that with all the prospecting that has been done by hundreds of experienced men during the past 10 years only one discovery has been made of ground that will under present conditions pay large profits, and that is on Bonanza, and its tributary, Eldorado Creek. None who come here now may hope to obtain mines on these creeks, except at exorbitant prices. There have been many stampedes of late, but there have been stampedes for years along the Yukon upon the reports of rich discoveries, and all who have joined in these rushes have been disappointed with the exception of those who came to the Klondike.

"There has been a rush to Munook Creek, and locations are selling there for as much as \$5,000 each. This is all based on the fact that one man found a good prospect at the bottom of a shaft last spring, and the further fact that food is more accessible there than elsewhere. It is possible that Munook will turn out to be another Eldorado, but no more probable than that Coal Creek, Mission Creek, American Nation, Henderson or a dozen others will turn out rich. The chances of finding another creek as rich as Eldorado are very small. One may be found—a dozen may. It is possible that another Cripple Creek will be found in Colorado, but that is no reason why all the world should rush to Colorado. There is nothing left for those who are now coming, or are here and waiting for some one to start a stampede, to do but go out prospecting or work for wages. Wages will probably be \$1 an hour. If they shall be \$1.50 an hour the mine owners say that they will not employ many men. In winter men can work but seven or eight hours a day. Fifteen dollars a day has seldom been earned at wages except in a few summer claims.

"The only other alternative is to go out prospecting. To simply live here involves hard work. But to prospect means hardship and privation that none but the most hardy can endure. One must carry his tools, bedding, stove and food on his back over the most wretched roads, or after the winter has set in pay freight at the rate of 10 or 15c. a pound. In summer freight is from 25c. to \$1 a pound from Dawson or Circle City or Forty Mile out to the creeks. To the prospector this is prohibitive, for to move out to one of the creeks with a small outfit takes a long time. One must build a cabin or sleep in a tent with the thermometer registering at times 70° or 80° below zero.

"Prospecting itself when on the ground involves much more labor for the results than on any other mining district in the world. It is seldom that the pay dirt is to be found uncovered, and shafts must be sunk to bedrock by thawing the ground with fires and digging out. The pay channel, as it is called, is generally from 15 to 50 or 60 ft. wide. In order to locate it, prospect shafts must be sunk at short distances across the valley of the creek, which may be from 100 to 1,000 ft. wide. A season may be lost in prospecting in one or two rows of holes. They may be sunk where there is no good pay in the creek, while rich ground may be found later a few hundred yards above or below.

"In California in early days prospecting along the creeks was simple and easy. The pay was in or near the creek beds. One could follow up a stream and pan out a little here and there until he came to rich ground. To prospect miles of creeks was the work of a few days. Here it is all different. In the first place the gold is not in the beds of the present streams nor in such bars as bordered the California creeks, but in the 'till' or ground moraines of ancient glaciers left there ages before the streams began to cut their present channels, and a week's hard work is necessary to reach it through the muck and gravel that cover it. A man could prospect miles of creeks in California in those days in a week easier and more thoroughly than he could 100 yds. of one of these creeks in a year. Here there has been only one force at work—that of the glacier. Practically all the rich gold-bearing deposits of the Klondike district on Eldorado and Bonanza Creeks are but the ground moraines of great glaciers of the ice age. In all parts of the Yukon country are to be found alluvial deposits in the shape of bars and benches, which contain gold, it is true, but so far none has been found to compare in richness with the gold-bearing deposits of Eldorado and Bonanza creeks, which have been the cause of this useless influx of thousands from the outside world.

"The best proof of the fact that there are already here many more persons than can hope ever to obtain claims without going far away is in the figures of the Gold Commissioner as to the number of locations that have been made. The whole length, practically, of every creek within a distance of 40 miles, and in some directions more, has been located. These creeks include Eldorado, Bonanza, Hunker and other tributaries of the Klondike River as far up as All Gold, 50 miles away; Sulphur, Dominion and Quartz, branches of Indian; Henderson, a branch of Stewart, and Bryant, Montana, Deadwood and Adams, branches of the Yukon.

"Yet all these locations, together with a few in the Forty Mile district, do not exceed in number 1,800. But under the mining laws a man may locate one claim in each division of the Yukon district. There are eight divisions, and many men have claims in several of these. So it is safe to say that about 1,000 men own all these claims. There are in Dawson and in the mines of these districts at the present time certainly over 4,500 persons, and probably 5,000. Besides this there are of those who came in late by St. Michael and those who went down to Fort Yukon in order to obtain food, certainly not less than 1,000 who intend to come here as soon as navigation opens in the spring. There are coming into Dawson from up the river daily from 20 to 40 men in small boats. It is said by those who have come in last that there are at least 1,000 men on the road who have crossed the passes and will winter on the trails and come in early in the spring.

"From all indications this is a low estimate. In other words, there are here, or near here, and to come as soon as roads are open, 7,000 men, and there are mines in the district for 1,000. The other 6,000 can only hope to work for wages or go long distances from here to prospect. Of all the mines located not more than 250 have been proved to be of value under present conditions, and of these many will not be worked full handed until wages are still further reduced. So far as can be learned from the mine-owners themselves, about 1,000 men will be employed in the mines if wages are \$1 an hour. Then as many more will work on lays. In addition to these, not more than 1,000 will work on their own claims prospecting, developing or mining them, making in all about 3,000 men employed in the mines.

"Yet it is probable that not so many will have supplies of provisions to last them until spring. Of the rest of the population of the district 1,500 or more will be idle, unless they move out and prospect. When the winter work is over there will be employment for far less men in summer or sluice mining, and with those coming there will be but a small proportion of the men here employed unless new mines are discovered.

"There have been during the last decade many thousand men in the Yukon country prospecting and mining all the way from the Hootalinqua River to the Koyu-Kuk, a distance of 800 miles in a straight line. Hundreds have gone away poor in pocket and broken in health by the rigors of the climate, hardships and privations. Up to two years ago but one of all these men had made a respectable amount at mining, and that was only \$50,000, made by John Miller, who in three years took that out of his mine on Miller Creek in Forty Mile district. Since then probably half a dozen men have made that much in the Birch Creek district. There are in the Klondike district but few mines that will do better, as far as is known now. There are not more than 250 mines in the district that have been proven to be of sufficient value to work at a profit under present conditions. All this does not offer much encouragement to those coming here. Yet the Yukon country has been heralded to the world as one of the greatest of mining districts. It certainly is, but the bulk of its yield of bullion will come from mines that to-day and under present conditions cannot be worked at a profit.

"The high prices, the scarcity of the necessaries of life and the difficulties of travel and transportation make it impossible for poor men or men of small means to work any but exceedingly rich claims. The cost of working is from \$5 to \$20 per cubic yard. Similar deposits are worked under similar conditions and by almost the same methods in Siberia for 50 cts. per cubic yard. Ground worth there \$5 per cubic yard pays a high profit. Here it cannot be touched. The mine owners held a meeting two weeks ago, at which it was decided to pay only \$1 an hour wages from October 1st to June 1st, 1898. Wage earners have held several meetings, at which they have agreed to stand out for \$1.50 an hour, and in two cases have compelled men who were working for \$1 an hour to quit. A meeting was held by them, yesterday, and it was determined to stand out. Neither side up to the present time could tell its strength. The mine owners are better organized, and many of them are in a position to let their mines lie idle rather than pay the higher rates. At Circle City last winter the claim owners were trying to reduce wages to 80c. an hour, when the Klondike miners offered \$1.50. After the dumps had been made ready for sluicing and stripping was begun for summer work a number of claim owners on Eldorado attempted to reduce the rate to \$1. An informal combine was formed for the purpose, but it happened that many of these men had purchased their claims, paying down a little cash and agreeing to pay the balance by July 1st out of the ground. The days went by and the wage earners refused to work. Soon the lockout was broken and the men went to work at \$1.50 an hour. A very few of the mines, and those are nearly all on Eldorado, can pay \$1.50 an hour and leave themselves any profit.

"While the amount of gold that has been produced by the Klondike mines is very large for the number of cubic yards of ground drifted and sluiced, it is much less than has been generally reported. It is safe to say that the total yield so far has been less than \$3,000,000 from Bonanza and Eldorado creeks. Correct figures might show less than \$2,500,000. In making up estimates that have been published it is often that the sums taken down to San Francisco and Seattle by men who have sold their claims have been counted twice, once as part of the amount mined from the claim it came from, and again as mined by the man who received it as pay for his claim. Again, one hears here of cases where men went away with small sums and have been reported on the outside as having large fortunes. One government official left here in the summer with \$1,300. He was reported as having made all the way from \$90,000 to \$163,000, and he writes back that his poor relations are making life a burden.

"Captain Healy, manager of the North American Transportation and Mining Company, estimates that the output of gold from winter drift mining was about \$2,000,000, and that from summer sluicing between \$500,000 and \$700,000. As to the probable yield for the coming winter and summer, the estimates depend upon the number of men that will be employed. If wages shall not exceed \$1 an hour and no rich discoveries draw many men away, Edgar Mizner, the secretary of the Mine-owners' Association, says the yield should reach \$11,000,000 from these sources; Eldorado, \$4,000,000; Bonanza, \$4,000,000; Hunker, \$1,500,000; small creeks and branches of these and side hill claims, \$500,000, and from other creeks in the district, \$1,000,000. Captain Healy says that with wages at \$15 a day the yield may not exceed \$5,000,000, for in that case the richest mines would make small outputs, while the poorer mines, being worked on lays, would not be affected."

**Manganese Exports from Spain.**—In the 10 months ending October 31st there were exported from Huelva, Spain, 87,103 metric tons of manganese ores. Of this 79,663 tons went to Belgium.

**Coal Imports in Chile.**—According to British Consular Report No. 1991. Annual Series, the imports of steam coal in 1896 amounted to 565,898 tons, and of smelting coal to 53,075 tons against 590,043 and 64,797 respectively in the previous year. The decrease is due chiefly to the rapidly increasing consumption of native coal and to the shutting down of the nitrate works.

## NOTES ON BY-PRODUCTS IN GOLD MILLING.\*

By Charles Butters.

By-products may often be an item of importance in the economy of a mining and milling plant. The attention of managers and directors should be given to these sources of income, and regular quarterly account sales of these by-products should be required. Too frequently the battery is utilized as the great sewer through which these valuable products disappear along with a large proportion of their values. The subject, which is treated with special reference to the practice on the Witwatersrand, may be divided into six heads.

## 1. BY-PRODUCTS FROM STAMP MILLS.

In the process of amalgamation we have the inside copper plates, the screens through which the pulp passes and the outside copper plates, brushes and rags that are used to clean the plates with, the screen frames, mortar boxes, shoes and dies; all these come in contact with the gold and quicksilver and take up more or less amalgam. The ordinary clean-up gives the plate scrapings, which contain, beside the gold amalgam, particles of iron, sand, iron pyrites, especially magnetic iron pyrites when present, bits of copper, sometimes a little grease, and various colored metallic films that spread over the plates as a result of the decomposition of pyrites and other sulphur compounds. This amalgam is then cleaned by grinding and washing, generally in an amalgamating barrel with various chemicals, such as lime, cyanide of potassium and other chemicals special to the individual amalgamator. Into this barrel is also put the ashes which result from the burning of the chips, rags, brushes, scalings from the screens, the cleanings round the dies, and all the odds and ends round the amalgamating room that may contain a little amalgam. As a rule this barrel is a grinding barrel, and its products at the finish of the operation are clean amalgam, fine silica, slime, and water containing various chemicals. At many of the best mills, when the barrel is empty all these various products are saved, because complete amalgamation of all the gold contained in the barrel has not by any means taken place. Some of the quicksilver has been floured, some of the hard amalgam has been ground up into an impalpable powder, and in the grinding up of the pyrites some of the amalgam adhering to the fine grains of the pyrites is floured. Where cyanide has been used, which is frequently the case, some of this floured gold has been dissolved. Hence, besides looking after the amalgam from this barrel, the sands and slimes should be most carefully settled and the water drained into a collecting tank filled with scrap iron, old zinc, cyanide cases, bits of screens from the battery—in fact, any old scrap iron that may be about that might contain gold. This tank is acidulated with sulphuric acid, and the sludge from it, in addition to the slime and sand settled from the washing of the amalgam, can be sent away for treatment. The value of this product will vary from 50 to 300 oz. to the ton. The sludge tank should be cleaned up once or twice a year, and the sands and slimes twice or four times a year, according to the size of mill. The remarks apply to any form of grinding pan or other machine for cleaning amalgam. The value of this product and the weight obtained varies, of course, with the size of the mill and the richness of the ores. In a 100-stamp mill from 40 to 50 oz. may be easily obtained from this source per month. In many mills this material is run straight to waste. The screens after being rusted and beaten, still contain about 2 oz. to the ton, and can be readily sold as a blast furnace flux or worked up for ferrous sulphate in a chlorination works, and the sludge from this afterward treated. The copper plates, after being worn out and cast to one side, still contain, after most careful scaling, gold enough to make them worth more for their gold contents than for their copper value. These should always be sold to a refinery. The iron chips, which are known as battery chips, always contain more or less amalgam, even after the most careful rusting and cleaning. A very efficient and cheap way of rusting battery chips, old screens, and any old iron that may be suspected of containing amalgam, is to make a bed of clean concentrates—that is, concentrates containing as much sulphur as possible—and bed the screens and chips in alternate layers of screens, chips and concentrates, and keep this bed watered with a solution of warm water and salt for about a month or six weeks. At the end of that time, if this has been done in a warm place near a boiler furnace, or, if that is not obtainable, under a glass frame, in the same way as a forcing bed for flowers would be arranged, this material can be dried and put through a ball mill. What iron is left from the chips, or pieces of iron, would be so deeply rusted that all amalgam is scaled off, and the screen will be found to have disappeared and pulverized. This product is then available for the blast furnace or chlorination works. The gold obtained from these various sources is quite sufficient to warrant the serious attention of the amalgamator.

## 2. BY-PRODUCTS FROM CYANIDE WORKS.

The by-products that are obtained from the cyanide works are very much less in the case of fresh unoxidized ores than from acid or partly oxidized ores. Where the ores crushed have been exposed to atmospheric influences and are partly weathered, the products of incomplete decomposition of the iron compounds always introduce a series of complications in the solution and precipitation of the gold that increases the amount of by-products, whether the gold so dissolved is precipitated by chemical or electrical agency. In the case of the unweathered pyritic ore, or of perfectly oxidized ore, a solution is obtained comparatively free of iron salts, but in the case of a partially oxidized ore the ferrous and ferric salts produced form, with cyanide and alkali, ferro-cyanides and ferrous and ferric hydrates. These diminish the efficiency, more especially of the chemical precipitating agency, and also increase the amount of sludge obtained from the electrical precipitation boxes. In the case of these acid ores a comparatively large amount of lime is needed, which, going into solution in the shape of hydrate, carbonate and sulphate of lime, crystallizes out in the zinc box and in the electrical precipitating box upon almost everything that it comes in contact with, more or less destroying the precipitating surfaces. This is a serious

difficulty in the treatment of acid slimes. The surfaces of the lead cathode are almost completely covered after a few weeks by these comparatively insoluble lime salts, which gradually slip off the lead surfaces. By carrying down gold they thus tend to enrich the precipitates in the bottom of the boxes, as well as the floating precipitates which pass through the boxes and out into the sump. In zinc precipitation everything that accumulates in the box in the way of slime is taken as the main clean-up. The particles which flow away from the box in mechanical suspension in the form of insoluble complex cyanides and hydrates, clayey matter, insoluble humus which has been precipitated from humic acid, and, in fact, any flocculent precipitates that may float through the box, will always carry gold along with them, which may be partly deposited in the sump. Hence one might properly say the only by-product produced directly from the zinc precipitation boxes, outside of the products resulting from the treatment of the zinc slimes, are the precipitates obtained from either the settlement of the precipitated liquors, or the precipitate obtained by filtration of all the liquids after passing through the zinc box. Under ordinary conditions, in a well-conducted cyanide works treating fresh ores, filtration of the precipitated solutions merely to obtain the floating matter from the zinc boxes would not pay, but where acid ores are treated, the precipitated sludge obtained from the sumps is of sufficient importance to warrant its careful collection. This precipitate varies in value from 1 up to 20 oz. to the ton. Precipitates so obtained from the Sumner and Jack cyanide works, where fresh pyritic ores have been treated, assayed 2.9 oz. During the precipitation of rich solutions, running from 5 oz. to 8 oz. to the ton, flocculent precipitates assaying 14 oz. per ton, and composed of zinc cyanide and zinc ferro-cyanide, insoluble in the dilute liquor used, were carried over into the sumps. A skimming taken from the top of the treated tank partly mixed with exhausted residue gave an assay of 0.8 oz. per ton, due mainly to finely divided precipitated gold which had been pumped back. Black skimmings of organic matter, resulting in the same way from the filtering through sand of precipitated liquors, give an assay of 0.25 oz. per ton. I consider it worth the attention of cyanide managers to see that the sumps are regularly cleaned of sludge, which may be dried by pouring into a small enclosure or dam made of tailings in the open air. After two or three weeks this material is dry enough to sample and assay, and in nearly every case will be found rich enough to sell to the smelting works. The gold in precipitates so obtained is not so easily soluble in cyanide solutions unless special preparation is given to their proper oxidation, either by means of preliminary roasting or long-continued exposure to aeration and agitation with cyanide solution in an agitating vat.

## 3. BY-PRODUCTS OBTAINED FROM SIEMENS &amp; HALSKE PRECIPITATION BOXES.

In the Siemens & Halske boxes the main clean-up is obtained from the melting of the lead cathodes. Whatever else is obtained from the box in the shape of gold is termed gold from by-products. The sources of these by-products are the insoluble compounds of iron and cyanogen. The iron of the anode oxidizes, forming ferrous hydrate, which partly unites with the cyanide in the solution forming ferro-cyanide, from which Prussian blue is derived, and partly undergoes further oxidation to ferric hydrate. A portion of these precipitates settles in the bottoms of the boxes, and a portion floats through them into the sump, where they become by degrees oxidized to the ferric state. This precipitate also adheres to and saturates the sacking which covers the iron plate, when, after long usage, this sacking becomes rotten it is removed and burnt, and the anodes are likewise carefully scaled of oxide. The value of the Prussian blue, of the ashes resulting from the burning of the sacks, and of the scalings of the plates vary with the care and regularity with which the process has been carried on. In a sand plant where all the solutions come filtered clear to the boxes the Prussian blue may be cleaned up for sale every two months, and may contain from 5 to 50 oz. to the ton. The product from the sacks and the plates, which is obtained once every one or two years, may have about the same average value as the Prussian blue. The value of these by-products has averaged, so far, at the Worcester, which is the oldest Siemens & Halske sand plant, about 25 oz. for scalings in 1895 and 21 oz. for scalings in 1896, 21 oz. for Prussian blue in 1895 and 9 oz. for Prussian blue in 1896. In a slime plant the difficulty of obtaining an absolutely clear liquid for precipitation introduces a certain amount of ore slime which becomes mixed with the Prussian blue, thereby increasing the quantity and decreasing the value of this product. With fresh slimes a clearer liquid and less mud is introduced into the precipitation boxes than with acid slimes. What with mud from imperfect settlement, precipitated lime salts and the formation of insoluble sulphates and hydrates and complex cyanides, any precipitation process, no matter how perfect, is very much handicapped. To prevent this state of affairs in the precipitation boxes I am now constructing sand filters to clarify the liquid before precipitation. When a sand and slimes plant are worked together, a large proportion of the solutions decanted off from the slimes can be clarified by passing through the sand vats as a wash. The precipitates which form in the boxes themselves do not have nearly so bad an effect as the introduction of a small amount of finely divided silica or clay. While there may not be over 1 oz. to the ton of finely suspended siliceous slime in the liquid flowing through the box, still this small quantity coats both the anode and cathode with a fine film of non-conducting material, thus preventing the gold from adhering firmly to the cathode, as well as raising the voltage in the box. Hence the clarification of the solutions, whether from fresh or accumulated slimes, will tend to reduce the amount of by-products which must be sold and increase the percentage of gold directly obtained by the melting of the lead strips.

(To be concluded.)

Copper Telegraph Wires.—Some time ago attention was called to the fact that the Western Union Telegraph Company was using copper wire exclusively on new construction and renewals on its principal lines. The company has recently completed a line of copper wire from New York to San Francisco, the longest heavy copper wire for telegraphy in the world. This wire is strung between San Francisco and Ogden along the Southern Pacific and from Ogden to Omaha along the Union Pacific.

\* Paper read before the Chemical and Metallurgical Society of South Africa.



## A CALIFORNIA GOLD DREDGE.

In a recent article, in the *Engineering and Mining Journal* for November 20th, page 605, we referred to the work undertaken and accomplished in dredging river beds for gold in Montana. Much interest has recently been manifested in this method of working river beds and low-lying placer grounds, and a large number of dredges will probably be at work before long, in addition to those now in use. In California, at different times, attempts have been made in this direction, but none of the machinery built was suitable for handling the gravel economically; some of the machines were too light to handle the heavy boulders and others again were constructed in such a way as to make them very costly to operate. For these reasons, the industry has not prospered and dredging ventures have not found favor with capitalists despite the acknowledged possibilities of such work.

Last year Mr. Robert H. Postlethwaite, mining and electrical engineer, of New Zealand, where dredge working has been most extensively in use and has reached its greatest development, came to California and determined to try dredging operations on the Yuba River. After careful examination he concluded to build a dredge on the same lines as those in New Zealand, which are the result of long evolution and have been brought to a very high degree of efficiency.

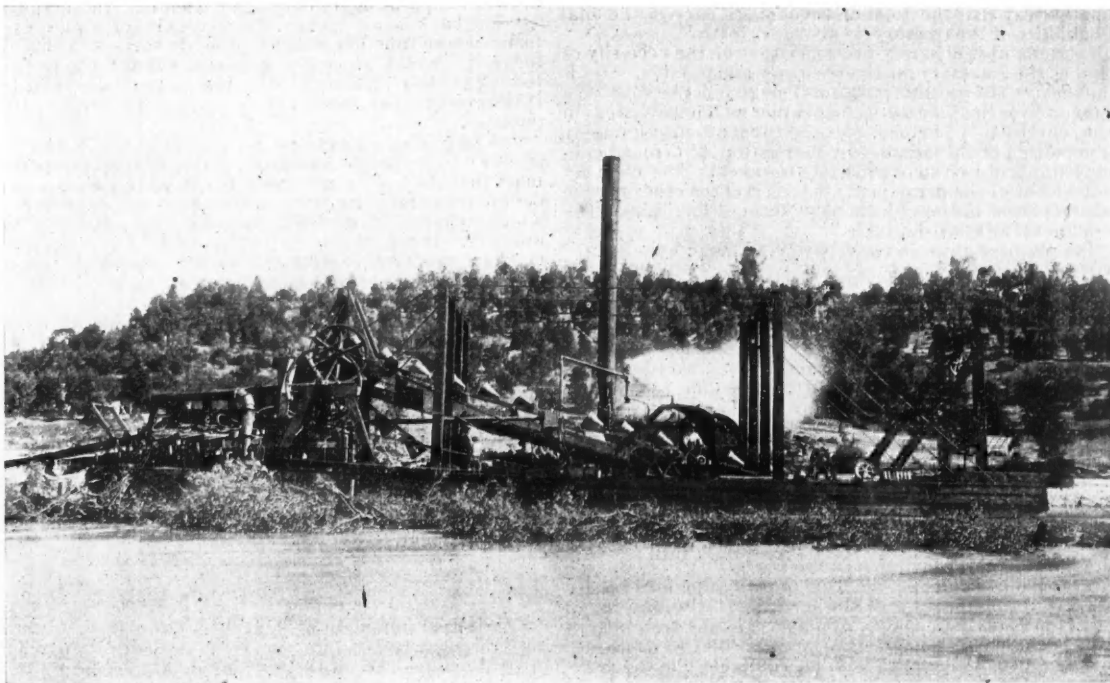
Arrangements were made with the Risdon Iron and Locomotive Works, of San Francisco, Cal., to build a dredge to Mr. Postlethwaite's plans, and this machine has proved a very great success, handling with only two men per shift some 90 cu. yds. per hour from a depth of 45 ft. with an expenditure of only 37 H. P. actual, more than half of this being

dredge shown in the cuts is working in a river bed. Another one now being built is to operate in what is apparently dry ground, but in which the natural water level is some 18 ft. from the surface and some 24 ft. above bedrock. These two examples show the very large field this method of handling wash dirt opens up.

**Coal in Norway.**—Boring for coal has been in progress for some time near Andenes in Norway. A seam of coal has been located and the samples brought up by the drill are of good quality.

**New Blasting Fuse.**—The following process of making blasting and mining fuses has just been patented, says the *London Engineer*: A core of nitrocellulose is impregnated with a solution of nitrate and chlorate of potassium containing either prussiate of potash, picrate of potassium or carbonate of potassium, in addition. It is then dried for use. The core may be used direct or may be insulated. As a modification a core is formed of cellulose boiled in a solution of nitrate of potassium, chlorate of potassium, and prussiate of potassium, and after being dried is covered with jute and made waterproof, after which it is ready for use.

**The Niagara-Buffalo Electric Power Transmission.**—The power transmission line from Niagara Falls to Buffalo is now undergoing a considerable increase; the demand for power from Buffalo having within the



THE RISDON IMPROVED GOLD DREDGE.

used to pump the necessary water, some 3,000 gals. per minute, to wash the gravel with. The material is handled for from 3 to 5c. per yard.

In the accompanying engraving the dredge is shown at work. The machinery is carried on a wooden pontoon or scow 100 ft. long, 23 ft. wide and 5 ft. deep, with a well hole 5 ft. wide running through the center for some 75 ft. The dredge itself is of the bucket type a number of buckets being carried on a belt or chain. The ladder or heavy girder frame is 67 ft. long and carries 37 buckets, each of 3½ cu. ft. capacity. The buckets form a continuous belt and discharge at the rate of 15 per minute. The material dredged dumps into a revolving screen or grizzly, the coarse going through the screen and thence overboard, the finer going through the perforations and over the gold-saving tables. The tables are of very large area, the stream of pulp over them being very thin, and are specially designed to save the fine flour gold mixed with much black sand which is so generally found in the Californian river beds. Water is supplied by pumps carried on the scow and worked by steam from the boiler which supplies the dredge engine. There is also a power winch which is used to move the dredge, ropes being fastened to a post or tree on the river bank.

The ladder, 67 ft. long, built up as a heavy lattice girder, is hung at the stern end by a bar fixed across a heavy wooden framing. The lower end of the ladder carries a five-sided tumbler, and is suspended by blocks and tackle to a crossbeam. By means of wire rope and blocks the winch can raise or lower the bottom end as required. The top tumbler is carried by the timber framing some 3 ft. above the top end of the ladder. The continuous bucket chain comes up the top side of the ladder on rollers round the top tumbler and back in a catenary curve to the lower tumbler. The top tumbler is driven through a rope transmission and heavy gears by the engine.

The theory on which the dredge is designed is that to handle large quantities of gravel and sand wear and tear must take place, and that the most economical method is, while making the wearing parts of the most durable material obtainable, to design them so that they are small and easily replaced. This idea has been carried out all through. The

past few months grown beyond the capacity of the line first put up. The three wires strung on the poles will shortly be increased to six. A new order for cable as well as for transformers has been placed with the General Electric Company. The cable is of special manufacture, is insulated to stand the ultimate pressure of the line, which will be 22,000 volts, and is tested under a considerably higher pressure before leaving the works. At first 24,000 ft. of this cable will be used for that part of the transmission line within the city of Buffalo. The order for increasing transformers covers seven of similar size and design to the three already installed in the transformer house of the Niagara Falls Power Company. These 10 transformers are the largest ever built. Each has a capacity of 1,250 H. P., making a total step-up transformer capacity of 10,000 H. P. They are of the air-blast type, and will stand in rows of four upon the air-tight chamber, whence the air is forced through the ventilating spaces in the transformers. It will be remembered that the two-phase current at 2,200 volts passes from the 5,000-H. P. generators in the power house to the transformers. In these it is not only increased in pressure but changed in phase, the current issuing from the transformers' three-phase current at 11,000 volts. This pressure will be adopted until it becomes necessary to increase it, when it will be doubled and be delivered to the transmission lines at 22,000 volts. On its arrival in Buffalo it will be delivered to the step-down transformers of the Cataract Power and Conduit Company, which controls its distribution there.

Several step-down transformers will also be placed in the station of the Buffalo General Electric Company, and from these, three-phase current converted into direct current in rotary converters, will be utilized for lighting purposes and for small power units.

The Buffalo Railway Company is also increasing its step-down transformer and rotary converter capacity in its Niagara Street Power House. In addition to the two 500-H. P. converters already in operation, the General Electric Company has built two others of similar capacity and construction. These will bring the total converter capacity in the station up to 2,000 horse power.

## THE SECRETARY OF THE TREASURY'S CURRENCY PLAN.

In his report, which has been submitted to Congress this week, Mr Lyman J. Gage, Secretary of the Treasury, submits a plan for a partial reform of the currency, which is in line with his well-known views. As the matter is one of the greatest importance to all of us and as our business prosperity is largely dependent on the proper settlement of the currency question, we give below Mr. Gage's recommendations substantially in full.

