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RICHARD P. ROTHWELL, C. E. M. E., Editor.  
ROSSITER W. RAYMOND, Ph. D., M. E., Special Contributor.  
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The opening of the Northern Indian reservations and the discoveries of large ore deposits in the northern part of the State of Washington, near the International boundary line, have given a great impulse to prospecting and mining in the State. The mining industry, indeed, is advancing much more rapidly than was believed possible two or three years ago, and is becoming an important factor in the growth of the State. The Republic District—which is described on another page—has attracted more attention outside of the State than any other, and the actual facts about the history and present condition will be found of much interest. It is already a considerable producer, and its development will be much advanced when the best process for treating the somewhat complex low-grade ores is determined. Other districts in the northern part of Washington are beginning to be heard from, and it is quite possible that in a few years the State will hold a prominent place among the mining communities of the West.

The Union Copper Mining Company is opening, near Salisbury, N. C., a very promising copper deposit. One shaft has a depth of 260 ft. and there are seven or eight other shafts of less depth, so that it is already beyond the class of a mere prospect. The selected ore shipped has averaged by the carload some 8 per cent. copper and the ore-bodies carrying 4 to 5 per cent. are said to be from 20 to 40 ft. in width. This deposit merits a much fuller notice than we can give it now, and we shall again refer to it.

It is to be regretted that exaggerated statements of the quantity and richness of the ore have gained circulation, and that in consequence the stock of the company has been quoted at a figure which would place the value of the mine at \$9,000,000; a figure for which there is no justification. We believe that the officers of the company are in good faith spending their own money very freely in this enterprise, and that they are pushing work on it with the utmost energy; nevertheless it is very unfortunate when evidently extravagant ideas of values are sincerely held by gentlemen like these who wish to do what is honest and fair in developing their property, for if the mine should not turn out as they expect, it greatly injures legitimate mining in public esteem; and if it should ultimately realize their expectations, it will encourage many doubtful enterprises to cite these exaggerated and harmful statements as justifying their own in advance of demonstration of actual value. "Good wine needs no bush," as the French say.

It is understood that the Huanchaca Mining Company has taken seriously in hand the work of placing its great silver mines in Bolivia on the footing which they ought to have held long ago. The management at the mines is to be thoroughly reformed, with a view of conducting the work hereafter in a systematic way, and of dealing properly with the water which has for two or three years interfered seriously with operations on the lower levels. American capital has become interested in the mine, and the French financial papers report that Guggenheim Brothers of New York have advanced the Huanchaca Company \$300,000, which is to be repaid in half-yearly installments of \$75,000 each.

It is further stated that Guggenheim Brothers have taken in hand the extensive reduction works at Playa Blanca, and will operate them, the Huanchaca Company furnishing the ores under an agreement by which the profits will be divided between miner and smelter. The Guggenheim house also takes an option, running over six years, for the purchase of the works at a valuation of \$300,000, with a rental or royalty of \$6 per cajon of ore delivered to the works by the Huanchaca Company. This royalty or premium is to run for 15 years, the company to deliver a minimum of 10,000 cajons a year.

This report is interesting as a promise that the capital invested in the great silver mine and reduction works may be at last properly utilized; and also as showing that American capitalists are realizing the importance of the South American opportunities which have been so long left to European merchants.

### THE MOVEMENT OF LAKE SUPERIOR IRON ORES.

The movement of iron ore from the Lake Superior districts up to November 1st, as reported at the receiving ports, reached a total of 15,560,000 long tons, or 3,014,500 tons more than at the corresponding date last year. During the present month shippers have been extremely active, so that the total shipments are now close upon 17,000,000 tons; and will probably exceed 17,500,000 tons should navigation continue as late as now seems probable. This is an unprecedented movement, and its carriage has taxed the present capacity of the fleet of vessels available, as the rapid rise in freight rates has shown. There has

been also on the Lakes this year a large movement of grain, which in the earlier part of the season limited the tonnage available for ore almost entirely to that which had been regularly chartered for the season. Quite recently, however, a number of grain boats have been disengaged and have taken the opportunity to round out the season by a few trips with ore; so that tonnage is now abundant.

We recently ("Engineering and Mining Journal," November 4th) referred to the unprecedented extent to which vessels had been purchased or chartered by the owners and shippers of ore. It was then stated that the vessels thus secured had a carrying capacity for the season of 17,798,000 tons, and charters since made have increased this to 18,250,000 tons. The fleet engaged already is therefore able to carry more ore by 500,000 tons than the total mined and shipped this season. From the preparations made, however, it is beyond question that the output of Lake ores in 1900 will show another large increase, and will probably exceed 19,000,000 tons; some good authorities even considering 20,000,000 tons as possible. It is therefore evident that there will be some demand for extra or "wild" tonnage, though it may not be large enough to affect rates or to attract many grain carriers into the business.

The important point to vessel owners is that the charter rate on iron ore has practically been fixed for next season, and that it is \$1.25 a ton from Lake Superior ports, or nearly three times the figure which was generally accepted during the season of 1898. Of course this charge applies only on chartered vessels; and the large quantity which will be carried on boats owned by the ore-mining and consuming companies will represent only to those companies the actual cost of carriage plus interest on their investment, or such sum as may be charged on their books.

Nothing has been said about the prices of Lake Superior ores for next season, but they will undoubtedly be higher than those fixed last spring for the present year. The increased transportation charge will be a factor in making still greater the advantage which the companies owning their own ore supplies already have over the smaller concerns which must buy their ores from others.

#### SILVER MOVEMENT FOR TEN MONTHS.

While the movement of silver through the London market has been large this year, it has still fallen somewhat below that of 1898. The British imports for the ten months ending with October showed a decrease in total value, as compared with last year of £1,083,162, or 9.1 per cent.; while in the exports there was a decrease of £888,291, or 7.0 per cent. The imports into and exports from Great Britain for the ten months are given in the Board of Trade returns in detail, as below:

	Imports.		Exports.	
	1898.	1899.	1898.	1899.
United States.....	£7,707,779	£7,363,323	£7,916	£11,487
Other American countries.....	1,253,692	884,114	42,271	187,842
European countries.....	2,744,764	2,277,595	6,758,535	4,704,727
Africa.....	102,764	106,626	503,309	458,218
Australasia.....	61,651	178,540	92,967	131,170
The East.....	22,329	473	5,183,254	6,181,614
Other countries.....	22,446	14,582	99,930	118,843
Totals.....	£11,908,425	£10,825,263	£12,688,162	£11,799,891

Of the imports, the United States, as usual, furnished considerably over half, its proportion of the total being 67 per cent. this year, against 64.7 per cent. in 1898. There was a reduction of £369,578, or 29.4 per cent., in the receipts from Mexico and South America. The imports from Australasia showed a large relative increase, 188.7 per cent.; but the total, £178,540, is not large. The other changes in imports call for no special comment.

Perhaps the most notable change in the exports was in those to European countries, which showed this year a decrease of £2,053,808, or 43.7 per cent. The chief changes were a decrease of £2,163,904, or 74.6 per cent., in the shipments to France, which last year took a large quantity for new coinage, and is this year taking but little; and a decrease of £293,594 in the exports to Spain, which is at present not in a position to buy silver—or anything else. On the other hand, there was an increase of £1,265,745, or 75.6 per cent., in the exports to Russia, which has been a heavy buyer of silver for a year past. As we have heretofore pointed out, a large part of this silver probably finds its way to China, where the Russians are now spending a great deal of money in railroad building and other work.

The shipments to the East this year constituted 52.4 per cent. of the total exports, and showed an increase of £1,001,360, or 19.3 per cent. These shipments in detail are shown in the following table:

	1898.		1899.		Changes.	Per cent.
	£	1898.	£	1899.		
British East Indies.....	£4,625,172	£4,788,069	I.	£162,897	2.5	
Japan.....	150	.....	D.	150	100.0	
China.....	557,932	1,396,545	I.	838,613	150.3	
Totals.....	£5,183,254	£6,184,614	I.	£1,001,360	19.3	

It will be seen that the chief increase this year was to China, a country which has apparently been taking a great deal of silver this year. The

increase is not so large, however, as appears above, since for the ten months there was a decrease of \$734,397 in the shipments of silver from San Francisco to Hong Kong and Shanghai; and it is also understood that the German sales of silver in China, which were large in 1898, have been much lighter this year. Whatever silver the Russians may have shipped to that country does not much affect the regular trade, since it represents a new demand, and is paid out chiefly for value received, either from Manchurian laborers or Peking mandarins.

Upon the whole, the statistics this year do not show any important decrease in the demand for silver. At the present time it is improving and appearances indicate considerable shipments for the balance of the year. There are several elements—among others the high price and heavy demand for tin—which are calling for such shipments, and the supply is ready.

#### THE FUTURE OF THE LAKE SUPERIOR IRON MINES.

The activity in the Lake Superior iron ore fields is unprecedented. Properties that have lain unworked for years are being reopened to ship next year, and other properties which have merely a showing of ore are eagerly sought for, and taken under option by the big mining and smelting concerns which are sharing the iron trade of this country. In this rush to get iron lands, several curious changes in the sentiment prevailing among the iron companies a few years ago are evident. The magnetites, and the specular hematites, which so long commanded a premium among the Lake Superior ores are now in less demand. Experience has shown that these more or less crystalline ores do not smelt as easily as those of a softer character, and their higher price has perhaps been due to their looks. In any event magnetites and specular ores have had their day, and at least one large company is refusing to take specular hematites except at a discount from the prices paid for standard Norrie ore.

Another feature of the present excitement is the inquiry for low grade propositions. The cause of this is the need of hard ore to mix with the abundant, but less desirable, Mesabi hematites. All the mining companies are looking forward to the time when the present hard ore mines will be worked out. This year's output in the Lake Superior ranges will be about 17,500,000 long tons. Of this about one-third will be the less desirable Mesabi hematite. Next year's output will be probably larger than this; and it is not likely that production will fall off for several years. It is evident, therefore, that before long the furnaces of the iron companies will want 15,000,000 tons yearly of Lake Superior ore other than Mesabi, and the high grade mines cannot stand this drain long.

Mining costs may be reduced somewhat from what they were two years ago, but higher prices for labor for at least a few years, high costs for machinery, explosives and all supplies is not likely to allow mining expenses to be lessened much at present. On the other hand, transportation by lake in modern steamers can be profitable for less than 50 cents a ton from Duluth to Cleveland, and rail freights may be reduced, particularly on the Minnesota roads. However, it must be admitted that extremely low costs of production have already been attained. Thus, it is known that a certain low grade iron ore body near Ishpeming had been worked at a profit when its ore sold at Cleveland for \$1.75 a ton. The price of standard hematites at Cleveland fixed for the present season was \$3.75 to \$4.25; next year it will be higher, though prices are not yet fixed. The low grade mentioned contains 35 per cent. of iron; the standard ores 63 per cent. Thus in a 35 per cent. ore the iron sells at 5 at 5 cts. a unit; in a 60 per cent. at over 6 cents. Now there are in the Lake Superior region very few medium grade ore bodies. When the country was first opened there was an immense supply of ores running over 60 per cent. iron. It is these ores that are being exhausted. Below 58 per cent., there are very few bodies of any size known until we come to those where the iron content is 30 to 35 per cent. Of such, the visible supply is enormous. Rock as rich as this is the material from which the high grade ore bodies have been formed by a process of concentration through percolating waters. This stuff, known among the miners as jasper, on the Marquette, Menominee, Gogebic and Vermillion ranges, frequently contains 30 per cent. iron. On the Marquette and Menominee it forms immense outcrops. These outcrops can be worked as cheaply as quarries, and with improved machinery, a 35 per cent. ore can be put on the cars, as in the case above noted, for a price that will leave a profit at \$1.75 delivered at Cleveland. Thus it is evident that while the old high grade mines in the Lake Superior country may be exhausted, iron mining in that region is still young. The striking fact brought out by present conditions, however, is that a 35 per cent. ore is sought for to be smelted at a furnace over 1,000 miles away, where it forms a desirable mixture with the soft Mesabi ores. It is an incident in that general cheapening of costs of production which has



been a feature of this century, and is made evident daily by the opening all over the world of metal mines of so low a grade that they could not have been worked at a profit a few years ago.

#### NEW PUBLICATIONS.

"Report of Lecture on the Deep Leads of Victoria, and Some Indications of Ore Deposits." By E. Lidgley. Melbourne, Australia; Government Printer. Pages, 9.

This is a popularized summary of information on Victoria deep leads, or drift mines. It appears that there are nearly 400 miles of deep leads at present unworked. The pamphlet contains also a short paper on "Some Indications of Ore Deposits." Mr. Lidgley seems to have benefited to some degree by a reading of Dr. R. W. Raymond's paper on "Indicative Plants," published in the "Transactions" of the American Institute of Mining Engineers some years ago.

"Alloys of Tin and Lead." by Erwin S. Sperry. London; Eyre & Spottiswoode. Pamphlet, pages 12.

This is a paper reprinted from the "Journal of the Society of Chemical Industry," and gives the results of a large number of experiments made on alloys containing varying proportions of tin and lead. With the conclusions derived from them Mr. Sperry found that tin and lead will combine in all proportions. The greatest tensile strength was found in an alloy containing 72.5 per cent. of tin and 27.5 per cent. of lead; the most ductile alloy consisted of 40 per cent. tin and 60 per cent. lead; while the best alloy for ordinary use is 50 per cent. tin and 50 per cent. lead. The general results are expressed in a convenient table, which is supplemented by a diagram.

"Geological Survey of Victoria—Department of Mines. Progress Reports Nos. IX, X and XI." Issued by James Travis, Acting Secretary for Mines. Melbourne, Australia, 1898; Government Printer. Price (in New York), \$1.75 each.

Considerable space is given in these reports to the deep leads of Victoria, which recently have been attracting the investment of English capital. James Sterling, Government Geologist, and Reginald Murray, late Government Geologist, have been the leading contributors. The reports are not selected on account of the economic importance or geological interest of the mines examined, but the volumes form a compendium of the work of the Geological Survey, which in its natural desire to be thorough has to expend much time on places of purely negative interest. The volumes are handsomely illustrated with maps and plans, and contain much information of value, though in an unwieldy form.

"Kansas Bureau of Labor and Industrial Statistics; Fourteenth Annual Report, 1898." W. L. A. Johnson, Commissioner. Topeka, Kansas; State Printer. Pages, 360.

This report of the Kansas Bureau of Labor discusses many important questions, among which are manufacturing and industrial concerns; wage earners and their condition; railroad employees; statistics of State Institutions; labor organization; factory inspection; sociology; labor legislation; the zinc and lead industry of the State. It will be seen that it covers a wide range of subjects, upon all of which statistics and comments are presented. The chapter on the zinc and lead industry, which is most interesting to us, is comparatively brief. It gives statistics of production in the different districts, the number of mines, mills, etc., and a brief account of the leasing system under which most of the mines are operated. A short paper gives, also, an account of the petroleum industry of the State, with figures for its production. The chapter on the State institutions gives some interesting details of their operation. The report has evidently been carefully prepared and much pains have been taken in collecting and preparing these statistics.

"Painting to Prevent Corrosion; with Specifications." By A. H. Sabin. New York; Edward Smith & Company. Pages, 96; illustrated. Price, \$1.25.

This is a convenient little hand-book, treating of the different kinds of paints which have been used on iron and steel work, both when exposed to the air and when faced or covered in order to prevent corrosion. This is an important subject, as all engineers know, and perhaps too little attention has been paid to it. Bridges and other metallic constructions, which are exposed and can be readily seen, will speak for themselves, but the framing of buildings, which is generally covered by the outside walls or ceiling, is a more difficult matter; and if not properly protected it is possible that corrosion may proceed to a considerable extent before it is detected. In both cases the proper painting of the iron and steel is a matter needing much care. The book gives much useful information on the subject, and the specifications have evidently been prepared. They were, the author says, submitted to the criticism of a number of engineers in different parts of the country before publication. The illustrations show a number of metallic structures and also some striking examples of the extent to which corrosion will sometimes injure such structures and detract from their strength.

#### BOOKS RECEIVED.

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

"Statistik des Auswärtigen Handels des Oesterreichisch-Ungarischen Zollgebiets, im Jahre, 1898." Vienna, Austria; issued by the Statistical Bureau of the Ministry of Commerce. Pages, 468.

"Some Unrecognized Functions of Our State Universities." By J. B. Johnson. Madison, Wis.; published by the University of Wisconsin. Pamphlet, pages 20. Price, 25 cents.

"Italia; Rivista del Servizio Minerario nel 1898." Pubblicazioni del Corpo Reale della Miniere. Rome; National Printing Office. Pages, 400.

"Monopolies and the People." Third Edition, Revised and Enlarged. By Charles Whiting Baker. New York and London; G. P. Putnam's Sons. Pages, 362. Price, \$1.50.

"A Dividend to Labor; A Study of Employers' Welfare Institutions." By Nicholas Paine Gilman. Boston and New York; Houghton, Mifflin & Company. Pages, 400. Price, \$1.50.

"Alloys of Iron and Nickel." By Robert Abbott Hadfield. London, England; Published by the Institution of Civil Engineers. Pages, 172; with tables and diagrams.

"Journal and Proceedings of the Royal Society of New South Wales for 1898." Edited by J. H. Maiden and W. M. Hamlet, Honorary Secretaries. Sydney, N. S. W.; published for the Society. Pages, 332; illustrated.

"Indice del Comercio Americano: Directorio Descriptivo y Clasificado de los Miembros de la Asociacion Nacional de Manufactureros de los Estados Unidos." Philadelphia; the National Association of Manufacturers. Pages, 360.

"Graded Weekly Wages." Being an extract from the 29th Annual Report of the Massachusetts Bureau of Statistics of Labor. By Horace G. Wadlin, Chief of Bureau. Boston; State Printers. Pages, 384.

"Annual Report of the Chief of the Bureau of Steam Engineering, Navy Department, 1899." George W. Melville, Engineer-in-Chief, U. S. N. Washington; Government Printing Office. Pamphlet, pages 90; with plates.

#### CORRESPONDENCE.

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

#### Prices of Tungsten Ore.

Sir: We read in your paper of November 11th, in the mining news from South Dakota: "Wolfram Ore.—The Durango Mine has 30 tons of wolfram ore ready for shipment. The mine has a shoot of 18 in. by 14 in., which runs 40 to 50 per cent. tungstic acid. The owners ship to New York and receive \$5.50 for each per cent."

As far as the price is concerned we will tell you that neither abroad nor in this country are there buyers of wolfram ore paying that price for such a low grade, and unless proper vouchers are submitted to you, you can strongly deny that a kind of ore as mentioned can find a market at the stipulated price of \$5.50.

We understand very well that your correspondent forwarded the report as given to him, but being interested in that business, we protest against untrue statements given by mine owners for publication, as such statements do more harm than good. They are simply deceiving other miners of similar ores and prevent business.

We do not believe that a 40 to 55 per cent. ore would find buyers at \$3.50 per unit, which is far from \$5.50. Those fancy prices are given only for one object—to deceive parties who have money to invest.

Poulot & Voilleque.

Denver, Colo., Nov. 17, 1899.

#### Ammonia in Flue Dust.

Sir: In Dr. Iles' article in the "Engineering and Mining Journal" of November 11th, some surprise is expressed at the rather considerable quantity of ammonium sulphate found in the liquid condensed from lead furnace fume. I believe that ammonia, most probably as sulphate, exists quite generally, and in considerable quantities, in flue dust. Its presence is made very apparent by the odor of ammonia in the vicinity of the brick machine, when bricking flue dust with milk of lime, as a binder. I frequently noticed this at the El Paso Works, and at the Argentine Works, but more especially at these works, San Luis Potosi, when briquetting flue dust in the improved Chisholm, Boyd & White briquetting machines, in which the cream of lime is intimately mixed with the flue-dust, just as it enters the rollers, or Chile-mill-like arrangement for filling the disk. In this machine the ammonia is liberated in such quantities as to be quite irritating in coming close to the machine, causing one's eyes to water, or, at times, in looking in to the cylinder which surrounds the rollers, the ammonia is strong enough to cause the characteristic pains in the nose and head. Although it may be possible that ammonia might be made in the furnaces, it is not probable that it could be made in such quantities as to be so apparent in the flue-dust, but is more likely to come from the residuum left in the coke; this seems especially so when we consider that in the by-product ovens there is actually recovered 20 lbs. or more per ton of coal coked, of ammonium sulphate. The formation of sulphate in the flue-dust is due to the furnace gases probably, and the calcium hydrate liberates the ammonia at the briquetting machine.

R. C. Canby.

San Luis Potosi, N. M., Nov. 18, 1899.

MINING ACCIDENTS IN INDIA.—The report of the Government Inspector of Mines in India for the year 1898 mentions 41 fatal accidents at mines, in which 53 persons were killed. Of these persons, 44 were men and 9 women; 41 were killed underground and 12 on the surface. In all 22 were killed by falls of roof, coal, etc.; 5 by accidents in shafts; 5 by explosion of blasts; 3 by explosion of fire-damp. The inspector believes that the returns are not full, many small mines failing to report.

## SIR WILLIAM DAWSON.

Sir William Dawson, for nearly 40 years principal of McGill University, and one of the most famous geologists of our time, died at Montreal on November 19th. He was born at Pictou, Nova Scotia, October 13th, 1820. He studied at the college there, where his natural bent for scientific research became evident. At the age of 22 he met Sir Charles Lyell, and accompanied him on a scientific tour of Nova Scotia, giving special attention to the carboniferous rocks and such vestiges of life as were to be found in them. In 1846 he was in Scotland studying chemistry at the University of Edinburgh, and on his return to Nova Scotia in 1850, he applied his knowledge to investigating the natural history of Nova Scotia and New Brunswick. The results of these investigations appear in his "Acadian Geology." In 1850 he was appointed superintendent of education for Nova Scotia, and was associated with the first normal school there. In 1855, he became principal and professor of natural history at McGill University at Montreal, which positions he held till his resignation in 1893. His fame as an educator is connected inseparably with the growth and influence of this institution.

Sir William's reputation as a geologist rests upon his investigations of the fossil remains contained in the palæozoic rocks of Eastern Canada and in this field he is recognized as an authority both in this country and in Europe. While his opposition to the views of the origin of species that were promulgated by Darwin and the Darwinian school of geologists, kept him from being regarded as a leader, he made many discoveries of importance, and his writings cover many subjects. He discovered the first fossil reptile in the coal formation of America, and also the first known palæozoic land-snail. In 1863, Sir William issued his "Air Breathers of the Coal Period," an account of the reptiles and other land animals found in the Nova Scotia coal-beds. Some years later he claimed to have found in a pre-Cambrian limestone the oldest known form of animal life, the Eozoon Canadense. This discovery created widespread discussion, and the fossil nature of the so-called remains is still doubted. Sir William published also two volumes on the "Devonian and Carboniferous Flora of Eastern North America," one of the most important contributions ever made to our knowledge of the plant life of the carboniferous era. Among his other works are a "Handbook of Geography and Natural History in Nova Scotia," "Archæa or Studies of Creation in Genesis," "The Origin of the World," "Fossil Men and Their Modern Representatives," "The Change of Life in Geological Times," and "The Story of Earth and Man." He traveled in Egypt and Syria in 1884, and after his return wrote "Modern Science in Bible Lands," and "Modern Ideas of Evolution." His last work was on "The Canadian Ice Age," which appeared in 1893. Besides the writings enumerated, he was a contributor to the "Proceedings of the London Geological Society," and to many scientific, educational and religious publications in Canada, United States and Great Britain. He held degrees and honors from various universities, including that of LL.D., from the University of Edinburgh, and from Columbia. In 1882 he received the Lyell medal of the Geological Society of London, was made a Knight Bachelor in 1884, was president of the British Association for the Advancement of Science in 1886, and was chosen president of the American Geological Society in 1893.

Sir William was one of the few geologists of this continent to enjoy a wide reputation abroad. His work was largely that of the student in the laboratory, and his views those of the man of letters, rather than of the careful yet broad-minded field geologist. Consequently his contributions to science are not, outside of his work in Carboniferous palæontology, regarded as of high authority, by American geologists. None the less, his life was a fine and noble one. His writings were widely read, and his influence will be felt for years. To him the Canadian Geological Survey owes much of its reputation. His religious views, and the esteem in which he was held by all who knew him, doubtless led the Canadian Government to appropriate money for investigating the resources of the Dominion, which a bolder, less conservative man would not have obtained. The great work that the survey is carrying out, and the famous university at Montreal, built up largely by his endeavors, will be his best memorials.

## ALABAMA MINERAL PRODUCTION.

The statistics collected under the charge of Dr. Eugene A. Smith, State Geologist, give the following figures for the production of the principal minerals in the State of Alabama for the nine months ending September 30th:

	First quarter.	Second quarter.	Third quarter.	Nine months.
Coal, short tons	1,761,271	1,833,819	1,843,137	5,438,227
Coke " "	353,320	449,412	459,468	1,262,200
Iron ore, long tons	516,310	620,618	11,324,5	1,790,773
Pig iron " "	212,590	268,443	262,761	743,794

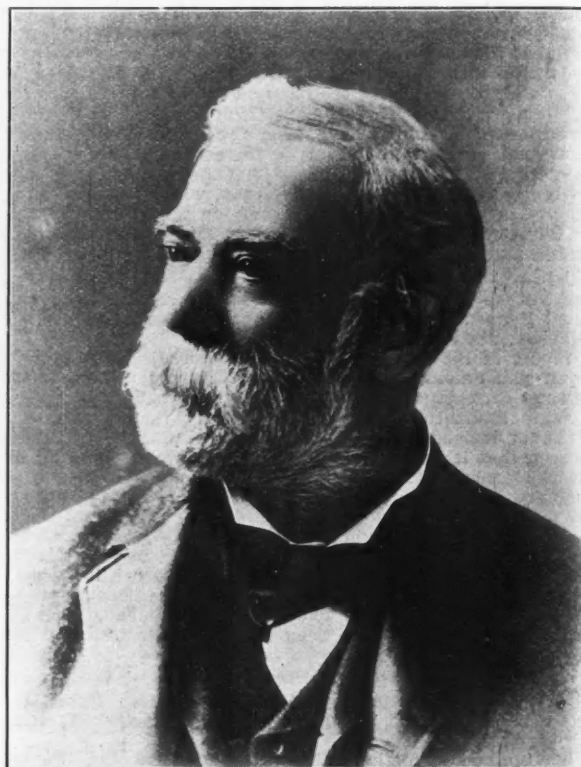
Should the rate of production be maintained throughout the fourth quarter of the year, and from all accounts it is being increased, the production of Alabama will largely exceed that of last year. The probable output of coal is 7,400,000 tons, against 6,466,741 tons in 1898; and of coke 1,750,000, against 1,541,250 tons in 1898. Pig iron does not show as large an increase as had been expected; but several furnaces have been added to the active list since the end of September.

**GLASS PAVING BLOCKS.**—The Garchey glass paving blocks laid down in Lyons, France, some months ago are reported to wear very well, only a few having become chipped. The blocks have a superficial area of about 64 sq. in., the face being divided into 16 squares by cross furrows so as to afford better foothold. They are set close together to prevent percolation, and are stated to be more durable than granite, while cleaner than wood blocks or asphalt. A large factory has been erected near Lyons for producing these blocks, as well as plain and ornamental blocks for building purposes.

