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CONTENTS.

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The copies of the "Engineering and Mining Journal" sent out by mail for some weeks past have been inclosed in wrappers of a new pattern. Those who receive them will notice a black line running across the wrapper. This is a strong thread, and when pulled from either end it cuts open the wrapper at once and very easily, leaving the paper free. It is a small but very convenient contrivance.

The Canadian Senate, we note this week, has voted to reject the Yukon Railroad bill, to which reference was made in our editorial columns on March 19th, and in the letter of Mr. Hamilton Smith, published in the same issue. The cause of the rejection was the excessive land grant, to which our editorial referred.

The Electrolytic Marine Salts Company, of Rev. P. F. Jernegan and associates, to which we referred at some length last week, continues to circulate descriptions of its works in New England papers, especially those of the smaller towns. The company is limiting its claims a little, and now only asserts the recovery of an average of one quarter of a grain of gold to the ton of sea water passed through its machines. This is made up by an increase in the quantity of water treated. The machines are as mysterious as ever, and the elaborate precautions taken to preserve the secrecy of their operations, seem to be part of the general mystery relied upon to impress the credulous.

The demand for zinc ores has very much improved recently, with the stronger position of the metal. In the Joplin ore market last week all the zinc ores offered were taken and the demand brought the price up to \$25 per ton, an increase of \$1.50 per ton over the preceding week, and of \$4 over the price ruling a year ago. This improvement is in part due to the demand for zinc ores and spelter for export, but in part also to a better demand for the metal at home. This has been manifest for some time and the prices have been gradually strengthening for several weeks. Business in the Missouri zinc district is active now, and there is a prospect for a very large production for some time to come.

The putting of old and unseaworthy vessels into the Alaska trade, to which we have heretofore referred, may be checked a little owing to the attention excited on the Pacific coast by the loss of the "Helen W. Almy" before she had got far outside of San Francisco bay. The wreck, it is claimed, might easily have been prevented had there been a proper system of inspection, for in that case the ship would never have been allowed to sail. The San Francisco papers call attention to another case of a vessel which has been for nearly ten years rotting on the mud flats, but is now being "refitted" for the Alaska trade. As public attention has been aroused by the "Almy" case, it is quite possible that the next candidate for a berth on the bottom of the ocean will not be allowed to sail. There seems to be room for improvement in inspection methods.

The Philadelphia papers are strongly urging that the suits entered against a number of coal operators and others to enjoin them from polluting the waters of the Schuylkill River shall be pressed. These suits were begun some time ago, but have been allowed to drag along without definite action on either side. The principal charges are against the coal operators, who, it is claimed, dump culm and mine refuse into the river or its affluents, to the great injury of its waters, which are used for supplying the city. The mines do some injury to the river, probably, but they sin much less in this respect than many parties much nearer Philadelphia, while culm or coal dust is much less detrimental to the water than many kinds of organic refuse which find their way into it. The quarrel is one of long standing, and it ought to be settled for the benefit of both parties.

The Klondike rush is, fortunately, still far from attaining the dimensions expected by the transportation companies. A good many people are going to Alaska and the Yukon, but the thousands, or hundreds of thousands, whom the railroads and steamers have been preparing for do not yet appear. All our testimony from our correspondents and other reliable authorities is to the effect that experienced miners from the West, and especially from the Northwest, are not going to the Klondike country. They know too much about it, and are better satisfied to stay where they are than to encounter certain hardships for an extremely doubtful benefit. The movement so far is almost entirely a "tenderfoot rush," and promises to continue so. Of the old miners who have started recently, more come from Australia than from our own Western States. In that country, as in England, the value of the Klondike discoveries has been greatly overstated by reports.

Some comment has been made by Boston papers on offers to sell Nova Scotia coal, made by the Dominion Coal Company, in that city, the price named being \$2.20 per ton on wharf. Deducting duty, dock and

Stock Quotations: New York, Philadelphia, Pittsburgh, Boston, Baltimore, Cleveland, Cripple Creek, Colo Springs, Toronto, Denver, Helena, San Francisco, Los Angeles, Salt Lake City, Rossland, B. C., Mexico, London, Paris, Valparaiso, Shanghai. Mining Co.'s: List of. Current Prices: Minerals, Chemicals, etc. Advt. Index. Advt. Rates.

port charges this would leave about \$1.50 per ton to cover the cost of coal at mine, and the freight from the Cape Breton port to Boston. As the current prices of bituminous coal are from \$2.40 to \$2.80, this seems to put the Nova Scotia company in the position of underbidding home companies for the trade. The offer does not seem to open a very formidable competition, however, when we take into account the quality of the coal, and also the fact that all the large consumers have already closed their contracts for the year. It is quite possible that the offerings are more in the nature of a "bluff" than anything else.

A more serious competition is threatened when the big by-product coke plant is completed and Boston consumers are offered coke and fuel gas at low rates. Great anticipations are already indulged in, and some sanguine people even predict the establishment of a new iron industry in New England, to be supported by cheap coke from Nova Scotia coal and high grade iron ores from Newfoundland. This is looking a long way ahead, but the fuel gas supply is a probability which the coal dealers must take into account.

LARGE EXPORTS OF SLATE.

Mention has been made of the remarkable continued increase in the foreign demand for American roofing slates, which many affirmed had reached a maximum with the closing months of 1897. All conversant with the trade, and with what is going on at the Pennsylvania and Vermont quarries, know the opposite is true, and that export orders are not only more numerous and larger than for the same period last year, but also include a wider range in kind or variety, both for artistic effect and for common use, where durability rather than beauty is desired. There is a stirring building activity in England, where in many towns 90 per cent. of the new structures are covered with slate. The same, though in less degree, is true in Germany. Appreciating something of this condition, W. H. Hughes, a member of the Vermont Slate Company—the Sea Green Syndicate—three weeks ago sailed for Liverpool to arrange if possible for the handling of larger consignments abroad of these slates, which are noted for strength and durability, but not for fixed color. About two years ago some Sea Green slates were exported, which were represented as being unfading in color, or rather it was said that where they changed at all they did so uniformly and later on, proving otherwise, they were emphatically condemned. In consequence of this happening, for more than a year it was almost impossible to export these slates, and other American quarry products suffered for a time from this ill effect. Different and more commendable tactics are now adopted. No claim is made but the truth; i. e., that these slates are strong and serviceable, though far from unfading or uniform in fading in tint on exposure. As a result Mr. Hughes has just sent back word that he has met and is meeting with greater success on his mission than he anticipated, that there is a ready market for all slates of standard sizes in vogue abroad, which are on the banks at the Sea Green quarries, amounting to some 90,000 squares, and probably for all that will be produced this season, above the home requirements. The quarryman who conveys this pleasant piece of news says, there is great rejoicing in Granville and Pawlet, the Sea Green towns, and that the slate business is to-day everywhere taking on a new lease of vigorous life.

THE BURNHAM ZINC LEAD SULPHIDE PROCESS.

In the opinion of the promoters, Messrs. Fry, Everett & Company, of London and Swansea, their Burnham zinc lead sulphide process is now a working success. They have formed a big company called the Smelting Corporation, Limited, to take it over, and they are asking the public to subscribe for £250,000 in £1 shares. The capital of the new company is £600,000; the purchase price is £430,000, payable in 350,000 shares and £80,000 in cash. Out of the remaining £170,000, available for working capital, a sum of £90,000 is to be spent in erecting a plant in Lancashire capable of treating 100,000 tons of ore yearly, while £10,000 is to be spent in enlarging the works at Swansea. Since February 1st, 1897, the plant has been at work at Swansea, and 10,872 tons of ore were smelted during 11 months of 1897, with an average assay value of 31.8 oz. silver, 26.3 per cent. lead, and 26 per cent. zinc, and 0.015 oz. gold. The smelting profit realized is given as £9,521. Mr. August Raht has examined the process and reports that the percentage of recovery of the metals is for silver 90 per cent., lead 87 per cent., and zinc 70 per cent., and that the cost of treatment of a ton of ore of constitution such as that named above would be £2 4s. 8d. (\$4.92) per ton. Presumably this is meant to include the extraction of the zinc from the slags as oxide, and also the desilverization of the lead, though it is not made quite clear. The Continental patents have been bought by the West Prussian Mining Company, Limited, but as Messrs. Fry, Everett & Company have some interest in that corporation, this purchase does not constitute necessarily an independent testimony to

the value of the process. The French Company of Mines and Works of Escombrera-Bleyberg, has also examined the process, presumably with a view of adopting it, but the opinion and decision on this point are not stated.

The Board of Directors is a most influential one and it includes Mr. Lidderdale, a former governor of the Bank of England, who became celebrated as the savior of the Barings. The other directors are also capable business men, but they will have to take all their opinions about smelting from Mr. Fry.

Readers will remember that this process consists of treating the ore in a furnace with sulphate of soda and oxide of iron. The lead and silver come out in metallic forms and the zinc goes away in the slag. We have always considered that the process was worth following up and working out; but we have pointed out various drawbacks, such as the short life of the furnace bottoms, the cost of recovering the zinc and the impossibility of getting salt cake cheaply to the smelting works, if situated near the mines, or alternately the cost of transporting the ore if the smelting works are situated in chemical manufacturing districts. Mr. Raht's views on these points would be interesting; unfortunately, his detailed report is not given in the prospectus, and only his figures for cost of treatment are quoted. The validity of the patent is vouched for by eminent authorities and there seems no doubt that it will hold good, though to a disinterested metallurgist it seems clearly only a modification of the old caustic soda process, the difference being that the caustic soda is made in the furnace instead of being introduced as a separate ingredient of the charge.

ZINC PRODUCTION IN 1897.

The revision of the mining statistics for Volume II. of "The Mineral Industry" is now nearly completed, and we are enabled to give in the following tables the final figures of the production of spelter, or commercial zinc, in the United States for the year 1897, comparison being made with the years 1896 and 1895:

	1895.		1896.		1897.	
	Sht tons.	Per ct.	Sht tons.	Per ct.	Sht tons.	Per ct.
Illinois and Indiana.....	33,748	41.2	31,656	40.7	38,680	38.5
Missouri and Kansas.....	36,642	44.8	36,566	47.2	51,807	51.7
Eastern and Southern.....	11,468	14.0	9,415	12.1	9,900	9.8
Total, short tons.....	81,858	100.0	77,637	100.0	100,387	100.0
Total, long tons.....	73,088	....	69,319	....	90,078	....
Total, metric tons.....	74,245	....	70,432	....	91,071	....

The chief point of note in this table is the great increase in the Missouri-Kansas district, which in 1897 produced 15,241 short tons, or 41.6 per cent. more than in 1896. Development is going on rapidly in that district, and recently some large purchases of property have been made by companies which purpose operating on an extensive scale.

In addition to the output of spelter there was a considerable production of zinc oxide, which is shown in the following table:

	1895.	1896.	1897.
Short tons (2,000 lbs.).....	22,690	16,799	26,222
Metric tons	20,498	15,240	23,788

This production is chiefly from the Eastern mines, where the zinc oxide or zinc white is made directly from the ore. A large part of the New Jersey ores are utilized in this way.

The exports of zinc ores and metallic zinc from the United States for three years have been as follows:

	1895.	1896.	1897.
Zinc ore, pounds.....	48,000	4,648,000	18,502,400
Zinc or spelter, pounds.....	3,141,285	20,260,169	28,490,662
Manufactures of zinc, value....	\$50,126	\$51,216	\$71,021

The export of spelter is comparatively new, and the great increase shown in the past three years indicates that it has been successful and promises to be an important trade. The American production has become an important element in the foreign market.

The following table shows the world's production of spelter in metric tons, the figures being chiefly from official sources, supplemented by the tables of Henry R. Merton & Sons, of London:

	1895		1896		1897	
	Met. tons.	Per cent.	Met. tons.	Per cent.	Met. tons.	Per cent.
Belgium, France and Rhenish Prussia..	192,305	46.7	205,514	48.8	214,063	48.1
Upper Silesia	95,519	23.2	97,409	23.1	95,550	21.5
Great Britain	29,967	7.3	26,294	6.3	23,805	5.4
Spain	5,845	1.4	6,000	1.4	5,437	1.2
Austria	8,489	2.1	9,403	2.2	9,332	2.1
Russia (Poland)	5,039	1.2	6,264	1.5	5,852	1.3
United States	74,245	18.1	70,432	16.7	91,071	20.4
Totals	411,400	100.0	421,313	100.0	445,110	100.0

This table shows that the United States last year was the producer which made the most decided advance in its output. It shows also that the world's production of this metal is growing steadily. In this country we have not utilized it to the same extent as has been done abroad, where new uses are continually being found for it. So far the outlet for our increasing production has been found rather in export than in extending its employment at home.

ANTHRACITE COAL IN 1897.

The issue of periodical statements by the anthracite coal companies was suspended nearly three years ago, in consequence of a mistaken belief that their publication was injuring business in some mysterious way. The corrected figures of shipments are, therefore, somewhat delayed, but the total shipments have been ascertained for 1897. They are given in the following table, in long tons, and are compared with the figures for 1896:

	—1896.—		—1897.—	
	Tons.	P. c.	Tons.	P. c.
Philadelphia & Reading.	9,019,533	20.89	8,395,411	20.16
Lehigh Valley	6,749,128	15.63	6,425,227	15.43
Central of New Jersey ..	4,999,003	11.58	4,730,860	11.36
Delaware, Lackawanna & Western	5,627,533	13.08	5,690,684	13.67
Pennsylvania Coal Co..	1,728,972	4.00	1,777,841	4.27
Delaware & Hudson and Lackawanna ..	5,835,621	13.52	5,646,853	13.56
Other lines	9,217,693	21.35	8,970,988	21.55
Total shipments	43,177,485	100.00	41,637,864	100.00
Consumed and sold at mines 7% of shipments	3,022,424	....	2,914,650	....
Total production, long tons	46,199,909	....	44,552,914	....
Total short tons.....	51,742,898	....	49,898,816	....
Total metric tons.....	46,939,098	....	45,265,761	....

The division by companies is not quite complete. The shipments of the Erie are included under the head of Delaware & Hudson and Lackawanna; while under "other lines" are found those of the Pennsylvania, the New York, Ontario & Western, the New York, Susquehanna & Western and others of minor importance. By districts the Lehigh Region furnished in 1897 a total of 6,249,450 tons, or 15 per cent. of the total; the Schuylkill Region 12,181,061 tons, or 29.2 per cent.; the Wyoming Region 23,207,263 tons, or 55.8 per cent.

The shipments of 1897 were less than those of 1896 by 1,539,627 tons, or 3.6 per cent.; they show a decrease from 1895, which was the year of highest production, of 4,907,896 tons, or 10.5 per cent. Comparing the figures of 1897 with 1896, we find that last year the Reading showed the greatest proportional decrease. Two companies, the Pennsylvania and the Delaware, Lackawanna & Western, had an actual increase in shipments. Upon the whole, however, there were no important changes in the proportions credited to the different companies.

Adding the usual allowance of 7 per cent. for coal consumed at the mines would make the total quantity of anthracite mined last year 44,552,514 long tons, equal to 49,898,816 short tons, the usual measure of coal production in the bituminous mines.

As to the value of this output it is difficult to fix it exactly. The average selling price of anthracite coal at New York in 1897 was about \$3.25 per ton, making allowance for the varying proportions sold of the regular market sizes and the small or steam sizes. The reports of the anthracite companies, as a rule, give no figures as to prices or costs. The only ones from which we can obtain an approximation are that of the Delaware & Hudson Canal Company, which puts the average price obtained for coal sold during the year at \$2.02 per ton; and that of the Lehigh Coal and Navigation Company, which puts the average at \$1.61. As the Lehigh figures do not include transportation to tide-water, these figures are not far apart.

As to the cost of producing anthracite there is the same difficulty in obtaining exact figures. The Lehigh Coal and Navigation Company alone reports actual cost of mining and preparing coal at \$1.29 per ton in 1897. From the Delaware & Hudson report we find the approximate cost to be \$1.80, which includes \$1.31 for mining and preparation, \$0.38 for transportation and \$0.11 for general expenses. Here again we find the figures for mining costs not far apart. In either case the margin of profit would be a narrow one. The accounts of the other large companies which issue reports at all are so complicated with those of the transportation companies which own them that it is impossible to arrive at an exact average value, but it may be assumed to have approximated \$1.55 per ton at the mines in 1897.

Without going too far into the future, it is not too much to say that the anthracite production has nearly reached its probable maximum and the trade will, before many years, be a declining one. The abundant supplies of bituminous coal and the low prices at which it is delivered in the East, where anthracite was formerly the only fuel, have given the bituminous coals the preference for all manufacturing uses and the production of steam and have gradually limited the employment of anthracite to domestic uses. In that field it is encountering each year greater competition from gas and electricity in the large cities, and the fuel used for making these is bituminous coal. The soft coals have not only succeeded in limiting anthracite to a restricted field; they are making serious inroads upon the trade that is left.

We do not, of course, mean by this that the anthracite trade is to come to a sudden end. An industry which produces nearly 50,000,000 short tons a year, with a value at the mines of about \$75,000,000, and in which an enormous capital is invested, does not die in a year. The

companies will make strenuous efforts to retain their trade and to fight competition. The situation is not yet so critical as to compel them to unite to meet it; and they are now apparently more inclined to fight each other than to resist the common opponent. A far better policy for them would be to accept the situation and to devise methods for the better utilization of their output. Some of these have heretofore been outlined in our columns, and will, very probably, be adopted in time.

NEW PUBLICATIONS.

"Asbestos and Asbestic." By Robert H. Jones. London; Crosby Lockwood & Sons. Pages 368. Illustrated.

A volume of this size devoted to the study of asbestos ought to give a very complete account of that mineral, and the author has certainly collected and put before us a large body of facts in relation to its occurrence, its history, the methods of mining and preparing it, and its various uses. In his twelve chapters he has treated of the nature and properties of asbestos; the varieties and qualities of the mineral; the present sources of supply; Italian asbestos and the Italian mines; Canadian asbestos; the Canadian quarries; the output and the cost of production; the various uses of asbestos; special applications to engineering, electric and other purposes; the uses of asbestic; substitutes and similarities to other mineral products; the spinning of asbestos fiber.

Special attention is given in the book to the Canadian asbestos deposits, of which the author has evidently made a careful study, but he has also given many facts with relation to the Italian mines, which at present furnish nearly all the asbestos mined outside of Canada. Asbestos in its various forms is widely distributed, but the deposits of commercial value are comparatively rare. In the United States they are chiefly in the Appalachian region, and it is only in Georgia that they are at present worked. It is found in Wyoming, where some deposits are said to promise well; in California, where some asbestos has been mined; in Montana and in Washington. No considerable supply has been obtained from any of these deposits, however, with the exception of the Georgia mines.

The uses of asbestos are extending, especially in building, and in some kinds of electric work. They promise to extend still further if a sufficient supply can be furnished at reasonable prices. The book has a good deal to say of the uses of asbestic, which is a comparatively new application of the mineral. In this the short-fibered asbestos, which had been regarded as of little worth, is utilized in making plaster and for similar purposes, and promises to have an established value. Asbestic is a Canadian invention, and was first prepared for market at the Danville mines in Quebec. Mr. Jones is sanguine as to its future.

The book seems to be a very complete summary of our knowledge in relation to this mineral. So far as the Canadian mines go it is written from close personal observation, and the author has visited many of the Italian and other mines. The book will doubtless continue to be a standard authority on the subject.

BOOKS RECEIVED.

Not 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.

"Sanitary Engineering." By Wm. Paul Gerhard. New York; published by the Author. Pages, 132.

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.

Temperature in Amalgamation.

Sir: In the interesting communications on the subject of temperature in amalgamation, we notice that one writer ascribes the loss in amalgamation noted by Superintendent Greer, of the Homestake Company, to the introduction of exhaust streams directly into the water supplied to the stamps. Our acquaintance with the earlier methods of the Homestake Company, which methods have produced satisfactory results, warrants the assertion, we think, that no one then was, or now is, ignorant of the results which would attend the introduction of warm cylinder oil into the process of amalgamation, by such a method of utilizing the exhaust steam from the engine.

It is probable that the battery water supplied to the Homestake mills is heated in the same way, and for the same purpose that it was 20 years ago, that is to say, a steam coil is introduced into the supply tank for the purpose of preventing the water from freezing and distorting the brass valves, and also to prevent it from freezing in its passage over the outside plates, as it would do in very cold weather.

As we understand it, the point to which the attention of mill men was called was that the experimental raising of the temperature of the battery water in the Star Mill, considerably above the normal degree of heat, was the occasion of the entire loss of the amalgam which had accumulated on the plates, and from this the deduction was made that warm water was prejudicial to good work. In this connection we would say that twenty years ago the same phenomenon was observed in the Homestake Mill, of the same company, although in the first instance, the effect was observed soon enough to avoid the loss of amalgam reported in the latter instance.

The sudden and excessive rise in the temperature of the water, acting upon the mercury portion of the amalgam, so increased its bulk and fluidity that displacement from the copper plates occurred as a mechanical result. This fluid amalgam was forced out of the mortar by the

action of the stamps, and was arrested on the upper portion of the outside plates, but when the accumulated amalgam in those plates became sufficiently fluid, from the heated water, specific gravity, assisted by the flow of water, carried it off the plates. The experienced mill man, under usual conditions, is able to obtain good results in the heat of the tropics, as readily as he does in colder regions. The extremes of condition for mercury are the vapor point, on the one hand, and the congealing point on the other. The sensitive qualities of mercury which make it available in amalgamation, remain unchanged everywhere between these points, although the method of using it under different degrees of temperature would require modification. Within reasonable limits between the above named extremes the degree of heat is not so important as uniformity of temperature. The amalgamator who judges his process by the condition of the amalgam on his outside plates could conduct his process properly, whatever the temperature of the water was, provided said temperature was within the bounds of reason and uniformity.

The objections to the use of hot water in amalgamation are found in the increased solubility of certain salts in its effect upon an imperfectly coated copper plate, and some other things which do not bear on the subject under discussion.

J. A. Sanborn.

Mining in Washington.

Sir: Washington has not been regarded as a mineral producing State, mainly through prejudice and the carelessness of its leading men, who have neglected the material resources of the country and devoted more time and attention to speculative enterprises. It is only within a few years past that systematic prospecting and development have been undertaken, and the Cascade Range, particularly on the western slope, and the prospectors have kept the result of their operations to themselves. This has particular reference to the capitalists who opened up Monte Cristo district in Snohomish County, to which a railroad was constructed before development seemed to justify so large an undertaking; reduction works were also constructed on Tidewater, and have been successful by reason of their well chosen situation. The construction of this railroad stimulated prospecting and resulted in the opening of new districts and the discovery of a number of mining properties in Silverton or Stillaguamish district.

Monte Cristo, however, is at present in a state of uncertainty, owing to the partial destruction of the railroad during the winter by freshets and snow-slides, and the doubt as to its reopening.

The construction of the Great Northern Railway through the Cascades was also the means of opening up mining districts that were previously isolated and remote from transportation. In this portion of the range are found Silver Creek, Troublesome, Trout Creek, Skykomish, Beckler River and Miller River districts, also Goat Lake, which should more properly be included in Monte Cristo. Capital has become interested in Goat Lake and Miller River districts, and a large amount of development is under way. Silver-lead ores predominate, but gold and copper values are also found. This being particularly the case in Silverton, Trout Creek and Beckler River.

A district of which little mention is made, is Cascade, situated in Skagit County, on the western slope of the Cascade Range. The most desirable smelting ores in the State are found here, carrying silver, lead and some gold. The State is constructing a wagon road to connect the mines with railroads.

In the country south of the Northern Pacific Railroad on the western slope of the Cascades, a great deal of prospecting has been done within the past year, resulting in the discovery of low-grade copper ledges. Milwaukee capitalists have furnished the means for exploration in this portion of the State, but no development has followed as yet.

In the eastern portion of the State, particularly in what was formerly known as the Colville Reservation, prospecting has been carried on quite successfully, and a number of new districts have been opened up where development is well under way, largely under the superintendence of experienced Montana miners.

In the Okanogan country, embracing a number of districts along the Columbia, Okanogan and Methow rivers, a number of enterprises have been undertaken, the tunneling of Palmer Mountain being among them.

In the Swank placer mines, in Kittitas County, the production has increased with the introduction of improved methods. This district has been mined for the past 25 years, and the yield this year exceeds that of any in the history of the camp. Some quartz ledges have also been located.

The excitement over the discoveries in the Klondike has been instrumental in drawing attention away from the mines of Washington, but this is regarded as only temporary, and the State may profit materially by the overflow.

Seattle, Wash.

A. N. Hamilton.

The Dexter Gold Mining Company of Nevada.

(We have received the following official communication from the secretary of the Dexter Gold Mining Company, and are pleased to place on record the information contained therein. Our special correspondent, who has taken great pains to investigate this company, expresses his conclusions in our Mining News Columns.—Editor E. & M. J.)

Sir: Your letter of March 19th received, stating that you had received our telegram of March 16th, referring to the article of March 12th, concerning the Dexter mine of Elko County, Nevada. We believe that it is your desire to do justice and to do right and when we sent the telegram we thought it originated in Elko County from a former employee of our mine, who had been discharged and who was endeavoring to injure our company on account of his discharge. At the time we received your letter, however, your special correspondent called at our office, stating that he had written the letter and did so upon information coming from Elko County, which he thought to be correct, and upon information as he understood it received from our Mr. Gray, who is now at the mine and who was not here when the article appeared. We are satisfied that your correspondent does not desire to do our company an injury, and that he will now write you

fully concerning the mine and the mills operated in connection therewith, as we have explained to him fully and have shown him the exact facts concerning the same. He states to us that he received the information that the mortgage on the property was \$100,000 from Mr. Gray, in which he undoubtedly misunderstood our Mr. Gray, because the mortgage indebtedness on the mine at the time the article was written was and is now only \$50,000, and the total indebtedness at that time was \$100,000, the \$30,000 raised by assessment reducing that amount to \$70,000, of which \$50,000 is covered by the mortgage and the other is accepted paper of the company. We have a 40-stamp mill, 20 stamps of which are running successfully. We have four Kinkead mills; and cyanide plant, which is now treating tailings at the rate of 35 tons per day. The Kinkead mills handle about 16 tons per day, averaging about \$40 per ton and saving about 70 per cent. of the values. The 20-stamp mill handles about 40 tons per day, and saves about 50 per cent. of the values, the ore going about \$12 per ton, that is sent to the stamp mill; the tailings from each mill are treated with cyanide. The cyanide plant is running on tailings, of which we have 6,000 tons already for the mill, and the entire tailings pond will average \$12 per ton. The cyanide plant saves about 93 per cent. of the value of these tailings.

Regarding the electrical plant will say that when the stream was measured about September 10th, it showed about 750 cu. ft. per minute under 170 ft. head. Along about the latter part of December and the first part of January it was again measured and had 400 cu. ft. On February 4th, 1898, when the plant was started, after an extremely cold January, the thermometer standing lower than 20° for days at a time, it measured only 220 cu. ft., which is about the present flow, the mountains being still frozen up and heavily covered with snow. This 220 cu. ft. is now sufficient to run 20 stamps and the rock-breaker, delivering about 43 to 45 horse power at the cam shaft of the stamp mill. The stamps are running on the 6-in. drop at from 80 to 90 drops per minute, 90 drops being the maximum intended by the mill, instead of 110. The Dexter Company owns in addition to this water power two other streams, one of which streams was sufficient to run a 10-stamp mill, including the rock-breaker and four pan settlers in connection therewith, this stamp mill being built up the canyon and not receiving full head, which can be obtained for the water. Mr. R. M. Jones of Salt Lake City, the electrician and engineer who supervised the erection of this plant, and who is well known as the electrician and engineer who has supervised the building of the large electrical plants and water power in Utah, advises us that this additional water power owned by the Dexter Company is sufficient to generate about the same power as that generated at the other plant. As soon as a thaw comes in the spring there will be sufficient water at the electric plant now built to run the whole 40 stamps, and crushers, up to and until the extreme cold weather of winter comes next year; but in the meantime the other plant will be ready so that the company will have sufficient power to run the 40 stamps the year round. The company intends in the immediate future to double the capacity of the cyanide plant. The three mills now in operation are earning about \$800 per day and the total expenses of operating the mine does not exceed \$300 per day, and we think will be less than that from now on. The mine is in excellent condition and has large reserves of ore blocked out for the mills.

Mr. James W. Linnell, the former president, is not the heaviest individual shareholder, several of the Salt Lake officers holding more shares than does Mr. Linnell. The deepest place in the mine is the 150-ft. level. The veins are fissure veins, one large vein crossing the claims northwest and southwest and nearly east and west, and several other veins running through the same almost due north and south. The tone of the article as it appeared in the "Journal" was that the new plant put in by the company was a failure; that it transmitted only 28 horse power out of the 90 horse power generated, while the fact is that the transmission is very good.

The company will be fully able to meet every obligation when due. The indebtedness is held by personal friends of the Salt Lake owners, and will not be pressed if there should be any delay in payment.

With these corrections, which we presume will be fully reported by your correspondent, we have no objection to your article, and we have to say that we have read your "Journal" for many years, and have always considered it as the leading mining journal of the United States. We believe the Dexter mine will be one of the great gold producers of the United States, and while there is no stock of the company on the market for sale, we did not like to have its first appearance in public, in your journal, misrepresented.

Dexter Gold Mining Company.

Hiram E. Booth, Secretary.

Salt Lake City, Utah, March 24, 1898.

PETROLEUM IN THE DUTCH EAST INDIES.—According to a recent report from United States Consul S. B. Everett at Batavia, Java the imports of oil into Java for two years have been, in gallons:

	1896.	1897.	Changes.
American	16,786,820	20,092,900	Inc. 3,306,080
Russian	7,319,510	4,951,060	Dec. 2,368,450
Langkat (Sumatra) ..	3,306,520	5,295,690	Inc. 2,089,170
Totals	27,412,850	30,439,965	Inc. 3,027,680

The current prices are \$1.26 per case of 10 gallons for American oil; \$1.22 for Russian, and \$1.18 for Langkat. The duty on foreign oil is about 0.4c. per gallon, or 4c. per case. The Consul says that Russian oil, though it undersells American, is being driven out of the market. The Sumatra oil shows a larger percentage of increase than the American oil; but this is due to the lower price of the local article. It must be taken into consideration that a most determined fight is being made against the Standard Oil Company, and that everything is done, officially and commercially, to hinder and annoy it. Locally, it is commonly reported that the Standard Oil Company is doing business at a loss, whereas the Sumatra oil companies are supposed to be making money, one of them having last year paid a dividend amounting to 100 per cent. There is a successful refinery in Java, near Soerabaya, and it is claimed that Borneo will prove to be a great oil country.

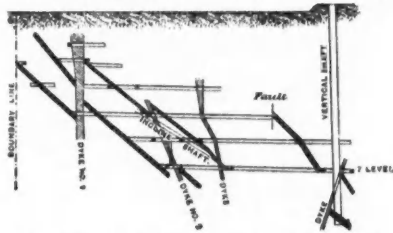
THE LANGLAAGTE ROYAL MINE IN THE TRANSVAAL.

The accompanying illustrations from photographs show characteristic views from one of the Langlaagte group in the Witwatersrand District of the Transvaal, the Langlaagte Royal. The first view shows the settling pits for tailings, which are in the immediate neighborhood of the cyanide plant; the second is a view of the interior of the extract house, showing the tank in which the gold is deposited from the cyanide solutions. The small engraving given is a section showing the position of the reefs worked in the mine, with the shafts and crosscuts, and the location of several faults interfering with the continuity of the reefs.



SETTLING PITS AT THE LANGLAAGTE ROYAL MINE IN THE TRANSVAAL.

The mine is one of those which have shown a great variation in the value of the ore worked at different periods. The highest return obtained has been \$17 per ton, and on the other hand it has fallen as low as \$5.05. At the lower point the return was exceeded by the costs. As in all the Witwatersrand mines, a very considerable part of the yield



SECTION OF LANGLAAGTE ROYAL MINE.

has been obtained from the working of the tailings, and the cyanide plant forms an important portion of the property.

MANGANESE IN THE CAUCASUS.—A deposit of manganese ore recently discovered and opened near Tchiatouri in the government of Koutaisk in the Caucasus is said to be very rich, analyses made at St. Petersburg showing from 79.8 to 86.2 per cent. of manganese oxide (MnO₂).

PLATINUM IN NEW ZEALAND.—There are reports of the finding of platinum ore in the Nelson district in New Zealand, where a large outcrop has been located in a volcanic hill near Takaka. The surrounding country is limestone. The statements as to the value of the ore are very conflicting.

STEEL PRODUCTION IN GERMANY.—The German Iron and Steel Manufacturers' Union reports the production of basic steel as below, in metric tons, for two years:

	—1896.—		—1897.—	
	Tons.	Per ct.	Tons.	Per ct.
Thomas (converter)	3,004,615	69.9	3,234,214	71.3
Open-hearth	1,292,832	30.1	1,304,423	28.7
Totals	4,297,447	100.0	4,538,637	100.00

The increase in converter steel was 229,599 tons, or 7.6 per cent., that in open-hearth steel being only 11,591 tons, or 0.9 per cent. The total gain was therefore 241,190 tons, or 5.6 per cent.

ABSTRACTS OF OFFICIAL REPORTS.

Hecla Consolidated Mining Company, Montana.

This company's report for the year ending December 31st, 1897, shows receipts from bullion of \$170,582; miscellaneous, \$2,877; total, \$173,459. Total expenses were \$212,898, showing a loss of \$39,439. Deducting this from the balance of \$71,219 brought forward from 1896, left a total of \$31,780. From this dividends amounting to \$30,000 were paid, leaving a balance of \$1,780 at the close of the year. The company has paid a total of \$2,175,000 in dividends on the capital of \$1,500,000. The products during the year were 406 oz. gold, 215,431 oz. silver,

184,836 lbs. copper and 1,990,175 lbs. lead. The average assay of the ore treated was 45.94 oz. silver per ton, 23.4 per cent. lead, 16.1 per cent. zinc and 27.1 per cent. silica.

The difficulty encountered during the year was the shortage of lead ores. The concentrator was of little use, owing to the small quantity of second-class or concentrating ores. An attempt was made to concentrate some of the old tailings, but it was abandoned because the high percentage of zinc contained made them of little value as a smelting product.

The furnace report shows that there were treated 4,614 tons of ore, 293 tons skimmings, 225 tons waste, 1,262 tons iron and 2,228 tons slags. The average charge was 59.5 per cent. ore and 40.5 per cent. flux. The fuel was 71.8 per cent. coke and 28.2 per cent. charcoal. The average daily was 19.43 tons ore. The averages used per ton of ore were 0.68 ton flux, 0.21 ton coke and 0.08 ton charcoal.

The total amount of ore taken out was 4,403 tons first-class and 768 tons second-class. The mining cost was \$20.56 per ton of first-class ore, or \$17.53 per ton, including all ore. Development work was continued steadily, but without opening any new deposits of importance.

Aetna Consolidated Quicksilver Company, California.

The report of this company covers the year ending December 31st, 1897. The receipts from sales of quicksilver were \$131,017; expenses, \$78,332; leaving a profit of \$52,685. From this dividends were paid amounting to \$40,000, leaving a balance of \$12,685. The total balance on hand on December 31st was \$62,913, after charging off \$6,310 for depreciation. New construction charged to expenses was \$4,887. The quicksilver produced was 3,600 flasks. The new prospecting work in the mine included 1,325 ft. drifts and tunnels and 342 ft. winzes sunk. The operations at the reduction works were as follows:

	Total.	Per ton.
Ore treated, tons.....	17,538	
Quicksilver produced, pounds.....	275,400	15.70
Earnings	\$131,017	\$7.47
Cost	78,332	4.47
Profits	52,685	3.00

The average tenor of the ore worked was 0.78 per cent. quicksilver. The metal was in good demand and prices were well maintained. The company purposes erecting a new furnace to take the place of the two now in use, and it is believed that this will result in a reduction of costs.

Napa Consolidated Quicksilver Mining Company, California.

This company's report covers the year ending December 31st, 1897. The receipts from quicksilver sold were \$217,567; expenses, \$123,291,

leaving the net earnings \$94,276. The dividends paid amounted to \$70,000, leaving a surplus of \$24,276. After charging off \$6,450 for depreciation and adding the balance from previous year, the surplus at the close of the year amounted to \$53,156. The net earnings were greater than those of 1896 by \$45,640, and the dividend payments were increased by \$10,000. Construction amounting to \$4,401 was included in expenses.

The total quicksilver produced was 6,200 flasks; the average tenor of the ore was 0.83 per cent. quicksilver. The operations are shown in the following table:

	Total.	Per ton.
Ore treated, tons	28,650	....
Quicksilver produced, lbs.....	474,300	16.55
Earnings	\$217,569	\$7.59
Expenses	123,291	4.30
Net earnings	94,276	3.29

Development work included 6,436 ft. drifts and tunnels and 189 ft. winzes sunk. The report says that operations during 1897 were very satisfactory and resulted in a material gain to the company. A large amount was spent in prospecting and development work and opening the ore ahead for reserves. The second furnace was started in May and has worked very satisfactorily.

Gold Coin Mines Company, Colorado.

The report of this company covers the year ending December 31st, 1897. The results were less satisfactory than expected, owing to a series of accidents which reduced the output, and to the lower grade of the ore during a large part of the year.

The total output of ore was 31,797 tons. Of this 1,238 tons were smelting ore, averaging \$71.81 per ton, and 30,559 tons milling ore, averaging \$6.51; the average for all ore mined being \$9.05 per ton. The costs were, for mining \$5.55; milling and other charges, \$1.36; mint and smelter deductions, \$0.90; total, \$7.81 per ton, leaving a profit of \$1.24 per ton. The mill charges were: Kansas Mill, 17,704 tons (1,485 tons concentrates), \$0.99; Hidden Treasure Mill, 7,707 tons (518 tons concentrates), \$1.11; outside mills, 5,148 tons (346 tons concentrates), \$0.88 per ton.

The profit and loss account shows receipts for ore sold and milled, \$287,849. Mining costs were \$176,685; milling, etc., \$42,916; mint and smelter charges, \$28,635; total, \$248,236, leaving a profit of \$39,613.

Tests of Wrought Iron and Steel Pipes.