In his preliminary statement of the case he sums up the position of the government as follows: "The responsibility of the government in this respect means that in addition to its liability for redemption in gold on demand of \$346,000,000 of legal tender notes, it must also hold itself in readiness to redeem in like manner \$114,000,000 of the treasury notes of 1890, and to maintain through its treasury the free interchangeability with gold, any part or all of \$470,000,000 in silver now current with our people. The aggregate of these liabilities amounts to \$930,000,000. It is not intended to convey the idea that the government will ever be called upon to pay at any one time or over any one period of time, however protracted, the total of liability thus shown. It is, however, indispensable that the treasury be endowed with power and resources ample to meet all claimants who may come, and will margin sufficient to give full assurance to all who do not come, that its ability for continuance is unimpaired. The statement that the traditional \$100,000,000 of gold reserve is insufficient for these purposes need not be supported by argument. It is manifest. The recognized inadequacy of that amount has on more than one occasion brought fear and derangement to all interests—industrial, commercial and financial. The losses suffered by the body politic through these derangements having their origin in the state of the public treasury cannot be named, although it is not beyond the limit of reasonable estimate to say that the total of such losses exceeds the total of the demand liabilities of the treasury as above set forth."

Following this statement it is hardly necessary to urge the necessity of immediate action, as the Secretary does very clearly and forcibly. Of his proposed plan he says: "The recommendations I make must be construed not as being in themselves final measures, but rather as tentative steps in a direction which, consistently pursued, will lead to conditions ultimately desirable. The condition of the treasury in its relation to demand obligations requires that one of two steps promptly be taken. The one may be a large reinforcement of the permanent gold reserve; the other may be by an important reduction in the objectionable form of liabilities. The latter is, in my opinion, the more desirable."

The details of the plan are given in the report as follows:

## THE SECRETARY'S RECOMMENDATIONS.

First. That proper legislation be enacted which will establish, separate and apart from the ordinary operations of the treasury as they relate to revenue and expenditures, a department to be known as the Issue and Redemption Division. To this division the sum of \$125,000,000 in gold should be set over from the general fund in the treasury, to be used only for redemption purposes, and all the silver dollars now held for redemption of silver certificates, and all the silver bullion and dollars coined therefrom, bought under the act of 1890, should be passed to the same account. Further, that the sum of \$200,000,000 in the legal tender notes of the United States known as greenbacks be collected as hereinafter described, and deposited in the Issue and Redemption Division, to be disbursed only upon the receipt in exchange thereof of an equivalent amount of gold coin, such gold, when so secured, to be held in said division as part of the general redemption fund.

Second. That provision be made for the issue of refunding loan bonds, payable after 10 years at the pleasure of the government, to bear interest at the rate of 2½% per annum, payable, principal and interest, in gold coin; and that the Secretary of the Treasury be authorized to issue such bonds and receive in payment therefor, with an equitable allowance for the difference in interest, any part or all of the outstanding loans of the United States which mature by their terms of payment in the years 1904, 1907 and 1925.

To accomplish the objects herein suggested without contracting the circulation, some other form of paper money must be allowed to fill the vacuum which would otherwise be occasioned. The national bank note now familiar to our people is the readiest and most practical agent to accomplish that object, and under reasonable conditions it will be found responsive to the call.

An enlarged issue of bank notes thus contemplated would require a number of amendments to the present National Bank Act, which the Secretary submits as follows:

First. Permit national banks to be organized with a minimum capital of \$25,000 in any place having a population of 2,000 inhabitants or less.

Second. Reduce the rate of taxation on circulating notes secured by deposit of bonds to ½ of 1½ per annum.

Third. Permit banks now organized or hereafter to be organized to issue circulating notes to the par value of the refunding bonds hereinbefore suggested, when deposited by them with the Treasurer of the United States; and, further, allow such banks, as shall avail themselves of the opportunity, to deposit as security with the Treasurer of the United States greenbacks, treasury notes, or silver certificates to a total amount of \$200,000,000, against which there shall at once be issued to them by the Comptroller of the Currency national bank notes to an equal amount, it being further provided that from time to time, at his convenience, the Secretary of the Treasury shall substitute for the greenbacks, treasury notes and silver certificates so deposited to secure circulation, bonds of the same class and character as the refunding bonds first named to the amount of \$200,000,000, such bonds to be chargeable to said banks and by them accounted for at such price (not less than par) as the market quotations may indicate to be their fair market value. During the period of time intervening between the deposit of greenbacks, Treasury notes, and silver certificates and the substitution of the bonds by the Secretary of the Treasury the circulating notes specifically issued therefor shall be exempt from taxation. Upon such substitution of bonds the funds released thereby shall at once be transferred by the Secretary of the Treasury to the Issue and Redemption Division.

Fourth. After said banks have deposited such bonds, greenbacks, treasury notes or silver certificates to the amount of 50% of their capital

they shall be permitted to issue bank notes in addition to the 50% thus provided, to the extent of 25% of such deposits, which 25% may be unsecured by any direct pledge of security, but issued against the assets of the bank.

Fifth. Extend the guarantee of payment by the government to all circulating notes of the bank whether issued against deposited security or against assets.

Sixth. To secure the government against loss, if any, attaching to its guarantee a tax of 2% per annum on unsecured circulation shall be levied to create a safety fund, which fund shall be invested by the Secretary of the Treasury and the Comptroller of the Currency in government bonds. In addition to such funds the government shall be further protected by having a first lien upon all assets in case of failure of the issuing bank.

Seventh. All notes shall be redeemed in the city of New York at the Sub-Treasury, and at such other sub-treasuries as may be designated by the Comptroller of the Currency with the approval of the Secretary of the Treasury. The control of such redemption shall be under the direction of the Comptroller of the Currency and made from a redemption fund of 10% to be provided and maintained by the banks.

Eighth. Restrict the issue of national bank notes to the denomination of \$10 and upward.

The Secretary considers in detail some of the objections which may be raised to his plan. His closing summary of the case is as follows:

"Paper money is the product of an industrial, commercial and financial evolution. Its economizing effect in the use of metallic money precludes the idea of its abandonment until society shall re-lapse into anarchy. Credit is the base upon which it rests. Paper money is the evidence that a thing of value has passed into the possession of the issuer, and that the holder of that paper is willing to await payment. When payment is made the evidence of the transaction should be withdrawn, to appear again only when a similar transaction occurs.

"The bank is an agency, the result also of a pure evolutionary movement, whose function it is to issue its various forms of credit instruments, of which paper money is one, against the pledges and promises to it of the less publicly known members of the industrial community. It thus becomes an intermediary in much the larger part of all trade and industry.

"Whatever operates to render the bank a safe, efficient and available agency to the people operates to the general prosperity. The requirement that the bank shall invest its capital in public securities as a precedent to the issue of its credit instruments—paper money—is a requirement which operates by so much to reduce its efficiency to commerce and industry. It cannot use its capital in two directions at the same time. Only a necessity to control the bank's capital for the public use or an indispensable need for security in such a form to the note holder can justify this requirement.

"The exigencies of the government do not now require the absorption of banking capital in aid of its own finances. In fact, with treasury conditions once normally established as to revenue and expenditure, the funded debt will, within a few years, be entirely liquidated. . . . The problem is a two-fold one: How to withdraw the specific form of security now provided, since it will ultimately disappear, and how to provide a substitution which will be recognized by the people as adequate security, and which will at the same time allow to banks within well-guarded limits the most useful freedom in their note issues. The problem is too large, its results too far-reaching to be solved offhand or by expert dictum. Its solution must be gradually reached by the path of safe experiment."

## MINING IN NEW ZEALAND.

The annual statement of Hon. A. J. Cadman, Minister of Mines, which was recently laid before the New Zealand Parliament, says that the progress consequent on the impetus given to gold mining during the year 1895-96 still continues. A great addition to the number of mining companies has been made, and on their behalf extensive mining operations are being carried on to open up the older as well as the newer mines by the sinking of shafts, driving tunnels or adits and the construction of water races for the development both of quartz mines and alluvial workings. In the prosecution of these works new and improved machinery—some being on a very large scale—has been introduced for winding, pumping, milling, ventilation, etc., in quartz mines; also for dredging, elevating, cement crushing and hydraulic sluicing in alluvial drift and river bed workings. The expenditure upon works of this kind had hitherto been beyond the resources of many of the New Zealand mining companies, and it is only since the investment of outside capital has been directed to the colony that these necessary works could be undertaken. Prospecting work in search of reefs containing gold and silver has been vigorously carried on throughout the Auckland district, especially in the dense and hitherto unexplored and almost inaccessible bush localities. Numerous new lines of reefs have been discovered and hundreds of men are already engaged in exploration works to open up the lodes. Samples of quartz tests, which, in many instances, have given very encouraging results, tend to show that many of these newly-discovered reefs are valuable.

In the Middle Island goldfields prospecting for reefs is pursued with favorable results. The alluvial drifts containing gold are being further tested, and river claims have been taken up in localities that were not previously deemed suitable for working by means of dredges.

For the year ending December 31st last the total production of gold and silver was 358,001 oz., representing a value of £1,052,017, compared with a value of £1,172,843 for the preceding year. This shows a decrease of £120,826. Of other minerals, including coal, 800,205 tons were produced, representing a value of £862,224, as against 734,693 tons, of a value of £826,048 for the previous year. The production of kauri gum was 7,126 tons, valued at £431,323, as compared with 7,425 tons, valued at £418,766 for 1895.

The quantities of the chief mineral productions for the year ending December 31st were as follows: Gold, 263,694 oz.; silver, 94,307 oz.; antimony ore, 21 tons; manganese ore, 65 tons; coal exported (including that used by home steamers), 79,520 tons; coke exported, 105 tons; coal consumed in New Zealand, 713,327 tons; kauri gum, 7,126 tons. The total value of the gold, silver, coal and other minerals, including kauri gum, exported up to the end of 1896, was £66,759,584.



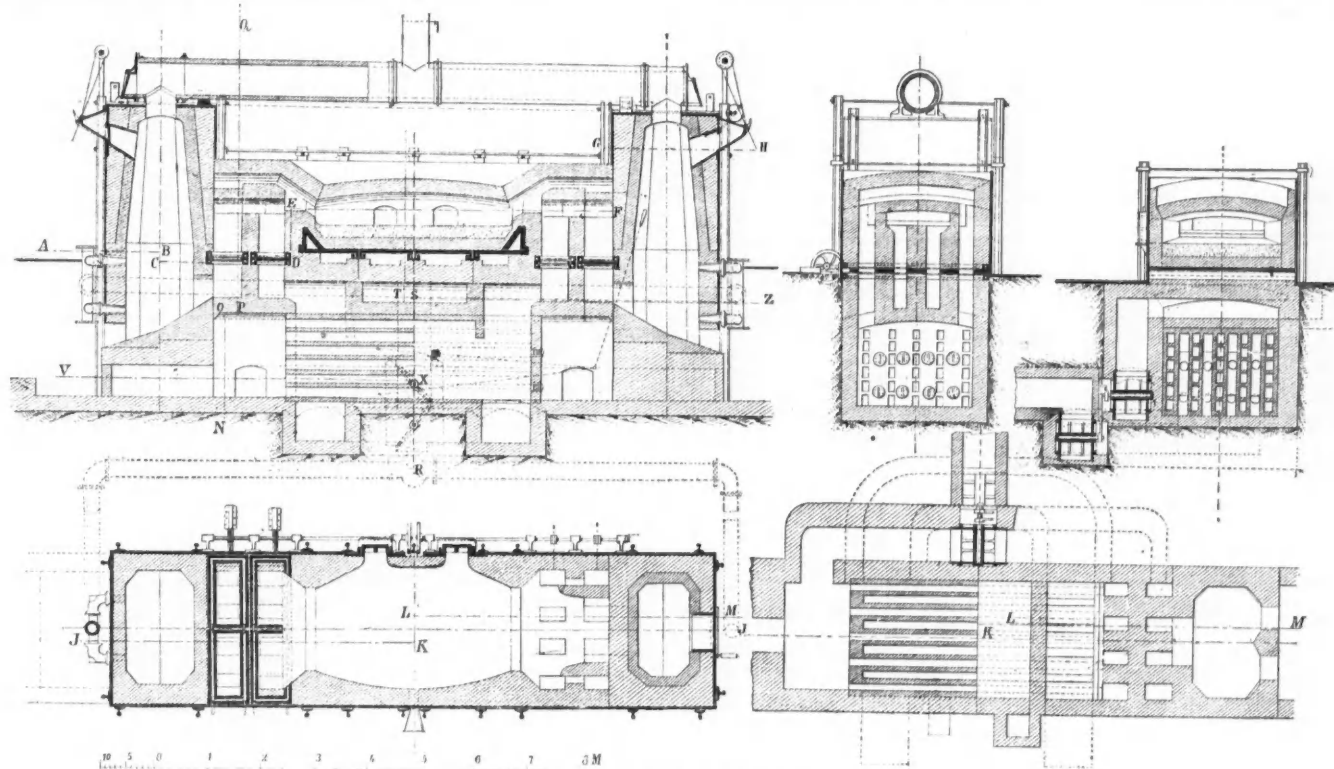
The decrease in the yield of gold during last year may be accounted for in several ways, and is not due to the scarcity of the precious metals. As, for example, the increased demand for mining properties by English companies and the consequent change of ownership of many of the gold-producing mines, together with an alteration of policy in preparing for extensive exploring operations, with the object of the more efficient working of the mines in the future, led to a contraction in the quantity of the ore mined. Many crushing plants were thus left comparatively idle; not for want of material to operate upon, but because it was deemed advisable to let the ore remain in the ground until improvements in gold-saving appliances were effected. This applies both to Hauraki district and to Reef-ton, which is the chief center of quartz mining on the West Coast goldfields. The alluvial fields of the West Coast and Otago also show a decrease in the yield, chiefly owing to the scarcity of water. Many of the claims taken up are now in the hands of persons who have given evidence of their desire to develop the areas by the expenditure of large amounts upon new works, but there are many claims and water rights held by persons who have failed to show what work they intend to do, and who are evidently not prepared to comply with the conditions under which they hold their properties. The certainty of tenure depends in a large measure on the holders of rights themselves. The quantity of gold entered for exportation through the customs for the year ending March 31st last was 256,913 oz., representing a value of £1,015,741; while the quantity exported for the same period of the preceding year was 302,600 oz., valued at £1,196,081. This shows a decrease of 45,777 oz. Of the quantity exported, Auckland contributed 93,876 oz., Marlborough 789 oz., Nelson and West Coast 74,082 oz., and Otago 88,166 oz.

THE TERENY REGENERATIVE GAS FURNACE.\*

The accompanying drawings show a type of furnace designed by Johann Tereny, a Hungarian engineer, and especially intended for use where fuel of an inferior kind—such as lignite, wood or poor coal—must be used to reduce working costs. The chief peculiarity of the furnace is found in the use of two gas producers, one placed at each end of the furnace. These producers are connected and the gas from one producer can be passed through the other. The second producer can also be used as a working gas generator as well as a regenerator and heater. The gases from the producer are also forced through a mass of burning coke before passing into the furnace. The construction is somewhat similar to that of the Pieczka furnace, but with certain changes intended to adapt it to the use of the cheaper fuels. It was designed for the use of the Hungarian steel works, to some of which the cost of fuel is a very serious question, since most of their coke and the better grades of coal must be imported from Germany and hauled by rail over a long distance; while abundant supplies of lignite are found close at hand and can be obtained at a low cost.

The construction of the furnace and of the gas producers is very fully shown in the drawings, which include a longitudinal section, a plan, a horizontal section and cross-sections at different points. The gas from the producers is passed through a bed of porous coke to purify it.

The Hungarian iron and steel industry has received much attention in recent years and has grown rapidly, in spite of some difficulties, one of which has been the cost of coke and coal. The manufacture of steel is



THE TERENY GAS FURNACE.

During last year 113,731 tons of quartz and tailings were treated in the Auckland district, yielding 198,547 oz. bullion, representing an estimated value of £354,256, as against bullion to the value of £378,107 for the former year, being a decrease of £23,851. In Nelson and the West Coast 15,369 tons of quartz were crushed on a return of 10,217 oz. of gold, valued approximately at £40,900.

In the future treatment of quartz for the extraction of gold the new plants erected on the different fields will be in a marked degree superior to those formerly in use. The adoption of labor-saving appliances, stone-breakers, elevators, and self-acting feeders for the mills, the concentration of tailings and slimes, and improvements in the methods of dealing with the pyritous matter will be the means of reducing the cost of extracting the gold and silver from the ore. The cyanide process, which is already used with success, is being made the subject of exhaustive experiments, with a view to improvements in the methods of percolation, filtration, etc. In the Hauraki district 77.7% of the quantity of gold and bullion produced was won by this process. The quality of the bullion extracted by the cyanide process was, however, of a lower grade than that obtained by amalgamation, the proportion of the value of the former being only 64%. In view of present importance, and the continuance of future great benefit arising from the use of the cyanide process, which is eminently suitable for the extraction of gold from a large proportion of the quartz found in New Zealand, it has been decided, subject to the approval of the legislature, to acquire by purchase the existing patent rights within the colony for the use of cyanide in the extraction of gold and silver.

being developed in a very satisfactory way, as was shown at the recent millennial exposition at Buda-Pesth.

**Coke Prices in Belgium.**—The Belgian coke syndicate is said to have contracted for nearly all the production of coke which it controls for next year—about 1,100,000 metric tons—at 19 fr. (\$3.65) per ton.

**Borides of the Alkaline Earthy Metals.**—In a recent communication to the Paris Academie des Sciences, Mm. H. Moissan and P. Williams say that the three alkaline earthy metals, calcium, barium, and strontium, yield with boron compounds of the formula B<sub>2</sub>R, a formula identical with that of the nitrides of Curtius. These compounds are perfectly crystalline; they scratch ruby, possess a great stability, do not decompose cold water as do the carbides, and are especially destroyed by oxidizing agents; they are not comparable to the alkaline-earthly carbides and silicides in composition and in properties.

**Iron Production in Russia.**—According to an official statement published in St. Petersburg the production of pig iron in Russia for the year 1896 was as follows, by districts:

	Poods.	Metric tons.
Northern Provinces.....	440,000	7,207
Oural District.....	40,860,000	669,287
Moscow District.....	9,880,000	161,835
Southern Provinces.....	44,171,000	723,521
Poland.....	15,161,000	253,300
Totals.....	110,815,000	1,815,150

The increase over 1895 was 17,763,000 poods (290,958 metric tons), or 19.1%, showing a large gain, which, it is stated, has continued through the present year.

\*abstract of article in the *Berg- und Hüttenmännische Zeitung*.

**The Zambesi Coal Fields.**—No development work has been done as yet on the coal fields of the Zambesi, which are in the territory of the British South Africa Company. The outcrops are so extensive and so promising that the company is considering the question of building a railroad from the fields to Bullwayo, a distance of about 300 miles.

## PERSONAL.

MR. WILLIAM A. FARRISH, of Denver, is in San Francisco, Cal.

MR. SAMUEL NEWHOUSE, after a fortnight's sojourn in New York, has returned to Denver.

MR. JAMES HICKEY has been appointed superintendent of the Dexter mine near Tuscarora, Nev.

MR. J. J. GALLAGHER, of Atlanta, is examining mining property in Arizona for a New York syndicate.

MR. W. S. McCORNICK, the Salt Lake banker, intends to open a bank at Mercur, Utah, the first of the year.

MR. H. L. WEED, general manager of the South Mountain mines, in Southern Idaho, is on his way to the mines.

MR. JAMES BUTTERWORTH RANDOL, of San Francisco, who is largely interested in quicksilver mines, is in New York.

MR. C. T. MIXER, of Mixer & Dubois, Ishpeming, Mich., has returned to Colorado in the interest of Chicago parties.

PROF. GEO. C. TILDEN, of London, has recovered from a severe illness at San Francisco, and is now on his way to the East.

MR. J. NOEL SPARKS, Civil Engineer, has opened an office at Winchester House, Old Broad street, London, E. C., England.

PROF. WALDEMAR LINDGREN will take the chair of Metallurgy and Mining Engineering at Stanford University, Palo Alto, Cal.

MR. E. LAUCK, of Pittsburg, is the new superintendent of the United States Iron and Tin Plate Works at McKeesport, Pa.

MR. P. T. FARNSWORTH was in Austin, Nev., last week looking over the Austin mine and other properties under his management.

MR. CHARLES HIBBERT TUPPER has been visiting Rossland, B. C., where he has mining interests. He will open a law office in Victoria.

MR. A. F. HOLDEN, manager of the Old Jordan & Galena, Bingham, Utah, has returned to Salt Lake from an extended Eastern trip.

MR. EDWARD P. RICKER, of Poland Springs, Me., has been at Silver Cliff, Colo., to examine the Jay Gould mine in which he is interested.

HON. FREDERICK PETERS, late premier of Prince Edward Island, is about to open a law office in Victoria, B. C., where he will in future reside.

MR. P. J. LANIGAN, of Colorado, and Louis Emery, Senator from Pennsylvania, are at San Francisco, looking over mining interests in California.

MR. GEO. H. FISHER, formerly manager of the Eagle Iron and Steel Company, has been appointed manager of the Olive Foundry and Machine Works at Ironton, O.

PROF. GEORGE W. MAYNARD, mining engineer, who has been for several months in Nevada examining mines for prominent Eastern capitalists has returned to New York.

MR. JOHN A. PEACOCK, one of the owners of the El Rosario gold mines in Southwestern Chihuahua, Mex., is back in Fort Worth, Tex., from an extended trip to that country.

Information as to the present address of Mr. LETSON BALLIET, formerly of Reno, Nev., will be gratefully received by the publisher of the *Engineering and Mining Journal*.

MR. T. W. BUZZO was in Salt Lake several days last week greeting old friends and receiving congratulations on the excellent condition in which he has placed the Alice mine, Montana.

MR. JOHN H. MORCOM, of Denver, superintendent of the Colorado Iron Works, has been in Salt Lake City on business connected with the installation of two new roasters at the Germania smelter.

DR. I. W. POWELL, of Victoria, B. C., has been visiting the Slocan, Trail Creek and Boundary districts in the interests of the Wilkenson Exploration Syndicate, of London (Eng.), and South Africa.

MR. O. M. HARTZELL, who has conducted an iron and steel brokerage business at Pittsburg for some time, will remove to New Castle, Pa., and will be connected with the Neshannock Steel and Tin Plate Company.

MR. JOHN SMITH, who has been superintendent of the rolling department of the Ohio Steel Company at Youngstown, O., has taken a similar position with the Colorado Fuel and Iron Company at Pueblo, Colo.

MR. HENRY BRATNOBER is said to be on his way to Alaska with a party of surveyors to lay out a route for a railway through White's Pass to Dawson City, the first connection to be at Lake Linderman or Lake Bennett.

MR. E. H. WILLIAMS, for several years the furnace superintendent of the Brown-Bonnell Iron Com-

pany, of Youngstown, O., has been made assistant superintendent of the Joliet blast furnaces of the Illinois Steel Company.

MR. A. G. CHARLETON, mining engineer, left London early in December for Western Australia, where he will inspect a group of mines on behalf of several important London companies. He expects to be back in England about April next.

MR. H. B. ADSIT, general manager of the Butterfly & Terrible, in the San Juan region, Colorado, has been in Denver conferring with PRESIDENT WICHMANN, of the Anglo-American Company, of London, which now owns the properties.

MR. WILLIAM H. HALL, formerly State Engineer of California, has just returned to his home in San Francisco, after a long professional visit to the Transvaal, Cape Colony, Orange Free State, Bechuanaland and Rhodesia, South Africa.

MR. WILLIAM J. ELMENDORF, of Denver, Colo., has gone to Silver Cliff to assume charge of the Geysers mine. He has been appointed resident director and manager to succeed Superintendent Johnson, deceased. Mr. Elmendorf is an Aspen man.

MR. JOHN K. MACKENZIE, of the firm of Dickman & Mackenzie, of Chicago, has left Chicago for Utah, where he will examine gold mining properties in the Mercur District for Chicago men. Mr. Mackenzie will also visit Idaho, where he will examine a sulphur property.

MR. JOHN A. PILLOW, a Canadian iron and steel manufacturer, has been visiting Joliet, Chicago, Cleveland and Pittsburg. In an interview he said among other things that steel tubing from the United States costs \$5 less, delivered at Montreal, than that from Germany.

GEN. C. W. TURNER and MR. A. A. JONES, of Seattle, are in San Francisco on business connected with the Yukon Transportation Company, which will run a line of boats up the Stickeen River next spring for the purpose of transporting passengers and freight to the Klondike.

MR. J. W. CORKINS, of Sedalia, Mo., has gone to Hermosillo, Mexico, where he will represent a St. Louis and Cincinnati mining syndicate. Mr. Corkins will be accompanied by two or three St. Louis members of the syndicate, MAX P. JAMES, of Perryville, and DR. WALLACE, of Brunswick.

MR. HENRY W. EDWARDS, mining engineer and metallurgist, passed through New York this week on his way to Colorado, where he expects to examine copper mines for a London syndicate. Mr. Edwards was recently in New Caledonia, where on his reports his clients have purchased important nickel, copper and cobalt bearing manganese deposits.

## OBITUARY.

B. F. GRIFFIN, of the Valley View mine, at Telluride, Col., was instantly killed by being thrown from a bucket on the tramway, December 1st. He was 32 years old.

GEORGE R. BLODGETT, chief patent counsel of the General Electric Company, died at his home in Schenectady, N. Y., December 4th, having been mortally wounded by a burglar. He was 35 years old, a graduate of Yale in the class of 1884, and had been associated with the General Electric Company since 1893.

COL. JOHN LAING, a well-known civil engineer, died in Baltimore December 3d, aged 80 years. He was born in Edinburgh and entered the British army as an engineer. His services during the Crimean war won him the rank of lieutenant-colonel. He was chief engineer of Birmingham, and afterward the chief engineer and superintendent of construction of several railroad systems in Brazil. In 1867 he came to Baltimore and surveyed the route of the Western Maryland Railroad over the Blue Ridge Mountains. He was also the chief engineer of the Union Railroad Company, which built the Pennsylvania Railroad tunnels under the city of Baltimore.

DR. CAMPBELL MORFIT, a distinguished chemist, died in London, Eng., December 8th in his seventy-eighth year. Dr. Morfit was born in Missouri on November 19th, 1820. He studied at the Columbian University, Georgetown, D. C. He originated the Chemical Department of the Maryland Institute, and in 1854 became Professor of Applied Chemistry in the University, where he remained for four years. In 1858 he removed to New York, where he followed his profession until 1861, when he went to London. He was a fellow of the Chemical Society of London and of the Institute of Chemistry. Besides he was joint author with James C. Booth of a report to the United States Ordnance Department on gun metal, in 1853. He was co-editor with Dr. Booth of the *Encyclopedia of Chemistry*.

## INDUSTRIAL NOTES.

The Marinette Iron Works, Marinette, Wis., are to resume operations.

A 20-ton gear wheel was recently completed at the Gould Steel Works at Irondale, Ind.

The stack of the Temple Iron Company, at Temple Pa., is being prepared for early resumption.

The Troy Steel Company is about to start up its plant on Breaker Island at Troy on full time.

The rolling mill of the Springfield Iron Company, at Springfield, Ill., has been put in operation.

The blast furnace of the Sharon Valley Iron Company, at Sharon Valley, Conn., has been blown in.

The Portage Iron Company, of Duncansville, Pa., is preparing to add a new wire rod mill to its plant.

It is stated that a blast furnace is to be erected at Jones Valley, between Birmingham and Bessemer, Ala.

The La Belle Iron Works, at Wheeling, W. Va., are to add a three-high modern bar and skelp mill to their plant.

The tinplate plant of the National Tinplate Company, at Monessen, Pa., will be ready for operation early next year.

The Peoria Steel and Iron Company, of Peoria, Ill., is figuring on the erection of several open-hearth steel furnaces.

Every department at the tinplate plant of the Hyde Park Iron and Steel Company, at Hyde Park, Pa., is in full operation.

The Illinois Steel Company, of Chicago, Ill., is making arrangements for the starting of its No. 2 Union furnace at Chicago.

Sharpsville furnace, at Sharpsville, Pa., has been put in blast after an idleness of nearly two years, giving employment to about 150 men.

The Illinois Zinc Company, at Peru, Ill., is about to manufacture acid phosphate for fertilizers. Rock will be brought from the South and treated at the works.

The two new mills being built for the Pennsylvania Tinplate Company, at New Kensington, Pa., are expected to be completed and in operation by January 1st.

The Fred J. Meyers Architectural Iron Works, of Hamilton, Ont., will soon be again in operation. The firm went into the hands of a receiver during the hard times.

The Peoria, Ill., rolling mill will be sold at public sale January 4th. It is said the mill will start up shortly after. Mr. George J. Gibson will probably be superintendent.

The West Bergen Steel Works, Jersey City, N. J., are now running full time with 350 men. The company has orders enough to keep the factory in operation three months.

Buena Vista Furnace, at Buena Vista, Va., has been leased to the Allegheny Iron Company, of Iron Gate, Va., and will be repaired and put in operation as soon as possible.

The Benjamin Atha & Illingworth Company, of Newark and Harrison, N. J., have obtained a contract from the government for the construction of 30 4-in. breech-loading rapid-fire rifles.

M. W. Henderson has been appointed a receiver of the Willamette Iron Works at Portland, Ore. The liabilities of the company are about \$50,000, aside from the capital stock, which is \$300,000.