## LYMAN CURTIS PARKE.

Lyman Curtis Parke, one of the best known mining engineers and manufacturers on the Pacific Coast, died at his home in Oakland, California, November 11th, after an illness which had confined him to the house for several months. He was born in Pontiac, Michigan, in 1834, his father being a physician in that town. His first experience in active work was in the Lake Superior Copper District, where he passed several years. His brother, Hervey C. Parke, was for a number of years connected with one of the large copper mines in that district. Mr. Parke had acquired considerable knowledge of mining machinery, and much practical experience in mechanical engineering, when in 1870 he went to New York, and there associated himself with Mr. John Waring, under the firm name of Waring, Parke & Company. The new firm undertook to manufacture and introduce the Waring air compressor, in which they succeeded; but later the manufacture of these compressors was taken up by Mr. A. C. Rand, whose business afterward developed into the present Rand Drill Company.

In 1872 Mr. Parke went West, and located in Virginia City, Nevada, where he was well known, and where two of his brothers, Frank and Ira Parke, were already at work, in connection with the Comstock Lode. In 1873, he joined with Mr. B. T. Lacy, and formed the firm of Parke & Lacy, shortly after moving to San Francisco. In a few years this firm became widely known as manufacturers of mining machinery, and gradually built up the extensive business which is to-day so well known. Parke & Lacy introduced the first air compressor and the first rock-drilling machines used on the Pacific Coast, and were also pioneers in the manufacture of many special classes of mining machinery in California. The firm also was the first American house to begin the export of mining machinery to Australia. They met with great success there, and established the reputation of American machin-



LYMAN CURTIS PARKE.

ery in the Australasian Colonies. As the business extended, branch houses were established in Salt Lake City, Utah; in Butte, Montana, and in Sydney, New South Wales. The number of mines equipped wholly or in part with Parke & Lacy's machinery is very large. Mr. Parke's ability as a mechanical engineer and constructor contributed much to the great success of the firm. In 1889, Mr. Parke retired from the firm, having sold out his interest to Mr. Lacy. Since that time he has occupied himself with various interests, including several mining enterprises in which he had a share.

Personally, he was a generous and warm-hearted man, who made friends everywhere, and whose loss will be deeply regretted by almost everyone who knew him. He leaves a widow and one daughter.

**IRON ORE TRADE OF GREAT BRITAIN.**—Imports of iron ore into Great Britain for the 10 months ending October 31st are given by the Board of Trade returns as below, in long tons:

	1898.	1899.	Increase.
From Spain	3,957,818	5,251,938	1,294,120
From other countries	697,957	761,814	63,857
Totals	4,655,875	6,013,752	1,357,877

The increase in the total imports this year was 22.6 per cent. The imports from Spain were 87.3 per cent. and the total this year against 85.0 per cent. last year.

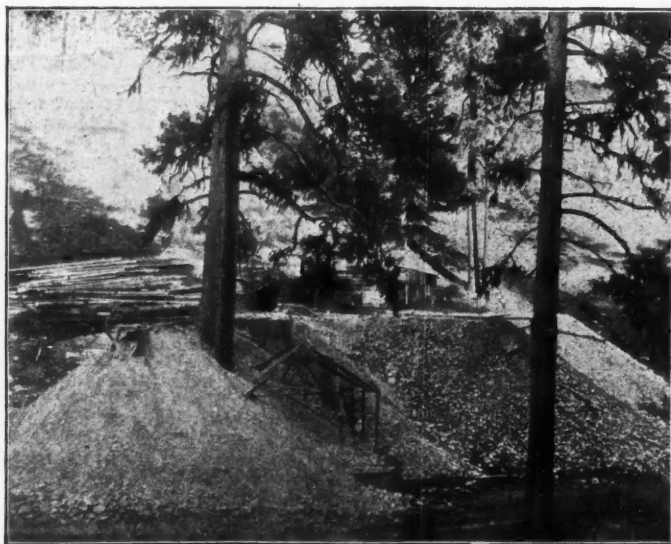


## THE REPUBLIC MINING CAMP, WASHINGTON.

Written for the Engineering and Mining Journal by M. H. Joseph.

On February 22d, 1896, the north half of the Colville Indian Reservation was thrown open for the entry of its mineral lands; it was on these lands that the Republic District was located. It is situated in the northwestern part of Ferry County, Wash., amidst timber and grass-covered hills, which are separated by small valleys and winding streams, with good grazing and agricultural lands in every direction. The day following the opening, Thomas Ryan and Phillip Creasor, who had prospected through the Coeur d'Alenes, in Idaho, and many camps of Washington and British Columbia, were grubstaked by James Clark and Charles P. Robbins of Rossland, B. C., to prospect in the reservation. Ryan had heard of a rich quartz ledge on La Fleur Mountain, but he learnt, upon reaching Nelson, a little settlement in the neighborhood, that the ledge had already been secured by others. There, however, they met Allan Blackburn and the brothers John and George Welty, who, on the very day the north half of the reservation was thrown open, had made some locations on Eureka Creek, a small tributary of the Sans Poil River. The Weltys had been prospecting and were returning with the intention of opening up the Black Tail claim, the first bona fide location made in the new camp, of which John Welty was the locator. Ryan and Creasor were striking westward to placers they had heard of, but went with the Weltys.

On the night of February 26th Ryan and Creasor camped at Tonasket's ranch, on the Sans Poil River. The day after their arrival they followed up the banks of Granite Creek, another branch of the Sans



NO. 1 TUNNEL, REPUBLIC MINE, WASHINGTON.

Poil, and began prospecting. After the Black Tail, the Sans Poil and Last Lode claims had been taken up, and Ryan and Creasor located the Copper Bell, Iron Mask, Lone Pine and Last Chance claims. Then the Trail and Tenderfoot were taken up, and the Weltys secured the Micawber. It was not until March 5th that the Republic and Jim Blaine claims were located by Ryan and Creasor.

A few days later Creasor returned to Rossland, taking with him samples of quartz from all of the claims Ryan and he had located, but the highest assay value obtained from them was \$2.06 in gold per ton. Yet, believing that where there were traces of gold there might be pay shoots, Creasor returned to the new camp with a fresh outfit of mining supplies on March 22d and began prospecting on the Iron Mask claim, where he found nothing of higher value than \$4 per ton. He then drove a small open cut on the Lone Pine croppings and got a sample that assayed \$36.17 per ton.

Early in April Ryan and Creasor parted company, the former to prospect in Okanogan County, and the latter on O'Brien and Rabbit creeks, in the eastern part of the camp. He returned in June, and from then until the following March worked alone, driving a tunnel to cross-cut the Lone Pine Lode. The work developed a vein 15 ft. in width and samples from it ran as high as \$72, while assays were had from the croppings that ran over \$300 per ton.

About the latter part of October, 1896, Creasor went to Rossland and sold a one-eighth interest in the Republic and Jim Blaine claims to Dennis Clark, retaining a like interest for himself. In the following December Mr. Clark met Mr. Ryan in camp. An open cut had been excavated across the croppings of the Republic claim and they immediately went to work and took up 2 ft. of the bottom of it, gaining a total depth of 8 ft. on the vein, with unexpected results. The average of the quartz broken in doing the work assayed \$160 per ton.

In March, 1897, the Republic Gold Mining and Milling Company was organized at Spokane, and active exploration began. Charles P. Robbins, one of the original owners, was the first president of the company and managed its affairs with economy and good judgment. Patrick, the oldest of the Clark brothers, bought the first 50,000 shares of the treasury stock of the company at 10c. per share. B. C. Kingsbury, R. K. Neil and others took up the balance of 100,000 shares offered at that price, and Mr. Clark subsequently purchased the remaining 100,000 shares of the treasury stock.

In June, 1897, having become satisfied that the mine would return a large profit on the investment, he bought another 100,000 shares of Mr.

Creasor, paying him 20c. per share. Mr. Clark, who by shrewdness, tact and good judgment, had won his way up from an ordinary miner, had become prominent as a successful mine operator in the Coeur d'Alenes and British Columbia, and was the leading spirit of the War Eagle Mining Company at Rossland, B. C. At the first annual election of the Republic Gold Mining and Milling Company he succeeded Mr. Robbins as president, and from that day dated the rapid industrial growth of the Republic camp.

The news of the rich strike on the Lone Pine vein had been heralded abroad, and on April 18th, 1896, there were 64 men in the camp. Upon that day 24 of them assembled at a spot where the Okanogan mail trail crossed Eureka Creek and organized a mining district, naming it Eureka. It embraces an area of 19 by 26 miles and is bounded by the Okanogan County line, 7 miles westward; by Lambert Creek, 14 miles northward; by the summit of the divide between the Sans Poil-Curlew and Columbia valleys and rivers, 12 miles eastward; and by the west fork of the Sans Poil River, 12 miles southward from the town of Republic. It includes the following mining divisions, or camps: Republic, Lambert Creek, Trout Creek, Empire, Gold Hill, Cody, Lame Foot or Wolf's, Klondike, Copper Mountain, Iron Mountain and a part of Sheridan camp. James Green was elected the first mining recorder and was succeeded on the following year by James Herington, who still retains the office.

A settlement, then named Eureka, but now known as North Republic, soon sprang up on the banks of Eureka Creek and spread along the hillsides. The ninth standard parallel passes through it, at or near the southwest corner of Section 35, Township 37 N, Range 32 E, Willamette Meridian. It is geographically situated in longitude 119° 40' and latitude 40° 20'. The prospectors had their mail brought from



WINZE 50 FT. DEEP, NO. 3 TUNNEL LEVEL, REPUBLIC MINE, WASHINGTON.

Nelson, Wash., 30 miles north of Republic, and there and at Colville, the county seat of Stevens County, the first claims in the camp were recorded.

Wm. C. Otto, of the Keller Company, was the first merchant in the camp, and his company still retains a business location.

When Patrick Clark became the president of the Republic Gold Mining and Milling Company he assumed the directing management of the mine. The population of the camp rapidly increased. North Republic soon acquired the proportions of a town, but the increasing population spread southward and new town sites were laid out on mining claims nearer the Republic Mine. A post-office, hotel, stores and other buildings quickly followed.

The Blue Jacket Development Company laid out a town site, and in March, 1898, threw the lots on the open market. It was then combined with North Republic and other town sites in one town, and named Republic. That was the signal for a general rush. On March 22d Messrs. Cleveland & Drake commenced the publication of a weekly newspaper, the "Pioneer;" two others, the "Record" and the "Miner," have since followed. The town grew rapidly, and in 2 months nearly 2,000 people had rushed in. Reported new strikes set people wild with excitement. Stock companies out of number were incorporated at Spokane, quotations were telephoned to Republic twice a day, and mining shares rapidly changed hands as the prices steadily advanced.

July 1st, 1898, the south half of the reservation was thrown open and a large number rushed off to the new excitement. Toward the fall of the year, with the certainty of clear titles to the several town-sites, by United States patents, and the stability of several of the leading mines assured, the permanent residents began the erection of substantial buildings.

On October 10th the Republic Gold Mining and Milling Company declared its first dividend, and immediately thereafter the excitement was renewed. Hardly a square foot of ground within a radius of 8 or 10 miles of the town of Republic could be found that was not staked. Not a claim of any description, with a vestige of quartz on it, either float or in place, but was bonded and stocked.

On June 3d, 1899, the greater part of the town was destroyed by fire; but this was not an unmixed evil, as it made possible the rebuilding of the town on a definite plan. It now has banks, telegraph and telephone connections and other modern conveniences.

The Sans Poil Mining and Water Power Company of Spokane has put in a pole line and erected a power plant on the Sans Poil River, 4

miles east of Republic, for the purpose of lighting the town and supplying the mines and mills in the neighborhood with electric power.

The Miners' Union has an organization, with 360 members, and there are about 500 miners working in the district, with an established rate of wages of \$3.50 per day for underground miners.

The camp possesses 3 saw-mills that turn out 35,000 ft. of lumber a day, and 2 shingle mills.

Republic was originally in Stevens County, with Colville, the county seat, 85 miles distant. A division of the county was secured and a new county, with Republic the county seat, was named Ferry County. The Columbia and Kettle rivers are the dividing line.

Up to the present date about 12,500 mining locations have been transcribed upon the new county records, of which from 2,500 to 3,000 were made in the Eureka Mining District. The rules of the district require that all mining claims must be recorded within 60 days after location.

Republic is within 2 days' travel of Spokane, and is reached by the following routes and conveyances: From Spokane, by the Washington Central Railroad to Wilbur; thence by stage to Republic, laying over at night at Cache Creek. The trip is made in 30 hours.

From Spokane to Myer's Falls, by Spokane Falls & Northern Railway; thence by ferry to Kettle Falls, and thence horseback to Republic. Time, 30 hours.

From Spokane, by Spokane Falls & Northern Railway, to Rossburg, on the Columbia River; thence by stage 40 miles to Grand Forks, B. C., and thence 35 miles by stage to Republic. Time, 31 hours.

There is also a route from Seattle, Wash., by the Great Northern Railway to Wenatchie, and up the river to Republic Landing, on the Okanogan River, and thence by stage to Republic. The Canadian Pacific Railway also affords a route by Crow's Nest Pass, or Revelstoke and Arrow Lake to Robson; thence by the Columbia & Western Railway extension to Grand Forks, and thence by stage to Republic.

The Eureka Mining District is not connected with the great mountain ranges, the Rockies and Cascades, but is midway between them. Topographically it presents rolling hills, thickly covered with grass and yellow pine, fir and tamarack, and low ridges divided by valleys and streams. The town of Republic, at its business center, has an elevation of only 2,650 ft., but the peaks of the Sherman Range, 12 miles eastward, rise to from 6,000 to 7,500 ft. above sea level. The range extends almost due north and south, 85 miles, parallel with the Columbia River, and forms in part the eastern boundary of the district. It is the water shed between the Curlew and Sans Poil rivers, on the east, and the Columbia River on the west.

The Sans Poil is the principal stream of the district. It is formed by the junction of 3 smaller streams rising in the Sherman Range, 12 miles northeast from Republic, and flows south-southeasterly 6 miles to the summit of the Curlew and Sans Poil valleys. There it divides into two separate streams, one flowing 13 miles through the Curlew Valley into the Kettle River, and the other 55 miles through the valley of the Sans Poil into the Columbia River. In the fall of the year, just south of the town, this branch of the river carries 400 miners' inches of water, the maximum flow being 1,000 and the minimum 300 inches.

The principal branch of the Sans Poil is O'Brien Creek, which also heads in the Sherman Range. It flows along the eastern base of Iron Mountain and empties into the Sans Poil, 2 miles east of Republic. It drops over a cataract of 100 ft. and has a fall of about 200 ft. just southeast of the town. It usually carries 200 to 300 miners' inches of water.

Granite Creek comes in from 2½ miles west of the town, where it has its source in a small chain of lakes which are fed by foot-hill streams. It supplies water for the Republic Consolidated Gold Mining Company's mill.

Copper Creek rises in the summit which divides the Sans Poil and Okanogan valleys, flows southeastward, and empties into the Sans Poil River 5 miles south of Republic. It carries 50 miners' inches of water. Trout Creek rises in Sheridan Camp, flows southeasterly 12 miles, and empties into the Sans Poil Lake, at the westerly base of Gold Hill.

The west fork of the Sans Poil rises 30 miles southwest of Republic, takes a general southwesterly course, crossing twice the boundary line of the north and south divisions of the reservation, and empties into the main body of the Sans Poil, 14 miles south of Republic. The Sans Poil River has an average width of 100 ft. south of that point.

The geological structure of the Eureka Mining District shows a series of uplifts and synclinals, with a general dip of the strata southeastward. A prominent basaltic ridge, about a mile southeast of the center of Republic, rises to about 1,400 ft. above the bed of the Sans Poil River, its apices striking about N. 6° E. The strata dip away from it on either side. A similar basaltic uplift, capped with obsidian, lies 9 miles west of it, in Summit Camp, near the Okanogan County line. A gradual slope on the west side of the latter descends to the sinus of a synclinal in Archæan granite, with cyanite to the west. The east side of the easterly uplift also presents a gradual slope; but the slopes toward the San Poil are steep and precipitous for a considerable distance, with a gentler slope below, forming an intermediate basin, 6 to 8 miles wide, which is traversed by a low, winding range of hills. Then another basaltic uplift several miles eastward, toward the Kettle River.

Up to the present there has been no such general study of the fossils in the sandstones of the district as would identify them closely, but the prevailing rocks are metamorphics of the upper and lower Cretaceous. The lower strata of the sandstone beds which lie east of the Republic Mine are exposed within the town, by excavations for street grades, and are recognized as Cretaceous by the leaf fossils. These strata have a general strike N. 13° E. and dip E. 18 per cent. 25°. The beds have an estimated width of 1,800 to 2,000 ft., as shown by the upturned edges, and are traceable for several miles to the north and south of the town. In the latter direction they increase in width and bend toward the southeast. The bulk of the sandstones are identified Cretaceous, but south of the town they bear some evidence of being Tertiary. There are numerous other beds of sandstone in the district.

Lignite has been found in a number of places, between layers of sand-

stone, similar to the small coal veins above the Blue Canyon vein of the Whatcom coal measures.

The Archæan granites and syenites lie 5 to 10 miles west of the town. The granite area is 4 or 5 miles across and has been traced 10 or 12 miles along its course. It is Archæan, but the syenite west of it may possibly be Silurian. Between the granite and the Cretaceous rocks to the east are thin beds of gneiss and gneissoid rocks and mica-schists of undetermined age, but probably Silurian.

The formations of the district are neither continuous nor conformable. Taking a cross-section through the most important part of Republic Camp at present under development, beginning 5 miles west of the town with the granite and going east, the rocks observed are Archæan granite, secondary granite, syenite, gneiss, mica-schist, felsite, limestone, chloritic slate, shale, schists, gypsum, lime conglomerate, quartz conglomerate, sandstones, porphyritic felsite, obsidian, andesite, porphyritic breccia and basalt.

From the granite, eastward, all the strata have a southeasterly dip, until cut by the volcanic beds, about a mile east of town, where they are sharply upturned against the central basaltic uplift and dip to the west, forming a basin. Northeast of the town, conforming to the strata, an obsidian overflow covers the sandstone on the west side of the basalt, and even a part of the basalt itself. It attains a width of 400 to 500 ft. in some places and dips in every direction with the contour of the underlying rocks. It has been traced from 2 to 3 miles northward, and float rock from it has been found far beyond that distance.

A belt of syenite, cut by diorite and trap dykes, is found 9 miles from the town, north of the Republic Basin, which extends southward as far as Cody Camp and Gold Hill.

The vein system of the district shows fissures following the lines of contact and structure, and others running transversely. They strike at various angles from nearly due north to 50° east or west of north. Apparently none run on a straight course throughout their length. They generally dip eastward, but a few show a slight westerly dip. They are usually more or less faulted, or split, by intrusions of porphyry. They vary in width from a few inches to 60 or 70 ft.

The ores are highly silicious, containing as much as 93 per cent silica. The injection of silicious and metalliferous solutions from below is a possible origin.

The vein quartz varies much in color and freshness. Sometimes it is banded like onyx or agate, sometimes jaspery and fine grained. It may break with a sharp fracture, without disintegration, or fall into granular fragments on exposure. Its color may be white, black, blue-gray or a reddish brown.

The ores usually contain only gold and silver as the metals of economic value, but iron sulphides occur in aggregations or finely disseminated. The sulphides seldom carry much, if any, value, but are regarded as favorable indications of a pay shoot.

It has been repeatedly stated that the precious metals are so finely divided that without roasting they cannot be detected, even with a magnifying glass; but native gold is now frequently found in fine grains in the rich ores. Black sulphuret of silver sometimes occurs in the quartz, carrying gold that, on roasting, sweats out of the rock in grains as large as birdshot. Reduced to a pulp of 150 mesh fineness, almost any of the ore having a value of \$8 and upward, will show gold to the naked eye by panning.

The production of silver in the ores of the district, as compared with that of gold, relatively increases as depth is attained.

The following minerals have been found among the gold-bearing quartz ores of the district: Pyrite, marcasite, pyrrhotite, arsenopyrite, magnetite, limonite, chalcopyrite, bornite, cuprite, galena, sphalerite, millerite, stibnite, argentite and selenite of silver. Manganese occurs as an oxide.

During the summer of 1898 the Republic Gold Mining and Milling Company built a mill, with equipments for daily treating 10 tons of ore from the mine, by the Pelatan-Clerici process. The method was an experiment, and at first a rather expensive one, costing the company from \$12 to \$14 per ton, but the expense has since been reduced to about \$6.50 per ton. After the reconstruction of the company Mr. R. G. Edwards Leckie was appointed general manager, and he now feels confident that he can reduce the cost of treatment to \$3 or \$4 per ton, using a modification of the ordinary cyaniding process.

The Mountain Lion Gold Mining Company is erecting a mill and will use a plain cyaniding process.

The establishment of a custom milling plant is under consideration by a Butte, Mont., syndicate, which has been several months experimenting on the ores of the district.

**MOLYBDENITE IN SWEDEN AND NORWAY.**—According to a report from the British consul at Stockholm, molybdenite is frequently found in some of the most important iron-ore fields in Sweden, but it has been worked to hardly any extent. The largest quantities have been found in the mines at Vestanfors and on the island of Ekholm. The Knaben Molybdenite Mine in Fjotland produced 5,000 kilos. of molybdenite in 1897 with 10 to 18 men employed. The molybdenite was sold in 1896 for 50 to 55c. per kg., but prices fell in 1897, so that the mine did not pay, which caused the stopping of the production. The cost of working varied between 13 to 40c. per kg., according to the quality of the molybdenite and the rent of the mine.

**PAPER DRIVING ROPES.**—According to "Engineering News," paper driving ropes are being made by the Ironmongers' Rope Works, Wolverhampton, England. The rope is made from twisted strips of pulp paper, laid up finally into a 3-strand rope by ordinary methods, and treated with boiled oil, making it practically waterproof. The actual tensile strength is far less than Manila rope; but for driving purposes it is abundantly strong. At the works, one 1½-in. diameter paper rope transmits 6 H.-P. and runs at a speed of 700 ft. per minute. It has been running since last February, and, it is stated, shows no sign of wear whatever; having merely become polished and smooth. This rope can be spliced like any other rope, though a longer splice is used. It is very pliable and it is lighter than Manila rope.



## SOME VIEWS AT THE KIMBERLEY DIAMOND MINES.

The accompanying illustrations are reproductions of two excellent photographs taken recently at Kimberley, the South African town to which general attention has been drawn by the siege which the Boer forces are conducting, and the stubborn defence of the British garrison.

The diamond mines at Kimberley, owned by the DeBeers Company, are, in connection with the DeBeers Mine, the chief—almost the only—source from which the present supply of diamonds is drawn. The methods of mining, washing and saving the diamonds are well known,

watching, nor to the stripping and searching to which each miner must submit when he leaves the mine each day. The picture gives a good idea of the compound, and the way in which the natives pass their time.

The second view is taken from the same point of view as the first, but the buildings are not visible. The photograph was taken at night when a South African thunder storm was raging. The lightning effects are faithfully reproduced, and the photograph is one of the clearest and best night views we have ever seen.

It looks as if the attack on Kimberley would fail, and the garrison would be able to hold out until relief reaches them from Capetown,



THE COMPOUND AT THE KIMBERLEY DIAMOND MINES.

through the many descriptions which have been published, and through the very full reports of the DeBeers Company, which have been from time to time published in our columns. We may add that the operations at these great mines are conducted under the charge of an American engineer, Mr. Gardner F. Williams.

The first illustration is a view taken in the compound at Kimberley, which is the residence of the native laborers employed. These men are strictly confined during the period for which they are engaged, and

which should now be within a week. These views were mailed from Kimberley October 9th, 1899.

ACETYLENE GAS IN ASSAM.—The Assam "Pioneer" gives a description of the prompt manner in which the installation of an acetylene gas plant was carried out by the Pioneer Acetylene Gas Company.



A SOUTH AFRICAN THUNDERSTORM, TAKEN FROM THE COMPOUND AT KIMBERLEY.

are allowed to pass from the mine only into the compound, where they sleep, eat and pass their leisure hours. The large open court, around which the sleeping quarters are built, is covered with wire netting, to prevent any scaling of the walls. These precautions are necessary to prevent the theft of diamonds, which was formerly very common, but has now been reduced by incessant care and watchfulness almost to nothing. The Zulus and Kafirs who work in the mines are willing to support the strict imprisonment, because the pay which they receive is high; much higher than that earned by their fellow tribesmen who work in the gold mines of the Transvaal. They do not object to the strict

"Less than a fortnight before the meeting of the Assam tea planters at their club house a telegram was sent to the company, and by the day of the meeting the arrangements were completed. Over 100 gentlemen were present and every satisfaction was expressed with the new light. If, on such short notice, and in a place comparatively so remote, acetylene gas can be set up with such promptitude, there must be considerable vitality in the business; and, as almost every station in India is crying for more light, and a relief from kerosene oil and candles, the public may well take note of what has been so satisfactorily accomplished on this occasion."

## MINING CONDITIONS IN CUBA.

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

Having recently returned from a trip into Santiago Province, in Cuba, where I enjoyed exceptional advantages for observing the conditions under which mining is now carried on, I have thought that, perhaps, it would interest the readers of this journal to know just how things are there at the present time. I visited the manganese mines of the Ponupo Mining and Transportation Company, at Ponupo, the iron ore mines of the Juragua Iron Company at Firmesa, and the iron ore mines of the Spanish-American Iron Company at Vincent, above Daiquiri. All of these mines have resumed operations since the close of the war and are now getting into fair condition. Indeed, the war did not greatly damage any of these properties. They suffered from the long shut-down, of course, but the actual losses due to the carrying on of hostilities in the vicinity were inconceivable. I do not know of any two men who could have stood in the breach during the insurrection more successfully than Mr. C. H. Ziegenfuss and Mr. Thomas Redington, of the Juragua Iron Company. It requires diplomatic ability of no mean order to be friendly with insurgents and Spanish alike; to be regarded with esteem and affection by the leaders of the insurgent forces and at the same time to be decorated by the Spanish Government for services rendered to the administration. Yet they were able to do this without compromising themselves personally or the interests committed to them. The wisdom with which they acted is abundantly shown by the facility with which shipments were resumed after the close of the war. There were a few bullet holes through some cars and a tender, and one of the engines was used as a target, but on the whole the entire equipment was ready for use within a week after the capture of Santiago.