Size of Pipe.	Weight in pounds per running foot.						Bursting pressure, pounds per square inch.						Tensile strength, pounds per sq. in. section.					
	Wrought Iron.			Steel.			Wrought Iron.			Steel.			Wrought Iron.			Steel.		
	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.
2-inch line pipe.....	3.105	3.702	3.452	3.331	4.073	3.821	1.000	4.000	2.918	2.300	6.000	4.733	43,107	53,809	50,092	63,025	67,586	65,999
2-inch tubing.....	3.592	3.995	3.864	3.739	3.961	3.840	3,300	5,000	4,106	5,150	6,000	5,809	47,244	55,074	51,852	60,370	66,495	63,057
5%-inch casing.....	8.991	10.417	10.003	9.293	10.328	9.824	250	1,400	931	1,450	2,750	2,038	47,312	61,309	54,311	75,931	91,591	82,325

from which the sum of \$10,000 was paid for property bought and \$1,125 for sundry charges, leaving a balance of \$28,488. The mining costs in detail were as follows, per ton taken out:

	Per ton.	Per ton.	
Breaking ore and tram- ming	\$2.88	General repair account.....\$0.12	
Holisting	0.43	Keystone lease	0.01
General mine account.....	0.17	Drainage	0.34
Taxes and legal ex- penses	0.14	Prospecting and dead work	1.00
		Total	\$5.55

Development work for the year included 257 ft. sinking shafts; 3,187 ft. drifts; 181 ft. crosscuts; 137 ft. winzes; 658 ft. upraises; a total of 4,420 ft. Work was delayed by a serious cave-in in the 1,000-ft. level of the Indiana mine, which is the largest producer.

Portland Gold Mining Company, Colorado.

This company's report covers the year ending December 31st, 1897. The operations of the company's mines for the year are stated as follows:

	Total.	Per ton.
Net tons ore raised.....	18,852	....
Gold contents, ounces ..	68,735	3.12
Silver contents, ounces.....	5,544	0.29
Gross value	\$1,177,643	\$62.47
Treatment charges	184,004	9.76
Gross value to mine.....	993,639	52.71

The treasurer's account shows total receipts of \$1,003,140, of which \$993,639 was on ore account, as above, and the balance miscellaneous. Expenses were \$513,335 (or \$27.23 per ton of ore), leaving a balance of \$489,805, from which dividends amounting to \$360,000 were paid, leaving a surplus of \$129,805. This, added to \$177,152 brought forward from 1896, left a balance of \$306,957 on hand at the close of the year. The total amount paid in dividends up to the close of the year was \$1,267,080.

The President's report says: "The only litigation the company has to contend with is in adverse suit between the Baby mine vs. the Bob-tail No. 3 and Success lodes; the Fairplay vs. the Baby mine; the Black Jasper vs. the Fairplay, and the Echo vs. the Fairplay. Also a case entitled Foley vs. the Portland Gold Mining Company. All of the above litigation is of a trivial nature. The litigation pending between the Amethyst vs. The National Belle, and Harcourt et al. vs. the Portland Gold Mining Company, has been settled favorably to the company and the suits have been withdrawn. At one time during the past year it seemed highly probable that the company would have to face a very serious lawsuit with the Granite Gold Mining Company. This suit would have been based upon the 'apex' question. After most serious consideration and expert mining and legal examination the management decided to suspend the suit. Very serious trouble with the Golden Circle Railroad Company was anticipated at one time on account of said railroad usurping the right to run its track across the company's territory and through its dumps without regard to property rights. After two or three hearings in court the matter was amicably adjusted by the railroad company making concessions to pay this company a

certain sum of money and agreeing to perform certain stipulations in building its road across the company's territory. The suit known as the Mackey Case, brought against the company and four of its directors, has recently been decided in favor of the defendants. At present there is no litigation between this company and the Uinta tunnel site. All the territory of this company which the Uinta tunnel penetrates as per location survey, has prior rights to said tunnel site. Therefore, according to the latest United States Federal Court decision it will be impossible for the Uinta tunnel to acquire any rights within the boundaries of the Portland territory; and furthermore, all veins that produce any ore cannot be reached by said tunnel. * * *

"The Anna Lee ore body, which has not worked since January, 1896, has been cut on the 700-ft. level of the Burns shaft. On account of the large flow of water, however, only a few cars have been shipped. Shipments will be resumed when this level is properly drained. Owing to the excessive smelter and mill charges at the present time and the constant improvements in chlorination and cyanide plants, it might be well for the company to own and operate its own mill. It is the policy of the present management to vigorously prosecute the development work by sinking the Burns shaft to the 1,000-ft. level as quickly as possible, besides other judicious developing on known ore bodies."

During the year the work of prospecting the undeveloped property of the company was carried on as rapidly as possible; 10,139 ft. of drifting, crosscutting, etc., was done, and 25 veins discovered that were not known to exist prior to January, 1897, most of which contain ore in paying quantities.

THE RELATIVE STRENGTH OF WROUGHT IRON AND STEEL PIPE.

An investigation into the relative strength of wrought iron and steel pipe was recently made by Prof. Henry M. Howe at the instance of the National Tube Works Company, and the results of these tests have been made public. Three points were included in the trials, the resistance to bursting under pressure; the tensile strength; and the friction, or resistance to the pressure of water. In each three classes of pipes were tried, 2-in. line pipes, 2-in. tubes and 5%-in. casing. The steel pipes were made at the National Tube Works and were taken from the ordi-

nary market stock; the wrought iron pipes were obtained from three makers of good standing and also represented the usual stock quality.

In the bursting tests 51 wrought iron and 36 steel pipes were subjected to hydraulic pressure, the results being summed up in the accompanying table. This shows that the bursting strength of the steel pipes of the three classes tested exceeded that of wrought iron by 62 per cent., 84 per cent. and 119 per cent. respectively. These percentages should probably be increased, as 12 pieces of the steel pipe did not burst under a pressure of 6,000 lbs., the highest measured. Comparing the minimum strength of the two classes, the weakest iron 2-in. line pipe was found less than one-half as strong as the worst steel one; the worst 2-in. iron tube had only 64 per cent. of the strength of the worst steel; while 6 out of 16 of the 5%-in. iron casings were only from one-sixth to one-half as strong as the weakest steel ones.

The 2-in. steel pipes were slightly heavier than the wrought iron pipe of the same diameter; but the difference in weight was far too small to account for the great difference in strength. The tensile tests were made on 11 steel and 11 wrought iron pipes and the results are given in the accompanying table. The steel showed tensile strength greater by 32 per cent. in the 2-in. pipe; 22 per cent. in the 2-in. tubes, and 52 per cent. in the 5%-in. casing. The results do not call for special remarks.

The friction tests are described by Prof. Howe as follows: "These were of two kinds, scraper tests and hydraulic tests. The scraper tests were made by drawing through each of 10 steel and 12 wrought iron pipes a steel boiler tube scraper under a constant pull and noting how fast it traveled.

"In the hydraulic test I coupled together six 2-in. steel pipes in one lot about 104 ft. long, and six 2-in. wrought iron pipes in another lot of the same length. Through each 104-ft. lot thus made I then ran water at full hydrant pressure, and also at lower pressure, and noted in each case the loss of pressure of water in traveling the length of the pipe. This loss of pressure gives us a measure of the friction in each 104 ft. lot.

"In the scraper tests neither metal has a decided advantage over the other. In many cases, owing to the lightness of the pull used, the scraper was arrested by the friction of the surface of the pipe after it had traveled only part of the measured distance. As regards the proportion of the arrests thus caused the steel stands somewhat better than the wrought iron, the arrests being 34 per cent. of the total number of trials for steel against 44 per cent. for wrought iron. On the other hand, on a general average of those cases in which the scraper was drawn through without arrest, the velocity of travel was rather greater in the wrought iron than in the steel pipes. But as this leaves out of consideration all the cases in which the scraper was arrested, and thus does not give sufficient weight to the rougher pipes of each class, and as the number of arrests thus left out of consideration was greater in case of wrought iron pipes than in case of the steel ones, these averages give an undue advantage to the wrought iron pipes.

"In the hydraulic tests the steel showed a constant and pretty uniform superiority to the wrought iron. For given initial pressure, the final

pressure is on an average of 0.1 lb. per square inch greater in case of steel pipe than in case of wrought iron pipe. In other words, for given initial pressure the final pressure is about 5 per cent. greater in case of steel than in that of wrought iron."

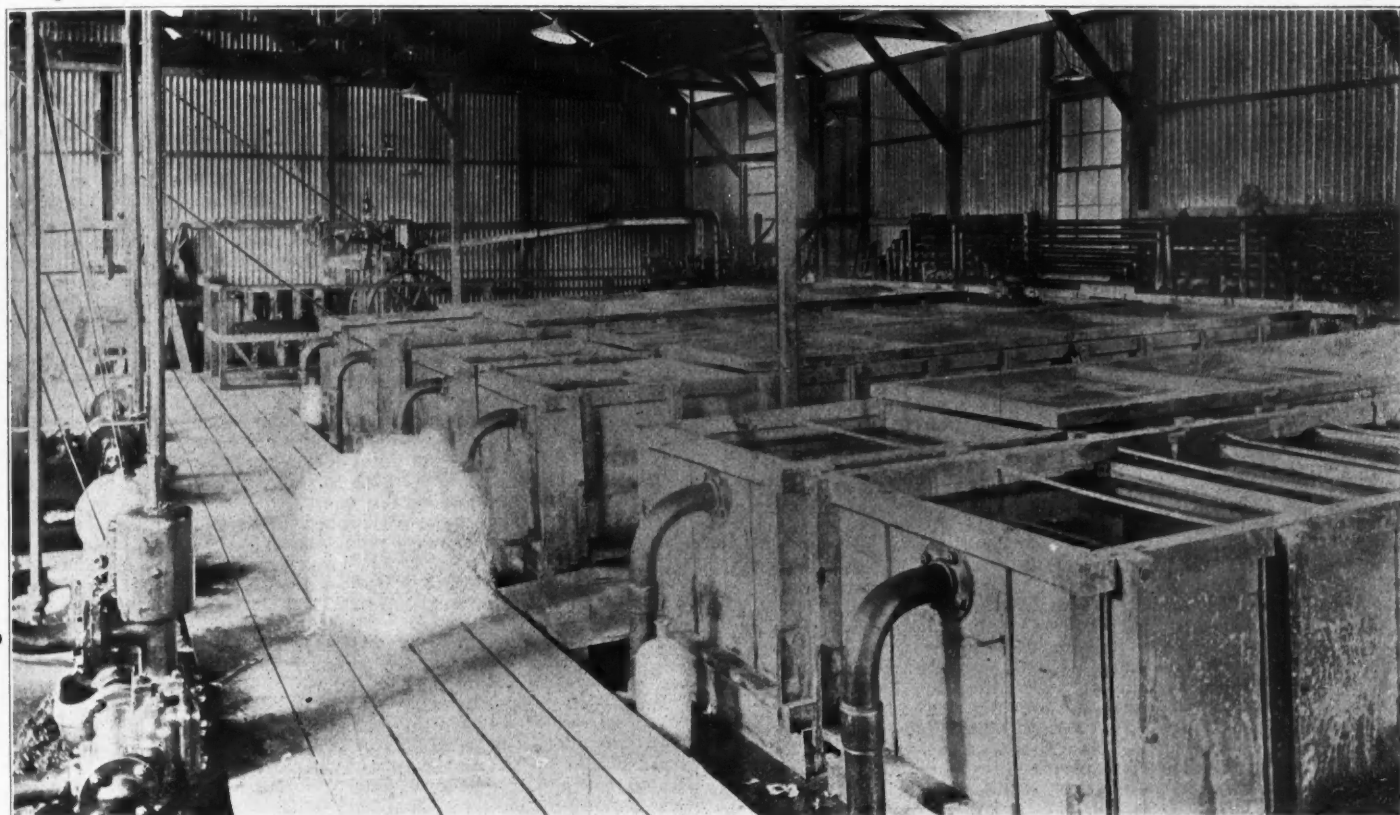
In the resistance to bursting strain, which is the most important point in the investigation, Prof. Howe's conclusions are strongly in favor of the steel pipe. In his summing up on this point he says: "Whether we compare the average or the worst of the steel and wrought iron pipes together, we find that the steel excels the wrought iron very greatly; so greatly indeed and so uniformly that we may safely conclude that steel pipe resists bursting much better than the wrought iron pipes of the brands which I examined. The explanation of the very great superiority of the steel pipe over the wrought iron pipe is twofold:

"First, that the bursting strength of a pipe is limited by the strength of the metal across the grain, and that, while wrought iron is very weak across the grain, steel is nearly as strong across as along the grain. It is natural that, owing to the extreme weakness of wrought iron across the grain, pipes made of it should be very deficient in bursting strength.

"Second, that the steel used welds so thoroughly that the pipe as a whole gets the benefit of the fact that the steel of which it is made is

COPPER TELEGRAPH WIRES.—We noted recently the completion of a line of copper wire from New York to San Francisco. The Canadian Pacific Company has now begun to put up a new telegraph line entirely of copper, along its road from Montreal to Vancouver, 2,910 miles. As the wire used weighs about 300 lbs. to the mile, this will require about 390 long tons of copper.

WORK OF THE UNITED STATES PATENT OFFICE.—The report of the Commissioner of Patents says that for the year 1897 there were received 45,661 applications for patents, and in addition a large number of applications for designs, trade marks, etc. Patents granted amounted in number to 23,729, including designs; 65 patents were reissued, 1,671 trade marks registered and 14 labels and 16 prints. The number of patents that expired were 12,926. The total expenditures were \$1,122,843; the receipts over expenditures, \$252,798. The total balance of the credit of the Patent Office in the Treasury of the United States on Jan. 1, 1898, was \$4,971,438. In proportion to population, more patents were issued to citizens of Connecticut than to those of any other State—one to every 786 inhabitants. Next in order are the following: Massachusetts, District of Columbia, New Jersey, Rhode Island, New York. To residents of England 706 patents were issued; to residents of Ger-



EXTRACTOR HOUSE AT THE LANGLAAGTE ROYAL MILL IN THE TRANSVAAL.

much stronger than wrought iron. This inference agrees with other facts, of which I will refer to two:

"First, of the 23 steel pipes which burst at all, 17.4 per cent. burst elsewhere than at the weld, showing that in these cases the weld was not the weakest place in the pipe. Second, in a German investigation into the strength of 19 welded boiler flues made of soft steel like yours, it was found that the weld was practically as strong as the solid metal.* Here the strength of the weld was on an average 99.3 per cent. of the strength of the solid unwelded metal, the weakest weld being 91.9 per cent. as strong, and the strongest 109.3 per cent. as strong as the solid metal."

A BIG MONTANA OPAL.—The Helena, Montana, "Independent" of March 15 says that John Craighton of Deer Lodge recently found on Mount Powell what may prove to be the finest specimen of opal known in the world. While going to his work recently his attention was attracted to a stone of peculiar brilliancy. He picked it up and submitted it to Professor Thompson, of the Montana University at Deer Lodge, who pronounced it an opal. Its chief value, perhaps, is in its remarkable size, for the stone weighs nine ounces, troy. It will be submitted to some expert for a report. While this opal is by far the most valuable gem ever found in the vicinity of Mount Powell, small rubies and garnets have been taken from that district.

*The results of these tests, made by J. L. Kruft, are published in "Stahl und Eisen," Volume XIV., p. 290, April, 1894.

many, 551; Canada, 286, and France, 222. The number of applications received for examination during the year was greater than for any other in the history of the office, yet the report says there was no increase in the facilities or force for doing the work. Applications awaiting action December 28th last numbered 11,382, due to the inadequacy of the office force.

A COPPER-ARSENIC COMPOUND.—According to Dr. H. C. Hahn salamanders from lead blast furnaces are sometimes partly covered with small, dark-green crystalline plates with metallic luster. A sample, which I analyzed, had the following composition:

	Proport. of atoms.
Cu = 61.03	96.3
Fe = 0.97	1.8
Tb = 0.44	0.2
As = 35.50	47.5
Sb = 1.08	0.1
S = 0.89	2.8
	99.91

If we deduct for 1.8 atom Fe, 0.2 atom Pb, and 0.1 atom Sb, a total of 2.1 atoms, an equal amount from the S, it leaves 0.7. We have then in the pure product; 96 atoms Cu; 47.5 atoms As; 0.7 atoms S; or 48 of the two latter. Its composition is, therefore: Cu, As. Its specific gravity at 10.0°=7.976; at 20.0°=8.008; at 30.0°=7.575. The crystals belong to the hexagonal system, as proven by the following measurements of six different angles (by aid of a goniometer-microscope): 118.75°, 119.14°, 119.31°, 119.83°, 119.89°, 120.18°; or an average of 119.5°.

WIRE AND WIRE MAKING.*

Written for the Engineering and Mining Journal by S. Barnett.

(Concluded from page 373.)

Historical.—Wire manufacturing as a leading industry dates back only to 1874, with the introduction of barbed wire for fencing. The capacity of the mills was then small, and for the next ten years it was necessary to run night and day to keep up with the increasing demand. Previous to 1874 the only large amounts wanted were for telegraph wire, the demand for which began between 1840 and 1850. At the same period that wire fencing became popular, bale ties for hay came into use, wire ropes and cables were in demand for haulage, for suspension bridges, and the rigging of ships and yachts. A few years later wire nails began to take the place of cut nails. From 1878 to 1880 this business was a small one, but in 1884 extra efforts were made to make it popular with the trade, and in 1886 the production reached 600,000 kegs of 100 pounds each, and later increased rapidly. The invention of Bessemer and basic steels furnished material to the wire-drawers by which they were able to make wire for a greater variety of uses than before, and to draw coarse and medium sizes at less expense, and the introduction of continuous fine wire drawing machines (which had been in a progressive state of invention for 20 years previously) came in at the same time that an enormous demand sprang up for fine copper wire for insulating purposes. In 1884 copper began to displace iron and low carbon steel for telegraph and telephone lines, and the many applications of electricity to commercial uses created a demand for copper wire of all sizes, as coarse as $\frac{3}{8}$ -in. for trolley purposes, Nos. 8 to 14 for telephone and telegraph, and in finer sizes for the various insulated wires and cables.

Steel wire cables for street railways, and the use of wire hawsers for towing vessels, also added to the production of wire.

Sizes and Lengths of Wire.—Previous to the invention of the continuous rolling mill in 1862 by Mr. Geo. Bedson, then of Manchester, England, coils of wire were not made in one continuous length exceeding 20 lbs. in weight. Bedson's invention enabled him to make 100 lbs. in one length, and to-day 250 and even 300 lbs. are sometimes rolled. This would make one-half mile of No. 4 B. & S. gauge copper rods, or one mile of No. 8 wire. Trolley wire, however, as coarse as No. 0, is demanded in mile lengths, which weighs nearly one ton to the mile. Several coils are brazed together for this purpose, the tensile strength at the brazed part being fully up to standard; it is satisfactory also for electrical uses, the conductivity not being lessened. At No. 32 size the weight of copper is only one mile to the pound, and 300-lb. coils would, therefore, be 300 miles long. Such lengths are not needed; most of the fine wire is used to make up into insulated wires, and for reeling or unreeling during manufacture, it is found best not to have the reel so heavy that the winding or unwinding will strain the soft copper wire. In the coarsest sizes the full weight coil can be used to advantage; at No. 10 not over 130 to 150 lbs.; at No. 13 to 15 not over 50 to 70 lbs.; at No. 20 sometimes 50 lbs. can be used on one reel, sometimes 100 lbs.; at No. 25 not over 20 lbs., and in finer sizes not over 5 lbs. in one unbroken length. If the wire is put on the market in spools the weights are smaller yet, not over 10 lbs. at No. 25, 5 lbs. at No. 30, and 1 or $1\frac{1}{2}$ lbs. for finer sizes. Manufacturers always expect buyers to use, if possible, the shorter lengths which occur, on account of the wire breaking in process, if it weighs several pounds to one length. On very fine sizes heavy weights in unbroken lengths are not usually obtainable, as the wire when it becomes as fine as a hair has little strength and is difficult to draw without breaking.

All these show the average length and weights obtained. It is of course possible to occasionally draw heavier coils in one unbroken length of wire. At one wire mill this month they are getting out a special order of No. 6 B. & S. gauge copper wire in coils weighing 260 lbs. in one continuous length. Steel wire is sometimes supplied in coils weighing 200 lbs. of No. 12 and 60 to 100 lbs. of Nos. 15 to 20, and a coil of low Bessemer steel exhibited at the World's Fair weighed 50 lbs. of No. 30 B. & S. (0.010 in.).

On a continuous rolling mill to-day a coil of rods all of one length is seldom made weighing over 300 lbs. for steel, although for exhibition one length has been rolled weighing 400 lbs. In copper the weight seldom exceeds 280 lbs. On a Belgian mill the lengths are not as great, seldom exceeding 200 to 225 lbs. in weight on copper or steel, and from that down to 50 lbs., if preferred, on either mill.

In one instance 12 miles of 0.003-in. copper wire were drawn in one continuous length, but this is considered extraordinary. A thousand feet at this size weighs only half an ounce, and it is supplied for commercial uses in this length or weight up to as long lengths as practicable to make. Steel being stronger, although requiring more skill to draw than copper, can be depended on for greater lengths. We have one instance before us of a 25-mile length of 0.0035-in. steel. In steel it is considered practicable to supply five to seven mile lengths of 0.003 or 0.0025-in. A finer size is more of a scientific curiosity. It has been made in small quantity by machine, or pulled through a diamond die by hand, but as a reduction from 0.003 to 0.001 could not be made at one pull through a single die on account of the frailty of the wire, but would need to be gradual, taking say 10 or 15 diamond dies, which alone would cost \$100, the wire could not be produced in this way profitably. Medium sizes of steel wire can be made in 15 to 50 lbs. of one length, and coarse sizes in 100 to 300 lbs.

Special Wires.—In the United States three-fourths of the supply of brass wire is drawn in Waterbury, Conn. The rods or coils of coarse sizes do not usually exceed 30 lbs. weight, and much smaller coils at fine sizes. Brass wire springs are not as much used now as when brass was cheaper than steel. Steel springs are now used altogether in clocks, where formerly brass springs were employed. The less well-known wires, aluminum, German silver, the bronzes, gold and silver-

plated wires are made chiefly at Waterbury, Conn., and Providence, R. I. Makers of electrical instruments are seeking for a substitute for German silver for resistance wire which will cost less and yet have equal or higher resistance. Special alloys of steel have so far given the best satisfaction, but no one brand is in general use.

Roebling's "Climax" resistance wire has nearly 50 times the resistance of copper, while German silver has only 18 times, and ordinary steel wire about 8 times the resistance of a copper wire of the same diameter. Its mechanical qualities render it available for rheostat work where German silver, on account of its brittleness caused by successive heating and cooling, would be useless.

Silicon-bronze wires for trolley wires are not as popular in the United States as they deserve to be, though large amounts are used in Europe. The same is true of bimetallic wire, having a steel core with a solid coating or outer layer of copper, which has been used successfully for long distance telephone lines. The advantages of using aluminum wire are not as well known as they should be; it could replace, at present low prices, brass wires for many uses, and also steel and even insulated wires. Phosphor-bronze wires make excellent springs.

Odd shaped steel wires that a few years ago cost 50c. to \$1 per pound can now be bought for 10 to 20c., more as a result of competition than any improvement in processes.

Insulated Wires.—Several attempts were made in 1897 to consolidate the interests of 15 or 20 of the larger concerns manufacturing insulated wires in the United States, but up to December no binding agreement resulted. The proportions of this industry will be seen when an authority states that the output of various sizes of insulated wires and cables amounts annually to about \$10,000,000.*

The variety of kinds and qualities of insulated wires is very large, each leading manufacturer also having several specialties, in addition to the following better known descriptions. Underwriters' wire consists of a copper wire conductor of any desired size covered with two coatings of fibrous material, saturated and coated with fireproof metallic paint. Weatherproof wire is a superior substitute for the underwriters' wire, fulfilling the conditions required by the fire underwriters. It should be fireproof and weatherproof and have good insulating qualities. It is used for electric light circuits on poles and in buildings, and sometimes in place of annunciator or office wires, sometimes by telephone companies when their pole lines pass through branches of trees or when high insulation is desired. All insulated wires are also made into cables, having conductors of a suitable number of small wires to give flexibility.

Office wire consists of a copper conductor of any suitable size, covered with two braids of fiber, or with one wrap and one braid, and saturated with paraffine. It is polished and furnished in any color or combination of colors. Office wire and cables are used extensively by telegraph and telephone companies for all circuits from telegraph or telephone instruments to the point where the line wire or cable enter the building or to "earth." Also for wiring buildings, hotels, electric bell annunciators, and similar uses.

Rubber-covered wire includes rubber, gutta percha and their compounds. It is either a single conductor, or if very large, a number of small strands, so as to secure sufficient flexibility for safe and ready handling. Over the conductor are placed seamless coverings of rubber cement, and rubber compound, varying in thickness, and often protected from mechanical injury by one or more braids of tape saturated with protective compound; if used underground it must be covered with lead pipe. It is used for wiring offices, residences, stores, and also by telegraph, telephone and electric light companies, but is much more expensive than wires having saturated fiber coverings.

Annunciator wire has a copper conductor, either single, double or triple, wound with fibre, and saturated with paraffine, and is used for wiring offices, houses and hotels. Incandescent lamp cord consists of a number of small strands to equal the conductivity of a solid copper wire of the size desired. Magnet wire is the very best soft copper wire covered with one or two even wraps of fine cotton or silk, and used for a multitude of purposes, in induction coils, for telephone receivers and transmitters and relays, and electrical instruments of various kinds.

Lead encased wires and cables are used for every kind of electric service, but mostly underground. The insulation of lead encased telephone cables is dry paper. Submarine cables have been made in the United States in only one to seven mile lengths, and the well known London makers make nearly all the great ocean cables.

Musical Instrument Wire.—During the last three years there has been a wonderful increase in the demand for fine wires of music steel grade, for strings for mandolins, guitars, violins and other stringed musical instruments. The control of the principal factories engaged in this industry was in 1897 combined in the National Musical String Company of New York City, with a capital of \$130,000, and which in March of this year combined all their factories into one, in their new building at New Brunswick, N. J. The string-makers for small instruments use sizes from 0.004 in. to as coarse as 0.019 in. For piano strings the sizes are chiefly from 0.029 in. to 0.058 in.

Diamond Dies for Fine Wire.—Some fifteen years ago, in a small room in the top story of one of the old buildings on Dutch Street in New York City, the Jenots, husband and wife, made the first diamond dies in the United States. Coming here from France, they had for 25 years supplied pierced jewels for watches, and later for wire-drawing purposes. By their method the drill was fixed, and the stone, imbedded in a holder, was pressed and revolved against it. The Jenots are dead, but while they were yet living machines were invented to do this work. Diamond wire drawing dies are made in the United States in Worcester, Mass., by the Washburn & Moen Manufacturing Company; in Brooklyn, N. Y., by John Wenstrom, and in Europe in London, England; Lyons, France, and Breslau, Germany.

By Jenot's method several weeks or months were occupied in drilling a single diamond, while the machine, running at 20,000 to 30,000

* Copyright, 1898, by the Scientific Publishing Company.

* "Electrical Engineer," November 11th, 1897, "Insulated Wire Consolidation."

revolutions per minute, will pierce a diamond in several days or weeks. The strength of a diamond for wire-drawing is more in its surface than thickness, and advantage is taken of this fact in drilling the hole in the direction of the greatest resistance, to obtain good wearing dies, and also in cleaving 5 to 10 carat stones into thin slabs in the direction of cleavage, when these can be used. The finest sizes of wire can be drawn through a diamond of one carat or less; for sizes Nos. 20 to 30 it varies from one to three carats, and for still coarser sizes three to five carats or even larger.

The use of diamond dies in continuous wire drawing machines enabled manufacturers to supply the great demand for very fine copper wires with great accuracy as to size and smoothness of finish for the electrical trade. They had been held back by the slowness of the Jenot method of drilling diamonds, and their inability to obtain a sufficient supply of the dies.

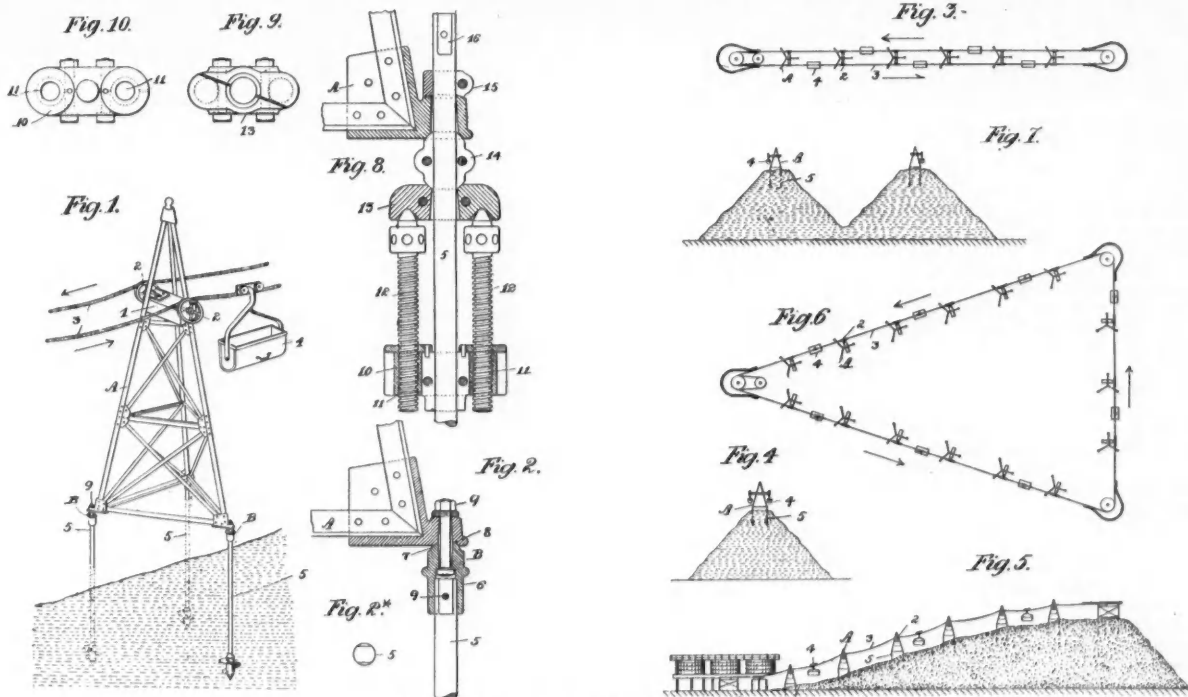
A diamond die is used a few days or weeks on one size of wire and as soon as it begins to show signs of wear is polished out and used to draw a larger size. In this way it will often last a year or more for drawing copper, and draw from 15,000 to 25,000 lbs. Steel being harder, wears more on the diamond, and 1,000 lbs. of wire and three months' use is a fair estimate in drawing steel. We have one instance of a diamond die being used to draw 46 tons of copper wire, which it took 12 months to draw. It must be remembered that wire as fine as 0.010 in. contains nearly 4,000 ft. in one pound.

Clear polished stones are usually of too great market value for the making of diamond dies, but the die maker finds he can use the "end-

AN IMPROVED METHOD OF DISPOSING OF WASTE.

After the treatment of sand in cyanide works or the extraction of precious metals by any process, the disposing of the waste sand is often quite an expensive matter; especially so in cases where the output is several hundred tons per day and where the nearest available dumping ground is some distance away. It is well known that the use of the aerial wire rope-way is a cheap and economical method for handling sand and minerals where a fixed line of supports can be used; however, its use has hardly been practicable up to this time for the building up of dumps, on account of the fact that the ever increasing dump would soon reach the level of the traveling buckets and necessitate the raising of the line.

The screw pile, which has for a number of years been used for supporting lighthouses, piers and bridges, consists of a cast iron disc screw shaped and on the lower end of an iron shaft and screwed into the ground. While it was known that these piles could be removed by unscrewing, the use of screw piles for elevating a structure from time to time by partially unscrewing the pile is new and makes the use of the aerial wire ropeway possible for building up of dumps and stockpiles. In fact, a dump could by its use be built up over a mile long and 500 or 600 ft. high. In the accompanying drawing Fig. 1 represents a view of a standard, or tower, supporting an aerial rope-way, the tower being supported by three screw-piles. In practice the piles are screwed into the ground, if the latter be of a suitable nature, to a distance that will give stability; or in case of starting on hard ground,



LANE'S SUPPORT FOR AERIAL ROPEWAYS.

ings" which are cut off the rough diamond when it is cut. These can be had at prices low enough to make into dies, as can also diamonds which are discolored or have other defects which make them unsuitable for brilliants, though they are still very good for the wire drawer's use.

Wire drawing dies are also made of rubies and sapphires, but these are not hard enough for drawing copper or steel in large quantities. They can be used by jewelers in drawing small amounts of gold wire with great care, and they have been used for a finishing draft for the carbon filaments of incandescent lamps, to make the filament smooth and exact to a given size. In India they are used for drawing very fine gold and silver wire (Lametta wire) for weaving into rugs and lace work.

During the last 10 years over 50,000 diamond dies have been made and used, the cost being from \$8 to \$100 each, or from \$8 to \$10 per carat, if sold by weight of stone. The large stones occasionally may make a die costing \$100 to \$200.

The Finest Wire.—A manufacturer of platinum wire states that "for use as 'spider lines' in optical instruments platinum is drawn by a special process to diameters so fine as to be nearly invisible to the unaided eye." This refers to the very short lengths which are used in telescopes for hair lines. Platinum is ductile and can be drawn very easily.

ASBESTOS IN NEW ZEALAND.—The New Zealand Asbestos Company has recently been formed to work a deposit of asbestos in Nelson province. The company's headquarters are in Christchurch, and its objects are the acquisition and development of asbestos lodes on the Upper Takaka River, within an area of 300 acres held under mineral licenses. The quantity of the mineral is said to be good. In a report on the deposits, Mr. J. S. Browning, late Commissioner of Crown Lands, Nelson, says that "about the center of the property, on the mountain side, there lies a continuous face of rock, about 1,500 ft. in length and from 60 ft. to 70 ft. in height, showing fiber freely, which admits of being easily quarried. A few chains below there is a similar face, about 1,000 ft. in length and about 20 ft. high, showing fiber freely, and this also can be easily worked. Spurs on both sides of Asbestos Creek show fiber freely along their outcrops and have been prospected."

holes are dug slightly larger than the diameter of the screw and the holes filled with sand after the insertion of the piles therein.

Fig. 5 is a side elevation of a sand-dump aerial ropeway and cyanide tanks. Similar letters and numerals of reference designate corresponding parts throughout the several views. The wire rope 3 supports the buckets 4. The towers or standards A are supported upon screw piles 5. The line may be constructed to go out and return on the same line of standards as shown in Figs. 3, 4 and 5, or it may be constructed in the form of a loop going out on one set and returning on another set of standards, thus making a wider dump and with a depression in the center, as shown in Figs. 6 and 7. Fig. 6 is a plan view of a circuit or loop line, and Fig. 7 is a transverse section of the loop line as shown in Fig. 6.

In case of rock dumps, it may not be found practicable to unscrew the pile, and for such a case the construction shown in Figs. 8, 9 and 10 may be used to advantage. The standard is raised relatively to the pile, the latter remaining stationary. Split clamp collars 10 and 13 are temporarily applied to the three piles, 5 under one standard or tower and screws 12 are brought into use to elevate the tower, after which it is again held in place by clamp collars 14 and 15. When necessary, an additional length of pile can be coupled to the upper end of pile at 16. The invention may be used for quite a number of purposes, such as building up a stock pile of ore, coal or other minerals, or in disposing of earth removed in stripping a quarry or body of ore.

Mr. J. S. Lane, an American engineer of Westport, Conn., having occasion to spend several months in the gold-fields of the Transvaal in South Africa, was impressed with the large number of men used and the considerable expense incurred in removing the sand from the cyanide, works to the dumps, and the ever increasing cost as the dumps grow higher and larger. He was led to give the matter some study, and this invention was the result. Apparently it could find a place in many cases and especially so where the disposition of tailings is a necessity.

IRON PRODUCTION IN BELGIUM.—Pig iron production in Belgium in February was 71,680 metric tons. For the two months ending February 28th it was 151,530 tons, showing a decrease of 22,120 tons from 1897.

MINING IN QUEBEC IN 1897.

Written for the Engineering and Mining Journal by J. Obalski.

The state of the mining industry in the Province of Quebec, during 1897, as shown by the following notes, is quite satisfactory. Copper and asbestos mining and charcoal iron making are important industries, with mica and chrome coming next.

Iron.—The Radnor Forges had a furnace in operation for the whole year, and the Drummondville one since July. They have produced 8,386 tons of pig iron, 680 men being employed by this industry. The consumption of raw material has been: 19,766 gross tons of bog ore; 2,545 tons of limestone; 1,031,800 bu. of charcoal.

Important deposits of titanite iron ore were discovered in the Lake St. John District. The utilization of the magnetic sands of the north shore of the St. Lawrence is under discussion.

Chrome Ore.—The shipments have been 2,340 gross tons, mainly to the United States, and stocks are over 2,000 tons, about 50 men being employed. The ore is mostly high grade, but with concentrating plants low grade ore could be used. With only hand working, over 10,000 tons have been taken out since 1894, representing an approximate value of \$140,000; of which 8,183 tons have been shipped.

Ocher.—Is prepared by two companies in the vicinity of Three Rivers, with a production of 1,239 short tons of burnt ocher. It has been used in Canada, or shipped to the United States, 50 men being employed.

Copper.—The low grade ores have been worked at Capelton, the product being 36,815 gross tons, of which 29,512 tons were shipped to the United States, a small cargo to England, and the balance used on the spot for sulphuric acid manufacturing, 270 men being employed. At Harvey Hill some work has been done, but only 20 tons of high grade ore shipped.

Several prospects have been made at a few points in the Eastern Townships.

Lead, Zinc and Silver.—On the Calumet Island, several good prospects have been made, showing the existence of an important mineral belt, containing zinc blende and galena, carrying sometimes 200 oz. of silver to the ton. The Lake Temiscaming mine has also been worked to some extent, but no shipments made. The output has been 430 tons of zinc blende and 5,000 tons of galena, 45 men being employed.

Gold.—Prospecting was carried on in the Beauce district, on the Gilbert, on Riviere du Loup and in Dudswell District, with some finds reported in the vicinity of Sherbrooke. Besides these every summer small parties find a living by washing in the rivers of the gold district. Some preparatory work was done last fall on the old diggings of the Gilbert River, and gold in paying quantities struck. The total gold obtained is estimated at not more than \$900.