The Union Iron Works, of San Francisco, Cal., are now employing 2,000 men. Most of these are at work on several large ships and the war vessels in course of construction for the United States government.

Workmen are repairing the Corning steel plant near Hammond, Ind., which has been idle since October, 1896, and preparations are under way to open the plant by January 1st. It was last operated by the Illinois Steel Company.

No. 1 blast furnace of the Bellaire Steel Company's works at Bellaire, O., has been placed in full operation, giving employment to about 150 men. It has been banked since the great strike was inaugurated nearly two months ago.

The Armington & Sims Engine Company, Providence, R. I., has gone into liquidation as a result of a recent meeting of the creditors. They are heavily in debt to local banks, and it is said the liabilities are much greater than the assets.

The plant of the Madison Car Company, at Madison, Ill., which has been idle for a year, has been absorbed by the Missouri Car and Foundry Company and will be reopened as soon as possible. When in full operation it will give work to 1,000 men.

The Catskill Shale Brick Company, of Catskill, N. Y., has a contract for 6,000,000 brick to pave streets at Jamaica. Over 2,000,000 have already been delivered and 1,000,000 more will be delivered this season. Next spring the balance of 3,000,000 brick will be delivered.

The No. 1 furnace of the Andrews & Hitchcock Iron Company at Youngstown, O., is in full blast. Furnace No. 2, which has been undergoing extensive repairs, has been blown in. The new furnace will manufacture foundry iron, while the product of No. 1 will be Bessemer.

Bristol furnace, Bristol, Tenn., was again sold on



December 2d under decree of court to the Home Iron Company for \$29,000. At a former sale, which was not confirmed, the property brought \$55,000. The purchasing company held claims against the property amounting to \$85,000.

The plant and property of the Guelph Norway Iron and Steel Company, Guelph, Ont., were sold recently for \$9,700 to Mr. John Taylor. Forty-eight thousand dollars was put into the enterprise. The mill ran off and on until May, 1897, when it was closed. The stockholders will lose everything.

The rolling mill of the Dover Iron Company at Dover, N. J., is being enlarged to accommodate a new 20-in. train of rolls. With the new rolls the mill will be able to turn out 5-in. bars in rounds and squares, and bars 7 in. wide in flats. The mill will also be able to turn out billets for car axles.

The Maryland Steel Company at Sparrows Point, Md., is very busy. Over 27,000 tons of ore from Cuba and Newfoundland have been received during the past month. Recent shipments include two cargoes of steel rails to Calcutta. Two more cargoes of 3,500 tons each will soon be shipped to the same port.

The Cambria Iron Company, at Johnstown, Pa., will erect 100 new Otto-Hoffman coke ovens early in the spring. It is stated that the Cambria people have also decided to place compressed air engines in all its coal mines, and to that end has placed an order with the Baldwin Locomotive Works of Philadelphia.

The Flushing Gas and Electric Company, of Flushing, L. I., has placed the contract for the extension of its generator plant with the Berlin Iron Bridge Company, of East Berlin, Conn. This extension will be built in a fireproof manner, having steel framework and trusses covered with corrugated iron roofing.

The well-known firm of W. C. Barnes & Company, of London, of which William J. Mathison & Company, Limited, are American agents, has been changed into a limited company, the partnership having expired by effluxion of time. The management will be continued by the former partners, who will act as the sole directors of the company.

Fraser & Chalmers are moving the various departments of their Chicago factory to the vicinity of their immense foundry on West Twelfth street and Washtenaw avenue. The new plant will have a floor space of 160,000 sq. ft., and will cost over \$500,000. The factory yard will be 762 by 796 ft. Over 1,000 men will be employed when all departments are in running order, which will be as early in the new year as the rush of business will permit. The old buildings contained but 75,000 sq. ft. of floor space, and were quite too small.

The Colorado Iron Works has just closed a contract with the Germania Lead Works, Salt Lake City, Utah, for five Bruckner roasters, and has just received an order for a slag equipment complete, including four 44 cu. ft. capacity self-dumping slag trucks, with electric generator, electric locomotive, standards, etc., for handling trucks. The company also has shipped four 44 cu. ft. capacity self-dumping slag trucks to the Copper Queen Mining Company, Bisbee, Ariz., also one self-dumping slag truck of 60 cu. ft. capacity to Wm. A. Clark, Butte, Mont.

It is stated that the Carnegie Company has almost completed the alterations in the plant at Homestead, Pa., by which it will be able to compete for the steel girder rail trade. It is claimed that the tonnage practicable will be very great, and prices may be reduced. The company will manufacture 100-lb. open-hearth rails. At the Edgar Thompson Works, at Bessemer, Pa., November 7th this company broke the record recently made by the Cambria Iron Company in turning out steel billets. After the first nine hours' work on No. 1 turn, 99 heats of 10 tons each were made.

NEW PATENTS.

UNITED STATES.

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

WEEK ENDING NOVEMBER 30TH, 1897.

- 594,422. PULVERIZING MACHINERY. Almarin B. Paul, San Francisco, Cal. This machine comprises a rotary cylinder or barrel mounted on a solid horizontal shaft, ends or heads having recessed chambers concentric with the shaft, radial feeding ways through the cylindrical walls of the chambers, and a cylinder surrounding the shaft and supported upon the walls of the recessed chambers.
- 594,427. APPARATUS FOR WEIGHING AND DUMPING COAL. Peter Quirk, Des Moines, Iowa. This apparatus comprises a supporting frame, a hopper or receptacle slidingly mounted therein and having an inclined bottom, means whereby the hopper or receptacle is depressed a distance proportionate to the amount of weight contained therein, and a dumping gate at the front of the hopper.
- 594,458. APPARATUS FOR WASHING GAS. Owen F. Leibert, Bethlehem, Pa. This apparatus consists of a vertical receiver provided with an expanded or enlarged lower portion contracting at its base where it

enters the water seal, admission and discharge pipe, means for introducing water into the upper portion of the receiver and a water seal into which the receiver opens and is in part submerged.

- 594,483. GAS PRODUCER. Kerr M. Mitchell, St. Joseph, Mo., and John Harleman, Kansas City, Kan. Combination of a furnace, a retort tapering upward and having its walls imperforate and grooved vertically on its inner surface, and having an annular space or chamber surrounding it and an annular flue in communication at its top with the retort and at its bottom with the coke chamber located between the grate and the bottom of the retort.
- 594,497. PROCESS OF PURIFYING IRON. Benjamin P. Stockman, London, England, Assignor to the Stockman Iron and Steel Company, of West Virginia, Patented in England April 27th, 1894, No. 8,370; in France, April 4th, 1895, No. 246,391; in Belgium, April 23d, 1895, No. 115,268; in Luxembourg April 26th, 1895, No. 2,292; in Italy, May 18th, 1895, LXXVI, 42; in New Zealand, June 7th, 1895, No. 7,660; in Austria, September 2d, 1895, No. 451,639, and in Hungary, October 26th, 1895, No. 4,016. The process consists in subjecting phosphoric or other pig iron in a molten state to the action of a loose granular mixture of nitrate of soda in a dry powdered state and magnetic iron sand.
- 594,521, 594,522. APPARATUS FOR EXTRACTING GOLD OR OTHER PRECIOUS METALS FROM EARTH ETC. Benjamin S. Church, New York, N. Y., Assignor, by mesne assignments, to the Church Machinery Company, of New Jersey. Combination of a tank, means for feeding sand into one end and withdrawing it from the other, one or more separators and return-conduits arranged in the tank and means for elevating the sand through the return conduits and discharging it into the top of the tank.
- 594,524. AIR OR GAS COMPRESSOR. Jonas Crabtree, New York, N. Y. This comprises a slide and means for reciprocating it strongly in a right line in combination with a pair of compressing pumps arranged on opposite sides thereof and pivotally connected thereto, arranged to oscillate on trunnions near the inner ends so as to give a motion nearly coinciding with that of the slide near each end of the stroke.
- 594,537, 594,539, 594,540. APPARATUS FOR MANUFACTURING GAS. Arthur Kilsor, Philadelphia, Pa. Assignor to Appleton L. Clark. Combination of the combustion chamber, with take off ports near the bottom thereof, one or more fuel-charging ports in the upper portion thereof, and a rotary combined blast-pipe and stirrer which extends downward below the normal fuel line.
- 594,577, 594,578. BLAST FURNACE. Maximilian M. Suppes, Lorain, O. A charging car for blast furnaces, comprising a frame supporting a shell and a bottom member, an opening between the bottom and the shell, and a vertically movable shell adapted to close the opening and open it for the discharge of the charge.
- 594,583. CASTING APPARATUS. Frederick W. Wood, Baltimore, Md. Combination with a fixed mold or casing provided with a vertical opening therethrough from end to end and with a chamber or chambers surrounding the opening, of thin metallic bands extending through the opening in the mold and flatly against its interior sides and jointly wholly covering the same, means for moving the bands downward through the mold, and means for circulating a cooling medium through the surrounding chamber.
- 594,588. MACHINE FOR WORKING STONE. George L. Badger, Quincy, Mass. This comprises a work support for the stone, a vibrating carrier, a tool yieldingly mounted thereupon, arranged to deliver a succession of blows in a straight line in the direction of the vibration, means to vibrate the carrier and feeding mechanism to impart a relative feeding movement to the support and carrier, in line with the direction in which the impacts of the blows are delivered.
- 594,611. PROCESS OF AND APPARATUS FOR REMOVING ZINC FROM ZINCIFEROUS ORES. Stephen H. Emmens, New York, N. Y. The process consists in pulverizing and roasting the ore, leaching it in a series of vessels through which the solution flows continuously, and subjecting the contents of each vessel intermittently to electrolytic action, whereby the solution is rendered alternately acid and neutral or more acid and less acid in contact with each body of ore.
- 594,662. FURNACE VALVE. James R. Spear, Pittsburg, Pa. Combination with a sack having two sections the upper section being supported a distance above the lower section by connecting external members, of a valve-seal ring, arranged to be slid into the space between the two sections, and a valve seat removably secured to the seal ring.
- 594,672. MACHINE FOR PREPARING CLAY. Phineas Arnold, Canal Dover, O. Combination of a chute provided with a scattering feed-brush with a water-conducting pipe having parallel branches provided with nozzles, and a steam-conducting pipe composed of like parallel branches and provided with nozzles, both the water and steam pipes located below the chute and having supply pipes attached thereto, provided with suitable cut-offs.
- 594,696. ROLLER PULVERIZING MILL. George R. King, New York, N. Y., and Albert Raymond, Chicago, Ill. A roller shaft having its bearings on the opposite sides of and attached to the driving shaft and standing at an angle therewith in combination with two rollers having their faces standing at an angle with their own shaft and parallel with the faces of circular rings standing at right angles to the driving shaft, whereby one pair of rollers can be mounted and rapidly revolved on the same shaft and counterbalance each other, and produce a slipping action between the tread of the rollers and the inner faces of the rings.
- 594,707. MACHINE FOR BREAKING AND LOADING PIG-IRON. Axel Sahlin, Sparrow's Point, Md. Combination of a breaking roller with a support for the article to be broken, and means for causing a relative motion between the support and the roller.
- 594,739. MANUFACTURE OF FUEL BLOCKS FROM PETROLEUM. Hans Hansen, Christiania, Norway. A composition of binding matter consisting of petroleum, caustic soda, turpentine, pine-resin, margarin and coconut oil.
- 594,740. PROCESS OF AND APPARATUS FOR CARBURIZING CALCIUM. Herman L. Hartenstein, Belvaire, O. The process consists in calcining limestone and then forcing into the calcined mass while in a heated condition a carbonaceous material by the aid of a combustible gas under pressure and simultaneously subjecting the mass to the action of an electrical current.
- 594,772. DEVICE FOR LOSSENING WELL DRILLS. Frederick Ausin, Centre Point, Ia. The apparatus con-

sists of the drill rope and means for drawing the same taut, a head encircling the rope and adapted to strike the upper end of the drill when dropped, and upwardly extending sections of rod or tubing connecting with the head, whereby the same may be raised and dropped.

- 594,786. FURNACE TUYERE. Ambrose P. Gaines, South Pittsburg, Pa. Combination blast pipe of a furnace tuyere having nozzle lips conforming approximately to an arc of a circle and forming a horizontally elongated blast orifice, the orifice having widened and narrowed portions symmetrically disposed with respect to the central point of the orifice.
- 594,826. ACETYLENE GAS GENERATOR. James S. Ferguson, Minneapolis, Minn. Combination with a telescope gas-holder, of a case or cabinet having horizontally supported shelves hinged to its interior side or sides, magazines supported by and latches supporting the shelves, a shaft having cams mounted thereon, and a ratchet-wheel affixed thereto, a pendent rod operated by the rising-and-falling case of the telescope gas-holder, adapted when on its downward course to contact with a tooth of, and to rotate the ratchet wheel, and a pipe connecting the case or cabinet, and the telescope gas holder.
- 594,829. PROCESS OF TREATING ZINC LEAD OR OTHER ORES. Samuel I. Hallot, Aspen, Colo. Assignor of one-half to D. M. Hyman, Cincinnati, O. The method consists in crushing the ore to the fineness of the smallest crystal of the metallic mineral having the greatest specific gravity, and then subjecting the crushed material to the action of suitable devices for separating and concentrating it according to the gravity of its particles.

GREAT BRITAIN.

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

WEEK ENDING OCTOBER 23D, 1897.

- 24,705 of 1896. R. A. Hadfield, Sheffield. Improvements in manganese steel.
- 25,462 of 1896. Syndicat d'Acier Gerard, Paris, France. In the manufacture of steel, a method of oxidizing some of the iron by making it into a fine spray by the action of an electric current.
- 26,322 of 1896. J. Fairlie, Glasgow. Improvement in the manufacture of red lead.
- 29,816 of 1896. S. Danner, Kladno, Bohemia. Improvements in the manufacture of crucible steel.
- 29,922 of 1896. J. D. Gilmour, Lennoxtown, Scotland. Method of drying alkaline cyanides.
- 2,727 of 1897. W. Black and W. G. Todd, Sheffield. Improvements in coal washing machines.
- 19,030 of 1897. A. H. Eyles, New York, U. S. A. Carbonizing apparatus for use in connection with the manufacturing of white lead.

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

GENERAL MINING NEWS.

OIL PRODUCTION AND NEW WELLS.—According to the Oil City *Derrick* there were completed in the New York, Pennsylvania and West Virginia fields during November 404 new wells having a daily output of 11,310 bbls.; at the end of the month 634 wells were drilling. The Buckeye, O., field completed 191 new wells in November, with a daily production of 4 145 bbls. and on December 1st it had 229 wells at work. The Southeastern Ohio, field completed 22 new wells in November, with a daily capacity of 192 bbls., and at the end of the month it had 40 wells under the drill. The Indiana field completed 119 new wells in November, with a daily output of 3,790 bbls., and had 64 wells at work on December 1st. The total daily production of the new wells completed in November was 19,437 bbls., against 23,184 bbls. in the previous month.

ALABAMA.

A recent sale of 17,000 acres of coal lands in Walker and Marion counties is said to have been made to parties representing the Illinois Central Railroad Company. That company has had surveys made for an extension of its Aberdeen branch from Aberdeen, Miss., to a point in Walker County.

JEFFERSON COUNTY.  
(From Our Special Correspondent.)

The courts of Jefferson County commenced December 6th trying the cases against the corporations which have grown out of the legislation of last year. On the meeting of the legislature a recommendation was sent in by the Governor for the creation of an office in each county to be termed Back Tax Commissioner, whose duties should be to investigate the tax lists and the assessed valuation of properties, increasing such as his judgment dictated. For this work he was to receive no salary from the State, but was to be paid by a commission of 10% chargeable against the increased tax. After the appointment of this official, in Jefferson County particularly, the corporations were generally notified that the assessed valuation of their property as returned for the year 1897 has been increased by this official, for amounts varying from 10% above the original valuation to 50 and 60% and sometimes



higher. The companies generally refused to accept increased valuations on the grounds that they had already returned their property to the tax assessor at full legitimate value, and that before they returned it there had been a conference between the officials of the companies and the county commissioners who form a board of equalization, at which the valuations as already returned were agreed to by all parties. The increase made by the back tax commissioner referred particularly to the tracts of wild land owned by the companies, the value of which is in their prospective mineral resources. The cases were tried before the county commissioner and settled in favor of the companies, but the back tax commissioner, being empowered by the legislature to invoke the aid of the judiciary of the State to carry out his recommendation, caused suits to be brought against the corporations in the district courts. It is these suits which have now come on for trial and the result is awaited with a good deal of interest not only by the State officials and the resident officers of the companies but also by the non-resident stockholders. The fact that the stock of the corporations in Jefferson County is principally owned in the East or in foreign countries is calculated to arrest the attention of non-resident capitalists who may be thinking of investing in Alabama.

#### ALASKA.

Some of the numerous transportation companies guaranteeing to land passengers at Dawson will be interested in a decision by Judge Hanford, in the Federal Court at Seattle, Wash., on December 7th. Two passengers, who started to Alaska last September on the Steamer *Eugene*, were awarded \$800 damages each against the owners of the steamer for their failure to land them in Dawson.

A bill authorizing the Dyea-Klondike Transportation Company to locate and construct a line of transportation from Dyea to Lake Bennett, the line to consist of railways, aerial tramways, or wagon roads, as the company may deem proper, and a bill granting a similar right of way to the Skaguay and Lake Bennett Tramway Company, from Skaguay over the White Pass to the boundary line of Northwest Territory, on the Skaguay trail, have been introduced in the United States Senate.

#### SKAGUAY.

(From Our Special Correspondent.)

SKAGUAY, November 22.

The town has now a population of about 1,500. Work on various improvements is in active progress. The electric light plant will soon be ready. Three wharves are nearly completed, two of which are receiving freight. A tramway from Skaguay through White Pass to Lake Bennett is under construction by a Philadelphia syndicate. Forty men are at work who have partly finished the roadbed for a distance of five miles. The syndicate expects to have the tramway ready by November 1st.

The Yukon Transportation and Construction Company is building a wagon road from Skaguay to Lake Bennett. The road runs along the right bank of the Skaguay River for seven miles. A steel bridge for it is expected from Portland this week. The company is pushing work as fast as possible. Fifty men are now employed, which force will be increased to 200 as soon as the camps are ready. Mr. Brackett, the superintendent, says he expects to have the road in such condition by March that wagons loaded with outfits can be hauled over it to Lake Bennett. This will be one of the cheapest ways of transporting freight to the headwaters of the Yukon.

At Dyea there are three companies engaged in erecting cable tramways from the scales to the summit of Chilkoot Pass. A company under the management of the Newell Gold Mining Company of Juneau is making the most rapid progress. It has two 5,000 ft. cables up side by side which run on a 20% grade. The cable used weighs 1½ lbs. to the foot. A narrow-gauge tramroad with cars like those used in the mines will run from the foot of the cable to salt water. The company has 50 men at work and expects to have everything ready by March 1st.

Town lots in Dyea are selling at fancy prices, from \$50 to \$500, and lumber cannot be landed fast enough to supply the demand.

Two wharves are being run out in deep water on the left of the channel entrance.

Another wharf has been started to run out to deep water from the harbor. This will have to be two miles long, as the beach is so level that low water is 1½ miles below high water.

The Canadian government has established a monthly mail route to Dawson via the Skaguay trail, with posts every 50 miles. The mounted police have been using dogs with success in moving goods the last 10 miles on the trail. They have 75 tons of government freight at Lake Bennett now.

The weather has been clear and cool during the past week, with no snow on the ground this side of the summit.

Today the steamer *City of Seattle* brought in a party of 24 men from Haines Mission who had just come from Dawson over the Dalton trail. They left September 24 because of the scarcity of provisions.

Swift Water Bill, one of the party, tells me that two men were shot dead near Dawson for stealing just before he came away. He says that Eldorado Creek is 600 ft. wide and the majority of its claims will run \$2,000 to the foot down stream. He asserts he has taken out \$235,000 from his own location and that he has only worked 45 ft. of it. Wages remained steady at \$15 per day of 10 hours. He esti-

mates that 1,500 will come out overland this winter to get food. Flour sold for \$75 per sack when he left and giant powder at \$5 per lb.

#### YUKON DISTRICT.

Major Walsh, Administrator for the Yukon District, has notified the Canadian government that he has imposed a tax of \$2 per gallon on all whiskey going into the Yukon country. If this tax does not stop the traffic it will be raised.

#### ARIZONA.

##### YAVAPAI COUNTY.

FULLER GROUP.—At these six claims, the principal one being the Golden Eagle, situated on Squaw Creek, which were recently purchased by Messrs. Reeves and Thurston, of Denver, a new mill has been erected with five vanners; the vein is 3½ ft. wide, in granite, and the ore is said to run about \$17.50 to the ton. A bucket tramway will connect the mine and mill.

PLANET SATURN MINING COMPANY.—The works of this company at Fools Gulch, four miles east of the Congress mine, which were shut down early in the year, because the rollers used could not handle the sulphuret ore properly, will, it is said, start as soon as a stamp mill is in. The vein is 6 in. wide, and is reported to average \$10 to \$14 in gold. Shaft No. 1 is down 675 ft. and shaft No. 2 is down 480 ft. Boston men are behind the company.

#### CALIFORNIA.

##### AMADOR COUNTY.

(From Our Special Correspondent.)

AMERICAN.—Willfred Dennis lately sold this mine to San Francisco parties for the reported price of \$30,000. The property is located six miles above Sutter Creek, and has a 10 stamp mill. H. W. Tangerman will act as superintendent for the new owners, with Jos. Russell as foreman.

BALLOL.—At this mine, about one mile east of Sutter Creek, the plant is to be increased to 100 stamps. The property is being worked by a cut 100 ft. wide and deep and by several tunnels. About 275 tons of ore are mined and milled daily at a total cost of not to exceed 85c. per ton.

WILDMAN-MAHONY.—The shaft at the Wildman is down 1,300 ft. in good ore. The vein varies from 3 to 75 ft. in width. The Mahony is also well developed, and the 40-stamp mills on each of these mines are kept running constantly. These properties are located at Sutter Creek.

##### BUTTE COUNTY.

(From Our Special Correspondent.)

GOLD BANK.—This mine at Forbestown has just completed the upraise from the big tunnel which was begun in August, 1894, and has been driven ever since. The property is well equipped with machinery and works about 125 men. H. P. Stow is superintendent.

##### CALAVERAS COUNTY.

(From Our Special Correspondent.)

BOLYTHO.—At this mine, one mile south of Angels, the crosscut and tunnel show vein matter 125 ft. in width. The shaft is down 300 ft. and another shaft is to be started very soon. A. N. Butts is general manager.

ESPERANZA.—The shaft at this mine on Indian Creek, two miles northeast of Mokelumne Hill, is down 700 ft., and will be continued to the 1,000. The vein where crosscut is 45 ft. in width and averages 3% of \$75 sulphurets. A 30-stamp mill is running. P. Ely is superintendent.

GWIN.—The shaft at this mine, 4 miles southwest of Mokelumne Hill, is down 1,461 ft., and the 1,200, 1,300 and 1,400 levels are being opened up. The vein is from 10 to 25 ft. in width. The 500-H. P. air-compressor which is being run by the waste water from the mill, will be used to develop the south end of the property. F. F. Thomas is superintendent.

KEYSTONE.—At this mine, in Railroad Flat, the shaft is down 275 ft. on the vein, with levels run at the 200-ft., where the vein is from 3 to 6 ft. in width. A 3-stamp mill and a water-power hoist are on the ground.

This company has been organized with a capital of \$100,000 for the purpose of working the Carson Creek mines near Robinson's. There is a large and complete plant on the property and the shaft is down 600 ft. on a large body of low-grade ore.

TRACY.—At this mine, near Angels, sinking still continues, and arrangements are being made to put in a larger hoisting plant that will enable the management to sink the compartment shaft to the 1,200-ft. level. This mine is near the Utica.

##### HUMBOLDT COUNTY.

(From Our Special Correspondent.)

STANDARD BEACH MINING COMPANY.—This company has leased from C. E. Beach 125 acres of land south of the mouth of Little River for a term of 8 months, with the privilege of purchasing. The company will put in the most approved machinery for working black sand, and commence work as soon as the necessary buildings can be erected.

##### KERN COUNTY.

(From Our Special Correspondent.)

PINMORE.—From this mine, at Randsburg, 25 tons of ore per day are shipped to the mills at Garlock. The returns run \$8 to \$15 per ton.

##### MONO COUNTY.

ARTHUR.—According to the *Bodie Miners' Index*, W. A. R. Loose has started a shaft on his mine, the

Arthur, formerly the South Bulwer, about 200 ft. north from the old shaft, which is 700 ft. deep, and still in tolerable condition, with no water to speak of. He is down about 20 ft., getting quartz that prospects well, and is confident that he will strike the apex of the Fortuna vein before long.

#### SAN DIEGO COUNTY.

(From Our Special Correspondent.)

GOLDEN CROSS MINING COMPANY.—This company has at last adjusted its legal troubles, and the group of mines worked by the company has been consolidated with other valuable property in the vicinity, and will be worked as one property under the management of G. H. Coffin, of Pasadena. Ex-Governor Markham, of California, is interested in the new company, which will operate on a large scale. These mines are located near Ogilby.

#### TRINITY COUNTY.

(From Our Special Correspondent.)

ALTOONA QUICKSILVER.—At this mine prospecting and development work done on the 435 and 450 levels has uncovered two bodies of rich ore, and work will be continued on these levels as well as on the 460 ft., from which ore is being stoped now. The retorts will start up in a few days. The ore from this mine contains about 2% quicksilver, which is considered very rich. Forty men are now employed.

#### TUOLUMNE COUNTY.

LONGFELLOW.—This mine—the Butler, as it was once named—is looking well. Stanley & Company have been taking out some fine specimen rock, besides milling ore from the east 120-ft. level. The James Brothers took some rock from the west 150 ft. level and at the same time uncovered a large body of mill ore that averages \$12 to the ton. It is stated by reliable authority that Messrs. Roberts, Moore & Mitchell have bonded the same to a Scotch syndicate for aed in Glasgow.

(From Our Special Correspondent.)

DONDERO.—This mine, near Columbia, is being worked by two giants, which are kept steadily at work. Twelve men are employed.

POTATO RANCH.—This mine, 2 miles east of Sonora, shows a fine 7-ft. ledge at the bottom of the 120-ft. shaft, and the little drifting done shows the vein to average as above. The ore assays very high.

#### COLORADO.

##### CLEAR CREEK COUNTY.

(From Our Special Correspondent.)

FREIGHT RATES.—The mine owners of Georgetown and Silver Plume have appointed a committee to confer with the railroad company and the smelters with the object of trying to get a reduction in charges on the smelting ores from those mines which are exclusively silver and lead bearing.

GRIFFITH MINING COMPANY.—This property, at Georgetown, has had an adit driven on the vein for 1,500 ft., and within the past two weeks has struck a big body of ore. It is high grade silver, with a small percentage of gold. Stoping ground is afforded for 400 ft. The ore body seems to be the same as had appeared in the upper workings where leasers are at work. Boston people are back of the enterprise.

JASON MINING COMPANY.—A recent incorporation of this name has in view the opening of a group of lodes on Ute Creek, near Idaho Springs. A steam plant has been bought.

NEW YORK & PROVIDENCE LEASING AND MINING COMPANY.—Eastern capital has organized under this name for the working of properties near the top of Bellview mountain at Idaho Springs. The Phillips and Lucas mines are to be consolidated as soon as a connection can be made of the two cross lodes. Native copper shows in the Lucas workings. The ores carry a high percentage of both lead and copper.

SMELTER RATES.—The increase in smelter rates from this county is quite heavy. Those ores showing zinc have been hard hit. Where the ores are low grade they will be moved to the mills for treatment instead of shipping to the smelters.

#### DOLORIS COUNTY.

(From Our Special Correspondent.)

BLACK HAWK.—A 100-ton lot of iron ore is being shipped to the Omaha and Grant smelter at Durango.

ENTERPRISE.—This company, while driving an exploration tunnel in a large body of low-grade ore, recently opened up a 2-ft. streak of ore running very high in gold and silver.

LILLIE D.—The tunnel has reached a depth of 220 ft. and has an upraise of 65 ft. from the breast. At this point it struck the contact and disclosed a large body of good ore. An air shaft recently started from the surface to connect with the raise struck a 17-ft. vein of good concentrating ore near grass roots. No ore will be shipped until connection is made with the lower workings.

LITTLE EMMA.—A syndicate of New York and Boston capitalists recently purchased this mine, and a 10-stamp mill is now on its way here.

MAGGIE.—Lessees have struck a first-class body of manganese and will ship their first carload shortly.

QUEBEC.—A force of miners is engaged in developing a 50-ft. body of iron pyrites, which averages \$9 per ton gold.



## EL PASO COUNTY—CRIPPLE CREEK.

The contest between W. S. Stratton, the owner of the John A. Logan claim and the Gold Sovereign Mining and Milling Company is attracting considerable attention. This is a tunnel site case; but is not like the famous Rico-Aspen dispute. The plaintiff claims that the State statute of 1897, giving tunnels the right of way to cross patented claims violates the State and the federal constitution.

(From Our Special Correspondent.)