It has been remarked before by those who were familiar with Cuban conditions that the Spaniards from the province of Galicia, Spain, made the best miners, the native Cubans not taking very kindly to such work. This seems to be the case, and it is a great pity that such of the rank and file of the Spanish soldiers from this province as chose to do so should not have been allowed to remain in Santiago, where their services are in such demand. It was, however, thought best by the American Government to send them all back, under the supposition, perhaps, that their presence in Cuba would have been a source of friction. This view of the case is not shared by those who have been in the country many years. As between the common Spanish soldier and the ordinary Cuban there is no feeling of hostility. The Cubans recognize that they had no quarrel with the common soldier, but with his Government, and they did not and do not hold him responsible for the acts of Blanco, Campos or Weyler. If considerable numbers of the common soldiers had remained in Santiago Province there would not have been any disturbances growing out of their presence. On the contrary, they would have taken hold of the work that the Cubans do not like and cannot be induced to do except under stress of hunger. The native Cuban is either a herdsman or a farmer, or both. He likes to grow cattle, or to cultivate sugar, coffee, chocolate, corn, fruit, etc. This kind of labor suits his temperament, both his personal and his hereditary inclinations, and as a rule one succeeds best in what he likes best. He does not take to mining, partly because mining on any scale has not been carried on in Cuba more than 15 years, and the people have not yet become accustomed to regard it as one of the national occupations, and partly because it requires steady application at a task which is by no means light, even in its best estate. When he digs in the ground he expects something to grow that he can gather and eat without much labor, and it seems to him rather a roundabout way to fill his stomach to bore a hole in a rock, break the rock to pieces, load it on a car, send it to the ship at Santiago, let the ship carry it to Baltimore and the furnace people dump it into a big stack. So he is entirely willing for the Spaniard to work in the mines while he works on the hacienda, or tends his own little crop. When the American Government wished to build a short line of railroad near Havana within the last year the work of grading was done by Chinamen, who were gathered together by the local Chinese boss. Chinamen do very well in such work until they come to heavy rock work, and then they are not so good. But in and around Santiago there are very few Chinamen, although one sees now and then unmistakable evidences of the admixture of Chinese blood with that of the native Cuban. I was informed that the experiment had been made of importing negroes from the States, but that they soon reverted to the native type and did not long survive the insidious attacks of the "dolce far niente"—not so deadly as "El Vomito," but yielding about the same results. In the land of "Pasado Mañana" there are things that are to be dreaded almost as much as the "fiebra." Santiago Province is to-day suffering from a scarcity of good labor, whether for the mines or for ordinary purposes. I was informed by General Wood that he got fairly good results by the use of native labor on the excellent roads he is building, and along the line of the Sabanilla & Maroto Railroad from Santiago to Cristo and from Cristo to Ponupo and San Luis one can see gangs of section hands at work, native Cubans for the most part. I do not wish in any manner to disparage Cuban labor or to speak an unjust word about those who have a great many obstacles to overcome that are unknown to us of a more temperate zone. If they prefer to herd cattle, or to farm, or to get out timber, that is their business, and they should be encouraged to do what they can do to the best advantage. But anyone who goes to Cuba to engage in mining operations must bear in mind that he goes among people who do not take kindly to such work. They do not oppose it, quite the contrary, but they simply do not like such employment.

At one of the mines this summer it was decided to raise the daily wages from 75c. to 90c., both American money, in the hope of attracting laborers. But the practical result was that the other mines also raised wages and kept their men. A rate of 90c. a day is very good pay in Cuba where the miners secure board for 25c. a day. The fare consists of bread, fried codfish and coffee for breakfast, soup, rice, vegetables, bread and coffee for dinner, and about the same for supper.

Fresh meat at one of the mines was sold for 25c. a pound and dry salted sides for 15c. Of course at 25c. a day for board there is not much chance of getting fresh meat that costs 25c. a pound. At a certain cantina it was noticed that rations were put up in 5, 10 and 15c. packages, the rations consisting of rice, beans, bread, and a little meat. Salted codfish are much in demand, as also the jerked meat from South America, called "Monte Video." It makes no great difference what it is called, for it is strong enough to answer to any name. It is said that the original buccaneers were simply manufacturers of jerked beef, and for myself I have no doubt that the dreadful atrocities of Roc, L'Olonnois and Sir Henry Morgan were in great measure due to the meat they had to eat. After a steady diet of Monte Video I can imagine one inclined to anything.

The men, as a rule, are of slender build, though muscular. Working day after day under that fierce sun their movements lack the vigor that one is accustomed to notice in the States, and an able-bodied American miner would do the work of two or three Spaniards—for a while. Then he would revert to the native type, wear a big straw hat, sandals, a pair of pantaloons, an apology for a shirt and a machete. Always the machete. If a man is digging with a pick he wears a machete; if he rolls a wheel-barrow he has a machete dangling by his side, and the height of absurdity was reached one day when I saw a brakeman on an ore train swinging on the brake with one hand, and wildly waving his machete with the other. For cutting down weeds, grass, vines, small trees, etc., the machete is certainly extremely useful, and could be employed with advantage in many parts of this country, but when it comes to equipping brakemen on ore trains with this deadly knife, I would draw the line. The guards on the passenger trains, as well as the members of the Guardia Civil, are armed with a carbine, pistol and machete, and this is, perhaps, well enough until law and order are again firmly established, but surely around the mines there can be very little use for the machete, except when clearing away the bush.

The only mining operations now carried on in Cuba are in the province of Santiago, and are confined to iron and manganese ores. There are two companies mining iron ore, the Juragua and the Spanish-American, with a third, the Cuban Steel Ore Company, about to start near Cayo Damas, some 40 miles west of Santiago. There is only one concern mining manganese, the Ponupo Mining and Transportation Company, which also owns the Sabanilla & Maroto Railroad, connecting Santiago with Ponupo and San Luis by way of Cristo. Between San Luis, which is about 24 miles from Santiago, and Santa Clara, on the line between Havana and Cienfuegos, there is a gap of some 365 miles without a railroad and very few ordinary roads. Some day this gap must be filled, for all-rail communication between Havana and Santiago is both a military and a commercial necessity. The intervening country is extremely fertile and portions of it are well wooded with mahogany, cedar, etc. Very little is known as to the mineral wealth along this line, although it is likely that good manganese ore occurs at intervals. But the chief mineral districts of Cuba are Santiago and Pinar del Rio.

There has been recently a revival of the old stories as to the finding of gold in the vicinity of Holguin, Santiago, as well as reports of the opening of the old copper mine at El Cobre, west of Santiago city. This was worked to a depth of about 1,100 ft. years ago, but a great deal of water was encountered, and for some reason or other it was abandoned. I was shown some good samples of zinc blende from Santiago, but no definite information was forthcoming. A complete mineral survey of Santiago should be undertaken at once by the American Government, for while the portion in the immediate vicinity of the coast east of the city has been fairly well prospected there are large stretches of territory as to which there is no information at all. The two Aguileras, Eugene and Pedro, and E. J. Chibas have done good work but their means have been limited. They are graduates of the Polytechnic School at Troy, and are well qualified to carry on both prospecting and mining work. Mr. Eugene Aguilera has recently been appointed mining engineer for the province of Santiago. But unless something is done toward the granting of franchises (concessions) for the construction of railroads, there is very little use in looking toward Cuba as a scene of profitable mining operations. Unless one happens to own all of the land through which the line is to run no concessions can now be obtained. The best thing that could be done for the development of the mineral wealth of Cuba would be the granting of concessions for railroads. Not only is this true with respect to minerals, but also and particularly with respect to sugar, coffee, chocolate, and timber. There are thousands of acres of very fertile land that cannot be utilized until a railroad is built near them, and hundreds of thousands of feet of valuable timber inaccessible for lack of transportation.

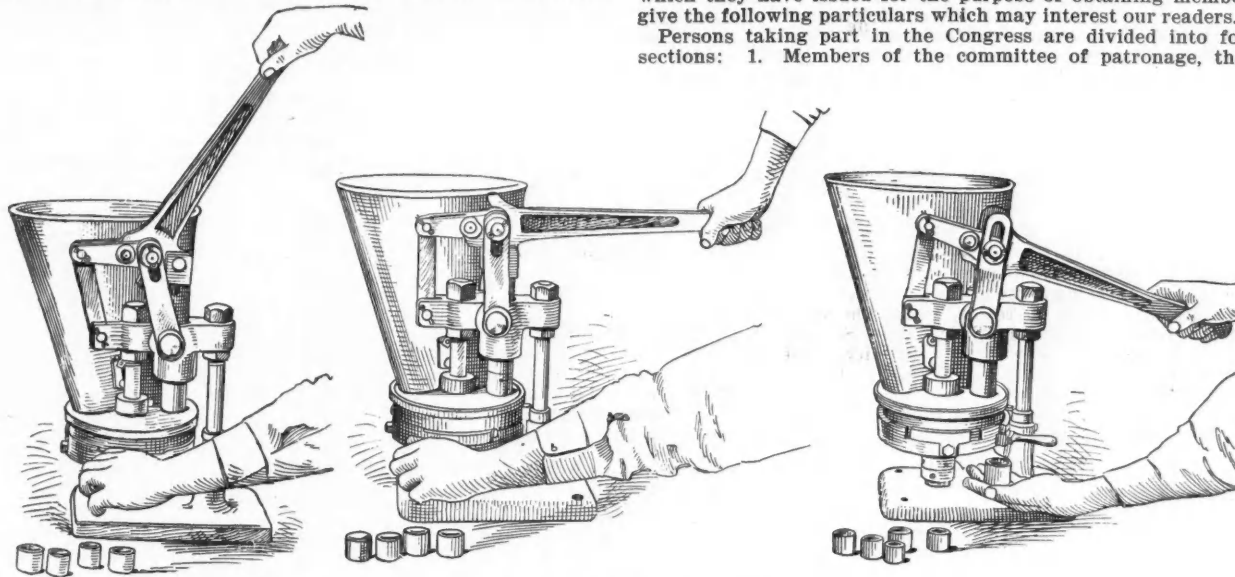
Just why no concessions can be obtained does not appear. The American Government says, in effect, that it cannot grant them, for it has not the authority to do so, and there is no Cuban government. In the meantime the whole island suffers, investments are withheld and undertakings that would distribute a great deal of money throughout the different provinces are indefinitely postponed. The surest road toward the pacification of the island, whatever that may mean, would be to put the people in possession of transportation facilities, to open the various parts of the island to settlement, so that the farming, and timber and mineral lands could be occupied and developed. If the American Government has the right to occupy the island, and to administer its affairs, as it certainly is doing to-day, and with no immediate prospect of withdrawing its troops, it certainly has the right to use all the honorable means in its power to induce capital to invest there, so that there would be a large number of intelligent and enterprising foreigners deeply interested in the preservation of good order and in maintaining a stable government. To hold that this Government is to remain in Cuba until it is pacified and all the while neglect to do the very thing that would pacify it—the introduction of outside capital—is to take a very short-sighted view of the situation. I cannot very well pacify my neighbor by camping troops on his field, but if he sees me at work building roads, felling timber, erecting mills and factories and opening mines, he soon realizes that I mean what I say, and that I have come to help him on to greater comfort and happiness.



THE CALKINS CUPEL MACHINES.

These machines have recently been perfected and are now being placed on the market. They are simple in construction, easily operated, and, it is claimed, will make perfect cupels. To the careful assayer a perfect cupel is as essential as an accurate balance. It is impossible to make a cupel of uniform density by hand, and the degree of density of the cupel determines its absorptive power. The different grades of bone-ash require different degrees of compression to make a cupel of the same absorptive quality. This difference in compression is provided for in all of Calkins' cupel machines, thus permitting the operator to make his cupels of such density as his bone-ash and judgment may demand. Every assayer knows the objection to the old style of driven cupel made by hand, which is never uniform either in size or compression, and that a large percentage of them fissure and check in the muffle. The hand-made cupels consist of a succession of flakes, the first layer being formed by the first blow on the die, each successive blow adding flake after flake. Cupels made in machines by steady compression are a homogeneous mass and neither check nor fissure.

These machines are made in three designs: The "automatic," made with interchangeable discs and dies for making five different sizes of cupels, and with automatic device to feed the bone-ash into the mold. The "table" pattern, made with interchangeable parts to per-



THE CALKINS CUPEL MACHINE

mit of making three sizes of cupels. The "wall" pattern, no interchangeable parts.

All machines are of fine workmanship, use the same means of compression, and turn out uniformly perfect cupels, the different designs being made to meet the requirements of all classes of opera-

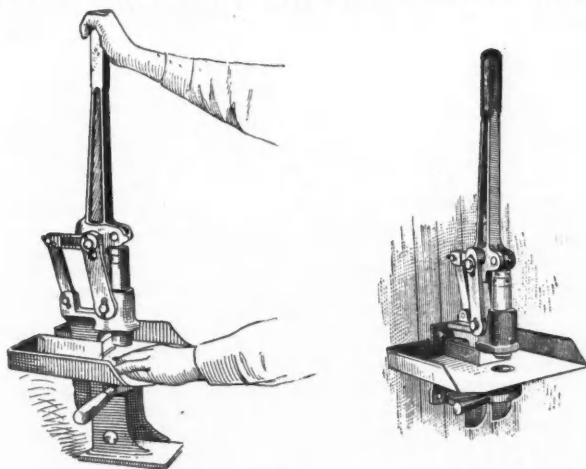


FIG. 4.—TABLE PATTERN.

FIG. 5.—WALL PATTERN.

tors. This labor-saving invention only requires to be known by assayers to be appreciated.

Fig. 1 shows the automatic machine at the beginning of the compression. The bone-ash, properly moistened, is put into the hopper which feeds the machine. There is a strong wheel in the hopper which bears on the top of the disk and is thus rotated as the machine is worked. It prevents the moist bone-ash from bridging in the hopper and insures absolutely regular feed. The machine consists of a compound lever of ingenious construction, a plunger or die and two disks. The top disk contains the holes in which the cupel is compressed, and the bottom disk is a plane plate with but one hole, somewhat larger than in the disk above, in which the cupel has been compressed. The machine is provided with automatic devices for stopping the disk at the proper point. Fig. 2 shows the position of the machine and hands of operator on downward stroke

as compression is being made. Fig. 3 shows the machine when the cupel has been discharged. Fig. 4 shows a machine of the table pattern and Fig. 5 one of the wall pattern.

The machine is compact and powerful and of good workmanship, and is so constructed as to admit of more or less compression by simply adjusting the jam-nuts holding the lever apparatus in place. With this machine the assayer can easily make 600 cupels of perfect shape, uniform in size and density, in one hour. The automatic machines are supplied with disks and dies for making cupels of the following diameters: 1-in., 1¼-in., 1½-in., 1¾-in., 2-in. All parts are interchangeable and readily adjusted to the machine. The other patterns have a somewhat smaller range of sizes and capacity.

These machines are introduced by F. W. Braun & Company of Los Angeles, California.

CONGRESS ON THE METHODS OF TESTING BUILDING MATERIALS.

The Committee appointed by the General Commission of the Paris Exposition of 1900, for organizing the International Congress of Uniformity in the Methods of Testing Building Materials, has appointed as its president M. Haton de La Goupillière, and fixed July 9th, 1900, as the opening date for the Congress. The Committee has sent us the notice which they have issued for the purpose of obtaining members, and we give the following particulars which may interest our readers.

Persons taking part in the Congress are divided into four distinct sections: 1. Members of the committee of patronage, the honorary

presidents of which are the ministers who have to deal in their departments with matters relating to building, construction, public works, war, navy, etc. 2. Donors of 50 francs and upwards. 3. Assisting Members, who, having paid the subscription of 25 francs will take part in the Congress and receive its publications. 4. Members of families who may be presented by the assisting members and shall pay the subscription of 10 francs only. They will be allowed to follow the discussions of the Congress, but will not receive the publications.

It is needless to dwell upon the great importance of this question of uniformity in the methods of testing material. This problem must be solved, if we want to obtain from tests of material precise results giving all the guarantee required and generally accepted. This unification is of scientific, technical and international interest and there is reason to hope, that those who have to deal with building material of any nature, such as engineers, manufacturers, architects, builders, etc., will endeavor to take part in this Congress.

All communications should be addressed to M. Baclé, Secrétaire du Comité d'organisation, Rue de Chateaudun, 57, Paris, France."

SEPARATION OF GOLD AND PLATINUM.—In the "Oesterreichische Zeitschrift für Berg- und Huetten-wesen," E. Priwoznik says that gold scrap containing platinum is kept apart for separate treatment in minting because the ordinary methods of refining gold would not be suitable for it. The author describes the method used by him for dealing with a large batch of metal. The sifted filings were digested with nitric acid of sp. gr. 1.199 as long as any silver dissolved, a trifling amount of platinum also dissolving as silver platino-nitrite. The metal remaining was then washed and digested with aqua regia (composed of 100 concentrated HCl, 43 concentrated HNO<sub>3</sub>, 143 vols. of H<sub>2</sub>O), until the silver chloride forming on the surface of the metal prevented further action. The solution of gold is then poured off and the silver chloride is removed by treatment with dilute ammonia, when the metal is again in a condition for further treatment with aqua regia. After six alternate treatments with aqua regia and ammonia the residual metal consisted of pure platinum. The acid solution containing the gold was evaporated with excess of hydrochloric acid to drive off nitric acid, until gold chloride crystallized out. This was then dissolved, and a small amount of platinum removed by adding ammonium chloride, and the gold was finally precipitated by ferrous sulphate. The filings contained 28.05 per cent. of gold, 10.56 per cent. of silver, 45.46 per cent. of platinum, and 15.93 per cent. of copper. If the metals are really alloyed it is necessary to fuse with three parts of lead, or, better, of zinc. After granulating the melt, it is easy to remove the zinc by treatment with sulphuric acid, and the noble metals remain in a finely divided form suitable for separation by the method already described.

## RECENT PRACTICE IN MAGNETIC SEPARATION IN SWEDEN.\*

By H. C. McNeill.

(Concluded from Page 609.)

2. The Monarch Separator.—The Monarch separator may be regarded as a Wenstrom with the single drum duplicated; it is, however, of a rather more delicate construction, and is a modification of and improvement on the original Ball & Norton machine, a class which includes the most successful machines of the eccentrically placed internal electro-magnet and the revolving drum pattern. Fig. 10 shows a sectional elevation of this separator. It is necessary that the ore treated should be quite dry, and in Sweden the best results have been obtained upon material crushed to pass through a 1-mm. screen.

The ore of the size mentioned, after drying, is fed in an even stream into the machine by means of the roller at A, the feed being capable of adjustment as shown. The mineral falls on the revolving drum, B, which moves over the fixed electro-magnets, all the material being compelled to pass close to the drum by means of the bent shield, BC. Having passed the point, C, the non-magnetic portion, or tailings, fall into compartment D, and are fed out at that point by a similar roller. At or near the point, E, the particles hop across to the next drum in consequence of a stronger current being employed in drum No. 2, and are possibly helped by an induced current of air caused by the superior velocity of this second drum, the relative speeds being as 6 : 1. Those particles containing a little magnetite are whirled off drum No. 2 at about the point, F, the centrifugal force being the stronger force of the two, and drop into the compartment, G, constituting middlings; the wholly magnetic particles are whirled off drum No. 2 at about the end of the electro-magnets, and are flung against the end of the machine and are fed out at H.

The middles may be recrushed and retreated, if necessary. A com-

up. After passing these rolls the ore enters the circular screen, M. This screen is of 1/16-in. steel plate with oblong holes, the details of which are given in the sketch (Fig. 11B). A certain proportion of the ore, about 20 per cent. of the whole, which finds its way, or is small enough to pass through M, drops right down to the bottom chamber, N, while the rest passes out of the screen and is fed into the double rolls, R, and after that passes into a second and similar screen, M1. The ore fine enough to pass through this second screen joins that which has already passed through the upper trommel, M, while that which is still too large is returned to the double rolls, R, by means of the elevator, PP, and is recrushed. Assuming the chamber, N, to contain nothing but ore 1mm. diameter, this is then transferred to a Monarch separator, Q, by the elevator, S S, the middlings from which pass down, and are sent through a second separator, Q1.

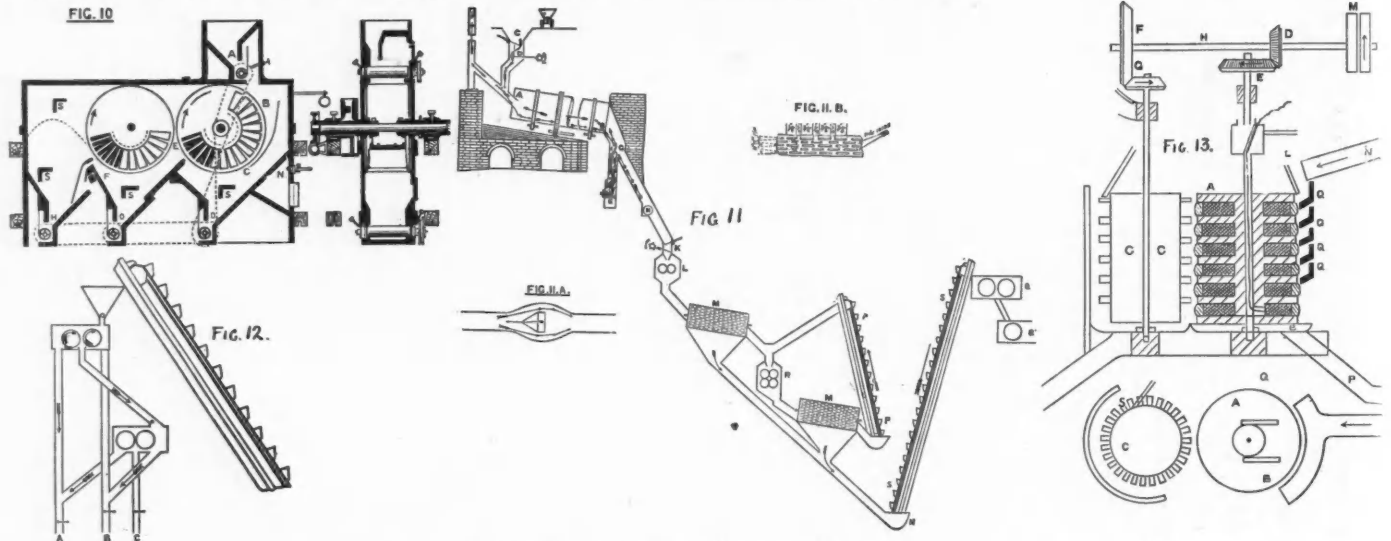
The plant is in duplicate; Fig. 11 represents just one-half of the mill, each half working independently of the other half, and there are therefore four separators at work, two to each half.

The arrangement made for joining the like products from two separators is shown in Fig. 12, where the two concentrates join together and are collected at A, and the tailings similarly at B, while the middles from the top machine are taken to the lower separator, and the middles from which again collected at C.

All the screens, rolls, separators, elevators, shoots, etc., are boxed in with wood, and the dust from them, by means of mains and exhaust fans, drawn to a separate house, allowed to settle, and removed when necessary for further treatment.

It might be of interest to note that the tailings, consisting of apatite, with a very small proportion of magnetite and some hematite, constitute the most valuable product delivered from the separators.

This then goes forward and receives further treatment for the separation of the small residual portions of iron compounds, and the finished phosphate of lime is finally converted into the soluble phosphate of soda by the Wiborgh process.



SWEDISH PRACTICE WITH MAGNETIC SEPARATORS.

bination of three such machines, where the middles from two of them are passed through a third, is said to be capable of treating 200 tons of uncleaned ore per day of 24 hours.

One of the later improvements on this separator is the introduction of drums made of German silver, which has been found to increase the efficiency of the machine.

This form of machine, when used after a careful preliminary treatment, such as drying, crushing, screening, etc., is applicable to two classes of ore: 1. Those in which magnetite is more or less intimately associated with worthless material. 2. Those in which the magnetic portion is of secondary importance. To both of these cases the machine is successfully applied.

The extensive plant at Lulea, in the north of Sweden, may be taken as a case coming under the second of these conditions, and may be briefly described as follows:

The ore which is put through the mill assays from 0.01 per cent. to 3 per cent. phosphorus, and is correspondingly low in iron, the phosphorus occurring in the form of apatite. Only the ore richest in the latter mineral, and hand selected on this account, is put through the mill.

It is first passed through a Blake crusher and then through a single pair of Swenson rolls, the ore being thus reduced so as to pass through a 1/2-in. mesh screen. This product is then thoroughly dried by passing it through the revolving cylinder, AB, Fig. 11. This cylinder is 48 ft. in length and 4 ft. 8 in. diameter; it is inclined 1 in 18, and rotates once every 5 seconds. The ore from the hopper, C, is by means of the feed plates at D passed in a constant stream into the cylinder, meeting the heated gases, etc., coming from the coal fire at E. Having arrived at B, the ore, which is now quite dry and hot, falls down shoot G, being divided at that point into two streams (Fig. 11A), in order to miss the uptake from the fireplace, E. At H is a revolving drum, and at K are placed an adjustable baffle-plate, and a vibrating feed-tray, which not only acts as a safety catch to prevent any object, such as a hammer head, getting into the rolls, but also regulates the feed of ore, so that the rolls, L, have just sufficient ore to deal with, and do not get clogged

A similar plant to the one just described is also used, as already mentioned, where magnetite has to be separated from other and worthless minerals. In this case, the only point that it is necessary to draw attention to is that the ore itself, in the absence of any appreciable quantity of apatite, may be harder, and the initial crushing more difficult to accomplish. At Herrang a No. 5 Gates crusher is employed for this purpose.

3. The Dellvik-Grondal Separator.—This machine is designed to treat those ores in which the magnetite exists in a state of intimate admixture with other and generally worthless minerals. At present it is at work and is successfully treating low-grade magnetite ores. The material may be described as a slime. Fig. 13 shows a sectional elevation and part plan of the machine. AB is of cast iron, and consists of a series of rings. In the spaces between each two is placed the copper wire conveying an electric current. This drum is rotated by means of the bevel gearing, DE, and the pulley shaft, H. CC is a solid drum of wood caused to revolve three times faster than AB by means of the gearing shown at FG, and is studded with soft wrought-iron bolts or pegs, each ring of which revolves exactly opposite to the rings of AB. It will be noted, as indicated by the arrows, that AB revolves from right to left in front, and CC from left to right in front. The slime is carried to the machine by means of the launder, N, which terminates in the circular launders, Q Q Q, which enclose the drum, AB, for about one-third of its circumference, as seen in plan, and offer a larger area of the slime to be acted upon. Further, water is supplied by the pipe, L. The magnetite particles thus brought under magnetic influence attach themselves to the rings on AB, and are carried round. Those particles which escape the first ring are caught lower down, and so on, each successive ring being more strongly magnetic than the one above. The unmagnetic portion of the ore, being unattracted, is washed down and into launder, P, together with the excess water. As each peg of the drum, CC, is successively presented to the rings of the drum, AB, magnetism is induced therein, and the magnetite hops over and forms in tufts on each peg, and is thus carried out of the magnetic field, where most drops away, and the rest is washed off by a strong jet of water from the pipe shown, this separated magnetite being run by the launder into settling pits, from which it is dug out. The copper wires conveying

\* Abstract of paper read before the Iron and Steel Institute, of Great Britain, August, 1899.



the electric current are protected by carefully fitted brass rings and special jointing. Professor G. Nordenstrom mentions that the Dellvik-Grondal separator has been advantageously used at Pitkaranta, in Russian Finland, since 1894 for concentrating poor iron ores.

4. The Heberle Separator.—There are two distinct types of machines, each of which is shown in separate figures. Fig. 14 is a type designed for the separation and concentration of low-grade magnetic ores only. Fig. 15 is designed for the treatment of galena blende ores when occurring with magnetic oxide of iron, also the separation of roasted spathic iron and blende, etc., or in the treatment, which will be described below, of a complex ore consisting of galena blende, magnetic oxide, pyrrhotine and quartz. In Fig. 14 the ore to be treated, after reduction to size of about 30-mesh, is fed in at A with water. B B is a continuous gutta-percha belt traveling round pulleys, C C, and over the fixed electromagnets placed in the casings shown, the whole machine being enclosed in a wooden box, which is kept full of water to a height a little above the highest of the magnets. The magnetic portion of the ore attaches itself to the belt, and is carried down with it until, arriving at D and out of the field, it falls away into E, and is withdrawn through F. The worthless portion falls into G, and is withdrawn through pipe, H. The width of the belt may be from 1 ft. 8 in. to 2 ft. 6 in., and a machine of the latter size is capable of treating 35 tons of crude ore per day. At Saxburget, in Sweden, to mill, they are treating an ore consisting of approximately: Lead, 11 per cent.; zinc, 22; magnetic oxide, 14; pyrrhotine (magnetic pyrites), Fe<sub>3</sub> S<sub>2</sub>, 2 to 5; silica, 15 to 20; which is obtained from the adjacent Langfallsgrufvan Mine.