Graphite.—The graphite industry is difficult to operate in Canada, as we have to compete with old establishments in the United States, taking their supply from Ceylon. In the Buckingham District there are three companies with well-equipped mills, two using the wet and one the dry process, and all that is required is a regular market. But little work was done last year.

Asbestos.—The market for asbestos has been fair; three companies at Thetford and one at Danville, employing altogether 800 men, have been in operation for the whole year, having shipped 12,565 tons (of 2,000 lbs.) of fiber; about 42,000 gross tons of the new product called asbestic have also been prepared, of which a very large quantity has been shipped to England, Germany, Australia, South Africa, the United States and Canadian points. The Black Lake mines were not in operation in 1897, and the production of the two companies having their mill in the Laurentian District, near Ottawa, was small.

Phosphate.—No work was done except a few hundred tons extracted from the mica mines.

Mica.—Several prospects were opened in the Gatineau District, but of small importance. In the vicinity of Perkins' Mill, in Templeton, three important companies have worked regularly and taken out a large quantity of mica well adapted for electrical purposes, of which a good part has been sold in Canada and in the United States. About 200 short tons of thumb-trimmed mica have been taken out, 90 men being employed. No mine of white mica was worked last summer.

Petroleum.—Prospecting and boring are going on as usual in the vicinity of Gaspé. Last season some excitement prevailed on account of a larger quantity of oil being struck in one of the wells which had been flowing for some time. Nevertheless, nothing very definite has yet been ascertained. About 30 wells have been bored, some of them having struck oil in greater or less quantity. The only shipments were some barrels as specimens.

Feldspar.—In the vicinity of East Templeton station a quarry of feldspar has been worked, with 15 men, for the whole season, the quantity shipped being 1,260 short tons. The material appears to be of a good quality and is sent to the United States for ceramic purposes. A few other deposits, some of them connected with white mica mines, exist, but are not worked.

Kaolin.—In 1894 I visited the township of Amherst (Labelle) and my attention was called to a white material which, after testing, I was able to pronounce to be a genuine kaolin. The indication was a small one, but may lead to the discovery of an extensive field. Subsequently, Mr. R. Lanigan, from Calumet, secured some property there, made some prospects and came to the conclusion that workable deposits existed. He also sent specimens to porcelain works and received high testimony regarding the quality. The district above mentioned is five miles from the Montfort Railroad, which connects with the Canadian Pacific.

Molybdenite.—Inquiries have been received from England about this mineral, but the price offered (14c. per lb.) does not give much chance for the opening of the small deposits, which are not developed, and are far from ordinary communication. We know of only two deposits giving indications of importance, one on the north shore of the St. Lawrence and the other in the Gatineau Valley. The latter was discovered in Egan township, about 110 miles from Ottawa; the surface indications would authorize further developments.

Building Material.—In this line 3,208 tons (of 2,000 lbs.) of slate were shipped, 90 men being employed; also 1,072 tons of flagstones.

The Stanstead, Whitton and Lake St. John granite quarries have been in operation as usual, the latter only for local supply. The limestone quarries on the Trenton belt between Quebec and Ottawa have been extensively worked.

There was for 1897 a production of 14,000 barrels of cement. New companies are in process of formation and preparations are made to considerably increase the output in 1898. There is an importation of over 200,000 barrels yearly.

The established limekilns and brick yards are going on as usual. There are, in round numbers, 300 limekilns, producing 1,000,000 of bushels of lime, of a value of \$140,000, with 250 men employed all the year round. In round numbers also, there are 150 brick yards, employing 1,200 men for the summer season, and producing 120,000,000 bricks, of a value of \$600,000.

Totals.—The value, at mine, of minerals taken out in Quebec is about \$1,800,000, including building material; the number of men employed the most part of the year being about 4,000.

SOME NEW LIME SALTS.

Written for the Engineering and Mining Journal by Dr. H. C. Hahn.

In some recent experiments I forced through a mixture of lime and water in a stoppered flask a current of H₂S under pressure of a 2-in. quicksilver column for 12 hours, filtered the solution, heated it and put H₂S through it again for some hours. The filtered solution contained: Proportions—Ca = 2.359 per cent. = 56 atoms; S = 3.477 per cent. = 109 atoms; which corresponds with CaS₂. This was evaporated to about half its volume to get crystals of the salt. Instead of this, a white powder commenced to settle, which was insoluble in H₂O; soluble in diluted HCl, without evolving even a trace of H₂S. Its composition was: CaO = 75.98 per cent. = 136 atoms; H₂O = 24.02 per cent. = 133 atoms. Its formula is, therefore, CaO + H₂O. Under the microscope the powder appeared to consist of six-sided columns, many combined apparently to twins, and some six-sided plates. By the measurement of the angles with a goniometer-microscope I obtained the following number: 118.75°, 119.55°, 120.7°, 121.5°; or an average of 120.1°. The crystals, therefore, belonged to the hexagonal system.

A stream of CO₂ forced through the solution of CaS₂ decomposes this salt at once. A solution left in a flask, covered with paper, for some weeks, deposited a large quantity of crystals, mostly in needle-form, some as plates of a yellow color, soluble to a small degree in water, to which they gave a yellow color. They settled soon in a white powder, the settling being hastened by boiling the solution. This powder had the same composition as that obtained by heating a solution of CaS₂, or CaO + H₂O.

The yellow crystals evolved with an acid abundant H₂S. When exposed to the air they became lighter colored and opaque. When heated to about 300° they turned white. Their composition was:

	Prop. of atoms.	
Ca	32.93	82 or 1
S	25.47	80 " 1
H ₂ O	27.72	164 " 2 volatile at 100° temp.
	14.33	80 " 1 " higher "
	100.45	

The formula is, therefore: CaS + H₂O + 2H₂O for this compound.

A SOLVENT OF GOLD FOUND IN 1857.

A well-informed correspondent writes the "Engineering and Mining Journal" from London: As far back as 1857 the Rev. J. B. Reade made some extremely interesting experiments on the solubility of gold in the metallic state and as it exists in different ores. Ten years previously he had demonstrated that if a few drops of liquor ammonia be added to 20 or 30 grs. of iodine and the compound slightly heated the result is an ammoniacal solution which is an instantaneous solvent of gold leaf. This solution, he said, when saturated with gold, yields upon spontaneous evaporation four-sided prismatic crystals of ammonia-periodide of gold, which have very much the same color as iodine. At a high temperature ammonia and iodine are given off and metallic gold remains. For several years Mr. Reade continued his researches and finally, last year, in 1897, a paper was published from which we extract the following information:

"Some caution is required in forming a solution of iodine in ammonia, but with ordinary care to secure a large excess of iodine which dissolves periodide of nitrogen if formed, the explosion of this terrible compound may be avoided. The best method is to place 50 or 60 grs. of iodine in an evaporating basin, to warm it until the vapors arise, and then to add a few drops of liquor ammonia, which will be immediately charged with a large excess of iodine in solution. Gold leaf, in this solution, instantly turns black (or purple, if the solution is weak) and immediately dissolves, like sugar in water. If a drop or two of the iodine solution is spread on a piece of glass and two or three square inches of gold leaf dissolved in it, a very slight application of heat will cause a rapid crystallization in the arborescent form.

"The solution of iodine in ammonia may also be successfully used in separating gold from ores when the percentage of gold is very small. From a commercial point of view, this solution might be more available than mercury, and the iodine could be easily collected and used for further experiments."

E. L.

SWISS MINT COINAGE.—According to a report from United States Consul-General DuBois, the mint of Switzerland coined in 1897 a total of 2,886,700 pieces. Of these 400,000 were 20-franc gold pieces. The remainder were bronze pieces, as follows: 500,000 of 20 centimes; 500,000 of 10 centimes; 500,000 of 5 centimes; 486,700 of 2 centimes; 500,000 of 1 centime. The one-centime coin is worth only one-fifth of a cent in United States money.

WORTHINGTON TRIPLE-EXPANSION MINE PUMPING ENGINE.

In the "Engineering and Mining Journal" for March 26th, page 371, we gave a description of a triple-expansion pumping engine built by Henry R. Worthington for the New Jersey Zinc Company at Franklin Furnace, N. J., the illustrations showing the arrangement of the cylinders, and also several indicator diagrams taken from the engine in operation. We now add to this description a view of the engine itself, showing the three steam cylinders and the pump cylinders. As the photograph was taken when the engine was set up in the shop before shipment, it does not show the condenser or air pump. This pump is for the 960-ft. level of the company's North Hill mine. The photograph shows the general construction of the pump and also the arrangement of the valve-gearing very clearly.

THE BAUXITE INDUSTRY.

Written for the Engineering and Mining Journal by W. M. Brewer.

In the year 1897, the seventh since the discovery of bauxite in Alabama and Georgia, the shipments were about 20,000 tons. New discoveries and deposits are now rarely recorded. During 1891 and '92 the sections in which the discoveries were first made were very thoroughly exploited by prospectors and most of the workable deposits known today were located; but since then little change has been noticed with regard to new discoveries or the organization of new companies until within the past twelve months. Previous to this the main feature of progress in the industry had been the establishment by some of the shippers of washing and drying plants. By this means the Georgia Bauxite Company, which was organized in 1895, was enabled to utilize several hundred tons of bauxite from the waste dumps left after screening.

During 1897 another corporation was organized, the American Bauxite Company of Rome, Georgia. This has entered the field as a shipper;

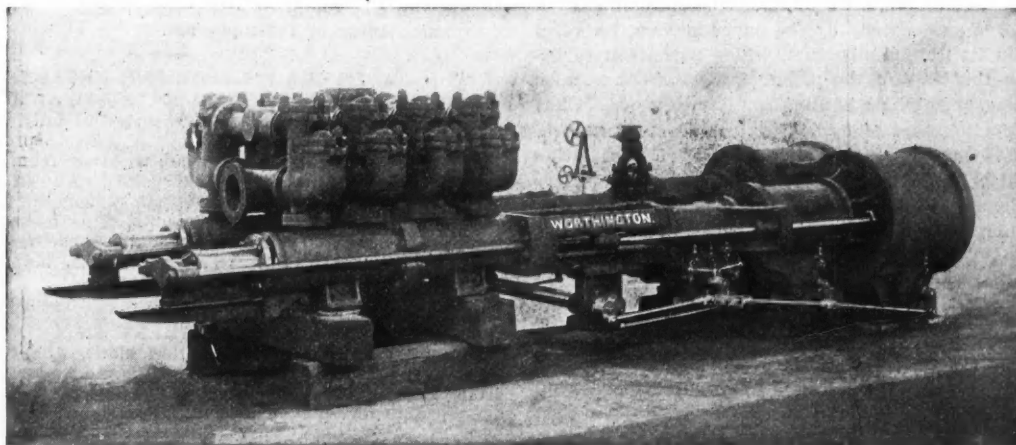
future will be an important factor, before outlays for pumping and hoisting machinery are made.

So far the capital invested in machinery and mining plants has been limited to the smallest amount possible, because with the limited knowledge as to permanency of the deposits it was not advisable to invest larger amounts to carry on operations. For two or three years after the industry had been established, the companies merely erected drying sheds, where the ore was stored for some weeks previous to shipment and dried by the air and sun. As the business became larger and competition keener artificial driers were put in. The Republic Mining and Manufacturing Company, the pioneer in the business, uses a drying kiln designed by Mr. Hawkins, the superintendent, which is simply a revolving cylinder 30 ft. long, through which the ore passes and is sufficiently dried by the heat of the furnace located under the cylinder. The other companies employ either some similar device or a Davis-Colby drier and roaster, somewhat modified from that designed for roasting iron ore.

The object in preparing the ore by artificial drying process is to eliminate all the water and moisture absorbed as well as a portion of the quantity chemically combined with the alumina and other elements, but it is not desired by buyers that all the water in combination should be eliminated, and it depends upon the purpose for which the bauxite is to be used what proportion of this water should be taken out. Consequently the roasting or drying process has to be watched very carefully. Indeed, the business of handling bauxite is one in which expert chemists have to be employed, because of the variations in the grade of ore even in the same mine, and apparently in the same stratum, which cannot be detected by the eye no matter how experienced an operator may be.

During 1897 an export trade was established and a large quantity of bauxite was shipped during the year by the Southern Bauxite Company to meet the demands in the foreign market.

The prices of bauxite have declined from \$10 a ton in 1891 to \$7 per ton. As railroad freight has to be paid from the mines to Pennsylvania,



WORTHINGTON TRIPLE-EXPANSION MINE PUMPING ENGINE.

it purchased bauxite properties in Floyd County, Georgia, and erected a washing and drying plant for the preparation of the ore. There are now engaged in the mining and shipment of bauxite four companies: The Republic Mining and Manufacturing Company, Rock Run, Ala., and Hermitage, Ga.; the Georgia Bauxite Company, of Linwood, Ga.; the Southern Bauxite Company, Cave Springs, Ga.; the American Bauxite Company, Rome, Ga. The properties owned and leased by these companies do not comprise the entire area of the bauxite belt, because in the southwestern portion of Calhoun County, Ala., the Alabama Mineral Land Company owns several tracts on which bauxite has been discovered and on some of which the mines have been developed to a limited extent. Continuing up the belt to the northeast the workable deposits which show a commercial value are in Cherokee County, Ala., on the property of the Rock Run Iron and Mining Company (these are leased by the Republic Mining and Manufacturing Company); adjoining these in the same county are the mines owned by the Southern Bauxite Company. Towards the northeast, across the line in Georgia, there are occurrences of the mineral in workable deposits at and near Cave Springs, in Floyd County, some of which are owned by the Southern Bauxite Company, others by several individual owners; next, in Vann's Valley, in Floyd County, nearly all of which are owned by the original owners of the land on which the deposits were discovered; further to the northeast the properties recently purchased by the American Bauxite Company, in the neighborhood of Rome, in Floyd County; still further northeasterly the deposits at Hermitage, or Ridge Valley; next to these come those in Bartow County on the Barnsley estate; some indications have been discovered near the Trion Cotton Factory and also near Summerville, Chattooga County; and beyond these are the Kawkins or, Armington mines in Walker County.

The Cherokee County deposits, in Alabama, have produced up to the present time the greatest quantity, the works of some of the mines having been carried to a depth of about 100 ft. The mining has been done in open cuts and by benching. At some of them, where the greatest depth has been attained, work has been temporarily suspended because mineral could be extracted from other deposits nearer to the surface and at less expense. While the structure of the deposit is pockety, like that of the brown ore (limonite) deposits, yet so far there are no indications of possible exhaustion in the near future. In such mines as have been worked to a considerable depth the question of cost in the

New York and other points in the East, the rate being over \$5 per ton, it is not surprising that there is no greater competition in this industry; especially when the limited demand is taken into consideration.

ZINC IN THE CAUCASUS.—A deposit of zinc ore has recently been discovered in the government of Koutaisk in the Caucasus, which is now being explored. The ore is a blende, and an analysis made in the laboratory of the Technical Society of St. Petersburg showed: ZnO, 57.82; S, 31.90; insoluble residue, 10.28 per cent.

COAL PRODUCTION OF HUNGARY.—According to the "Kohlen Zeitung" the coal production of the Hungarian mines for two years has been as follows, in metric tons:

	1896.	1897.	Increase.
Coal	1,120,000	1,150,000	30,000
Brown coal (lignite).....	3,800,000	4,130,000	330,000
Totals	4,920,000	5,280,000	360,000

The Hungarian brown coal is of very variable quality. Experiments in coking brown coal and in its use in the blast furnace are being made in several districts, with some degree of success.

GOLD EXTRACTED BY POTASSIUM CYANIDE.—On page 222 of the "American Journal of Science" (Volume 41, 1866) we find the following paragraph in a letter written by Dr. Henry Wurtz on his remarkable iodine amalgamation: "When gold has been obtained in solution, either from ores or other materials by the action of chlorine, aqua regia, cyanide of potassium or any other solvent, also when silver has been obtained in solution in hyposulphites or otherwise, the most rapid and thorough method of saving these metals will be found to be their conversion into amalgams by precipitation with metallic iron, in contact with magnetic quicksilver, more especially when the solutions are dilute." We think it is this quotation from the letter of Dr. Wurtz, in which he claims the priority of his invention to Prof. W. Crookes', which caused the Transvaal court to give their decision against the MacArthur Company. Evidently this paragraph shows that the treatment of gold ores with a weak solution of potassium cyanide was already known in 1866.

QUESTIONS AND ANSWERS.

Vanadium: T. M.—Prices of and dealers in vanadium.

Answer.—Prices of vanadium are given weekly in the "Engineering and Mining Journal." Heretofore there has not been a sufficient demand for vanadium salts to warrant regular quotations for them. The dealing in them has been confined to a few firms whose business is large enough to enable them to handle the rare earths and metals. A demand for vanadium seems to be springing up, chiefly for use in steel making, which is a new application.

Electro-Cyanide Process in North Carolina: F. H. J.—What is the name of the company working low-grade gold ores in North or South Carolina by an electro-cyanide process? They claim they can treat ores for 65 cents a ton.

Answer.—We know of no company operating an electro-cyanide process on a commercial scale in North or South Carolina. The chlorination process has been for many years in successful use at the Haile mine in South Carolina. A number of other processes have been offered and a few experimented with in the South, but with very little success.

Spontaneous Combustion of Coal: S. I. T.—Where can I find, in English, information concerning the spontaneous combustion of coal and the causes thereof?

Answer.—An article on spontaneous combustion of coal was given in "The Mineral Industry," Volume IV., 1895, which gives a summary of experience on this point, and also a list of publications on the subject. The most elaborate publication in English is the report of the commission of 1876 to investigate the causes of fires on shipboard; this was published as a Parliamentary document.

Talc: G. M. K.—What manufacturers use talc? Also pure silica?

Answer.—Fibrous talc is used chiefly by the paper-makers, its value to them depending upon its fibrous structure, which permits it to become incorporated with the body of the paper, and makes it a much better filler than the clay or sulphate of lime sometimes used. It has also been used in the manufacture of dynamite, being a good absorbent and conveyor of the nitro-glycerine. A great deal of information with regard to talc will be found in the volumes of "The Mineral Industry."

Silica is used as an abrasive, for making sand-paper. Its chief use, however, is in the manufacture of glass, and to a less extent in pottery.

Pearsall Hydraulic Engine: A. C. C.—At the Boston meeting of the American Institute of Mining Engineers in 1888, a paper was read by H. D. Pearsall, describing a hydraulic engine. Are any of these engines in operation in this country?

Answer.—The Pearsall engine was a form of hydraulic ram. We do not know of any now in use in this country. The hydraulic ram has never found much favor here, and very few large ones are in use, though several forms have been devised. A valuable paper on this form of engine was contributed by Mr. J. Richards to the "Engineering and Mining Journal" of April 25th, 1896. The chief reasons why the hydraulic ram has not come into more general use is the apparent complexity of the pipe and valve systems required for large works, and the difficulty of adapting them to high heads.

Mica: P. C.—Where can mica in sheets and ground mica be sold? Of what quality must mica be to have a commercial value?

Answer.—The demand for sheet mica is from the stove-makers and the manufacturers of electrical machinery. New York and Philadelphia are the principal markets in this country. The value of sheet mica depends first, upon the size of sheets; second on clearness and color. Color is an important point with the stove-makers, but is less considered in electrical work. Freedom from cracks and blemishes is required by both. For ground mica the chief point is that it must be free from impurities, that is from particles of rock, or other substances. Ground mica is largely made out of the clippings and waste left in trimming off sheets. An advertisement in the "Engineering and Mining Journal" will no doubt bring bids from the dealers and consumers in many places in this country and in Europe.

Slate in the South.—Could a wholesale supply depot for slate in Washington or some Southern city be made a profitable venture? As I understand it, the commoner slate used in this section comes from Pennsylvania, and the finer article from Vermont.

Answer.—A full answer to the several phases of your inquiry necessarily would be long. Vermont slates include both the highest and cheapest priced; the latter are adapted for all buildings where durability, not artistic, effect is desired. Wider use of roofing slates in any locality requires missionary work in different towns, which proved remarkably successful in Ohio, where more are sold than in any State. Like tactics would produce like results elsewhere. The wholesale business is attempted to be influenced, if not regulated, by the National

Slate Mining and Roofing Company, 409 Market Street, Pittsburg, Pa., a sort of general pool embracing producers, dealers and roofers, but its affairs at present are in somewhat chaotic condition, and many members are pulling out. It is believed the company has no member in Maryland or Virginia, the nearest to Washington, D. C., being Wheeling, W. Va. Secretary Jonas Clark of the Vermont Slate Company, Granville, N. Y., will supply information on Vermont slates and Horatio A. Miller, Bangor, Pa., or D. D. Roper, Slatington, Pa., on those of Pennsylvania.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

CONTINUING WORK WITH KNOWLEDGE OF DEFECTS.—Where an employee has knowledge of defects in machinery used in his employment, and they are not so dangerous as to threaten immediate injury, or the danger is not such as to be reasonably apprehended by him, his continuance at work will not defeat a recovery for injuries from such defects; but if they are so obviously and immediately dangerous that a person of ordinary prudence and precaution would refuse to use the machinery, then if he continues its use he assumes the risk.—*Mangum vs. Bullion Beck & Champion Mining Company* (50 Pacific Reporter, 834); Supreme Court of Utah.

RIGHT OF LESSOR TO USE THE GAS.—Where the lessor under a gas lease is entitled to use gas for his mill and several houses, if there be sufficient for both parties, his right is confined to an attachment for supply to a well drilled on his premises. He cannot attach to a pipeline which conveys gas from his well in common with that from others. Where the provision is that lessor may use gas for his mill "as now erected and built" such right is not affected by any change which does not effect an increase in the amount of gas consumed.—*Pearce vs. Bridgewater Gas Company* (28 Pennsylvania Law Journal, 171); Court of Common Pleas of Pennsylvania.

LIABILITY TO TRACKLAYER FOR UNSAFE ROOF.—A mine employee who was primarily engaged in tracklaying in the entry of a mine, and who was not charged with the special duty of looking after the safety of the roof of the entry, has a right to presume that the company had inspected and knew that the roof from which coal had recently been removed was reasonably safe. And in order to charge any employee with contributory negligence in working in a dangerous place, the dangers, and not the defects alone, must be so obvious that a reasonably prudent man would have avoided them.—*Ashland Coal Company vs. Wallace* (2 Southwestern Reporter, 744); Supreme Court of Kentucky.

FIXTURES OF SMELTING PLANT IN COLORADO.—Large iron matte pots, furnished for a smelting plant, which weigh 800 lbs. each and are mounted on wheels and are placed under the spout of the receiving hearth, and when filled with matte pulled out, emptied and returned; and fore-hearths, being large heavy castings, made in the shape of boxes, lined with fire-bricks, and attached to furnaces and capable of being detached and removed, upon a track prepared for them, used to receive the matte and slag as it runs from the furnaces, and allowed to remain in front of the furnaces from 30 to 60 days at a time, are fixtures within the Colorado mechanics' lien law, providing that the lien shall attach to all machinery and other fixtures used in connection with any building or structures. The question whether a mechanic's lien will lie for articles furnished for a smelting plant depends largely upon the intention of the owner to make them a permanent accession to the plot, and upon the use to which they are applied.—*Cary Hardware Company vs. McCarty* (50 Pacific Reporter, 744); Appellate Court of Colorado.

PATENTS RELATING TO MINING AND METALLURGY.

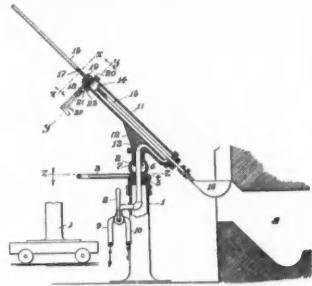
UNITED STATES.

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

Week Ending March 15th, 1898.

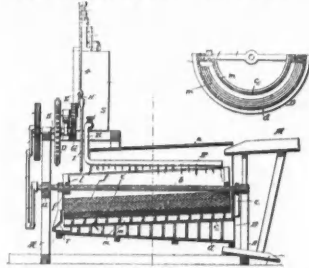
- 600,529. **GAS WELL CLEANER.** Israel K. Hall, Pittsburg, Pa. Combination with the well-casing, of a valve pivotally mounted in the sides of the casing and extending across the same, a nut pivoted within the valve, a rod connected to the nut and extending to the top of the well, and mechanism connected to the rod for operating the valve.
- 600,565. **DOUBLE DIE OR MOLD FOR CLAY PRODUCT MACHINES.** William W. Wallace, Willoughby, Ohio. Assignor to the American Clay Working Machinery Company, Bucyrus, Ohio. Two compartments arranged side by side; suitably-supported liners forming the walls of the compartments and the end liners being shiftable endwise and interposed between the liners, and the inner side liners being shiftable laterally; two wedges interposed between the inner side liners and having their sloping surfaces facing or abutting each other, and a square bolt or rod extending through the opposing sides and forming slideways for the wedges.
- 600,566. **MECHANISM FOR HANDLING MOLTEN METAL.** William R. Webster, Jr., Bridgeport, Conn. Combination of a cylinder normally inclined and mounted upon a suitable support, a pipe communicating with the interior of such cylinder whereby steam, water, air, etc., may be introduced, the pipe being provided with means for controlling the alternate supply and exhaust of such agent, the piston-head within the cylinder, the piston-rod extending through both ends of the cylinder and having secured to its lower

extremity the ladle, means for translating the cylinder to the location of the molds preparatory to pouring, and means connected with the piston-rod whereby such rod may be independently revolved.



600,566.

600,579. **GOLD-SEPARATOR.** William H. Fulcher and Samuel E. Latta, Stockton, Cal. A suitable frame, a shaft disposed longitudinally therein, a riddle-crib secured to the shaft, a screen-box loosely suspended from the shaft above the riddle-crib, a spray pipe arranged longitudinally above the box, a pump for supplying the pipe, suitable drive-gearing, an arm leading from one of the gear-wheels of a series, an arm secured to the longitudinal shaft, and a pitman connecting the arm with the arm of the gear so as to rock the shaft, a rod connecting the screen-box with another gear so

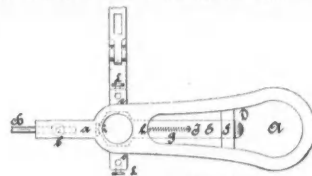


600,579.

that the box may also be rocked, a feed-hopper at one end above the screen-box, a discharge-hopper at the same end below the riddle-crib, and a guard at the elevated end of the crib.

600,583. **STEAM SHOVELING, DREDGING AND EXCAVATING MACHINERY.** Otis T. Jones, Kingsville, Ohio. This machine consists of an A-frame mounted on a movable support, a crane pivotally connected to this A-frame, a rotatable support for the crane, a dipper operatively mounted on the crane, separate means to operate the dipper and crane, a receptacle on the rotatable support to receive the material from the dipper, and means on the movable support to carry the material away.

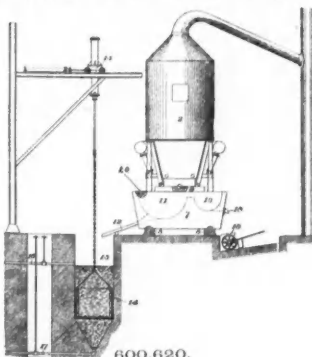
600,591. **MINER'S CANDLESTICK.** Frank S. Moore, Park City, Utah. Assignor to Frank E. Williams, same place. This comprises a handle having a socket to receive the candle, vertically-apertured lugs at opposite sides of the socket, and a longitudinally apertured or bored lug in front of the socket, and set screws intersecting the



600,591.

bore or apertures of the three lugs, one or more vertically-disposed hooks, the shanks of which are clamped in the vertical apertures, and a longitudinally extending pointed rod, the shank of which is clamped in the longitudinal bore or socket.

600,620. **SMELTING FURNACE.** William S. Reese, Natrona, Pa. Assignor to the Pennsylvania Salt Manufacturing Company, Philadelphia,



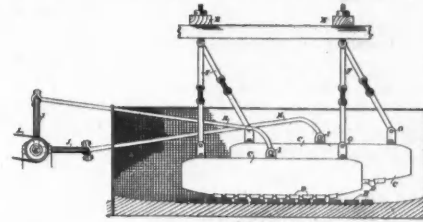
600,620.

Pa. Combination with a water-reservoir having a cage or receptacle suspended therein, of a smelting-furnace having a fore-hearth arranged to discharge its contents into the cage through the water in the reservoir.

600,626. **COMPRESSOR.** John Stumpf, Chicago, Ill. Combination with the cylinder and piston, of a fluid-passage communicating with the cylinder, a valve at the passage, and means carried by the valve and operated alone by the fluid-pressure.

600,635. **QUARTZ MILL.** Hugh H. Crain and John W. Forbes, Plymouth, Cal. A mortar having an unyielding bed with suitable grinding-surfaces, weights placed parallel with each other within the mortar and having grinding-surfaces, rods or pitmen connected with the weights at points between the ends thereof, a shaft having cranks to which the opposite ends of the rods or pitmen are connected, links pivotally connected with projections from each end portion of the weight and pivotally suspended from above, supplemental links interposed in the length of the first-named

links to permit of an independent movement of each end of the weight and means whereby the suspending devices may be in-



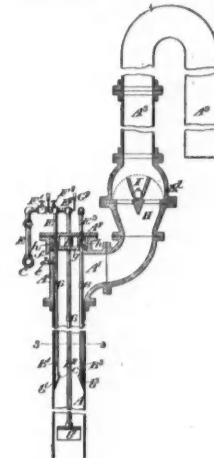
600,685.

dependently adjusted to compensate for the wear of the grinding-surfaces.

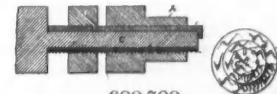
600,683. **METHOD OF MAKING SOLUBLE METAL ELECTRODES FOR ACCUMULATORS.** Jules Julien, Brussels, Belgium. Patented in Belgium March 10th, 1896, No. 120,281; in Germany March 18th, 1896, No. 35,697; in France April 1st, 1896, No. 255,227; in England April 2d, 1896, No. 7,259; in Austria, April 25th, 1896, No. 465,130, and in Hungary April 27th, 1896, No. 2,857. A process consisting in depositing on a copper plate, by electrolysis, a finely-porous surface of pure copper, then amalgamating the copper surface so produced, and finally depositing on the amalgamated surface, a coating of zinc to form the active surface of the electrode.

600,700. **ROLL FOR BENDING STRUCTURAL IRON.** Charles Weber, Pittsburg, Pa. A roll having a reduced screw-threaded portion, a movable and adjustable collar mounted thereon and provided with a keyway, a series of longitudinal keyways formed in the reduced portion and a key adapted to engage the roll and collar so as to lock the collar at a desired point on the roll.

600,703. **MEANS FOR USING COMPRESSED AIR FOR RAISING WATER.** William D. Andrews, New York, N. Y. Assignor to Mary Augusta Andrews, same place. Combination with a well-tube and an air-tube inserted therein in proximity to the walls thereof for dis-



600,703.

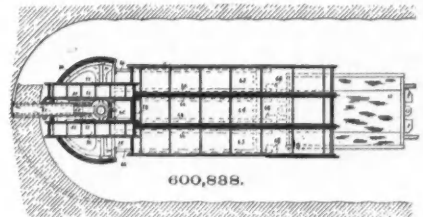


600,700.

charging compressed air into the water therein, of a delivery-shoe attached to the air-tube projecting laterally therefrom around the walls of the well-tube and having an approximately horizontal slit-like discharge-opening below which it is sloped downward toward the walls.

600,770. **BUCKET ELEVATOR.** James M. Dodge, Philadelphia, Pa. Assignor to the Link-Belt Engineering Company, same place. Combination of an endless carrier, buckets thereon, the elevator having a main vertical run and short horizontal runs at the base, with a pivoted feed-chute situated above the upper horizontal run of the elevator, there being uninterrupted contact between the pivoted chute and the buckets, for causing the buckets to raise and lower the chute as they pass under the same.

600,833. **MINING MACHINE.** George F. Myers, Boston, Mass. Assignor to the Myers Mining Machine Company, same place. Two upright cutter-chains located side by side, and having edge-teeth adapted



600,833.

to cut to the right and left respectively, in combination with a supporting frame for the chains, and a motor for moving the frame alternately in opposite directions from rib to rib transversely across the room.

GREAT BRITAIN.

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

Week Ending February 26th.

- 3,288 of 1897. **ELECTRIC FURNACE.** R. C. Contardo, Paris, France. Continuously acting electric smelting furnace.
- 7,111 of 1897. **COAL CLEANING.** W. F. Butler, Wrexham. Apparatus for cleaning, sorting and picking coal.
- 7,391 of 1897. **ROCK DRILL.** J. Dulait and R. Forget, Paris, France. Improvements in percussive rock drills.
- 7,532 of 1897. **ZINC LEAD SULPHIDES.** E. A. Ashcroft, Newcastle, N. S. W. Improvements in the inventors' process for treating zinc lead sulphides.
- 8,007 of 1897. **COKE OVENS.** R. Dixon, Durham. Certain economies in heating coke ovens.
- 29,910 of 1897. **COAL SCREENS.** W. H. Baxter, Leeds. Screening and elevating coal, ores, etc.

PERSONAL.

Mr. Charles O. Richardson, mining engineer, of Pueblo, Colo., is at present in Chicago.

Mr. D. Keith, managing owner of the Silver King mine at Park City, Utah, has taken a trip into Mexico.

Messrs. Frank Rockefeller and James Corrigan were at Bessemer, Mich., on the Gogebic iron range last week.

Mr. T. W. Thomas has been appointed superintendent of the Great Northern Coal Company's mines, near Cardiff, Colo.

Mr. Francis T. Freeland has been in Butte, Mont., in attendance as a witness in several mining cases before the Federal Court.

Mr. Warren C. Bogue, traveling representative of the Colorado Iron Works Company, was in Salt Lake City March 23d on his way to Butte.

Mr. George E. Pfunder, manager of the Monte Cristo and Colonna properties at Roseland, B. C., spent a few days in Spokane, Wash., last week.

Mr. Henry F. Hoyt of St. Paul has been in Joplin, Mo., examining the property of the Hermit Mining Company, in which he is interested.

Mr. F. E. Goodheart of London, England, will arrive in Utah shortly to visit the Mammoth mine, of which he is one of the heaviest shareholders.

Mr. Charles H. Krause has been appointed superintendent of the Tamarack-Osceola mills on Torch Lake, Mich. He succeeds the late John Gundry.

Mr. William W. Adams, a Colorado and Montana mining engineer, is now located at San Francisco, and will in the future report on California mining properties.

Mr. W. M. Mackintosh of Seattle, Wash., passed through San Francisco recently, on his return from Tuttle town, Cal., where he is developing mining properties.

Messrs. Frederick Mills and Willard Ferguson of Boston, visited Utah this week, and examined the Chloride Point mine in the Mercur region, in which they are heavy owners.

Mr. Thomas Kiddie has been appointed superintendent of smelters at the Vananda Copper & Gold Company, whose mines are situated on Texada Island, Vancouver, B. C.

Mr. Warren C. Bogue, manager of the tramway department of the Colorado Iron Works, passed through Salt Lake last week, on his way to the mining camps of Montana.

Mr. Percy Williams of Silverton, Colo., has been appointed agent for the Philadelphia Smelting and Refining Company in the Northwest, with headquarters at Northport, Wash.

Mr. Samuel M. Green of Milwaukee has been examining mining properties in California, it is said, in the interest of an Eastern syndicate that intends to develop some old quartz claims.

Mr. Allen C. Washington, president of the Horn Silver Mining Company of Utah, was in Salt Lake recently, and is now on the ground of the Austin Mining Company, of which he is also president, at Austin, Nevada.

Mr. Charles Butters, the well known metallurgist, is now on his way from the Transvaal to London, where his office is 20 Bishopsgate street Within, E. C., and after a few weeks' stay there he will come to America, where he expects to remain the greater part of the year.

Messrs. A. E. Salven, general manager of the Grangesberg mines at Grangesberg, Sweden, and Claes Landen, civil engineer of the same corporation, have been at the principal iron mines of the Menominee range in Northern Michigan, the Calumet & Hecla copper mine, and the Mesabi iron range in Northern Minnesota.

OBITUARY.

Joseph P. Butterfield of Chicago, president of the Chicago & Two-Bit Mining Company, died of pneumonia at Deadwood, S. D., on March 25th. He was 56 years old and had been a large cattle dealer in Chicago.

Percival Roberts, head of the firm of A. & P. Roberts, that owns the Pencoyd Iron Works, died at Philadelphia on March 23d. He was born in Montgomery County, Pa., in 1830, he graduated at Rensselaer Polytechnic School in 1847 and subsequently served as an engineer locating the Pittsburg, Ft. Wayne & Chicago Railroad. In 1852, associated with his brother, Algernon Roberts, he began the business with which he was connected till his death. He was known in the iron trade as a painstaking, conservative man and left a wide circle of friends.

SOCIETIES AND TECHNICAL SCHOOLS.

West Virginia University.—Prof. Russell L. Morris, assistant in the department of civil engineering, is at work on a map for the Geological Survey of the State. Dr. I. C. White, director of the State Geological Survey, is preparing a bulletin on the petroleum industry of the State, to be followed by one on the coal resources.

Society of Chemical Industry, New York Section. The monthly meeting was held at Have-meyer Hall, Columbia University, on March 25th. Mr. C. E. Tripler gave many interesting experiments with liquid air at a temperature of 312 degrees. Liquid air boils fairly rapidly at ordinary temperature, the nitrogen evaporating more readily than the oxygen, so that the liquid becomes more and more concentrated in oxygen. Mr. W. H. Birchmore's paper on the "Modern Development of Electrical Furnaces for the Laboratory" showed that when intense heat was employed the vapors of chromium were readily obtained so as to show the spectrum of this metal. A button of metallic chromium was produced.

Engineers' Club of Philadelphia.—At the regular meeting, on March 19th, 73 members and visitors were present. The subject for discussion was "Modern High Explosives." Mr. L. Y. Schermerhorn gave a general description of the essential composition and characteristics of various high explosives and fulminates. High explosives, to be effective, must be near the object to be injured. Experiment made by the British Government showed that 500 lbs. of gun-cotton, if exploded 100 ft. from a vessel, would not injure it, while at 30 ft. the side-plates were driven in and the frames distorted. The destructive value of torpedoes or submarine mines, therefore, depends upon their being placed within a limited distance of the hull of a vessel. Mr. Arthur Falkenau, with the aid of photographs and illustrations, showed the results of a series of experiments made with torpedoes fired from a pneumatic gun. Messrs. C. H. Ott, C. L. Prince, William C. L. Eglin and E. M. Nichols also made remarks.