The total gross output for the month of November is placed at \$1,258,600 as against \$1,087,000 for October. A portion of this is based on estimates, as full returns have not yet been received from two or three of the mills, but the re-ult will not be changed materially. 33,250 tons of ore were mined. Of this, 10,200 tons went to the smelters at an average of \$70 per ton, giving \$714,000; 21,850 tons to the various mills for treatment, averaging nearly \$24.38 per ton, or \$532,600, and 1,200 tons to stamp-mills, worth \$10 per ton, \$12,000. The mills are credited with the following: Brodie Gold Reduction Company, 3,000 tons at \$22.50, \$67,500; Gillett Reduction Works, 1,200 tons at \$33, \$39,600; Colorado Ore Reduction Company at Elkton, 1,150 tons at \$25, \$28,750; El Paso Reduction Company, Florence, 2,500 tons at \$27.50, \$68,750; Metallic Extraction Company, at Cyanide, 8,000 tons at \$20, \$160,000; Colorado-Philadelphia Reduction Company, at Colorado City, 6,000 tons at \$28, \$168,000.

At a meeting of the Board of Directors of the Anchoria-Leland Company, held in Colorado Springs on the 4th inst., the regular monthly dividend of one cent per share was declared, payable on December 15th to stockholders of record December 11th. This will amount to \$6,000, and is the 17th monthly dividend declared by this company, which has already paid \$96,000 in dividends, and this will make the total \$102,000 distributed among the stockholders. This company shipped 150 tons of high-grade smelting ore during the past week.

A recent decision in the District Court of El Paso County, held at Colorado Springs, and presided over by Judge Lunt, is of great interest to mine owners generally. The case was that of Charles Ray vs. the Anaconda Gold Mining Company. The plaintiff sought to enforce a lien against the Kittie M. Lode of the Anaconda Company for labor performed by him for the G. M. B. and Leasing Company, who had a sub-lease on the claim from one John Anderson. The plaintiff claimed that the statutes granted a lien on the property to miners working thereon for leasers. The defendant company claimed that the plaintiff had no such lien. Plaintiff based his claim on Section 89 of the mechanics lien law. Judge Lunt reviewed the case at length, and in his findings denied the application, thus deciding in favor of the defendants.

ANCHORIA-LELAND.—The output for November is about 700 tons of an average value of about \$50. Nothing but smelting ore has been shipped. The company is running a crosscut at a depth of 217 ft. This is being pushed with three shifts and the aid of air drills. The objective point of this crosscut is the Johnson vein of the Half Moor, which adjoins the Anchoria-Leland, from which Johnson and others leasing on it have shipped so much valuable ore lately there is little doubt that this vein runs through Anchoria territory. The big shaft has reached a depth of 800 ft., but an increase in the waterflow has stopped work on it and will probably be left as it is until the Cripple Creek and Gold Hill tunnel reaches the shaft, which it is expected will be about the end of January.

FLOURINE.—A strike is reported on this claim belonging to the Montreal Gold Mining Company, and leased by J. O. Hardwick. It is situated on Copper Mountain, north of Spring Creek, and nearly north of Mineral Hill. The development so far consists of an open cut about 30 ft. wide, which under about 18 inches of soil discloses a deposit of ore lying nearly flat. The deepest working so far is a shaft only 18 ft. deep, all in ore. Much of this material is being shipped and is reported as ranging from \$20 to \$200 per ton.

GOLD COIN.—This mine at Victor has one of the most complete plants in the district. The new shaft through which all the mine is now worked is a three-compartment shaft 300 ft. deep. In the first level the ore chute was opened up for about 400 ft., with an average width of some 3 ft. In the second level the vein has widened out to about 5 ft., and has been opened up for a length of about 700 ft. In the third level the ore body so far has been opened up between 400 and 500 ft. with an increasing width varying from 3 ft. to 15 ft. and in one place to over 20 ft. of ore; above the first level there is a body of ore that has not been touched. Between the first and second levels about half the ore has been stoped out, but between the second and third levels very little stoping has been done. Quite an amount of high grade ore is found in the mine, but the bulk of the ore shipped will average upward of \$20 per ton. There is certainly over \$1,000,000 worth of ore in sight at the present time. The daily shipments are from 80 to 100 tons per day; the scarcity of cars has a tendency to curtail this. The net returns of ore for the month of October were upward of \$64,000, with a working expense of \$18,000. The company has lately paid \$25,000 for the Little Montana property which joins its property on the east, and also a dividend amounting to \$10,000. This leaves a treasury balance of some \$50,000. The company is considering the erection of a cyanide plant adjoin-

ing the mine for the treatment of the large quantities of low grade ore.

HULL CITY PLACERS.—A. G. White & Company have sold their three-eighths interest in a lease on Block 12 and part of 13, Hull City Placer, to L. E. Christian, of Minneapolis, for a sum said to be upward of \$10,000. The remaining five eighths are held by C. C. Vaughan, who was recently leasing on the Orizaba, where he opened up a very rich vein of sylvanite ore. The lease runs to October 1st, 1898.

KITTIE M.—Johnson & Anderson have secured a renewal of their lease on the Kittie M., of the Anaconda Company. They expect to open up the rich ore chute of the Half Moon. Johnson was one of the original leasers of the Kittie M., but sold out his interest several months ago to take hold of his present lease on the Half Moon. He has now bought it back, and is said to control the property.

MOON-ANCHOR.—This mine on Gold Hill is a steady producer and the November output will be quite \$5,000 above what it was for October. Four distinct chutes are now open in the 65-ft. vein. The 500-ft level has cut three producing chutes, the Wilson, Peachy and Reed, and it is expected the Cobb will shortly be cut. It has been cut in the 300 ft. level. In the 400-ft. level, 205 ft. of smelting ore is opened up with an average width of 4 ft. The 500 ft. level shows this to be wider and of better grade. The Peachy chute has also widened and now carries ore that will average 4 ft. in width and will run upward of \$70 per ton. The new shaft is down 160 ft. and it will soon be equipped with a hoister, independent engine and air compressor. The regular monthly dividend of 2½¢ per share will be paid on the 1st of December. This amounts to \$15,000. The company's surplus is increasing and the mine is in first-class condition.

## GILPIN COUNTY.

(From Our Special Correspondent.)

BEAM MILL.—There was a report circulated in Black Hawk that a mill of the Beam process-pattern would be built at an early date in the near vicinity of the Mill City, but there seems to be no foundation for the report.

BRANCH.—A lease and bond has been taken on this property on Bobtail Hill, by a pool of local parties. The shaft has been retimbered to a depth of over 100 ft., and sinking operations commenced, with a fair-sized smelting streak in sight.

BUTLER.—Local parties have taken a lease on this property, on Gunnell Hill, and have commenced operations. When formerly operated, some fair-grade smelting ore was taken out.

CENTRAL CITY.—The bottom of shaft is being cleared out and the management expect to go to sinking immediately.

COLUMBUS.—This mine, in Russell Gulch, is now shipping largely both smelting and concentrating ore, returns for the first-class ore showing values of nearly \$80 per ton. The concentrating ore is being successfully treated at the Rocky Mountain concentrator in Black Hawk. This mine is being operated by its owners, Messrs. Waybright & Middleton, of Denver.

## GUNNISON COUNTY.

(From Our Special Correspondent.)

DOCTOR.—Mr. H. T. Keeland, manager of the Aspen sampling works, has secured a two and a half years' lease on this property, and recently opened up a large body of very desirable sand carbonates, similar to the Leadville ore. The mine is in shape to ship all winter and bids for hauling the ore have been called for.

OHIO.—Good ore has been struck in the Ohio, in Dutch Gulch, and arrangements are being made to begin shipping.

## HINSDALE COUNTY.

(From Our Special Correspondent.)

CONTENTION.—Work has been resumed with a large force, under the supervision of Riley & Dawson. The new work will be carried on through the Argus tunnel and will cut the Contention vein 200 ft. below the old workings.

GENERAL SHERMAN.—A new gasoline engine and drills have been put in, and a recent test gave satisfactory results.

HIDDEN TREASURE.—Surface improvements are under way. J. B. Paterson having secured a contract for furnishing 25,000 ft. of lumber, before January 1st.

MINERAL FARM GROUP.—Boston parties have secured a lease and bond on this group and have just begun work on a large scale.

## LAKE COUNTY.

(From Our Special Correspondent.)

In a telegram to the *Engineering and Mining Journal* two weeks ago I called attention to the manner in which the mine owners and operators were worked up over the supposed smelter combine, and intimated that the mine operators would form an association of their own. The calling by the Leadville Mine Manager's Association, through its secretary, Mr. H. I. Higgins, of a meeting to be held in Denver on December 13th at the Brown Palace Hotel is without doubt a step in the direction mentioned. Although the circular issued by Mr. Higgins does not say anything about smelters it sets forth that the meeting is for the purpose of forming a permanent State organization for mutual benefit. The objects of the organization is to be discussed and acted upon at the meeting. From indications

the meeting will be a very large one, and nearly every active mine in the State will be represented.

A leading smelter man in Leadville who would not allow me to use his name stated positively today that the talk of a smelter combine is purely imaginary. He said that if there was a combine his plant was not in it; that the Leadville miner is today getting the best price for ore that the smelter can pay and a better price than a few months ago. He further added that the smelter charges are regulated altogether by the supply and demand, and that no steady and hard schedule of rates could stand for an instant.

BIG SIX COMBINATION.—While shipments are steady from the Nettie Morgan shaft other parts of the property are being actively developed, and this week the Big Six lease shaft ran into ore. The shaft is down 400 ft. and a very rich streak has been encountered, but no ore body has yet been located. The find assayed 7% lead, 0.03 oz. gold, and over 3,000 oz. silver. It was but a streak, however, of a marvellously rich character.

MINING SUIT.—A suit has just been filed against the IbeX Mining Company et al by Jas. B. Belford. The complaint in the case is a very voluminous document and seeks to break the transfer by Trustee Clinton Reed of the Archer consolidation on Brece Hill through lease to the IbeX Company. The action is brought on a charge of fraud on the part of the trustee and asks for his removal, and further asks that an account be made and a receiver be appointed for the property. Another suit of a similar character on the same consolidation is also brought by John Mack et al for their interest in the Archer consolidation.

ORO CITY.—The shaft on this property is to be put down a depth of nearly 400 ft. Operations are being conducted by lessees, who have been unable to locate the ore chute in the upper working, and have let the contract for further sinking. It is supposed that the shaft will cut the Smuggler ore chute at that depth.

PUMPING PROSPECTS.—Mr. C. T. Limberg, who represents the Penrose, Bon Air and other leases given up by the Smith-Moffat Combination, has been in Denver for the past few days and is quoted as saying that he believes the outlook very good for starting the downtown mines soon. Mr. Limberg has been in consultation with Shedy & Kountz, who have obtained a lease on the Starr placer adjoining the other ground. It seems quite probable that a combination will be effected and that the unwatering of this territory is now but a matter of time.

## PITKIN COUNTY.

ARGENTUM JUNIATA.—The company has decided not to renew the lease of that portion of the mine above the fourth level, and will in the future work the ground itself. This territory was cut into blocks some six months ago, 14 of which were leased to Aspen parties. With one exception these blocks gave handsome returns to the lessees, notwithstanding the fact that prior to that time the company could not mine the ground at a profit. A strike is reported on the 13th level of the Mollie Gibson, in Argentum territory.

LITTLE ANNIE.—The ore chute recently struck is said to be 4 ft. thick and to run 60 to 90 oz. of silver to the ton.

SMUGGLER.—The fire in the mine is practically out, according to last reports. The drift driven behind the stope broke into it on November 29th, and a stream of 150 gals. of water per minute was poured on the hot timbers and walls. No attempt will be made to remove the bulkheads and ascertain the extent of the damage until all danger from admitting air freely is passed. The steam poured continuously into the stope for over 10 days had the effect of clearing the mine of smoke and gas, and work was to be commenced with a full force this week.

In the adjoining properties heavy gases that do not rise have caused considerable inconvenience, particularly in the Johnson and the Cowenhoven tunnel, but work will probably be resumed shortly. The way in which Manager Hallett has kept the gas from getting into the lower workings of the Smuggler and driving the pump men from their posts has attracted much attention and given rise to much favorable comment among mining men.

## RIO GRANDE COUNTY.

ANNIE.—The mine and mill of this company recently shut down indefinitely. The Consol Company, operating the mines, is reported to be behind hand and the manager, Kirby, refused to continue the work until bills were settled.

## SAN MIGUEL COUNTY.

(From Our Special Correspondent.)

MELDRUM TUNNEL AND MINING COMPANY.—This enterprise, backed by a large amount of Scotch capital, is preparing for the construction of a large air compressor plant at Pandora, one mile above Telluride. When completed the plant will furnish power for machine drills to be used in driving the Meldrum tunnel from this side of the range. As projected the tunnel will be constructed from Pandora to a point near the Guston mine, near Ironton, in Ouray County, and will be 21,200 ft. in length. It is figured that it will cost in the neighborhood of \$3,000,000. The tunnel has already been driven about 1,000 ft. into the mountain from the Ironton side of the range, and on this end it is in over 300 ft. Work on this side will be prosecuted by hand until the



compressor plant is ready for operation. At its completion the tunnel will afford transportation facilities, drainage and ventilation to 32 different known and worked lode claims, the most prominent among them being the Tom Boy, Belmont, Mountain Chief, Japan, Sultana, Climax, Flora, Argentine Nos. 1 and 2, Elephant, Columbia-Menona, extensions of the Smuggler-Union, Cincinnati, and Bradley and Pioneer. The veins will be cut at depths varying from 2,600 to 1,280 ft. The tunnel will provide transportation for their ore to the terminus of the Telluride branch of the Rio Grande Southern Railroad, or to the Silverton Railroad at Ironton. The tunnel will be 12 x 15 ft. in the clear. Its principal object is to reach the ore deposits believed to exist in Savage basin and Ajax Peak, and carry ores to places where there is plenty of water for milling. J. M. Jardine, assistant cashier of the First National Bank, is the company's representative in Telluride, and it also has an office in Glasgow, Scotland.

**SMUGGLER UNION.**—The company's large tramway between its 50-stamp mill at Pandora and the mines fell down on November 23d. It is believed the break-down was caused by stringing another large cable recently for the purpose of increasing the capacity, which proved more than the tramway could sustain. The mill will doubtless be closed down for several weeks in consequence.

**TERRIBLE & BUTTERFLY.**—A first payment of \$25,000 was made November 23d on the Terrible and Butterfly mines, in the Trout Lake District, owned by K. Benson, and these properties are sold to the Anglo-American syndicate, principally composed of Englishmen, for a consideration of \$190,000. The deal was negotiated by Harry B. Adsit, former general superintendent of the Tom Boy Gold Mines Company, and it is reported that he has signed a two years' contract to act as general manager of the properties. The purchaser contracted for about 250,000 ft. of lumber to be used in the construction of a large mill building at the mouth of the lower working tunnel, and the machinery for the mill, which will comprise 30 stamps with concentrating appliances, has already been ordered.

**UNITED STATES & BRITISH COLUMBIA MINING COMPANY.**—Five feet of \$50 ore, principally gold, was recently encountered in the lower level of the Liberty Bell, which, together with the Greenback and Lucky Girl, all in Cornet Creek Basin, was purchased by this company last spring. A crosscut tunnel is nearly completed which will tap the vein 200 ft. below the lower level. This company is also developing the Tariff and Diamond King in Cornet Creek, on which it has bonds, and the veins so far opened up are very promising. It is expected that Liberty Bell product will shortly be packed to the Allegheny 20-stamp mill for treatment.

**VALLEY VIEW GOLD MINING COMPANY.**—Mable A. Banks, of Denver, was recently appointed manager of this company, vice Blakely Graham, resigned. Ten inches to 5 ft. of \$25 to \$40 ore is regularly opened up by the winze from the fourth level, and by drifts on the vein each way from the winze at intervals of 150 ft. A new working tunnel has been started on the vein, 550 ft. below the lowest of the upper workings. The winze, now down 275 ft., will be sunk to this tunnel, and after connection is made the entire output will pass through it. Handsome retorts are brought down from the company's stamp mill, on Marshall Creek, at frequent intervals for shipment to the mint, and the mill will keep going all winter, arrangements having been made for plenty of water for milling purposes.

**YELLOW GIRL.**—Briarly, Grau, Hawke and partners lately secured a lease on the whole of this property, lying on Silver Mountain, between the Gold King and Suffolk, and have made a contract for the treatment of 300 tons monthly of their ore at the Gold King 40-stamp mill. The balance of the product will be treated at the Iliam 10-stamp mill at Ophir. The pay streak of this mine averages 2 ft. wide. The ore is free milling and runs \$20 per ton on the plates.

#### GEORGIA.

##### PAULDING COUNTY.

A tract of 600 acres has been sold to J. H. Feare, of Halifax, Nova Scotia. The purchaser represents a syndicate and intends to open gold mines on the tract.

#### IDAHO.

##### BOISE COUNTY.

**BAY CITY MINING COMPANY.**—This company has been organized to work a tract of placer ground near Lardo, said to comprise 12 square miles. The system of ditches to be used will aggregate 21 miles. The company is capitalized for \$30,000. The principal place of business is Lardo, and directors named for the first year are Edgar A. Cooley and Irving W. Snyder, of Bay City, Mich.; Robert M. Wilson, of Boise; R. Burch Dolsen and H. M. St. Cyr, of Lardo.

**BOISE BASIN PLACERS.**—According to reports, A. J. Mallory, representing New York parties, has bonded 1,000 acres of placer land in Boise Basin at Idaho City. In connection with it he has secured water rights, embracing all the available water in that vicinity. The deal includes the property of K. P. Plowman, that of Joseph Branstetter and the Hanson property. It is the intention of the new company to enlarge the ditches and concentrate the water so that operations can be conducted upon a larger scale.

**TWIN SPRINGS COMPANY.**—This company has recently bought through J. B. Nibbler 200 acres of placer ground lying between the middle and south branches of the Boise River.

#### IDAHO COUNTY.

**LAKE CREEK GOLD MINING COMPANY.**—Mr. J. M. Knable, who has been superintending this company's work during the past season, states that 2½ miles of ditch has been constructed, with a total capacity of 2,000 in. The company has 2,200 ft. of pipe, most of it 13 in., and two giants on the ground.

#### OWYHEE COUNTY.

**HYDE vs HARDIMAN.**—In this case Judge Stewart, of the Supreme Court, has decided that the doctrine of riparian rights has not prevailed in Idaho, and that the defendants are entitled to only so much water from Pickett Creek as the small ditch taken out on their land will carry.

#### SHOSHONE COUNTY.

**BUNKER HILL & SULLIVAN MINING COMPANY.**—The new plant of machinery is in place and work is being pushed in the long tunnel.

**FLYNN GROUP.**—The Consolidated Kansas City Smelting Company is understood to have taken a bond for \$235,000 on this group of 16 claims, near Wallace. The ground is said to be some of the best in the Cœur d'Alenes, beginning at the east lines of the Black Bear and Frisco and covering these leads to the Morning and Grouse. Though other smelting companies hold large interests in Sunset Peak properties, they have let them lie idle till lead ores are harder to get.

#### WASHINGTON COUNTY.

**NEW YORK & IDAHO SMELTING COMPANY.**—This company is pushing development on the Peacock, the Helena and the White Monument claims. The principal work so far has been on the Peacock outcrop, where an open cut shows a face of 40 ft., running about 20% copper and \$8 gold per ton. A part of it runs as high as 30% copper. The smelting furnace is completed, but has not yet been started up; it will be put in operation as soon as arrangements are completed for transportation, which will be for the present by steamboat on Snake River. The smelter will make about a 55% matte. A small quantity of the richer ores will be shipped without matting.

#### ILLINOIS.

The miners who went to work in the Northern district on November 26th started to go out again on account of some small details, but the bulk of the men stayed in. On December 4th the miners and mine workers of the LaSalle district had returned to work at the various shafts of LaSalle, Peru, Rockwell, Jones and Oglesby. The committee sent to Spring Valley to try to persuade the men there to come out failed to accomplish its object. The settlement between the miners and the operators of the LaSalle district is 60 cts. per ton gross weight for mining coal and \$1.75 per day for company men.

#### MACOUPIN COUNTY.

The Green Ridge coal mine, near Girard, has been sold to a Chicago syndicate for the reported price of \$175,000. The mine was started about three years ago. The coal rights embrace nearly 10,000 acres. The mine employs about 200 men.

#### INDIANA.

Mass meetings were called this week at the various cities in the natural gas belt, at which petitions were to be signed, calling on the Governor to enforce the law against gas waste. Millions of feet a day are escaping about Alexandria, and the citizens feel that the welfare of this whole gas belt is at stake. Attempts to prevent waste have so far failed.

#### SULLIVAN COUNTY.

Striking coal miners, to the number of 350, returned to work December 1st in the Sullivan County district. The miners and mine owners reached a settlement through a conference with President Knight, of the miners, and the State labor commission.

#### KENTUCKY.

##### BELL COUNTY.

E. H. Jones has leased the coal mines at the forks of Straight Creeks and will work them to their fullest capacity.

##### BOYD COUNTY.

The Ashland Improvement Company, on November 29th, made a general assignment to Willis L. Ringo, for some years its manager. The assets are \$119,583 in lands, \$105,285 in stock and \$6,250 in notes and accounts, making a total of \$231,128. The liabilities in notes and accounts are \$140,702. The old townsite corporation known as the Kentucky Iron, Coal and Manufacturing Company, the stock of which is largely held by the Ashland Improvement Company and the Ashland & Catlettsburg Street Railway, also thus held, will not be embraced in the failure. The loss falls almost altogether on outside parties, who in 1890 put over \$100,000 in the venture. The falling off in the sales of real estate was the cause of the failure. Ex-Gov. S. B. Buckner is president of the company.

#### LINCOLN COUNTY.

At Preachersville a 3 ft. vein of cannel coal has been struck. A number of hands will be employed and the mine opened at once.

#### MORGAN COUNTY.

**MORGAN COUNTY CANNEL COAL COMPANY.**—This company has been chartered at Frankfort, Ky., by R. K. McClure and others to operate coal mines.

#### MAINE.

##### HANCOCK COUNTY.

According to numerous reports, a syndicate of New York and Boston capitalists are making preparations to reopen the old copper mines at Blue Hill. The syndicate has organized a stock company with a capital of \$1,000,000. The Blue Hill mines were last operated in 1879.

#### MARYLAND.

##### ALLEGANY COUNTY.

**WILLIAMS MARBLE COMPANY.**—This company has been incorporated by J. B. Williams, T. E. Lewis, Thomas J. Price and others, with headquarters at Frostburg, to work marble quarries near that place.

#### MICHIGAN.

##### COPPER.

The output of the mines publishing returns for November is: Atlantic 274 tons, Franklin 153 tons, Quincy 927 tons, Wolverine 106 tons.

**BALTIC.**—The ore body at this exploration is exciting widespread interest. Copper is shown by the three pits giving a length of 370 ft. so far. The foot wall has been struck in but one pit, and no hanging wall has been found yet; although one drift—driven to crosscut the vein—is 50 ft. long and still in ore. Until the foot and hanging walls have been found in two pits one guess as to the extent of the ore body will be as good as another. The formation is unlike that of any mine yet opened in the region. The country rock is amygdaloid. The copper is found in irregular lumps replacing seams and masses of calcite, the lumps averaging about the size of a man's fist. The chute is apparently about 1,000 ft. horizontally east of the bed shown in the Isle Royale. The location is E. ½ sec. 20, W. ½ and N. E. ½ sec. 21, T. 54, R. 34. The pits are near the ¼ post. The compressor is in place, and three power drills are soon to be at work. The stock will not be listed until sufficient work is done to show up, at least, the surface extent of the ore body, and enable some estimate to be made of its value as an investment. The rock will be handled by the Atlantic mill and railroad.

**CENTRAL.**—On account of the fire the output for November was but 10 tons, the mine being shut down more than half the month. The December production, however, will probably be over 40 tons.

**FRANKLIN, JR.**—Manager Pope states that the rock from the mine in November yielded 1.3% and the amount of copper from the stamp mill was larger than for any month this year except April. He hopes in a few days to increase the output from the Junior so that he can keep our stamp going for a month's run on that rock alone.

##### IRON—MARQUETTE RANGE.

The Ishpeming branch of the Miners' Union has made another written demand on the three companies operating mines there for an advance in wages. The increase asked is 15%. The officials of the companies refuse absolutely to have anything to do with the union. It is stated, however, that an increase in pay for the miners has been under consideration for some time, and but for the action of the union the advance would have gone into effect December 3d. As it is, if the union makes no further demands, the rise will come before long. The operators do not say exactly how much wages will be increased.

**CHAMPION.**—This mine has made an output of 135,000 tons this year. On this tonnage, considering the character of the ore, the depth from which it is raised, and the expense of crushing, fixed charges must be kept down to permit of a balance on the right side at present prices.

**CLEVELAND CLIFFS.**—Work about the Cliffs shafts has been hurried to allow pumping to begin as soon as possible. The foundations for the ore crusher are finished.

**CLEVELAND-CLIFFS.**—The water in the Cliffs shafts is going down slowly. It takes the full capacity of the pump. Bailers will soon be running, and then it will not be long before the bottom level is reached.

**JACKSON.**—A few thousand tons have been shipped from the stockpile at the South Jackson mine, but no work has been done in the pits. During the shipping seasons for the past few years only an occasional order for this ore has been received, so that no great amount of it has been forwarded. All work at this mine has been suspended, likely for the season.

**LAKE ANGELENE.**—Another pump will be used in removing the water from the basin of Lake Angeline. The present one is altogether too large to do the work required economically. The cost of keeping the water out will be greatly reduced when the new one is in use.

**REPUBLIC.**—This mine has, within the past three months, sent out a considerable tonnage of high silica ore. It was secured by an assortment of the immense rock burrows, containing millions of tons of mixed and lean ores and rock entirely without value. The ore is in demand as a sweetener of Mesabi ores.

**WINTHROP.**—The Winthrop No. 3 pit, which has



been worked during the past few weeks, is idle again. It is not certain that the work at this pit has been suspended for the winter.

IRON--MENOMINEE RANGE.

**CHAPIN.**--The new sliding scale lease under which the Chapin is operated during the current year fixes the royalty as follows: When ore at Cleveland brings \$2.10 a ton, or less, the royalty is 6c. a ton; \$2.10 to \$2.15, 7c. a ton; \$2.15 to \$2.20, 8c.; \$2.20 to \$2.25, 9c.; \$2.25 to \$2.50, 10c.; \$2.50 to \$2.75, 15c.; \$2.75 to \$3, 20c.; \$3 to \$3.25, 22c.; \$3.25 to \$3.75, 25c.; \$3.75 to \$4, 28c.

**HEMLOCK.**--James George, head captain at this mine, has resigned to take a similar position at a mine in California.

KALAMAZOO COUNTY.

(From an Occasional Correspondent.)

Quite an extensive deposit of marl has been found at Climax, Mich. It has been known for many years that marl existed in this locality, but no idea was had as to its extent. Recently Mr. F. Hodgman, of Climax, secretary of the Michigan Engineering Society, has caused an examination to be made, and it is found the deposit covers an extent of 100 acres or more and runs from 6 to 20 or more feet in depth.

MINNESOTA.

IRON--MESABI RANGE.

(From Our Special Correspondent.)

**OLIVER MINING COMPANY.**--Stripping is going on as actively at the Mountain Iron mine with three shovels and an immense area will be added during the winter to the minable surface. It looks as if the next year's production of this mine was intended to be even greater than that of the present season. At the Oliver stripping is also in progress.

In current publications, commenting on the work of putting automatic couplers on freight cars, the statement is made that only two or three roads, and they all in the East, have complied with the orders of the Interstate Commission on this point. The Duluth & Iron Range road has been for some years completely equipped with air brakes and automatic couplers, as well as every other practical safety appliance in best practice.

Ore is still being loaded at Two Harbors, but the weather is very cold and work may stop any day. The season is already the longest ever known at the port.

ST. LOUIS COUNTY.

Press reports from Duluth state that iron ore has been found in large quantities and close to the harbor, and that it can be put on board boats for 15c. a ton. Somewhat similar finds were reported from the same locality during the Mesabi excitement in 1892 and 1893. There is plainly some mistake about the present find, as the reports say that the ore contains but 22% of iron.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

**JOPLIN ORE MARKET.**--The past week was an unfavorable one for out-door operations in the mines. The severe weather Monday, followed by the sleet and snow of Friday and Saturday caused a partial suspension of work and the result shows a greatly decreased turn-in. The probability of continued bad weather stiffened up the market and six carloads of zinc ore sold at \$24.50 per ton, with a raise on the other grades. Lead ore went up a dollar per thousand pounds, selling at \$24.25 per 1,000 lbs. delivered. There is a very little surplus of zinc ore in the district, but lead ore has accumulated at several camps, the holders waiting for higher prices. For the corresponding week last year top grade zinc ore sold at \$26 per ton, and lead ore opened at \$15.50 per 1,000 lbs., and closed at \$16.50, going up a dollar a thousand pounds, the same as the past week.