The ore is first hand-cobbed and picked over roughly to pieces of 6 in. diameter. It is then passed on a Blake breaker, A—Fig. 16—which re-

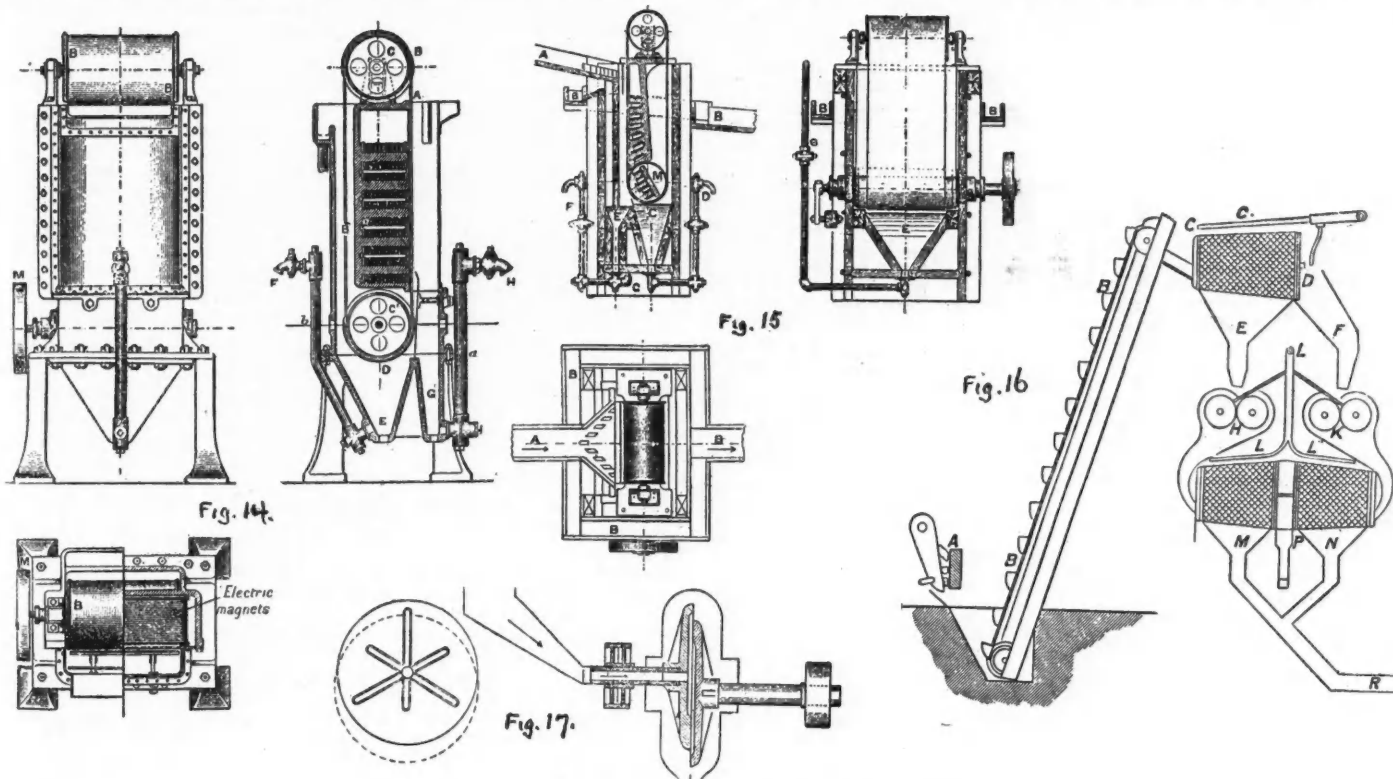
THE CAPE NOME DISTRICT, ALASKA.

Written for the Engineering and Mining Journal by Herbert Murray.

The information given here I have obtained by interviewing a great many of the best-informed people in this camp, and then sifting it down. The beach I have myself prospected for a number of miles and found it to be all that people claim for it. The beach diggings were discovered so late that it was not till the latter part of July that any great number of people got to work there, and on that account the time put in there has been very limited, the season practically closing the latter part of September. Lane, the California mining man, has invested very heavily here. He has purchased six claims, three of which are on Anvil Creek, for \$70,000, and it is reported that he has invested a total of \$200,000 here.

The creek claims have probably produced about \$1,200,000 this year. This in spite of the fact that nearly the whole population was down on the beach rocking and it was hard to get anyone to work on the creeks for love or money. Moreover, lumber was very scarce, costing a dollar a foot at one time, while it was very hard to get any means of freighting sluice box lumber the three or four miles from the beach.

To become great quickly a gold-field must be easy to reach; there must be a large extent of ground rich in gold; the claims must be shallow; there must be water to work them, and the gold must be in such a condition that a large per cent. of it can be saved. Cape Nome possesses all these advantages and will become great because it has areas of gold-bearing territory that can be extracted without much loss, quickly and cheaply; consequently the gold will be divided among a large



SWEDISH PRACTICE WITH MAGNETIC SEPARATORS.

duces it to the size of about 3/4-in. diameter. It is then lifted into the trommel, C D, provided with 3/8-in. holes, by means of which the material less than 3/8 in. passes through and goes on the fine rolls, H, together with water supplied by the pipe, G. Material larger than 3/8 in., or between 3/8 in. and 1/2 in., passes down F to the coarse rolls, K; also with water supplied by the pipe shown. From these rolls the crushed ore passes to further trommels, M and N, provided with holes of about 1/32 in. The stuff already small enough passes down in the shape of a slime by launder, R, direct to a Heberle separator of type shown in Fig. 15. Anything above 1/32 in. is returned from P to the fine rolls, H, and re-crushed. The ore now consists of a slime containing all the minerals mentioned above, and in this state is run into the separator—Fig. 15—at A; the magnetic portion is carried down the belt, and deposited into chamber C, and withdrawn by a pump through D. The coarser portion of the remainder of the mixture accumulates in E, and is withdrawn, through the pipe F, the outer case of the separator being kept full of water up to launder B by means of the water pipe, G. The finer portions of mixture, consisting mostly of the blende and silica, together with about 3 per cent. magnetite, in a state of suspension, are carried away by the overflow, B, to settling pits for subsequent re-treatment as fine slimes. The magnetite, after withdrawal from C, here disappears from the process, as although it contains a little zinc and lead, it is found unprofitable to treat it further. The material which collects in chamber E then goes forward to a four-compartment jig, whereby the coarser galena becomes a separated and sized product, and the other products are re-ground in a special form of mill designed by Heberle and shown in Fig. 19, and consisting of two fluted plates rotating concentrically against each other, after which as much as possible of the other minerals are separated by means of pointed boxes, continuous revolving buddles, Rittinger side recoil tables and similar appliances.

number of men, and the result will be prosperity to all. It is not alone the quantity of gold that determines its value; it is how much of the gold that the claim contains can be saved, and how much is it going to cost to save it. What is left after paying the expenses of working the claim is profit. Cape Nome gold has been pronounced by all mining men exceptionally pure. It is bright, very clean, and amalgamates perfectly on plates.

Nome being on the coast can be reached easily and directly by large vessels; consequently men, supplies and machinery can be shipped there speedily, cheaply and safely. There will be needed no tedious transfers and costly freighting overland on men's backs at \$400 a ton, as has occurred at other places. Moreover, the district is under our own Government, which imposes no royalties.

The most valuable feature that the Nome placers possess is their similarity to the early California placers. They are shallow, hardly ever exceeding 5 ft. to bed-rock. This means that the ground can be easily and rapidly prospected, and the gold can be extracted quickly and at small expense, there being very little non-paying dirt to remove and get rid of before reaching the pay-streak. The beach diggings alone have produced about \$2,000,000 already, and will produce much more before they are exhausted. This beach, which runs from 75 to 200 ft. wide, has been prospected for over 60 miles, and it is believed that every mile of it will pay. Hundreds of men who rocked there have averaged an ounce of gold a day each. Some expert old-timers have made from \$50 to \$300 a day, and occasionally a clean-up of from \$1,000 to \$1,500 has been reported. The pay-streak runs down to the water's edge and how much further no one has been able to find out.

These beach diggings, small parts only of which have been as yet worked, make Nome remarkable, because between high and low-water mark no title can be had to any claims; consequently anyone at any

time can work anywhere on the beach and if everything else fails the Nome miner can always go to the beach and make a grub-stake. The resources of the beach are so vast that, notwithstanding the camp is a year old and has contained more than 3,000 people, neither the tundra, creek, nor quartz claims have been given any attention save in isolated cases, and these few cases have proved bonanzas.

The tundra diggings, which prospect as rich as the beach diggings, extend from the beach three or four miles to the foot-hills; but so far no work has been done save to prospect, owing to the richness and the proximity of the beach diggings to water, rendering them the easier to work. Three or four miles from the beach lie the foot-hills, containing many creeks and streams. That many of these streams are rich has been proved beyond a doubt by the little work already done on them. Of the few claims which have been already worked, some have paid over \$100 a day to the man, and one claim has a record of \$250,000 for two months' work. On these, as on the tundra claims, work has been postponed, everyone turning attention to the beach, where only a rocker was needed with which to work.

Besides the placer diggings ledges of high grade quartz have been located, but as yet no one has prospected systematically for lode claims. Next year, with the big inrush of people which is bound to occur, there will be enough men to work not only the beach but the tundra and creek claims. Hundreds of men who left at the end of the season have gone out for the purpose of purchasing mining machinery with which to return and work their claims next summer.

Besides the Nome District, there are other districts which have been discovered recently in adjoining territory which promise well. This winter, when the ground gets hard enough to permit travelling, there will be hundreds of men out exploring new regions.

The power of attorney has proved a curse here, as in other places. Numbers of men have brought each over 50 powers of attorney in with them, and staked claims by the wholesale. The result is that the whole country is staked for miles in every direction. This works a great injustice to the bona fide miner who undergoes all the hardships and the dangers which must be met in these regions, and then arrives, only to find that someone in New York is holding 10 or 20 of the best claims in the district, having had them staked by some man who has also staked as many claims for some other parties, who will never set foot in the district. Of course on a good many of these claims the assessment work will not be done, and they will be relocated; but they can be held a year, and men cannot afford to wait to get a claim on any such chances as these. This will hurt and hold back the district a great deal, for numbers of the claims will lie idle all next year till the law allows them to be relocated. Power of attorneys are legally holding, but they are a great injustice to the prospector. No man should be allowed to hold a claim unless he is on the ground to work it.

There are a good many cases of typhoid fever in Anvil City, and a number of deaths have occurred. Scurvy also has attacked a good many and will probably claim its quota of victims when the winter sets in for good. There will be a great deal of suffering this winter owing to the scarcity of lumber. Lumber is already \$250 per 1,000 ft., and very little of it in town. The result is that a large number of people will be obliged to winter in the tents in which they passed the summer, and in this intensely cold climate this means sure death to a number. Wood for fires is hardly obtainable, and coal, which is also very scarce, is already \$150 per ton, and nearly all the companies have refused to sell what little they have left, reserving it for their own use.

Golovin Bay and Cape Prince of Wales are being boomed, but as yet I have been unable to get any reliable information concerning those districts.

#### ROPE HAULAGE IN MINES.

In by far the greater number of the mines in this country, particularly in the smaller precious metal mines of the West, the labor of tramping or pushing the pre-cars to the shaft from the breast, where the ore is mined, or from a shute from an upper level, is still done by laborers. In coal mines, however, or other workings, where as the mineral excavated is but a few feet thick, it is necessary to have a large amount of ground open to get a heavy output, and where large amounts of mineral must be left as pillars to support the rock overhead, the working faces soon are so far from the shaft that hand tramping is prohibited by the cost. For short hauls, the mule in this country, and the pony in England, are largely used. As in opening the mine it becomes necessary to bring larger amounts of mineral to the shaft, than can be done conveniently or cheaply by horse power, mechanical appliances are demanded. The chief mechanical appliance that is in use for bringing coal or other materials to the shaft along the main gangways of the mine, is some system of wire-rope haulage.

The use of underground locomotives is constantly increasing. Steam locomotives are prohibited in many mines, on account of the danger of fire. They also foul the air. Electric and compressed air locomotives are continually coming into wider use. The advantage of rope haulage over electric locomotives is that there is no danger from sparks in the case of fiery mines, nor from shocks to miners, from the naked wire, which may lead to loss of life. Electric locomotives also require the installation of a dynamo with a consequent loss of power between the coal burned under the boiler and the force applied to the car. They also call for a high grade of labor, heavier track, and care all around. A compressed air locomotive is free from the first two objections just stated; but it needs the installation of a compressor, and a possible loss by friction and leakage in the pipes. It also needs skilled labor, heavy track, and a heavier initial expenditure for putting in a plant than an electric railway; but it has the advantage of greater flexibility, as it carries its motive power about with it.

In laying out any system of haulage the most important factor and the one that needs to be most accurately established is which system is most capable of distributing the necessary power over the area to be worked; also which will involve the least manual labor and can be best handled with unskilled help. The haulage rope has the advantages

that it can be applied to the distribution of the steam power direct from the engine on the surface. All rope haulage systems are divided into two classes, each having certain advantages for certain work and certain locations. These two systems are the endless rope and the main and tail.

The former is the system generally used for surface work about mines or mills, and is the system employed in the cable roads of our large cities. In this system a rope of uniform size, proportioned to the load it will have to move is driven by passing once or twice round a pulley which is usually actuated by a steam-engine, either directly or by gearing; at the end of the haulage line the rope runs over a large sheave or a series of small sheaves. This arrangement generally necessitates a gangway wide enough for two tracks; or two gangways near together with a track in each. On one track the loaded cars that have been brought in by mules from the branch tracks to the main line are hauled to the shaft, and on the other track the empty cars are hauled back. The action of such a system being continuous, a large amount of coal can be brought to the shaft with a rope travelling at a low rate of speed, not over 4 or 5 miles an hour. In consequence of this, the jolting of the cars is reduced to a minimum, the wear and tear of rails is small and the rolling stock is not abused. Pieces of rock are not likely to fall from the loaded cars, thus derailing other cars, and there is little danger of cars jumping the track on rounding curves. The rope may travel above or below the cars; but the best results are obtained when the cars are attached singly to the rope, catching automatically by a clip on top of the car. If the cars are topped much the rope will have to travel underneath them. In a form of endless rope haulage, known as the series system, an endless rope transmits power from an engine on the surface, down the shaft to a pulley on a shaft in some convenient place underground to which other pulleys may be geared with clutches, and from these pulleys, other ropes are worked over the various gangways. To these ropes the cars are attached, and from the return pulley at the terminus of each gangway, a third endless rope may be driven to haul over a secondary branch. The one great objection to this general scheme is that if anything goes wrong with the main rope, the whole plant stops.

As the cars on the empty side in an endless rope system, balance those on the loaded side, the load on the engine will be the weight of the mineral, multiplied by the average gradient, plus friction. It is of the greatest importance, therefore, that the car should be attached in a uniform and systematic manner to even the load upon the engine. The advantages of the endless rope lie in these two particulars; the cars can be attached singly, distributing the load uniformly, and the attachment can be automatic, thus giving a minimum of power, and a minimum of manual labor. One great objection to the use of the endless rope system below ground, is the necessity in most cases of using two roadways, which are difficult to keep in good condition where the ground is bad. There are instances, however, where this system is used with but one rope underground. For instance, at one of the mines of the Susquehanna Coal Company, at Nanticoke, Pa., and at other Pennsylvania collieries the rope runs over rollers on the surface for perhaps a mile to a point over the foot of the main haulage plane, and thence down a bore-hole to the big sheave at the bottom. The empties in such cases may run back to the foot of the plane by gravity.

In spite of its many good points, the endless rope system is probably in less use than its rival, the main and tail. This system is used in mines where the ground is such that only a single gangway can be easily kept open, and where the grades are not too heavy, not over 3 per cent. The system is worked by an engine on the surface or underground. There are two drums, fixed generally on the same shaft, which are thrown in or out of gear by clutches. It necessitates the use of two ropes, a main and a tail; the main being the length of the gangway, and the tail rope usually double that length. By branch ropes it is possible to haul over several gangways. In this case, as any delay in one gangway involves a corresponding delay to the others, it is important that the branch ropes should be capable of being connected or disconnected quickly.

The cars instead of being connected singly to the rope, as in the endless rope system, are usually made up into trips, and the rope travels at a high rate of speed, frequently 10 miles an hour. This rapid speed necessitates heavier rails, and there is more wear and tear on the cars. The system is much used in Pennsylvania, and a model plant of this type is installed in a mine at Providence, near Scranton, in that State. The loaded cars are hauled at a speed of over 15 miles an hour. While the main rope may be stronger than the tail rope in the ratio of 3 to 2, yet as both ropes must be kept in equal tension by the use of the brake it is often well to have them the same breaking strain. A careless engineer may have the brake firmly set on his tail-rope drum, when the engine is pulling with full strength on the main rope. Many break-downs are due to this. In laying out the track, on account of the high rate of speed, the curves must be proportioned carefully, and particular attention paid to the rollers or sheaves. On one short curve, one large sheave is better than several small rollers, as one bearing needs less attention, and is less liable to get out of order than several. In putting in several sheaves they should be so close together that the ropes should travel round the curve without making angles at each sheave. It is also very important that the large sheave at the end of the plane should be as large as possible, and the tread of the pulley not wider than the diameter of the rope, thus distributing the abrasion of the rope over as large an area as possible. This pulley may be horizontal, vertical or at an angle, as circumstances permit, or conditions compel. In both endless and tail rope systems, the rollers supporting the rope will last longer if put alternately more to one side of the center line of the track than the other. Then when one end of the roller is worn, it can be turned over, and the life of the roller is greatly increased.

The different factors entering into any system of haulage are labor, maintenance, cost of motor power, and cost of installation. The total cost by rope haulage in England was estimated at 4 cents per ton mile some years ago. In this country lower figures are usually obtained, and estimates as low as 3 cents per ton mile, or even less, have been made.



## QUESTIONS AND ANSWERS.

Queries addressed to this department should relate to matters within the special province of this periodical, such as mining, metallurgy, chemistry, geology, mineralogy, machinery, supplies, etc. As it is manifestly impossible to devote space to all the questions and notes constantly received, preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot here undertake to give professional advice on problems requiring special investigation and which should be obtained from a consulting expert. Nor can we undertake to give advice about mining companies or mining stocks. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers should send their names and addresses. Anonymous questions will not be answered. Preference will, of course, always be given to questions submitted by subscribers.—Editor E. & M. J.)

**Ozokerite Imports.**—Can you give the quantity of ozokerite, or mineral wax, imported into the United States for the years 1896-1899 inclusive? The Custom House reports do not give this article separately.—A. A. S.

**Answer.**—The article is not dutiable and the imports are very small, which is the reason why no separate record is kept. From Galicia, where the greater part of the ozokerite used is produced, the total exports last year were 3,620 metric tons of crude ozokerite, and 1,147 tons cerasin, or prepared ozokerite. A large proportion of this goes to Russia, and more to Germany.

**Acetylene for Lights in Mines.**—Can you tell me whether acetylene gas has been used anywhere for lighting in mines?—J. P. R.

**Answer.**—We do not know that acetylene gas is used in any mines in this country. Our German exchanges inform us, however, that acetylene lamps have been introduced recently in the New Diepenhock ore mines in the Selbeck District of Germany. The lamp holds 120 grammes of carbide, and it will burn for eight hours. The carbide costs 98 pfennigs, delivered at the mine, and the cost of lighting works out at 2 pfennigs per hour, as against 1.3 pfennigs with oil.

**Cost of Concentration.**—Can you give me some data regarding the average cost of concentration, for labor and materials, with the use of Frue vanners and other machines? I mean in the United States.—R. B.

**Answer.**—Costs of concentration vary so widely at different mines and in different districts, according to nature of ores, appliances used, wages, cost of power and other items, that it is impossible to give any general average. Consult article on Concentration, by F. L. Bartlett, in the "Engineering and Mining Journal," May 7th, 1898; also the series of articles on "Progress in Ore Dressing" in the volumes of "The Mineral Industry."

**Tellurium.**—I have a ledge of quartz which contains a shoot of ore containing a high percentage of tellurium, practically barren of gold values. Has the tellurium any commercial value? For what is it used? Where may it be marketed? Can you refer me to work on same or a process of extracting same?—H. G. G.

**Answer.**—The metal tellurium has no special commercial uses, and is not in demand for any economic purposes. It is, of course, possible that some use for it may be discovered later, but at present there is no market for it. There is no special work on the metallurgy of tellurium. You will find an article on its preparation in a metallic form in the "Engineering and Mining Journal," June 24th, 1899, page 743. You will also find references to it in the volumes of "The Mineral Industry."

**Treatment of "Fahl-ores."**—We should be much indebted to you if you could tell us if any efficient process is in use for the treatment of ores belonging to the class of the so-called "Fahl-ores" having the following typical composition:  $4(Cu, Fe, Zn, Pb, Hg, Ag)_2Sb(As)_2S$ . The ore is accompanied by about 50 per cent. silica. The silver is about 250 oz. per ton.—S. V.

**Answer.**—Ores of composition similar to that given are treated successfully by roasting, followed by amalgamation in pans or barrels, or lixiviation with hyposulphite solutions. The roast is a chloridizing one, with salt. The process outlined is that used at the Ontario Mine in Utah for some time past. The silver contents of your ore seem to be more than sufficient to stand the cost of such treatment. The main objection to it is that there is always some loss of silver in roasting with salt, but this need not be very large. It is, of course, impossible to give more than a very brief outline of the process here.

**English Coal in the United States.**—Can you give some information to settle a dispute? A friend maintains that large quantities of English coal are imported into the United States every year for steam purposes. I maintain that no English coal comes here except a few small lots of canal coal for domestic use. Which is right?—H. C.

**Answer.**—You are quite right as far as the Eastern United States are concerned. No English steam coal comes here, nor could any be imported which could possibly compete in price with our own coal of equal quality. Some English coal goes to the Pacific Coast, however, almost all of it to San Francisco. It can be sold there on account of the high prices of coal in California, and because ships going to Pacific Coast ports for flour and wheat cargoes are willing to take coal as ballast at a very low freight rate. The quantity is not large, however; for nine months of the present year the receipts of English coal at San Francisco were 80,371 tons, out of a total of 1,074,167 tons. This was

only 7.5 per cent. of the total, and could not be called a large quantity, either relatively or absolutely.

**Dry Placers.**—Can you tell me anything about the dry placers of Lower California? I am interested in finding a placer ground where a gold recovering machine requiring but little water could be used. If no running water is to be found near the working, but water could be had by drilling say 50 to 100 ft., and only so much water be found as is usually found in the East where such wells are drilled for drinking water that amount would be quite enough to work enough ground to satisfy me.—J. W. M.

**Answer.**—Many reports were circulated recently about the gold-fields in Lower California, which were reached from the port or landing of Ensenada. There was a little rush there for a time, but it soon stopped. The reports were rather conflicting, but the general opinion was that there was not enough in the mines to pay, especially in such a barren and uninviting country. There are other dry placers in Mexico—in the Altar District in Sonora, for instance. Dry placers, or at least placers with a very short supply of water are to be found in Arizona and other parts of the United States. An advertisement in the "Engineering and Mining Journal," stating what you want would doubtless bring you plenty of answers from owners or locators of such properties.

**Dry Blowing Machines.**—Would the dry blowing machines in use in Western Australia be available for concentrating metals, other than gold, whose specific gravity is largely in excess of the gangue matter? For instance, could they be successfully employed in concentrating low grade cinnabar ores, the gangue of which is mainly calcite. Experts in the reduction of cinnabar ores are under the impression that the wet concentration process is not adapted to these low grade ores by reason of loss through slimes. It may be that this opinion is based upon experiments made in years past in California, where these low grade ores were crushed under stamps, and not by rolls, or by the Huntington Mill.—R. M. B.

**Answer.**—You are right as to the wet concentration of quicksilver ores; it failed because of the high percentage of slimes. Wet concentration of such ores does not seem to be possible, unless a special slimes settling plant can be used. It is said that quicksilver ores have recently been concentrated wet at the Almaden Mines in Spain; but no particulars have been received.

The dry blowers used in Western Australia are small machines, used chiefly in prospecting and working on a small scale. They would probably be of little use for concentrating ores on a large scale. There are several forms of dry concentrators, but we do not know of any that have been used on quicksilver ores. The usual process of saving the quicksilver by roasting it out is not an expensive one.

**RUBY MINES IN SIAM.**—A recent British consular report says that the ruby and sapphire mines at Pailin, in the Battambang Province are held by the Siam Exploring Company, Limited, one of the affiliated companies of the Siam Company, Limited. The mines are worked entirely by Shans and Laos, who take out digging licenses from the company, and are then allowed to dispose of the stones themselves. At the beginning of the present year the people were complaining of the poor prices their stones were fetching in Europe and Calcutta; they have since improved somewhat. It is understood that the company has recently entered into an arrangement in London for the introduction of a steam shovel.

**GOLD MINING IN SIAM.**—A British consular report says that the Kabin Gold Mines in Siam are being energetically developed, and the erection of the new 20-stamp mill is expected to be completed during July. The local representatives of the company consider that the prospects are good. Crushings have been carried on for the past two years with part of the old machinery brought out over 20 years ago by the Siamese Government, and the new mill is expected to largely increase the output. The mine is the property of the Societe des Mines de Kabin, a French company, having its head office in Paris, but the Siam Company, Limited, is understood to have a large interest in it, and to have sole control of the management. Some 20 Cornish miners and several Scotch engineers are employed, the manager is English, and an English firm represents the company in Bangkok.

The Wattana Gold Mine belongs to a purely French company, and it is understood that its operations have been so far on an extremely small scale. Not much is known about it, however.

## PATENTS RELATING TO MINING AND METALLURGY.

## UNITED STATES.

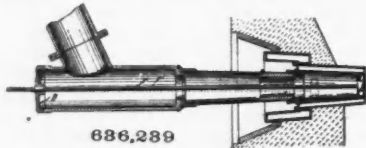
The following is a list of the patents relating to mining and metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

Week Ending November 7th.

636,234. PROCESS OF AND APPARATUS FOR ELECTROLYTIC DECOMPOSITION OF SALINE SOLUTIONS. Elbridge Baker, Winchester, Mass., assignor to the Nashoba Company, Portland, Me. The process consists in flowing a film of mercury continuously from a higher to a lower level beneath a column of the saline solution, passing a current of electricity through said solution to said film during said flow of the mercury, thereby forming an amalgam of mercury and the metal of the saline solution, and separating the amalgam from said solution as soon as formed, by continuing the flow of the mercury and amalgam by their own weight and

momentum and the weight of the column of saline solution, in a substantially vertical direction until such column is counterbalanced by a column of mercury and amalgam.

- 636,239. APPARATUS FOR REGULATING DISCHARGE AREA OF FURNACE-TUYERES. Paul Benni, Ostrowiec, Russia. In an adjustable tuyere the combination of a tapered nozzle or inlet, a hollow

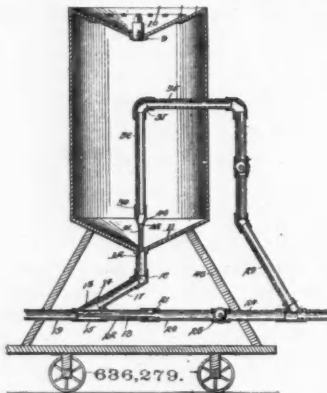


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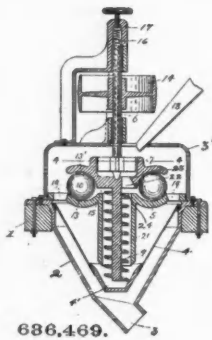
annulus of size to fit and partially close the nozzle or inlet, and combined adjusting and cooling pipes movable substantially longitudinally of the said nozzle or inlet, and secured to the annulus, and guides through which the pipes pass.