INDUSTRIAL NOTES.

The St. Louis Steam Engine Company has shipped an 8 by 8 in. air compressor to Bradford, Eng.

The Arkansas Valley Smelting Company at Leadville has placed an order with the Colorado Iron Works Company for a carload of water-jackets.

The Sovereign Chemical Company of Omaha, Neb., has been incorporated, with a capital stock of \$100,000, by Thomas B. McPherson and George G. Bowman.

A Vulcan double-rope tramway to handle 300 tons of tailings daily, is being constructed for the El Triunfo Mines, Lower California, by the Vulcan Iron Works of San Francisco.

The E. P. Allis Co. of Milwaukee, Wis., have just shipped a complete machinery plant, including 300 H. P. boilers and Reynolds-Corliss engine, to the Tasmania Smelting Company, Tasmania.

The J. H. Parsons Chemical Company of Chicago, owing to the increased demand for the boiler compounds it manufactures, has enlarged its factory. The company reports a good run of orders from the mine trade.

The entire plant of the Marinette Iron Works at West Duluth, Minn., is to be sold under personal property foreclosure on April 2d. D. Clint Prescott intends to operate the plant at Marinette, Wis., with headquarters in Chicago.

Fraser & Chalmers are now sales agents for the United States, Mexico, British Columbia and all other foreign countries for the Green rotary pressure blowers, for use in blast furnaces for the reduction of gold, silver, copper, lead and iron ores.

It is reported that the Pacific Coast Borax Company of San Francisco, contemplates erecting a large factory at Daggett, San Bernardino County, Cal., for the purpose of manufacturing boracic acid. This will not effect the output of the Alameda plant.

Messrs. White, Rogers & Co. of San Francisco are handling numerous orders for mining machinery, particularly for Wilfley concentrators, which are giving good results in many camps. The firm has a Wilfley table at the laboratory for working tests of ores.

The Prospecting, Mining and Machinery Company of Chicago was incorporated on March 23d under the laws of Illinois with a capital of \$20,000. The incorporators, Charles W. Tremain, Hezekiah N. Elwell and Louis B. Tremain, are interested in the Tremain steam stamp.

The Westinghouse Machine Company of Pittsburg, Pa., now holds the exclusive right to man-

ufacture the Parsons steam turbine in this country. This is the type of engine that enabled the English torpedo boat "Turbinia" to make such phenomenal speed. It is said that the Westinghouse Company will use the turbine for driving direct-connected high-speed dynamos.

The Berlin Iron Bridge Company has a contract for building a new power house, car barn and steel bridges for the Port Jervis Electric Railway Company, Port Jervis, N. Y. The buildings will be of a very substantial character, entirely fireproof, covered with the Berlin company's patent anti-condensation corrugated iron. The bridges are plate girder type constructed in a substantial manner for carrying the heaviest loads.

It is said a company has been organized in Chihuahua, Mexico, to undertake the construction of a brick and tile factory. The company has already a paid-in capital of \$60,000, and no expense will be lacking in obtaining the most modern machinery and appliances for the works. Jose Maria Prieto is the president, Romulo Jaurieta, secretary, and Otoy Sartorius, treasurer. The machinery, etc., will probably be bought by either of these gentlemen.

The Metropolitan Electric Construction Company will do hereafter all of the installation work of the Sprague Electric Company. The Construction Company not only contracts for installation and maintenance of Sprague machinery, but for any other machinery as well. The offices of the company, as well as those of the Sprague Company, are in the Commercial Cable Building, New York city. The officers are: W. D. MacQuisten, president and general manager, and Wallace E. Carver, treasurer. The Sprague Company, which was formed by the consolidation of the Interior Conduit & Insulation Company and the Sprague Electric Elevator Company, has also recently secured a suite of rooms in the Marquette Building, Chicago, which will be in charge of Millard B. Kitt and E. B. Kittle.

The General Electric Company has placed contracts for a new foundry at Schenectady, to be one of the largest in this country. The building will be of brick, 500 ft. long and 140 ft. wide; with an "L" 100 ft. by 120 ft. for a cleaning shop. A new pattern store house 200 ft. long, 60 ft. wide and two stories high will also be erected. All combined, the floor space occupied will be about 12,000 sq. ft. Plans are also under consideration for a new machine shop, 650 ft. long by 165 ft. wide.

The middle aisle of the new machine shop will be 65 ft. wide, with narrower aisles down each side. Electric traveling cranes will work along each aisle and a gallery will be built along one side only. The total floor space of this building will amount to not less than 144,250 sq. ft.

TRADE CATALOGUES.

"Fan Motors" is the title of a little pamphlet published by the General Electric Company. It describes the several patterns of motors for fans manufactured by the company.

The Hendey improved mine timber framing machine is described in catalogue No. 5, published by the Denver Engineering Works Company of Denver, Col. This machine, it is stated, will cut the tenons equally true on either round or square timber, no matter how crooked it may be; will frame any length of timber from the shortest used to 10 ft. in length, and from the smallest to 16 in. in diameter or square; and will enable the framer to make full use of the whole length of the beam or log. There are 10 saws in the machine, which are adjustable in every way.

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.

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GENERAL MINING NEWS.

ALABAMA.

Bibb County.

(From Our Special Correspondent.)

Hargrove Coal Mines.—The 125 miners employed at these mines left work last week because the company refused to remove a subcontractor. It is believed, however, that a compromise can be arranged.

Jefferson County.

(From Our Special Correspondent.)

Pratt Coal Mines.—State Mine Inspector James D. Hillhouse, after a careful investigation with his two assistant inspectors, Messrs. Culverhouse and Duncan, has made a report on the explosion which took place in Shaft No. 2 on March 12th, in which six convicts lost their lives. According to the report there was fire damp generated in the mine from a pocket of gas freed by a shot in the coal. This gas accumulated, and was ignited, when the men returned to gather the coal which had been shot down. The mine has been operated for 20 years, and this was the first time a pocket or accumulation of gas was ever encountered. The ventilation of the mine, according to the report, is not surpassed in the State. The accident was unexpected, and could not have been foreseen or prevented.

ALASKA.

An Alaska mining paper quotes with approval the following statements regarding the action of the Canadian Government in raising the British flag on the summit of White Pass: "The British and American flags may both fly there, as it is the eastern limit of the American claim of territory. It is the section west of the summit that is in dispute. The boundary was fixed by the treaty of 1825 between England and Russia. The treaty says the line shall follow the summit of the mountains parallel with the coast unless the summits are more than 10 marine leagues inland. There seems to be an impression on the part of Americans who have gone north that the line is everywhere 10 marine leagues from salt water, and this is why they imagine Lake Lindeman lies within the limits of Alaska, when the fact is that wherever the mountain summit ridge is less than 10 leagues from the ocean the summit becomes the boundary line. Therefore, the utmost claim of the United States ceases at the summit of Chilkoot and White passes."

Dispatches from Dyea under date of March 24th state that the whites who pack to the summit of Chilkoot Pass have driven off the Indian packers. The price for packing from the scales to the summit is 2c. per lb. at present. Packers make from \$6 to \$15 per day. The Burns hoists are working, one by horse power and one by steam. The Dyea-Klondike Company has just got its aerial tramway in operation. Other proposed tramways are not yet completed. The Burns hoists only run from the scales to the summit, and the Dyea-Klondike Company from a short distance below the scales to the summit.

Threats were made that if the tramway companies get to working too soon the packers will take measures to stop their work, as the successful operation of the tramways will throw practically all the packers out of employment.

The prices for hauling from Dyea to Sheep City fluctuate according to the condition of the roads and demand. Teams have been making from \$150 to \$200 per day for several weeks.

Every one is apprehensive that the road in the canyon will give out. The price will then be advanced to 4c. or 5c. at least per pound. It is estimated that the ice in the canyon cannot last more than 14 or 15 days if the present mild weather continues. Travel is proceeding regularly on the Skaguay trail. Many very large stocks of goods have gone by the White Pass, while the other trail has done more of the small business.

Cook's Inlet.

A letter from O. A. Nutsche, who went to Alaska last fall, is published in an Oklahoma paper, and gives information about the conditions at Cook's Inlet:

"Our information, before leaving Oklahoma, was that there were mines in this district paying \$20 a day that had been deserted in the wild rush to the Klondike. Upon arrival we found that mines paying \$2 a day are eagerly sought. We learn through the papers that the Cook's Inlet mining district had last year yielded fully half a million dollars. We find that the 300 men who operated here last season had to be satisfied with about \$90,000. We were shown nuggets worth from \$8 to \$10, which the exhibitors said abounded in plenty along such and such a river. Actual and correct information informed us that the nuggets were the result of two or three years' search."

Copper River.

Letter received at Tacoma recently state that 1,200 prospectors, many from the Eastern States, are blockaded at Valdes, Alaska, whence they hope to make their way over Valdes Glacier, 40 miles, to the Copper River. The advance parties sent out reports that the glacier is absolutely impassable, containing wide and deep crevasses which cannot be crossed. The Indians say nobody has crossed the glacier to Copper River since two years ago, when drifting snow filled the crevasses, making travel safe. The miners must wait until the early summer, when the weather will permit taking small boats around

the Valdes Peninsula to the mouth of the river, where a fresh start can be made.

Possibly they may secure steamers to transfer them to Orca or Copper River City, whence there is a trail to Alganik on the river. Blizzards have been frequent at Port Valdes. Several parties have become lost while seeking a way across the river. When Henry Jameson wrote, late in February, four men had been missing so long as to make it certain that they had frozen to death.

ARIZONA.

Cochise County.

Arizona.—This property, in the Chiricahua mountains, has been bonded by Corbett & Wyman of Deming and J. R. Brandt of San Simon. John Sullivan is the owner.

South Bisbee Copper Mining and Townsite Improvement Company.—This concern has started a double compartment shaft on a claim adjoining the Copper King property.

Maricopa County.

Garcia Gold Company.—This is a new organization, backed by English capital that has secured control of claims south of Wickenburg. A pipe line will be run 4 miles from the river, and a 10-stamp mill erected. The claim has a shaft down 120 ft., showing some good gold ore.

Mohave County.

Temple Bar Consolidated Mining Company.—Hydraulic work will be started May 1st on gravel banks on the Colorado River, northwest of Kingman. Steam pumps will lift water on the mesa, to give head for giants below. Driftwood from the river, it is said, will be largely used for fuel.

CALIFORNIA.

Alameda County.

(From Our Special Correspondent.)

Corral Hollow Coal Mines.—At Tesla the working force now numbers about 500. The summit vein has been tapped and the company is ready to begin active work in it. It is claimed that the coal is of superior quality, and that within a few weeks the output will amount to 100 tons per day. The contract for electric power calls for three electric underground haulage plants. The coal washing plant will be completed in about 90 days, at a cost of \$25,000.

Amador County.

(From Our Special Correspondent.)

Amelia.—The shaft at this mine, one mile northwest of Jackson, has passed the 500 ft. level. A cross-cut has been run on the 400 ft., and a dam has been put in for the purpose of catching the surface water. As the shaft is dry, good progress is made in sinking, about 15 ft. per day. The company will probably sink to the 1,000 ft. before stopping.

Argonaut.—The output of this mine, one mile northwest of Jackson, for the month of February, was between \$56,000 and \$57,000 in free gold, besides several thousand dollars in sulphurets. Estimating the expenses about \$15,000 per month, on an average, would leave a net profit of \$50,000 per month.

Bay State.—At this mine, four miles north of Plymouth, the lrens have, it is said, been settled for 75c. on the dollar, and the new company will commence work very soon.

Bellwether.—This property ½ mile northeast of Jackson, has passed into the hands of Mrs. J. W. Hepburn for \$98,000. It is reported that a company will be organized, and the shaft sunk to greater depth and other development work done on a large scale.

Central Eureka.—Sinking still continues, and at the 600 ft. a drift is being run on a large ledge of low grade ore. A drift has also been started in the 900 ft. north. This mine is located near Sutter Creek.

Kennedy.—This mine, one mile from Jackson, now the deepest gold mine in the State, is holding its own as a great producer. Ore from the 2,250 ft. level is reported to mill \$20 per ton. The quality of ore from this mine is about the same as that from the Argonaut, but the latter has a greater crushing capacity, and will produce from \$5,000 to \$10,000 more per month.

Lincoln.—This old mine, in the north portion of the village of Sutter Creek, is about to be reopened. A number of years ago, the mine was worked by Downs & Co., to some 700 ft. It was then sold to an English company at a large figure, but failed to pay. A new company has been organized, with a capital stock of 115,000 shares, of which 15,000 shares are unassessable until \$2 per share has been collected from the remaining 100,000 shares. The Lincoln contains a strong vein of low-grade ore.

Pioneer.—This mine, at Plymouth, is about to be opened up by Dr. Boyson.

South Eureka.—At this mine ½ mile south of Sutter Creek, good milling ore is being taken from the 600 ft. level. The contractors who are sinking the shaft are averaging 9 ft. per week.

Union Consolidated.—This mine, 8 miles north-east of Jackson, more than paid expenses during the last month. The shaft is down about 500

ft., and development work shows the ledges to be from 5 to 40 ft. in width, low grade ore, with some rich spots.

Wildman-Mahoney.—At this mine at Sutter Creek they are crushing low grade ore that will pay from \$8,000 to \$15,000 per month clear; 80 stamps are running steadily.

Zeila.—At this mine, in the town of Jackson, 150 tons of ore are being crushed daily. It is reported that a shaft will be sunk about 1,000 ft. east of the old one, on the land bought from Mrs. Evans, last Spring.

Butte County.

(From Our Special Correspondent.)

Prospectors on small placer properties are not doing well this year, on account of the lack of water.

Banner.—The mine recently cut down its force by 30 men because, it is said, there was more rock on hand than the 40-stamp mill could handle.

Carlisle.—This mine, near Forbestown, is putting in a 3-drill Rand compressor. About 20 men are employed.

Crystal Peak.—This property, comprising 3 claims 3 miles north of Enterprise, is being worked by a tunnel on the vein, which is about 6 ft. in width, carrying very promising ore; 25 men are employed.

Gold Bank.—The 40-stamp mill is running to its full capacity.

Martin.—The old shaft on this property, 3 miles from Forbestown, is being cleaned out and enlarged. An 8-ft. ledge runs about \$20 per ton.

Inyo County.

(From Our Special Correspondent.)

Panamint District.—Among the many mines in this district, which are being profitably worked, are the World Beater, Copper and Tuber Canyon. On the latter property a 10-stamp mill is to be erected very soon. Some of the ledges are said to mill over \$100 per ton.

Kern County.

Randsburg-Santa Fe Reduction Company.—The Colorado Iron Works Company has sent 5 carloads of stamp mill machinery for this Los Angeles company.

(From Our Special Correspondent.)

Red Dog Mill.—This mill at the Johannesburg Reduction Works, is running night and day, and will soon make up for the time lost by the breakdown. Large quantities of ore from the Wedge, Butte, Skookum and Rattlesnake mines are waiting to be crushed.

Nevada County.

(From Our Special Correspondent.)

California.—This mine, 4 miles from Grass Valley, owned by C. D. Lane and others, is now being operated under bond by a New York company under the management of Dana Hamon. The property is being examined by an expert, and if the report is favorable, the deal will be closed at about \$50,000. About \$60,000 has been expended in opening up the mine. The deposit is large and of fair grade.

Placer County.

(From Our Special Correspondent.)

Morning Star.—This drift mine at Iowa Hill, turns out 100 carloads of gravel every 24 hours. This is run through a 10-stamp mill. The company recently declared its 87th dividend.

Mountain Maid.—The mill at this mine near Bear River, 2½ miles north of Colfax, is running 16 hours per day.

San Bernardino County.

(From Our Special Correspondent.)

Rose.—At this mine 45 miles northeast of Victor, at an elevation of 7,200 ft., a cyanide plant of 50 tons capacity is to be erected as soon as possible, and all the ore mined is to be treated by that process. This decision was brought about by the success of the Salt Lake Company, which has been working the tailings.

Shasta County.

Mountain Copper Company.—The Department of the Interior has sent special agent Cullom to investigate the damage done to trees and vegetation generally about Spring Creek canyon by the fumes from the ore roasting and smelting plants at Keswick.

(From Our Special Correspondent.)

Benta Bar.—The Chinese company working this claim, at Honolulu, on the Klamath River, has found some large nuggets and very coarse gold dust on the bedrock of the old channel. The wing-dam is to be extended further down stream.

Copely District.—A small ledge of very high grade ore has been discovered in this district. It is said to assay from \$500 to \$700 per ton.

Milkmaid.—The shaft at this mine at French Gulch, is down 100 ft., and the new mill is running to its full capacity, on good ore. D. E. Hunt is manager.

Ruby Pearl.—This claim, together with the Gold Rose and Blue Bell, all located on Castle Creek, 10 miles west of Castella, is being de-

veloped by Mullen, Stoddard & Watts. About 150 tons of very rich ore are on the dump.

Washington.—This property, 4 miles northwest of French Gulch, comprising 82 acres, has been worked for some time by the Blgrave Bros. and others, under leases. The Blgraves reported a very rich strike within the past few days. They are said to have taken out several thousand dollars' worth of ore from the upper workings, most of it from rich stringers. After the leases expire, April 1st, the mine will be worked by the owners, who will erect a 10-stamp mill to take the place of the old one.

Siskiyou County.

(From Our Special Correspondent.)

Pacific River.—This mine at the mouth of Humbug Creek on the Klamath River, is to be reopened under the management of A. Smith. A wing-dam, derricks, water wheel, etc., are to be put in.

Wright & Fletcher.—This claim, together with the Eastlick Brothers' claim, the Eastlick farm and part of the Ed. Quigley farm, comprising 209 acres of gravel, and located at Oro Fino, Scott Valley, has been sold for \$57,000 to a syndicate, composed of W. H. Taylor and R. S. Moore of the Risdon Iron Works of San Francisco; W. E. Miles, G. A. Pope, A. B. Carlock and E. L. Wallace. It is said that these properties, which have already produced several hundred thousand dollars, will be worked by the Evans Hydraulic Elevators, under the management of J. O. Rusby.

Tuolumne County.

(From Our Special Correspondent.)

App.—At this mine on Quartz Mountain, the 20-stamp mill is running steadily on ore stoped from between the 8th, 9th and 10th levels. The new rockbreaker, having a daily capacity of 200 tons, will soon be running.

Big Oak.—This mine in Groveland District, now operated by the Tuolumne Development Company of Fresno, is showing up well. The vein is large and rich in free gold and sulphurets.

Dreisam.—The work of sinking the main shaft at this mine near Soulsbyville, is going on day and night, under the management of C. P. Grimwood. An air compressor plant is to be put in.

J. T. Necomer.—Prospect work has been commenced on this property, located 18 miles northeast of Sonora, near the Star mine. The ledge is a new discovery and at the depth of 25 ft. is said to mill very well, besides carrying rich sulphurets.

Paducah Patent.—This mine, which adjoins the Rawhide and Rappahannock on the east, has been bonded by C. L. Lang, who will prospect the property by sinking a shaft to a depth of 200 ft., and then crosscut and drift. Sinking machinery is to be put in at once.

Slap Jack.—This claim, about one mile northwest of the Star mine, is being developed by the Meyers Bros. The shaft is down 20 ft. on a 2-ft. vein of high grade ore, said to mill on an average \$43 per ton. Arrangements are being made to put in a first class plant.

Yuba County.

(From an Occasional Correspondent.)

Abbey.—This mine, 4 miles east of Forbes-town, is running a 10-stamp mill on ore that goes \$10 per ton. The shaft is down 175 ft., and has struck a blind ledge 20 ft. wide that goes \$3 free gold per ton. A cyanide plant just started is said to treat the tailings satisfactorily.

Yuba Power Company.—This company is now supplying power for the electric lights at Marysville from its power house 23 miles distant at Capitan mine. The three generators of 500 H. P. each are driven by Pelton wheels, working under a head of 293 ft. Power will be furnished for the mines in the district.

COLORADO.

Clear Creek County.

(From Our Special Correspondent.)

Badger Mining and Milling Company.—This company at Empire has had its mill reconstructed on the "advanced" scientific ideas of the Beam process people.

Beauzy.—This mine at Idaho Springs, which has lain idle for a number of years, has been bought by A. D. Bullis and W. L. Shaffer of that place. They begin work at once.

Cardigan.—This mine located at Idaho Springs belonging to the firm of Davies & Co., it is claimed, has just been sold to C. L. Kurtz and associates of Columbus, O. The consideration is believed to have been \$50,000.

Corncracker Gold Mining Company.—This Company at Empire has sunk its shaft and levels are now being driven on nice bodies of smelting and milling ores. The Melvin Edwards mill has a tramway from the mine to the mill and treatment of 30 tons per day will begin next week.

Crockett.—A Chicago pool is working this property at Idaho Springs under B. J. Smith of Central City. In sinking a shaft below the adit level ore like that found by the former operators has been encountered. John M. Smyth of Chicago is at the head of the pool.

Falcon Extension.—A half interest in this mine

cut by the Lamartine tunnel, at Idaho Springs, has been sold to L. Hanchett, manager of the Lamartine mine and tunnel.

Gem Extension.—This property at Idaho Springs, worked by W. E. Renshaw, and the Main Trunk property, owned by A. B. Wrisley of Chicago, have broken into one another's workings. Each claims the apex of the vein and 200 ft. upraises are being put through to surface. Big bodies of ore are showing in the disputed territory. Later reports are to the effect that a compromise is possible, whichever side wins.

Joe Reynolds.—This property located at Lawson under the management of C. H. Noyes for Jay Morton of Chicago is to be worked on a more extensive scale. Mr. Morton has ordered the sinking of the shaft below its present depth of 800 ft. Work has already begun. While the water will be rather difficult to handle, it is contended that the production will more than pay the additional cost. It is proposed also to sink a new shaft about 1,000 ft. east of the present workings.

Little Pittsburg Company.—This company, operating at both Empire and Idaho Springs, has secured the old Knickerbocker mill at Empire and proposes putting in a concentrating plant for ores from the Atlantic claim. At the Atlantic the manager is reported to have said that the shaft is down 220 ft. with no levels run. The pay streak is claimed to be 12 ft. wide with a value of \$7.50 for the last test. There is absolutely no ore in sight other than that which might be found in the sinking. The manager of the company has taken issue with the "Journal's" correspondent for saying that the mill is likely to become a monument, yet the more thorough the investigation the more convincing becomes the fact. The proposed system of concentration has already proved a failure in the lower districts of the county. A Boston make of combined crusher and rolls is proposed, the ore passing to screens and then to Wilfley tables. I have it personally from the patentee of the tables that they are not adapted for the heavy sulphide ores of Clear Creek. They have proved the finest savers of slimes and small particles of ore, but are not adapted for the heavier ores. These should be handled by jigs.

Mammoth Gold Mining, Tunneling and Railroad Company.—This company, which is driving a tunnel into the Alps Mountain at Idaho Springs, has just bought of the Mine and Smelter Supply Company of Denver a plant of machinery, consisting of Rand compressor and improved drills and a 40 H. P. boiler, which is being installed this week. J. J. Fleetford, the manager, says that the company intends to drive the tunnel into the mountain for 3,000 ft. or more. This will crosscut the great mineral belt crossing through Bellevue Mountain and Stanley hill, on which are located such prominent properties as the Shafter, Stanley, and a dozen others. The tunnel has been driven about 500 ft. by hand. Water prevented the working of these properties which will be drained by the tunnel.

Pennsylvania Tunnel.—L. Sternberger, the manager of this property at Idaho Springs, says that Scotchmen are organizing to push ahead the bore toward the mineral belt of the two counties. The tunnel owns 150 patented and 45 unpatented claims on its line. The intended consideration is \$1,000,000, \$400,000 of which shall be used in development before the balance of the purchase price is made.

Perkins Consolidated Gold Mining Company.—F. Regaud, a French mining engineer, has been at Idaho Springs recently examining the tunnel of this company. He was accompanied by E. A. Howard of Howard & Stubbs of Denver, the heaviest owners of the tunnel and group of 22 claims. It is understood that French capital may be interested.

El Paso County.—Cripple Creek.

Portland Gold Mining Company vs. Uinta Tunnel.—Judge Hallett recently took under advisement a novel point that has come up in the litigation between these two companies. The tunnel has crossed the Little May and Ocean Wave claims, which were valid when the tunnel site was located. Although the owner of the claims made no objection to the tunnel crossing their ground, the question now arises whether the tunnel site has any right beyond these claims. That is, to give a valid location for 3,000 ft., must not the line of the tunnel for 3,000 ft. be all the way unappointed public domain?

Raven.—At the annual meeting the following officers were elected: E. M. De La Vergne, president; M. F. Stark, vice president and general manager; E. R. Stark, treasurer; A. W. Conacher, assistant secretary. The annual report of President De La Vergne shows that during the year 3,118 ft. of development work has been done at an average cost of \$10 per ft. The company has acquired title to all of the property owned by the Raven Tunnel and Mining Company by foreclosure on a trust deed. The total shipments for the year ending December 31st, 1897, amounted to 1,953½ tons. The net returns for this was \$114,331. The average value per ton of

the ore shipped was \$58.50. The company is a regular dividend payer.

San Antonio Mining and Development Company.—This company, with \$1,000,000 capital, holds a bond and lease on the Mary Alice property on Battle Mountain. The officers are: President, George S. Fleming of Pittsburg, Pa.; vice president, John Evans of Pittsburg; general manager, Fred J. Manley; secretary, Joe Wygant; treasurer, A. S. Frost of Victor. These officers also constitute the board of directors.

(From Our Special Correspondent.)

Alice.—This property, on Raven hill, has been leased and bonded by W. P. Crandall, formerly of the Victor, and work has begun. No ore of any consequence has been shipped from the former workings.

Fluorine.—Shipments still go out from the claim on Copper Mount. The bond on the claim, which became due a few days ago, was not taken up. The property is in charge of A. A. McClurg.

Half Moon.—Ore shipments from the lease on this property keep up as usual. The lease is owned and worked by Carl Johnson of Cripple Creek. The property belongs to the Matoa Company.

Jewell.—Development work is being rushed on this claim on Monarch hill. The shaft is now 150, and it is to be sunk deeper. Three shifts of men are employed. Mr. Paterson has charge.

Magna Charta.—Owen Murphy of Cripple Creek and others are doing considerable prospecting on this property under lease. Some good indications are found, but no ore has yet been shipped. It is on Iron Clad hill and belongs to the Magna Charta Company.

Strong Gold Mining Company.—An injunction has been served on the company to stop it taking out ore from the Four Queens lode, which is claimed by the Portland Company. The latter company is also enjoined from taking ore from the disputed territory. Both sides have mining engineers at work preparing for the lawsuits which are expected to follow.

Gilpin County.

(From Our Special Correspondent.)

Cook.—The new hoisting machine, made by Welster, Camp & Lowe of Akron, O., is now in place on Bobtail Hill. It is a 14 by 18 double cylinder and driver, with the Lowe clutch and band friction brakes. It is 160 H. P. and the largest in this country. The rest of the equipment of this property consists of two 80 H. P. return tubular boilers, a 16 by 16 Norwalk air compressor, and a Sturtevant high speed engine and dynamo, furnishing 60 lights. The shaft house is a model. At present, using the Fisk shaft for hoisting, the daily output is 50 tons per day of a good grade ore. C. K. Colvin, Central City, has charge.

Delaware-Chief.—A lease and bond in the sum of \$20,000 has been given by the Delaware-Chief Gold Mining Company to Edmund J. Moffat of Denver, nephew of D. H. Moffat. The property is equipped with good machinery, and will soon be in operation.

Lillian.—Russell Gulch parties operating this property, have opened up a bonanza. The shaft is scarcely 110 ft. deep, yet with 2 shifts sinking, 4 tons of ore are being taken out every day and shipped, giving returns of 4 oz. gold per ton. The operators have a lease and bond. E. Craig of Russell Gulch, Colo., is manager.

Lotus.—This Russell Gulch mine, owned by Philadelphia parties, is shipping smelting ore running as high as \$500 per ton. L. Sternberger, Russell Gulch, is manager.

Rocky Mountain Terror.—Mr. W. J. Menzies of London, owner of the Russell Gulch property, is here. An option has been taken for 30 days by local mining men.

Tramway Company.—Engine No. 2, which has been at the repair shops in Denver, has arrived and the output of the mines touched by the company's lines will be handled better than of late. J. Bostwick, Central City, is manager.

Wautauga.—In the east 5th level a 4-ft. ledge has been opened up with a pay streak 12 in. wide, showing nearly yellow copper and iron, with very good values. The company will sink 100 ft. to cut this ore body. Daily shipments amount to 20 tons to the local mills.

Woodbury Mining Company.—A surface pocket of ore showing free gold has been opened up in the shaft at the Loma and Herbert veins, with very high assay values. The shaft is down 105 ft. St. Joseph, Mo., parties are interested. The manager is J. L. Unangst, Central City.

Lake County.

(From Our Special Correspondent.)

Banker Mining Company.—This big proposition, headed by New York people, is going ahead under Mr. John Guth, Leadville, one of the owners. The shaft is now down 580 ft., and is in white porphyry. It has been going through very fine vein matter. There is but a small flow of water in the bottom, and they are handling the upper flow with ease at the 300-ft. level.

Big Four Mining Company.—Since the return from the East of Manager J. F. Walsh, besides

drifting and opening up the old ore body, the shaft is to go down deeper. The damage caused by the fire some months ago has all been repaired. Shipments now run about 10 to 15 tons of fair grade gold ore per day.

Dolle B.—Manager P. K. Connolly has been putting in machinery to handle the water. It is learned that this is again under control and the mine will soon be shipping. Manager Connolly still persists in making light of his find, but it remains one of the most important finds in this camp since early days.

Gallagher.—This, one of the claims belonging to the Mikado, is successfully operated by Andy Dyatt, a veteran mining man. Mr. Dyatt says he has some important new work on foot, which promises to mean an important consolidation. In the meantime he is developing a fine body of iron sulphides below the 1,100 ft. level, from which he ships about 3,000 tons monthly.

Gold Belt Section.—With the opening of Spring there is renewed activity along the entire line known as the gold belt and within 60 days some very important new work will be under way. Meantime along the Big Evans, on Little Ellen, Printer Boy and the Great Breeze Hill sections the output is being increased, while much new work is being carried on.

M. N.—This fraction adjoining the Glengarry of the Ixex Company, is being operated now by Al Lynch of the Leadville land office, and Dr. J. A. Jeannotte of the Nisi Prius lease. The shaft is down over 300 ft. and may cut Nettle Morgan ore shoot soon. The Glengarry ore shoot will not be cut under 600, and possibly 700 ft.

Pawolos.—Mr. Percy McGeorge is manager for the Philadelphia parties interested. At present, at the 360-ft. level, they are drifting on an iron stringer, carrying gold and silver. This stringer is increasing in value daily and growing larger. No ore has been shipped yet.

Ruby & Colin Campbell.—These mines are the nucleus of the important work to be done in the Weston Pass section as soon as Spring opens. The lead ore body in the Ruby is opening up well. Shipments average 15 to 20 tons daily. James Kavanaugh and John Crowley are at the head of the Ruby, while T. S. Schlessinger, Will Evans and others are pushing work on the Colin Campbell. The shafts lie about 300 ft. apart. The Colin Campbell, at 200 ft., is now passing through fine vein matter and may soon cut the Ruby shoot.

Ixex Mining Company.—On April 1st, Mr. Fred G. Bulkley, a mining man of 20 years' experience in Colorado, will assume active management. Mr. John F. Campion may not retire entirely, but does not desire to put in as much time as formerly at the property. Mr. Bulkley came to Colorado and to Leadville in the early days, and is a half owner of the Penrose. He went to Aspen in 1887, and from then up to 1893 was manager for Mr. Wheeler's properties in that camp. In 1893 he went to Mexico, where he has since been managing the properties of the Guggenheims in Mexico.

San Miguel County.

(From Our Special Correspondent.)

Colorado Gold Mining and Milling Company.—This company, composed of Milwaukee parties with an Eastern office in that city, Peter Barth, president; Richard Seidel, treasurer; William Schultz, secretary, and G. H. Trumble of New-mire, Colo., superintendent, has leased and bonded the Leonore group of three claims, in Bear Creek, Mt. Wilson District, and will work it extensively this season. The property lies just opposite and across the creek from the Silver Pick, and the principal vein is believed to be a continuation of the lead of that property. A 300-ft. cross-cut will be extended until the Leonore vein is cut which, according to surveys, will be within 20 ft. Another tunnel, 200 ft. in length, will also be continued until the Gold Queen vein is intersected, and only about 30 ft. remain to be driven. If at the intersections the veins come up to expectations it is the intention to build a mill on Bear Creek, a short distance below the Silver Pick mill, for the treatment of the product, and connect it with the property by a tramway two miles in length.

Gold Run Placer Mining Company.—This company has been recently organized to work the Gold Run placer, lying about one-half mile above Telluride and immediately below the Smuggler-Union 50-stamp mill at Pandora. It will be operated principally for the tailings that have settled upon it, in places 10 ft. deep, which assay from \$2 to \$14 per ton in gold and silver. A test run of a large quantity of the tailings was made last fall, which demonstrated that if handled on a sufficiently large scale they would pay. It is estimated that there are between 300,000 and 400,000 tons of them on the placer. Colonel George H. Todd of Telluride, general manager, says that preparations are being made for the erection of a plant this spring and summer capable of treating 200 tons daily. He says the plant will comprise four Huntington mills for the purpose of regrounding the tailings, a large number of California canvas-covered tables and several concentrators. There is a small canvas

plant on the property now, but it is not large enough.

Hector Mining Company.—The Cimarron mine, in Marshall Basin, owned by this company, is being worked under lease by F. G. Willson of Telluride, formerly superintendent, who is employing 25 to 30 men, and taking out enough ore to supply 10 stamps of the Cimarron 30-stamp mill. The product runs almost exclusively in gold, and 20 tons are concentrated into one. The crude ore runs from \$10 to \$15 per ton.

Pulaski Mining Company.—The Pulaski group of mines, in Bridal Veil Basin, owned by this company, has been undergoing development by contractors the past winter, as it has been every winter for the past eight years. It is a gold proposition, and will be worked more extensively the coming summer than ever before. A test run of the ore was made last fall, and soon afterwards it was given out that a large stamp mill would this summer be erected in close proximity to the group. George E. Harmon of the Central Music Hall, Chicago, is president and general manager of the company.

San Juan Gold Mining Company.—The Waterloo group, in Bridal Veil Basin, is being developed by this company, which holds a lease and bond on the property. Seven ft. of ore is now shown in the breast of the tunnel run on the vein of the Waterloo, which is in the mountain a distance of 500 ft. Recent assays gave flattering returns in gold. W. S. Buckley of Telluride, Western manager of the company, says a 10-stamp mill will be erected at the property this summer for the treatment of the ore. He estimates there is now enough mineral blocked out and on the dump to keep a 20-stamp mill busy the rest of the year.

Silver King.—Frank and Fred Horton and O. B. Kemp, lessees of this mine, located in Alta Basin, above the Gold King, recently intersected the vein with a cross-cut. Stopping ground is now being blocked out, and shipments will be resumed at an early date. The shipping ore, of which there is from 12 to 18 in., runs from \$75 to \$125 per ton.

IDAHO.

Ada County.

Bedrock Dredging Company.—This company has 250 acres of ground in Boyle's and California Gulches and Wolf and Granite creeks. The property is so located that it cannot be worked by old methods. The company will put in a bucket dredge. The machinery is to arrive at Boise in about a month.

INDIANA.

The Indiana coal operators and miners, after two days' conference, on March 26th signed the scale for the year, beginning April 1st. In the main it was for the Chicago agreement, but smaller considerations in the price for machine mining and yardage, to apply to local conditions, required long consideration. It was agreed that in case of any further difference in local agreements they shall be settled by arbitration without cessation of work.

IOWA.

According to the forthcoming report of the State Geological Survey, the value of the mineral output of the State in 1897 was: Coal, \$5,653,000; clay, \$1,556,000; stone, \$557,000; gypsum (estimated), \$400,000; lead and zinc, \$5,000; iron, \$250. Total, \$8,171,250.

The total coal product was more than 5,275,000 tons. The average price was \$1.12½ per ton; varying from .92c. to \$2. The average number of days worked by the miners was 190. The production and values in the 10 counties was as follows:

	Tons.	Value.
Mahaska	1,885,123	\$1,979,379.15
Appanoose	658,833	744,481.29
Folk	588,140	644,578.20
Monroe	522,135	516,954.15
Boone	261,976	421,766.87
Keokuk	251,842	264,424.10
Wapello	238,960	262,856.00
Jasper	159,951	172,747.08
Webster	150,230	225,810.10
Marion	129,099	117,481.08

The building stone industry is in its infancy, with more than 290 producers. The brick industry has grown enormously the past three years. This is due largely to the use of brick for street paving.

MINNESOTA.

(From Our Special Correspondent.)

Until the actual completion of the new cut-off line of the Duluth & Iron Range road out of the Lake Superior basin, the new track will be used for empty cars. While the grade of the old line permitted but 25 cars to a train, the new road will allow over 40.

The first vessels for ore arrived at Two Harbors March 24th. This is the first year on record in which vessels got in before April 20th. Ten ore trains were put on March 28th, and there are vessels in port to load 20,000 tons. This ore is all from No. 4 stockpile of the Chandler, whence early shipments were necessary. Ore will not be going to docks at Duluth for two weeks yet. The extension there of No. 2 dock for the Duluth,

Missabe & Northern road is about completed, and 400 ore cars for the Missabe road, built at Pullman, are expected to be ready in a month.

Mesabi Range.

(From Our Special Correspondent.)

It is expected that from 1,000 to 1,300 men will be employed about Virginia this year. The Oliver mine will need about 150; Minnesota Iron Company, 250; Commodore, 150; Ohio and explorations, 200, and Franklin from 300 to 600, as it is worked full or not. This will be the best season for Virginia in years.

Biwabik Bessemer Company.—Work on the great stripping contract has begun, two steam shovels of the Drake-Stratton outfit being employed. Four or five shovels will be busy all the season.

Vermilion Range.

(From Our Special Correspondent.)

Chandler Iron Company.—The daily hoist at this mine is 2,600 tons, and the stockpiles now amount to 400,000 tons. More stockpile room is imperatively needed. After the opening of navigation the daily output from underground will be lessened.