As compared with the preceding week the sales of ore for the past week were less by 1,323,400 lbs. of zinc ore and 502,070 lbs. of lead ore, and the value was less by \$24,131. Following are the sales of lead and zinc ores from the different camps in the district for the week ending December 4th, 1897: Joplin, zinc, 1,267,590 lbs.; lead, 147,900 lbs.; value, \$18,164. Car.erville, zinc, 993,370 lbs.; lead, 209,800 lbs.; value, \$15,521. Webb City, zinc, 329,440 lbs.; lead, 20,190 lbs.; value, \$3,955. Oronogo, zinc, 371,290 lbs.; value, \$4,057. Galena, zinc, 2,630,000 lbs.; lead, 237,000 lbs.; value, \$33,362. Aurora, zinc, 585,000 lbs.; lead, 25,000 lbs.; value, \$5,132. Mt. Vernon, zinc, 255,290 lbs.; lead, 30,000 lbs.; value, \$3,727. Springfield, zinc, 44,000 lbs.; lead, 50,000 lbs.; value, \$1,741. Belleville, zinc, 9,860 lbs.; lead, 1,430 lbs.; value, \$114. District totals for last week: Zinc, 6,465,750 lbs.; lead, 721,380 lbs.; value, \$85,773. District totals for 49 weeks: Zinc, 328,451,286 lbs.; lead, 55,170,730 lbs.; value, \$4,214,563.

**AMERICAN LEAD AND ZINC COMPANY.**--The company has put in a large pump, drained a 10-acre lease of the Connor land and built a large steam concentrating plant, which they will start up Monday. They are drifting at 190 ft. on a large face of zinc ore in open ground.

**BRAMSTETTER & COMPANY.**--On the Kohinoor land, west of Joplin, these parties are making improvement. They have a 30-ft. face of zinc ore which they have been working for three weeks. They will soon nearly double their output and sell 50 tons of high-grade zinc ore weekly.

**HEROLD MINING COMPANY.**--This company has

a 40-acre lease on the Connor land, near Webb City. They are replacing their lift pumps by a steam pump, and will sink their shaft to 238 ft. The shaft is down 218 ft. in good pay dirt.

MONTANA.

JEFFERSON COUNTY.

**NEW ELKHORN MINING COMPANY.**--The November report of the superintendent, W. S. Kelley, states that the usual amount of exploration work was done without any very noteworthy results. The total amount of ore hoisted was 1,190 cars. The mill ran without interruption during the month. In all 1,667 tons of dry ore were panned during the month of an average assay value of \$43.52; the tailings assayed \$4.02, giving a per cent. saved of 92.5. Forty-two deré bars were produced containing 45 oz. gold and 44,354 silver. Estimated value of bullion shipped, \$22,178; net value of bullion, \$24,807. Expenses, \$22,243; profit, \$2,564.

GRANITE COUNTY.

(From Our Special Correspondent.)

**BIMETALLIC MINING COMPANY.**--Orders have been given by President Fuzz, of the Bimetallic Mining Company, to put in a compressor plant at the mouth of the big drain tunnel and the boiler is almost in place. The object of the company is to drive a cross-cut from the tunnel south to the Alice-Nora vein to prospect it at a greater depth.

LEWIS & CLARKE COUNTY.

**AFTON CONSOLIDATED.**--A vein of considerable size and richness has been struck in these mines, close to Helena.

**BARRE CREEK.**--According to Mr. E. R. Lippincott the coalbeds on this creek which were located last September promise very well. A tunnel driven 70 ft. shows three veins, with an aggregate thickness of 5 ft. The coal is said to be of good quality and similar to that of the Lethbridge deposits.

**GOLDEN HOPE.**--This property, near Townsend, has passed into the hands of Simeon Wenban, of San Francisco. The price is said to have been \$35,000 cash. J. M. Musgrave, of San Francisco, acted as Mr. Wenban's agent in getting the property.

**MONTANA MINING COMPANY.**--A new pump of 500 gals. per minute is being put in at the 1,600-ft. level of the Drumlummon, the lowest working of the mine. This would indicate that the old mine is not likely to shut down immediately.

MEAGHER COUNTY.

Press dispatches under date of December 5th state that John Cudahy, of Chicago, has acquired a controlling interest in the Big Seven mine, near Neihart, for \$225,000. The Big Seven company is capitalized at \$3,000,000, and was originally a silver mine, which became almost valueless when the price of silver fell. Recently a gold lead was struck, and the Cudahy purchase was made on the indications that the mine will prove rich in gold.

MISSOULA COUNTY.

**KENTUCKY & MONTANA MINING COMPANY.**--J. C. Eiseman, president of this company, recently stated that the company owns a group of 10 claims on Silver Butte Mountain, 15 miles from Vermillion. The development so far consists of about 2,750 ft. of tunnel and 500 ft. of inclines and crosscuts. At present 70 men are steadily employed. The mill is equipped with 10 Hartz jigs, a large Comet ore crusher, two sets of Fraser & Chalmers' 16x30 in. rolls, two double-deck Roan's slime tables, elevators and a 10-ton wagon scale. The power is derived from a turbine wheel with 150 ft. pressure. The ore will run 35 oz. in silver, 60% lead and a small percentage in gold, and the mill turns out daily about a carload of concentrates. The directors are J. C. Eiseman, president, and R. R. Schuider, general manager, who are at the mine, and Zach Phelps and Philip Ackerman, of Louisville, and Chas. H. Trame, of Covington, Ky.

SILVER BOW COUNTY.

**ALICE.**--During the year a large amount of exploration work has been done with satisfactory results. At present the ore is coming from the 1,000 level. The 60-stamp mill is handling this and the ore from neighboring ground. About 9,000 tons a month go through the mill. The company employs about 170 men, while 70 men are leasing. The mill is reported to be doing very economical work, handling ore that carries but 12 oz. silver and \$1.50 gold at a profit. Another dividend is expected soon. F. W. Buzzo is general manager.

(From Our Special Correspondent.)

**ANACONDA MINING COMPANY.**--The Grant mine, which is an extension of the St. Lawrence, one of the Anaconda properties, is being sunk from the 350 to the 450th level. The leasers, Metcalf & Sweet, have already extracted a large quantity of ore from this mine, and still continue taking out from 45 to 50 tons every 24 hours. Crosscutting will be commenced as soon as the shaft is down.

**BOSTON & MONTANA.**--Prospecting with the diamond drill is still being carried on at the Atlantic shaft, one of the properties of this company.

**COLUSA-PARROT MINING AND SMELTING COMPANY.**--Articles of incorporation of the Colusa-Parrot Mining and Smelting Company were filed November 26th. The incorporators were W. A. Clark, Charles W. Clark, Alex. J. Johnston and Arthur Wethey. The capital stock is \$1,000,000, divided into 10,000 shares of \$100 a share. Spokane, Wash., is the principal place of business of the com-

pany. The Colusa-Parrot is the adjoining mine on the east line of the famous Parrot mine.

**ELLA.**--At the Ella mine, in Meaderville, the shaft is being renovated, the old timbers being taken out, and larger ones put in place. Crosscutting is being carried on and the general opinion is that a rich body of copper ore will be struck in less than 200 ft. John Bordeaux, the well-known mining-man, still owns the controlling interest in this mine, reports to the contrary notwithstanding.

NEVADA.

CHURCHILL COUNTY.

**EAGLEVILLE.**--Good reports are sent out from this camp, which is 30 miles from a railroad. The Eagle has a shaft down 300 ft. and an adit 500 ft. long to the foot of the shaft. The pay streak is 18 to 24 in. wide, a gold ore. W. S. Bacon is developing the claim. The Great Eastern in the same camp is being worked by Percival & Kenyon, who are shipping the rich ore, and saving the lower grade until a mill is erected.

WHITE PINE COUNTY.

**STAR AND GRAY EAGLE.**--At these mines surface work is being pushed. The engine is on the ground, the engine-house is ready and the machinery is going into the mill.

NEW MEXICO.

GRANT COUNTY.

**HELENA.**--Report says that this gold property has been taken from Messrs. Whitehall and Woods by parties who will put in a cyanide plant if the ore can be handled successfully by that process.

**PACIFIC MILL.**--Messrs. Crawford and Derbyshire, who have been working the old tailing pile of this mill, are doing well. October's product is said to have been 430 tons from six Frue vanners. A Wilfley table has been added to their plant. The entire output is taken by the Silver City Reduction Works.

**SILVER CITY REDUCTION WORKS.**--The present capacity is reported to be between 90 and 100 tons per day, the plant having been recently enlarged. S. C. Bretherton is superintendent.

**TEXAS.**--A chute of ore has been struck in the shaft at 333 ft. The streak is but 3 in. wide, but is said to be silver sulphurets with native silver. The stakes on the 300 level are turning out some good ore.

TAOS COUNTY.

**MIDNIGHT.**--It is stated that sufficient ore is now in sight to keep the mine running several months. A. E. Robinson recently resigned as manager, and Benjamin Hastings fills his place.

NORTH CAROLINA.

CHATHAM COUNTY.

**CUMNOCK COAL MINE.**--The recent sale of this property by the receiver to a Baltimore syndicate has been ratified by the court. It is understood that the new owners will operate the mine on a large scale.

OHIO.

Recently in the Athens County Common Pleas Court Judge Wood gave a judgment for \$132,000 in the case of the Massachusetts Loan and Trust Company against the Greendale Coal Company. The property of this company is located in Hocking and Athens counties, and C. H. Boardman, of Columbus, is receiver.

ATHENS COUNTY.

One man was killed and two fatally injured at the coal mines at Floodwood on December 8th.

PENNSYLVANIA.

ANTHRACITE COAL.

The report of John Maguire, of Pottsville, mine inspector of the Eighth Anthracite District, embracing 42 collieries, shows that there were 163 accidents in the district during the year ending December 1st; of these 41 were fatal. The fatal accidents numbered 6 above ground, while underground there were 8 from falls and various causes about the shafts, 11 from falling ground, 9 from explosions of gas and 6 from explosions of powder and dynamite, including premature blasts. The fatal accidents are 22 less than last year.

**LEHIGH COAL AND NAVIGATION COMPANY.**--This company gives notice that the bonds of the gold loan which mature on December 15th will be paid in full on and after that date at the office of the Fidelity Trust, Insurance and Safe Deposit Company in Philadelphia. There are \$2,810,000 of these bonds outstanding. Of this indebtedness, bonds to the amount of \$2,310,000 were assumed by the Central Railroad Company of New Jersey, in consideration of the sale of the railroad equipment of the Lehigh & Susquehanna Railroad, at the time of the lease of that road in 1871, and \$500,000 were assumed by the Lehigh & Wilkes Barre Coal Company as a part of the purchase money of a tract of coal lands in the Wyoming Valley. These companies now furnish the funds to extinguish this amount of the indebtedness of the Lehigh Coal & Navigation Company, which is thus reduced to \$15,000,000, the amount of the general mortgage.

A terrific explosion of gas in the Clear Spring Colliery, at Pittston, fatally injured three men. The mine was badly damaged.

BITUMINOUS COAL.

Judge Frazer, of the Allegheny County Court, recently decided that the law passed by the last leg-

islature requiring coal to be weighed before it was screened when used as a basis in regulating miners' wages is unconstitutional. The case was appealed to the Supreme Court.

Preliminary work on the recently chartered Johnstown, Ebensburg & Eastern Railroad has begun and is being pushed rapidly. The road will connect with the Beech Creek at Ramey, in Clearfield County, and with the Baltimore & Ohio at Johnstown. It will be 63 miles long, and will give the Beech Creek, through the Baltimore & Ohio, a connection with the West, besides giving transportation to a very large coalfield.

#### PETROLEUM.

The Elk Fork pool in the lower southwest fields holds attention. No. 2 well of the Fearless Oil Company, on the Gorrell farm, started with a record of 70 bbls. an hour. The production of the pool for the month of November was 240,000 bbls.

The Midland division of the South Penn Oil Company has purchased I. E. Mallory's one-fourth interest in the Matson Oil Company. The interest consists of producing property in the Watsonville pool in the Bradford field, and was not included with the \$1,400,000 purchase made almost a month ago. Mr. Mallory received \$87,000 for his interest, which was a slight advance over the proportioned price paid for the other interests.

#### RHODE ISLAND.

##### PROVIDENCE COUNTY.

**RHODE ISLAND GRAPHITE COMPANY.**—According to Mr. J. Esdaille Florence, this company has in its property, near Cranston, a well-defined fissure vein 18 ft. wide between walls of gneiss. The graphite shows a structure between scaly and granular; the best analysis obtained is 52% pure carbon, the balance silica, oxide of iron and a trace of sulphur. The property was originally a quarry and in making the open cut the vein has been exposed for 72 ft. The company is sinking a shaft, which is down 20 ft. The company is erecting a plant, which will be in full operation before January 1st for preparing the graphite for market. There has been some trouble experienced in obtaining a proper machine for pulverizing, owing to the silicious nature of the graphite, it having a strong tendency to cut out the ordinary grinding machinery, but this has been largely overcome by using an attrition machine. The complete process for handling the raw material is as follows: The graphite, when hoisted from the mine, is crushed, carried by a conveyor to the drying furnace, from there to the pulverizer, and thence to the screens to get the different meshes, when the product is ready for the market.

##### SOUTH CAROLINA.

##### BERKELEY COUNTY.

**ASHLEY PHOSPHATE COMPANY.**—The plant and properties of this company, on Ashley River, have been sold to the Virginia Fertilizer Company, of Richmond, Va., for \$25,000.

##### SOUTH DAKOTA.

##### LAWRENCE COUNTY.

(From Our Special Correspondent.)

**BEAR GULCH.**—This district, one of the oldest camps in the hills, is at present the scene of active placer mining. Not only is placer mining carried on in the summer, but there are several quartz claims which are showing well. On one claim there is a shaft 153 ft. deep which shows a good ledge of free-milling ore. In another shaft is found a 5 ft. ledge, which carries considerable cassiterite. One miner has a large amount of stream tin which will soon be shipped East for treatment. Owing to an unusual shortage of water in the gulch this summer the placer season was very short.

**BELLE FOURCHE SMELTING AND REFINING COMPANY.**—Articles of incorporation have been filed for this company at Belle Fourche, with a capital of \$2,000,000. The incorporators are H. G. Holman, A. C. Ottis, Philadelphia; W. J. Bishop, F. L. Langan, F. W. Johnson and James Crawford, Minneapolis; Fred M. Brown and John Wilson, Deadwood.

**CONSOLIDATED HARDIN MINES, LIMITED.**—This company has very recently purchased from Jas. D. Hardin nine claims adjoining the Hardin mines in the Two Bit District, the entire property consisting of 100 acres. Mr. James F. Hardin is president, H. M. Quackenbush is treasurer and J. H. Delaney secretary. The purchase is said to represent almost wholly foreign capital. The company contemplates erecting at Two Bits a large smelter. Work has already begun on two shafts.

**CUSTER DISTRICT.**—A group of three claims about three miles north of Custer, is attracting considerable attention because of a recent discovery on the ground. A ledge has been traced across the claims, samples from which assay very high. The ore is solid and carries considerable value in concentrates. The ledge is 14 ft. wide and varies in thickness.

**ELK CREEK.**—A stampede was occasioned last week by the discovery of gold in the Elk Creek District, about 15 miles southeast of Deadwood, near the Runkel sawmill. The discovery is an outcrop of black quartz. This is a new field for gold discoveries, though a few miles west of the find is the Old Uncle Sam mill and mine which operated several years ago to a good profit. The mine has been closed down because of an overflow of water.

**GRANTZ PROPERTY.**—This property is a short distance northwest of the Reddy and consists of two

claims. The mines have been worked two years by quarrying. There is a large body of quartzite ore that apparently underlies a portion of both claims. The ore is 6 ft. thick in many places and covered by from 6 in. to 2 ft. of soil and gravel, requiring merely to be stripped in order to be taken out. A 6 ft. face is exposed for nearly 200 ft. From five to seven cars are loaded a week and shipped to the Deadwood & Delaware smelter.

**HAWKEYE COMPANY.**—This company owns seven claims and joins the Homestake possessions on the east, running to within 200 ft. of the Highland mill. The company is composed principally of capitalists who live at Des Moines, Ia. Their Black Hills' representatives are Superintendent Fry and Business Manager David Hunter. The Hawkeye mill is at Pluma. It has 40 stamps. The ore is conveyed to the mill by a trolley system over a mile in length.

##### PENNINGTON COUNTY.

(From Our Special Correspondent.)

**GOLDEN SLIPPER.**—A shaft has been sunk about 200 ft. on an incline. It is said over \$20,000 worth of bullion has been shipped from this mine.

**GREY EAGLE.**—The owners of the Grey Eagle and Blue Lead, which are copper properties, near Sheridan, have recently prospected with a diamond drill to the depth of about 200 ft. Several other holes will be drilled at an angle with the formation. Samples of ore assay about 15% copper.

**HOLY TERROR.**—The shaft in this mine is down 550 ft. and the ledge is strong and the ore is rich. The company has been putting in new and expensive machinery and is now in excellent condition. The ore remained very rich until the 200-ft. level was reached when it fell off very materially. The shaft was continued to the 400-ft. level when the rich ore was struck again. A monthly dividend of \$9,000 is being paid by the company.

**SUNNY SIDE.**—The shaft in this mine is down 200 ft. and follows a strong vein of free milling ore lying between slate and quartzite. The shaft will be sunk another 100 ft. and a drift from the 200-ft. level toward the north. The 10-stamp mill is making a continuous run.

**THE SOUTHERN HILLS' MINES.**—Since the Holy Terror mine began to pay dividends and has continued to make payments, investors have taken more interest in property in this district. There are five free-milling propositions near Custer, within a circuit of one mile, which will show good gold values.

#### TENNESSEE.

##### RHEA COUNTY.

James M. Head, an experienced mine operator of Dayton, Tenn., has leased the Nelson mines of the Dayton Coal and Iron Company, and will operate them in the future. Mr. Head was formerly very successful with the mines, but left them immediately after the explosion two years ago. Work has been suspended for over a year.

##### ROANE COUNTY.

**POPLAR CREEK COAL COMPANY.**—This company has been organized as follows: A. J. Queener, president; H. M. Corr, vice president; G. W. Queener, secretary and treasurer. This company will operate the Poplar Creek coal mines formerly worked by Queener Bros.

#### TEXAS.

##### UVALDE COUNTY.

Various reports have been circulated about gold discoveries near Uvalde. Several prospecting parties are doing exploration work, and some rich ore has been found; whether it is in paying quantities remains to be seen.

#### UTAH.

(From Our Special Correspondent.)

Winter opened with a snowfall on December 1st that was general in all the mountain districts, which interfered with surface work and retarded shipments. Owing to this storm several development undertakings were closed down earlier than anticipated. Snow fell 1 to 2 ft. in the different camps, then it turned cold—an unlooked-for happening following so soon after the November storms. In spite of the inclement weather the ore supply at this center for the beginning of the new month shows an improvement. Particularly is this true of Tintic, where the resuming of active mining in the Bullion-Beck, Mammoth's increased production and a brighter outlook for other mines, all indicate that the improvement is other than a temporary spurt. Bingham and Fish Springs promise an increased December tonnage. Park City last month hardly came up to the expectation, though its total output is a shade more than for October, and will probably be maintained. Mercur and other localities present no special change, and generally, where there is any at all, it is for the better.

The Pennsylvania fired one stack handling 120 to 140 tons daily just prior to December 1st, after its brief close down, making the total ore treatment—other than copper products—at the three smelteries 550 to 600 tons per diem. A few days ago the Germania purchased 3,000 tons of copper ore of the defunct Salt Lake Copper Manufacturing Company—its last asset of this character—most of which came from the Ajax, at Tintic, several years ago. This added to the accumulation of the past eight weeks, with what is coming to hand, indicate a considerable copper production soon.

Some mine owners are skeptical about the alleged smelter combine coming to naught, as announced

by recent Eastern associated press dispatches, saying that is exactly the report which would be made public if there was to be a rearrangement of treatment charges and a dividing up of ore-yielding territory. They affirm their belief that a new schedule will be made known about the first of the year, and that mine owners should perfect an organization to protect their interests. A few urge a combine of large producers, and an agreement, if necessary, to stop shipments, to demonstrate to the smelters that they cannot always have everything their way. Now that silver appears to be gaining, and industrial conditions generally are more favorable than during the summer, it is to be hoped there will be no occasion for any such friction, which would mean a severe setback.

**FREIGHT ON CYANIDE OF POTASSIUM.**—A reply is received to the petition of the owners of cyanide plants in the West, praying for a reduction of freight from New York on cyanide of potassium, particularly when shipped in carload lots, which was mentioned in the *Engineering and Mining Journal* of November 27th. The request is denied by the Freight Classification Committee of the different railroads, and the rate of \$4.02 per 100 lbs. to Salt Lake will continue in force. A few years ago cyanide of potassium cost 75c. per lb. in Utah, and to-day it is half that figure and several cents less when bought by the carload. To-day 4 lbs. are used where 1 lb. was in 1893, and it is probable the consumption in 1898 will be more than double that of 1897. It would seem as though the railroads could well afford to contribute a little toward the successful winning of gold from low-grade ores by this treatment, which is rapidly becoming a large industry, particularly as the margin of profit to the mine owner, in some instances, is very small, and each item of cost must be closely watched.

**SHIPMENTS FROM SALT LAKE.**—During the week ending December 4th there were sent East 20 cars, or 569,243 lbs., lead silver bullion; 35 cars, or 1,406,075 lbs., lead silver ore. For November the shipments East were: 133 cars, or 4,309,443 lbs., lead silver bullion; 174 cars, or 8,006,772 lbs., lead silver ore. In November the cyanides, as the product of the cyanide plants is locally styled, handled in Salt Lake, were about 6,500 lbs., averaging in the vicinity of \$20 per lb.

##### JUAB COUNTY.

(From Our Special Correspondent.)

**BULLION-BECK.**—On December 1st the mine resumed active production. In the first four days of the month 400 tons were sent forward. The latest find is an ore body in the winz sunk 360 ft. from 900 level north, which measures 33 ft. thick, carrying 70 to 110 oz. silver, 5 to 15% lead. This proves the Beck zone at 1,260 ft. depth in this part of the mine, which is of considerable moment. The last shipment shows over 2% copper, something out of the common for this mine.

**GEMINI.**—Perhaps the mine never showed better. Deepest working is 1,160 ft., and ore is coming from stopes on 500 to 1,160 level. The production is 1,500 tons per month and can easily be increased. Lead ore is mixed with dry so as to form about a 25% lead product.

**SIOUX-AJAX TUNNEL.**—Manager George H. Robinson came out to Tintic, just prior to December 1st, and resumed driving the tunnel, now 3,000 ft. long. This is perhaps the most important deep exploration undertaking attempted in the district.

**SOUTH EUREKA.**—From bottom of shaft, 500 ft., crosscuts are being driven east and west; former is in 60 ft., latter 50 ft. East drift has penetrated mineralized fissures in blue lime, an indication of ore near by. Work will continue through the winter.

**SOUTH SWANSEA.**—Shaft is down 670 ft., deepest level 650. At the company's office no confirmation can be had of any new important development, such as rumored. Concerning larger gold values, either here or in Swansea ground, it is said they do not exist, or at least the directors are ignorant of them.

**SWANSEA.**—A reported gold strike, wired to the Salt Lake papers three days ago, has no foundation in fact. It was said to be on south end; evidently designed to boom both Swansea and South Swansea, as Swansea's shaft is but 30 ft. north of the South Swansea line. The management is strongly averse to such tactics and desires this fake gold find set right. Production continues at 400 tons per month, with values about unchanged. Shaft is down 728 ft., though 650 level is the lowest working. It is proposed to sink to 750 ft. and start a new level in January. Gold in shipping products averages 60c.; never over 90c. per ton.

**TINTIC LEASING COMPANY.**—Incorporation articles were filed with the Secretary of State on November 30th. Capitalization, \$1,000; share, \$1, and assessable. Principal office, Salt Lake; annual meeting, first Monday in February, the first to be held in 1899. Officers and directors are: Lewis C. Doty, president; William Hatfield, vice president; George W. Snow, secretary-treasurer; William M. Bradley, Claude Doty. Messrs. Doty reside in Eureka, others in Salt Lake. Though launched as a small affair, it has on hand a development project of worth, being a two years' lease of Buckeye ground on a 25% royalty. The shaft, now 300 ft., is to be sunk to 500 ft. The drain tunnel, nearly completed, will tap shaft at 185 ft. depth. Buckeye has been a producer and the property is well thought of. Capt. Hank Smith, recently in charge of the Centennial-



Eureka, will be the superintendent, and work is to be immediately begun.

#### PIUTE COUNTY.

(From Our Special Correspondent.)

**BLUE BIRD.**—Development continues to good advantage, and the grinding of ore in the lower tunnel, like that in the upper workings, is a certainty. The seam is 5 to 12 in. thick, and runs \$80 to \$140 gold. It is said operations will continue for the winter, though the snow is already too deep for further shipments.

**DALTON.**—A contract is let for some 600 ft. of tunnel—a branch from the lower tunnel—to cut a vein opened at the surface. This work is just started.

**DEER TRAIL.**—A 10-ton test shipment was sent out last week to Denver, which, it is understood, will be treated by the cyanide process. The outcome is anxiously looked forward to, as a favorable result will mean much for the Marysvale country.

**SEVIER.**—Nothing can be said in response to the numerous inquiries of the recent reported strike in the lowest workings. President-Manager Lammerdorf is not at the mine and the men at work are not communicative, only affirming the cutting of a rich ore chute. It is understood that maneuvering is again on foot for the control.

#### SALT LAKE COUNTY.

(From Our Special Correspondent.)

**ANTELOPE.**—A new hoist is just installed and the intent of Messrs. McDonald, Harrington & McNally is to prosecute development during the winter.

**BINGHAM NOVEMBER SHIPMENTS.**—Last month's output came well up to expectations, being an increase of 623 tons over October, which was the largest of any month of the year. The total was 5,345 tons of ore and concentrate products, and the following properties were the contributors which shipped more than 20 tons: Old Jordan & Galena, 2,057; Highland Boy, 540; Old Telegraph, 450; Winnamuck, 325; Grant Chief, 285; Dalton & Lark, 200; Spanish Fraction, 162; Storey, 100; Spanish, 100; Petro, 95; Fortune, 75; Golden Opportunity, 75; Sampson, 75; Phoenix, 75; Northern Chief, 65; June Blossom, 50; Live Pine, 45; Benton, 30; Neptune, 40; Zelnora, 25; 10-40, 39 tons respectively.

**GRANT CHIEF.**—The Markham mill is secured by the company, and is being put in condition to treat second-class ore, of which the mine can furnish a generous supply.

**HIGHBRED BOY.**—Some 200 tons of copper ore were in the bins on December 1st, most of which would have figured in November shipments had it not been for storms and bad roads. Other mines were affected the same way.

**OLD JORDAN & GALENA.**—For November the production was the largest of any Utah mine, being 311 tons greater than Park City's Silver King, which again takes second place. The probability is that December will record the biggest output of the year. On the opening of the 1898 season a cyanide plant is determined on, to treat the extensive bodies of auriferous oxide mineral opened up.

**WINNAMUCK.**—Indications are that the extensive exploration which has been on foot the past season, under the bond held by A. H. Borman et al., is at an end, and only a small force will be employed taking out ore. The reason assigned is that an extension of the bond, which expires in February, is refused. Report has it that the east drift on the 400 level has opened an ore body. Some new machinery is needed for further systematic mining.

#### SUMMIT COUNTY.

(From Our Special Correspondent.)

**ALLIANCE.**—The \$5,000 dividend which was to be paid December 23d has been reconsidered. A majority of the directorate a week ago were in favor of distributing this sum, but the minority, favoring the expenditure of the treasury fund in systematic exploration, won over the majority before final action was taken.

**ANCHOR.**—Officers for the ensuing year were elected by the board of directors last week; they are: Francis Smith, president; E. F. Holmes, vice-president; W. S. McCornick, treasurer; H. E. Myers, secretary. November's output was all concentrate products, and was 120 tons more than both crude and concentrates in October. From all that can be gleaned the mill is doing well and the outlook for the property was never brighter.

**PARK CITY NOVEMBER SHIPMENTS.**—For the past month the ore and concentrate products handled by the Mackintosh sampler, which practically means the smelter shipments of the camp, were:

Silver King, crude, 2,067,135 lbs.; Silver King, concentrates, 1,424,875 lbs.; Anchor, concentrates, 957,140 lbs.; Ontario, crude, 218,690 lbs.; Creole, crude, 15,380 lbs.; Clark's Woodside, crude, 52,510 lbs.; McPolin, concentrates, 26,050 lbs.; total, 4,761,780 lbs.

As predicted a month ago, this total is somewhat larger than for October, notwithstanding Silver King fell about 270,000 lbs. short of its October yield, which was not anticipated. During November the Ontario forwarded 50,242 oz. silver, which rounds out the production of the camp for the month. In the Ontario mill 5 stamps are still dropping on cleanings and sweeping from under the floors and mill—the accumulations of a dozen years of activity. The management states it may take two weeks to wind up here, for more material is being steadily brought to light, but, as the day for

the final closing down has been set so often, there may be yet work found for this one battery to the end of the month. A good profit is realized from the gatherings of this cleaning.

**SILVER KING.**—For 1897 Silver King will have first place in the State so far as concerns value of yield and dividends. It will be credited with over a million ounces silver, more than an equal value of lead, and 5,000 oz. of gold. The present reserves assure an equally flattering record for 1898.

#### TOOELE COUNTY.

(From Our Special Correspondent.)

**CYCLONE.**—Should it prove true, as prominent railroad men of Salt Lake affirm, that the construction of the railroad to Deep Creek will begin shortly after the first of the year, Clifton district will give employment to many miners. At present there is very little doing. The Cyclone shaft is down 63 ft. on a 3-ft. vein, with an 18-in. pay seam of lead carbonates. Were it not for the 90-mile wagon-haul across the desert a shipment would soon be made. H. H. Green and Duncan McVichie are the owners.