- 636,252. DRY-PRESS BRICK-MACHINE. Samuel B. Frank, San Antonio, Tex. The combination in a brick-machine, of a slidable hopper having a depending lug, and an upward-projecting lug, a slidable cap having an upward-projecting lug, a revoluble shaft, wings secured to the shaft and engaging the said lugs to move the hopper back and forth, and means of engagement between the hopper and cap to retract the latter.

- 636,279. SAND-BLAST. James M. Newhouse, Marble Cliff, Ohio. A sand-blast, comprising a sand-reservoir, a discharge-pipe leading from the reservoir, an air-nozzle opening into said discharge-pipe and adapted to create suction therethrough from the reservoir, openings in the nozzle for directing air against the contents of the reser-



636,279.



636,469.

voir, a second nozzle leading into the discharge-pipe below the first-named nozzle and adapted to create suction between it and the first-named nozzle and to exert a discharge-pressure between it and the outlet of the discharge-pipe, and means for supplying air-pressure to said nozzles.

- 636,288. PROCESS OF EXTRACTING PRECIOUS METALS FROM ORES. Harald de Raasloff, New York, N. Y. The process consists in mixing with the ore a solution consisting of a base and a solvent for precious metals, which solvent is capable of being separated from the base by oxygen, and adding liquid air to the ore and solution.

- 636,310. BRICK-KILN. Alfred Yates, Somerville, Mass. In the floor of a kiln, main flues communicating with a series of chimneys on the crown of the kiln, transverse quarter-flues communicating with a series of chimneys at the foot of said crown, the former flues adapted to draw the heat from the furnaces through the kiln, and the latter arranged to carry the moisture out of said kiln.

- 636,318. BATTERY. Charles Burroughs, New York, N. Y., assignor to Norton P. Otis, Yonkers, N. Y. The combination in a battery-cell, of inner and outer electrodes, the latter being expandible, a body of saturated absorbent material between the electrodes normally tending to expand the outer electrode, and means engaging the other electrode to limit its expansion and thus hold the absorbent material under pressure in contact with both electrodes.

- 636,321. ELECTRO-METALLURGICAL PROCESS OF EXTRACTING NATIVE COPPER. Thomas Crane, Bay City, Mich. The process for mining native copper, where it occurs in isolated masses, or boulders, consists in making the mass or boulder the containing vessel and anode of an electrolytic cell by first forming a cavity therein and then electrolytically depositing the copper upon a cathode in presence of a suitable electrolyte.

- 636,335. SEAMLESS-TUBE-ROLLING MILL. John A. Hampton, West Bromwich, and Henry Keates, Moseley, England. The combination of a pair of idly-revoluble concave dies whose contiguous surfaces leave a circular opening, a piercing-mandrel centrally located between said dies, and means for rapidly revolving and feeding forward a billet longitudinally against such mandrel and between said dies.

- 636,448. PROCESS OF MAKING CAKES OF BICARBONATE OF SODA. William D. Patten, New York, N. Y. The process consists in forming carbonate of soda, containing a suitable amount of moisture, into individual cakes of the required size and then subjecting said cakes to the action of carbonic-acid gas, whereby the individual cakes of carbonate of soda are converted into individual cakes of bicarbonate of soda of substantially uniform porosity and the cakes are simultaneously made rigid, so that the cakes are adapted for immediate transportation and use.

- 636,460. SAND-BLAST MACHINE. George S. Slocum, Newport, R. I. The combination with a blast-conduit of a nozzle having a slot or elongated crevice, said crevice being of reduced central section whereby a jet of sheet-like form and substantially uniform sand-carrying power is produced.

- 636,469. GRINDING MILL. Thomas L. Sturtevant, Quincy, and Thomas J. Sturtevant, Framingham, Mass. The combination of the following instrumentalities: A stationary bed-plate provided with a groove and having discharge-openings for the ground products of the mill, a series of crushing-balls mounted upon said grooved plate, a runner-plate supported by said balls, means for rotating said runner-plate and the crushing-balls which support it, central feed-openings for the material to be reduced, an inclined screen upon which the ground products fall, and means located centrally of and operated by the moving parts of said mill for returning the unscreened material to the grinding agencies for regrinding.

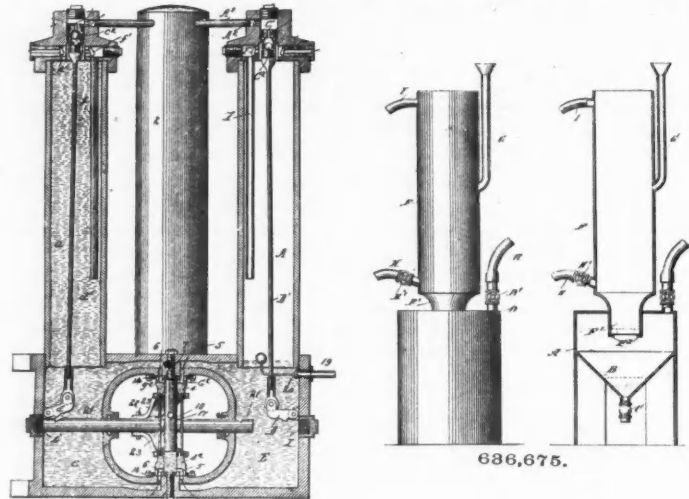
- 636,521. ROLLING METAL. Joseph Guest, Homestead, Pa., assignor of one-half to W. H. R. Hilliard, Pittsburg, Pa. The method of rolling angle-bars consists in reducing a square billet to star shape and then shearing the star-bar into two angle-bars.

- 636,560. BRICK-MAKING MACHINE. George L. Rolfe, New York, N. Y. The combination with the shaft, hubs surrounding said shaft, the platen, arms connecting the hubs and platen, and means for swing-

ing the platen, arms and hubs in opposite directions upon said shaft, of the side frames mortised to receive said shaft, levers pivoted to the side frames of the machine with their short ends beneath the ends of said shaft, gear-wheels and means for operating them from a source of power and studs upon said gears periodically engaging the long ends of said levers for automatically raising the shaft and platen before swinging movement in either direction.

- 636,565. SAFETY-FUSE. Joseph Sachs, New York, N. Y. The combination with a tubular casing having closed ends and projecting terminals therein, of two fuse-wires between and connecting the terminals, the one passing longitudinally through and within the casing between the closed ends and the other extending visibly along the outer surface of the casing between the terminals.

- 636,643. AIR COMPRESSOR. Samuel A. Donnelly, Chicago, Ill. The combination of a pair of chambers having air inlets and outlets, a body of liquid in the chambers, a reversible pump adapted to exhaust the liquid from one and discharge it into the other of said chambers, means for reversing the pump, said means including movable parts exposed to the pressure within the chambers, latches for restraining the movement of said parts until the latches are re-



636,675.

636,643.

tracted, devices disposed in the upper parts of the chambers and adapted to be raised when the liquid reaches them, and means for transmitting the movement of said devices to the latches for retracting them.

- 636,666. AMALGAMATOR. John M. Holmes, Glens Falls, N. Y. An amalgamator pulverizing-drum, comprising an inner and an outer sheet-metal shell, the inner one being corrugated to provide a series of ribs, a mulling-cylinder longitudinally corrugated, arranged within the corrugated shell and adapted to engage with the corrugations of the shell whereby the rotation of the shell will cause the cylinder to revolve, and means for directing steam through the peripheral passages formed by the corrugating of the inner shell.

- 636,675. APPARATUS FOR EXTRACTING PRECIOUS METALS FROM ROCK, SAND, ETC. James F. Latimer, Toronto, Can., assignor of one-half to Fergus Donovan, George Stevenson and James Scott Fullerton, same place. An apparatus comprising an upright receptacle having an open contracted bottom or throat, an overflow-outlet near the top, a valved pulp-outlet near the bottom, a material-inlet between the two outlets, a ring set in the said contracted bottom or throat, to reduce the size thereof, and a receiver through the top of which extends the contracted lower end of the receptacle, said receiver having a valved liquid-inlet at its top, and a valved concentrates-outlet at the bottom.

- 636,679. ORE-CONCENTRATING MACHINE. John H. Michelsen, Butte, Mont. The combination with a vibrating table, roller-bearings for supporting the same; means for raising said rollers under one side of said table; of a pitman provided with a vertically-adjustable connection to said table and also provided with a pair of toggle-levers upon each side, said levers being pressed inward by curved springs, one end of said toggle-levers being connected to the pitman and the other upon the frame of the machine; and an eccentric connected to said pitman provided with means for varying the movement of said pitman.

#### GREAT BRITAIN.

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

Week Ending September 16th, 1899.

- 18,032 of 1898. GOLD ORE TREATMENT. E. Bohon, Brussels, Belgium. A process for treating gold and silver ores, consisting of simultaneously amalgamating and cyaniding with comparatively little water.
- 20,361 of 1898. STAMP MILL GUIDES. R. Shepherd and R. G. Thomas, Johannesburg, S. A. R. An arrangement of friction-balls to improve the guide blocks of stamp mills.
- 21,284 of 1898. SULPHATE REMOVAL FROM SOLUTION. H. Y. Castner, London. Process for removing sulphates of magnesia and lime from brine, preparatory to electrolyzing.
- 10,433 of 1899. DRILL. A. Raky, Erkelenz, Rhenish Prussia. Improved deep boring apparatus.
- 13,217 of 1899. CRUSHER. F. F. Depeaux, Rouen, France. In crushers for coke, anthracite, etc., arrangements for reducing the production of smalls.
- 15,238 of 1899. RETORT. W. Young and J. Fyfe, Glasgow. Improvements in retorts for distilling oil shale.

Week Ending September 23d, 1899.

- 21,856 of 1898. MINE DOOR. T. G. Noble and G. H. Allison, Sunderland. Devices for opening locked ventilator doors in mines, without a key, in case of emergency.
- 862 of 1899. BORAX REFINING. C. Bigot, Hamburg, Germany. Improvements in the manufacture of borax from boracic acid.
- 7,079 of 1899. COAL DRILL. H. C. Sergeant, New York, U. S. A. Improvements in coal drills of the type where the drill is fixed direct on the actuating piston.
- 10,729 of 1899. ROCK BREAKER. W. H. Baxter, Leeds. Improvements in rock breakers of the Blake type.
- 13,834 of 1899. RAKE FOR ROASTING FURNACES. W. B. Devereaux, Glenwood Springs, Colorado, U. S. A. In calcining furnaces with travelling rakes, making the rakes hollow with cooling water running through.



## PERSONAL.

Mr. W. M. Brewer was recently in Rosslund, B. C., and went north and west via Revelstoke.

Mr. John Hays Hammond arrived in New York November 22d, from England. He intends to visit Mexico.

Dr. R. Bell, of the Canadian Geological Survey, has been in Phoenix and Summit Camps, Yale District, B. C.

Mr. J. S. Sneddon has succeeded H. S. Pell as superintendent of the Stirling Company's boiler works at Barberton, O.

Mr. Bernard MacDonald was in Rosslund, November 15th. He is examining properties in various portions of Southern British Columbia.

Mr. James Taylor recently resigned his position as superintendent of the New South Wales Government metallurgical works at Clyde, N. S. W.

Mr. William Mack has succeeded Gomer Jones as superintendent of the Audendie and Honeybrook Collieries of the Lehigh & Wilkes Barre Coal Company.

Mr. F. E. Ware, president of the Bartha Gold Mining Company at Altar, Sonora, Mex., is at the mines inspecting the plant which was recently installed.

Mr. F. R. More, general manager of the St. Anthony Mining Company of California, is in San Francisco from the Omenica country of British Columbia.

Prof. Boverton Redwood, the English oil expert, has been spending considerable time in Wyoming examining the petroleum fields and the soda deposits.

Mr. Charles H. Fulton, of the Columbia School of Mines, has been elected instructor in mining and geology in the School of Mines of the University of Wyoming.

Mr. Neil Cochrane, lately in charge of the Diamond Hall mines, Hassel, Mont., has been appointed superintendent of the Oro Denoro in Summit Camp, B. C.

Prof. Andre Ivanhof, professor of mineralogy in the Imperial Mining Academy at St. Petersburg, has been making a visit of inspection to the Illinois Steel Company's works at Joliet, Ill.

Mr. Frank N. Gibbs, mining engineer, recently in San Francisco, has taken charge of a hydraulic mine at Cherokee, Butte County, California. His headquarters will be at that place.

Prof. Wilbur C. Knight, of the University of Wyoming, has just returned from examining the soda deposits of Natrona and Carbon counties. The data collected will form a portion of a bulletin on the "Soda Deposits of Wyoming," to be published by the university.

Dr. Francis M. Simonds and Mr. J. Howard Wainwright, of Messrs. Simonds & Wainwright of New York, are at present examining mining properties at Central City, Colo. Dr. Simonds will also visit southern Colorado on professional business before returning to New York.

If any of our readers know the present whereabouts of a certain J. H. Smith, who has gone also under the name of George Ryall, of Kallis-pell, Mont., we shall be obliged for the information. In March, 1899, said Smith was in New York, and in April appeared in Portland, Ore.

Dr. E. C. Eustis of Boston, Mass., accompanied by Mr. C. M. Weld, one of the directors of the Melones Mining Company of Calaveras County Cal., has been examining the property of the company at Robinson's Ferry. The late high waters in the Stanislaus River has interfered with the improvements.

Mr. E. A. S. Clarke, general manager of the Illinois Steel Company, Chicago, severed his connection with that company on November 15th, to work with the Deering Harvester Company. His successor as general manager of the Illinois Steel Company is T. W. Robinson, general superintendent of the Joliet works.

Mr. W. A. Carlyle, recently of the British America Corporation, is about to leave Rosslund for the Rio Tinto mines, Spain, where he takes an important position. A number of his friends and acquaintances in Rosslund, B. C., have presented him with an address, and a valuable silver service has been ordered in England.

Mr. A. J. Moxham, who until lately has been president of the well-known Johnson Company and of the Lorain Steel Company, has undertaken the management of the Nova Scotia Steel Company at Sydney, Cape Breton. The company is controlled by Mr. Henry M. Whitney of Boston, and his associates, of the Dominion Coal Company. The iron ore is found on the coast of Newfoundland.

## SOCIETIES AND TECHNICAL SCHOOLS.

Engineers' Club of Philadelphia.—At the meeting on November 15th, 23 members and 6 visitors were present. Prof. J. L. Van Ornum read a paper on "The Volunteer Engineers in the War with Spain," giving a brief history of the formation of the engineer regiments and the numerous military duties and drills in which the regiments received thorough instruction. Besides the purely military features the various engineering duties of these troops were explained, many of them being enumerated in detail. The paper was supplemented by a series of views which were fully explained by the speaker.

The discussion was participated in by Messrs. Colby, Bryan, Kinealy, Nipher and Spencer.

Manufacturing Chemists' Association of the United States.—At a recent meeting in New York City the following officers were elected: President, Nicholas Lennig; vice-presidents, Edward D. Pearce, F. P. Hazard; executive committee, C. A. Grasselli, chairman; A. M. Purves, A. P. Howard, W. H. Nichols; secretary and treasurer, C. Lynde Cochrane of Boston. Representatives of the following firms were present: The Ammonia Company, Cochrane Chemical Company, Columbia Chemical Works, Fairfield Chemical Company, Grassell Chemical Company, Highlands Chemical Company, Martin Kalbfleisch Chemical Company, Lazaretto Guano Company, W. H. Matheson & Company, Limited, Merrimac Chemical Company, James L. Morgan & Company, Nicholas Chemical Company, Passaic Chemical Company, Pennsylvania Salt Manufacturing Company, T. P. Shepards & Company, Solvay Process Company.

Franklin Institute.—At a meeting on November 8th of the Metallurgical Section, Mr. Charles James read a paper on the "Annealing of White Cast Iron." The paper was based on observations made in actual practice. The castings annealed weighed from a fraction of an ounce to several thousand pound pieces. He pointed out that silicon was a necessary element in annealing, and that manganese materially shortened the time in effecting the change in the state of the carbon. Sulphur had also a marked effect, but no positive information could be given of the exact part played by it. The annealed castings were much stronger than ordinary cast iron, both in compressive and tensile strength, showing as high as 50,000 lbs. tensile strength. The resistance to wear was also considerably greater than ordinary cast iron.

California Water and Forest Association.—This association was formed at San Francisco last week. Its object is to conserve the flood waters of the State. The men prominent at the gathering were mostly those interested in irrigation and the hydraulic miners received little consideration. The resolutions that were passed urged the Federal Government to step in and build reservoirs and irrigation works. The following officers were elected: President, William Thomas, San Francisco; vice-presidents, W. E. Smythe, Lassen; P. A. Buell, San Joaquin; W. F. Pierce, Alameda; Timothy Hopkins, Menlo Park; T. J. Field, Monterey; M. J. Daniels, Riverside; secretary, T. C. Friedlander, San Francisco; treasurer, F. W. Dohrmann, San Francisco; executive committee, C. B. Boothe, T. E. Gibbon, Los Angeles; A. J. Pillsbury, Tulare; George H. Maxwell, Sonoma; F. W. Dohrmann, William Thomas, San Francisco; Timothy Hopkins, Menlo Park.

Alabama Scientific and Industrial Society.—The society held its fall meeting in Birmingham on November 16th. Mr. Truman H. Aldrich presided, while Dr. Eugene A. Smith acted as secretary.

State Geologist Smith gave figures as compiled from reports made by the various companies and from estimations, as to the output of coal, pig iron, iron ore and coke, for the three quarters of this year; the figures are given in full elsewhere.

There was some discussion of the conditions of the various industrial developments in the State, while the mineral displays at the State Fair were also talked of. The display of kaolin from Marion County was mentioned.

## INDUSTRIAL NOTES.

The Illinois Steel Company recently ordered 4 gravity discharge heating furnaces of the Morgan Construction Company of Worcester, Mass., to supply billets to the 3 rod mills at Joliet, Ill.

It is stated that the German Alsen Cement Company of Hamburg, Germany, will send engineers to this country to locate near Nazareth, Pa., 3 cement plants. Work will begin December 1st, and the plants when completed will cost about \$500,000.

The Sullivan Machinery Company of Chicago closed a contract from the National Contracting

Company for 8 channeling machines, to be used in cutting out a new wheelpit for the Niagara Falls Power Company. These machines weigh about 9,000 lbs. each.

The Ohio Steel Manufacturing Company will erect a plant at Canton, O., to manufacture open hearth steel castings. The plant will contain one 15-ton open hearth furnace. The officials are Edward S. Raff, president; Edmund G. Fisher, vice-president; Harry B. Stewart, secretary, and Samuel Lowenstein, treasurer.

The Londonderry Iron Company, Limited, of Londonderry, N. S., has been sold to H. S. Hall of that city for \$153,000. The deal includes the blast furnaces, rolling mill, foundries, railway, etc., with the machinery plant, as well as the Maccan (N. S.) colliery, consisting of 4 square miles. Extensive improvements are to be made on all the property.

A special dispatch from Norfolk, Va., states that what is said to be the first of a number of shipments of Pocahontas coal for the Japanese Navy began on November 15th, when 5,000 tons were consigned on the British collier "Needle" to Nagasaki. Large orders have just been received for the Cape of Good Hope, presumably for the British Navy.

The Cooke Locomotive and Machine Company of Paterson, N. J., has shipped 3 locomotives, ordered by the Barry Railway Company of Wales, England. The engines are 6-coupled tank ones, having 80% of the total weight on the drivers and work at 160 lbs. pressure. The total weight in working order of each is 126,000 lbs.; total weight on drivers, 100,000 lbs.

Messrs. Charles H. Besly & Company of Chicago, Ill., report a large demand for machinists' tools and supplies from all parts of the United States and Canada. On Helmet Oil "Perfection" and "Bonanza" cups contracts have been closed for future delivery far in excess of any former years. The factory at Beloit, Wis., is run over time in many departments. Among foreign business are shipments to India, Argentina, France, Germany, Russia and England. Messrs. Besly & Company are introducing the Gardner band grinder.

The Pittsburg Steamship Company has been organized under West Virginia law with a capital stock at the start of \$5,000 that can be increased to \$5,000,000. The personnel of the company will be practically identical with that of the Oliver Iron Mining Company, 5/6 of which is owned by the Carnegie Steel Company, and it will own and operate all the lake vessels of the Carnegie interests. The Oliver Iron Mining Company owns 6 vessels of the Lake Superior Iron Company, and has contracts placed for 6 more. The headquarters will be in Cleveland.

The Goubert Manufacturing Company of New York is erecting new works, at Bayonne, N. J. The shops are 70 by 130 ft., the main structure having a span of 34 ft., with aisles on either side. A travelling electric crane runs the length of the main structure. The system of construction is steel frame with brick enclosing walls. The boiler and blacksmith shops constitute another structure. The company is building some large Goubert heaters to fill the largest order ever placed with one concern for heaters. This is from the Metropolitan Street Railway Company of New York City, and for 9 heaters, each weighing 36,000 lbs. and having an aggregate capacity of 45,000 H. P.

Announcement is made that the American Hoist and Derrick Company, St. Paul, Minn., will engage in the manufacture of steel castings, using the Tropenas converter. The plant will be installed in the iron foundry, but next spring the building will be enlarged by the addition of 100 ft. at the west end, thus practically making a new department for a steel foundry. The steel converter will be erected under the supervision of G. Champailier, a French engineer, who will be in St. Paul about January 1st. It is expected that the company will begin to make steel castings about the middle of February. The converter used will have a capacity of 2 tons. At present steel castings are not made further west than Milwaukee.

The New York Kaolin Company was incorporated under New Jersey laws with a capital stock of \$500,000 recently. It is stated that the company has control of a deposit of kaolin in Florida, and tests are said to show that the deposit is equal to French or English clay. The capital stock will be divided into \$100,000 preferred stock and \$400,000 common stock. The preferred stock will be a 7% cumulative. A certain amount of the common stock will be retained in the treasury for acquiring other lands the deposit now owned by the company and which are under option.

Kaolin clay, English, is worth on dock New York \$11@16 per ton. There is a protective duty of \$2.50 a ton. The officers of the company are: P. Hillyer, president; H. W. Vandivert, vice-president; Horace Dumars, treasurer; B. Barnard, secretary.

The organization of the Sloss-Sheffield Company was finally completed November 17th by the election of the following permanent board of directors: Archer Brown, New York; Joseph Bryan, Richmond, Va.; W. H. Goadby, New York; Sol Haas, Birmingham, Ala.; A. H. Larkin, New York; J. C. Maben, Richard Mortimer, Walter G. Oakman, Geo. Parsons, E. W. Rucker, of Birmingham, Ala.; John A. Rutherford, Fred. W. Scott, of Richmond; Wm. E. Strong, Moses Taylor, New York; R. B. Van Cortlandt, New York. The officers are: Sol Haas, president; E. W. Rucker, vice-president; R. W. McQueen, secretary and treasurer. The executive committee consists of W. G. Oakman, Joseph Bryan, J. C. Maben, Sol Haas and R. B. Van Cortlandt. The headquarters will be at Birmingham, Ala.

#### TRADE CATALOGUES.

The W. E. Caldwell Company, of Louisville, Ky., issues a 35-page catalogue of cypress wood tanks of all sizes and for all purposes. The pamphlet also gives prices of water steel towers for tanks for small water-works either for private concerns or for cities of less than 25,000 inhabitants.

The Westinghouse electro-pneumatic system for controlling railway and other motors is described in a 38-page pamphlet of attractive appearance issued by the Westinghouse Air Brake Company, of Pittsburg, Pa. By this system the motors on several cars may be operated simultaneously from either end of a train. The catalogue also states that the system is applicable to the control of motors used for coal handling machinery, special forms of cranes and elevators and apparatus for charging coke ovens and furnaces. Numerous half-tone cuts give details of construction.

#### MACHINERY AND SUPPLIES WANTED.

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

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

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

#### GENERAL MINING NEWS.

##### ALASKA.

###### Douglass Island.

Alaska Mexican Mining Company.—The mine reports for the month ending November 4th, 12,881 tons ore crushed, realizing \$17,808, and 311 tons sulphurets, valued at \$7,175. Gross yields, \$27,339; expenses, \$18,928; average of ore, \$2.12.

Alaska United Mining Company.—The October report is 24,777 tons ore crushed, yielding \$39,456, and 657 tons sulphurets saved, valued at \$15,111. Ore averaged \$2.40 per ton. Gross yield, \$59,564; expenses for month, \$37,111.

##### ARIZONA.

###### Graham County.

Arizona Copper Company.—This company reports for October a production of 807 long tons of black copper. For the six months, May-October, inclusive, the total output was 4,572 tons black copper.

###### Yavapai County.

Planet Saturn.—The shaft at this mine, near Congress, is down over 1,000 ft. and will be sunk deeper. Air-drills, a compressor and 2 new boilers have been ordered. A 10-stamp mill is running. Twenty-five men are employed under W. A. Clark, superintendent.

United Verde Copper Company.—Circulars sent to stockholders state: "The United Verde Copper Company, organized under the laws of the State of New York, has been dissolved by proceedings taken under the statute for that purpose, and the mines and works of the company at Jerome, Ariz., together with the railroad from the works to Verde Junction, are about to be sold at auction in the course of the liquidation of the affairs of the company on dissolution. A majority of the stockholders have joined together for the purpose of buying in the property at the sale, and the undersigned have been appointed as a committee to act on their behalf and have consented to act as a purchasing and organization committee.

"In case they bid in the property at the sale it will be transferred to a new corporation formed for the purpose of operating the mines and works, in which each stockholder joining in the purchase will receive stock for some proportional amount he had in the old company.

"Stockholders desiring to join in the purchase and reorganization must deposit their certificates of stock accompanied by a proper assign-

ment thereof with the undersigned at the office of the company, 43 Cedar Street, New York City, on or before December 4th, 1899.

"William A. Clark, James A. MacDonald, Henry G. Atwater, Committee."

It is proposed to acquire all the property of the United Verde Copper Company of the State of New York and transfer the same to a corporation organized under the laws of the State of West Virginia, with a capital of \$3,000,000, and take in exchange therefor the stock of that corporation for \$3,000,000 and its bonds for a like amount. Each stockholder of the old company joining in the purchase and reorganization will receive for each share of stock in the old company a share of stock in the new company, and in addition a bond of the new company for \$10. Arrangements have been made by which any stockholder desiring to dispose of his bonds can sell them at par.

#### CALIFORNIA.

California Debris Commission.—The commission will meet in San Francisco, December 4th, and give a hearing to the following new applications to mine by the hydraulic process: From W. H. Secombe in the Landecker Mine, near Placerville, El Dorado County, to deposit trailings in a ravine tributary to Webber Creek; from Joseph J. Hoffman and T. M. Browne, in the Paragon Mine, at Bath, Placer County, to deposit trailings in Volcano Canyon; and from G. W. Coatos and E. S. Randall, in the Pebble Hill Placer, near Smith's Flat, El Dorado County, to deposit trailings in Little Chunk Canyon.

##### Amador County.

(From Our Special Correspondent.)

Altaite.—This company has been incorporated with a capital stock of 2,000 shares, par value 50c. each. The officers and directors are J. B. Francis, president; L. W. Borger, vice-president; J. W. Caldwell, secretary, and R. J. Adams and G. G. Fraser. The company will work a gold property 8 miles above Sutter Creek, on a ledge between Sutter and Rancheria Creeks. The property was once worked by the Mexicans.