Southall Iron Company.—The explorations at this mine may be stopped as a result of troubles into which Mr. Southall has fallen in connection with the Government engineer's office at St. Paul for years.

Zenith Iron Company.—This company has sold its lease of the Zenith mine to the Oliver Mining Company for about \$100,000, it is understood. The lease has yet 10 years to run on 30c. a ton royalty, with a minimum output of 30,000 tons. This makes two mines at Ely the property of the Oliver company, and it is said the company is still after the Pioneer. It is hardly likely that the Oliver company would invest heavily in Ely without assurances that the present rail freight to Two Harbors will be reduced from the present figures, \$1.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The constant rains of the past week made conditions unfavorable for mining, and rendered many roads almost impassable for ore haulers. In spite of bad weather, however, the output was large and would have been larger than that of the preceding week had the weather been more favorable. There was a strong demand for zinc ore and a sharp advance in prices. On Monday there was an advance of \$1, and another advance on Wednesday of 50 cents per ton, and the week closed with the top grade firm at \$25 per ton. Lead ore was steady all the week at \$22 per 1,000 lbs. There is a small surplus of lead ore which is being held for better prices, but there is not a pound of surplus zinc ore on hand. As compared with last week, there was a falling off in the output of 485,210 lbs. of zinc ore, and 327,110 lbs. of lead ore, and the value was less by \$11,435. During the corresponding week last year, zinc ore sold at \$21 per ton and lead ore at \$18.25 per 1,000 lbs. delivered, but the output of zinc ore was less than the past week by 1,119,040 lbs., although the output of lead ore was greater by 563,310 lbs. The value was greater than same week last year by \$17,306. For the corresponding 12 weeks of last year the output of zinc ore was less by 26,442,550 lbs., but lead ore output exceeded that of this year by 1,716,680 lbs.; the value last year was less by \$412,162.

Following are the sales of lead and zinc ores from the different camps in the district for the week ending March 26th: Joplin, zinc, 1,271,050 lbs.; lead, 240,710 lbs.; value, \$20,548. Carterville, zinc, 761,460 lbs.; lead, 156,040 lbs.; value, \$11,773. Duenweg, zinc, 584,100 lbs.; lead, 23,440 lbs.; value, \$6,789. Webb City, zinc, 679,510 lbs.; lead, 25,790 lbs.; value, \$7,902. Oronogo, zinc, 490,800 lbs.; lead, 9,280 lbs.; value, \$6,110. Central City, zinc, 351,550 lbs.; lead, 11,680 lbs.; value, \$4,171. Stott City, zinc, 290,680 lbs.; value, \$3,634. Galena, zinc, 3,150,000 lbs.; lead, 300,000 lbs.; value, \$40,037. Aurora, zinc, 610,000 lbs.; lead, 25,000 lbs.; value, \$5,725. Carthage, zinc, 98,340 lbs.; value, \$1,204. Carl Junction, zinc, 60,580 lbs.; value, \$727. Belleville, zinc, 6,290 lbs.; value, \$75. Greenfield, lead, 25,800 lbs.; value, \$567. District totals for the past week, zinc, 8,354,360 lbs.; lead, 818,250 lbs.; value, \$109,263. District totals for 12 weeks, zinc, 101,238,460 lbs.; lead, 13,859,960 lbs.; value, \$1,351,273.

Albatross.—This mine, two miles north of Alta, now has in operation two large Worthington steam pumps, two steam end pumps, one Hooker pump and two double action force pumps, the whole having a capacity of 360,000 gallons per hour, the largest and most complete plant in Southwest Missouri. The mill can handle 100 tons a day. The shafts are down 215 ft. with good blend below 146 ft. and plenty of mineral in the bottom of each shaft. Capt. S. O. Hemenway is the manager; Frank Rely, superintendent.

Birthday Mining Company.—The company has two lots on Get There lease on which they have built a steam concentrating plant and put in an air compressor to run two air drills.

Grounds & Irwin.—On the lease at Duenweg this last week these parties produced over 500,000 lbs. of zinc ore and made a dollar a minute while their plant was running.

Phoenix Mining Company.—The company has eight lots on the Get There lease at Carterville. It is running its plant double shifts and producing about 40 tons of zinc ore and 30,000 lbs. of lead ore weekly. A large air compressor at present is working four air drills on a large body of lead and zinc ore at 160 ft. in hard ground.

Saint Francois County.

Bonne Terre Prospecting Company.—This company has been organized at St. Louis to prospect near Bonne Terre. The stockholders are D. R. Francis, W. H. Lee, C. F. Gauss, Henry C. Scott, James Green, G. W. Chadbourne, Samuel Fordyce, Samuel H. West, J. H. Reifsnnyder, William Senter, L. M. Rumsey, W. B. Dean, W. G. Simmons, D. P. Doak, Edwin Harrison, J. E. McKeighan and Hugh A. Crawford. The first board is composed of Messrs. Chadbourne, Green, West, A. L. Shapleigh, Crawford, Francis, Gauss, Reifsnnyder, McKeighan, Doak and Harrison. The company is capitalized at \$31,000, but will increase to \$1,000,000 when ready to establish its plant. Its tract adjoins that of the St. Joe Lead Company, which has a plant costing \$500,000.

MONTANA.

Flathead County.

Snow Shoe.—This mine at Libby is reported sold to an English corporation for \$200,000. A larger concentrator is projected near the mouth of Snow Shoe Creek, to be connected with the mine by a tramway.

Jefferson County.

New Elkhorn Mining Company.—The February report of Manager W. S. Kelley states that 1,643 cars of ore were hoisted during the month, or 929 tons. The mill treated 965 tons of an average assay value of 42.2 ozs., the per cent. saved being 89.6. The number of bars produced was 28, being 38,001 ozs. silver and 24 ozs. gold. The total receipts were \$26,483, and the current expenses \$25,036, leaving a profit of \$1,447.

American Development and Mining Company.—This company, now in the hands of F. W. Bacon, receiver, owns Golden Sunlight and Ohio groups of claims in Jefferson County, and the Gibbonsville and Bull of the Woods group near Gibbonsville, Idaho. The Gibbonsville group is equipped with machinery and well developed. The total indebtedness of the company is given at \$270,000, mostly for notes held in Boston.

Madison County.

Hidden Treasure.—J. D. Kelleher and Amos Bingham have sold this property, near Norris, to Boston (Mass.) parties for a reported price of \$25,000. A double compartment shaft is down 350 ft. on an incline of about 65 degrees, and two levels, the first 100 ft. and the second 250 ft. from the surface, have been driven a distance of 200 ft. each. The vein is 2 to 3½ ft. thick. Ore is gold, a smelting proposition. It is said D. F. Hawley of Boulder will be manager.

Silver Bow County.

Anaconda.—Work has begun on another addition to the big electrolytic refinery of this company. It will be 70x250 ft. and contain 200 copper tanks, increasing the output one-sixth. It may enable the company to refine the entire output of the smelters at Anaconda, and do away with shipments to Baltimore.

NEBRASKA.

Scott's Bluff County.

Gold Placers.—There is some excitement over reported finds of gold in the gravel banks and sand dunes, extending a long distance east and west to Cheyenne County and the Wyoming line. The gold dust is found in a black sand. No estimate of the real value of the deposit has been made.

NEVADA.

Elko County.

(From Our Special Correspondent.)

Dexter.—Mines located at Tuscarora. In issue of March 12th of "Engineering and Mining Journal," some inaccuracies occurred in regard to operations of this company. Amount of mortgage on property is only \$50,000, not \$100,000, as stated, but at time of writing total indebtedness was \$100,000, in round numbers. Of this sum it is expected to wipe out \$30,000 by assessment of 15c. per share levied March 2d, and delinquent April 4th, leaving \$20,000 carried by notes of company but not secured by realty, and \$50,000 as mortgage on property. In addition, management has increased debt \$5,000 by purchase of conflicting interests, involving some 6,000 tons of valuable tailings, the lot having a possible recovery of \$60,000. This leaves a total indebtedness, after the present assessment is paid and applied, of \$75,000. Four Kinkadee mills are treating 16 tons and saving \$300 per day; cyanide plant treating tailings from these mills handles 35 tons and recovers \$300 per day; new stamp mill treats 40 tons per day, saving 50 per cent. of values, or about \$240, bringing total recovery up to about

\$25,000 per month, with operating expenses standing about \$9,000. Management expects to reduce the latter after preliminary work of breaking in new stamp mill is disposed of. Present power system delivers about 45 H. P. to mill, but an adjacent stream with a possible 300-ft. head and 120 cu. ft. flow will be drawn on for additional power, the only expenditure necessary being purchase of a generator. Tailings from stamp mill are being saved and will ultimately be cyanided when capacity of plant is increased. Mr. John G. Gray of the legal firm of Booth, Lee & Gray of Salt Lake, Utah, and Mr. L. L. Archer, both directors of company, are on the ground dividing the duties and responsibilities of superintendent.

Storey County—Comstock Lode.

Sierra Nevada.—The last official report states that in the Riley tunnel the raise, started at a point 750 ft. in from the tunnel mouth, was extended 14 ft. during the week; total height, 30 ft.; top in low-grade quartz. Have extracted 65 mining carloads of ore from said raise during the week. The average assays of car samples show a value of \$40 in gold and 21 ozs. in silver per ton.

NEW MEXICO.

Bernalillo County.

Cochiti District.—W. J. Cartan of the Cochiti Gold Mining Company, has taken under lease and bond the Good Hope, the Hopewell, the Allerton, the Black Girl, the Posey and the Last Chance No. 2. Mr. Cartan agreed to spend \$28,000 in the development of these properties prior to January, 1899.

NORTH CAROLINA.

Macon County.

Detroit Mica Mining Company.—This Michigan mining company has acquired 425 acres of land, on which is said to be a very large bed of mica. The factory for handling the raw material will be in Detroit, and the company expects to begin work at the mine by May 1st. H. M. McCormick is president of the company.

PENNSYLVANIA.

Anthracite Coal.

A large force of men is at work in the foundation for the Midvalley breaker and shaft near Shermokin. It is to be one of the most complete collieries in the anthracite region, and will furnish employment to 1,200 men and boys.

Bituminous Coal.

Germania.—This mine on the Wheeling division of the Baltimore & Ohio, and owned by Henry Floersheim of Allegheny, has been sold to J. E. Boyle, owner of the Hackett, an adjoining property. The land embraces 114 acres and the price is said to have been \$46,000.

Slate.

(From Our Special Correspondent.)

It is reported that a company of London capitalists has purchased a large tract of land in the vicinity of Carlisle, from which it expects to get good material for roofing purposes. The entire product will be shipped to London. Years ago there was considerable prospecting in this territory, and although large beds of slate were found, no attempt was made at development.

Bangor Royal Slate Company.—The personal property and effects of the company were sold at constable's sale March 26th to various purchasers for \$895. The sale was the outcome of suits for wages brought by employees. The company was composed of several New Yorkers, who operated the quarry on a lease. Not finding the business as profitable as they anticipated, they took this method of discontinuing it. The quarry will be leased to other parties.

Carbon Slate Company.—This company, at Slatington, last week made a shipment of 86 cars of roofing slate to New York for the export trade. The same company has several other large orders to fill.

Delta.—It is stated that the slate rubbish, the accumulation of nearly 100 years at these quarries, is to be utilized in the manufacture of articles of commercial value. The experiment will be watched with interest by slate people generally.

Pennsylvania Hard Vein Company.—This company, whose quarries are located at Edelman's, last week doubled its force for a large increase in production this year.

Wind Gap Slate Company.—Parties are arranging to lease the company's plant, to manufacture mantel stock, blackboards, vaults and refrigerators. This company has next to the largest slate mill in Pennsylvania.

SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

Box Elder District.—Active work continues on this property, near Custer Park. It is worked by Messrs. Campbell of Lead, and Abbott, Palmer, Corson and others of Sioux Falls, S. D. There is an indication of free-milling ore instead of silicious ore, as was expected.

Drummer Group.—A Milwaukee syndicate owns this property. The prospecting is about finished, giving a thorough knowledge of the formations. It is expected that a 10-stamp mill will be erected and a cyanide plant.

Lawrence County.

(From Our Special Correspondent.)

Challenge Mining Company.—Last week 23,000 shares of delinquent stock were sold for the amount of assessment and cost. Active work will begin on the Challenge mine, in Spruce Gulch and the Noble Grand, in Two Bit.

Decorah.—This mine is shipping seven carloads of ore weekly to Omaha smelters. A tunnel has been driven from the Alaska mine on quartzite. The ore shoot is medium size and assays well.

Deadwood & Delaware Smelting Company.—The insurance adjusters allow the company \$75,000 of the \$100,000 insurance. Work has begun on the new smelter on the same old site. The works will have about the same capacity, and use the same method as before. Everything is to be made fireproof. The company will resume buying ore in a short time.

Detroit & Deadwood.—This is a new company, organized last week at Detroit. President, Malcolm McCullam; vice-president, Albert Peck; secretary, Robert H. Murray; treasurer, Frank C. Andrews; general manager, John Walker, all of Chicago. The directors are the same gentlemen with Homer Warren and Daniel C. Baker. The company voted \$25,000 to sink shafts and buy machinery. The property is in Two Bit.

Golden Crest.—The new hoist is now working, and the shaft is down 145 ft. The officers of the company are: President and treasurer, James Braburn, Chicago; vice-president and secretary, Edin Henderson; general manager, Frank Weber, Deadwood.

Hercules Company.—After a shut-down of several weeks, because of water, this company, at Two Bit, has resumed work. The shaft is down 90 ft. Power drills will be used.

Little Blue.—It is reported that \$50,000 has been taken out in the last six months. It has been developed in a year, and is now a heavy producer. The ore is found on the south end of the claim, where the quartz is about 75 ft. thick. A tunnel from the northwest is used as a working tunnel for several adjoining claimants, and in time most of the Flat Iron District will be operated from it.

St. Elmo.—The new 850-lb. 10-stamp mill on this property in the Southern Hills is running regularly. It is equipped with jigs and concentrators, and handles about 35 tons a day. Ore is being stoped on the 100-ft. level.

TENNESSEE.

Phosphates.

Work in the mines about Mt. Pleasant, it is reported, has been unusually active during the past month. All companies have run with a full force, and the shipment has been the largest yet. Several new companies are expected to begin work soon.

Brown Phosphates.—A large deposit along Indian Creek, in Hickman County, has been proved by pits for a distance of 2 miles. It is one of the sub-Devonian beds, and is from 3 or 4 to 8 ft. thick in places. The deposit in one place is described as made up of a layer 18 in. thick of hard blue rock, going 60 per cent. bone phosphate; a hard gray rock 18 in. thick, going 75 per cent. lime phosphate, and below that a soft brown rock 12 in. thick that averages 76 per cent. lime phosphate. The brown rock may be mined with a pick and shovel; the blue and gray require blasting in places. The importance of the deposit is said to be due to the fine mechanical condition of the acid phosphate made from a mixture of brown, blue and gray rock.

TEXAS.

Petroleum.

Rod Oliver Well No. 2, in East Corsicana, proves to be a good producer. The tank has a capacity of 125 bbls., and the well has a daily flow of about 60 bbls. Tom Wood is manager.

There appears to be renewed activity, especially in the undeveloped regions. In the Corsicana oil field 80 wells are producing, 25 wells are drilling and 13 rigs are about ready. The Lone Star Oil Company, composed of Pittsburgh and Franklin, Pa., capitalists, has completed a third well and has a duster.

Central Texas Oil and Development Company.—Incorporation papers were recently filed by this company, of Dallas, with a capital stock of \$10,000 and the following officers: President, W. E. Sullivan; vice-president, T. J. Gay; treasurer, R. W. Bogy; secretary and general manager, W. P. Garber. Development work will begin at once.

UTAH.

(From Our Special Correspondent.)

Shipments from Salt Lake.—Forwarded in week of March 26th: Silver-lead bullion, 35 cars, or

1,272,632 lbs.; copper bullion, 1 car, or 41,137 lbs.; silver-lead ores, 49 cars, or 1,724,730 lbs.

International Mining Congress.—The official call for the meeting of the Congress in Salt Lake City is for July 6th, 7th, 8th and 9th. A fund is being raised for the necessary expenses, printing of proceedings, etc., and W. S. McCornick of the banking house of McCornick & Co., is treasurer for the Finance Committee. A suitable structure in which to make a mineral display has been tendered, and work of collecting minerals is now under way. All communications regarding the Congress should be addressed to W. D. Johnson, chairman Executive Committee, Salt Lake City.

Rare Elements.—Mr. William Bedding, representative of Krupp Brothers of Essen, Germany, spent several days in Utah this week, superficially inquiring into deposits of uranium and other rare elements in this field, and departed for Arizona until after the disappearance of snow in this region. In the Tintic District, Juab County, and also in the iron belt of Iron County, uranium, molybdenum and other rare elements are supposed to exist, but so far nothing has been done in the line of intelligent investigation. On his departure, Mr. Bedding left a representative in this field to look around.

Beaver County.

(From Our Special Correspondent.)

Amelia Gold and Silver Mining Company.—Incorporated March 16th, 1898. Principal office, Salt Lake City, and annual meeting third Thursday in March. Capitalization, 200,000 shares of the par value of 10c. each. Officers: J. H. Dupaix, president; R. E. Miller, vice-president; Max E. Smith, treasurer; Sam Williamson, secretary; Henry P. Burns and Francis Walkingshaw, additional directors. Company owns four lode claims in the Star Mining District.

Box Elder County.

(From Our Special Correspondent.)

Century.—Milling stuff is now being taken from vein, and carries higher values than dump material fed in first month. Two hundred and fifty tons per month are being treated, and gold bar marketed in March went .972 fine. Capacity of mill will be increased this year.

Carbon County.

(From Our Special Correspondent.)

Rocky Mountain Asphalt Company.—Incorporated March 16th. Principal office, Salt Lake City, and annual meeting on second Monday in March. Capitalization, 500,000 shares of the par value of 50 cents. Officers: A. E. Hyde, president; J. W. Fox, vice-president; J. M. Stouff, treasurer; Hyrum Beck, secretary; F. Y. Taylor, director. Company acquires 16 asphalt claims in Whittemore Canyon, Carbon County.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—Forwarded in week of March 26th: Bullion-Beck, 20 cars ore; Gemini, 10 cars ore; Centennial Eureka, 4 cars ore; Uncle Sam and Humbug, 10 cars ore; Mammoth, 6 cars ore, 2 cars bullion; Grand Central, 6 cars ore; Swansea, 5 cars ore; Treasure Hill, 3 cars ore; Dragon Iron Mine, 14 cars ore; Eureka Hill, 20 cars concentrates; Sioux Mill, 2 cars concentrates, 1 bar bullion.

Ajax.—The periodical disagreements of principal stockholders has broken out in an application for a receiver, Samuel McIntyre, owner of 115,000 shares, being plaintiff. Mines are in fine condition, though present output is small.

Galena.—Mines isolated at Fish Springs. An important strike was made on 300 ft. level, showing 3 ft. of ore carrying 40.5 lead and 280 oz. silver. A new 60-H. P. hoist and compressor is being installed, but is not yet in commission, and until it is, no shipments will be made.

Grand Central.—Management has about decided to sink a new shaft on the Victoria claim, which is on the Eureka side of the mountain, the present hoist being on the Mammoth side. Arrangements are being made with the Teluride Power Transmission Company for electric power for hoist, power drills, etc., and Rio Grande Western Railway will put in a switch to the works, thereby dispensing with the present long wagon haul. Shipments from the mines amount to about 40 tons of high-grade gold ore per day.

Hercules.—Prospecting has been going on from the 400 level of Ajax, which is equivalent to the 600 of Hercules, and about 50 ft. from west side line of the Hercules the vein was cut this week. As far as explored the vein is 7 ft. wide and contains several stringers of high grade copper-gold ore.

Mammoth.—Contract for new pump to increase capacity of pipe line from Cherry Creek to Mammoth, 22 miles, was awarded Monday to the Fred M. Prescott Steam Pump Company of Milwaukee. Pump will weigh 6,200 lbs. and will work under a vertical lift of 500 ft. in 14,000 ft. of line, forcing 800 gallons per minute. It is referred to as a Prescott duplex triple expansion pumping engine, has two 11½-in. H. P. cylinders,

two 18-in. intermediate and two 30-in. L. P., with 9½-in. plungers and 24 in. stroke. Pump is to be delivered 90 days after date of contract.

Mammoth-Grand Central Apex Question.—Mammoth is preparing maps from recent survey, preliminary to filing suit for injunction on account of claim that apex of Grand Central ore chute is on Mammoth ground.

Treasure Hill.—Management is shipping iron ore from recent disclosure, smelters desiring the material for flux on account of its excess iron, in addition to 15 oz. silver and \$1.60 gold.

Salt Lake County.

(From Our Special Correspondent.)

Dipper.—This, a variable gold proposition, with occasional high values, is situated at mouth of Little Cottonwood Canyon, 12 miles from Salt Lake City. J. M. Davis has commenced sinking a new shaft and reports good values in a small streak.

Germania Smelter Fire.—At 9.30 a. m., March 25th, fire broke out in north end of smelter, damage amounting to about \$5,000, and two out of seven stacks being rendered unserviceable. All other stacks were thrown out temporarily by destruction of the connections, but in a few hours these were again at work. The two stacks destroyed, together with that portion of the building, will be immediately rebuilt.

Julia Dean.—A shipment of 46 tons on Salt Lake market this week netted \$112 per ton, and management has another lot of same grade ready to load. Mine is a recent discovery in Bingham.

Last Chance.—New concentrator has about passed experimental period, treating 110 tons per day and turning out 60 per cent. lead concentrates. In addition to the Hodge jigs, a special feature of this plant, two Willey tables are being put in.

Niagara.—Drift on new ore chute on 350 level has been pushed 120 ft. to east and exposes a solid breast 14 ft. wide of lead and iron sulphides carrying silver. Shipments are 40 tons per day.

Old Jordan & Galena.—Grading for the cyanide adjunct to the concentrator was interrupted by weather conditions. All contracts for machinery and tanks are closed.

San Juan County.

(From Our Special Correspondent.)

La Sal Mountains.—Information is to the effect that snow is still too deep to admit of prospecting, mountains having an altitude of 10,000 to 11,000 ft., and not till April 15th can there be much of a rush. The nearest point of approach is either Cisco or Thompson's on the line of the Rio Grande Western Railway, the distance from either station being about 40 miles, with the preference in favor of Cisco. The railway is prepared to build a branch into the region as soon as developments warrant it, and Cisco will be selected as the point for the reason that it is soon to become a mail route, a daily stage and mail service into the Miner's Basin having been arranged for to go into effect July 1st. An idea of the values in this region is furnished from some reports made last fall by competent and conservative men. The M. I. F. lode has 12 in. ore carrying \$179 gold; Skylark, 8 to 10 in. with \$200 gold; the Golden Sceptre, \$160 gold and 35 per cent. to 75 per cent. copper. Much ore above 30 per cent. copper is found in large veins which are so exposed that work of mining will be like quarrying.

San Juan River Placer Mining and Power Company.—Incorporated March 12th. Principal office, Bluff City, San Juan County, and annual meeting to be held first Monday in September. Capitalization, 1,000,000 shares of the par of \$1. Officers: Alonzo P. Adams, Adelbert L. Raplee, Edmond H. Ryan, all of San Juan County, Utah, and Edward G. Cox and Joseph B. Killip of Albany County, New York. Closer designation is not furnished in articles. Company owns places, ground and water rights along the San Juan River.

Tooele County.

(From Our Special Correspondent.)

Daisy.—A West Dip mine in Mercur region. Grade is being made for erection of cyanide plant of 100 tons capacity, crushing machinery being already on ground.

Golden Gate.—While the big mill has been in partial operation for some two weeks, the ores have not yet reached the roasters, and it may be two weeks yet before the mill is working up to its capacity.

Golden Gate Extension.—Shaft, which is down 110 ft., and in which gold values of \$4.50 have been found, is to be pushed to greater depth at once, and development of ground prosecuted. Property has Golden Gate and Cannon mines as adjoining neighbors.

Sacramento.—Capacity of mill is being increased by addition of a No. 3 Gates crusher and 8 leaching tanks, mill buildings being enlarged proportionately. A roaster for calcining of talcy and semi-base ores is among the improvements, and electricity may be decided upon for

power in place of steam. At mine the caving system is being adopted, a surface cut on vein offering excellent opportunities for the method, and management believes handling and treatment of ores will be reduced to \$1 per ton.

VERMONT.

Slate.

(From Our Special Correspondent.)

American Slate Mart and Wharf Company.—Samuel Keat, manager of this company, who has his office at Pen Argyl, Pa., has shipped 10 carloads of Vermont unfading green to England.

WEST VIRGINIA.

Chief Mine Inspector James W. Paul has made his annual report to Governor G. W. Atkinson. The number of tons (2,240 lbs.) pick-mined coal from the commercial mines for the year is 10,971,482, against 11,937,468 in 1896. The number of tons machine-mined coal is 600,418 for the year. Total number of tons of coal from commercial mines for the year, 11,571,900; for 1896, 11,937,468—a decrease of 365,568.

The total value of coal at the mines for the year was \$8,229,198; for 1896, \$8,783,476—a decrease of \$554,278. The total value of coke at the ovens, \$1,718,121 for 1897, and \$2,152,832 for 1896—a decrease of \$434,711. Number of coke employees, 2,036; for 1896, 2,156—a decrease of 120. Total number of men employed at commercial mines and ovens, 21,442; for 1896, 24,227—a decrease of 2,805. Number of men killed, 62; in 1896, 65.

Petroleum.

The greater part of the new oil production for March in Wetzel County will come from the deep sand territory on Campbells run, southwest of the Whisky Run pool, in Ritchie County. The Mountain State Gas Company has drilled in its test well in the Daniel G. Payne farm and got a good producer, one-half mile in advance of developments.

WYOMING.

The following official statistics of the mineral production of Wyoming in 1897 have been issued: Coal, 2,744,960 tons, value, \$3,431,200; coke 23,800 tons, value, \$47,600; decomposed granite (Sherman gravel), 304,936 tons, value, \$152,467.50; iron ore, 10,700 tons, value, \$64,320; plaster, 3,100 tons, value, \$36,600; petroleum, 30,000 barrels (estimated), value, \$270,000; clay, 150 tons, value, \$910; gold, \$37,000.

Albany County.

(From Our Special Correspondent.)

Decomposed Granite.—The great quarries at Sherman will resume work on April 12th. Two large steam shovels will be put in. When the conditions are best these shovels can load 100 cars per day. The product is not only used by railroads for ballast, but a prominent street in Denver is to be paved with this new material.

Carbon County.

(From Our Special Correspondent.)

Chatterton & Kirst.—It has been reported that this property has been purchased by a French company for the sum of \$50,000. The new company claims that it will put in a concentrating plant and do a large amount of development this season.

Rip Van Winkle.—The owners of this claim, at Cooper Hill, have found several feet of decomposed ore that assays from \$4 to \$7 in gold.

Converse County.

(From Our Special Correspondent.)

Douglas Oil Field.—While drilling for oil recently the driller encountered an artesian flow of water at 600 ft. that rose 16 ft. above the surface. The water is considered almost as valuable as an oil well, since it is in a good farming district without water.

Natrona County.

(From Our Special Correspondent.)

Pennsylvania Oil Company.—Among the improvements recently made by this company is an arrangement for shipping their oil in tank cars in place of barrels. The first tank left Casper only a few days ago for the South.

FOREIGN MINING NEWS.

AUSTRALASIA.

Western Australia.

The monthly return of the West Australian Chamber of Mines for February shows that during that month the cabled crushings of the English companies working in Westralia, or companies in which English investors are interested, amounted to 42,819 oz., of which 38,466 oz. were obtained from milling and smelting, 4,133 oz. from tailings, and 220 oz. from concentrates. The average of the gold recovered was a little over 1.05 oz. per ton, comparing with very nearly double that average, 2.05 oz. in the corresponding month of last year, when the productions of the English companies was 24,561 oz. from 11,967 tons of ore. For the whole of the colony the amount of gold entered for export in February was 53,739 oz., valued at £204,208, contrasting with 32,526 oz., valued at £123,599, in the corresponding month of last year. For the

two months of the current year, January and February, the aggregate returns have reached 149,134 oz., valued at £559,111, in contrast with 72,913 oz., valued at £277,068, for the first two months of 1897. The latest advices from Westralia show that great excitement prevails in some of the districts, owing to the filibustering expeditions which have been organized in search of alluvial gold, and it is feared that if prompt action be not taken by the Government to protect the rights of leaseholders, a great amount of harm will be done to the permanent interests of the colony. Rushes of men have taken place upon several of the properties, and although the sensational finds reported do not appear to exist in fact, the process of pegging out alluvial claims on quartz-mining claims is proceeding vigorously, in some instances, in defiance of legal injunctions and the imprisonment of some of the diggers. It seems that the original object and intention of Section 36 of the act which deals with alluvial claims, was to authorize the alluvial men, such as "dry-blowers," to work the loose surface deposits, the section providing for the entry of any miner upon any lease "to within 50 ft. of any reef situated thereon, for the purpose of searching for and obtaining alluvial gold." As a temporary measure, the Government have decided to limit the search for alluvial to a depth not to exceed 10 ft.; but it is to be hoped that in its next session the Westralian Parliament will legislate more effectively in meeting the difficulties which have arisen owing to the discoveries of deep alluvial.

CANADA.

British Columbia.—West Kootenay District.
(From Our Special Correspondent.)

Ore Production.—The quantity of ore produced in this district from January 1st to March 24th, 1898, amounted to 27,000 tons, valued at about \$2,750,000.

The Rossland mines shipped from January 1st to March 24th, 17,500 tons of ore.

Dundee Gold Mining Company.—At the annual stockholders' meeting in Rossland, the treasurer's report showed a balance of \$19,504. The report of Superintendent Charles Parker showed the main shaft to be 250 ft. deep. The drift from this level was in 55 ft., with the breast in ore. The management intends to put in at once a concentrating plant with a daily capacity of 50 tons. At present 16 men are employed. About 500 tons of concentrating ore are on the dump. The value is given at \$34 per ton. The newly elected officers are: Charles Dundee, president; W. A. Galleher, vice-president. The directors chosen were Ernest Kennedy, Donald Kennedy, J. L. Parker, C. F. P. Conybeare and Robert Scott.

Le Roi.—Foreman Tregear, at the suggestion of Provincial Inspector Macdonald, has adopted a series of rules to give as much protection as possible to the lives of the employees.

Sunset No. 2.—The shaft has reached 210 ft. or 110 ft. below the level of the tunnel. A drift is being run eastward from the bottom.

Ontario.

Professor De Kalb of the School of Mining, Kingston, has handed to the Bureau of Mines his preliminary report of the tests made of the corundum ores of North Hastings.

"The tests which have so far been made," he says, "are merely sufficient to indicate that successful concentration of the ore is feasible on a large scale." With the aid of additional machinery which will soon be erected in the laboratory of the School of Mining, he hoped that an exhaustive investigation of the problem of economical milling of corundum would be carried out, after which it is his purpose to submit a complete report. A sample of 100 lbs. was crushed in a jar crusher and then in rolls until the entire product would pass a No. 4 mesh screen. This sample was then screened successively through Nos. 8, 10, 12, 16, 20, 24, 30, 40, 50, 60, 70, 80, 90, 100, 120 and 150 mesh screens, and the resultant sized products were weighed, and each lot tested to ascertain the percentage of corundum and of magnetite which it contained. The quantity of corundum is relatively greater in the coarser and finer grades, while the magnetite reaches its maximum in the grades of medium fineness. This Professor De Kalb regards as a fortunate circumstance, since it admits of a better separation of the corundum, and also will yield grades of concentrates rich in magnetite which may be economically separated as a by-product.

Professor De Kalb adduced from his experiments that the ore contained 27.94 per cent. of corundum and 4.64 per cent. of magnetite.

The experiments in practical concentration were incomplete, but enough was done to demonstrate that this work can be done economically. As an example of this the Professor admitted the following data: "Forty-five pounds of the ore, between Nos. 12 and 16 mesh, were treated in a vertical hydraulic separator. The concentrates weighed 5.06 lbs., and contained 71.56 per cent. corundum and 22 per cent. magnetite. After the elimination of the magnetite by a magnet the resultant concentrates contained 91.74 per cent. corundum. Another lot of 27 lbs. of ore

between Nos. 30 and 40 mesh, treated in like manner, yielded 2.56 lbs. concentrates, containing 54.28 per cent. corundum and 42 per cent. magnetite. After the elimination of the magnetite the concentrates contained 93.92 per cent. corundum.

"The commercial standard of purity for corundum concentrates," says Professor De Kalb, "requires only 80 per cent. corundum, so that it appears that this limit can be easily passed. Such highly concentrated corundum will command a correspondingly higher price in the market. Many additional tests have been made, but remain unfinished. I may, however, venture the opinion from the work done that 80 per cent. of all the corundum in the ore can be obtained in the form of concentrates averaging 90 per cent. corundum."

Yukon District.

Four men who arrived at Vancouver on March 25th direct from Dawson, report that they made the trip to coast in 29 days, undergoing terrible hardships. At the diggings along Hunker, Eldorado, Bonanza and Bear Creek the smoke from the fires thawing the ground is so thick that it is almost suffocating. The winter output is going to be very large. Good order is maintained by the mounted police.

SOUTH AMERICA.

Bolivia.

Royal Silver Mines of Potosi.—Mr. Robert Peele informs us that he has received from Potosi the following statement of the operation of these mines for the year 1897. There were 4,860 tons of ore treated by amalgamation, the average assay being 363 oz. silver per ton; 164 tons of ore were exported, the average assay being 720 oz. per ton. The total product was 601,715 oz. silver, of which 96,247 oz. was from export ore and 505,468 oz. from amalgamating ore. The average loss in roasting was 7.4%; in amalgamating by "tina" process, 7.2%; total loss in treatment, 14.6%. The loss of quicksilver was 1 oz. per mark (7.39 oz.) of silver. The export ore contained, in addition to the silver, from 10% to 12% of copper.

COAL TRADE REVIEW.

Anthracite.

New York, April 1.

The month just drawing to a close probably comes near being the most unsatisfactory March on record for the seaboard anthracite trade. In spite of colliers working three days a week and other restrictions on productions, the supply exceeds demand, and with the steady coming of warmer weather, consumption must fall off still more. There seems little likelihood of any great improvement in the situation for some time. Shipments from the lake ports will reduce somewhat the stocks on hand and so ease the prevailing congestion. The stormy weather hindered work at some collieries during the week, but the movement of coal West was retarded by freshets. The season has continued mild and helped to keep down demand. The amount of coal going forward on some large roads at present is almost insignificant. The general statement of the New York sales agents is that nobody is buying. There is no indication that a spring circular altering quotations will be issued and business will probably continue on the nominal basis of \$4 f. o. b. New York for stove. As the demand is so very small there is no probability that cut prices would make much difference in sales, consequently large producers hold to quotations.

Bituminous.

The Eastern seaboard soft coal trade is active, with fair tonnages going forward. These would have been larger but for floods, which crippled some main line roads badly. Indeed it is known that one of the roads was placed in such condition with coal freights banked up that orders were given through the transportation superintendent not to allow further shipments until passage was made for the blocked cars; this even in a district where producers had vessels at the shipping ports waiting for coal not yet mined. The captains of the vessels were of course heard from and the only thing was to explain the situation. It is not believed any demurrages were incurred. The captains naturally did not care to get in bad odor with the roads that were responsible. The agitation among the miners in certain districts continues, and it is not quite clear as yet what the outcome is to be. Still, with prices at their present level, it is plain that the margin that will permit operators to pay more to the miners is very small indeed.

There are yet a few contracts being closed at figures which fully equal those taken some time ago. The far East is taking considerable coal and is at present the most active consuming territory. There is an effort to get limit prices, but this is being fought. Sound business shows a strong demand and the consumers objected to the interruption caused by floods very strongly. New York harbor trade is quiet, though some coal is being shipped. We hear of one or two

small cargoes for South America. All rail trade is rather light. The transportation from mines to tide was affected by floods, but coal is now coming through on time. Car supply is now up to the demand. In the coastwise vessel market fogs in the East have delayed boats and disappointed shippers awaiting arrivals. A number of vessels are on the way and near ports. These will be heard from in the next few days with ordinary weather. The market remains strong and freights are steady as follows from Philadelphia; Boston, Salem and Portsmouth, 75@80c.; New Haven and Bridgeport, 65c.; Providence, New Bedford and the Sound, 65@70c.; Wareham, 75@80c.; Newburyport, 90@85c.; Portsmouth and Bath, 80c.; Dover, \$1 and towage; Saco, 90c. and towage; with 5c. and 10c. above for further lower ports.

Birmingham, Ala.

March 29.

(From Our Special Correspondent.)

There is no abatement of the hard work at the coal mines in this district. There is not an idle mine in the district and there are orders being received which will take hard work to fill at the stipulated time. There is much coal going to the coast in the lower part of the State and to Pensacola, Fla., for export purposes. The railroads last week reported a scarcity of gondolas to handle the product, while a couple of trains were handled in special quick time in order that the fuel might reach the destination in time to complete a quick contract. There will be more coal mined at Pratt mines this month than ever before in the history of the place. At Blocton, Belle Ellen, Blue Creek, Horse Creek, Carbon Hill, Coalburg, Brookside, Pratt Mines, Blossburg, North Birmingham, Corona, Oakman, Patton and the many other places, reports are made that the mines are working steadily and every bit of coal being brought out is finding a ready sale. Many inquiries have been made in the district as to what the operators could do in case an extra demand should be made on them for the product. Replies have been given that an increased demand could be met.

A tow of coal, carrying about 12,000 tons of Walker County coal, will be loaded this week at Greenville, Miss., in barges there now for the Louisiana markets. This will be the largest tow of Alabama coal ever sent down the Mississippi. As has been stated before, the barge line is operated by the Southern Railway, which carries the coal from the mines to Greenville, Miss., and the coal operators of the western part of the State. A tow of about 5,000 tons carried down three or four weeks back met with a ready sale.

It is stated that the Mobile & Ohio Railroad, which recently constructed a branch line from Columbus, Miss., to Montgomery, Ala., passing through some heretofore undeveloped country in this State, will build the road on to Brookwood, where are located some good coal mines. Besides this, it is stated, the company will back parties who are contemplating opening other coal mines along the road.

Chicago.

March 30.

(From Our Special Correspondent.)