**DAISY.**—A steam hoist was installed the first of the month and exploration is being advanced with the greatest possible expedition. Report has it this sudden activity is due to an examination in the near future on which hangs the building of a mill.

**DAYTON.**—Development is to be advanced during the winter by the aid of a steam hoist, which will soon be on the ground. The West Dip, in the neighborhood of the Dayton group, is just now a scene of activity, owing to the assessment work being done.

#### VIRGINIA.

##### AUGUSTA COUNTY.

Operations are to be extended on the manganese ore properties owned by James T. Lightner, of Stanton, and others, and new machinery has been ordered for the mines.

##### WEST VIRGINIA.

##### WETZEL COUNTY.

An enormous flow of gas has been struck in the South Penn Oil Company's well on the Cunningham farm, on Piney Fork. The roar of the escaping gas can be heard at a distance of six miles. No effort is made to control it, the pressure being so great.

### FOREIGN MINING NEWS.

#### AFRICA.

##### CAPE COLONY.

**CAPE COPPER COMPANY.**—This company will pay on January 1st 6s. 6d. per share, making, with 2s. 6d. paid in July, a total dividend of 9s. for the year, a substantial increase over last year. This result is due to the higher price of copper and to improved conditions at the mines.

##### AUSTRALASIA.

##### NEW SOUTH WALES.

**BROKEN HILL PROPRIETARY COMPANY.**—For the four weeks ending November 11th this company reports 18,441 tons of ore treated. The refining output included 281 oz. gold, 365,901 oz. silver, 1,189 tons lead, 19 tons of hard or antimonial lead and copper matte estimated to contain 43 tons of copper and 15,308 oz. silver. Output of ore was reduced owing to the recent fire in the mine.

**SULPHIDE CORPORATION (ASHCROFT'S PROCESS), LIMITED.**—A circular from the company states that the work of refitting a section of the plant at Cockle Creek has been now completed, and the electrolytic works, which have been closed since the end of July, were again restarted on November 16th, under the direct supervision of Mr. Ashcroft. Although in the period between March 29th and the end of July, during which work was carried on with some interruptions and 150 tons of zinc of the highest quality were produced, the results were commercially unprofitable. Mr. Ashcroft attributes this to defects in the plant, and the board has sanctioned a further run for a period not exceeding three months, with such modifications of the plant as have now been effected in accordance with Mr. Ashcroft's suggestions. Unless during this period Mr. Ashcroft is able to show commercial results justifying a continuance, it is proposed that the electrolytic works shall be shut down, and the operations at Cockle Creek limited, for the present, at any rate, to smelting the concentrates produced at the Central Mine. Of the mine itself the board entertains the highest opinion. From the concentration of ore substantial profits are being realized, and the directors have every confidence that these will be maintained.

##### TASMANIA.

The Emu Bay Railway is an important line on which work has been begun. It will open up the mineral country of the West Coast, the development of which has been much retarded by lack of transportation.

##### WESTERN AUSTRALIA.

The new mint at Perth is rapidly approaching completion. When opened it will doubtless receive all the Western Australian gold (excepting specimens) for coinage. At present most of it is sent to the Melbourne Mint.

(From Our Special Correspondent.)

PERTH, W. A., October 29.

The discovery of a rich deposit of alluvial gold at Kanowna, a goldfield town about 12 miles from

Kalgoorlie, has given a fresh start to the mining industry of this colony. The find is reported to be the richest alluvial met with in Western Australia, and has attracted some hundreds of men. News of this kind is most encouraging, as our goldfields can hardly be called the place for the average prospector. As instancing the richness of the find at Kanowna, one party is reported to have procured 450 oz. gold in three weeks. The gold is found in cement, and has been obtained at a depth of about 40 ft.

There is now no doubt of the intention of the country to carry out the much-talked and much-abused Coolgardie water supply scheme. A motion to refer the matter to a select committee and still further delay its progress was, after considerable debate, withdrawn in the legislative Assembly last evening, and it was clearly to be seen that there was a large majority in the House in favor of the government proposals. There have been few or perhaps no political questions in this state upon which such adverse criticism has been pressed as upon the water supply, yet several of our leading mining engineers and representatives of goldfields constituencies who strongly opposed the measure on its introduction are now as strongly in favor of it.

Mr. A. G. Pitman, government geologist of New South Wales, has been visiting our goldfields, and his impressions of them are most favorable. During a short stay in Perth, after returning from the Eastern field, Mr. Pitman gave much useful evidence before the Royal Commission on Mining, which is at present sitting in the capital.

#### CANADA.

##### BRITISH COLUMBIA—SALMON RIVER DISTRICT.

(From Our Special Correspondent.)

There is great activity in the Salmon River District and particularly around Ymir. This country is promising, as the ledges are wide and carry good gold values. There are 12 claims working, some of which are yet prospects, while others may well be termed mines. Among the latter may be mentioned the Porto Rico, the Ymir and the Dundee.

**DUNDEE.**—This mine employs 25 men. Their main shaft is now down to a distance of 240 ft. On cross-cutting an ore body of galena 9 ft. wide was struck. The galena is peculiar in that it contains gold values from \$30 to \$60 per ton, together with 100 oz. silver. It is understood that the Dundee is to be a steady shipper this winter. A contract to haul 100 tons of ore down to the railroad has been let for a start.

**FERN.**—This is a free gold property and has a 10-stamp mill erected, which is running in a very satisfactory way.

**JUBILEE.**—This is also near the Ymir. Six men are employed. It is a quartz ledge carrying iron and copper pyrites. Some very high grade selenium ore has been struck, running up to \$1,800 in gold to the ton.

**PORTO RICO.**—This company is working 30 men. It is developed by several tunnels which show a lead 3 to 4 ft. wide. The ore is silicious, carrying iron and copper pyrites and running from \$10 to \$60 a ton in gold and copper. A good part of the ore is rich enough to send direct to the smelter at Nelson, but some of it can be called concentrating ore. Of this last there is quite an accumulation on the dump. I understand they are soon to ship.

**YMIR.**—This mine is working 30 men. There are two shafts on the property, one of which is to connect with a tunnel at the 200-ft. level. Crosscuts in the shafts show the vein to be 30 ft. wide, of which half is good concentrating ore. Some high assays have been obtained, and it is believed that the property is to be one of the best concentrating properties in the region.

##### BRITISH COLUMBIA—TRAIL CREEK DIVISION.

(From Our Special Correspondent.)

**BRITISH COLUMBIA BULLION EXTRACTING COMPANY.**—This company, under the general direction of L. H. Webber, with Thomas W. Fisher, of Helena, Mont., as superintendent of construction, has been making rapid progress on its reduction works, 2½ miles southwest of Rossland, on the line of the Red Mountain Branch of the Spokane & Northern Railway. Little Sheep Creek has been flumed for a distance of 3,000 ft. toward the O. K. mine, a siding connecting with the tram line of the railway. Mr. Fisher has a large quantity of timber on the ground and a force of carpenters at work preparing it for the reduction works. The plan is to erect the works and concentrator on the slope to the creek from the siding, where a large ore bin is to be built. The Pelatin-Clerici process is to be used, but any particular class of ore requiring a different mode of treatment will be handled. The works are for customs trade only, especially for the low-grade ores of the camp. The water supply will be increased by bringing down from O. K. mountain water from a neighboring creek. The works will be ready for business early next spring. The company are the sole owners of the Canadian patents in British Columbia of the Pelatin-Clerici process.

**CLIFF.**—Operations have been suspended on the surface workings. Work is, however, being continued underground.

**DEER PARK.**—Development work on this property has been resumed and, it is stated, will be continued indefinitely. The shaft is down 145 ft. and the showing, it is reported, is improving. The management intend to sink to the 200 ft. level.

**DUNDEE.**—The prospects of this mine are good. Recent assays of both the argentiferous lead and gold copper ores have been made showing high



values in gold and silver and 31% of lead. The mineral body in the bottom of the shaft has, it is stated on the authority of the superintendent, widened to nearly 6 ft., but this is not all solid, as it takes in stragglers.

**GREAT WESTERN.**—Operations, which were suddenly resumed a few days ago on this property, have been suspended.

**JOSIE.**—The stockholders of this company rejected recently the offer made by an English syndicate through Mr. Thomas Ricards, of London. It is reported that Mr. Ricards' proffer was to pay the stockholders \$50,000 in cash and 40% of the stock of the new company. It was stipulated that \$200,000 in cash should be treasury stock. The capitalization of the new company was to be 200,000 shares at \$1 each. The present stockholders were to receive 80,000 shares in \$400,000. The management is cross-cutting to the 300-ft. level. No shipments are being made.

**LE ROI.**—This company has shipped for the present year up to November 23d about 52,000 tons of ore. The mine continues to show up well. The shipments are now about 1,450 tons weekly.

**LILY MAY.**—No ore shipments have been made from this mine, but considerable progress has been made in development work with an improved showing. About 15 men are at work.

**MONTE CRISTO.**—The company has a good force of men at work. The extent of the ore body was uncovered, but nothing is said as to values.

**ORE SHIPMENTS.**—The shipments from Trail Creek mines to November 20th, from January 1st, have passed the 70,000 tons figure, and by the end of the present month will be close to 75,000 tons. The weekly shipments now average about 1,300 tons.

**POORMAN.**—Development work on this property continues. Small shipments of ore have been made.

**BRITISH COLUMBIA—WEST KOOTENAY DISTRICT.**  
(From Our Special Correspondent.)

**ORE AND MATTE SHIPMENTS.**—The total quantity of ore shipped and heated by local smelters for this district for the 11 months ending November 30th of the present year amounted to about 110,000 tons. The value of this is given at about \$7,250,000. The district embraced includes five mining divisions at least. Of the above quantity of ore Trail Creek shipped and heated about 72,000 tons.

**ONTARIO—RAT PORTAGE DISTRICT.**  
(From Our Special Correspondent.)

**GOLDEN HORN.**—Messrs. Hemmings & Rideout have shipped supplies to the mine and intend to continue operations during the winter. The vein at the 60 ft. level, although narrow, is very rich.

**LA MASCOTTE.**—Work has been pushed on this property since the spring and the management are making arrangements to have some boring done with the diamond drill. The ore obtained from the surface, on the main vein, was very rich and it is thought a larger body may be found deeper.

**MIKADO.**—An air compressor plant supplied by the Rand Drill Company is being shipped to the mine to push development during the winter. The 20-stamp mill is making a return of about \$12,000 a month and saves one ounce of gold per ton, another half ounce being carried off in the tailings, which are kept and will be treated in cyanide tanks. About 90 men are now employed on the company's property.

**OTTAWA GOLD MILLING AND MINING COMPANY.**—The company's 20-stamp mill, built at Keewatin, for custom milling, is now complete and will be run entirely by water power. The first shipment of ore has been received.

**EUROPE.**  
**NORWAY.**

**NORWEGIAN MICA COMPANY (AKTIESELSKABET).**—This company, which was organized in October, and has its headquarters in Christiania, is working a mica mine in Norway. Mr. H. E. Mohn is president and Prof. J. H. L. Vogt, of the University of Christiania, is a director.

**SWEDEN.**

A dispatch from Stockholm announces that gold has been discovered in the Mattillavaare Mountain, six miles north of Ofver-Tornea, at the northern end of the Gulf of Bothnia.

**SOUTH AMERICA.**  
**BRAZIL.**

**OURO PRETO GOLD MINING COMPANY.**—This company reports in November 1,930 oz gold won from 5,483 tons ore crushed; an average of 0.35 oz. per ton. The ore was all from the Passagem mine.

**DUTCH GUIANA.**

The official statement gives the gold production of the colony for the six months ending with June as follows, by districts:

	Kilograms.	Ounces.
Surinam.....	171,645	5,519
Saramacca.....	59,466	1,912
Marowine.....	30,941	694
Lawa.....	117,394	3,774
Totals.....	379,446	12,199

This includes all gold on which royalty has been paid. A small quantity probably escapes registration.

**COAL TRADE REVIEW.**

New York, Friday Evening, December 10.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending December 3d, 1897, compared with the corresponding period last year:

Pennsylvania Railroad.....	1897.		1896.
	Week.	Year.	Year.
	102,328	3,480,245	3,464,017

PRODUCTION OF BITUMINOUS COAL in tons of 2,000 lbs. for week ending December 3d, and for years from January 1st, 1897 and 1896.

Shipped East and North:	1897.		1896.
	Week.	Year.	Year.
Allegheny, Pa.....	60,069	2,291,952	3,555,757
Barclay, Pa.....	1,291	40,269	43,792
Beech Creek, Pa.....	93,856	3,527,845	2,849,457
Broad Top, Pa.....	*	49,014	345,630
Clearfield, Pa.....	110,164	2,613,761	4,084,689
Cumberland, Md.....	93,520	3,576,551	3,314,660
Kanawha, W. Va.....	1143,875	3,640,745	3,406,302
Phila. & Erie.....	1,027	206,734	86,833
Pocahontas Flat Top.....	*	*	*
Totals.....	503,892	16,306,901	17,687,117

Shipped West:

Monongahela, Pa.....	1897.		1896.
	Week.	Year.	Year.
	43,509	1,130,533	1,158,504
Pittsburg, Pa.....	4,624	1,875,267	1,747,378
Westmoreland, Pa.....	50,317	2,125,491	1,778,391
Totals.....	136,611	5,061,351	4,684,173

Grand totals..... 190,443 21,368,252 22,371,290

Production of coke on line of Pennsylvania Railroad for the week ending December 3d, 1897, and year from January 1st, 1897, in tons of 2,000 lbs.: Week, 139,638 tons; year, 4,516,665; year to corresponding date in 1896, 3,593,321 tons.

\* Returns not received.  
† For nine days ending November 30th.

**Anthracite.**

The situation of the anthracite coal trade is very unsatisfactory at this time, and from all quarters we hear it is demoralized, and that prices are exceedingly low. No agreement has yet been arrived at by the operating and carrying companies, and it is expected that nothing definite will be done until the coal trust case now being appealed by Attorney-General Hancock of New York has been disposed of. In the meantime the sales-agents are contenting themselves with what little business can be secured from dealers who are unwilling to buy on a falling market. While it is true that the different operating companies are working their collieries on half time, it is also to be noted that they are not curtailing their output to the extent they would like to.

Much can be said concerning prices, but it is enough to say that stove coal, free burning, has been sold on board at \$3.75 per ton this week, while chestnut has been offered at \$3.25@3.60 according to grade, and egg at \$3.60@3.75, while broken is quoted at about the same price as chestnut, with perhaps a little deviation. On the other hand stocks at tidewater have been increased somewhat since the closing of navigation, and the coal which was formerly shipped to Buffalo for transportation to Western markets is now thrown on the Eastern distributing points.

We are informed that business in 1897 has been less remunerative than a year ago, notwithstanding the curtailment of production during the first six months of the year.

During November business was more demoralized than for some time past, and in consequence that month showed the lowest prices at tidewater this year. In explanation of this we would say that the Delaware & Hudson Company worked its collieries 2 1/2 days in that month, and others also operated on full time or nearly so. Concerning prices, we note that in the month of November stove coal sold on an average of \$3.80, or 55c. less than the net circular; chestnut at \$3.30, or 80c. less than the schedule of \$4.10, and egg at \$3.65, or 45c. less than the circular. In the case of stove coal the November selling price was from 12c. to 17c. less than in any previous month of the year. Chestnut coal was from 28c. to 35c. less, and egg from 1 to 5c. less. There were heavy losses in the selling prices of the steam sizes throughout the year, amounting to about 40c. per ton as compared with 1896, owing in good part to the low values of bituminous coal which were in competition with those sizes. It appears that December will also see some very low prices on the steam sizes.

**NOTES OF THE WEEK.**

The coal trust case will again be prosecuted by Attorney-General Hancock, of New York, who proposes to carry the matter to the Court of Appeals. Several technicalities in the trust law will be discussed as regards their constitutionality, and when decided a further examination may be made of the presidents of the leading coal-carrying roads.

The Schuylkill Coal Exchange gives notice that the collieries of the Philadelphia & Reading drawn to return prices of coal sold in November, 1897, to determine the rate of wages to be paid for the last half of November and the first half of December, 1897, put that rate at 5% above the \$2.50 basis.

**Bituminous.**

The Atlantic seaboard soft coal trade is active and there is a strong demand for supplies at the present time. The demand comes from all the consuming territories, the one showing the smallest amount being the far East. We hear of one or two people complaining of dull business, but it would seem to be a form with them. The amount of coal going forward is proof that trade is active. The belief also is that this demand is of a bona fide character, but it is likely that the shortage of water craft is responsible for it to no small degree.

We hear of some talk of accommodations in one form or another in the trade, but the results are not expected to be reached until the railroads give intimations or make definite statements concerning through rates for the coming year's business. There is also to be taken into consideration the antagonism of the railroads among themselves which would prevent any effective combination in the coal trade. The Baltimore & Ohio has shown an aggressive spirit lately in intruding on the territory of other railroads, and it is believed that those railroads are fully cognizant of the efforts of that line.

Trade in the far East is fair and shipments are being made on the old contracts still in force. There is a little changing around of trade in this quarter from one contractor to another. Sound business is active and strong and the demand is large; shipments are proportionately larger from this port than from the other territories because coastwise vessels desire Sound business rather than go around the Cape at this season of the year. New York harbor trade is also active, though there is some difficulty in getting coal forward owing to the short supply of harbor boats.

All-rail trade is in good condition and shipments are being made pretty freely. Transportation from mines to tide is much improved from what it has been, and coal is running through to the various shipping ports on about schedule time. The side tracks and terminal points are relieved of the mass of coal that was standing on and at them for some time. The car supply is regulated by the dispatch of the individual shipper in loading coal. To those showing facilities for handling the coal at tide there is no refusal of cars.

In the coastwise market vessels are very scarce and in great demand. Rates are strong and, if anything, advancing. It is understood that some of the smaller craft are laid up for the winter. This would seem to be the beginning of what is the annual custom in shipping circles. We quote current rates of freight from Philadelphia: To Boston, Salem, Wareham and Portland, 90c.; Portsmouth, 95c.; Newburyport, \$1 to \$1.05; Providence, New Bedford and the Sound, 75c.; Lynn and Bath, 95 to \$1; Dover, \$1.25 to \$1.30 and to Saco, \$1.25 and to Bangor, \$1.10. Ten cents above these rates are quoted from Norfolk and Newport News, and 15c. from Baltimore.

**NOTES OF THE WEEK.**

Coal receipts at San Francisco in November were 146,243 tons, the largest reported for two years. For the 11 months ending with November the receipts were: Eastern, anthracite and Cumberland, 19,649 tons; Oregon and Washington, 527,156; Alaska, 1,700; British Columbia, 396,076; Australia, 227,983; Japan, 160; Tonkin, 2,047; Great Britain, 121,871; total, 1,296,642 tons, an increase of 125,820 tons, or 10.7% over last year.

**Birmingham, Ala.**

Dec. 7.

(From Our Special Correspondent.)

The past week has witnessed but little change in the condition of the coal mining industry. In Jefferson, Bibb and Tuscaloosa counties all the mines have been running full time and in fact some of them have fallen behind in filling orders, but this was accounted for by a temporary lack of sufficient labor. So far as this shortage of labor was concerned in the counties I have mentioned, it has not been caused by any labor trouble but because of the fact that in some camps there have been cases of smallpox reported among the negroes, who are so superstitious regarding vaccination that the fact of most of the companies having enforced a rule that all employees should be vaccinated or quit work has caused a strike in the camps. In Walker there has been some slight labor disturbance, the reports concerning which, as first received, were very much exaggerated. More mines in this county are worked with machinery, and the coal is used for domestic purposes. Some months since a decrease of wages was ordered averaging about 10%. This was accepted by the machine workers and loaders generally, on the understanding that when times improved the wages should be advanced to the old rate. Since the great demand for domestic coal, occasioned by the coming winter, labor organizers have been in the district endeavoring to persuade the men to make a general demand for the restoration of 10% regardless of whether the increased business would enable the operators to restore the rate. On Sunday last a meeting was called of all the miners in the district, but as it was only attended by about 80 out of 2,000 no general strike or disturbance occurred. The miners at one mine went out for two or three days, but before the end of the week everything was arranged, and the Walker county mines have been enabled to take advantage of the increased demand for domestic coal. The output, though, has not reached the capacity of the mines, because there is an insufficient supply of labor in that county.

Some idea of the disturbances in the coal trade



during the last three or four months can be formed from the fact that the Tennessee Coal, Iron and Railroad Company was compelled to curtail its output 1,000 tons a day for about three months. The Sloss Iron and Steel Company ran short in filling orders during September 500 carloads, during October 300 carloads and during November 300 carloads. These two companies have the greatest production of any in the district.

The month of December promises to witness as great a movement of coal as has been recorded for the months of September, October and November. The output will not be as great as the orders will demand, because already a shortness of cars is being felt.

**Buffalo.** Dec. 9.

(From Our Special Correspondent.)

The anthracite coal trade under the influence of coal weather has continued good. Prices unchanged. Bituminous coal has been in demand and full prices were obtained. Supply ample, but not excessive.

Vessels continue to leave port with coal, despite the cold weather which has prevailed over the upper lake regions. The weather in that locality has moderated considerably and navigators think they will have no difficulty in arriving at their points of destination. Freight rates were firmly maintained.

The steamer *Egyptian*, bound to Milwaukee, was burned on Lake Huron last week, and sank in 30 fathoms of water, with 1,200 tons of soft coal on board.

The shipments of coal westward by lake from Buffalo for the week ending December 4th, inclusive, aggregated 78,200 net tons, distributed as follows: 43,650 tons to Chicago, 17,350 tons to Milwaukee, 4,000 tons to Superior, 4,000 tons to Green Bay, 4,600 tons to Gladstone, and 4,600 tons to Manitowoc. The rates of freight were 60c. to Chicago, Milwaukee, Superior, Green Bay, Gladstone and Manitowoc.

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

Receipts and shipments of coal by railroad not reported by request. Receipts by lake for November none, and none for several years past. The shipments by lake for November 474,715 net tons, as compared with 367,610 net tons in 1896 and 533,708 net tons in 1895; for the season to December 1st 2,094,329 net tons, as compared with 2,320,668 net tons in 1896 and 2,496,033 net tons in 1895. The receipts of coal by canal for November, 240 net tons, as compared with 983 net tons in 1896 and 1,228 net tons in 1895, for the season to December 1st, 9,052 net tons, as compared with 40,061 net tons in 1896 and 12,382 net tons in 1895. The shipments of coal by canal for November, none, as compared with 849 net tons in 1896 and none in 1895; for the season to December 1st, none, as compared with 2,045 net tons in 1896, and 4,289 tons in 1895. The aggregate shipments of coal this season show a decrease of 226,339 net tons under 1896 and 401,704 net tons under 1895.

Lake freights on coal from Buffalo for November this year were 50¢ to Chicago, Milwaukee and Green Bay; 30¢ to Duluth and Lake Superior ports; 30¢ to Toledo and Detroit; 50¢ to Racine, and 35¢ to Bay City. A year since the rates were 30¢ to Chicago and Milwaukee; 20¢ to 30¢ to Duluth and Lake Superior; 50¢ to Ashland; 40¢ to Saginaw, Racine and Green Bay; 25¢ to 30¢ to Toledo.

The shipments of coal by lake thus far this season to December 1st were distributed about as follows: 869,648 tons to Chicago, 421,638 tons to Milwaukee, 270,622 tons to Duluth, 194,114 tons to Superior, 21,075 tons to Green Bay, 14,550 tons to Racine, 6,710 tons to Saginaw, 1,100 tons to Grand Haven, 500 tons to Kelly Island, 800 tons to Menominee, 300 tons to St. Ignace, 2,200 tons to Cleveland, 850 tons to Marinette, 350 tons to Vermilion, 2,025 tons to Oseola, 179 tons to Pentanquinshene, 200 tons to Port Colborn, 3,771 tons to Lake Linden, 7,300 tons to Marquette, 62,520 tons to Toledo, 29,300 tons to Gladstone, 13,928 tons to Fort William, 43,850 tons to Manitowoc, 6,275 tons to Kenosha, 7,700 tons to Detroit, 9,600 tons to Bay City, 2,000 tons to Baraga, 1,250 tons to St. Clair, 4,300 tons to Sault Ste. Marie, 400 tons to Marine City, 300 tons to Mackinaw City, 100 tons to Traverse Bay, 1,300 tons to Muskegon, 1,400 tons to Escanaba, 360 tons to East Tawas, 2,447 tons to Port Stanley, 600 tons to Portage, 1,730 tons to Windsor, 4,220 tons to Port Huron, 330 tons to Sand Beach, 1,728 tons to Amherstburg, 4,600 tons to Washburn, 2,200 tons to Ashland, 2,350 tons to Port Arthur, 800 tons to Michigan City, 700 tons to St. Joseph, 5,650 tons to Hancock, 195 tons to Alpena, 700 tons to Benton Harbor, 580 tons to Sturgeon Bay and about 20,000 tons to miscellaneous ports via vessels from Tonawanda.

Additions will be made to Chicago, Milwaukee, Green Bay, Superior, Gladstone and Manitowoc shipments since December 1st, which when added will be the movement for the year 1897.

The season of navigation will practically end this week, it is thought, as far as coal shipments are concerned. News from many ports announce that ice has closed their harbors.

Mr. A. A. Parker, of Detroit, wants the by-laws of the Lake Carriers' Association amended so as to provide for a minimum rate for carrying coal next season. Would vesselmen adhere to the agreement?

**Chicago.** Dec. 8.

(From Our Special Correspondent.)

**Anthracite Coal.**—Hard coal continues in better demand, selling apparently being entirely influenced by the colder weather. There has been considerable coal shipped to out-of-town points, indicating that dealers there were beginning to realize that winter was at hand. City trade has been quite brisk, simply because the retail trade had been given an impetus through the cold weather, and the fact that the average consumer can buy coal at a more reasonable price than ever before at this season of the year. Circular prices continue for grate, \$5.35; egg, stove and chestnut, \$5.60.

**Bituminous Coal.**—Soft coal is in good supply with an increasing demand. The better grades are more and more being bought for domestic purposes, and are consequently bringing better prices. Steam coal, particularly the Illinois and Indiana product, is now in plentiful supply, with what might be called an excellent demand, though as yet prices appear very low in comparison with those for the same grades of coal in recent years.

**Pittsburg.** Dec. 9.

(From Our Special Correspondent.)

**Coal.**—The Lake season is ended. Notwithstanding the strike the shipments were fully 15% more than last year. No flotilla in the world was ever gotten together to carry so much freight in so short a time as was done this year in the carrying of coal from the Pittsburg district to its destination at upper lake points. It is estimated that fully 2,750,000 tons of coal was carried out of the Pittsburg district for the Lake trade since the close of the strike, just 2½ months. To carry this immense tonnage 110,000 cars of 25 tons each were necessary, and it required 550 lake vessels of 5,000 tons each to carry it to its destination. Despite the strike and its apparent losses the operators of the Pittsburg district have shown what they can do in a pinch, and half as much more coal could have been shipped in the required time if the railroads could have handled the freight. No contracts remain unfulfilled. The river mines are more or less busy according as there is a supply of empty craft, which is returned to the pools and loaded as fast as possible. The late rains caused a great boating stage; the amount loaded is about 6,000,000 bu. The shipments reached 5,740,000 bu. bound for Cincinnati and Louisville.

**Connellsville Coke.**—The trade continues to thrive; the increase in shipments was large and only limited by the want of cars. Out of 18,508 ovens, 15,132 were active, the increase in shipment being due to big Western orders. While the gains have not been very marked for a few weeks, they continue to show a healthy condition of the trade, especially as there has been more or less dullness in the iron trade. The indications are that the coke trade has about reached a fairly settled condition for the balance of the year. The summary of the region shows only 3,505 idle ovens out of a total of 18,508; the week's production was large, amounting to 157,918 tons, an increase over the preceding week of 3,073 tons. There has been no change in prices, furnace coke being \$1.75, foundry, \$2.15, and crushed \$2.30 per ton f. o. b. at ovens. In the running order of the ovens in blast, 3,981 ovens made six days, 11,081 ovens five days, 20 ovens four days, and 50 ovens—the Smet-Solvay plant—seven days. The shipments were: To Pittsburg, 3,175 cars; points West, 4,510 cars; sent East, 1,095 cars; total, 8,780 cars.

**IRON MARKET REVIEW.**

**NEW YORK, Friday Evening, Dec. 10, 1897.**

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

Fuel used.	Week ending		From Jan., '96.	From Jan., '97.
	Dec. 11, 1896.	Dec. 10, 1897.		
Anthracite.	27 15,850	27 17,150	1,122,410	749,362
Coke.....	85 106,200	137 191,850	6,935,304	7,113,657
Charcoal...	21 5,200	19 4,650	283,265	210,977
<b>Totals...</b>	<b>133 127,250</b>	<b>183 213,650</b>	<b>8,340,979</b>	<b>8,073,976</b>

We still have a waiting market, and there seems to be little more disposition to close contracts for 1898 than was reported last week. Makers of pig iron are confident of a large demand and are not in any hurry to bind themselves as to prices for next year, believing that buyers will soon feel the need of filling up their stocks. Buyers are a little less confident than they were, but still keep up a good front.