Onelda.—The new vertical shaft at this mine, 2 miles north from Jackson, is down 2,020 ft. and sinking will probably continue until the 60-stamp mill is ready to start next spring. The old shaft is being cleaned out and repaired to 400 ft., but is still in bad condition. A 6,000 lb. pump is in operation. There is a large quantity of milling ore on the dump and plenty in sight to stope.

##### Calaveras County.

(From Our Special Correspondent.)

Blazing Star.—At this mine, 1 mile east from West Point, work has been resumed and development has continued to the 400 ft. level.

##### Fresno County.

(From Our Special Correspondent.)

Wabash Mining Company.—This company is making arrangements to run 3 tunnels on its copper property adjoining the Copper King, about 5 miles northeast from Letcher. Work will be prosecuted day and night. The property is considered promising.

##### Inyo County.

(From Our Special Correspondent.)

Ratcliff Consolidated Gold Mining Company, Limited.—Within 10 days this company, whose mines are in Pleasant Canyon, about 6 miles from Ballarat, has cut the ore body in the No. 3 tunnel at 160 ft. in, and in No. 4 tunnel 223 ft. in. This gives a continuous ore body opened from No. 1 tunnel to No. 6 upward of 1,800 ft. on the dip of the ledge, which shows assays in No. 1, \$20; No. 2, \$15.40; No. 3, \$22.60; No. 4, \$37.40; No. 5, \$41.60 to \$61.20, and No. 6, \$18.40. Above No. 1 there is a breast of 40 ft. of ore, one-half of which runs \$20 and upward. At No. 2 there is about 23 ft. which assays \$15.40. At No. 3 the ore's width is unknown; the same is true of No. 4. At No. 5 the ore is upward of 30 ft. wide and averages about \$15 per ton, while the sulphide streak, the full width of the tunnel, carries the high values spoken of. In No. 6 the width is unknown. The company have purchased a carload of steel cable for the new double tramway, 8,000 ft. of which is 1 in. interlocked coil rope, made by the Trenton Iron Works of Trenton, N. J. The Vulcan Iron Works of San Francisco is building the terminals and conveying machinery. The tramway will have a capacity of 150 tons in 10 hours, and will be in use February 15th.

Reward.—Los Angeles parties have bonded this mine and mill, 10 miles southwest from Independence, near the Carson & Colorado Railroad. The tailings, estimated at 10,000 tons, valued at \$5 per ton, are being cyanided by Pridham, Dineen & Quinn, who are operating a 50-ton plant. The results are said to be very satisfactory.

##### Kern County.

(From Our Special Correspondent.)

The Buckboard is showing up well, a large body of \$12 ore having been encountered on the 160 ft. level.

Work has been resumed on the Defender by Taylor & Company, who hold a bond at \$15,000.

Randsburg District.—The Annex Mine is producing good ore. The last shipment of 30 tons milled at the Johannesburg mill yielded \$37 per ton.

##### Mariposa County.

(From Our Special Correspondent.)

Columbus.—The shaft on the Merced River is down 900 ft., where some very rich ore is being taken out. Twenty men are at work. An electric plant to supply power to the Columbus and other mines in the vicinity is contemplated.

##### Nevada County.

(From Our Special Correspondent.)

Imperial Paint and Copper Company.—This company has its men at work day and night taking out ore for shipment from its property at Spenceville. An assay office has been established.

Massachusetts Hill.—In place of coal for fuel at this mine, 1 mile south of Grass Valley, petroleum will be used, a great saving being made. A plant is being erected.

##### San Diego County.

(From Our Special Correspondent.)

Grapevine District.—At the Marion Mine a rich ledge has been discovered. The shaft at the Dewey Mine is down 100 ft. in good ore, and work is progressing on a dozen more mines in the vicinity.

##### Shasta County.

(From Our Special Correspondent.)

Among the important transactions of the past 10 days is the transfer of the Reid & Clendenin gold group of 6 claims to C. D. Galvin, F. Grotefeld and F. G. King. The property is in Old Diggings District, 10 miles northwest of Redding. Work will begin immediately. A rope tramway and power plant, air compressor, etc., are projected. F. G. King, Redding, will be the general manager. The price on a 6 months' option is \$75,000.

Another sale is the Mammoth Copper property under development bond to J. F. Coleman from Saelzer, Kakuy, Jaegel and Wallace, comprising 1,000 acres, which Mr. Coleman has sold through W. A. Temple to Walter C. Boak of Halifax for a Halifax and London company. The work on the Coleman warrants, the purchasers think, heavy expenditures. Mr. Temple of Halifax, is the local representative of Mr. Boak.

##### Siskiyou County.

(From Our Special Correspondent.)

Greenhorn Blue Gravel No. 2.—At a depth of 160 ft. the bedrock has been struck, and the gravel prospects well. There is much water, and hoisting will be slow until arrangements are made to take care of it.

##### Tuolumne County.

(From Our Special Correspondent.)

Draper.—This mine, 1 mile west from Soulsbyville, is running day and night, hoisting about 30 tons of good milling ore to the shaft. The vein appears to widen as sinking progresses.

Mount Jefferson.—The stamp mill at this mine north from Groveland is nearing completion. Each stamp weighs 1,026 lbs. Two thousand tons of ore are on the dump, while many thousand tons are blocked out. Mill runs show the value of the ore in free gold to be from \$7 to \$24 per ton. The sulphurets are said to be rich. A 3-compartment shaft is to be sunk below the present workings. J. M. Meighan is manager.

Pauper's Dream (Accident).—The Boston & Tuolumne Gold Mining Company has made the final payment on this property at Big Oak Flat. The shaft has been sunk to the 300 ft. and drifts have been run east and west 200 ft. on the 265 ft. level and east 100 ft. on the 100 ft. Large bodies of good milling ore have been developed. The mine is equipped with a 50 H.P. boiler and a 35 H.P. engine. The 10 in. pump will be in place in 10 days. Sinking will continue. J. M. Meighan is general manager.

Providence.—The shaft at Summersville is down 550 ft. and drifts are being run and ore stoped. The ledge shows free gold and carries about 1½% of sulphurets. The 10-stamp mill is running steadily. Charles Holland is superintendent.

Tuolumne Water and Electric Power Company.—This company has been obliged to shut down on account of a break in its pipe line near Phoenix Lake, causing several mines to suspend until repairs can be made.

#### COLORADO.

##### Chaffee County.

Tasmania Copper Mining and Milling Company.—This company's 11 claims near Winfield, 22 miles southwest of Leadville. The Australian group of 5 claims is in Black Bear Gulch on the North Fork of Clear Creek. The ores run in copper, zinc, lead, silver and gold. The last Dollar claim is to be cut by a long tunnel. Of the 5 claims on the South Fork of Clear Creek, the Dicky Boy has an 80-ft. tunnel. The company has a 40-ton smelter ready to run next spring. Philadelphia capital is interested. H. M. Smith is president and superintendent.



## Clear Creek County.

(From Our Special Correspondent.)

**American Gold Standard Mining Company.**—In the extension of drifts on the Black Eagle vein through the Bismarck workings at Idaho Springs a new body of mineral has been encountered. The smelting streak is 10 in. wide and was \$60 a ton. The milling ore fills the rest of the break. The company is raising to surface for a working shaft from about 400 ft. Pittsburg capital is back of the undertaking.

**Massachusetts Mining Company.**—Boston capitalists have organized to work the Freeland Extension Mine at Idaho Springs. They bought the property for \$90,000, and are doing preliminary work. Several adits from an adjoining property have been run into Extension ground. The line shaft was sunk to 200 ft. and levels were driven. The ore is a copper-iron with gold values. I am told that the smelting streak is 10 in. wide and runs \$72 a ton, and that there is plenty of good milling ore. Bids are asked for a powerful hoisting plant. The shaft house has been enlarged and an increased force of miners put on by Manager J. H. LeMoyné.

## Dolores County.

**Saw Pit.**—This company, operating in Navajo Basin, is putting in supplies for a winter campaign. The crosscut tunnel, which is expected to tap the vein at the depth of 700 ft., is now in 490 ft. The vein has a width of 4 ft. on the surface.

## Gilpin County.

(From Our Special Correspondent.)

**Mining Deeds and Transfers.**—G. W. Schneider, et al, the Holdredge placer claim to C. E. Adams of Superior, Neb.; H. P. Lowe, et al, to West Wyandotte Mining Company the Topeka lode in Russell District; The Gunnell Gold Mining Company to The Gunnell Gold Mining and Milling Company, a portion of Grand Army and Marine lodes; lease and option, I. C. Morse, et al, to J. R. Grant, et al, the Lamberson and Warren lodes, \$20,000; E. W. Williams and D. McKay to W. McKay, et al, 3/5 interest Golden Wedge, \$6,000; lease from Hal Sayr to The Freedom Gold Mining and Leasing Company, the Freedom and Bueno claims, bond \$17,500; C. T. Barnes to C. K. Colvin, Jean lode in Gregory District.

**Argosy.**—The Argosy Mining Company will give a contract for a new shaft house 24 by 45 ft. and will put up machinery. C. Hesselbine, Central City, is manager.

**Banta Hill Consolidated Mining Company.**—A new plant consisting of one 70 H.P. hoist, one 100 H.P. boiler and one 4-drill compressor will be installed at once and development carried on.

**Concrete Mining Company.**—A good strike has been made in this shaft, according to Manager Newell. The ore body is 8 ft. wide at 1,265 ft. deep and the mill ore carries assay values of 12 to 14 oz. gold per cord and the smelting ore about 7 oz. gold per ton. Pennsylvania capital is largely interested.

**Cook Mining Company.**—This company shipped during October 35 tons of smelting ore, 2,500 tons of mill dirt producing 220 tons of concentrates. The output is kept down while the new mill building at Black Hawk is being erected. Boston capital is interested, with C. K. Colvin, Central City, manager.

**Machinery Receipts.**—During the past week the following machinery was received: One 25 H.P. hoister, Topeka Mine; one 150 H.P. hoister for Gold Coin Mines Company; one 100 H.P. boiler for Boston & Denver Mining and Milling Company, besides the equipment for an 80-stamp mill for the last company.

**O. K.**—Eastern owners have made Forbes Rickard of Central City, Colo., their agent, with instructions to open up this mine.

## Lake County—Leadville.

(From Our Special Correspondent.)

**Car Famine.**—Mines and smelters state that it is almost impossible to secure cars. The most serious effect of this shortage is a threatened coal famine. At several mines, notably the Ute & Ulay at Lake City, work has had to stop. For the time being the coal supply is sufficient, but winter like last would raise havoc.

**Acacia Gold Mining Company.**—Considerable good ore is shipped from the Burns claim from the 6th level. A strike of very rich ore is reported on the Morning Star claim. The lessees are building a new ore house.

**Boston Gold-Copper Smelting Company.**—This new pyritic plant on the old Elgin site blew in its 300-ton furnace November 20th, and is handling about 200 tons of ore per day. The matte is a very desirable product for the smelters, being especially rich in copper. The concentration is 30 to 50 tons of ore into one. S. J. Loder, the inventor, is superintending work and announces that 2 more furnaces will be built, giving the plant a capacity of 1,000 tons per day. The ore comes from Lake and Summit counties.

**City Mining Company.**—The company has organized. The capital stock is \$1,000,000 par value \$1 a share. The directors are Albert Sherwin, R. R. Moore, Andrew Dyatt, Wm. Guller, A. Baer, John M. Maxwell and R. H. Blose. Each lot owner will receive 200 shares of stock for the right to mine under his house. The territory embraces 40 acres of ground in the thick settled part of the town west of the carbonate fault and east of Harrison Ave.

**Comstock Mining Company.**—This new Breece Hill proposition, worked by Boston capital, has its new shaft down 400 ft. in pyriticiferous porphyry. About 3 ft. a day is made.

**Free Coinage Gold Mining Company.**—This company has almost completed its new ore house, one of the finest in the country. An office building 24 by 36 ft. is also being built. This property adjoins the Burns claim of the Acacia Company and ore is shipped from the continuation of the Burns shoot.

**Golden Eagle Mining Company.**—On November 20th the company paid a dividend of 1c. a share on the capital stock of \$500,000, representing the profits on ore mined from the Vinnie.

**Home Mining Company.**—The Penrose is producing 200 tons daily of \$20 ore, the Starr 40 tons daily of 60 oz. ore, and the Boa Air 50 tons daily of 40 oz. ore. Over 225 men are employed. The main drift in the Penrose has gone through 275 ft. of ore 125 ft. across and 35 ft. high with ore still showing. This 275 ft. drift went through 50 ft. of lime and has again encountered the same rich ore shoot. The pay roll of the company last month was \$30,000.

**Reindeer.**—In this mine, worked by Geo. Campion, the main drift at the 200 ft. level is in 210 ft., following a vein of oxidized ore that assays 50 oz. gold. The vein is now 13 in. wide.

**Rialto Mining and Leasing Company.**—Judge Hallett has refused the petition of Phil. P. Browning to appoint a receiver. Defendants won on the ground that the suit was spite work. Manager Estey is preparing to resume work on the property, which lies in Graham Park. Surface improvements are being made for the winter and drifting is to start by December 1st.

**Robinson Placer.**—Mr. C. P. Schumacher is in the East completing the organization of a company to work this ground on the Rock Hill section. The shaft will be well located in Georgia Gulch.

## Pitkin County.

**Aspen.**—This mine at Aspen is worked through the Durant tunnel in Aspen Mountain. There are 11 levels above the tunnel. The ore is limy; present shipments are under 100 tons daily.

**Hunter's Pass Mining Company.**—This company, a branch of the New England Exploration Company of Boston, is working a gold mine at Independence, 11,200 ft. above sea level. The values run from \$8 to \$10 and the mill, which is run by water power, is said to save 85%. H. D. Quinby is superintendent.

## Teller County—Cripple Creek.

(From Our Special Correspondent.)

**New Mining Companies.**—Among some recent organizations are: The Wide Awake Gold Mining Company, owning ground on Rosebud Hill and a lease and bond on a piece of property on Gold Hill; the Progress Gold Mining Company, owning some good ground on Gold Hill and Raven Hill and a bond and lease on the M. W. S. of the Colorado City & Manitou Company on Bull Hill; also ground on Rhyolite and near Beacon Hills; the Maggie Company, owning the Maggie, Yum Yum and Stone Ezel claims on Bull Hill.

**Colorado Springs & Cripple Creek Short Line.**—The construction of this line from Colorado Springs to Cripple Creek now seems assured. Several parties of surveyors are at work. The road is meeting with considerable opposition from the roads already running into the district.

**Granite Hill Mining Company.**—Work has begun on the Granite Hill claim on Womack Hill. It has shipped some ore, but lately has been idle. A strike of good ore in the property is reported, but not verified.

**Oscealo.**—The 3 Nordberg heads at the stamp mill are now running steadily. Their daily capacity is 1,600 to 1,800 tons of rock.

**Union Gold Mining Company.**—About 2 cars per day of good ore is shipped from the Orpha May. A number of lessees are at work, most of whom have ore. This company is in very good condition. Harold Starkweather is in charge.

## CONNECTICUT.

## Fairfield County.

**American Tungsten Mining and Milling Company.**—This company is getting ready to work the tungsten deposit at Long Hill in Trumbull. The Rare Minerals Company started work 2 years ago, but failed. F. C. Beach of Stratford is treasurer of the company. New York capital is interested.

## IDAHO.

## Blaine County.

**Lucky Boy.**—The large cyanide plant at this mine near Custer is now in running order. The plant has a capacity of 800 tons and fills direct from battery tanks by water pressure. A large ore house and a tramway 1½ miles long are completed. Hannauer and McCornick of Salt Lake City are principal owners.

## Shoshone County.

**Mining Conditions.**—There is still a decided shortage of labor in the Coeur d'Alene district and representatives of the Empire State and other companies have been looking for laborers in the iron and copper mines about Lake Superior. The rate offered is \$3.50 a day. It is stated that nothing may be done to the few miners still confined at Wardner for rioting last April and they may be released on their own recognizances. Gov. Steunenberg is said to intend offering a reward for the arrest of Ed. Boyce, who was a leader in the miners' union and since the blowing up of the Bunker Hill & Sullivan Mill has been making false statements around the country regarding the condition of things in the Coeur d'Alene.

**Helena-Frisco.**—The reduction plant at this mine at Gem is to be enlarged to accommodate ore from the claims recently purchased.

## INDIAN TERRITORY.

Secretary of the Interior Hitchcock has given a hearing on the question of oil leases. Representatives of the Cherokee and Delaware Indians appeared in opposition to the grant of leases to the Cudahy Oil Company of Chicago and others. There are 185,000 acres of land within the Cherokee nation covered by the application of the oil interests, and the issue is as to whether the Secretary of the Interior in his discretion should lease such large amounts to a single party or concern, and whether he has the right to grant any leases on any of such lands as belong to the Delawares, who claim title to the oil as well as the surface of the lands.

**McAlester Coal Company.**—This company will sink a 400 ft. shaft near Alderson to reach the McAlester coal. The shaft will be equipped for an output of 1,000 tons per day. Contracts will be let about December 15th and work will begin at once.

## MAINE.

## Washington County.

**Electrolytic Marine Salts Company.**—It is announced that final dividend of 6% will be paid the stockholders on December 4th. This winds up the concern so far as the committee appointed to take charge of the settlement of its affairs is concerned. The total amount paid in dividends is 36 per cent. on a capital of nearly \$1,000,000. The plant and dock at Lubec now belongs to a canning company, which produces canned sardines instead of gold bricks.

## MICHIGAN.

## Copper.

**Champion.**—This name has been given to the workings of the Copper Range shafts. It is the property of the Champion Copper Company, a branch of the Copper Range Mining Company. It comprises the south ½ of section 30, the west ½ of section 31, and the north ½ of the N. E. ¼ of section 31, and the N. W. ¼ of the S. W. ¼ of the N. E. ¼ of section 31, T. 54, R. 34; the S. E. ¼ of section 25 and the E. ½ of section 36, in all about 1,210 acres, carrying the Copper Range lode.

**Victoria.**—This mine in Ontonagon County, 4 miles from Rockland, had been idle 14 years when work began last spring. No. 2 shaft has now been widened and sunk to 290 ft. The old shaft is down 360 ft. A permanent shaft, to be known as No. 3, has been started 1,100 ft. west of No. 2, and has been sunk 50 ft. No. 1 shaft, 1,100 ft. east of No. 2, commenced recently, is down in the rock. The company has opened a few pits on a lode south of the Evergreen, where is a showing of copper. A crosscut from the bottom of shaft No. 2 will prove all the lodes in the Evergreen belt. This crosscut is in over 40 ft. on each side of the Evergreen lode. A shaft house is being built at No. 2 shaft. A hoist that will lift rock from 1,100 ft. has been installed, and a compressor furnishes air for 12 drills.

## Iron—Gogebic Range.

**Ore Shipments.**—Shipments from Ashland up to Nov. 15th, were 2,607,600 tons, of which 1,257,600 tons came over the Wisconsin Central, and 1,350,000 tons over the Northwestern. The shipments are by far the heaviest on record.

## Iron—Marquette Range.

According to the Ishpeming "Iron Ore" shipments of ore from the Cleveland Cliffs, Lake Superior and Lake Angeline properties, this year will exceed considerably the 2,290,000 tons of last year. The mining companies about Ishpeming now have fully 3,500 men busy and 1899 promises to be a very prosperous year. The Cleveland Cliffs Company employs about 1,500 men.

**Goodrich.**—This mine, a few miles west of Ishpeming, an 80-acre tract with a large body of silicious ore that may go 50% iron, is now the

property of the Oliver Mining Company. It belonged to Ishpeming men.

#### MINNESOTA.

Shipments continue heavy and will not slack till the end of November. For November last year the Duluth, Missabe & Northern road sent out 125,000 tons of ore; this November it will ship 400,000 or more, and will close the year with about 3,300,000. The Duluth & Iron Range will have a record of at least 3,800,000 tons, perhaps nearer 4,000,000; the Eastern Minnesota has shipped 850,000 tons and hopes to make nearly 900,000, a gross tonnage for the season from Minnesota of at least 7,900,000 tons. Probably the gross total from all Lake Superior will be over 17,000,000 tons.

The Duluth & Iron Range Road has won its suit against the State of Minnesota over its land grant of 600,000 acres, which the State wished forfeited. Half of this had been patented to the road, the remaining 300,000 acres was directly in the courts. The road won every contention in its case.

#### Iron—Mesabi Range.

(From Our Special Correspondent.)

Colonial Mining Company.—This company at Biwabik is still shipping, but will close next week. Davis & Davis, contractors, will strip 50,000 yds. from the Hale and Kanawha mines this winter. They stripped 50,000 yds. this summer.

Minnesota Iron Company.—This company, which has had an option on the mineral lands of the C. N. Nelson Lumber Company a year or so, and has been exploring with diamond drills, has closed the purchase. The lands include the fee of the Auburn Mine, near Virginia, some good lands south of the Fayal and Cloquet Mines, and other locations. Auburn is under lease to the Minnesota Company, having been taken along with other Nelson lands in 1893 on a \$400,000 bonus and a 30c. lease. It is a big property and is cheaply mined on the milling system. The Minnesota Company is understood to pay a price for these properties the interest on which is equal to the present Auburn royalty on about 200,000 tons annually.

Roucheleau.—It is reported at Duluth that the Roucheleau ore deposit in section 17, T. 58, R. 17, has been bought by the Oliver Iron Mining Company. The facts are that 4 months ago the company bought a ½ interest, the remainder having already been secured by the Lake Superior Consolidated Mines. The interest acquired by the Oliver Company was that of the Higgins-Gilbert party.

Spruce Mining Company.—This company has secured a lease of Cloquet, or Vega, Mine to the west. Ground is being cleared on the Evelette townsite. An underlay shaft on an incline of 72° has been started. It is to be 16 by 6.9 ft. inside timbers, with 2 skip compartments and a ladderway. Night shifts will be put on soon. A hoist is in place. Wallace Kimberley is superintendent and Robert Powell, formerly of the Victoria Mine, is captain. Cloquet will probably be reopened next year.

#### Iron—Vermillion Range.

(From Our Special Correspondent.)

Chandler interests are said to have leased lands in section 32, T. 63, R. 12, south of Ely, and the Lockhart Claim adjoining Ely. The Chandler Mine has cleaned its stock docks for the first time in many years.

#### MISSOURI.

##### Jasper County.

(From Our Special Correspondent.)

At a well-attended meeting of producers November 16th, the sentiment was in favor of building smelters to be owned, operated and controlled by producers and a committee was appointed to investigate titles and secure a large tract of gas land in Kansas. It is proposed to form a stock company with a capital, if necessary, of \$5,000,000, the controlling interest to be retained by the producers and the balance to be placed with anyone who wants it. Matters are still in the preliminary stage.

Joplin Ore Market.—The market remains unsatisfactory to producers and buyers refuse to pay the association scale price of \$33 per ton for 60% zinc ore. The best price obtained was \$32.50 for a small lot on the land of the Missouri Lead & Zinc Company, while the ore from the celebrated Eagle Mine at Belleville sold for \$32 per ton, the lowest price paid in a year.

Three buyers for foreign smelters are in the market. It is not believed that prices will go lower, as large contracts have been made for export; this, with the shut-down of some plants on account of the scarcity of coal, and others on account of an inability to mine ore profitably at \$30 per ton, will reduce the output and stiffen the market.

During the corresponding week last year, top grade zinc ore sold at \$36.50 per ton, and lead for \$21 per 1,000. The lead sales were less than last week by 203,400 lbs., but the zinc sales were greater by 690,730 lbs. and the value was greater by \$29,125. For the corresponding 46 weeks last year, the lead sales were greater

by 4,881,482 lbs., the zinc shipments less by 51,278,890 lbs., and the value less by \$3,693,124. As compared with previous week, the sales were greater by 35,440 lbs. of lead and 1,382,170 lbs. of zinc and the value was greater by \$7,920. Following is the turn-in by camps:

	Zinc, lbs.	Lead, lbs.	Values
Joplin.....	2,035,500	364,270	\$40,368
Cartersville.....	1,425,990	232,250	26,235
Webb City.....	651,140	44,220	10,450
Oronogo.....	444,620	17,780	6,789
Belleville.....	366,140	8,010	5,708
Duenweg.....	205,200	73,650	4,241
Central City.....	137,070	6,080	1,999
South Jackson.....	137,910	14,000	2,538
Stotts City.....	162,580	.....	2,439
Galena—Empire.....	2,950,600	263,500	44,465
Granby.....	308,000	9,000	4,300
Aurora.....	1,188,000	20,020	13,477
Hells Neck.....	95,100	14,050	1,869
Dade County.....	224,000	.....	1,458
Total for week.....	10,335,210	1,067,490	\$166,608
Total for 46 weeks.....	450,017,010	42,426,088	\$9,747,761

The Wall Street Mill on the ground of the Missouri Zinc Fields Company, at Cartersville, burned down last week, entailing a loss of \$8,000. The plant was owned by H. G. & Clinton Gatsch, Branch Bros. and K. G. Sample of Webb City.

The Kansas City, Fort Scott & Memphis Railway Company is making a survey from the north end of its line at Webb City through Centre Valley, Oronogo to Alba and Neck City. The extension, if made, will have easy grades. Owing to the developments at all these camps and the freight business which now goes wholly to the Frisco, it is more than probable that the extension will be built.

Mining Land Sales.—Transactions have been lighter than for weeks past. John D. Cameron has purchased for eastern parties, represented by T. Gerrish of Boston, the Cowboy Mine and lease of 4 lots at Roaring Springs for \$55,000. The mine has been making 25 tons per week on hand jigs since it was opened up. Mr. Cameron will act as trustee for the eastern owners and a \$10,000 mill will be built. Harry Stough of Galena has sold his mill and lease of 8 lots on the Central ground to Philadelphia parties for \$25,000. The 40-acre fee at Tuckahoe, on which the Idaho lease is located, has been sold to a St. Louis company organized by Senator F. W. Mott of St. Louis, for \$30,000. The Wonderful Eight Mine at Saginaw, in Newton County, was sold last week to M. B. Sherbonda as trustee for Ohio parties. The price is said to have been about \$50,000. The mine has made the greater part of the lead turn-in reported from Saginaw for years. The owners were J. & J. W. Reinmiller, A. A. Armour and W. H. Picher, the two former of Saginaw and the latter of Joplin.

New Companies.—The Reindeer Mining Company of St. Louis, capital stock, \$15,000. The Gouger Lead & Zinc Mining Company of Indiana, capital stock \$25,000, with offices at Cartersville, Mo. The Connecticut Zinc Mining Company, under the laws of Delaware, capital stock, \$100,000, organizers, L. W. Plimpton, E. Cady, E. B. Dow and H. S. Bullard, all of Hartford, Conn. Joplin Independent Mining Company, capital stock, \$50,000; incorporators, Knut Wibein, W. F. Gooding and H. U. Dale, purpose to erect and operate zinc smelters.

#### MONTANA.

##### Flathead County.

Buzz Saw.—It is expected the new 125-ton concentrator at this Libby mine will run all winter, as freezing weather will not interfere with the water supply.

##### Deer Lodge County.

Empire State Mining Company.—This property consists of 6 claims, making 112 acres in T. 8, R. 6, in the northern part of the county. E. J. Blackstone and others have secured a verdict for \$99,531 on a mortgage executed by the defendant company at Syracuse, N. Y., in March, 1898. The property will be sold at auction.