Anthracite Coal continues in very moderate demand in a wholesale way, single carloads being the largest orders coming in. There does not appear to be any immediate increased demand for hard coal, for weather conditions at this time of the year cannot aid very materially in increasing consumption. There was never more soft coal used in place of hard coal than at the present time, and consequently the better grades of bituminous coal are in very much better demand than ever before. Prices are weak, and concessions are being made right along to gather in business. Circular prices are: Grate \$5, egg, stove and chestnut \$5.25.

Bituminous Coal is in very plentiful supply, but in comparatively small demand. The manufacturing interests are buying only in a small way, and the quarterly being bought by the railroads is rather smaller than expected. The better grades of soft coal used in a domestic way are in considerable demand, and consequently shipments of that article are larger than usual. There is much competition for business, and the consumer continues to have the advantages of very low prices. The tracks and yards throughout Chicago are pretty well filled with soft coal, and the question of demurrage will shortly be on.

Pittsburg.

March 31.

(From Our Special Correspondent.)

Coal.—The rivers are in good boating order; in fact, we have had too much water, navigation for several days being suspended, resulting in great destruction of property and loss of life. In the Pittsburg district the condition of the coal trade is a confused one, because of the uncertainty which prevails as to the rate of wages to be paid after April 1st. It was supposed that everything was agreed to at the Chicago conference, so far as the rates to be paid in this and the competing districts were concerned. Since that time there seems to have been a difference of opinion as to what really was agreed upon as a rate for mining in Pittsburg, in Ohio and in other districts.

At Charleston, W. Va., a strike is ordered

April 1st. Orders have been issued to Kanawha and New River Mines not to meet the committee of the United Mine Workers to arbitrate. An order has been issued for a general strike on Friday.

The Coal Producers Association has decided to ask lake shippers 30c. a ton above the mining price this season. This will make the price 96c. a ton.

Connellsville Coke.—The advent of Spring finds the coke trade growing stronger, with prospects of continued activity during the Spring and Summer months. The demand is strong, and prices are keeping up with but little danger of a decrease. The continued activity in the pig iron market gives assurance of a lively Spring trade in coke. More ovens have been fired up, adding to the active list, which, for the last few months, has been unprecedentedly large, showing an increase of 456 tons, but demand went up almost 2,000 tons. The increased shipment was principally to eastern points; while there was a decided falling off to points west of Pittsburgh. Summary of the region shows 15,134 ovens in blast, with 3,626 ovens idle. Production of the region for the week, 157,001 tons, an increase of 456 tons. In the running order of the ovens in blast, 6,756 ovens made six days; 8,272 ovens five days; 56 ovens made two days; 50 ovens, the Somet-Solvey by-product plants, made seven days, an average of 5.43 days, as against 5.32 days the previous week. Shipments for the week, 8,572 cars. To Pittsburgh, 2,872 cars; points west, 4,300 cars; sent east, 1,400 cars. Total, 8,572 cars.

SLATE TRADE REVIEW.

New York, April 1.

As in other callings, the war agitation is unfavorably influencing the slate trade, and is particularly felt in the market for structural material. Architects and contractors say the expected building impetus in different parts of the country is affected by this cause and that they look for a change for the better soon after it is positively known whether it is to be war or peace, as the tension of uncertainty prevents going ahead with contemplated new structures. The specifications call for a large percentage of slate in the buildings for the near future, more so than formerly. Meanwhile this branch of the trade is nearly stagnant, or but few mills are working at more than half their capacity. But little is doing in blackboards and prices are unchanged. Roofing slates would form no exception to the rule were it not for the brisk export demand which shows every evidence of keeping the quarries busy throughout the season. In this respect the latest piece of good news is that large foreign orders are being booked for Sea Green, which will clean out all the large sizes on the banks and call for more. Of course the home demand will remain quiet till there is more doing in building.

Here are quoted the latest list prices per square for No. 1 slates of standard brands, f. o. b. at quarries:

Prices of Roofing Slate.

Size, inches.	Monson, or Brownville.	Bangor.	Bangor Ribbon.	Albion, or Jackson Bangor.	Lehigh.	Peach Bottom.	Sea Green.	Unfading Green.	Red.
21 x 14...	6.10	3.50	3.00	3.25	3.50	4.85	2.90	4.50	.....
24 x 12...	6.60	3.50	3.00	3.25	3.50	5.10	2.90	4.50	.....
22 x 12...	6.60	3.60	3.00	3.25	3.50	5.00	2.95	4.50	.....
22 x 11...	6.50	3.60	3.10	3.25	3.75	5.00	2.95	4.50	.....
20 x 12...	6.90	3.60	3.10	3.25	3.75	5.00	2.95	.....	.....
20 x 10...	6.80	4.25	3.35	3.50	3.80	5.10	3.05	4.80	10.50
18 x 12...	6.80	3.60	.....	3.25	.....	5.00	2.95	.....	.....
18 x 10...	7.20	4.25	3.35	3.50	3.80	5.10	2.95	4.80	10.50
18 x 9...	7.10	4.40	3.35	3.50	3.80	5.10	2.95	5.00	10.50
16 x 12...	6.80	3.60	.....	3.25	.....	.....	2.90	.....	.....
16 x 10...	7.10	4.00	3.25	3.50	3.80	5.00	2.90	.....	10.50
16 x 9...	7.00	4.25	.....	3.50	3.80	5.10	2.85	5.00	10.50
16 x 8...	7.20	4.25	3.25	3.50	3.80	5.10	2.85	5.00	10.50
14 x 10...	6.60	3.90	3.25	3.25	3.75	.....	2.85	4.80	10.50
14 x 8...	6.50	3.75	3.25	3.25	3.40	4.85	2.45	.....	10.50
14 x 7...	.....	3.90	3.25	3.25	3.40	4.85	2.15	.....	10.50
12 x 8...	.....	3.25	.....	3.25	3.25	4.60	.....	4.00	9.00
12 x 7...	.....	3.25	.....	3.25	3.25	4.60	.....	4.00	9.00
12 x 6...	.....	3.25	.....	3.25	3.25	4.60	1.95	4.00	8.50

(A square of slate is 190 sq. ft. as laid on the roof.)

In Brownville and Monson delivery quotations can be had somewhat lower than above, which is also true of other brands. No. 1 Bangor are 50c. extra when full 3-16-in. thick, and \$1 more when guaranteed 1/4-in. thick. Purple sizes run 24 by 12 to 18 by 3, and vary from \$3.75 to \$4 per square. Variegated and mottled are the cheapest roofing slates, at \$1.75@2.25 per square.

IRON MARKET REVIEW.

NEW YORK, April 1, 1898.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending				From Jan., '97.	From Jan., '98.
	Apr. 2, 1897.		Apr. 1, 1898.			
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Anthracite..	31	18,600	27	18,550	247,286	237,050
Coke..	108	147,500	150	210,850	1,865,414	2,693,050
Charcoal....	18	5,550	16	3,950	75,086	71,850
Totals.....	157	171,650	193	235,350	2,187,786	3,001,950

The volume of trade continues large, as nearly all the mills and furnaces have heavy orders on hand, which will keep them busy for several months to come. Production continues very large in almost all directions. There is a perceptible halt in new work, however, and the uncertain condition of business is felt in this direction. A number of new contracts which were under negotiation, have been suspended for the present. Other enterprises, which had not yet reached the contract stage, are held back and nothing will be done until matters are more settled. In this condition of affairs it is hardly to be expected that any improvement in prices could be noted, and there have been no changes worth mentioning.

The Western Wire Combination is still going on with its work, and one or two additional plants have been taken in. The details of the combination are being arranged and completed rapidly.

The members of the Bessemer pig combination, which includes a number of furnaces in Western Pennsylvania and Ohio, met in Cleveland last week and appointed a committee to regulate the production of iron. The meeting was a private one.

Much interest is felt in a large order for rails from the Russian Government. It is for the Siberian Railroad, deliveries to be made at the Pacific end of the line. It is understood that American, German and Belgian mills have put in bids.

New York.

April 1.

There is nothing of special note about the iron market this week. The general feeling of uncertainty regarding the outcome of our relations with Spain continues to check buying, and business goes on in a small way.

In the export trade we note large orders for mining machinery placed during the past two weeks for early shipments to Algoa Bay. Among orders for steel rails were 500 tons for Australia, 1,000 tons for Mexico, 390 tons for Central America, and it is said 5,000 tons for Japan. Inquiries from Japan on architectural iron, iron bridge material and some castings have been received, with shipments of bridge material, while Mexico has taken mining machinery, machine tools, pipe and fittings. Shipments of manufactured material to Germany continue large, while inquiries have come for \$50,000 worth of electrical material.

Pig Iron.—There is no life to the market and transactions during the week have been small. Nothing definite is known here about the rumored meeting of the foundry iron men. Some holders of warrants have made forced sales, but there has been no general unloading, and the market is pretty steady. We quote: Northern brands, tidewater delivery, No. 1 X foundry, \$11.25@11.75; No. 2X foundry, \$10.75@11.25; No. 2 plain, \$10.25@10.75; gray forge, \$10.25@10.50. Southern brands, New York delivery, No. 1 foundry, \$10.75@11.25; No. 2 foundry, \$10.25@10.75; No. 1 soft, \$10.75@11.25; No. 2 soft, \$10.25@10.75; No. 3, \$10@10.50; basic, \$10.50@11.

Cast Iron Pipe.—The Newark, N. J., order for 2,000 tons went to the Warren Foundry & Machine Company. The price is said to be low. The local market is decidedly dull.

Steel Billets and Rods.—Billets remain firm at \$15.50, while rods are a little weaker and are quoted at \$22.25 and \$22.50 f. o. b. mills.

Plates.—Small orders make up the volume of trade, which continues very fair. No large contracts are in sight; a liberal discount is made on large orders. Steel plates tidewater delivery are quoted 1.25@1.30c. for No. 10 to 3-16, and 1.15@1.20c. for heavier. Shell is 1.25@1.30c.; flange, 1.35@1.40c. Universals are 1.15@1.20c.; 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 Material.—The market is in an unsettled state. Builders are waiting for a clearer outlook. Quotations remain for large lots on dock: Beams, 1.30@1.35c.; angles, 1.15@1.20c.; tees, 1.35@1.40c.; channels, 1.30@1.35c.

Steel Rails and Rail Fastenings.—Business remains fair, but no transactions of magnitude. Standard sections are again quoted at \$18; girder rails, \$23 up, according to specifications. Light rails are quoted: 12-lb., \$24; 16-lb., \$22; 20-lb., \$22; \$25-lb., \$20; 30-lb., \$20; 35-lb., \$20, up to standard, \$19; with the usual 10 per cent. advance for small orders. All f. o. b. mills. Track fastenings are quoted: Angle bars, 1.15c.;

spikes, 1.45@1.55c.; bolts, 1.70@1.80c.; fish plates, 1.20c.

Wrought Iron Pipe.—The local market is very quiet. Discounts as high as seven 10s are being given from the base discounts for desirable orders.

Birmingham, Ala. March 29.

(From Our Special Correspondent.)

The pig iron market in this district seems to be holding its own. The production has been reduced a little by the Colbert Iron Company's furnace at Sheffield, Ala., going out of blast, but there has been no change in the quantity of iron shipped. There are some good inquiries being received and the demand is keeping up. There is no falling off in the export trade.

The Colbert Iron Company, at Sheffield, has blown out its furnace in consequence of legal difficulties. The Colbert Company leased the old Hattie Ensley Furnace, which now belongs to J. P. Withrow, or rather to the Pittsburgh Engineering Works of Pittsburgh, Pa. The company manufactured about 160 tons of iron daily and found a ready sale for the product. The indebtedness for which an attachment was run, according to Mr. Moore, was all local and comparatively small. While it cannot be stated that the war talk has boomed the iron business as far as the furnaces are concerned, it must be admitted that it has assisted the foundry trade. In making a denial that any options were held on the furnace plant, Mr. A. W. Wills, president of the Sheffield Coal, Iron and Railroad Company of Sheffield, Ala., stated that a ready sale was had for all the iron made by his company, and intimated that it was loaded almost as quickly as it cooled. Major Wills disclaims the rumor, and denies the statements made therein.

The finished iron market is keeping up with the move that it took on several weeks ago. Both of the rolling mills here and at Gate City are working hard and are shipping their product just as quickly as it is turned out. There is a little shortness of men reported and a number of experienced hands from Ohio and other mill States were brought down recently. This scarcity of labor is occasioned by men returning to their old homes, leaving the mills here. In the Birmingham mill the puddling departments can hardly keep enough muck iron in hand. The statement is made that never before were the mills working so hard as now and the indications are that the work will keep up until late in the summer.

The Southern Bridge Company, workers of structural iron, is stated to have received a request to bid on a lot of material to be used in fortifying Southern coast cities recently. This company has been busy ever since it started in business, building bridges for railroads and doing much other like work.

The pipe works continue to turn out large quantities of pipe. The Anniston Pipe Works are rushing the construction on their plant and while it is admitted that the contract will not be completed at the stipulated time, it will be rushed so that at the earliest possible moment the work cut short by the fire several months ago can be resumed. The company has been given every assurance that many orders will be sent their way. At Bessemer the pipe company has been receiving handsome orders and the indications are very bright. A new gas company in Birmingham will mean the purchase of a lot of pipe right here at home. The old gas company recently purchased a large lot of the product and are replacing their worn out mains with new piping. The pipe factories are proving good local customers for the furnaces.

There are no changes in the pig iron quotations. No. 1 Foundry is still quoted at \$7.50 per ton; No. 2 Foundry at \$7.25; No. 3 Foundry at \$7. No. 1 soft is bringing \$7.50; No. 2 soft, \$7.25; Gray Forge, \$6.50.

Buffalo. March 30.

Special Report of Rogers, Brown & Co.

Sales have been light during the past week, and although shipments on existing contracts have kept right up to the satisfactory basis noted for some time past, yet the continued uncertainty of the outcome of the Cuban question seems to be having some effect on sales of any magnitude. With only a few exceptions the orders placed this week have been for immediate requirements. We quote below for cash 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 slivery No. 1, \$14; Southern soft No. 1, \$11.75; Southern soft No. 2, \$11.35; Lake Superior charcoal, \$11.50.

Cincinnati. March 30.

(From Our Special Correspondent.)

The market for pig iron has been quiet during the past week, with sales chiefly of small lots. A large pipe foundry is understood to be on the market for 10,000 tons of Nos. 3 and 4 foundry, and there is some competition for the order. The Southern furnaces are generally holding to their recent agreement to main-

tain prices, and the agents here have refused to cut quotations or to take orders below the agreed rates. A little iron has been sold below these, but it was chiefly on storage yard warrants.

Although machine shops, agricultural works and car works in this district are generally busy, they are well supplied with stock, and there is little new buying. The chief demand has been for Lake Superior charcoal iron for malleable castings. An attempt was lately made to put up prices of that class of iron \$1.50 per ton, but this advance has hardly been realized as yet.

There is no special change to note as to prices in this market, and they remain nominally as for the past three months. Quotations are f. o. b. cars Cincinnati: Southern coke No. 1, \$9.75@10; No. 2, \$9.25@9.50; No. 3, \$9@9.25; No. 1 soft, \$9.50@9.75; No. 2, \$9.25@9.50; gray forge and mottled coke, \$8.50@8.75; Ohio silvery No. 1, \$12@12.25; No. 2, \$11.50@12; Lake Superior coke No. 1, \$11@11.50; No. 2, \$10.50@11; standard Southern car wheel, \$14.25@15; Lake Superior car wheel and malleable, \$14.50@15.25. The flood in the lower sections of the city all along its limits on the Ohio River has for the time being closed many manufactories and hundreds of men are out of employment, making it very quiet. It will be some days before they start up again.

Cleveland. March 30.

(From Our Special Correspondent.)

Iron Ore.—The market has been fairly active during the past week. A liberal addition has been made to the season business reported a week ago, and the indications are that considerable business will be done during the next few weeks. The transactions of the past week have been mainly of the better or standard grades of Bessemer ores. Enough non-Bessemer and under-standard ores have been sold, however, to warrant quotations. It is reported that some of the ores lying on the docks of Lake Erie have been overlooked by buyers, but it is expected that these will be cleared up before navigation opens. The indications are that navigation will open much earlier this year than for some years past. On March 28th the Straits of Mackinac were reported clear of ice. The same report was made on April 7th in 1897, and on April 16th in 1896. On account of the probable early opening of navigation, some progress has been made in fixing ore rates for the year. Vessels have been secured for season charters at the following rates: Escanaba, 45c.; Marquette, 55c., and the head of Lake Superior, 60c.

Following are the prices at which ore has been sold: Specular and magnetic, Bessemer quality, \$3.25@3.65; specular and magnetic ore, non-Bessemer quality, \$2.50@2.75; hematite ores, Bessemer quality, \$2.55@3.25; hematite ores, non-Bessemer quality, \$2.10@2.25.

Pig Iron.—Foundry metal has moved rather actively during the past week, but practically no sales have been reported in the other varieties. The Bessemer market is strong, notwithstanding the fact that the transactions in that variety have been few and small. The indications are that the present quotations will prevail until something at present unforeseen by the dealers occurs. The quotations follow: Lake Superior charcoal, \$11.75; Bessemer, \$10.25@11; No. 1 foundry, \$10.65@10.75; No. 2, \$10.25@10.50; No. 1 Ohio Scotch, \$10.75@11; No. 2, \$10.25@10.50; gray forge, \$9.50@9.75.

Pittsbur g. March 31.

(From Our Special Correspondent.)

There is little change in the situation as regards prices or demand; the outlook continues favorable all along the line. To use a worn-out expression, the iron and steel trade is "booming." It would be difficult to find an establishment whose order books are not filled with orders. Many of them will keep employed for many months to come. There is a good deal of inquiry for material, but bidding for the orders is so close that prices seem to have no chance of working upward. Buyers are also influenced by the evident anxiety of sellers; otherwise it is probable that larger lots would be taken, as consumption continues quite up to the highest mark, with no prospect of any recession. Inquiries from abroad are coming in for material on a large scale, and there is reason to believe that important contracts will be closed in the near future.

Structural material appears to be wanted in Europe, one contract for 50,000 tons having been closed in Paris within the past few days. This order, however, was taken by mills on the Continent, and further sales are likely to be made by American houses, negotiations for which are now going on.

Wire Nails.—The demand for nails is improving, and the sales have been more liberal. Prices are \$1.40.

Ferro-manganese is firm; the largest sale of the year, 1,000 tons, was made at \$47.50 delivered at buyers' mill.

Wrought Iron and Steel Pipe.—Sales of several

good-sized blocks were made. Prices firm, tending upward.

Finished Material.—The demand was principally for limited amounts. Prices are weak, but no lower.

Sheet Bars in fair demand. Prices unchanged. Steel Rails in fair demand at unchanged prices.

Latest.—Business continues to move along steadily, showing but little change. The principal demand was for Bessemer with liberal sales at prices current in last report. Pittsburg, \$10.50@10.65; Valley Bessemer, \$9.75@10, according to time of delivery. Mill iron showed limited sales at \$9.25. Pittsburg Steel Billets not so firm, sales ranging from \$15.25@15.75, the latter for late delivery. Sheet Bars in steady demand, prices \$17.65@18. Ferro-manganese not so firm; steel wire rods weaker. Other articles show no change.

COKE, SMELTED LAKE AND NATIVE ORE.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of coke and ore with their respective prices.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of blooms, billets, and slabs.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of steel wire rods.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of sheet bars.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of skelp iron.

SKELP STEEL.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of skelp steel.

FERRO MANGANESE.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of ferro manganese.

BLOOMS, BILLETS, BAR ENDS.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of blooms, billets, and bar ends.

CHARCOAL.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of charcoal.

MUCK BAR.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of muck bar.

OLD IRON AND STEEL RAILS.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of old iron and steel rails.

SCRAP MATERIAL.

Table with 3 columns: Tons, Cash, and Price. Lists various grades of scrap material.

Philadelphia. April 1.

Pig Iron.—The movement of forge iron at interior points on a rather large scale has been the enlivening feature of the week. Agents who have forge iron to sell have taken fresh hope, and are on the warpath, but the abundant offerings have not helped buyers to hurry in their orders. Standard mill is still \$10.25, but the larger sales have been on the common and medium grades at \$9.75@10. Naturally some increased interest was developed on foundry irons, but not to the consummation of much business as yet. No. 1 X foundry is still \$11.75@12; No. 2 X foundry, \$10.75@11; No. 2 plain, \$10.50. Charcoal now has attracted increased attention, and business is reported daily at \$13@13.50, lake, \$16 for Southern. Bessemer is \$12; basic, \$10.

Billets.—The predicted activity in billets is behind time. The prevailing quotation is \$17.50. Interviews with large buyers show most of them, while not in pressing need for new deliveries, having stuff due on old contracts, are disposed to talk business, but makers are holding firmly to their prices.

Bars.—Some good business has been done in high-grade bars at about 1.30c. Soft steel bars have also been sold at 1.10c. Refined bars continue rather dull at 1.10@1.15c.; common, 1.05@1.10c.

Sheets.—The competition of the past few days has assumed an aggravated form, without resulting up to date in the placing of large orders. Buyers are ready to place orders, but have an idea that further concessions are to be had by holding back, but manufacturers do not share this notion.

Merchant Steel.—There is a heavy consumption of most kinds and grades of merchant steel throughout the East, and considerable business is going to mills.

Pipes and Tubes.—The situation is improving, because of the opening of summer work.

Plate and Tank.—The usual vigorous conditions continue. Much business is coming in. New work is opening up. Small shop requirements are heavy. Bridge builders have at last begun to put in their heavy orders. With all these strong features prices hug minimum. Tank is 1.15c.; universals, 1.20c.; filarge, 1.25c.; fire-box, 1.50@2.50. Fire-box orders are assuming favorable proportions.

Structural Material.—Rumors prevail concerning large export orders, but no definite information can be had. All mills are busy, and there is more work now in sight than for years, but,

as in the case of plates, prices do not improve. Angles, 1.20c.; beams and channels, 1.30c.

Steel Rails.—The big Russian order is talked about, and a rumor was circulated to-day that the contract was divided among three mills, but it cannot be verified. Quotations, \$18.

Old Rails.—Old rails continue quiet at \$10.50 for steel and \$12.50 for iron.

Scrap.—A larger distribution of scrap has set in. Prices are firm. Holders of desirable scrap will not let it go for less than their price. Choice railroad is \$12.50; car wheels, \$10.50; machinery cast, \$9.50; light scrap, \$8.

Cartagena, Spain. March 10.

(Special Report of Barrington & Holt.)

Iron and Manganiferous Ores.—The port has been very active this month, 11 cargoes of dry iron ore and 15 of manganiferous ores having been shipped. The large stocks of ore that were brought down to the wharves during the summer months have been all shipped some time since and merchants have now to depend solely on their deposits in the Sierra, but the railway company's stock is quite inadequate for the traffic required and shippers are turning their attention to bringing down ore direct from mines to shipping wharves by carts in order to evade to some extent the delay in getting cargoes loaded; the great difficulty, however, being in obtaining sufficient carts. A company formed in Glasgow for working mines at Penas Blancas, some sierras between this and Mazarron, and called the Subida Iron Ore Company, has now started cutting ore and the mineral for the first cargoes is now being brought to Cartagena; it is of the Campanil class and very pure.

We quote for iron ores: Ordinary 50 per cent. Portman, 6s.@6s. 6d.; special low phosphorus, 6s. 4d.@6s. 8d.; extra, 7s.@7s. 6d.; specular ore, 6 per cent iron, 9s. 6d.; magnetic ore, 10s. 9d. For manganiferous ores we quote: No. 1, 20 per cent iron and 20 per cent manganese, 15s.; No. 1 B, 25 per cent iron and 17 per cent manganese, 12s.; No. 2, 30 per cent iron and 15 per cent manganese, 10s. 6d.; No. 3, 35 per cent iron and 13 per cent manganese, 9s. 4d. All quotations are f. o. b. at shipping port.

Other Minerals.—Other exports noted are 2,550 tons blends to Antwerp, 150 tons iron pyrites to Marseilles, 200 tons sulphur to London.

METAL MARKET.

NEW YORK, April 1, 1898.

Gold and Silver.

Price of Silver per Ounce Troy.

Table showing price of silver per ounce troy from March to April 1, 1898. Columns include March, St. Ex., London, N. Y. Cts., Value of Sil. in \$., Mch and April, St. Ex., London, N. Y. Cts., Value of Sil. in \$.

The market shows no new features. The price seems to be maintained, owing to the absorption of all silver offering at current rates. In fact, at the close to-day inquiry for spot metal seems to be in advance of supplies.

The United States Assay Office in New York reports the total receipts of silver at 51,000 oz. for the week.

Gold and Silver Exports and Imports

At all United States ports, February, 1898, and years from January 1st, 1898 and 1897:

Table showing Gold and Silver Exports and Imports at all United States ports from January 1st, 1898 and 1897. Columns include Coin and Bullion, Exports, Imports, In ores, Exports, Imports, Total excess, Exp. or Imp.

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

Gold and Silver Exports and Imports, New York

For the week ending April 1st, 1898, and for years from January 1st, 1898, 1897, 1896, 1895.

Table showing Gold and Silver Exports and Imports in New York for the week ending April 1st, 1898, and for years from January 1st, 1898, 1897, 1896, 1895. Columns include Period, Gold, Silver, Total Excess, Exp. or Imp.

The gold exported for the week, this year, went to the West Indies and South America. The silver went chiefly to London. Of the gold

imported, \$3,458,549 came from England, \$6,662,408 from Germany, \$1,221,500 from France, and the remainder, together with the silver, came from Central and South America and the West Indies.

There also passed through the custom house \$118,256 foreign gold and silver in transit to Bermuda.

Average Monthly Prices of Silver.

In New York and London, per ounce Troy, from January 1st, 1898, and for the years 1897 and 1896.

Month.	1898.		1897.		1896.	
	Lon-don. Pence.	New York. Cents.	Lon-don. Pence.	New York. Cents.	Lon-don. Pence.	New York. Cents.
January...	25.29	56.77	29.74	64.79	30.69	67.13
February...	25.89	56.07	29.68	64.67	31.01	67.67
March...	25.47	54.90	28.96	63.06	31.34	68.40
April...	27.86	60.42	28.36	61.85	31.10	67.92
May...	27.58	60.10	27.86	60.42	31.08	67.88
June...	27.36	59.61	27.58	60.10	31.46	68.69
July...	24.93	54.19	27.36	59.61	31.45	68.75
August...	25.66	55.24	24.93	54.19	30.93	67.34
September...	26.77	57.93	25.66	55.24	30.19	65.68
October...	26.87	57.93	26.77	57.93	29.68	65.05
November...	26.83	58.01	26.87	57.93	29.46	64.98
December...	26.83	58.01	26.83	58.01	29.70	65.24
Year...	27.55	59.79	27.55	59.79	30.67	67.06

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

Financial Notes of the Week

Business continues in an excited and unsettled state, owing to the political complications and war rumors. All new enterprises are practically stopped, while banks and merchants are strengthening their position as far as possible to provide for all contingencies.

Gold imports continue to be reported on a large scale, as the loans which have been standing abroad are being called in. The total engagements of gold for import up to date, including the gold coming from Australia, amount to more than \$41,000,000, and it is quite possible that \$30,000,000 more may be taken.

The depression in business, caused by the war scare, has been shown by a heavy drop in the amount of the bank clearings reported. How long the uncertainty will continue no one can tell.

The statement of the United States Treasury on Thursday, March 31st, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	March 31.	March 24.	Changes
Gold	\$173,696,703	\$171,367,761	I. \$2,328,942
Silver	9,498,662	10,735,094	D. 1,237,434
Legal tenders.....	41,277,632	39,361,027	I. 1,916,605
Treasury notes, &c.....	3,843,785	4,071,172	D. 227,387
Totals	\$228,306,842	\$226,036,066	I. \$2,270,776

Treasury deposits with national banks amounted to \$31,281,277, a decrease of \$140,706 during the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending March 19th gives the following totals, comparisons being made with the corresponding weeks in 1897 and 1896:

	1896.	1897.	1898.
Loans and discounts..	\$164,396,400	\$504,478,200	\$600,168,400
Deposits	482,215,500	571,723,000	685,650,500
Circulation	14,216,000	15,826,800	13,861,400
Reserve:			
Specie	58,931,900	85,996,900	136,289,600
Legal tenders.....	79,769,400	106,823,600	68,974,500
Total reserve	\$138,701,300	\$191,820,500	\$205,264,100
Legal requirement ..	120,553,875	142,940,750	171,412,625
Surplus reserve	\$18,147,425	48,885,750	\$33,851,475

Changes for the week this year were increases of \$7,013,700 in specie and \$5,791,425 in surplus reserve; decreases of \$7,110,500 in loans, \$1,854,000 in legal tenders, \$2,526,900 in deposits and \$3,400 in circulation.

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

Banks.	Gold	Silver.	Gold.	Silver.
N. Y. Assoc.	\$85,998,900	.....	\$136,289,600	.....
England	196,712,275	.....	162,320,240	.....
France	383,679,288	\$245,366,250	372,475,300	\$243,619,500
Germany	209,070,000	.....	206,225,000	.....
Austro-Hun	160,652,500	63,135,500	152,442,000	52,345,000
Spain	42,640,000	53,735,000	47,890,000	54,400,000
Belgium	20,990,000	.....	20,930,000	.....
Netherl'ds ..	13,160,000	34,715,000	13,755,000	34,425,000
Italy	61,845,000	11,725,000	60,225,000	9,225,000
Russia	449,105,000	.....	576,830,000	.....

The returns for the Associated Banks of New York are of date March 26th; the Bank of Italy, February 28th; the Bank of Russia, March 1st-13th; the banks of Spain and the Netherlands, March 5th; the banks of England and France,

March 31st, and the others are of date of March 27th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England and the Bank of Russia report gold only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year up to March 10th are reported by Messrs. Pixley & Abell's circular as below:

	1897.	1898.	Changes.
India	£987,500	£1,582,250	I. £594,750
China	44,512	194,096	I. 149,584
The Straits	41,193	94,784	I. 53,591
Totals	£1,073,205	£1,871,130	I. £797,925

Arrivals for the week this year were £129,000 from New York and £23,000 from the West Indies, or £152,000 in all. The shipments were £224,100 to Bombay, £37,500 to Calcutta, and £25,000 to Hong Kong; a total of £286,600.

Indian exchange has been a little lower, partly on account of free buying of silver for Indian shipment. The average rate has been 15.84d. per rupee. The Indian Government, it is stated, has postponed for the present the adoption of any plan for currency reform.

Imports of specie at San Francisco for the two months ending February 28th were:

	Coin.	Bullion.	Total.
Gold.....	\$3,107,565	\$670,665	\$3,778,230
Silver	57,588	181,968	239,556
Totals	\$3,165,153	\$852,633	\$4,017,786

The imports this year were from the following countries: Mexico, \$295,109; British Columbia, \$45,946; Australia, \$3,532,404; Hawaiian Islands, \$130,000; Central America, \$6,500; Japan, \$6,500.

The German Imperial Mint in 1897 reports the coinage of 126,662,420 marks in gold, 124,823,340 marks in 20-mark pieces, and 1,839,080 marks in 10-mark pieces. In nickel the total was 1,479,454 marks in 10-pfennig and 5-pfennig pieces, and in copper 206,324 marks in 1-pfennig pieces. No silver was coined during the year.

The foreign merchandise trade of Great Britain is given by the Board of Trade reports as below for the two months ending February 28th:

	1897.	1898.
Imports	£77,020,832	£75,700,165
Exports	46,705,101	46,867,571

Excess, imports

The increase in imports was 1.7 per cent; in exports, 0.4 per cent. The movement of gold and silver for the two months was as follows:

	Imports.	Exports.	Excess.
Gold:			
1898.....	£4,817,181	£5,348,281	Exp. £531,100
1897.....	3,713,178	2,784,420	Imp. 928,758
Silver:			
1898.....	2,341,184	2,829,687	Exp. 488,503
1897.....	2,451,960	2,290,635	Imp. 161,345

Of the silver this year £1,543,313 was from the United States.

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars.....	\$.45	\$.46
Peruvian soles and Chilean pesos.....	.39 1/4	.41
Victoria sovereigns.....	4.84	4.87
Twenty francs.....	3.84	3.87
Twenty marks.....	4.74	4.74
Spanish 25 pesetas.....	1.78	1.80

Other Metals.

The annual election of officers of the New York Metal Exchange was held March 30th, resulting in the unanimous choice of the following: President, Robert M. Thompson of Orford Copper Company; vice president, Adolph Lewisohn of Lewisohn Bros.; treasurer, Charles S. Trench of Charles S. Trench & Co. Members of the Board of Managers, B. Hochschild of American Metal Co.; Clifford B. Hendricks of Hendricks Bros., L. Nachmann, George Nissen, Julius H. Lobdell of J. H. Lobdell & Co., G. H. Hull of American Pig Iron Storage Warrant Company, G. E. Behr of Behr & Steiner, W. H. Wells of Robert Crooks & Co. Arbitration Committee, Edmund Hendricks of Hendricks Bros., S. A. Jennings of Bruce & Cook, J. Mitchell Clarke of Naylor & Co., William J. Ives, Fred Steiner of Behr & Steiner, Inspectors of Election, C. H. Bolles, Jr., John Dardon, J. J. Archer.

Copper.—In spite of the political situation, daily becoming more threatening, the market has ruled exceedingly firm, and there is very little copper available. Lake copper has been reported sold for May-June delivery at 12c., but for such small parcels of spot as were left over a small premium could be obtained. For other brands the demand has been somewhat irregular, buyers holding off, but quotations are again somewhat firmer, and we have to quote electrolytic copper in cakes, wirebars or ingots 11 1/2 @ 11 1/4 c.; cathodes, 11 1/4 @ 11 1/2 c., with casting copper nominal at 11 1/4 c. Should the political horizon become clearer, there is little doubt that prices will show a further advance. Hardly any business for ex-

port has been done of late; nevertheless, shipments for Europe continue large.

The foreign market opened about the same as the close of the preceding week, but gradually a much better demand became noticeable, and prices close at the best, viz.: £50 17s. 6d. @ £51 for spot and £51 5s. @ £51 7s. 6d. three months prompt. In refined and manufactured a large business was done at very full prices, and we quote: English tough, £54 @ £54 10s.; best selected, £55 @ £55 10s.; strong sheets, £62; India sheets, £58 @ £59; yellow metal, 5-1-16d.

The statistical position for the second half of March again shows a slight improvement of 100 tons.

Tin.—Prices have ruled very firm, and there is a good consumptive demand. Business would have been even larger if the trade had been able to more readily make up their minds to pay the higher prices asked. We quote for spot and April delivery 14.35 @ 14.40c., and futures, 14.40 @ 14.45c.

The English market was very steady, and although opening a trifle lower, quickly regained the advance, closing at £65 5s. @ £65 7s. 6d. for spot and £65 15s. @ £65 17s. 6d. for three months.

Shipments from the East have been large, but deliveries in Europe and America have been such that there is again a decrease in the visible supplies of 1,200 tons for the month of March. These favorable statistics cannot fail to influence values.

Exports of tin from the Straits Settlements for the month of January were, in long tons:

	1896.	1897.	1898.
To United States.....	1,902	625	2,002
To Europe.....	2,385	2,286	2,775
To India and China.....	599	161	213
Totals	4,886	3,072	4,990

The increase shown this year was 1,918 tons

Imports and Exports of Metals.

Port.	Week, Mar. 24.		Year, 1898.	
	Expts.	Impts.	Expts.	Impts.
*New York.				
Aluminum, boxes.....	.....	.....	144	.....
Antimony ore, short tons.....	.....	20	.....	432
" regulus, casks.....	.....	.....	.....	73
Brass, old, short tons.....	7	.....	.....	.....
Chrome ore.....	.....	.....	.....	.....
Copper, fine, long tons.....	\$1,503	.....	12,319	997
" ore.....	.....	.....	.....	.....
" matte.....	890	.....	2,397	345
" sulphate.....	35	.....	35	.....
" Wire.....	408	.....	2,279	.....
Ferro-chrome.....	.....	.....	.....	163
Ferro-mangan, sc.....	133	.....	634	.....
Ferro-silicon.....	.....	.....	.....	5
Iron ore.....	.....	.....	1,166	37
" old.....	400	.....	1,544	.....
" pipe.....	.....	.....	.....	6,196
" pig, bar, rod.....	.....	.....	.....	.....
Lead, antimonial.....	8915	\$5,620	14,554	26,448
" bullion.....	.....	.....	.....	370
Lead ore.....	.....	.....	.....	4,074
Manganese ore.....	.....	.....	.....	12
Nails.....	.....	10	596	20
Nickel.....	.....	.....	1,505	.....
Rails, old.....	.....	.....	.....	647
Spiegeleisen.....	.....	.....	2,022	3,426
Steel billets, rods.....	.....	492	.....	4,355
Tin.....	.....	8250	.....	.....
" dross.....	.....	.....	20	.....
" and black plates, boxes.....	.....	37,790	.....	432,896
Wire.....	.....	.....	122	.....
Zinc.....	.....	.....	1,644	100
" dross.....	9	.....	482	55
" ores.....	.....	.....	2,363	.....
†Baltimore.				
Aluminum.....	.....	.....	21,875	.....
Brass scrap.....	.....	.....	.....	2,400
Chrome ore.....	.....	.....	.....	.....
Copper, fine.....	1,430	.....	8,809	.....
" matte.....	.....	.....	.....	.....
" sulphate.....	251	.....	1,108	.....
Ferro-manganese.....	99	40	375	240
Ferro-silicon.....	.....	.....	.....	100
Iron ore.....	.....	6,594	.....	82,237
" pig, bar, etc.....	12	.....	857	.....
" pipe.....	138	.....	1,644	.....
Lead.....	.....	.....	.....	10
Manganese ore.....	.....	.....	512	4,950
Nails.....	.....	.....	.....	.....
Rails, steel.....	.....	.....	3,852	.....
Silicon.....	.....	.....	.....	10
Spiegeleisen.....	.....	.....	16	604
Steel.....	803	.....	4,771	.....
" wire.....	.....	702	2,700	1,771
Tin.....	.....	.....	.....	1,000
" and black plates, boxes.....	.....	1,000	.....	7,282
Wire.....	.....	.....	.....	441
Zinc.....	.....	.....	.....	.....
" dross.....	35	.....	99	.....
*Philadelphia.				
Antimony.....	.....	.....	.....	300
Chrome ore.....	.....	300	.....	.....
Copper ore.....	.....	.....	.....	18,482
Ferro-manganese.....	.....	.....	.....	138
Iron ore.....	.....	3,000	.....	23,702
" pig.....	.....	.....	.....	150
" pyrites.....	.....	.....	.....	.....
Manganese ore.....	.....	.....	.....	10,000
Spiegeleisen.....	.....	.....	.....	100
Tin.....	.....	50	.....	75
" and black plates, boxes.....	.....	.....	.....	6,486

*New York Metal Exchange returns. †From our Special Correspondent. §Week ending March 31.

over January, 1897, and 104 tons, as compared with 1896.