Old prices for next season are being discussed in a quiet way. The situation in the Lake Superior region may be materially modified by the present large ownership of ore properties by steel-making interests, and it is still quite uncertain what arrangements will be made for 1898. Until this matter is decided the furnaces using Lake ores do not feel ready to name prices. Coke is \$1.75 now and will probably be \$2 after this month, and ores may be materially higher.

Discussion continues over the proposed wire and wire rod combination. Matters have advanced so far that the American Steel and Wire Company has been organized under the laws of New Jersey, the capital stock to be \$70,000,000, half in preferred stock and half in common stock. The difficult and delicate point of appraising the different plants is yet to be passed. It is possible that the whole ar-

range may break up on this point; and besides this it is understood that several important plants are still hesitating about accepting the combination terms. Among the important concerns which are said to have joined the new trust are the Consolidated Steel and Wire Company, the Cleveland Rolling Mill Company, the J. A. Roebling's Sons Company, of Trenton, the Oliver Wire Company, the Pittsburg Wire Company, and the Oliver Snyder Steel Company.

**NOTES OF THE WEEK.**

The Pittsburg Iron shippers are indignant at the action of the Joint Traffic Association in refusing to continue the summer rates on iron and steel products through the winter. It is claimed that the railroads promised to do so, and that contracts were made accordingly; and it is charged that the present action is a direct breach of agreement.

On this question of rates it is of interest to note that the Carnegie Steel Company's special rail and steamer rate from Pittsburg to Liverpool is \$3, by way of Baltimore, this applying to all export shipments.

The Illinois Steel Company will continue to draw its supplies of manganese ore from the Leadville district in Colorado. A contract was closed this week by the company for 40,000 tons of Leadville manganese ores to be delivered during 1898.

**New York.** Dec. 10.

The local market is coming out of the suspense and inactivity that has prevailed for some time past. Business is still rather dull, except in the export trade, but an increasing volume of inquiries indicates that there are contracts soon to be placed for the coming year, and while dealers do not anticipate any immediate revival of trade they regard the prospects as favorable.

A large contract for the city on which are bids asked is the Riverside Drive viaduct. The viaduct will be 1,564 ft. long, 60 ft. wide and 95 ft. above high water at 127th street. The approaches will be 480 ft. long. It will be of steel.

In the export trade, business is, on the whole, very good for this season of the year. This is especially true of pipe, boiler tubes and railroad material.

**Pig Iron.**—The market is awakening from its period of suspense. One firm placed an order for 5,000 tons within the past few days, but no general movement in stocks is looked for before the middle of January. Inquiries are constantly increasing, however, and producer and consumers are evidently beginning to talk business. In warrant iron little is being done, and there is no longer more iron going out of storage than coming in. The movement's now balance. We quote: Northern brands No. 1 X foundry, \$11.75@12.25; No. 2 X foundry, \$11.25@11.75; No. 2 plain, \$10.75@11.25; gray forge, \$10.25@10.75 Southern brands, same delivery, No. 1 foundry, \$11.00@11.25; No. 2 foundry, \$10.50@11; No. 1 soft, \$10.75@11.25; No. 2 soft, \$10.75@11; No. 3 \$10.50@11.

**Steel Billets and Rods.**—There is not much demand for billets, and a desirable order could probably be placed at less than \$15 f. o. b. mill. Rods are held with increasing firmness. They are quoted at \$22.50 f. o. b. mills, with little inclination to shade.

**Plates.**—There is little change in the local market, which is no stronger than last week. There is an increasing number of inquiries, however, though no large contracts have been placed. Steel plates at tide water are quoted: 1'35@1'40 for No. 10 to 14 and 1'18@1'20 for heavier. 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.**—Contracts are in sight and the city will award several this week. Buyers and sellers are getting together and the outlook is better than for several weeks. There is a very slight raise in certain quotations, but prices are probably unchanged. We quote: Angles, 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.

**Old Material.**—The market is very quiet and business decidedly dull. We quote: Railroad wrought scrap, delivered, New York, \$11.25@12.25; 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@16; car wheels, f. o. b. Jersey City, \$9@10; scrap steel rails, \$9@10; old iron rails, \$11@12; wrought pipe and tubes, delivered New York, \$7@8; burnt iron, buyers' works, \$5@8. Iron borings at mill are \$7; iron turnings at mill \$8.

**Steel Rails and Rail Fastenings.**—The local market is quiet. In the export market there are numerous inquiries, with prospects of some large shipments. Agents do not care to say at what price these export orders are filled, but quotations are: Standard sections, \$19, and girder rails, \$23, f. o. b. mill. Light rails are \$22 for 16-lb. up to 35-lb.; and \$20 for 40-lb. and 45-lb. rails, all f. o. b. mill.

Rail fastenings at tidewater are quoted: Fish plates, 1'15@1'25c.; angle bars, 1'15@1'20c.; spikes, 1'50@1'60c.; bolts, square nuts, 1'75@1'85c.; hexagon nuts, 1'85@1'95c.

**Wrought Iron Pipe.**—There is a good volume of business in the local jobbing trade, but the business



is at cut prices. The agents of the manufacturers say they are not shading, but that some jobbers carrying large stocks are selling at less than quotations. Outside of the jobbing trade the local market is dull. In the export trade business continues good, with no falling off in inquiries and numerous shipments of pipe and boiler tubes. Discounts are: Black, lap welded 78%, butt welded 72%; galvanized, lap welded 70%, butt welded 67%. Boiler tubes in small lots are quoted: charcoal tubes, 2 in. and 2 1/2 in., 65%; 2 1/2 in. and larger, 70%; merchant tubes, 2 in. and 2 1/2 in., 72 1/2%; 2 1/2 in. and larger, 75%.

**Nails.**—The stories of the coming wire pool are having their effect on prices of wire nails, and there is no such inclination to shade quotations as prevailed a few weeks ago. Business is in a hand-to-mouth condition and is likely to be until the pool is in definite shape. Present quotations are \$1.50 in carload lots on dock and \$1.60 in small lots from store.

Cut nails in carload lots on dock are quoted at: \$1.25@\$1.30, and in small lots from store, \$1.30@\$1.40.

**Birmingham, Ala.** Dec. 7.

(From Our Special Correspondent.)

During the past week there has been a little more active demand for Southern pig iron, and the makers consider there is a favorable prospect for an increase in prices in the near future. The makers in this district report that at the present time the stocks are smaller than has been the case at any time during the past five years. This is the condition especially with regard to the Tennessee Coal, Iron and Railroad Company. The prices which have ranged for the past five or six weeks are still quoted by the makers notwithstanding that the production is as great as has ever been reached in the district.

Another factor which is being taken into consideration by the Southern iron makers as supporting the prospects for any advance in prices is the tendency in the North toward advancing wages. Unless prices advance some of the Northern furnaces will be compelled to go out of blast in the face of the increased cost of material and labor, while the Southern iron makers will be enabled to continue the present production because there is no probability of any greater cost than at present.

The consumption of iron in this State grows year by year. A reference to statistics shows that in 1888 only 7% of the iron manufactured in Alabama was consumed in the State, but in 1895 this proportion was increased to 15%, and during the present year the home consumption will reach at least 20% and possibly go above that mark. In connection with this increased consumption must be considered the fact that the production has grown from 401,030 tons in 1888 to 854,667 tons in 1895 and that during the present year it will reach a higher figure still. The bulk of this consumption is by the pipe works at Bessemer, and Anniston, but the rolling mills of Birmingham since the introduction of the steel plant, have increased their consumption very materially.

**Buffalo.** Dec. 8.

(Special Report of Rogers, Brown & Co.)

The market is now beginning to experience the usual holiday inaction. A small run of business is in progress and some consideration is being given to requirements for the early part of 1898, but as a rule there is not much offering in the way of fresh business. A noticeable feature is the absence of requests to hold off deliveries, which at this season of the year are usually numerous but at present exceedingly rare. This is thought to indicate a more general employment than customary of the consuming shops and foundries. We do not observe pressure to sell from any direction and prices are steady. Quotations given below are 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.** Dec. 8.

(From Our Special Correspondent.)

**Pig-Iron.**—There continues a fairly steady demand for both Northern and Southern pig-iron in small lots, with a few sales as high as 1,000 tons. Inquiry is rather better and indications for business in 1898 are improving. The Northern furnaces are transacting the greater part of the present business and are very firm in their prices. The furnaces almost to a unit have about as much work on hand as they can well attend to and are, therefore, quite independent. Prices are as follows: Lake Superior charcoal, \$12.50@\$13; local coke foundry No. 1, \$11.50@\$12; No. 2, \$10.75@\$11; No. 3, \$10.25@\$10.75; 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, \$10.00@\$10.85; Southern silveries, \$11.25@\$11.50; Jackson County silveries, \$12.50@\$14.50; Ohio strong softeners, \$12@\$12.25; Alabama car wheel, \$16@\$17; malleable Bessemer, \$10.75@\$11; coke Bessemer, \$11.50@\$12.

**Bar Iron.**—There have been a number of fair-sized contracts closed in bars during the week, orders running as high as a couple of thousand tons having come in. Car builders are the main pur-

chasers, with agricultural implement makers a close second.

**Steel Rails.**—Inquiry for steel rails has improved. It is understood that the local mills are booking a considerable business for 1898 delivery. Prices are maintained at \$20.50@\$22.50, Chicago.

**Billets and Rods.**—But few sales of either billets or rods have been made, and those that have been were for small lots. Billets are quoted \$18, and rods \$25.

**Structural Material.**—A couple of office buildings in this city will soon be built, requiring about 2,000 tons of material. Business in bridge material continues fair, and prices are firm. They are: Beams, 15 in. and smaller, 1'30@1'35c.; 18 to 24 in., 1'40@1'45c.; tees, 1'30@1'40c.; angles, 1'20@1'25c.; plates, 1'30@1'35c.

**Cleveland.** Dec. 9.

(From Our Special Correspondent.)

**Iron Ore.**—The sum total of the sales made during the last week aggregate only a small amount. The dealers have been devoting almost their entire attention to closing the season. At this and other Lake Erie ports the last cargoes of the year are arriving. Agents of some of the companies report that the last cargoes of some of the ores have been received already, and it is probable that but few cargoes will be received during the next week. The vessel-owners say they expect to close the season at the upper lake ports on December 12th, as heavy ice has been encountered in some of the ports. It is expected that the official record of the movements and sales of ore will be completed within a week. The sales reported during the week were on the basis of the prices fixed at the beginning of the season.

**Pig Iron.**—Balancing up the season's business was responsible for practically all the activity noted on the market during the past week. As a consequence the market was not as lively as several months ago. The prevailing disposition is to buy lightly at this season. Notwithstanding this fact the market remains firm, the quotations remaining the same as last week. They follow: Lake Superior charcoal, \$13.25; Bessemer, \$10.25@\$10.50; No. 1 foundry, \$11.15@\$11.25; No. 2, \$10.65@\$10.75; No. 1 Ohio Scotch, \$11.15; No. 2, \$10.65; gray forge, \$9.25@\$9.50.

**Philadelphia.** Dec. 10.

(From Our Special Correspondent.)

**Pig Iron.**—The market is dull in all lines, but the evidences of activity in the West are strengthening the hopes of manufacturers here. The volume of business so far this month is far below what was expected. Local consumption is heavy. Buyers are watching the market, but when urged to close contracts for forward delivery usually answer in substance that the enormous production will take care of them. Quotations are: No. 1 X foundry, \$12@\$12.25; No. 2 X foundry, \$11@\$11.50; No. 2, plain, \$11.50; standard mill iron, \$10.50; common, \$10@\$10.25; basic, \$11.

**Billets.**—A drop in billets came unexpectedly. It has made buyers hesitate, though several have placed small orders. The current quotation is \$17. Prompt deliveries can be made, and sellers say they expect to do a large business at an early day. Our people do not talk as though they would buy fast.

**Sheets.**—Large buyers who have made known what they wanted within two or three days have found manufacturers more disposed to make concessions than for some weeks. This comes at a time when the general idea was that iron would harden in price. The stores are handling a good deal of thin sheet.

**Plate and Tank.**—Some 3,000 tons of plates have been contracted for, which is away below anticipated business this week. Most mills have been rushing work for a month past in order to be ready for quick delivery orders this month. This condition of things may develop weaker prices soon. Shipyard work will be heavy, but there is nothing to be gained by haste in placing orders. Tank is 1'5c.; universals, 1'20c.; flange, 1'30c.; firebox, 1'50c.

**Bars.**—Car builders are getting a good deal of work, and they are buying iron cautiously, as they are in no pressing need for it yet. Manufacturers see the field is broadening, and count upon putting on more furnaces after January 1st. Store sales are air.

**Merchant Steel.**—New business is of moderate proportions this week, except for tire steel, which seems to be wanted.

**Pipes and Tubes.**—Boiler tubes are in good demand in this market, though our capacity is not crowded. Pipes are irregular and weak.

**Structural Material.**—The big order reported in the newspapers for Japan will probably be followed by one or two more from that quarter, according to street talk. Bridge work has been heard of since Monday through correspondence with agents who are crowding their chances to sell with all energy. They write they are coming in sight of a great deal of "Japan" work. Angles are 1'5c.; beams and channels, 1'25c.

**Steel Rails.**—The orders for the week are insignificant. Quotations, \$19. Prospects for business are good. Foreign requirements are much talked of.

**Old Rails.**—Iron rails are \$13. Business is light. Steel rails are \$10.25.

**Scrap.**—Scrap dealers are now quick to buy good

scrap if the prices suit. Railroad scrap is scarce, and is not to be had at much if any less than \$12.50; heavy steel scrap would sell at \$10; old car wheels are \$10.

**Pittsburg.** Dec. 9.

(From Our Special Correspondent.)

Trade during the week was not very active; this, however, is no unusual occurrence for the last month of the year. Generally speaking, consumers are well provided with raw material and can afford to wait and take the chances of the market. The year's business has been a large one, exceeding the previous year over 1,000,000 tons. The volume of actual business is moderate; there is no disposition to force sales by concession in prices. The fact is buyers and sellers are apart in their views and cannot agree on prices for large lots. Bids are not made with much freedom, neither is there any great urgency on the part of sellers, although business at present rates would be quickly accepted; but knowing that, buyers stand out for reductions. The weakness in steel and in steel materials gives some encouragement to that disposition, but the fact of deliveries being well taken confirms sellers in the opinion that the recent orders will be ready as soon as they are ready to handle them. It is a test of endurance on both sides, and when the balance is so evenly adjusted it will be difficult to say which end will be the first to give way. There is little in the local pig-iron trade to warrant the belief that prices will improve, although statistically the market is in a very satisfactory shape. Consumers' yards are becoming bare of stock; purchases cannot, therefore, be postponed indefinitely, and as deliveries are being taken freely, there is a possibility that the resumption of active buying after the opening of the new year may enable holders to maintain prices.

**Steel Billets.**—Billets continue to be the weak stock in the market; the demand has fallen off very materially, not that consumption is very much less, but buyers hold off until they think prices have touched bottom.

**Finished Material.**—Business during the week has been on a smaller scale than usual; new work that was expected failed to materialize; prices weak.

**Wrought Iron and Steel Pipe.**—The demand has fallen off; this, however, is to be expected at this season of the year.

**Wire Rods.**—There was a slightly improved demand; prices, however, show no change.

**Latest.**—Business remains slow; both buyers and sellers seem to be waiting for something to turn up. The sales made show a wide range of values. An active market is not expected during the balance of the year. There is a wide difference of opinion in regard to prices for next year, as no two dealers seem to entertain the same views; they all agree on one thing, that the business of 1898 will be a record breaker.

Table with columns for COKE SMELTED, LAKE AND NATIVE ORE, SHEET BARS, STEEL WIRE RODS, MUCK BAR, SKELP IRON, CHARCOAL, BLOOMS, BILLETS, SLABS, and SKELP STEEL. Includes various grades and prices per ton.

**METAL MARKET.**

NEW YORK, Friday Evening, December 10, 1897.

**Gold and Silver.**

Price of Silver per Ounce Troy.

Table showing prices of Gold and Silver in New York, with columns for December, St. Ex., London, N. Y. Cts., and Value of sil. in \$.

Silver has been in fair request and the chances of the price being maintained through December were decidedly good until the action of the India Council concluding to renew sale of drafts next week. This bit of news took the silver buyers out of the



market, and silver fell to 26 3/4 d. Nominal market closes with unsatisfied enquiries at this figure.

The United States Assay Office in New York reports the total receipts of silver at 61,000 oz. for the week.

Average Monthly Prices of Silver

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

Table with columns for Month, 1897, 1896, 1895, and sub-columns for London and New York prices in Pence and Centa.

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, October, 1897, and years from January 1st, 1897 and 1896:

Table showing Gold and Silver Exports and Imports in ounces, with total exports and imports.

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 December 10th, 1897, and for years from January 1st, 1897, 1896, 1895, 1894:

Table showing Gold and Silver Exports and Imports for New York, with weekly and yearly data.

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

FINANCIAL NOTES OF THE WEEK.

Business has been fairly active, and though the President's message was disappointing in some respects, it was encouraging so far as it gave assurances of a pacific policy with regard to the Cuban question.

By far the most important of the documents submitted to Congress this year is the report of the Secretary of the Treasury. Mr. Gage's recommendations as to currency reform will be found in full in another column.

The statement of the United States Treasury, on Thursday, December 9th, 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 Dec. 2 and Dec. 9, 1897, with changes.

Treasury deposits with national banks amounted to \$46,970,012, an increase of \$8,558,585 during the week.

The estimate of money in the United States on December 1st, as prepared by the Treasury Department, is as follows:

Table showing money in circulation, in Treasury, and totals for Gold coin, silver dollars, and other forms.

The total amount in circulation shows an increase

of \$14,351,634 over that reported on November 1st. The estimated circulation per capita is \$23.39.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending December 4th gives the following totals, comparison being made with the corresponding weeks in 1896 and 1895:

Table showing Loans and discounts, Deposits, Circulation, Reserve, and Legal tenders for 1895, 1896, and 1897.

Changes for the week this year were increases of \$3,476,500 in loans and discounts, \$6,417,100 in deposits, \$339,300 in specie, and \$827,000 in legal tenders; decreases of \$93,100 in circulation, and \$437,975 in surplus reserve.

Shipments of silver from London to the East for the year up to November 25th are reported by Messrs. Pixley & Abell's circular as below:

Table showing India, China, and The Straits shipments for 1896, 1897, and Chan res.

Totals £5,599,559 1896; £5,910,375 1897; £3,101,816 Chan res.

Arrivals for the week this year were £212,000 in bar silver from New York, £24,000 from the West Indies and £8,000 from Australia; a total of £244,000.

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 for various banks in Gold and Silver for 1896 and 1897.

The returns for the Associated Banks of New York are of date December 4th; the Bank of Italy, October 31st; the Bank of Russia, November 1st-13th; the Bank of Austro-Hungary, November 27th; Spain and the Netherlands, November 20th; the Bank of Belgium, December 6th; Germany, December 2d; the others are of date December 9th.

Indian exchange has been a little higher and the average has been 15 1/4 d. per rupee. Shipments of silver have been light. The Indian government has given notice that it desires to borrow £2,500,000 in London on sterling bills.

Prices of Foreign Coins.

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

Table showing prices for Mexican dollars, Peruvian soles, Victoria sovereigns, etc.

Other Metals.

Copper.—The stronger tendency which was apparent when we last went to press has since become more pronounced. Domestic consumption is steadily on the increase, and already better than it has been for a considerable time past.

The foreign market, which opened on Monday at £48 2s. 6d. @ £48 5s. for spot, advanced later to £48 10s. @ £48 12s. 6d., but closes somewhat easier at £48 5s. @ £48 7s. 6d. for spot, and £48 15s. for three months prompt.

and manufactured we quote: English tough, £50 @ £50 10s.; best selected, £51 @ £51 10s.; strong sheets, £58 @ £58 10s.; India sheets, £55 10s. @ £56; yellow metal, 41 1/2 d.

Tin has remained steady. There were but very small fluctuations, prices having moved between 13 7/10 and 13 7/5c.

The foreign market was firm during the early part of the week, but, in sympathy with the lower silver market, is easier at the close, the quotation cabled to-day being £62 7s. 6d. @ £62 10s. for spot and £63 @ £63 2s. 6d. for three months prompt.

Lead remains rather dull, with prices unchanged at 3 7/10c. New York. Consumers do not show any inclination to anticipate their wants, but fortunately there is no pressure on the part of refiners to market what lead they have accumulated, else values would suffer not inconsiderably.

The foreign market has experienced a very heavy decline, the closing price to-day being £12 11s. 3d. for Spanish, which is 6s. 3d. lower than last week, and there are no reassuring advices that a reaction for the better is likely to set in soon.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is dull and very little business is doing. Common lead is selling lightly at 3 5/10 @ 3 5 1/2 c., according to brand and delivery. Corroding lead is quoted at 3 5 1/2 c. Both buyers and sellers are very much unconcerned as to the future course of the market and seem to be satisfied to look on.

Spelter is weak; production is large, and though consumption is fairly steady, it is not sufficiently so to maintain values. It is true the metal is constantly exported in quantities which ought to relieve this market, but producers show such an anxiety to market as much metal as possible, and for delivery as far ahead as possible, that it is generally assumed they expect production to materially increase.

Imports and Exports of Metals.

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

\*New York Metal Exchange returns. †From our Special Correspondent. ‡Week ending Dec. 9.





**Cleveland.**

Dec. 9.

(From Our Special Correspondent.)

But little activity was manifested on the stock market during the past week, and only a few unimportant transactions were made. The feature of the market has been the Cleveland-Cliffs fluctuation. Several weeks ago the prospective investors bid \$35 for it, and gradually increased their offers to \$40.50. Then it dropped again until last week, when purchasers could have been found at \$35. This week the holders have advanced their quotations \$2 per share.

**Salt Lake City.**

Dec. 4.

(From Our Special Correspondent.)

Not for many months has the Utah mining share market witnessed so much life as during the past six days. The present is a period of movement and speculation, with strong advances and sharp declines, the former predominating. With one reprehensible exception—the Geyser-Marion manipulation—the tone is healthy and the signs are that December will record the best month of the year in transfer of shares, as well as in the doings of the mines themselves. Outside orders are aiding the improvement, which in the main is due to the excellent condition of the mines.

When Geyser-Marion share owners received their dividend checks, mailed December 1st, they were served with a notice signed by President and General Manager John Dern, that there will be no January dividend, owing to an overdraft of several months standing. In August this amounted to nearly \$10,000; since that time three \$9,000 dividends were paid and the public now learns for the first time that, quoting from this notice, "The company's bank account has been overdrawn since last June. The books show that on August 15th the overdraft was \$9,699. On November 15th it was \$4,659. While the property has been earning sufficient during the past two months to pay dividends of \$9,000 per month, yet, with new improvements and extensive development work, which is necessary, it is not likely that we can earn enough to pay off the overdraft and also pay the regular dividend. We have not deemed it good business to continue in this situation, and have, therefore, determined not to pay a dividend on January 1st, but to defer the payment of dividend No. 8 until February 1st, in order to put the company into better financial condition." The new directorate is not responsible for what took place prior to the end of September, but must be held accountable for the assurances given to the public after it took the helm. When the books were audited it was authoritatively published that the company was out of debt and that the mine could readily maintain the monthly dividend. It would seem the schemes of the former large owners to unload their holdings were thus aided by withholding the truth. Such appear to be the facts, and it is impossible to reconcile the assurances of 60 days ago with those of to-day. From the most reliable information obtainable the mine shows well, with an abundance of good ore, but the two mills of the company are not achieving the gold-saving they can and ought to be made to. Before resuming dividends these primitive plants should be brought to a higher standard of efficiency, which outcome will materially improve these shares, though temporarily they may suffer a further decline. On Monday the bid was firm at \$1.07½, and Wednesday, when this notice became known, it dropped to \$1, then to 97c., closing to day at 93c. bid, 94c. asked. Over 8,000 shares were sold during the week, and it has supplied a stirring sensation, of which the end is not yet.

Bullion-Beck opened the week strong at \$4.85 bid, \$5.25 asked. It closed this forenoon \$5.65 bid, \$6.20 asked, doing business at \$5.75 and \$5.95. The transformation is due to the resumption of active mining and proving the ore zone at the lowest working. Centennial-Eureka is stronger by sympathy, if for nothing else. Swansea and South Swansea have each jumped upward, the former reaching \$2.37½ bid, \$2.60 asked, and South Swansea \$1.55 bid, \$1.75 asked in the middle of the week. Each recorded sales and, though not holding the full advance, they end the week very firm and much higher than on last Saturday. While Swansea's management denies any valuable new ore uncovering of gold or otherwise, it is again affirmed from Tintic this evening and large owners are quietly seeking more shares. Swansea announced the customary \$5,000 dividend, payable December 10th.

Mammoth still climbs, to-day's bid being \$2.17½, against \$2.10 last Saturday. In addition to paying all outstanding debts, the earnings of October and November showed a reserve of \$37,500 on December 1st, and it is said the earnings of the current month will be about \$40,000 additional. A Christmas dividend is probable. Buckeye has improved 80%, owing to arrangements for prosecuting exploration under a two-year lease. Ajax remains unchanged and unattractive. Galena and Utah are firm and in demand, well maintaining their recent advance.

Mercur has scored its highest point, \$8.25 bid, with signs of moving up. The belief is that, at the director's meeting next Friday, a \$50,000 dividend will be declared. Chloride Point has attracted attention throughout the week, doing considerable business at 43c. to 45c. A small lot of Sunshine sold to-day at 15c.; its depression is accounted for from the recent report of a possible assessment, which the officers state was unwarranted. Northern Light is again a little dumpish, though good accounts come from the mine.

At a meeting of Alice directors this morning, held in Walker Brothers bank, a dividend of 5c. per share, or \$20,000, was declared, payable December 20th. Manager Buzzo was present and made a report showing a satisfactory condition of the property. The directors propose to act favorably on the invitation of the manager and visit the mine at Walkerville, Mont., the coming week.

Date of sale of delinquent Morgan shares—of Park City—is postponed from December 6th to December 13th. This assessment is 10c. per share and a large majority of holders have signified their intention of paying up.

Silver King's customary \$37,500 dividend will be paid on December 10th. There is a likelihood of an extra for the holiday season. Orders are on the market for these shares at \$15.50 bid. Ontario made a small sale at current figures. Daly West advanced from \$3.25 bid last Saturday to \$4, the bid to-day. Horn Silver is again wanted at \$1.50 bid, with no offerings at any price.

**San Francisco.**

Dec. 4.

(From Our Special Correspondent.)

The market opened with dull business and low prices, but the cheapness of stocks attracted buyers and gave a more active look to business. The weekly reports contained nothing of an exciting nature at all, and the activity was limited to small transactions.

Several attempts were made to brighten up the market, but they were on too small a scale to give any hope of success, and no improvement was shown. The week closed with business still on a very small scale and the range of prices lower than at the opening.

Some quotations of Comstock shares noted are: Hale & Norcross, \$1.35; Occidental Consolidated, \$1.20@1.25; Consolidated California & Virginia, \$1.10; Confidence, 75c.; Sierra Nevada, 55@57c.; Justice, 49@50c.; Potosi, 38@40c. For Standard Consolidated \$1.60 was asked, with no sales.

The sales on regular call at the San Francisco Stock Exchange for the first 11 months of the year were as follows:

	1896.	1897.
January, shares.....	296,415	274,780
February.....	183,790	166,635
March.....	246,105	188,745
April.....	261,755	239,765
May.....	818,610	189,395
June.....	474,135	190,600
July.....	321,580	211,450
August.....	219,610	292,630
September.....	193,125	490,185
October.....	217,990	460,310
November.....	152,465	238,960
Total.....	3,374,165	2,942,985

The spurt in September and October failed to bring this year's sales up to the level of 1896, and the total is 431,180 shares less. The sales for the two months mentioned were about one-third of the total.

The stockholders of the Manzanita Gravel Mining Company have re-elected the old officers for 1898.

The Horsefly Gold Mining Company, of Caribou District, British Columbia, has levied an assessment of 90c. per share, delinquent December 27th.

The Vallejo Quicksilver Mining Company of Napa County has levied an assessment of 2c. per share, delinquent December 18th.

The Junction Mining Company of Tuolumne County has levied an assessment of 1½c. per share, delinquent January 8d.

The Santa Rosalia Mining Company paid a monthly dividend of 10c. per share December 1st.

**London.**

Dec. 1.

(From Our Special Correspondent.)

The London mining stock market continues very dull, and there is hardly anything to say about it this week. The leading spirit among the successful West Australian mines, Mr. Whitaker Wright, is now paying all his attention to British Columbians. People who have shares in his West Australian companies will all go into his British America Corporation which is to come out shortly. This explains to some extent a marked dullness in West Australians.

With the exception of this company of Mr. Whitaker Wright's, we have not heard much of Americans this week, as far as public flotations are concerned. The Canadian Pacific Exploration Company, of which Mr. W. H. Corbould is managing director, is being pushed to the front by talk and advertisement. Though Mr. Corbould says all the money required is being subscribed privately, it is probable that a new issue will be made shortly. From private sources I hear that Mr. Corbould has been engaged in legitimate mining development in British Columbia, and that his properties are much more promising than most of those which are being offered to the public here.