Montana Mining Company, Limited.—The October output was 2,810 oz. gold and 11,210 oz. silver from 4,200 tons of ore crushed and 12,687 tons of tailings from the dams. The tailings product was \$38,500 and the cost of extraction was \$12,860. The total estimated product was \$62,300 and the expenses \$45,700, leaving a net income of \$16,600.

##### Jefferson County.

Katie.—The mine at Basin has closed temporarily. The Glass Brothers have retired from the management and Chas. M. Allen has been appointed to take charge.

New Elkhorn Mining Company, Limited.—The mine at Elkhorn has shut down and all trains on the Boulder & Elkhorn branch of the Northern Pacific will stop running December 1st. People are leaving Elkhorn and it will soon be almost deserted.

##### Madison County

Butte & Ruby Valley.—This 100-ton smelter at Twin Bridges is now at work. The ore is expected to come from claims in the Tobacco Root Range between Virginia City and Whitehall. Web ores are contracted for in sufficient supply from the Coeur d'Alene district in Idaho. The

officers of the company are: James Murray, Butte, president; Wm. Owsley, Twin Bridges, vice-president; Chas. Schatzlein, Butte, treasurer and Sewall Davis, Butte, secretary.

Calvin.—This old mine, southwest of Rochester, has been leased from the owner, C. F. Chapin of Butte, by J. D. Pritchett & Company. The ore, which formerly went to Omaha, will go to Twin Bridges. It assays 50% lead and 35 oz. silver. An incline shaft is down 300 ft.

Easton.—At this mine, 6 miles from Virginia City, 40 men are working.

German Bar Dredging Company.—This company's dredges at the mouth of Alder Gulch are reported to be doing good work. The company has been testing its ground with drills, looking for a second bed-rock below the first.

King.—This group of claims in Hell's Canyon, 7 miles from Twin Bridges, which has been idle several years on account of litigation, is to be worked again, Jas. Moffet having secured a lease and bond.

##### Meagher County.

Northern Pacific.—On this claim at Copperopolis, one of a group of 7, Messrs. W. E. Reynolds and W. W. McDowell of Butte have a shaft down 350 ft. The shaft is equipped with a steam hoist and pumps. At 150 ft. a crosscut to lead showed good ore; at 250 ft. the vein was 6 ft. wide, with a 2-ft. pay streak reported to run 40% copper. The shaft is to be sunk 500 ft. The post-office address of Copperopolis is Copper.

##### Silver Bow County.

Gold Coin Mining and Milling Company.—The Gold Coin Mine, near Butte, has closed down and part of the property has been attached. The litigation is said to be due to differences among shareholders, most of whom live in Cleveland, O.

#### NEVADA.

##### Storey County—Comstock Lode.

Challenge Consolidated Mining Company.—At the annual meeting, November 17th, the following directors were elected for the ensuing year: James Newlands, James Newlands, Jr., J. P. Martin, A. F. Coffin and G. C. Snider. James Newlands was elected president; J. P. Martin, vice-president; C. L. McCoy, secretary, and W. E. Sharon, superintendent.

#### NEW MEXICO.

##### Bernalillo County.

Crown Point.—This mine at Bland, recently purchased by ex-Senator Warner Miller and other New York men for a price reported as \$50,000, has an incline shaft of 250 ft. with 4 levels. The vein is said to be 3 to 20 ft. wide and to average \$18 gold and \$2 silver. A tunnel is to be driven and a cyanide plant erected. George Milliken is superintendent.

Iron King.—This claim at Bland is owned by a Denver Company, with R. W. Woodbury president and W. C. Wyncoop general manager. A mill is being erected on the new townsite of Woodbury which will have a capacity of 100 tons daily and do custom work.

##### Dona Ana County.

It is said that Messrs. Llewellyn & Wade of Las Cruces have located 68,640 acres of alkali lands, east of San Andres Mountain, for a Pittsburgh, Pa., syndicate that is considering building on a road to the lands from El Paso and developing the beds of carbonate and sulphate of soda.

##### Grant County.

Bayard Smelting and Milling Company.—This company is working the old Texas Mine at Central and running a 50-ton concentrating plant with rollers, jigs and vanners purchased from the El Paso Machinery Company. The engines came from the Hamilton Corliss Company. Mr. H. Niles is in charge and F. W. Rossiter, lately from Deadwood, S. D., is superintendent of the mine. The main shaft is 500 ft. deep and the ore averages \$15 per ton in gold and silver. The company is stocked for \$120,000. It is reported that the company has completed plans for enlarging its plant by a Huntington mill and 6 vanners, which will give the mill an average capacity of 80 tons per day. Different sizing screens from those now employed are to be put in and all of the coarse product will be handled in the jigs, the jig tailings being re-ground and worked over the vanners.

#### PENNSYLVANIA.

##### Anthraccite Coal.

Jermyn.—The strike at the collieries owned by John Jermyn & Company at Old Forge and Rendham was declared off last week, the company granting most of the requests of the miners.

Reliance.—A good seam of coal 6½ ft. thick has been opened in this colliery near Shamokin. It is called the No. 11 seam.

Susquehanna Coal Company.—There has been rioting at the mines at Nanticoke and further trouble is threatened. No serious damage has been done. The United Mine Workers threaten to call off all the miners in the company's em-



play at Shamokin and Pittston unless the company comes to an agreement with the strikers at Glen Lyon and Nanticoke.

West Ridge.—This colliery at Scranton has been transferred to the Scranton Coal Company, a branch of the New York, Ontario & Western Railroad. T. C. Van Storch, E. A. Clark, George Clearwater and A. Harvey were the principal owners of the colliery. Its capacity is 150,000 tons yearly.

#### Slate.

(From Our Special Correspondent.)

Bangor Star Slate Company.—This concern, which owns and operates the former Bangor Superior quarry at North Bangor, is making blackboards as large as 7 ft. 4 in. by 4 ft., and manufactures as high as 1,300 ft. of blackboards a day. It has placed a large saw in its factory, with a bed of 10 by 12 ft.

Bangor Valley.—Bowers Brothers have enlarged the working by taking off 6,000 yds. of earth.

Crown.—At this West Bangor quarry a piece is being uncovered on the north side 120 by 50 ft. Contractors are removing 12,000 yds. of top earth.

Grand Central.—This firm still has 100 unfilled orders on hand aggregating between 30,000 and 35,000 sq. ft. of blackboards. The factory is working over-time.

National.—Four thousand to 5,000 ft. of blackboard stock and 50,000 school slates a month are taken out of this Danielsville quarry. John Lobb & Son are owners and operators. The quarry will be put in excellent condition during the winter.

#### SOUTH CAROLINA.

The Charleston Mining and Manufacturing Company has bought the Whaley phosphate tract on Ashley River, St. Andrew's Parish, for \$25,000.

#### SOUTH DAKOTA.

##### Custer County.

(From Our Special Correspondent.)

North Star Mining Company.—Eleven of the stockholders have been in Custer, including the president, John A. Schenck, and the secretary, H. Eisele, both of Omaha. The company will probably erect a plant at the shaft in Penobscot District, 8 miles northwest of Custer.

##### Lawrence County.

(From Our Special Correspondent.)

Baltimore & Deadwood.—This company has started the 10 new stamps at Gayville, and the full number, 20 stamps, will it is said, drop steadily this winter. The mill will handle about 80 tons per day.

British-American Gold and Copper Company.—The shaft in Butcher Gulch is down about 115 ft. and the vein fills the shaft bottom, which averages about \$12.50 gold to the ton.

Bullion.—Dr. H. H. Muggley, of Chicago, has bonded this mine in the Bear Butte District, near Galena. A payment of \$5,000 was made the former owners, G. P. Bennett and associates, of Rapid City. Recent development has shown free milling and refractory ore.

Detroit & Deadwood Mining Company.—The Deadwood management is preparing a carload of different kinds of ore from Lawrence County to be shipped to Cripple Creek, Colo., to be tested in a plant erected there by members of this company who have organized a reduction company.

Golden Reward.—The new reverberatory furnace for smelting slag is finished. It is built about 300 ft. west of the smelter and tracks have been laid to it. The smelter is treating about 500 tons of ore at present, using 4 stacks and 2 reverberatory furnaces. The company has opened up several old mines in the Bald Mountain Mining District.

Homestake Mining Company.—This company has announced its intention of getting a water supply for its works at Deadwood from the sources of Spearfish Creek, 20 miles away.

Yankee Boy Mining Company.—At the annual election the following directors were elected: John Baggaley, Austin Mabbs, Pauline McLaughlin and O. W. Matson, all of Deadwood. An application for patent will be made on the group of claims in Burno Gulch, near Carbonate Camp.

##### Pennington County.

(From Our Special Correspondent.)

Golden Slipper.—The sale of this mine to Chicago parties was not closed, as reported. The persons who bonded it intend to work it themselves. The vein resembles that of the Key-stone Mine.

Holy Terror.—The main shaft is being sunk 100 ft. deeper, to the 800 ft. level.

Mystic Cyanide Plant.—F. H. Long, of Chicago, and C. B. Hall and Thomas Morgan, of Muncie, Ind., have been in the Black Hills looking after the erection of a cyanide plant at

Mystic. The foundation of a 100-ton plant has been laid.

New Homestake Mining Company.—This company, headquarters in Chicago, has begun work on some claims.

Poisoned Ox.—A. D. Arundel, who has purchased this and the Copper Glance mines in Pactola District, has men at work. The copper ore will be hauled to Mystic by wagon and shipped to the Deadwood Smelter.

#### TENNESSEE.

##### Maury County.

Phosphate Industry.—Among the recent large purchases of land the most important is that of the J. K. Orr place by Mr. H. N. Soria and associates, of New Orleans, La. The price is \$75,000 for 300 acres, through which the main line of the Nashville, Florence & Southern Railway runs. The new plant of the Tennessee Phosphate Company is working satisfactorily. The Mt. Pleasant Southern Railway Company has about finished grading the first 2 miles of its road-bed and is laying track. As soon as this road is completed to the site the heavy machinery of the American Phosphate Company of Cleveland, O., will be erected, and by February 15th the company will be in shape to ship rock. The American Company has purchased recently 3 small farms in the Seventh and Eleventh districts, near Columbia; W. J. Eakin received \$5,040 for his lands; W. W. Scott, \$8,250, and Thos. Foster received \$5,700. Each of the places is less than 100 acres in extent.

#### UTAH.

(From Our Special Correspondent.)

Bullion and Ore Shipments.—During the week ending November 18th the different smelteries sent forward 29 cars, or 1,101,850 lbs., lead-silver bullion; 7 cars, or 364,520 lbs., copper bullion. From the different camps were shipped in the same week 39 cars, or 1,804,950 lbs., of ore and concentrate products, to smelteries outside of the State for treatment.

A New Smeltery.—It is an open secret that the American Smelting and Refining Company is considering the erection of an entire new plant in Salt Lake Valley, as the Germania and Mingo stacks now in commission do not handle much over 50% of the ore scheduled to be treated here. The plan under consideration is for a plant to handle not less than 20,000 tons of ore a month.

##### Juab County.

(From Our Special Correspondent.)

Tintic shipments.—In the week ending November 18th there were sent forward from the 3 railroad points of the district 85 cars of ore and 2 cars of concentrates, contributed as follows: Swansea, 16 cars of ore; Gemini, 13 cars; Bullion Beck, 10 cars ore, 2 cars concentrate; Grand Central, 5 cars ore; South Swansea, 6 cars; Humbug-Uncle Sam, 5 cars; Ajax, 3 cars; Godiva, 2 cars; Mammoth, 1 car; Sunbeam, 1 car; Tintic Iron, 23 cars of hematite for flux.

Alaska.—Secretary Morris R. Hunt reports the ore uncovered in the north drift, from bottom of shaft, improving in strength. What promises to prove a well-defined shoot is cut on the south drift, 210 ft. from the shaft.

Carisa.—Drifting from the bottom of 250 ft. incline has shown small bunches of ore and good mineralized vein matter. At the same horizon handsome shipments were made from Spy ground. Superintendent Underwood says the north drift will be continued and that the management will probably sink deeper.

#### VIRGINIA.

##### Augusta County

Ritch Patch.—About 550 tons of ore are shipped daily from these mines near Staunton to furnaces at Lowmoor, Goshen and Glen Wilton. The seams exposed vary from 40 to 90 ft. wide. Two 150 H.P. engines and an electric plant are to be erected and 2 100-ton furnaces near the mine are talked of.

#### WASHINGTON.

##### Okanogan County.

(From Our Special Correspondent.)

Black Bear-War Eagle Gold Mines Company.—The company has completed the installation of a gasoline hoist, retimbered the shaft 180 ft. and cleaned out the 150 ft. level. The hoist started November 12th. The shaft is 250 ft. deep, with drifts run each way. Ore will be mined from the 150 ft. level in both drifts. The mill will start December 1st. The War Eagle has a 70 ft. shaft on the vein, which will be sunk to the 100 ft. level.

Bull Frog.—The company has run through 8 ft. of \$60 gold ore, it is said, in the crosscut run to tap the main vein on the Phantom claim. This is a blind vein. The company owns 50 locations.

#### WYOMING.

##### Caribou County.

(From Our Special Correspondent.)

Grand Encampment District.—From 2 to 5

miles northeast and east of Battle are the promising locations of John Ledbetter, Mike Whalen and others. Well down on the west slope of the range, about 10 miles from Battle, and near the confluence of Battle Creek and its North Fork, is a promising location known as the Kelsey. The walls of the vein, which are schist and syenite, show native copper, with assays of about 6% copper—a new feature in the Battle Lake District. Near the Kelsey, but farther east, are the promising prospects of Messrs. Fernald, Norval and others. Farther south, along the main range, in the vicinity of Hog Park, near the Elkhorn silver mine in Whiskey Park and about the headwaters of the North Fork of the Snake River, partly in Wyoming and in part in Colorado, several promising copper leads have been located and opened.

A claim owned by A. Palmer and others, near the old Bridger Mine not far from Jack Creek, has been equipped with a small boiler and pump and whim for hoisting.

What is known locally as the Cox Mine, on Big Creek near the North Platte River, and the south line of the county and State, with adjoining claims passed into the control of the Wyoming Consolidated Copper Company, of which Secretary of State Fennimore Chatterton is one of the directors, early this season. This mine has been equipped with excellent machinery, the shaft has been sunk deeper, and a tunnel of some length run, disclosing high-grade ore running from 35 to 65% copper.

On the east side of the river, in the open rolling country, about 14 miles from Saratoga, is the Dewey copper mine. This has been equipped with a good-sized boiler, engine, hoist and pump.

##### Weston County.

Cambria Coal Mines. These mines at Cambria, 7 miles from Newcastle, have a present output of 1,700 tons daily. Of this amount 5% goes to the coke ovens 1 mile below the mines. The coke is shipped to Deadwood. About 700 men are employed. The camp and the coal land about it belong to Kilpatrick Brothers & Collins.

#### FOREIGN MINING NEWS.

##### AUSTRALASIA.

##### New Zealand.

(From Our Special Correspondent.)

Dredge Mining.—The Clutha River has risen from the melting of the winter's snow; dredging returns have therefore begun to fall off. The dredging boom has correspondingly slackened, probably due to the enormous number of dredging companies floated during the past year. Most of these are to work in Otago, though the Nelson and Westland Districts (West Coast) have not been neglected. The last 4 weekly returns of the Hartley & Riley Dredging Company are: September 29th, 527½ oz.; October 6th, 572 1/10 oz.; October 13th, 612 oz.; October 20th, 236½ oz. (for 4 days' work).

The September return of the Progress Mines (Reefton) is £7,010 (\$35,050), about an average monthly yield.

During the 4 weeks ending October 26th the returns from the Auckland gold-fields totalled £59,762 (\$298,810), beating the previous month by over £5,000 (\$25,000). The Ohinemuri District contributed £47,098 (\$235,490); the Thames District, £6,570 (\$32,850), and the Coromandel District, £6,094 (\$30,470).

##### CANADA.

##### British Columbia—Yale District.

(From Our Special Correspondent.)

Banner.—The quartz vein on this claim in Franklin Camp is 20 ft. wide, and averages \$40 a ton. The property is under bond to Henry White, locator of the Knob Hill and Old Ironsides mines in Phoenix Camp, for which he is said to have received \$300,000 in cash and stock. The bond on the Banner is \$50,000, of which 10% has been paid. Twelve men are driving a 200 ft. adit.

Brandon-Golden Crown.—This mine at Wellington is ready to ship. The 4 first mines to ship in the Boundary Country, if we except the Yankee Boy and Yankee Girl group on Hardy Mountain, which have already made a small shipment to Trail, will be the Winnipeg and Brandon, at Wellington, B. C., in Summit Camp, and the Pathfinder, on the North Fork of Kettle River.

Dominion Copper Company, Limited.—The capital stock is 5,000,000 shares of \$1 each. Of these 2,000,000 were taken by the vendors; 2,500,000 shares are in reserve, and 500,000 have been offered. The officers and directors are: President, Geo. A. Cox, Toronto; vice-president, William McKenzie, Toronto; managing director, Hugh Sutherland, Winnipeg; J. W. Flavell, Toronto; D. D. Mann, Montreal. The properties of the company are the Brooklyn, Idaho, Stenwinder, Standard, Montezuma and Rawhide in Phoenix Camp, midway between Columbia and Greenwood. Frank Robbins, formerly manager of the Eureka Consolidated of Eureka,

Nev., and of the New Elkhorn Company, Leadville, Colo., has charge. The company expects a rate for freight and treatment of \$4 a ton at Trail, and will ship 500 tons a day. The actual cost of mining and development will be more than \$2 per ton. Crow's Nest coal can be delivered at the mine for \$8 a ton, and will be used instead of wood. Tenders have been asked for a 20-drill compressor, and for a steam hoist for each mine. The present 5-drill compressor and steam hoist on the Brooklyn is to be transferred to the Rawhide, and the Stenwinder steam hoist is to go to the Idaho. The average values of all the company's Phoenix ores is said to be 3.5 to 4% copper and \$4 to \$5 gold.

The Brooklyn-Stenwinder group, owned by the Dominion Copper Company, Limited, includes the Brooklyn, Idaho, Standard, Stenwinder, Montezuma and Raw Hide. The Brooklyn-Idaho vein shows lime on the foot wall and diorite on the hanging, and is 300 ft. wide. An incline shaft has been sunk 300 ft., and crosscuts driven at the 150 and 250 ft. At the 150 is shown 13 ft. of pyritic ore, running from 5 to 6% copper, with low gold values. For the next 150 ft. the lode is poor, but at 35 ft. from the hanging copper pyrites stringers are again met. This pay streak is 30 ft. thick, being separated from the hanging by 5 ft. of barren rock.

Separated from the Brooklyn-Idaho deposit by several hundred feet of lime and diorite, lies the Stenwinder-Montezuma lode. An incline has been sunk 200 ft. At the 115 ft. level a crosscut has been driven 80 ft. toward the hanging wall. The first 18 ft. is pay ore, then follows 40 ft. of barren rock, then 40 ft. of poorly mineralized gangue, which gives place to barren rock. The Standard will be worked from the Brooklyn, and the Montezuma from the Stenwinder. The Raw Hide is to be opened by a tunnel which should cut the lode of 300 ft. below surface. The country is diorite and the 80 ft. vein gives averages as high as 6% in copper.

#### British Columbia—West Kootenay District.

(From Our Special Correspondent.)

Rossland Ore Shipments.—The output for the 10 months and 15 days ending November 15th amounted to 154,000 tons, valued at \$2,600,000 gross. The weekly shipments continue to average about 3,200 tons.

Giant.—Senator Turner and E. D. Saunders of Spokane have secured an option from A. D. Coplin and others on 1,270,000 shares of the Giant, located on the west side of Red Mountain. The total capitalization is 2,000,000 shares of \$1 each.

Le Roi.—W. A. Carlyle contradicts the statement that the dividend recently paid was from ore at the Northport Smelter at the time of the purchase. Mr. Carlyle states that the ore referred to was never credited to the purchasers, but retained by the old management as part of the assets.

Sunset No. 2.—According to W. H. Jeffrey, consulting engineer, the total amount of development work done amounts to 3,000 ft. on the 3 ledges. The present workings are chiefly in a shaft and drift, the latter to cut the main ledge. The prospects are favorable. A number of stringers of pay ore have been cut, as well as some good shoots. A carload of shipping ore has been removed from the shaft sunk on the main ledge.

War Eagle.—This company paid its regular monthly dividend of \$26,250, November 15th, making a total for the mine up to that date of \$466,500.

#### Nova Scotia—Guysboro County.

(From Our Special Correspondent.)

Modstock.—This mine, in Forest Hill District, returns from 1,259 tons of material 625 oz. of gold, covering 3 months.

Richardson.—This mine, in Stormout District, returns 300 oz. from 2,300 tons. The Richardson is a steady low-grade producer, paying monthly dividends.

Sherbrook District.—The Blue Nose returns for October 360 oz. from 1,200 tons of ore milled. There is a great change taking place in this old camp. J. B. Neil has added to his holdings the New Glasgow, making a compact block of over 200 areas from which \$2,200,000 worth of gold has been obtained, most of it from 25 to 30 years ago, when nothing but coarse gold was saved. A. B. Call, Mr. Neily's superintendent, recently ran 50 tons of the old waste dump through a stamp mill and was surprised with a return of \$1.30 to the ton.

#### Nova Scotia—Halifax County.

(From Our Special Correspondent.)

Gays River District.—A new York company has purchased all the mining areas in this district. The figures are private. The auriferous material is a flat conglomerate ledge from a few feet to 100 ft. thick, of unknown extent, covered with heavy surface drift. The conglomerate lies over a talcose slate and very rich material is found in the contact. Extensive mill tests have been made and a 100-stamp mill is contemplated.

Lake Catcha.—This mine, owned by T. B. Neil,

returned for September 59 oz. from 63 tons of stuff milled, obtained in sinking.

Montague District returns from tributors for the past 2 months are 600 tons quartz, 360 oz. gold.

Salmon River District.—The Montreal London Gold and Silver Development Company, owners of the Dufferin, have the new 60-stamp mill running full time. The returns show low-grade material, as all the rock from the sinkings, drifts and crosscuts was put through the mill. The company has over 200 men. There are 20 air-drills in constant operation. The main shaft is down 400 ft. and there are a great many hundred feet of crosscuts and drifts. Development so far is reported satisfactory.

Waverly District.—Manager McNulty, of the Tunnel Mine, after satisfactory diamond drill tests, which tapped several auriferous saddles which nowhere show on the surface, has determined to erect a 60-stamp mill. He has milled over 1,000 tons of ore from the Barrel lode, which have yielded satisfactory returns. The new mill will be driven by water power from Fall River 1½ miles distant, conveyed to the mill in a 60-in. wooden pipe. The Queen Foundry and Machine Company of Halifax will supply the machinery. Negotiations are in progress for 2 other properties in West Waverly.

Zemo.—This mine in Caribou District, owned by J. B. Neil, is running steadily and paying dividends.

#### Nova Scotia—Hauts County.

(From Our Special Correspondent.)

Jubilee.—This mine, in Renfrew District, after long idleness from injudicious tying up under bond to English people, has started again. The first 45 tons of ore yielded 305 oz. of gold. The shaft is but 60 ft. deep.

#### Ontario—Rainy Lake District.

(From Our Special Correspondent.)

Isabella Mining Company.—The shaft is down 60 ft. in a rock that is averaging about \$8. This prospect adjoins the Golden Star.

Manhattan Mining Company.—This company is sinking to 300 ft. and by spring 700 ft. of work will be done. The mine is in the same formation as Decca and others of the Mine Center group.

#### Ontario—Rat Portage District.

(From Our Special Correspondent.)

Britannia Consolidated Gold Mining Company.—This company has been formed to take over the Gold Hill, Black Jack and adjoining mineral claims, on the Lake of the Woods, near Rat Portage. Both Black Jack and Gold Hill have been developed and the former has a 10-stamp mill. Mr. D. C. T. Atkinson, late of the Dufferin Mines, Nova Scotia, has been appointed manager.

Olive.—The 15 additional 850-lb. stamps are being erected, as also is the new Blake crusher. Sirdar Mining Company.—This company in the Lake of the Woods section has located 2 veins by the diamond drill, one 17 ft. wide is thought to assay \$10. The other is 4 ft. wide.

#### Quebec.

Dominion Copper Company.—This company has been incorporated with \$2,500,000 capital under West Virginia laws. It proposes to work deposits of copper ore in Sherbrooke and Capleton.

#### SOUTH AMERICA.

##### British Guiana.

The output of gold reported to the Mines Department in October, on which royalty was paid, was 9,969 oz. In October, 1898, the total was 11,528 oz., showing a decrease of 1,559 oz. this year.

#### COAL TRADE REVIEW.

##### New York.

Nov. 24.

##### Anthracite.

The Anthracite Operators' Association had its annual dinner at the Waldorf this week. The papers next day contained entertaining and well-prepared statements of what the association was going to do. Some of the assertions made were a little strong, notably those regarding the amount of capital behind the association and the amount of tonnage it controls. However, as the association failed to build its own road, it may naturally attach itself to any new road building project.

The collieries are getting out coal as fast as their supply of cars will permit. It is quite possible that the November output may be 5,000,000 tons. Every company has given orders to mine all the coal possible.

The demand from the West continues good. In fact, one prominent company reports it could send twice as much coal west as it is sending if it could get cars. When shipments to tide water to supply points reached by vessels cease

there will be more cars available for western trade. But everything indicates that those parties who expect coal to be more plentiful than will be mistaken. The western demand promises to be away ahead of anything yet seen.

An advance of 25c. a ton in the East on December 1st is said to be under consideration, but inquiry fails to show there has been any discussion of the matter among producers. Coal will be higher, but the advance will come through the action of buyers. Chestnut size, for instance is already at a slight premium. Of course, transient buyers, those who have acquired the shopping habit, will get least consideration from sales agents. The advance will not be the result of any planning by producers.

Egg coal is in improved demand, but broken sells slowly, and it is on this size only that there is much chance of getting bargains. We quote free burning anthracite f. o. b. New York, chestnut and stove, \$4.25; egg, \$3.90; broken, \$3.50. The smaller sizes are higher: Pea, \$2.25; @ \$2.50; buckwheat, \$1.75@ \$2.25; rice, \$1.50@ \$1.75.

##### Bituminous.

The situation in the seaboard soft coal trade shows little change. Orders from transient buyers are increasing, but these orders are all turned down, as producers are unable to keep up with the orders coming in from contracts on hand. The demand is from all points—from beyond Cape Cod, from along the Sound, and from the all-rail trade. Producers are making desperate efforts to get coal to their buyers at shoal water ports, as a cold snap may come along in a week or two and close many of these ports for the winter.

This pressure to get coal down east makes vessels scarce. Boats are frequently delayed 1 to 3 weeks in loading, but consumers are only too glad to pay demurrage charges in order to get coal.

The railroads are seizing coal at points along their lines. One road started to seize coal quite a while ago, and the practice has become general. As the coal seized is often a particularly nice lot for some favored customer, the practice tends to produce an unchristian frame of mind among producers and consumers. Next week there will be a meeting of miners at Lonaconing to take up the matter of mining rates for next year. It is likely that a schedule will be drawn up which will allow for conditions at different mines, thickness of seam, amount of bone, etc.

Transportation from mines to tide is slow. Car supply has fallen back to 2-3 of the demand. Vessels are hard to get, owing to the demand for coal at the shoal water ports. The situation may improve when these ports are out of the way. Current rates are about \$1.75@ \$1.85 from Philadelphia to New York and \$1.25@ \$1.35 to Sound ports. Rates from Chesapeake Bay ports are 25@35c. higher.