Lead.—With very little disposition on the part of buyers to enter the market, prices again gave way somewhat, and business has been done at 3.67½c. for both spot and April shipment, at which price there are still sellers. The western markets also have been rather dull and depressed, and in St. Louis 3.52½c. has been accepted for refined and 3.50c. for common.

The London market shows a slight improvement, Spanish lead being quoted £12 13s. 9d. @ £12 15s., and English lead 5s. higher.

Arrivals of Mexican lead at New York in March are reported at 5,400 long tons. Exports of Mexican lead in bond were 6,740 tons, all to Europe. The stock in bond at New York and near-by ports on March 31st was 2,523 long tons.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: "Lead continues very dull and prices are unchanged. Spot lead is selling lightly at 3.52½c. and forward delivery at 3.55c. Neither buyers nor sellers are making any strenuous efforts to trade, all awaiting developments."

Spelter.—There has again been a very large demand, especially for galvanizing purposes, and good business has been doing, both in spot and futures at 4.02½@4.05c. St. Louis, and 4.25@4.30c. New York. Spot spelter is rather scarce.

The foreign market remains strong, good ordinaries in London being quoted £18 10s., and specials 2s. 6d. more.

Antimony.—No change. Cookson's, 8¼c.; Hallett's, U. S. Star and Japanese, 7¼@7½c.

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

Platinum.—Prices are now quoted at \$15@16 per oz. New York. The London quotation is 58@60s. per oz. Supplies are not large, and prices are firm.

For chemical ware (crucibles and dishes) best hammered metal Messrs. Eimer & Amend, New York, furnish the following prices: In lots of 250 grams or more, 56c. per gram; in lots of 100 grams or more, 57c. per gram; less than 100 grams, 58c. per gram; unmanufactured platinum will be supplied in same quantities at 2c. less per gram.

Quicksilver.—The New York quotation remains \$39.50 per flask. The London price is £7 2s. 6d. per flask, with £7 1s. 3d. named from second hands.

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

Aluminum:	Alum-Nickel, ¾ lb. 33@39c.
No. 1, 90% ingots,	Bismuth, ¾ lb. \$1.30@1.80
No. 2, 90% ingots,	Phosphorus, ¾ lb. 40@50c.
¾ lb. 34@40c.	Tungsten, ¾ lb. 70c.
¾ lb. 31@34c.	Ferro-tungsten, 60% 60c.
Rolled sheets ¾ lb. 38c. up	Ferro-tungsten, 60% 60c.

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

Average Monthly Prices of Metals.

In New York, for the years 1898 and 1897; in cents per pound.

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1898.	1897.	1898.	1897.	1898.	1897.	1898.	1897.
Jan.....	10.99	11.75	13.87	13.41	3.65	3.04	3.96	3.91
Feb.....	11.28	11.92	14.08	13.59	3.71	3.28	4.04	4.02
March....	11.98	11.80	14.38	13.43	3.72	3.41	4.25	4.12
April.....	11.48	11.48	13.34	13.34	3.32	3.32	4.13	4.13
May.....	11.03	11.03	13.44	13.44	3.26	3.26	4.21	4.21
June.....	11.11	11.11	13.77	13.77	3.23	3.23	4.21	4.21
July.....	11.11	11.11	13.89	13.89	3.72	3.72	4.32	4.32
August....	11.16	11.16	13.80	13.80	3.84	3.84	4.26	4.26
Sept.....	11.30	11.30	13.98	13.98	4.30	4.30	4.18	4.18
October...	11.13	11.13	13.88	13.88	4.00	4.00	4.17	4.17
Nov.....	10.88	10.88	13.79	13.79	3.76	3.76	4.03	4.03
Dec.....	10.78	10.78	13.71	13.71	3.70	3.70	3.89	3.89
Year.....	11.29	11.29	13.67	13.67	3.58	3.58	4.12	4.12

CHEMICALS AND MINERALS.

(For current prices of chemicals, minerals and rare elements see page 424.)

New York. April 1.

Heavy Chemicals.—The tone of the market remains about as last week. Some small orders are noted, but nothing of importance is doing.

Quotations are \$1.50@1.55 for domestic high test caustic soda, f. o. b. works; foreign, \$1.70@1.80 delivered, according to test and quantity. Powdered caustic soda, 98 per cent., 3@3¼c. per lb., according to make and test. Alkali, domestic, 58 per cent., 50@55c. for bags, f. o. b. works; foreign, 45@50c. from dock, as to style of package. Carbonated soda ash, 90@95c. per 100 lbs. for 5 per cent., basis of 48 per cent. Bleaching powder, English, prime brands, \$1.75 @ \$2; ordinary, \$1.65@1.80 per 100 lbs.; Continental F. brands, \$1.70@1.80. Bicarb. soda, domestic, \$1.25@1.37½ per 100 lbs. f. o. b. works, less the usual discounts, with quite a volume of business in sight; foreign, \$1.75@2¼ per 100 lbs., according to brand and style of packing. Sal soda, domestic, 50c. per 100 lbs. f. o. b. works,

less usual discounts; English 62½@65c. Concentrated sal soda, \$1.35@1.60 per 100 lbs. f. o. b. Chlorate of potash, \$8.50@8.75 per 100 lbs.

The Bureau of Statistics reports the following imports into the United States for the periods mentioned:

Articles.	1897.	1898.
Caustic soda, lbs.....	5,092,686	3,069,320
Nitrate soda, tons.....	8,458	11,381
Sal soda, lbs.....	793,246	524,098
Soda ash, lbs.....	16,243,146	9,032,673
Other soda salts, lbs.....	546,219	3,198,229
Chlorate potash, lbs.....	266,384	52,890
Muriate potash, lbs.....	14,318,088	10,592,656
Salt-peter, crude, lbs.....	5,300	301,961
Other potash, lbs.....	3,305,025	3,229,756
Bleach powder, lbs.....	8,296,941	9,567,798
Brimstone, tons.....	16,234	14,495
Fertilizer, value.....	\$144,561	\$109,836

The imports of heavy chemicals show a decided decrease this year, with the exception of bleaching powder, owing to the new tariff duties and to increased production at home.

Acids.—Business holds slow in this line owing to the unsettled political conditions which prevail. Prices remain about the same as the preceding week except blue vitriol, which advances to \$3.50@4 for extras, and \$3.25@3.37½ for ordinary grades, with fair sales reported. We quote per 100 lbs. for New York and vicinity, in lots of 25 carboys and over, as follows: Acetic acid, commercial, No. 8, \$1.40@1.55; redistilled 2 per cent., \$2@2.15. Muriatic acid, 18°, \$1@1.37½; 20°, \$1.10@1.50½; 22°, \$1¼@2, according to quantity and brand. Nitric acid, 36°, \$3¼@4¼; 38°, \$3½@4.40; 40°, \$3¾@4.67½; 42°, \$4½@5. Oxalic acid, \$6.50@7. Mixed acids, according to mixture. Sulphuric acid, 66°, \$1@1.65. Chamber acid, 50°, \$6.50@7 per ton, f. o. b. factory.

Brimstone.—Market this week is a trifle stronger than last. The demand for small orders is much better. Arrivals amount to about 3,000 tons. Prices quoted are: for best unmixed seconds, spot, \$23; futures, \$22.25; best thirds, spot, \$21.50; futures, \$20.50.

Nitrate of Soda.—No change in demand; freights are high from the coast and market quotations are \$1.77½ for spot, \$1.75 for next arrival, and \$1.55 for futures.

Fertilizing Chemicals.—Conditions are unchanged from last week. Quotations are: Sulphate of ammonia, gas liquor, \$2.40@2.42½ bone, \$2.35 per 100 lbs. Dried blood, high-grade Western, \$1.77½@1.80 per unit; New York, \$1.72½@1.75 per unit. Azotine, \$1.70@1.75 basis New York. Concentrated phosphate (30 per cent. available phosphoric acid), 57½c. per unit. Acid phosphate, 13@15 per cent., av. P₂O₅, 55@60c. per unit at seller's works in bulk. Dissolved bone black, 17@18 per cent., P₂O₅, \$16@16.50 per ton. Acidulated fish scrap, \$10.50, and dried scrap \$18.25@18.50 f. o. b. fish factory. Tankage, high grade, \$15.25@15.50 per ton f. o. b. Chicago; concentrated tankage, \$1.50 per unit f. o. b. Chicago; low grade, \$13@13.50. Bone tankage, \$18@18.50; ground bone, \$20@23. Bonemeal, \$1.40@1.50 f. o. b. Chicago.

Muriate of Potash.—We quote per 100 lbs. on basis of 80 per cent. as follows: New York and Boston, \$1.75 for 80@85 per cent., and \$1.78 for 95 per cent.; Norfolk and Philadelphia, \$1.76½ for 80@85 per cent., and \$1.79½ for 95 per cent.; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.78½ for 80@85 per cent., and \$1.81½ for 95 per cent. All for lots of 50 tons and upward.

Sulphate of Potash.—Quotations per 100 lbs., on basis of 90 per cent., are as follows: New York and Boston, \$1.96½ for 90 per cent., and \$2.00½ for 96 per cent.; Norfolk and Philadelphia, \$1.98 for 90 per cent., and \$2.02 for 96 per cent.; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$2 for 90 per cent., and \$2.04 for 96 per cent. All for lots of 50 tons and over.

Double Manure Salts.—Prices are scheduled per 100 lbs. for 48 to 53 per cent. on basis of 48 per cent. are: New York and Boston, \$1.01; Norfolk and Philadelphia, \$1.02; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.03½. All for quantities over 50 tons.

Kainit.—Invoice weights, as taken at port of shipment, per ton of 2,240 lbs., testing 12.4 per cent. actual potash, equivalent to 23 per cent. sulphate of potash, \$8.55 for New York and Boston; \$8.90 for Norfolk, and \$9.05 for Charleston, Savannah, Wilmington, N. C., and New Orleans. Actual weights, ex vessel at port of importations, are quoted \$8.80, \$9.15 and \$9.30, respectively.

Sylvinit.—Quotations on invoice weights at port of shipment, per ton of 2,240 lbs., are per unit of sulphate of potash as follows: 36½c. for New York and Boston; 37½c. for Norfolk and 38c. for Charleston, Savannah, Wilmington, N. C., and New Orleans. Actual weights, ex vessel at port of importation, per ton of 2,240 lbs., per unit of sulphate of potash, are 37½, 38½ and 39c. respectively.

Phosphates.—Contract deliveries comprise the major portion of business, and prices are unchanged. Quotations on Florida high-grade, 75 per cent. to 80 per cent. rock, sold on guarantee

of 77 per cent. iron and less than 3 per cent. alumina, are \$6 to \$6.50 per long ton, f. o. b. Fernandina. The freight rate to New York is about \$1.90 per ton. South Carolina ground rock is worth \$5.50 to \$5.75 per short ton delivered in New York; undried, \$3 per 2,400 lbs. f. o. b. Ashley River; dried, \$3.25 to \$3.45 f. o. b. same place.

Liverpool. March 23.
(Special Report of Joseph P. Brunner & Co.)

The political outlook continues far from reassuring, which has the effect of curtailing trade generally, buyers being afraid to operate except from hand to mouth. Soda ash is well controlled by makers, some of whom are refusing orders owing to being fully sold for the present. We quote spot range for tierces, as to market, as follows: Leblanc ash, 48 per cent., £4 10s. @ £4 15s. per ton; 58 per cent., £4 17s. 6d. @ £5 per ton. Ammonia ash, 48 per cent., £4 @ £4 5s. per ton; 58 per cent., £4 5s. @ £4 10s. per ton. Bags, 5c. per ton under price for tierces; all net cash. Soda crystals continue in fair demand, and for most export markets £2 17s. 6d. per ton, less 5 per cent., is quoted for barrels, although a lower figure is taken for some special quarters. Bags 7s. under price for barrels. Special terms for American business. Caustic soda is rather scarce on the spot and quotations firm at the following range, as to market: 60 per cent., £6 7s. 6d. @ £6 10s. per ton; 70 per cent., £7 7s. 6d. @ £7 10s. per ton; 74 per cent., £8 @ £8 5s. per ton; 76 per cent., £8 5s. @ £8 10s. per ton, net cash. Bleaching powder in moderate demand for export, at £6 @ £6 5s. per ton net cash for hardwood packages, as to destination. Chlorate of potash is quoted at 3¼@3¼d. per lb., but there is little business reported. Bicarb. soda still held for £6 15s. per ton, less 2½ per cent. for the finest quality in one cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia dull and lower at £9 3s. 9d. @ £9 5s. per ton, less 2½ per cent., for good gray 24 to 25 per cent. in double bags, f. o. b. here, as to quality. Nitrate of soda quiet at £7 12s. 6d. @ £7 15s. per ton, less 2½ per cent. for double bags, f. o. b. here, as to quality and quantity. Carb. ammonia, lump, 2¼d. @ 3d. per lb. Powdered 3¼d. @ 3¼d. per lb., less 2½ per cent.

Valparaiso, Chile. Feb. 12.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—Advises report the market depressed so that producers have had to give way. Sales have been effected of 95 per cent. at the equivalent of 4s. 7d. as far forward as June delivery, but for July-December deliveries there have been no willing sellers, although 4s. 9d. alongside has been offered for September-October delivery. For refined there has been very little interest. We quote: 95 per cent. February-March, 4s. 6¾d.; April-June, 4s. 7d.; July-December, 4s. 7½d., all sellers; and refined, February-April, 4s. 8½d., nominal. The price of 4s. 6¾d. with 22s. 6d. freight stands in 6s. 2½d. per cwt. net cost and freight, without purchasing commission. Sales for the fortnight aggregated 489,000 quintals.

MINING STOCKS.

Complete quotations will be found on pages 420, 421 and 422 of mining stocks listed and dealt in at:

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

New York. April 1.

The market during the past week has been active with prices advancing along the entire line, especially in the Comstock group, several leading stocks of this variety having doubled in prices during the past few weeks.

The strike recently made in Sierra Nevada is said to run \$40 to the ton, ore carrying most value in gold, while in the Occidental the ore is said to run very nearly as much. This has naturally tendered to create a demand for this group of stocks, which has caused the market to be rather stiff. Among the transactions noted during the past week were 200 shares of Sierra Nevada at \$2; Yellow Jacket at 33c.; Utah Consolidated at \$15@12c.; the latter being the closing price; Potosi at 45@50c.; Mexican, which opened at 40c., closed at 48c.; Crown Point also scored an advance, opening at 13c., rising to 25c. and closing at 21c.

Among the Colorado group, Cripple Creek stocks command most attention, the dividend payers still being the favorites, while the speculative stocks have not been neglected, Sentinel being the most active among the latter on the report of the probable closing satisfactorily to the company of a bond on one of its claims for \$45,000, which expires in July.

Of the California stocks, the Standard Consolidated was the only representative, 200 shares being sold at \$1.70.

The announcement of a dividend of 5c. a share on Alice stock recorded in these columns last week has turned out to be premature.

Boston. March 31.

(From Our Special Correspondent.)

The week closes with a better feeling in the copper stock market and prices for the active stocks the highest for the week. Calumet & Hecla has ruled steady at from \$510 to \$520 and closes at \$515. Boston & Montana has fluctuated \$20 a share, which is very unusual. The opening was \$166, followed by a bad break to \$158 and subsequent rally to \$175, followed by a fall to \$170 and advance to-day to \$173. These violent fluctuations evidently disturbed considerable long stock, but the declaration of a \$3 dividend steadied the market and the stock closes with but a slight concession from the top price. Butte sharply advanced from \$20 to \$26 with but slight reaction. It is stated that the mines have commenced producing again. Osceola rose from \$36½ to \$40½, and closes at the best. Old Dominion has been in demand, advancing from \$24 to \$28 and closing at \$27½. Centennial has evidently oversold to some extent as a brisk buying by the bears advanced the price from \$10½ to \$14, with fractional reaction. There has recently been considerable improvement in the rock at the Centennial mine. The mill is still running on both amygdaloid and conglomerate rock. A local official confirms the statement that the March output will be about the same as for February, notwithstanding that during March only single shifts were worked. There has been a sharp forward movement in Arnold from \$8½ to \$12, which is the highest price the stock ever sold at. Some good looking rock is on exhibition here, and its friends speak very highly of it. A few shares of Franklin sold at \$12, same as last week. At the forthcoming annual meeting on April 20th the stockholders will be asked to "consider the advisability of increasing the capital stock of the company" and also to "consider the expediency of selling a portion of the property of the company." Quincy is steady about \$108, with very little doing. Wolverine regained its lost ground, selling up from \$18¼ to \$21¼, with reaction to \$20½. Good buying of Tamarack advanced the price from \$139 to \$149, closing to-day at \$147. There is not much doing in Atlantic, the stock being steady about \$29@32½, the lowest for the week being \$27½. Parrott is steady at \$22@23. Baltic broke to \$11¼, but rallied handsomely to \$13, closing firm. A few shares of Tecumseh came out at \$2½. Humboldt sold at \$1½@1¾; Allouez at \$1¼@2, and Ashbed at \$2½@2¾.

Gold stocks have been a little more active and stronger, Pioneer selling at \$5½@5¾; Cochiti at \$6, Merced at \$4½@5, Gold Coins at \$1¼. Santa Ysabel after selling at \$5½, rose sharply and was in demand at \$6.

Salt Lake City. March 26.

(From Our Special Correspondent.)

The week has been one of great activity, a total of 39,000 shares having changed hands on board, with about as many more on curb.

Ajax is without action but holds to the figures of the past few weeks, the excellent condition of the mines acting as a counter-balance to the bad effects of more domestic trouble. Bullion-Beck is wanted at about \$6, with the shares held much higher. A dividend, April 10th, is as good as promised. Centennial Eureka advanced to \$23 bid, the figure offering no inducement to holders; there is expectation of a dividend in the near future. Chloride Point did a moderate business at 61½@65. The reaction was regarded as the beginning of the end by those who have opposed the security, and the recovery came as a surprise. Dalton can be had in blocks of any size at a cent. Dalton & Lark is quoted the lowest in its history, while the mines are employing a considerable force and putting a good grade of silver ore on market. Daly is weak and inactive. Daly West is gaining strength, though management refuses to announce a date for resuming operations. Shares have done business above \$5. Dexter sold in the week at \$1.02½. It is believed the assessment (delinquent April 4th) is being generally paid, and it is assured that any delinquent stock will be taken care of by management. Four Aces records a good advance, improved conditions at the mine being assigned as the cause. Heavy selling has followed the advance, a total of 14,334 changing hands on board, with large blocks going on curb.

At the opening Galena sold for 61, after which bids advanced three points without bringing out more stock. Geysers-Marion sold at \$1.02½@ \$1.07½, with stock in sight at \$1.05 at close. A dividend of 2c. per share was declared by directors March 21st, against wishes of some of the most heavily interested, and regardless of the fact that mill is closed, undergoing remodeling. The policy of disbursing dividends at such a period is freely criticised locally. Grand Central is strong in the bid, but no shares come out. Horn Silver is in moderate demand; quarterly dividend of 5c. per share was declared March 23d. Mammoth is without much action at reduced prices. There is no certainty that the option company has on the railway connecting its mine and mill will be taken up. Mercur remains at same figures. Northern Light is im-

proving, doing business at better than 20c. Only 2,250 shares were sacrificed at the time of delinquency of assessment, and these were absorbed by heavy holders. Preparations are being made to start mill. Overland sold at 60c., but the close found no more stock in sight under 75c. Sacramento had a slight reaction, but recovered and sold up to 43. There seems a speculative field in these shares. Swansea is in good form and does business with an upward movement. South Swansea is not so strong. Utah sold at 56c.

San Francisco. March 26.

(From Our Special Correspondent.)

The market opened this week with business rather dull, but prices fairly up to the close. A little boom was started in Sierra Nevada and the price of that stock was run up to \$1.70 on Tuesday, but without any effect on the rest of the list. A rush to sell followed, however, and on Wednesday the quotation dropped to \$1.45. Very little was done in the other stocks, and the same condition continued through the week, though Sierra Nevada was worked up again to \$1.75, the highest price this year.

Some quotations noted are: Sierra Nevada, \$1.45@1.75; Consolidated California & Virginia, 78 @ 80c.; Chollar, 48@50c.; Ophir, 44@45c.; Mexican, 34@36c.; Yellow Jacket, 29@30c.; Crown Point, 24c. There were some sales of Standard Consolidated at \$1.75.

London. March 23.

(From Our Special Correspondent.)

The stock market is dull, as usual. The South African market finds it convenient to explain the dullness by referring to the quarrel between Kruger and his judges, and to the rumored intention of the Transvaal to throw off the English yoke. Of course, all this political fuss is one of the reasons for the public abstaining from the market, but the absurdly high level of prices, artificially manufactured, is the real reason. When prices can only go down and not up people don't buy. And people never buy South African or any mining stock nowadays for the dividends.

The West Australian market entirely consists of Horatio Bottomley. He is devoting special attention to his Northern Territories Company, details of which I have given before. During the past week or two he has talked his shares up to £4 10s., and this week the public meeting of the company was held. A vast amount of speechifying was indulged in, and wonderful promises of rich properties were made; but little or no information was given such as a legitimate mining man would want. Of course, very few people buy Bottomley stocks for dividends, or even in the belief that there are any properties at all. They simply buy because they think that his talk will further put up quotations, and thus yield them a profit. In the long run the actual holders will no doubt get badly left.

As for Americans, British Columbians or Klondikes, there is nothing to say, for no new companies have come out and promoters find it impossible to get money from the public or to get underwriters to guarantee issues. There is not much probability of any more new companies in this direction just yet.

The most important public issue this week has been the Smelting Corporation, Limited, floated by Mr. H. E. Fry to acquire his process for treating zinc lead sulphides at present owned by the Burnham Syndicate. You have had a good deal to say about this process at different times during the past two years.

Another new company is the Copper Estates of West Australia, Limited, which has been formed to acquire and work the Wanerooka copper mine at Northampton, West Australia, 34 miles north of Geraldton. The assays of the mineral produced vary in a most remarkable manner. Small amounts assay 20 to 35 per cent. in copper, and these are made the most of; whereas by far the largest consignment of ore assays 5 per cent., and the report of this is put in an unobtrusive place in the prospectus. In estimating the value of the mine the average copper contents are taken as 15 per cent., and the matte is valued at £6 11s. 3d. per ton, while the costs are estimated as follows: Mining, 10s.; pumping, cartage and carriage to Geraldton, 5s.; cost of bags and handling, 7s.; freight to England, £1 16s.; incidentals, 3s. 3d.; total, £3 1s. 3d. per ton. The gold contents are admittedly only about 0.05 oz., and the silver, 1 or 2 oz., so the mine depends entirely on the copper. It is therefore necessary for the directors to get a more reliable estimate of average copper contents than the above mentioned 15 per cent., for if it runs as low as 5 per cent., as indicated with assay of the large sample, it is a poor look-out for investors. The directors and promoters are Scotchmen from Glasgow district, one of the directors being Mr. W. Y. Fleming of Fleming & Ferguson, the engineers and shipbuilders.

An interesting issue of new capital is that of Johnson Matthey & Company, Limited. This firm is one of the best known of English metallurgists, and has been in existence for considerably over 100 years. Besides being smelters, assayers, producers of platinum and other valuable and rare metals, they have a very exten-

sive department devoted to the refining of gold bullion. Practically the whole of the gold bullion produced by English gold mining companies and sent to England is refined by them. The purchases of such bullion are always made in cash, so the business requires a very large capital. Owing to the continued increase in gold production, and owing also to the desire of the two oldest partners to draw out of active work it has been considered advisable to offer £250,000 in debenture stock to the public. As this stock will yield 4 per cent. interest, there was a rush of subscribers, and the issue was taken up at once.

Paris. March 31.

(From Our Special Correspondent.)

Wars and warlike rumors have continued to draw attention from the mining stock market. The breaking up of China, your differences with Spain and our own serious troubles with Britain in Africa have all had their effect. Nevertheless there have been some incidents in the market.

Copper shares are very strong, and this appears to be warranted by the increasing prices of the metal and the limited supplies, as shown by the monthly statistics. There is a belief also that your producers are not forcing the output, and are taking care not to flood the market here with their shipments.

Nickel shares continue to maintain a high price. The proposition in Canada to impose an export duty on nickel matte may have important results for our company. Such action would certainly result in benefit to us, and give a chance for the metal from New Caledonia, which it has not had for some time past.

Huanchaca (silver) shares are a little higher. The management announces that a plan has been devised for unwatering the lower levels of the mine. It will, however, require an immediate expenditure of 4,000,000 fr. for machinery.

The shares of a new Russian company, the Societe de l'Industrie Miniere de Zyrianowik, are being introduced in our Bourse by the Russian Bank for Foreign Trade. The company has a capital of 12,000,000 roubles, or about 30,000,000 fr. The property of the company is in Siberia, and has been bought from the Imperial Domain. The mines of Zyrianowik have been worked in a small way for nearly a century, and produce gold, silver, copper, lead and zinc.

The Chamber of Deputies, in voting the new tax on sales of securities, has given the Minister of Finance very liberal powers of regulation over the Paris Bourse. It is understood that he intends to make an increase in the number of the "agents du change," and at the same time to enforce regulations which will suppress the "coulisse"—the outside or free market—or at least limit its operations greatly.

The report of the Paris Mint for 1897 shows that the total face value of the coinage executed was as follows:

	Gold. Francs.	Silver. Francs.	Copper. Francs.
France	221,400,000	.....	1,400,000
French colonies.	3,300,000	14,400,000	1,200,000
Foreign nations. ....	.....	101,200,000	1,500,000
Totals	224,700,000	115,600,000	4,100,000

The foreign silver coinage included 93,500,000 fr. in roubles and half-roubles for Russia; 4,000,000 fr. in dollars for Abyssinia. The Mint has done some admirable work during the year.

Your relations with Spain are watched with much interest here. General feeling is not with you, I think chiefly because our people are large holders of Spanish securities, and do not regard with sympathy anything which may tend to depress them. We look at these matters in the light of our financial interests.

It is money which rules, after all. We say that you worship the dollar—but we do not disdain the cult ourselves.

Rossland, B. C. March 25.

(From Our Special Correspondent.)

The total shipments of ore from West Kootenay from January 1st to the present date amount to 24,000 tons, valued at \$2,500,000. For the same period last year the shipments were about 13,000 tons, valued at \$1,200,000. The shipments are nearly doubled since last year, and the valuation has increased, owing to the fact that the grade of much of the ore has improved. The output of the Rossland mines for the same period of 1897 amounted to about 9,000 tons. This year the shipments reach 15,000 tons.

MEETINGS.

Golden Hope Mining Company, special meeting at the office, room 215 Symes Block, Denver, Colo., on April 13, at 2 p. m.

Mammoth Garfield Gold Mining Company, annual meeting at the office, 120 Sutter street, San Francisco, Cal., on April 5, at 2 p. m.

May Day Mining and Milling Company, annual meeting at the office, room 23 Central Block, Salt Lake City, Utah, on April 7, at 2 p. m.

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing various companies like Alamo, Albany, and American Flag, with columns for location, par value, and sales.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stocks including American Coal, Central of N. J., and others, with columns for location, par value, and sales.

Official quotations. New York Stock Exchange, mining, 300 shares; other stocks, 81,452 shares; Consolidated Stock and Petroleum Exchange, mining, 2,330 shares; Mining Exchange, 1,663,000 shares. Total shares sold, 1,771,002. *Bid and ask quotations.

PHILADELPHIA, PA.

Table of stock quotations for Philadelphia, PA, listing companies like Cambria Iron, Hunt & Br. Top, and Lehigh Nav., with columns for location, par value, and sales.

Official quotations Philadelphia Stock Exchange. *Bid and ask quotations. Total shares, 23,784.

PITTSBURG, PA.

Table of stock quotations for Pittsburgh, PA, listing companies like Allegheny, Carbondum, and Charliers Valley, with columns for location, par value, and sales.

Official Quotations Toronto Mining and Industrial Exchange. Total sales, 204,475 shares.

BOSTON, MASS.

Table of stock quotations for Boston, Mass., listing companies like Aera Con., Alhoue, and Anaconda, with columns for location, par value, and sales.

Official quotations Boston Stock Exchange. *Bid and ask quotations. Total sales, 107,200.

BALTIMORE, MD.

Table of stock quotations for Baltimore, MD, listing companies like Atlantic Coal, Howard C. & C., and Newburg Orrei C., with columns for location, par value, and sales.

Official quotation Baltimore Stock Exchange.

CLEVELAND, O.

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

From our special correspondent.

COLORADO SPRINGS, COLO.

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

Official quotations Colo. Springs Mining Stock Exchange. Sales: Listed stocks, 288,151; unlisted, 22,170; total, 310,320.

TORONTO, CAN.

Table of stock quotations for Toronto, Can., listing companies like Ontario, Hawatha, and Sam Bill, with columns for location, par value, and sales.

Official Quotations Toronto Mining and Industrial Exchange. Total sales, 204,475 shares.

STOCK QUOTATIONS.

DENVER, COLO.

Table of stock quotations for Denver, Colorado, listing various mining and industrial companies with their share prices and market activity.

Official quotations Denver Stock Exchange. Sales: Mines, 118,700 shares; prospects, 491,700 shares; grand total, 610,400 shares.

HELENA, MONT.

Week ending Mar. 25.

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

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

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing various mining and industrial companies with their share prices.

Official telegraphic quotations, San Francisco Stock Exchange.

LOS ANGELES, CAL.

Table of stock quotations for Los Angeles, California, listing various mining and industrial companies with their share prices.

Official quotations, Los Angeles Mining and Stock Exchange. Bid and ask quotations. Total shares sold, 128,000.

SALT LAKE CITY, UTAH.

Week ending Mar. 26

Table of stock quotations for Salt Lake City, Utah, listing various mining companies with their share prices.

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

ROSSLAND, BRITISH COLUMBIA.

Mar. 24.

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

From Our Special Correspondent.

MEXICO.

Week ending Mar. 23.

Table of stock quotations for Mexico, listing various mining companies with their share prices and market activity.

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. March 18. Table with columns: NAME OF COMPANY, Country, Authorized capital, Par value, Last dividend, Quotations (Buyers, Sellers).

PARIS. Week ending Mar. 10. Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Latest div., Prices (Op'ning, Closing).

VALPARAISO, CHILE. Feb 12. Table with columns: NAME OF COMPANY, Location, Capital paid, Sh. Val., Last Div'd., Bld., Prices (Asked, Last sale).

SHANGHAI, CHINA. Feb. 21. Table with columns: NAME OF COMPANY, Country, No. of shares, Value (Par, Paid up), Last dividend, Price.

DIVIDENDS. Table with columns: NAME OF COMPANY, Current dividends, Paid since Jan. 1, 1898, Total to date, NAME OF COMPANY, Current dividends, Paid since Jan. 1, 1898, Total to date.

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

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

* New assessment.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Date and Amount of Last. It lists 122 dividend-paying mines and 122 non-dividend-paying mines.

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. 1 Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends and the Cons. Virginia \$42,390,000. 2 Dividends paid since consolidation. 3 Bodie, Bulwer and Mono transferred to Standard Cons., January, 1897. Previous to consolidation Bodie paid \$1,677,572, Bulwer paid \$190,000, and Mono \$12,500. 4 Dividends have not been paid in several years. Note.—This table is corrected up to March 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 March 23d. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable.

Table with multiple columns listing various chemicals and minerals such as Benzole, Bismuth, Bitumen, Bone Ash, Borax, Bromine, Cadmium, Calcium, Carbonate, Chlorine, Chromic, Clay, Cobalt, Copper, Fluorspar, Fuller's Earth, Graphite, Gypsum, Infusorial Earth, Iodine, Iron, Lead, Lime, Magnesium, Magnanese, Marble, Mercury, Mica, Mineral Wool, Monazite, Nickel, Oils, Mineral, Ozokerite, Paints and Colors, Pyrites, Saltpeter, Scheelite, Silica, Silver, Sodium, Sulphur, Sulphate, Strontium, Tellurium, Tin, Titanium, Uranium, Vanadium, Zinc, and Zirconium. Each entry includes a description, measurement unit, and price.

ALPHABETICAL INDEX TO ADVERTISERS.

(-) Indicates every other week or monthly advertisements.

Table with columns A, B, C, D listing various companies and their page numbers. Includes entries like 'Abbott, J. W.', 'Advertizing Rates', 'Ainsworth, Wm.', etc.

Table with columns E, F, G, H, I, J, K listing various companies and their page numbers. Includes entries like 'Denver Republican', 'Detroit Copper Mining Co.', 'Eddy Valve Co.', etc.

Table with columns L, M, N, O, P, Q, R listing various companies and their page numbers. Includes entries like 'Laidlaw-Dun-Gordon Co.', 'Lambert Hoisting Engine Co.', 'Lambert's Wharfage Co.', etc.

Table with columns S, T, U, V, W, Y, Z listing various companies and their page numbers. Includes entries like 'Raymond Lead Co.', 'Raymond, Rossiter W.', 'Ricketts & Banks', etc.



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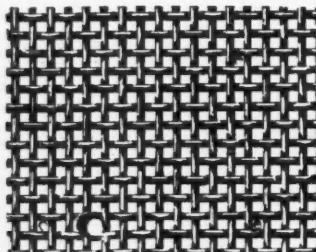
SOLE MAKERS IN U. S. A.,

THE FUEL ECONOMIZER COMPANY OF MATTEAWAN, N. Y.

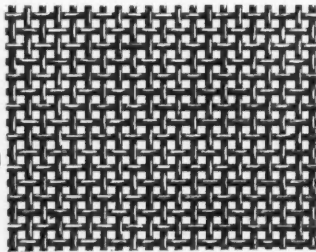
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RICHARD E. CHISM, Editor and Proprietor.

THE Directory of Engineers, Metallurgists, Chemists, Assayers, Etc., of the Engineering and Mining Journal, is always consulted by those who desire professional advice or services. See Pages 4, 5 and 6.

BUYERS' CLASSIFIED DIRECTORY.—Continued on Page 25.

A.
Air Compressors.
 Allis, The E. P. Co., Milwaukee, Wis.
 American Diamond Rock Drill Co., N. Y.
 Burling Rock Drill Co., Fitchburg, Mass.
 Bullock, The M. C. Mfg. Co., Chicago
 Clayton Air Compressor Works, N. Y.
 Colorado, The Iron Works Co., Denver
 Davis, The F. M. Iron Works, Denver
 Fraser & Chalmers, Chicago, Ill.
 Gates Iron Works, Chicago, Ill.
 Ingersoll-Sergeant Drill Co., N. Y.
 Laidlaw-Dunn-Gordon Co., N. Y.
 Mine & Smelter Supply Co., The, Denver
 Norwalk Iron Wks. Co., South Norwalk, Conn.
 Rand Drill Co., The, New York, N. Y.
 Sullivan Mach. Co., Chicago, Ill.
Amalgam Plates.
 Mine & Smelter Supply Co., The, Denver
 Western Plating and Mfg. Co., Denver.
Anti-Friction Metals.
 Besly, C. H. & Co., Chicago, Ill.
 Chester Steel Castings Co., Philadelphia, Ill.
 Illinois Sm. and Refining Co., Chicago.
 Magnolia Metal Co., New York.
 Phosphor Bronze Sm. Co., Philadelphia.
Armor.
 Bethlehem Iron Co., So. Bethlehem, Pa.
Assayers' and Chemists' Supplies.
 Ainsworth, W., Denver, Colo.
 Baker & Adamson Chem. Co., Easton, Pa.
 Becker, Christian, New York.
 Bullock & Crenshaw, Philadelphia, Pa.
 Denver Fire Clay Co., Denver, Colo.
 Elmer & Amend, New York.
 Fair Drug and Assay Supply Co., Butte, Mont.
 Fuerst Bros. & Co., New York, N. Y.
 Heit, Henry, Chemical Co., St. Louis, Mo.
 McCandless Chemical Laboratory, Atlanta, Ga.
 Pennsylvania Salt Mfg. Co., Philadelphia.
 Roessler & Hasslacher Chemical Co., N. Y.
 Sargent, E. H. & Co., Chicago, Ill.
 Smith & Thompson, Denver, Colo.
 Solvay, The, Process Co., Syracuse, N. Y.
 Taylor, John & Co., San Francisco, Cal.
 Troemner, Henry, Philadelphia, Pa.
 Western, The, Chemical Co., Denver.
Attorneys, Corporations.
 Curtis, Smith, Rosland, B. C.
 Daly & Hamilton.
B.
Babbitt Metal.
 Besly, C. H. & Co., Chicago, Ill.
 Illinois Sm. and Refining Co., Chicago.
 Magnolia Metal Co., New York.
Bankers and Brokers.
 Bannison, W., & Co., Rosland, B. C.
 Breitung, E. N., Marquette, Mich.
 Dabney & Parker, Rosland, B. C.
 Dignowity, C. L., & Co., Salt Lake City.
 Handy & Harman, New York, N. Y.
 Hedburg, E., Joplin, Mo.
 Kennedy Bros. & Purgold, Rosland, B. C.
 Peery & Lowe, Salt Lake City, Utah.
 Flewman, R., Rosland, B. C.
 State, The, Trust Co., New York, N. Y.
 Timmis & Clapp, Chicago, Ill.
 Wynn, Johnson & Co., Rosland, B. C.
Bearing Metal.
 Besly, C. H. & Co., Chicago, Ill.
 Chester Steel Castings Co., Philadelphia.
 Illinois Sm. and Refining Co., Chicago.
 Magnolia Metal Co., New York.
Belting.
 Hendrie & Bolthoff Mfg. Co., Denver.
 Jeffrey, The, Mfg. Co., Columbus, O.
 Link-Belt Machinery Co., Chicago, Ill.
Belt Lacing.
 Bristol, The, Co., Waterbury, Conn.
Blasting Caps.
 Metallic, The, Cap Mfg. Co., New York.
Blasting Batteries, Caps and Fuse.
 Lau, J. H. & Co., New York, N. Y.
 Macbeth, J., & Co., New York, N. Y.
 Metallic, The, Cap Mfg. Co., New York.
Boilers.
 Allis, The E. P. Co., Milwaukee, Wis.
 Billen, C. E., & Co., Chicago, Ill.
 Bacon, E. C., N. Y.
 Colorado, The, Iron Works Co., Denver.
 Davis, F. M., Iron Works Co., Denver.
 Denver, The, Eng. Works Co., Denver.
 Fraser & Chalmers, Chicago, Ill.
 Lambert Hoisting Engine Co., Newark, N. J.
 Pollock, W. B., & Co., Youngstown, O.
 Risdon Iron Works, San Francisco, Cal.
 Stillwell-Bierce & Smith-Valle Co., The, Dayton, O.
Boiler Fronts.
 Vulcan Iron Works Co., Toledo, O.
Brass Goods.
 Besly, Chas. H., & Co., Chicago, Ill.
 Eddy Valve Co., Waterford, N. Y.
 Detroit Lubricator Co., Detroit, Mich.
 Ludlow-Saylor Wire Co., St. Louis.
 Powell Wm. Co., Cincinnati, O.
Brattice Cloth.
 Besly, C. H., & Co., Chicago, Ill.
Brick Machinery.
 Freese, E. M., & Co., Galton, O.
 Harrington & King Perf. Co., Chicago.
Bridges.
 Berlin Iron Bridge Co., East Berlin, Conn.
 Gillette-Herzog Mfg. Co., Minneapolis.
Buckets.
 Link-Belt Machinery Co., Chicago, Ill.
 Brown Hoist. and Conv. Mach. Co., Cleveland, O.