A section of the market that has been exceptionally strong has been the shares in the copper mining companies. The way was led by Cape Copper, the dividend of which was much larger than expected, and a great advance on all recent distributions. A good deal of the buying comes from France, where copper mining companies are usually popular. Rio Tinto, Anaconda and Mount Lyell participated in the boom, but the second named shares are hard to move.

The South African section has been much upset by continued reports about Mr. Rhodes' health. Several times it has been announced that he was dead, and, on the other hand, messages have been

received alleging that he is in the best of health. All this uncertainty naturally has an unsettling effect. As regards business transacted, most of it has been in connection with deep levels. The leading houses in London are supporting deep levels and hanging all their future hopes on them. This policy has been evident for some little time, but now it is an open policy, and the public market is entirely guided by it.

**Paris.**

Nov. 28.

(From Our Special Correspondent.)

The mining stock market was sufficiently quiet last week, and no movements of importance were noted. The greatest activity was in the copper stocks, which were in some demand. Rio Tinto common shares were higher and the less important stocks were strong. For the zinc and lead stocks prices were a little higher, but without very active sales. Huanchaca (silver) was again lower, as it appears that the condition of the mine is very bad. The metallurgical shares have ceased to rise, but for the present hold their prices. The South African market is absolutely quiet—one might almost call it dead.

A very interesting paper prepared by M. Pierre des Essars, head of the statistical bureau of the Bank of France, estimates the amount of public securities held in France at 80,000,000,000 fr., of which about 60,000,000,000 fr. are French and the remainder foreign. The best known securities, such as French rentes, Paris municipal bonds, and the bonds of the French railroad companies, are held most largely by small investors. The stocks offering a larger return but greater risks are owned by persons of more means, and the foreign stocks, as a rule, by large capitalists. The average return on this enormous sum of investments is not now over 3½%, though 30 years ago it was between 5½% and 6%. This fall in interest has affected most seriously the small renters, whose income is gradually declining.

Our French coal mines do not quite supply all the fuel which we require, and the official returns show that in the nine months ending with September we imported 6,454,430 metric tons of coals and 1,140,680 tons of coke, which is 123,860 tons of coal and 9,177 tons of coke more than last year. Great Britain furnished 3,393,040 tons of coal this year and Belgium 2,568,560 tons; while 682,470 tons of coke came from Germany and 443,200 tons from Belgium. Our exports were 793,400 tons of coal, 22,250 tons more than last year, and 41,680 tons of coke, an increase of 1,630 tons. Belgium took 376,360 tons of the coal this year, and Switzerland 150,300 tons. It appears therefore that in nine months we consumed 5,661,030 tons of coal and 1,069,000 tons of coke more than we produced.

There is some uneasiness over the conflict of French and English interests in East Africa. In this case we believe that we are clearly in the right, but the English claims do not regard that.

Our insular neighbors have only the conscience of trade. There is business to be done—why should rights and treaties stand in the way? AZOTE.

**MEETINGS.**

Andes Silver Mining Company, annual meeting, at the office, 309 Montgomery street, San Francisco, Cal., on December 18th, at 11 A. M.

Brother Jonathan Mining Company, annual meeting, at the office, 255 Bennett avenue, Cripple Creek, Colo., on December 14th, at 10 A. M.

Head Center & Tranquility Mining Company, annual meeting, at the office, No. 310 Pine street, San Francisco, Cal., on December 14th, at 12 A. M.

Mt. Diablo Mill and Mining Company, annual meeting, at the office, 318 Pine street, San Francisco, Cal., on December 20th, at 1 P. M.

Muldoon Mining and Milling Company, stockholders' meeting at the office, Rooms 2 and 5, Eagle Block, Salt Lake City, Utah, on December 18th, at 2 P. M.

Santa Rosalia Mining Company, annual meeting, at the office, No. 310 Pine street, San Francisco Cal., on December 15th, at 11 A. M.

**LATE NEWS.**

(From Our Special Correspondent.)

TINTIC DISTRICT, UTAH.—During the week ending December 4th the following lots of ore were forwarded from the district: Gemini, 8 cars; Grand Central, 1 car; Humbug, 4 cars; Utah, 1 car; Swansea, 4 cars; South Swansea, 5 cars. From Eureka Hill were shipped 6 cars concentrates and 22 bars of bullion. Dragon Iron sent out 15 cars hematite for fluxing.

BY TELEGRAPH.

(From Our Special Correspondent.)

SALT LAKE, Utah, December 9th.—A find of great importance to the Tintic district, made this week, is in the Mountain View, next to the Humbug, where a 4-ft. lead-silver ore seam is cut. This is claimed to be the best strike on the Godiva Mountain since the Humbug bonanza, a little more than a year ago.

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 sales.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stocks including American Coal, Col. C. & L. Dev., and others.

Official quotations. New York Stock Exchange, mining, 1,300 shares; other stocks, 25,487 shares; Consolidated Stock and Petroleum Exchange, mining, 17,550 shares; Mining Exchange, 1,682,100 shares. Total shares sold, 1,726,437. \*Bid and ask quotations. †Ex-dividend.

PHILADELPHIA, PA.

Table of stock quotations for Philadelphia, PA, listing companies like Cambria Iron, Conn's Gas, and others.

Official quotations Philadelphia Stock Exchange. \*Bid and ask quotations. †Ex-div. Total sales, \$3,805.

PITTSBURG, PA.

Table of stock quotations for Pittsburgh, PA, listing companies like Allegheny, Carborundum, and others.

Official quotations Pittsburgh Stock Exchange.

BOSTON, MASS.

Table of stock quotations for Boston, Mass., listing companies like Alamo, Anaconda, and others.

Official quotations Boston Stock Exchange. \*Bid and ask quotations. Ex-div. Total sales, \$3,755.

BALTIMORE, MD.

Week ending Dec. 9.

Table of stock quotations for Baltimore, MD, listing companies like Atlantic Coal, Consolidation Coal, and others.

Official quotations Baltimore Stock Exchange.

CLEVELAND, O.

Table of stock quotations for Cleveland, O, listing companies like Aurora, Chandler, and others.

From our special correspondent.

ASPEN, COLO.

Oct. 15.

Table of stock quotations for Aspen, Colo, listing companies like Agnes C, Alta Argent, and others.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo, listing companies like Alamo, Anaconda, and others.

Official quotations Colo. Springs Mining Stock Association. Total shares sold, listed, 440,512; unlisted, 218,000.



STOCK QUOTATIONS.

DENVER, COLO.

Table of stock quotations for Denver, Colorado, listing various companies like Addie C., Etna, and others with their share prices and sales data for Nov. 29, Dec. 1, Dec. 2, Dec. 3, and Dec. 4.

LOS ANGELES, CAL.

Table of stock quotations for Los Angeles, California, listing companies like Amargosa, Brown Dale, and others with their share prices and sales data for Nov. 23, Nov. 24, Nov. 25, Nov. 26, and Nov. 27.

Official quotations, Los Angeles Mining and Stock Exchange. \* Bid and ask quotations. Total sales, 484,400 shares. † Holiday.

SALT LAKE CITY, UTAH.

Week ending Dec. 4

Table of stock quotations for Salt Lake City, Utah, listing companies like Ajax, Alliance, and others with their share prices and sales data.

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

ROSSLAND, BRITISH COLUMBIA.

Dec. 1.

Table of stock quotations for Rossland, British Columbia, listing companies like Abe Lincoln, Alberta, and others with their share prices and sales data.

\* From Our Special Correspondent.

HELENA MONT.

Week ending Dec. 4.

Table of stock quotations for Helena, Montana, listing companies like Am. Dev. & M. Co., Bald Butte, and others with their share prices and sales data.

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

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing companies like Alpha Con., Aita, and others with their share prices and sales data for Dec. 3, Dec. 4, Dec. 5, Dec. 6, Dec. 7, Dec. 8, and Dec. 9.

\* Official telegraphic quotations, San Francisco Stock Exchange.

MEXICO.

Week ending Nov. 23.

Table of stock quotations for Mexico, listing companies like Alhazna, Amistad y Concordia, and others with their share prices and sales data.

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. Nov. 26. Table with columns: NAME OF COMPANY, Country, Authorized capital, Par value, Last dividend, Quotations (Buyers, Sellers), and various stock prices.

PARIS. Week ending Nov. 25. Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Latest divs., and Prices (Op'n'g, Closing).

VALPARAISO, CHILE. Oct. 23. Table with columns: NAME OF COMPANY, Location, Capital paid, Sh. Val. paid up, Last Dividend, and Prices (Bid, Asked, Last sale).

SHANGHAI, CHINA. Oct. 29. Table with columns: NAME OF COMPANY, Country, No. of shares, Value (Par, Paid up), Last dividend, and Price.

DIVIDENDS. Table with columns: NAME OF COMPANY, Current Dividends (Date, Amt.), Paid since Jan. 1, 1897, Total to date, and similar columns for another set of companies.

ASSESSMENTS. Table with columns: NAME OF COMPANY, Location, No., Dlnq., Sale, and Amt.

\*November 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. ‡ Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends and the Cons. Virginia \$42,390,000. Dividends paid since consolidation. § Bodie, Bulwer and Mono transferred to Standard Cons., January, 1897. \* Dividends have not been paid in several years.

Note.—This table is corrected up to December 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 November 17th. 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, Acids, Alum, Aluminum, Ammonia, Ammonium, Argols, Arsenic, Asbestos, Asphaltum, Barium, Barytes, Bauxite, Benzole, Bismuth, Bitumen, Bone Ash, Borax, Bromine, Cadmium, and Sulphide.

Table listing various chemicals and minerals such as Calcium, Cement, Charcoal, Clay, Chlorine, Chrome Ore, Cobalt, Copper, Feldspar, Fluorspar, Fuller's Earth, Gold, Graphite, Gypsum, Iodine, Iron, Kaolin, Kroyolith, Lead, Lime, Magnesite, Magnesium, Marble, Mercuric, Mercurous, Mica, Mineral Wool, Nickel, Oils, Oxide, Paraffine, Petroleum, Potash, Potassium, Pyrites, Quartz, Silica, Strontium, Sulphur, Tellurium, Tin, Tungsten, Uranium, Vanadium, Zinc, and Zirconium.

Table listing various chemicals and minerals such as Mercury, Bichloride, Bisulphate, Red ppt., White ppt., Mica, Mineral Wool, Nickel, Oxide, Green, Oils, Oxide, Paraffine, Petroleum, Potash, Potassium, Pyrites, Quartz, Silica, Strontium, Sulphur, Tellurium, Tin, Tungsten, Uranium, Vanadium, Zinc, and Zirconium.

Table listing various chemicals and minerals such as Potassium, Iodide, Nitrate, Permanganate, Sulphide, Pyrites, Quartz, Salt, Silica, Water ground, Lump quartz, Silver, Cyanide, Nitrate, Sulphide, Slate, Sodium, Acetate, Bichromate, Bisulphate, Bromide, Carbonate, Chlorate, Hyposulphite, Molybdate, Nitrite, Phosphate, Silicate, Sulphate, Tungstate, Strontium, Sulphur, Tellurium, Tin, Tungsten, Uranium, Vanadium, Zinc, and Zirconium.

THE RARE ELEMENTS.

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

Table listing rare elements such as Argon, Barium, Beryllium, Boron, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Germanium, Glucinum, Helium, Indium, Iridium, Lanthanum, Lithium, Molybdenum, Niobium, Osmium, Rhodium, Rubidium, Ruthenium, Selenium, Silicon, Strontium, Tantalum, Thallium, Thorium, Titanium, Uranium, Vanadium, and Wolfram.



ALPHABETICAL INDEX TO ADVERTISERS.

(-) Indicates every other week or monthly advertisements.

Table with columns for advertiser names and their corresponding page numbers, organized alphabetically from A to Z. Includes sub-sections A through Z and various company names like Denver Fire Clay Co., Laidlaw-Dunn-Gordon Co., and Taylor Iron & Steel Co.



**A COMPOUND THAT YOU WANT. THE A. B. C. ALKALI WATER PURIFIER.**  
The Very Best of all Compounds for Boiler Treatment.

We are after the Mine Trade. Engineers write us. Send along a gallon jug of your feed water, expressage prepaid. We examine and report on same. Our analysis is guaranteed. Our compound is a pure chemical, and we make it to fit every emergency. Our trade with the mines is growing fast.

**THE J. H. PARSONS CHEMICAL COMPANY,** 1511-13-15 MASONIC TEMPLE, CHICAGO, ILL.

**THE HARRINGTON & KING PERFORATING CO. CHICAGO.**

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We are always willing to furnish our Readers and Busy People whose time is limited any information on Scientific and Technical Subjects—including the boundless domain of General Literature. We can supply you with anything that you may desire in the way of Books at popular prices. It would be a good thing to send for our catalogue. It costs you only a postal card.  
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SAVES 10% to 20%.

FOR STEAM BOILERS.

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SOLE MAKERS IN U. S. A.,  
**THE FUEL ECONOMIZER COMPANY,**  
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Unless You Get  
**THE TYLER Double Crimped.**  
THE 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,  
Copper and Phosphor Bronze  
**WIRE CLOTH.**  
Write us direct for information.  
Colorado concerns will find a stock of our screens at  
**Hendrie & Bolthoff Mfg. Co., DENVER, COLO.**  
Main Offices and Works of THE W. S. TYLER WIRE WORKS CO. corner St. Clair Street and C. & P. R. R. Crossing, Cleveland, Ohio.

**CYANIDE BLEACHING POWDER.**

**MINERS' CHEMICALS. FUERST BROS. & CO.,** 2 Stone St. New York.

**VOLLMER AND BEATON,**  
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.

**JOHN VOLLMER,** 18 Oregon St., Roxbury, Mass.  
**D. A. BEATON,** Box 84, Woburn, Mass.

**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.  
**EDW. F. WHITE, M.E.,** 116 Liberty St., N.Y. Cit.

**ZEITSCHRIFT FÜR PRAKTISCHE GEOLOGIE**

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—AND—  
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**C. D. BERGAW,**  
General Passenger Agent.

**The Handsomest**

Christmas present for a Mining Engineer, Metallurgist, Chemist, or any one connected with the mining industry, is a set of "The Mineral Industry." PRICE \$22.50.  
This set consists of five volumes in a handsome oak case.  
**THE SCIENTIFIC PUBLISHING CO.,** 253 Broadway, NEW YORK.

**Locations for Industries.**

The Chicago, Milwaukee & St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will insure their permanent success.  
A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.  
The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable. Address  
**LUIS JACKSON,**  
Industrial Commissioner, C. M. & St. P. Ry., 435 Old Colony Building, Chicago, Ill.



CLASSIFIED LIST OF ADVERTISERS.

Air Compressors and Rock Drills. American Diamond Rock Drill Co. Bullock, M. C., Mfg. Co. Buicklight Rock Drill Co.

Corrugated Iron Berlin Iron Bridge Co. Crucibles, Graphite, Etc. Baker & Co. Sedman's Foundry & Machine Works.

Lead Linings for Chlorination Tubs. Raymond Lead Co. Link Belting. (See Belting Link Belt Machinery Co.)

Pumps Billin, Chas. E. & Co. Cameron, A. S., Steam Pump Works. Clayton Air Com. Wks. Denver Eng. Wks. Co. Fraser & Chalmers.

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.

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.

1556 WANTED—A FIRST-CLASS SALES agent for a high-grade West Virginia bituminous gas and steam coal. Must be able to dispose of an output of from two to five thousand tons per day. Address BITUMINOUS, ENGINEERING AND MINING JOURNAL.

1557 WANTED FOR MEXICO—AN EXPERIENCED copper blast-furnace foreman who knows Spanish enough to get along. Salary \$200, Mexican, per month. Enclose copy of testimonials and references to COBRE, ENGINEERING AND MINING JOURNAL.

1558 WANTED FOR MEXICO—A GOOD reliable foreman for lead blast furnaces. Must know a little Spanish. Salary \$250, Mexican, per month. Send testimonials and references to VAN DYKE, ENGINEERING AND MINING JOURNAL.

1559 WANTED—A COMPETENT ASSAYER for mine in Central America. Steady employment. Give full particulars. Address CENTRAL, ENGINEERING AND MINING JOURNAL.

1560 WANTED—EXPERT MINING ENGINEER whose reports are acceptable in this country and Europe. Give terms and references. Address GOLD EXPERT, ENGINEERING AND MINING JOURNAL.

1561 WANTED—CHEMIST AND ASSAYER for Silver-Lead Smelter in Northern Mexico; state experience, references and salary in Mexican money required. Address BENEVIDES, ENGINEERING AND MINING JOURNAL.

1562 WANTED—THOROUGHLY COMPETENT manager for Bituminous Coal Company; must be competent in every detail. Give full particulars as to experience, abilities, reference and remuneration—part of latter must depend on results; no attention unless compliance with terms. Address TENNESSEE, ENGINEERING AND MINING JOURNAL.

1563 WANTED—A MAN WHO THOROUGHLY understands pig iron and steel, to sell steel and iron products, and who is also competent to make trips to foreign countries in the interest of a mining company. Address "STEEL," ENGINEERING AND MINING JOURNAL.

1564 WANTED AN EXPERIENCED AND competent millman who thoroughly understands amalgamation and concentration. Must be sober, active, reliable and have best of references; 40 stamp amalgamation and concentration mill in Colorado. Send copies of testimonials and state salary expected. Address DANIA, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

A MINING ENGINEER, ENERGETIC, TECHNICAL education, experienced in the management of men, 10 years' practice in charge of mines, desires position as manager or superintendent; speaks Spanish; excellent references. Address FILON, ENGINEERING AND MINING JOURNAL. No. 18,185, Jan. 22.

EXPERIENCED PROSPECTOR AND GRADUATE Civil Engineer (Swede, age 29), is open for engagement to go North for some company or prospecting syndicate. The very best references. Address at once, VANCOUVER, ENGINEERING AND MINING JOURNAL. No. 18,146 Dec. 25.

A MINING ENGINEER AND ASSAYER, 28 years of age, until recently employed in the Northwest, desires engagement as manager or assistant with mining company. Good references. Address BOX 23, ENGINEERING AND MINING JOURNAL. No. 18,145, Dec. 25.

YOUNG METALLURGIST, LEHIGH UNIVERSITY graduate, desires position in laboratory or with mining engineer; good references. Address HART, ENGINEERING AND MINING JOURNAL. No. 18,143, Dec. 13.

MINING ENGINEER, AGE 30, DESIRES position; thorough assayer, surveyor and book-keeper; nine years in the West; experienced in both mining and treatment of ores; good references. Address R., ENGINEERING AND MINING JOURNAL. No. 18,156, Jan. 8.

A BLACKSMITH, FIRST-CLASS IN ALL kinds of mine and mill work, from diamond drill setting to the heaviest or most complicated forgings, desires a permanent situation in a healthy locality, where he can have educational advantages for his children. Highest recommendations from employers. Refers to the ENGINEERING AND MINING JOURNAL. Address BLACKSMITH, ENGINEERING AND MINING JOURNAL.

PRACTICAL MINING MAN OF EXPERIENCE and responsibility is open for engagement, gold quartz and gravel only. If later more money is needed and property warrants, can secure it under unusually good auspices, which will explain. Address RESPONSIBLE, ENGINEERING AND MINING JOURNAL. No. 18,149, Dec. 18.

MINING MANAGER AND SUPERINTENDENT will take charge of good property and willing to invest money if satisfied with results. Address IDAHO, ENGINEERING AND MINING JOURNAL. No. 18,150, Dec. 18.

WANTED—POSITION AS SUPERINTENDENT of gold mining property, quartz or gravel; or would travel as expert for strong company; 12 years' experience in Western States; references. Address CALIFORNIA, ENGINEERING AND MINING JOURNAL. No. 18,147, Dec. 18.

WANTED—POSITION AS CHEMIST BY a University of Michigan graduate, with two years' experience in soap and fertilizer industries; best references. Address P. D., ENGINEERING AND MINING JOURNAL. No. 18,148, Dec. 18.

CHEMIST AND ASSAYER, WITH EXPERIENCE in surveying, will be open for engagement March 1st. Address F. I., Ph.B., ENGINEERING AND MINING JOURNAL. No. 18,154, Jan. 1.

A COMPETENT AND EXPERIENCED ASSAYER and chemist, speaking Spanish, desires change of position. Will go anywhere with reliable company. Best references. Address PLATA Y ORO, ENGINEERING AND MINING JOURNAL. No. 18,155, Jan. 8.

CONTRACTS OPEN.

BRIDGES.—Proposals for Supplying and Erecting 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 Security 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 Company, and the Union Stock Yards and Transit Company'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., U. S. and St. L. Ry. Co., C., and 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 accompanied 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 canvassed and the contract awarded and signed, the return 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. 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 furnished by the Sanitary District.

CHAINS.—U. S. Engineer Office, Charleston-Kanawa, W. Va.—Sealed proposals for chains and clevises of special make and strength for movable dams on Great Kanawa River will be received here until December 20th, 1897, and then publicly opened. Information furnished by Addison M. Scott, Resident Engineer, at above office. W. H. BIPBY, Major Engrs.

FIRE HYDRANTS.—Water Department, Lebanon, Pa.—Sealed proposals will be received for fifty (50) fire hydrants, by the Board of Water and Lighting Commissioners of the City of Lebanon, Pa., until December 30th, 1897. Specifications and further information will be furnished on application to the Board. The right to reject any or all bids is reserved. J. R. BECKLEY, H. P. WEITZLE, C. N. SEIDEL, Commissioners. Attest: J. D. KERR, Secretary.

CEMENT.—U. S. Engineer Office, 166 Granby street, Norfolk, Va.—Sealed proposals for furnishing and delivering cement, broken stone and yellow pine lumber at Fort Monroe, Va., will be received here until 12 o'clock, noon, January 11th 1898, and then publicly opened. Information furnished on application. THOS. L. CASEY, Capt. Engrs.

DOCKS.—U. S. Engineer Office, Duluth, Minn.—Sealed proposals for building Substructure for South Pier, Duluth Ship Canal, will be received here until noon, January 15th, 1898, and then publicly opened. Information furnished on application. CLINTON B. SEARS, Major Engrs.

ELECTRIC LIGHTS.—U. S. Engineer Office, 166 Granby street, Norfolk, Va.—Sealed proposals for furnishing and setting up an electric lighting plant at Fort Monroe, Va., will be received here until 12 o'clock, noon, December 23d, 1897, and then publicly opened. Information furnished on application. THOS. L. CASEY, Capt. Engrs.

LIGHTING.—Sealed proposals will be received by the city of Binghamton, N. Y., up to December 20th, 1897, at 7:30 p. m., for lighting the city with 175 or more naphtha lamps, every night in the year from dusk until daylight, the city to furnish and set lamp posts, the contractor to furnish lamps, supplies and care for same. Bids to be for one, two and three-year contract and to name price for ordinary naphtha burner and Welsbach burner. Contractor shall guarantee ordinary burner to furnish light of 25 C. P.; Welsbach burner 75 C. P. All proposals shall be directed to Burr W. Mosher, City Clerk, and shall be marked "Proposals for Lighting." The city reserves the right to reject any or all bids. The city also reserves the right, in case it establishes a municipal lighting plant, to terminate the naphtha lighting contract on 60 days' notice.

ELEVATORS.—Treasury Department, Office Supervising Architect, Washington, D. C.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 3d day of January, 1898, and opened immediately thereafter, for all the labor and materials required to erect complete ten freight elevators, two passenger elevators, one package elevator and one ash lift (either electric or steam) for the U. S. Appraiser's Warehouse, New York, N. Y., in accordance with the drawings and specifications, copies of which may be had at this office or the office of the Superintendent at the building, New York, N. Y. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the government to do so. Proposals must be enclosed in envelopes, sealed and marked "Proposal for Elevator Plant for the U. S. Appraiser's Warehouse, New York, N. Y.," and addressed to the Supervising Architect.

(Continued on Page 21.)

THE ENGINEERING AND MINING JOURNAL

ADVERTISING RATES. (NONPAREIL MEASUREMENT.)

Table with columns for Lines, Inches, Regular Edition 1 time, One Month 4 times, Three Months 11 times, Six Months 23 times, Nine Months 38 times, Twelve Months 52 times. Rows include 1/4 Column, 1/2 Column, 3/4 Column, 1 Page, 1/2 Page, 1/4 Page, Full Page.

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**J. F. CROSETT,**  
Secretary, Gold Mining Exchange,  
No. 828 Sacramento Street, San Francisco, Cal.  
**GOLD MINES FOR SALE.**  
On Pacific Coast. Correspondence solicited.

**KLONDIKE IN MISSOURI. LEAD MINES.**

For particulars on gilt-edge properties for sale or lease  
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We offer for sale large deposits of Bauxite, situated near Rome, in Floyd County, Georgia; convenient to railroad. Sample or analysis of ore furnished on application. Address **JAS. B. SULLIVAN, or ROBT. A. MINTOR,** Rome, Georgia.

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**FOR SALE.**—Stone-cutting plant at Troy, N. Y. The best plant in northern New York. Engine, boiler, three planers, four gang saws, three derricks, hand and steam drills, circular saw, boring machine, and stock of stones; also two bluestone quarries, located at Summit, N. Y., and Lanesboro, Pa. This is a good opening for a live concern. For further information address **T. H. MAGILL,** Troy, N. Y.

**YUKON GOLD DREDGE**

I have in storage, now for sale, new 800-yard Urie Placer Mining Dredge Machinery, complete, made for mule-back transportation. The best mining dredge on the market. Cost \$4,500. First draft for \$2,500 buys it. If a few cans attached to endless belt will dig up \$1,000 weekly by hand, what are the possibilities of a job of this kind on the Yukon? For particulars address **W. J. BREWSTER,** 915 Walnut Street, Kansas City, Mo.

**DIVIDENDS.**

**HOMESTAKE MINING COMPANY,**  
MILLS BUILDING, 15 BROAD STREET,  
NEW YORK, DEC. 15, 1897.  
DIVIDEND NO. 11.  
The regular monthly dividend, TWENTY-FIVE (25) CENTS PER SHARE, has been declared for November, payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 27th inst. Also EXTRA DIVIDEND (No. 235) of Twenty-five (25) Cents per share, payable at the same time and place. Transfer books close on the 20th inst.  
**LOUNSBERY & CO.,** Transfer Agents.

**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.

**ONTARIO SILVER MINING COMPANY,**  
MILLS BUILDING, 15 BROAD STREET,  
NEW YORK, DEC. 16, 1897.  
DIVIDEND NO. 216.  
A dividend of SEVENTY-FIVE (75) CENTS PER SHARE (\$112,500) making \$13,557,500 paid in dividends to date, payable December 31st at the office of transfer agents, **MESSRS. LOUNSBERY & CO.,** Mills Building. Transfer books close December 24th.

**SMUGGLER-UNION MINING CO.,**  
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**CONTRACTS OPEN.**

Continued from Page 20.

**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 Wyand, Ill., will be received here until December 20th, 1897, and then publicly opened. Information furnished on application here or to Assistant-Engineer **JAMES C. LONG,** Fiskilwa, Ill. **W. L. MARSHALL,** Maj. Engrs.

**ELECTRIC LIGHTING PLANT.**—U. S. Engineer Office, 166 Granby Street, Norfolk, Va.—Sealed proposals for furnishing and setting up an electric lighting plant at Fort Monroe Va., will be received here until December 23d, 1897, and then publicly opened. Information furnished on application. **THOS. L. CASEY,** Capt., Engrs.

**STREET LIGHTING.**—Binghamton, N. Y.—Sealed proposals will be received by the city of Binghamton, N. Y., up to December 20th, 1897, for lighting the city with 175, or more, naphtha lamps every night in the year from dusk until daylight, the city to furnish and set lamp posts, the contractor to furnish lamps, supplies, and care for same. Bids to be for one, two and three-year contract and to name price for ordinary naphtha burner and Weisbach burner. Contractor shall guarantee ordinary burner to furnish light of 25 C. P.; Weisbach burner, 75 C. P. All proposals shall be directed to **Burr W. Mosher,** City Clerk, and shall be marked "Proposals for Lighting." The city reserves the right to reject any or all bids. The city also reserves the right, in case it establishes a municipal lighting plant, to terminate the naphtha-lighting contract on 60 days' notice. **BURR W. MOSHER,** City Clerk.

**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 Wyand, 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,** Fiskilwa, Ill. **W. L. MARSHALL,** Major Engineers.

**SEWERS.**—Shelby, O.—Bids for building about 3½ miles of sewers, 12 and 18-in., will be received until December 27th, 1897. **W. F. SONNANSYNE,** Clerk.

**IRON VAULTS.**—Treasury Department, Office Supervising Architect, Washington, D. C.—Sealed proposals will be received at this office until 2 o'clock p. m., December 20th, 1897, and opened immediately thereafter, for all the labor and materials required for furnishing and placing complete all the iron vault and closet doors in the U. S. Post Office, Court House and Custom House building at Milwaukee, Wis., in accordance with drawings and specification, copies of which may be had at this office or at the office of the superintendent at Milwaukee, Wis. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the government to do so. Proposals must be enclosed in envelopes, sealed and marked: "Proposal for Vault and Closet Doors for the U. S. Post Office, Court House and Custom House, Milwaukee, Wis.," and addressed to the Supervising Architect.

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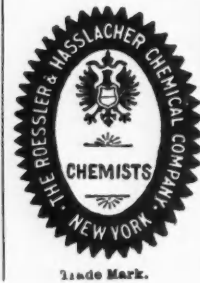
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