Jeffrey, The, Mfg. Co., Columbus, O.
 Hunt, C. W., & Co., New York.
Carbons.
 Lexow, T., New York.
 Motley & Co., New York.
 Yawger, I. C., New York.
C.
Cars (Dump and Mine).
 Allis, The, E. P. Co., Milwaukee, Wis.
 Colorado, The, Iron Works Co., Denver.
 Davis, F. M., Iron Works Co., Denver.
 Denver, The, Eng. Works Co., Denver.
 Fraser & Chalmers, Chicago, Ill.
 Gillette-Herzog Mfg. Co., Minneapolis.
 Hendrie & Bolthoff Mfg. Co., Denver.
 Koppel, Arthur, New York.
 Krupp, Fried., Magdeburg-Buckau, Germany.
 Mine and Smelter Supply Co., Denver.
Castings.
 Bethlehem Iron Co., So. Bethlehem, Pa.
 Chester Steel Castings Co., Philadelphia.
 Chrome Steel Works, Brooklyn, N. Y.
 Taylor Iron & Steel Co., High Bridge.
 Vulcan Iron Works, Toledo, O.
 Wood, R. D. & Co., Phila., Pa.
Chemical Engineers.
 Dearborn Drug Co., Chicago.
Chemicals.
 Baker & Adamson Chemical Co., Easton, Pa.
 Bullock & Crenshaw, Philadelphia, Pa.
 Elmer & Amend, New York.
 Fair Drug and Assay Supply Co., Butte.
 Fuerst Bros. & Co., New York.
 Heit, Henry, Chemical Co., St. Louis, Mo.
 McCandless Chemical Laboratory, Atlanta, Ga.
 Pennsylvania Salt Mfg. Co., Phila., Pa.
 Roessler & Hasslacher Chemical Co., N. Y.
 Sargent, E. H., & Co., Chicago, Ill.
 Solvay, The, Process Co., Syracuse, N. Y.
 Western Chemical Co., Denver.
Coal.
 Berwind-White Coal Mfg. Co., New York.
 Castner & Curran, Philadelphia, Pa.
 Consolidation Coal Co., Baltimore, Md.
 Davis Coal and Coke Co., New York.
 Flemington Coal & Coke Co., New York.
 Maryland Coal Co., New York, N. Y.
 Potts & Co., F. A., New York, N. Y.
 Stickey, Conynghan & Co., New York.
 Ward & Olyphant, New York, N. Y.
Coal Cutters.
 Ingersoll-Sergeant Drill Co., New York.
 Jeffrey, The, Mfg. Co., Columbus, O.
 Link-Belt Machinery Co., Chicago, Ill.
Coal Washing Machinery.
 Jeffrey, The, Mfg. Co., Columbus, O.
 Link-Belt Machinery Co., Chicago, Ill.
Coaks.
 Besly, C. H., & Co., Chicago, Ill.
 Powell Wm. Co., Cincinnati, O.
Compressed Air Shop Tools.
 Clayton Air Compressor Works, N. Y.
Concentrators, Crushers, Pulverizers, Separators, etc.
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 Bacon, E. C., N. Y.
 Blake, Theo. A., New Haven, Conn.
 Bradley Pulverizer Co., Boston, Mass.
 Colorado Iron Works Co., Denver, Colo.
 Davis, F. M., Iron Works Co., Denver.
 Denver Eng. Works Co., The, Denver.
 Englebach Mach. Mfg. Co., Denver.
 Fraser & Chalmers, Chicago, Ill.
 Gates Iron Works Co., Chicago, Ill.
 Hendrie & Bolthoff Mfg. Co., Denver.
 Krom, S. R., Jersey City, N. J.
 Krupp, Fried., Magdeburg-Buckau, Germany.
 McCully, R., Philadelphia, Pa.
 Mecklinberg Iron Works, Charlotte, N. C.
 Nelsonson, F. & Mfg. Co., Denver.
 Raymond Bros. Impact Pulverizer Co., Chicago, Ill.
 Stedman's Foundry and Machinery Works, Aurora, Ind.
 Sturtevant Mill Co., Boston, Mass.
 Walburn-Svenson Co., Chicago, Ill.
Conveying Belts.
 Lidgerwood Mfg. Co., New York, N. Y.
 Link-Belt Machinery Co., Chicago, Ill.
 Robins Conveying Belt Co., New York.
Conveying Machinery.
 Bacon, E. C., N. Y.
 Brown Hoist and Conv. Mach. Co., Cleveland, O.
 California Wire Works, San Francisco.
 Colorado, The, Iron Works Co., Denver.
 Cooper, Hewitt & Co., New York, N. Y.
 Fraser & Chalmers, Chicago, Ill.
 Hunt, C. W., & Co., New York, N. Y.
 Jeffrey, The, Mfg. Co., Columbus, O.
 Lidgerwood Mfg. Co., New York, N. Y.
 Link-Belt Machinery Co., New York.
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 Robins Conveying Belt Co., New York.
 Ropeway Syndicate, London, Eng.
 Trenton Iron Co., Trenton, N. J.
 Vulcan Iron Works, San Francisco, Cal.
 Vulcan Iron Works Co., Toledo, O.
Copper Dealers and Producers.
 American Metal Co., The, New York.
 Arizona Copper Co., Clifton, Ariz.
 Atlantic Mining Co., Atlantic Mine P. O., Mich.
 Balbach Smelting and Refining Co., New ark, N. J.
 Baltimore Copper Works, Baltimore, Md.
 Bath, Henry, & Son, London, Eng.
 Bond Vivian & Co., New York.

Bridgeport Copper Co., Bridgeport, Conn.
 Canadian Copper Co., The, Cleveland, O.
 Copper Queen Con. Mfg. Co. of Arizona, New York, N. Y.
 Detroit Copper Mfg. Co. of Arizona, Morenci, Ariz.
 Elliott's Metal Co., Burr Port, S. W. James & Shakespeare, London, Eng.
 Lambert's Wharfage Co., Swansea, Eng.
 Lewisohn Bros., New York, N. Y.
 Mountain, The, Copper Co., New York.
 Nichols Chemical Co., New York.
 Orford Copper Co., The, New York.
 Pass, C., & Son, Bristol, Eng.
 Pennsylvania Salt Mfg. Co., Philadelphia.
 Phelps Dodge & Co., New York, N. Y.
 Vivian, Younger & Bond, London, E. C.
Crucibles, Graphite, Etc.
 Denver, The, Fire Clay Co., Denver
 Dixon, Joseph, Crucible Co., Jersey City, N. J.
Cyanide.
 Fuerst Bros. & Co., New York, N. Y.
 Roessler & Hasslacher Chemical Co.
Cyanide Tanks.
 Williams Mfg. Co., Kalamazoo, Mich.
D.
Diamonds.
 Lexow, Theo., New York, N. Y.
 Motley & Co., New York.
 Yawger, I. C., New York.
Diamond Drills.
 American Diamond Rock Drill Co.
 Bullock, The, M. C., Mfg. Co., Chicago.
 Motley & Co., New York.
 Sullivan Machinery Co., Chicago, Ill.
Diamond Drill Carbons.
 Lexow, Theo., New York.
 Yawger, I. C., New York.
Drawing Materials.
 Alteneber, Theo., & Sons, Philadelphia.
 Besly, C. H., & Co., Chicago, Ill.
 Buff & Berger, Boston, Mass.
 Fauth & Co., Washington, D. C.
 Gurley, W. & L. E., Troy, N. Y.
 Keuffel & Esser Co., New York, N. Y.
 Liets, The, A. Co., San Francisco, Cal.
 Mann & Co., St. Louis, Mo.
 Queen & Co., Philadelphia.
 Saegmuller, G. N., Washington, D. C.
 Wittstock, P. & R., Berlin, Germany.
Dredging Machinery.
 Bucyrus, The, Co., So. Milwaukee, Wis.
 Jeffrey Mfg. Co., Columbus, O.
 Lambert Hoisting Engine Co., Newark.
 Marion Steam Shovel Co., Marion, O.
 Olsen, C. H., Gold Dredge Co., Tacoma, Risdon Iron Works, San Francisco, Cal.
 Vulcan Iron Co., Toledo, O.
 Weber Dredge Co., Kansas City.
Drills (Rock).
 American Diamond Rock Drill Co., N. Y.
 Allis, The, E. P. Co., Milwaukee, Wis.
 Bullock, The, M. C., Mfg. Co., Chicago.
 Burling Rock Drill Co., Fitchburg, Mass.
 Dixon Drill Co., Denver.
 Fraser & Chalmers, Chicago, Ill.
 Ingersoll-Sergeant Rock Drill Co., N. Y.
 Jackson Drill & Mfg. Co., Denver.
 Motley & Co., T. N., N. Y.
 Rand Drill Co., New York, N. Y.
 Rogers Boat, Gauge & Drill Co., Gloucester City, N. J.
 Sullivan Machinery Co., Chicago, Ill.
Dryers.
 Brown, H. F., Chicago, Ill.
 Colorado Iron Wks. Co., Denver.
 Cummer, F. D., & Son Co., Cleveland.
 Denver, The, Eng. Works Co., Denver.
Dump Cars.
 Jolorado, The, Iron Works Co., Denver.
 Davis, F. M., Iron Works Co., Denver.
 Denver, The, Eng. Works Co., Denver.
 Fraser & Chalmers, Chicago, Ill.
 Gillette & Herzog, Minneapolis, Minn.
 Hendrie & Bolthoff Mfg. Co., Denver.
 Hunt, C. W., Co., New York, N. Y.
 Koppel, A., New York.
E.
Educational Institutions.
 Columbia University, New York, N. Y.
 Columbian University, Washington, D. C.
 Chicago School of Assaying, Chicago, Ill.
 International Correspondence School, Scranton.
 Lehigh University, So. Bethlehem, Pa.
 Massachusetts Institute of Technology, Boston, Mass.
 Michigan College of Mines, Houghton, Mountain Summer, N. Y.
Electrical Batteries.
 Macbeth, James & Co., New York, N. Y.
 Weston Elect. Inst. Co., Newark, N. J.
Electrical Machinery Supplies.
 Besly, C. H., & Co., Chicago, Ill.
 Chicago Edison Co., Chicago, Ill.
 General Electric Co., Schenectady, N. Y.
 Jeffrey, The, Mfg. Co., Columbus, O.
 Link-Belt Machinery Co., Chicago, Ill.
 Okonite, The, Co., New York, N. Y.
 Sprague Electric Co., N. Y.
 Westinghouse Electric Co., Pittsburg.
 Weston Electrical Instrument Co., Newark, N. J.
Elevators, Conveyors.
 Bacon, E. C., N. Y.
 Brown Hoisting and Conveying Machine Co., Cleveland, O.
 California Wire Works, San Francisco.
 Colorado, The, Iron Works Co., Denver.
 Cooper, Hewitt & Co., New York, N. Y.
 Davis, F. M., Iron Works Co., Denver.
 Denver, The, Eng. Works Co., Denver.
 Fraser & Chalmers, Chicago, Ill.
 Hunt, C. W., Co., New York, N. Y.
 Jeffrey, The, Mfg. Co., Columbus, O.

Lambert Hoisting Engine Co., Newark.
 Lidgerwood Mfg. Co., New York.
 Link-Belt Machinery Co., Chicago, Ill.
 Montgomery, J. H., Mch. Co., Denver.
 Nelsonville Foundry and Machinery Co., Ropeway Syndicate, London, Eng.
 Vulcan Iron Works, San Francisco, Cal.
 Vulcan Iron Works, Toledo, O.
Emery and Buhr Mills.
 Sturtevant Mill Co., Boston, Mass.
Emery Wheels.
 Besly, C. H., & Co., Chicago, Ill.
Engineers and Chemists.
 See pages 4, 5 and 6.
Engineers' Instruments.
 Alteneber, Theo., & Sons, Philadelphia.
 Brandis, F. E., Sons & Co., Brooklyn, Buff & Berger, Boston, Mass.
 Bullock & Crenshaw, Philadelphia, Pa.
 Fauth & Co., Washington, D. C.
 Gurley, W. & L. E., Troy, N. Y.
 Keuffel & Esser Co., New York.
 Liets, The, A. Co., San Francisco, Cal.
 Mann & Co., St. Louis, Mo.
 Queen & Co., Philadelphia.
 Saegmuller, G. N., Washington, D. C.
 Wittstock, P. & R., Berlin, Germany.
Engines.
 Bacon, E. C., N. Y.
 Jeffrey Mfg. Co., Columbus, O.
 Bullock, The, M. C., Mfg. Co., Chicago.
 Colorado, The, Iron Works Co., Denver.
 Davis, F. M., Iron Works Co., Denver.
 Denver Eng. Wks. Co., Denver, Ill.
 Fraser & Chalmers, Chicago, Ill.
 Hunt Co., C. W., New York.
 Lambert Hoisting Engine Co., Newark.
 Lidgerwood Mfg. Co., New York, N. Y.
 Risdon Iron Works, San Francisco, Cal.
 Stillwell-Bierce & Smith-Valle Co., The, Dayton, O.
 Union Gas Engine Co., San Francisco.
 Union Iron Works, San Francisco, Cal.
 Weber Gas and Gasoline Engine Co., Kansas City, Mo.
 Webster, Camp & Lane Machine Co., Akron, O.
Excavators—See Steam Shovels.
 Bucyrus, The, Co., So. Milwaukee, Wis.
 Jeffrey Mfg. Co., Columbus, O.
 Marion, The Steam Shovel Co., Marion, O.
 Olsen, C. H., Gold Dredge Co., Tacoma, Risdon Iron Works, San Francisco.
 Vulcan Iron Wks. Co., Toledo, O.
 Weber Dredge Co., Kansas City, Mo.
Explosives.
 Atlantic, The, Dynamite Company of New Jersey, New York, N. Y.
 Lau, J. H., & Co., New York, N. Y.
 Macbeth, J., & Co., New York, N. Y.
 Metallic, The, Cap Mfg. Co., New York.
F.
Fire Brick and Clay.
 Chur, Walter, New York, N. Y.
 Denver, The, Fire Clay Co., Denver.
Fluorspar.
 Fuerst Bros. & Co., New York, N. Y.
Forgings.
 Bethlehem Iron Co., So. Bethlehem, Pa.
Fuel Economizers.
 Detroit Lubricating Co., Detroit, Mich.
 Fuel Economizer Co., Mattawan, N. Y.
Furnaces.
 Allis, The E. P. Co., Milwaukee, Wis.
 Billin, C. E., & Co., Chicago, Ill.
 Brown, H. F., Chicago, Ill.
 Colorado Iron Wks. Co., Denver.
 Denver, The, Fire Clay Co., Denver.
 Hoskins, W., Chicago, Ill.
 Krupp, F., Magdeburg-Buckau.
 Moore, S. L., Son's Co., Elizabeth, N. J.
 Nichols Chemical Co., New York.
 Pollock, W. B., & Co., Youngstown, O.
 Sargent, E. H., & Co., Chicago, Ill.
G.
Gas Engines.
 Allis, E. P. Co., Milwaukee.
 Union Gas Engine Co., San Francisco.
 Weber Gas and Gasoline Engine Co., Kansas City, Mo.
Gauges, Recording, Etc.
 Besly & Co., Chicago.
 Bristol, The, Co., Waterbury, Conn.
Gearing.
 Besly, C. H., & Co., Chicago, Ill.
 Chester Steel Casting Co., Philadelphia.
 Denver, The, Eng. Works Co., Denver.
 Fraser & Chalmers, Chicago, Ill.
 Link-Belt Machinery Co., Chicago, Ill.
Grease, Graphite, Etc.
 Besly, C. H., & Co., Chicago, Ill.
 Dixon, J., Crucible Co., Jersey City, N. J.
Grease Cups.
 Besley & Co., C. H., Chicago, Ill.
 Detroit Lubricator Co., Detroit, Mich.
 Powell Wm. Co., Cincinnati, O.
Grinding Mill Machinery.
 Sturtevant Mill Co., Boston, Mass.
H.
Hoisting Machinery.
 Bacon, E. C., New York, N. Y.
 Bullock, The, M. C., Mfg. Co., Chicago.
 Colorado, The, Iron Works Co., Denver.
 Davis, F. M., Iron Works Co., Denver.
 Denver Engineering Works Co., Denver.
 General Electric Co., Schenectady, N. Y.
 Hendrie & Bolthoff Mfg. Co., Denver.
 Hunt Co., C. W., N. Y.
 Jeffrey Mfg. Co., Columbus, O.
 Lidgerwood Mfg. Co., New York, N. Y.

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.

1579 WANTED—AN EXPERIENCED man to run a cyanide plant in the West, to begin work in June or July. Address **CYANIDE, ENGINEERING AND MINING JOURNAL.**

1585 APPLICATIONS ARE INVITED FOR the position of Assistant General Manager of the Broken Hill Proprietary Company's mines in Australia; salary about \$1,500 per annum, with residence; three years' engagement. It is imperative that the successful applicant should be fully conversant with mining in all its branches, and have had experience in managing a large metalliferous mine, and in that position proved himself a capable and successful administrator; he should also possess some knowledge of metallurgy. Applications with copies of testimonials to be forwarded, specially marked, "Application for Assistant General Managership," addressed to the London Secretary of the Broken Hill Proprietary Company, Limited, 3 Great Winchester street, London, E. C., Eng.

1586 WANTED—A THOROUGHLY COMPETENT surveyor for a thriving mining camp in Arizona; he must also be a fair draughtsman. Address **ARIZONA, ENGINEERING AND MINING JOURNAL.**

1587 WANTED—TWO OR THREE EXPERIENCED miners, competent to sink a shaft in wet, sandy ground in the South. State experience, references and wages required. Address **SHAFT SINKER, ENGINEERING AND MINING JOURNAL.**

1591 WANTED—OPERATOR FOR "E" Sullivan Diamond Drill, surface work, using steam. Apply at once, stating salary expected, and give experience and references. Address **AZTEC, ENGINEERING AND MINING JOURNAL.**

1594 WANTED—ASSISTANT IN TESTING laboratory in the South. Salary small to begin with. State age, experience and salary expected. Address **SOUTH, ENGINEERING AND MINING JOURNAL.**

1595 WANTED—A PRACTICAL MAN, who understands the business and who has had experience in handling different kinds of ores, to erect and manage a sampling works and merchant mill. Address **B. R., ENGINEERING AND MINING JOURNAL.**

1596 WANTED—A MINING ENGINEER of ability and experience, qualified to manage a paying property. Address **E. D., ENGINEERING AND MINING JOURNAL.**

1597 WANTED—AN ASSAYER, GOOD position open for a competent man. Address **Y. M., ENGINEERING AND MINING JOURNAL.**

1598 WANTED—CHEMIST, BY A NEW electro-chemical company. To a young man of exceptional capacity, ability and education this will be a good opening. Address **SODA-CHLORINE, ENGINEERING AND MINING JOURNAL.**

1599 WANTED—AN EXPERIENCED working superintendent for a water jacket smelting furnace to be erected at once in an Eastern State. Must be good assayer, familiar with lead and antimony smelting. State experience, reference and salary expected. Address **WATSON & CO., ENGINEERING AND MINING JOURNAL.**

1600 WANTED—SUPERINTENDENT FOR basic open-hearth plant, who is a sufficiently good handler of men to start a non-union plant; he must be a technical school graduate, and have had ample experience; state age and salary expected. Address **STEEL PLANT, ENGINEERING AND MINING JOURNAL.**

SITUATIONS WANTED.

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

POSITION WANTED AS SUPERINTENDENT of copper smelting plant; have thorough knowledge of converting, roasting and smelting, and could build plant for same. Address **SMELTER, ENGINEERING AND MINING JOURNAL.** No. 18,191, April 30.

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.**

A MALGAMATOR AND ASSAYER WANTS position; first-class references. Address **MILLMAN, ENGINEERING AND MINING JOURNAL.** No. 18,207, April 9.

POSITION WANTED IN A DYNAMITE factory. A chemist with 12 years' experience in the manufacture of dynamites—collodion cotton, sulphuric, nitric, chloridic acids, etc.—38, single, speaks English, French, German, Italian. Address **A. P., ENGINEERING AND MINING JOURNAL.** No. 18,192, April 28.

A COLLIERY MANAGER AND GRADUATE E. M. in charge of large plant desires change; 15 years' practical experience, energetic and progressive, up to date and successful in getting good results. Address **COAL, ENGINEERING AND MINING JOURNAL.** No. 18,176, April 16.

METALLURGIST AND MINING ENGINEER, with five years' experience in cyaniding, besides general experience in charge of mining, milling and smelting, would like a position with some company developing a cyaniding proposition. References exchanged. At liberty June 1. Address **METALLURGIST, ENGINEERING AND MINING JOURNAL.** No. 18,201, May 14.

AN EXPERIENCED MINING ENGINEER and Metallurgist wants position with mining or copper and lead smelting company. Address **COPPER, ENGINEERING AND MINING JOURNAL.** No. 18,203, April 23.

A TECHNICAL GRADUATE, WITH OVER 10 years' experience in a large lead works as head of the electrolytic silver refining department, chief assayer, etc., desires position. References furnished. Address **ARGENTUM, ENGINEERING AND MINING JOURNAL.** No. 18,206, April 30.

A MINING ENGINEER OF MIDDLE AGE, with 15 years' experience in gold mining in all its branches, is open for an engagement. Treatment of low-grade and refractory ores a specialty. Best of references. Address **GOLD MINING, ENGINEERING AND MINING JOURNAL.** No. 18,215, May 7.

ASSAYER AND CHEMIST—YOUNG MAN, some experience, desires position. Address **C., ENGINEERING AND MINING JOURNAL.** No. 18,209, April 23.

BLAST FURNACE CHEMIST, EXPERIENCED and familiar with modern rapid methods of analysis, desires a position. Speaks German and Spanish. Best references. Address **CHEMIST, ENGINEERING AND MINING JOURNAL.** No. 18,210, April 16.

ASSAYER AND SURVEYOR—A YOUNG man with technical education desires position. Address **A. M. M., ENGINEERING AND MINING JOURNAL.** No. 18,212, April 16.

FIRST-CLASS ASSAYER WANTS POSITION; has been assayer for mines in Mexico, in Arizona and California, and is now open for engagement. Best references. Address **ASSAYER, ENGINEERING AND MINING JOURNAL.** No. 18,211, April 9.

A GOLD METALLURGIST, AGE 25, AMALGAMATING in California, wants position with cyanide or chlorination company. Technical, assayer, Spanish, electricity. Address **M. L., ENGINEERING AND MINING JOURNAL.** No. 18,214, April 16.

POSITION AS MANAGER OR SUPERINTENDENT of a working mine; 30 years' experience as such in Germany, Mexico and Colorado; graduate of a royal school of mines of Prussia; first underground man, surveyor, etc.; good testimonials and references. Address **M. K. M., ENGINEERING AND MINING JOURNAL.** No. 18,213, April 23.

A YOUNG MAN DESIRES POSITION AS superintendent or head assayer to have charge of mill work and chlorination plant. Nine years' experience in large property. Best of references. Will go any place. Address **J. F. C., ENGINEERING AND MINING JOURNAL.** No. 18,217, April 9.

AN EDUCATED CHEMIST AND ASSAYER, 12 years' experience in the West, now open to engagement. Thoroughly understands milling, chlorination and cyanide processes and used to handling men. Moderate salary. Address **L. E. P., ENGINEERING AND MINING JOURNAL.** No. 18,216, April 30.

CONTRACTS OPEN.

ELECTRIC LIGHTING.—Sealed proposals will be received by the City of Geneva, N. Y., until 11 o'clock a. m., April 15th, 1898, for lighting the streets and alleys of the city with 100 arc lights of 2,000 candle power each, for periods of 3 years and 5 years, respectively, from May 1, 1898, for all night and every night in each year, and also for 325 nights for all night in each year. Also for 3 years and 5 years, respectively, for 100 arc lights of 2,000 candle power each, and 50 32-candle power series incandescent lights to be operated the same number of nights as the arc lights, that is, all night and 325 nights respectively in each year. Also for 300 Weisbach Incandescent gas lamps burning all night and every night in each year, and also for 325 nights all night in each year. A certified check for \$5,000 to the order of the Treasurer of the City of Geneva must accompany each bid. No bid will be considered unless accompanied by such check. In the case of unsuccessful bidders the check will be returned to them as soon as the award of contract shall have been made, and in the case of the successful bidder, the check will be returned when the contract for lighting shall have been duly executed by him and a bond shall have been given satisfactory to the Electric Light Committee of the Board of Aldermen of the City of Geneva to insure the fulfillment of the contract. All bids should be addressed to the chairman of the committee. Plans and specifications may be seen at the office of the City Clerk. The committee reserves the right to reject any or all bids.

BRIDGES.—"Proposals for supplying and erecting the Acheson, Topeka & Santa Fe Railway Company's bridge substructure on Contract Section Eight (8) of the Main Drainage Channel," will be received by the Clerk of the said Sanitary District at Room 1110, Security Building, Chicago, Illinois, until 12 m. (standard time) of Wednesday, the 18th day of May, A. D. 1898, 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 work for which said tenders are invited is the furnishing, delivering and building in place one (1) center pier and two (2) wing abutments, as per plans and specifications to be furnished by the Chief Engineer. Each bid must be accompanied by a certified check or cash to the amount of five hundred (\$500) dollars. All certified checks must be drawn on some responsible bank doing business in the City of Chicago and be made payable to the order of the Clerk of the Sanitary District of Chicago. Said amount of five hundred (\$500) dollars 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 same in the amount of three thousand (\$3,000) dollars. All bids must be upon the blank forms furnished by the Sanitary District. No bid will be considered unless the party making it shall furnish evidence satisfactory to the Board of Trustees of his experience and ability in this class of work, and that he can control sufficient capital to enable him successfully to prosecute same in case the contract therefor shall be awarded him. Bidders are required to state in their bids their individual names and places of residence in full. Specifications and plans may be obtained at the office of the Chief Engineer, Room 1010 Security Building, Chicago, Illinois, on or after April 25th, 1898. The said Board of Trustees reserves the right to reject any and all bids.

PIER, TUNNEL.—Sealed Proposals will be received at the office of the Board of Trustees, "Commissioners of Water-Works," of the City of Cincinnati, Ohio, until 12 o'clock noon of Thursday, April 23, A. D. 1898, for the construction of an Intake Pier, Tunnel and Pump Pit for the Eastern Pumping Station, near the village of California, Ohio, in accordance with plans and specifications on file in the office of the Chief Engineer of the Board of Trustees, "Commissioners of Water-Works." The same to be paid for as stipulated in the form of contract for the performance of the above work, and which form of contract is on file in the office of the Board of Trustees, "Commissioners of Water-Works." Copies of the specifications, form of proposal, forms of bonds, and form of contract can be procured by application to the Chief Engineer. Bidders must inclose their bids in sealed envelopes, and deposit the same with the Clerk of the Board of Trustees, "Commissioners of Water-Works," before Thursday, the 28th day of April, 1898, at 12 o'clock m., and such sealed envelopes must have indorsed thereon the nature of the bid and the name and address of the bidder. Bids will be opened on Thursday, the 28th day of April, 1898, at 12 o'clock m., at the office of the Board of Trustees, "Commissioners of Water-Works." Each bid shall be accompanied with a bond in the sum of \$10,000, signed by two sureties, for the acceptance of the contract, if awarded by the Board of Trustees, "Commissioners of Water-Works," or the bidder may deposit with the Board of Trustees, "Commissioners of Water-Works," in lieu of such bond, a certified check or bank certificate of deposit, payable to the order of the Board of Trustees, "Commissioners of Water-Works," or cash equal in amount to the bond as above required. Bidders must furnish satisfactory evidence of their ability to do the class of work required. Bidders must use the printed forms, as none other will be received. The Board of Trustees, "Commissioners of Water-Works," reserve the right to reject any and all bids. By direction of the Board of Trustees, "Commissioners of Water-Works."

WATER-WORKS.—Sealed proposals addressed to the City Clerk of the City of Mineral Point, Wis., will be received until 2 p. m. on the 19th day of April, 1898, for furnishing all the labor and materials required to construct a system of Water-Works in said city, in accordance with plans and specifications now on file in the office of the City Clerk. A certified check in the sum of \$200, payable unconditionally to the City Treasurer of Mineral Point, must accompany each bid. The right is reserved to reject any and all bids, and to waive any defects.

STAND-PIPE.—Sealed proposals will be received until 12 o'clock noon, April 21st, at the office of the Jeffersonville Water Supply Company, for furnishing and erecting a standpipe, 15 feet inside diameter and 179 feet in height. Specifications and information furnished by the undersigned. The Company reserves the right to reject any or all bids.

D. M. ALLEN, Supt.,
Jeffersonville Water Supply Company.

WATER TOWER AND TANK.—Sealed proposals will be received by the Town of Odeboit, Ia., until Tuesday, April 5th, at noon, for furnishing the necessary labor and material for the erection of a complete water tower and tank. Tower, steel, 60 ft.; Tank, wood, 20 x 30 ft. Plans and specifications can be seen at the office of City Clerk, Odeboit, Ia., or at office of U. S. Wind Engine & Pump Co., Engrs., Batavia, Ill.

LANDS AND MINES FOR SALE.

E. HEDBURG, Mining Engineer. JOS. F. BOYD, Mine Operator.

LEAD AND ZINC MINING PROPERTIES

In Joplin, Mo., District, Bought and Sold.

Large Dividend paying properties a specialty. We have had 17 years' experience in the district. Write for illustrated pamphlet. Address

E. HEDBURG & CO., Joplin, Mo.

FOR SALE,

In Nova Scotia, a valuable property containing Gypsum and Selenite in almost unlimited quantities. Address THOMAS A. SCOTT,

60 Congress St., Boston, Mass.

FOR SALE.

A Salt Works situated in the Kansas Salt Belt. The property is offered to close up an estate. For particulars address P. O. Box 591, Hazelton, Pa.

To Lease on Royalty.

A fine bed of fire clay; extent, 15 to 30 acres. Thickness, 10 to 20 feet. Coal underneath to lease on royalty in connection with clay. Site for brick works. Terms and particulars apply to WILLIAM TURNER,

P. O. Box 202, Johnstown, Pa.

Canada, Province of British Columbia.

No. 3. IN THE SUPREME COURT.

In the Matter of O. K. GOLD MINING CO.,

Limited Liability (Foreign), in Liquidation.

The undersigned Official Liquidator will sell by Tender, subject to ratification by the Court,

The O. K. Mine and Buildings belonging to said Company; also the entire Mining and Milling Plant of said Company, situated on the south slope of O. K. Mountain in Trail Creek Mining Division, about 2 1/2 miles west of Rossland and close to main wagon road and Tied Mountain Railway, leading from the City of Rossland, West Kootenay District, British Columbia, to Northport, Washington, distant about 15 miles. The claim is surveyed and Crown granted.

The ore was at first largely free milling. It was originally treated by a five stamp mill, which was superseded by the present 10 stamp mill.

The O. K. Mine has been worked since 1898, and has always been a producer. About 2,472 tons of ore from this mine were milled from January 19, 1897, to June 19, exclusive of several hundred tons of custom work for adjoining mines.

It is most favorably situated in all respects. The new ten-stamp mill is thoroughly equipped for the economical handling of ore. It is connected with the mine by a 600-foot gravity surface tramway, with 20 wire rope carrying rollers, etc., complete, the elevation of the workings being 200 feet above the mill; one 3-wheel brake with 650 feet 4-inch steel wire rope; two self-dumping ore cars, 18-inch gauge.

The mill contains two 50 horse-power standard tubular boilers, each containing 54 12-foot tubes; one 85 horse-power Corliss engine; one 10-stamp mill; one No. 6 Blake crusher; one grizzly 4 x 10, 3 x 1/2 iron; two Challenge automatic feeders; one overhead crane, with iron track; one 1-ton Weston differential pulley block; one gold retort, with cover, wedges and condenser pipe; one Rand straight line Class C 12 x 18 air compressor, capable of running four drills; one 28-inch x 5 foot air receiver; one No. 7 Miller duplex pump; three 6-foot Fraser & Chalmers Erie vanners; plain belts; one 4-core hydrometric sizer; one Woodbury concentrator; one bumping table; extra amalgamating plates following concentrating table, and one Fraser & Chalmers ore sample grinder, etc.

BUILDINGS.—The principal buildings are: The new mill building, containing 10-stamp mill, but designed and built to accommodate 25 stamps; engine and boiler house, office buildings, mess room, cook house and store room, manager's residence, etc.

DEVELOPMENT WORK.—Comprises three main tunnels, one winze and a number of drifts, shaft down 15 ft., aggregating over 1,500 feet, which is entirely confined to one corner of the property. Two-thirds of the property are as yet unprospected. Tenders are now invited for the sale of the property as a whole, including the new 10 stamp mill, the mine, four machine drills, and entire plant, machinery and all buildings connected therewith.

The undersigned reserves the right to accept or decline any tender, and to withdraw the property from sale at any time, and the further right to fix a reserve price upon the property, and to make such other conditions as may meet with the sanction of the Court.

The property is open for inspection, and intending purchasers will find it advantageous to make an application for this purpose to the undersigned, at No. 8 Imperial Block, Rossland, B. C., where an inventory can be seen and all further necessary information will be furnished.

RICHARD PLEWMAN,

Telegraphic and Cable Address Official Liquidator. "PLEWMAN." Use Bedford McNeil's Code.

UNITED STATES CONSULATE.

The Government of the United States has established a Consular Agency for the entire Kootenay District, at Rossland, B. C. All official and other business will receive prompt attention.

FRIEDRICH E. BLOCHBERGER, LL.B., Consular Agent.

FREDERICK G. CORNING, Pres. THOS. F. MASON, Vice-Pres.
THOMAS J. HUBLEY, Sec'y and Treas.

THE EXPLORATION SYNDICATE,
Mills Building, 15-17 Broad and 35 Wall St., New York.
London Office: 3 Grace Church St., E. C.

MISCELLANEOUS WANTS.

SECOND-HAND RAILS.

If you have any Rails which are in good condition to relay—or if only good to be used as scrap—write us we buy both kinds.

ROBINSON & ORR,
No. 419 Wood Street, Pittsburgh, Pa.

WANTED BONDS

of the Canada Consolidated Gold Mining Company dated about 1882. Address

BONDS,
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The Trustees of the Company have this day declared a dividend of TEN CENTS per share on its capital stock, payable April 15th, 1898.
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	21	1 3/4	5	12	33	58	78	100
	24	2	5	14	38	66	90	113
	27	2 1/4	6	16	42	72	98	125
	30	2 1/2	6	17	46	79	108	137
	33	2 3/4	7	19	50	86	117	149
	36	3	8	20	54	93	126	161
	39	3 1/4	8	21	58	99	135	173
	42	3 1/2	9	22	61	108	143	183
	45	3 3/4	10	24	65	112	151	194
	48	4	10	25	68	118	160	204
	51	4 1/4	11	26	72	129	175	224
	54	4 1/2	12	28	81	141	190	243
	57	4 3/4	13	32	87	151	205	261
	60	5	14	35	93	161	219	279
	63	5 1/4	15	37	99	171	233	296
	66	5 1/2	16	40	105	181	242	313
	69	5 3/4	17	41	109	190	258	329
	72	6	18	45	115	200	271	346
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	78	6 1/2	19	47	126	219	296	378
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	84	7	20	51	137	238	322	411
	87	7 1/4	21	53	143	248	336	428
	90	7 1/2	22	55	149	258	349	448
	93	7 3/4	22	57	154	268	362	464
	96	8	23	59	160	278	375	484
	99	8 1/4	24	61	166	288	388	504
	102	8 1/2	24	63	171	298	401	524
	105	8 3/4	25	65	177	308	414	544
	108	9	25	67	182	318	427	564
	111	9 1/4	26	69	188	328	439	584
	114	9 1/2	26	71	193	338	452	604
	117	9 3/4	27	73	199	348	464	624
	120	10	27	75	204	358	477	644
	123	10 1/4	28	77	210	368	489	664
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	129	10 3/4	29	81	221	388	514	704
	132	11	29	83	226	398	527	724
	135	11 1/4	30	85	232	408	539	744
	138	11 1/2	30	87	237	418	552	764
	141	11 3/4	31	89	243	428	564	784
	144	12	31	91	248	438	577	804
	147	12 1/4	32	93	254	448	589	824
	150	12 1/2	32	95	259	458	602	844
	153	12 3/4	33	97	265	468	614	864
	156	13	33	99	270	478	627	884
	159	13 1/4	34	101	276	488	639	904
	162	13 1/2	34	103	281	498	652	924
	165	13 3/4	35	105	287	508	664	944
	168	14	35	107	292	518	677	964
	171	14 1/4	36	109	298	528	689	984
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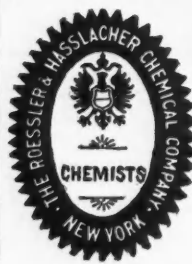
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