Transient buyers are paying all sorts of prices for coal. The producer names the figure. We have heard reports of \$3.75 being paid for a cargo of Georges Creek coal f. o. b. Perth Amboy.

##### Birmingham, Ala.

Nov. 20.

(From Our Special Correspondent.)

There is no change in the coal market in this district. With the exception of some little labor trouble in Walker County at the Galloway Mines, the mines in the State are working hard.

State Geologist Eugene A. Smith, who was in Birmingham during the past week, gave out preliminary figures as to the output of coal in this State for three-quarters of the year. The figures were 90%, reported by various companies in the business, and therefore are pretty reliable. During the first quarter of the year, including that estimated, the output amounted to 1,761,271 tons. During the second quarter it amounted to 1,833,819 tons. For the third quarter the figures were 1,843,137. There are no doubts but that the fourth quarter will show up as well as the last quarter, if not better. Saying that it does, this will bring the production for the year nothing less than 7,300,000 tons or over. This is a remarkable statement.

The Sloss-Sheffield Steel and Iron Company purchased from the State something like 4,480 acres of coal lands in Walker County, and an extensive development of the property is proposed. The property is said to contain two good seams of coal, measuring over 3 ft. in width, and though not the best of coking coal, is suited for domestic purposes, and will add to the general output of the State.

##### Chicago.

Nov. 21.

(From Our Special Correspondent.)

Anthracite Coal.—Continued warm weather has prevented any great absorption of hard coal during the past week, the demand being limited to small quantities, and no especial hurry for delivery. The decreased demand has enabled the coal companies hereabouts to strengthen their stocks to some extent, but the shortage in comparison with last year is so great that, even should Lake traffic continue for another month, stocks at the end of that time would be far less



than the normal supply. The scarcity of vessels still continues to affect this market...

Bituminous Coal.—Buying continues even a little more active than last week, each week apparently bringing with it a better demand.

Coke remains in short supply and large demand; prices very firm.

Pittsburg. Nov. 22. (From Our Special Correspondent.)

The rains of the past week were not sufficient to bring a boating stage in the rivers, and the 25,000,000 bushels of coal the Monongahela River Consolidated Coal Company expected to ship...

Connellsville Coke.—The production and shipments fell off somewhat last week. Of the 19,256 ovens in the region 671 are idle.

San Francisco. Nov. 13. (From San Special Correspondent.)

Coal receipts at San Francisco by water in October were light, the total being 132,494 short tons, a decrease of 23,833 tons from October, 1898.

SLATE TRADE REVIEW.

New York. Nov. 24.

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

Prices of Roofing Slate.

Table with columns for Size, inches, Monson or Br'n or ville, Bangor, Bangor Ribbon, Alb'n or Jackson, Lehigh, Peach Bottom, Sea Gr'n, Unf'd Green, Red. and prices per square.

A square of slate is 100 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.

There is a slightly better demand in some quarters, though the prices quoted by reliable dealers are a little higher than certain parties care to pay.

In manufactured stuff a moderate volume of business is passing at practically unchanged prices.

The export movement is diminishing greatly, as is evidenced by the small shipments from New York—a port which handles nearly 70% of the entire trade.

CHEMICALS AND MINERALS

(For further prices of chemicals, minerals and rare elements, see page 660.)

New York. Nov. 24.

The contract season is on and with few exceptions prices are considerably better than last year, while the volume of business is also larger.

Heavy Chemicals.—Bleaching powder absorbs much attention, and sales on spot are reported at \$3@\$3.50 per 100 lbs. in New York, a gain of 50c. to \$1 over last week.

Pyrites.—Market is strong and prices are unchanged. A number of vessels have been chartered abroad to carry pyrites from Huelva, Spain, and among these we note the following:

We quote American pyrites as follows: Mineral City, Va., lump ores, \$3.25 per long ton (basis 42%), and fines \$3; Charlemont, Mass., lump, \$5.50, and fines \$4.75; Pilley's Island, lump, \$6.50, and fines \$4.50 per long ton...

Fertilizing Chemicals.—Contracts for 1900 tankage were recently booked f. o. b. Chicago at \$14.50 per ton. Fish scrap is nearly sold up for the season.

Table with columns: Articles, F. o. b. Wks., In N. Y. Items include Potash, muriate, sulphate, d'ble m're salt, kaint, sylvanite, Sulph. Am., gas, bone, Blood, dried, h-gr. Chl., Azotine, Bone black, Fish scrap, Tankage h. gr., concentrated bone, Bone, steam gd. domestic.

The quotations on potash are on the basis of foreign invoice weights, tares and analysis, in quantities of not less than 500 tons bulk salts or 50 tons concentrated salts.

Nitrate of Soda.—The steamer "Valetta" arrived at New York with 32,891 bags. The market is very firm, owing to high ocean freights, which are now 29s. 3d. from the west coast of South America...

Phosphates.—The Florida producers are well sold up to March and April, 1900. In South Carolina the shipments of rock are larger, while the river miners are firm in their quotations.

The foreign market is very quiet. Charters of three British steamers, 1,166 tons, 1,201 tons and 1,267 tons, are noted from a Southern port to the United Kingdom or Continent at private terms.

Latest quotations for the European market, c. l. f. United Kingdom or North Sea ports, are as follows: Florida high grade rock (77@80%), 87@d. (\$14 per long ton); Florida pebble (68@73%), 77@d. (\$9.80 per ton); Florida Peace River (58@63%), 77@d. (\$9.00 per ton); Tennessee high grade rock (78@80%), 77@d. (\$11 per ton); Algerian (63@70%) rock, 77@d. (\$9.38 per ton); and 58@63% rock, 67@d. (\$7.80 per ton).

We quote: Florida high grade, 78@80% rock, \$9.50@\$10 per long ton f. o. b. Fernandina. The

Table with columns: Articles, Domestic (F.o.b. Works, In New York), Foreign (In New York). Items include Alkali, Caustic Soda, high test, 98% powd., 60@74% pwd, Sat Soda, conc., Bicarb Soda, extra, Bleach. Pdr., Eng. prime, other brands, Chl. Pot cryst. powd.

Prices are generally for large quantities, and in many cases depend upon make, test and package.

Acids.—Contracts are coming in satisfactorily, and prompt shipments have improved.

Quotations are in large lots delivered in New York and vicinity, per 100 lbs unless otherwise specified.

Table with columns: Articles, Domestic, Foreign. Items include Acetic, No. 8, Blue Vitriol, Chamber, Muriatic, 15%, Muriatic, 20%, Muriatic, 22%, Nitric, 38%.

Brimstone.—Market is quiet, and no arrivals at this port are reported this week. Spot best unmixed seconds are held at \$21.50@\$22 per ton, and shipments at \$20.75@\$21, while best thirds are \$2 less per ton.

freight rate to New York is about \$2 per ton. Florida land pebble, 68@73%, \$7@7.50 per ton, delivered in New York. Florida Peace River, rock, 58@63%, \$4.50 per ton f. o. b. Punta Gorda. South Carolina crude rock, \$4.25@4.50; hot-air dried, \$4.50@5 per long ton f. o. b. Fetteressa, S. C. Tennessee, 78% rock, \$4@4.50 f. o. b. Mt. Pleasant, and 75% rock, \$2.75@3 f. o. b. High grade Tennessee rock, ex-vessel New York, \$9@ \$10 per ton. Hickman County blue-gray rock, 65%, and not over 3% iron and alumina, \$2.50@ \$2.75 per ton f. o. b. mines. Concentrated phosphates, 13@15% av. P<sub>2</sub>O<sub>5</sub> 60c. per unit at sellers' works. Acid phosphates, \$6.25 per ton for 14% in bulk f. o. b. Charleston, S. C.

**Liverpool.** Nov. 15.

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

The strong position of heavy chemicals is fully maintained, and, owing to makers being so well sold, buyers find a difficulty in getting deliveries promptly. Soda ash is in limited supply and range for tierces is about as follows: Leblanc ash, 48%, £4 15s. @ £5; 58%, £5 @ £5 5s. per ton net cash. Ammonia ash, 48%, £4 5s. @ £4 10s.; 58%, £4 10s. @ £4 15s. per ton net cash. Bags are 5s. per ton under prices for tierces. Soda crystals are in request at £3 2s. 6d. per ton, less 5% for barrels, or 7s. less for bags, with special quotations for a few favored market. Caustic soda is scarce for any delivery up to end of this year. We quote spot range as follows: 60%, £8 5s.; 70%, £9 5s.; 74%, £9 15s.; 76%, £10 @ £10 5s. per ton net cash.

Bleaching powder is dearer at about £6 per ton net cash for hardwood packages.

Chlorate of potash is quiet on spot at 3½d. per lb. for crystals and 3¼d. per lb. for powdered, with resale parcels offering at a shade less. For contracts over 1900 makers quote 3d. per lb. net cash.

Bicarb. soda is unchanged and quotations range from £5 5s. @ £6 15s. per ton, less 2½% according to destination for the finest quality in 1 cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is slightly better at about £10 17s. 6d. @ £10 18s. 9d. per ton, less 2½% for good gray, 24@25% in double bags f. o. b. here.

Nitrate of soda is in moderate demand at £8 @ £8 5s. per ton, less 2½% for double bags f. o. b. here, as to quality and quantity.

**IRON MARKET REVIEW.**

**NEW YORK, Nov. 24, 1899.**

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

Fuel used	Week ending		From Jan., '98.		From Jan., '99.	
	Nov. 25, 1898.	Nov. 24, 1899.	Tons.	Tons.	Tons.	Tons.
An'racite	28	21,150	48	41,250	1,089,173	1,549,847
Coke.....	148	203,350	210	241,525	9,189,099	10,302,045
Charcoal.	20	6,125	29	7,375	278,221	267,440
<b>Totals..</b>	<b>196</b>	<b>230,625</b>	<b>287</b>	<b>290,150</b>	<b>10,497,493</b>	<b>12,119,332</b>

The iron trade has been comparatively quiet, although there is still what would be considered great activity for this season in an ordinary year. In raw iron and steel about all the furnaces and mills have disposed of their output for the first half of 1900, and many of them have three-quarters, or even the whole year covered. The demand for near-by deliveries seems to have been pretty well satisfied also, and we hear of no pressure on this account. There is, however, a good deal of complaint as to delay in delivery on contract made some time ago.

For finished material the market is quiet also, and few new contracts are reported. We even hear of some mills looking for business and willing to make small concessions to get it; but these are only a few scattered cases. As a rule, no new orders can be taken for delivery under 6 months.

Inquiries continue to come in for export trade, but there is not much actual business to be reported. Some foreign orders for Alabama pig iron are the exception. The difficulty is not in price so much as in the time of delivery wanted.

There is talk about the prices of Lake Superior ore for next season, but the producers seem to be in no special hurry about the matter. Coke contracts for next year are generally placed.

**Notes of the Week.**

The total value of exports of iron and steel from Great Britain for the 10 months ending October 31st is given by the Board of Trade returns as follows:

	1898.	1899.
Iron and steel .....	£18,877,626	£22,681,467
Machinery.....	14,997,237	16,252,210
<b>Totals.....</b>	<b>£33,874,863</b>	<b>£38,933,677</b>

Included in iron and steel are tin-plates valued at £2,288,279 in 1898 and £2,413,676 in 1899. Imports of iron and steel this year were valued at £1,386,893, against £1,010,056 in 1898; of machinery at £6,625,822, against £589,355 last year.

**Birmingham, Ala.** Nov. 20.

(From Our Special Correspondent.)

The feature of the pig iron market in this district is the steadiness of the demand and the large number of inquiries that are being received as to the product. Quotations do not move one way or the other, though all indications point to an advance before the middle of December, the expectation being that there will be a rush into the market, as consumers have bought very scantily on account of the high prices. The furnaces in blast now do not anticipate having much surplus iron during the entire year 1900, though some of them have three or four months, and possibly more, to be sold yet. For the first half of the year there are very few orders being taken. During the last week or 10 days some very good orders were booked, delivery to be made next year. There are 2 furnaces nearing completion, while before January 1st Alabama will have four more furnaces.

The following quotations are given: No. 1 foundry, \$18.50@19; No. 2 foundry, \$17.75@18.50; No. 3 foundry, \$16.75@17.50; No. 3 foundry, \$16 @ \$16.50; gray forge, \$16@16.25; No. 1 soft, \$18.50 @ \$19; No. 2 soft, \$17.75@18.50.

The rolling mills in this district are working on full time. The employees of the mill are now receiving the advanced wage, puddlers 10% on former wages and finishing department men 4% on former wages. The Bessemer mill will be ready for operation by the first of the year. Machinery to the amount of \$24,000 is being put in. Mr. R. H. Pritchard, formerly at the Gate City mills, will be in charge.

J. W. Harrison, formerly of the Howard-Harrison Iron Company, who owned and operated the big pipe plant at Bessemer, during the week asked for bids for the erection of a large furnace in the Bessemer territory.

During the past week the formation of the Sloss-Sheffield Steel and Iron Company, taking in the properties of the Sloss Iron and Steel Company, the Gulf Coal and Coke Company, the American Coal Company, the Lady Hattie and Philadelphia furnaces in North Alabama, was reported. The company will have a capitalization of \$20,000,000, and it is the intention to put in all of its 7 furnaces. There are prospects of the company erecting a steel plant in this district.

**Buffalo.** Nov. 21.

(Special Report of Rogers, Brown & Co.)

A steady demand for shipments keeps furnaces in this district fully occupied, and a continued stream of orders for next year's delivery adds strength to the situation. The week closing records in the aggregate a good tonnage, made up mostly of small and medium sized contracts. We quote below on the cash basis f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$24@24.50; No. 2, \$23.50@24; Ohio strong softener No. 1, \$24.25@24.75; No. 2, \$23.25@23.75; Jackson County silvery No. 1, \$31; Southern soft No. 1, \$23.50; No. 2, \$22.50; Lake Superior charcoal, \$24@25; coke malleable, \$24@24.50.

**Cleveland, O.** Nov. 21.

(From Our Special Correspondent.)

Iron Ore.—The week's business in iron ores was about the same as during the past several weeks, consisting of a few small sales for immediate delivery. The rush to get down all the ores possible from the upper lakes is still maintained. Carrying rates are favorable to shippers, the rate from the head of Lake Superior being \$1 per ton, from Marquette 90c., and from Escanaba 80c. Appearances are that agents of the ore companies will keep on bringing ore to Lake Erie ports as long as lake navigation and favorable carrying rates will permit. It is too early to predict how many tons of ore will have reached Lake Erie ports at the close of navigation this year, but there is no doubt that the amount will be the largest in the history of the ore business. The following are figures obtained for ore sales as they are made at present: Specular and magnetic ores, Bessemer quality, \$6@6.25; specular and magnetic ores, non-Bessemer, \$5; red hematite ores, Bessemer quality, \$5@5.25; red hematite ores, non-Bessemer quality, \$4 @ \$4.50.

Pig Iron.—A very fair trade was reported in the pig iron market. It was not so large, perhaps, as during some of the weeks, but good considering the volume of metal that can reasonably be offered for delivery any time during the remainder of this year or the first six months of the year 1900. Nearly all the Bessemer metal which is likely to be produced during the period mentioned is reported as sold. The market of all kinds and grades of iron is firm at highest quotations lately named. The following are the present quotations for pig iron f. o. b. Cleveland: Lake Superior charcoal, \$25; Bessemer, \$24; No. 1 foundry, \$23.50; No. 2, \$23; No. 1 Ohio Scotch, \$22; No. 2, \$22; gray forge, \$20.

**Philadelphia,** Nov. 23.

(From Our Special Correspondent.)

Pig Iron.—The quietness prevailing in the market is the occasion of more comment than if business was active. The situation throughout the United States is being very closely studied by manufacturers, jobbers and consumers, big and little, and the wisest thing to do under the circumstances is quite frequently the subject of office conversation. Prices have reached the highest point of the year, but there is some difference in quotations which was not noticed last week. There are certain kinds of pig iron which certain buyers would pay \$26 for, No. 1, if they could get it when they wanted it, but the outside quotation is \$25.50. No. 2 is worth \$24@24.50; gray forge is quoted at \$20@21. Sales have been made at the former figures. There are two or three large consumers now looking around for next summer's delivery, but are not getting any headway.

Muck Bars.—The average business that has been done this week was at \$31@31.50, but buyers look for \$30 muck bar within a short time.

Billets.—Buyers of billets inclined to think they will be able to make better terms shortly, but those who represent the mills do not think any weakening tendency is likely to develop for months to come. At the same time there is not the same bold front shown by makers, but their representatives say there is no occasion for makers to seek buyers in the present condition of their order books.

Merchant Iron.—For what is regarded as early delivery 2.20@2.30c. has been paid without question for refined. For common iron quotations are 2.10@2.15c., but for prompt delivery more money has been paid.

Sheet Iron.—It is stated that there is some fluctuation going on in sheet iron. This may be true, or there may be special circumstances to occasion variations, but the average small buyer cannot get the slightest shading, nor the slightest encouragement to hope for anything better.

Merchant Steel.—In merchant steel there has been nothing to note, but the fundamental conditions of the market are such as to make the position of manufacturers impregnable. The hardware dealers who use steel are endeavoring to increase their stocks. Agricultural implement people have already protected themselves by long contracts. The representatives of merchant steel mills have all they can do to keep their customers satisfied, and prices are quoted as high as ever.

Pipes and Tubes.—There is nothing new whatever in regard to either pipes or tubes. One or two mills are catching up, and if they are not taking on new business the fault is with them and not with buyers.

Plate Iron.—If there is any weakness in the market it is shown in plate iron, but this is not visible in early deliveries. Some parties who have been waiting for a good while, now that the opportunity is presenting itself are not so anxious to place such very large orders. They are putting in orders for small quantities. Quotations are not far from 3c. for tank, with the usual differences for other kinds.

Structural Material.—The inquiries this week are mainly revivals of inquiries that were made some time ago. A good deal of business is in the way of being placed this and next month, and the intimation is given out that buyers will not be expected to pay the fancy prices established by some few buyers who offered premiums for special accommodation. Angles range all the way from 2.40@2.80c., and other shapes in about the same way.

Old Rails.—Old iron rails are not coming forward as fast as brokers made promises they would. Holders have been shouldering up prices right straight along.

Scrap.—The same old story is to be retold concerning scrap. Some inconvenience results because some buyers are obliged to go without it. Steel axes would bring over \$30. Choice railroad scrap sold as high as \$28. Heavy steel scrap runs all the way from \$21@22.50.

**Pittsburg.** Nov. 22.

(From Our Special Correspondent.)

The iron and steel markets are still strong, but in some lines the high prices are being shaded somewhat. The manufacturers are simply knocking off the premiums put on the prices during the rush, which gave them business in the usually dull months of the year. They can therefore afford to make better terms for next year. The old business has been pretty well cleaned up, and new contracts are now being filled. Bessemer pig iron for immediate delivery is from 25 to 50c. a ton higher than last week, but there is little to be had. Several sales were made during the week aggregating about 8,000 tons. Buying of foundry iron has also slowed up, and the sales for the week do not amount to





but with little effect on general trade. The New York banks show some improvement in their situation, but rates on Wall Street loans are still high, Secretary Gage's mistake of last week having had very little effect. Foreign loaning rates are so high that no imports of gold are looked for at present.

The statement of the United States Treasury on Wednesday, November 22d, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding day of last week:

Table with columns: Gold, Silver, Legal tenders, Treas. notes, etc. and rows for Nov. 15 and Nov. 22, 1899, showing changes in balances.

Totals \$281,941,988 \$273,380,804 D. \$8,611,184 Treasury deposits with national banks amounting to \$81,908,968, a decrease of \$703,502 during the week.

The statement of the New York banks—including the 63 banks represented in the Clearing House—for the week ending November 18th, gives the following totals, comparison being made with the corresponding weeks in 1898 and 1897:

Table comparing bank statistics for 1897, 1898, and 1899. Columns include Loans and discounts, Deposits, Circulation, Specie, Total reserve, and Legal requirements.

Changes for the week, this year, were in excess of \$95,900 in circulation, \$781,700 in legal tenders and \$2,476,925 in surplus reserve; decreases of \$8,622,800 in loans and discounts, \$7,964,100 in deposits, and \$295,800 in specie.

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 of the corresponding dates last year:

Table showing specie holdings for various banks in 1898 and 1899, categorized by Gold and Silver.

The returns of the Associated Banks of New York are of date of November 18th, and the others are of date of November 16th, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports gold only.

Shipments of silver from London to the East for the year up to November 9th, 1899, are reported by Messrs. Pixley & Abell's circular as follows:

Table showing silver shipments from London to India, China, and The Straits for 1898 and 1899, with changes.

Arrivals for the week, this year, were £99,000 in bar silver from New York, £50,000 from the West Indies, and £20,000 from Chile; total, £169,000. Shipments were £87,500 in bar silver to Bombay and £70,000 to China; total, £157,500.

Indian exchange continues firm and the Council bills offered in London were taken at an average of 16.10d. per rupee. The taking of gold in Australia on Indian account continues.

The foreign merchandise trade of Great Britain for the 10 months ending October 31st is reported by the Board of Trade as follows:

Table showing foreign merchandise trade for Great Britain, including Imports, Exports, and Excess imports for 1898 and 1899.

The increase in imports was £16,886,357, or 13.2%; in exports, £29,128,204, or 11.9%; leaving a decrease of £12,241,847, or 8.7%, in the excess of imports. The gold and silver movement for the 10 months is reported as follows:

Table showing gold and silver imports and exports for 1898 and 1899, including excess.

Of the silver imports, £7,363,323, or 68.0%, of the total came from the United States this year, against £7,700,779, or 64.7%, last year.

Other Metals.

Daily Prices of Metals in New York.

Table of daily prices for Silver and Copper, including Fine oz., London Price, Lake, Electrolytic, and other grades.

The quotations given for electrolytic copper are for cakes, ingots and wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The market is quiet but firm. Lake is unchanged at about 17c. Electrolytic copper continues very scarce for early deliveries and refiners have difficulty in meeting their obligations. We quote electrolytic in cakes, bars and ingots at 16 3/4c., cathodes at 16 1/2c. Casting copper is nominal at 16 1/4c.

Inquiry from Europe for fine copper has been very good, but buyers seem to be of the opinion that by deferring purchases somewhat they may secure concessions. Whether such will prove to be the case remains to be seen. The speculative market which closed last week in London at £75 2s. 6d., opened at £74 15s. and fluctuated within narrow limits. It reached £75 7s. 6d. on Thursday, and closes at £75 10s. for spot, £73 15s. for 3 months.

Refined and manufactured sorts we quote: English tough, £78@£78 10s.; best selected, £78 15s.@£79 5s.; strong sheets, £84 10s.@£85; India sheets, £83 10s.@£84 10s.; yellow metal, 6 1/2@6 3/4d.

Imports of copper into Great Britain for the 10 months ending October 31st are given by the Board of Trade returns as below, in long tons:

Table showing imports of copper into Great Britain for 1898 and 1899, categorized by Ore, Matte and precipitate, and Fine copper.

The total was equivalent to 94,741 long tons of fine copper this year, against 95,869 tons in 1898. The United States furnished this year 434 tons ore (1,001 tons, 1898); 4,591 tons matte (9,057 tons, 1898), and 18,344 tons fine copper, against 31,578 tons in 1898. The increase in ores and matte this year were chiefly from the Cape of Good Hope, Canada and Newfoundland.

Tin.—The market has again fluctuated violently, with the result that the volume of transactions has been reduced. Sales ranged from 29c. to 27c., and at the close we quote 28c.

The foreign market, which closed last week at £129 15s., opened at £124 10s., declined quickly to £122 17s. 6d., reacting on Thursday to £124 5s. On Wednesday it was £129 and on Thursday £125 5s. It closes at £127 for both spot and 3 months.

Exports of tin from the Straits for the 9 months ending September 30th were as follows, in long tons:

Table showing tin exports from the Straits for 1897, 1898, and 1899, categorized by United States, Europe, and India and China.

There was a decrease of 283 tons, or 0.8%, this year from 1898, but an increase of 1,912 tons, or 5.7%, over 1897.

Imports of tin into Great Britain for the 10 months ending October 31st were 22,460 long tons, of which 16,205 tons came from the Straits, 2,532 tons from Australasia, and the balance from other countries. The total in 1898 was 16,681 tons, showing an increase of 5,779 tons, or 34.6%, this year.

Lead.—The market continues strong and active and some large transactions have taken place this week. Prompt metal appears to be good and rather scarce. Prices remain unchanged, and we quote 4.55@4.60c. New York; 4.45@4.50c. St. Louis.

The European market has again experienced a further advance and Spanish lead is now held at £17 10s., English 5s. higher.

Imports of lead into Great Britain for the 10 months ending October 31st are given by the Board of Trade returns as follows: Spain, 81,185; Australasia, 48,673; United States, 26,487; other countries, 9,453; total, 165,798 tons, against 153,392 tons in 1898, showing an increase of 12,406 tons, or 8.1%. The increase from Australasia was 16,096 tons, while there was a large decrease in the quantity reported from other countries. The metal credited to the United States is chiefly Mexican and Canadian lead refined here in bond.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: The lead market is strong at 4.47 1/2@4.50c., according to brands and delivery.

Spanish Lead Market.—Messrs. Barrington & Holt of Cartagena, Spain, advise us that the average price of lead in October was 81.27 1/2 reales per qtl., equivalent to £14 7s. 1 1/2d. per long ton,

f. o. b. Cartagena, on an average exchange of 31.66 pesetas to £1. The average price of silver in the same month was 13.41 reales per oz. The weekly prices were as follows: October 3d, lead, 77.75 reales per qtl. (£13 19s. 10d. per long ton; silver, 13.50 reales per oz.; exchange, 31.10 pesetas to £1. October 10th, lead, 80.50 reales per qtl. (£14 6s. 8d. per ton); silver, 13.50 reales per oz.; exchange, 31.43 pesetas to £1. October 17th, lead, 82.75 reales per qtl. (£14 5s. 4d. per ton); silver, 13.75 reales per oz.; exchange, 32.45 pesetas to £1. October 24th, lead, 83.25 reales per qtl. (£14 15s. 3d. per ton); silver, 13.25 reales per oz.; exchange, 31.55 pesetas to £1. October 31st, lead, 81.90 reales per qtl. (£14 8s. 6d. per ton); silver, 13.45 reales per oz.; exchange, 31.77 pesetas to £1. Exports of pig lead in October were 1,643,156 kilos to Marseilles, 800,000 kilos to London, and 498,717 kilos to Couerou; total, 2,941,873 kilos. Of silver, 4,190 kilos were sent to Marseilles.

Spelter.—The market has been quiet and weakish. All orders are eagerly competed for, with the result that prices have again suffered. We quote the metal at 4 1/4c. New York; 4 1/2@4 1/4c. St. Louis.

The London market has also declined and good ordinaries are now quoted at £20 10s., specials 5s. higher.

Imports of spelter, or metallic zinc, into Great Britain for the 10 months ending October 31st were 58,791 long tons, against 63,939 tons in 1898; a decrease of 5,148 tons, or 8.1%, this year.

Spanish Zinc Ore Market.—Messrs. Barrington & Holt of Cartagena write us that there has been a considerable falling off in production of zinc ore in that sierra since the local prices were cut down. Exports in October were 1,300,000 kgs. zinc-blende and 200,000 kgs. calamine to Antwerp; total, 1,500,000 kgs.

Antimony is without change. We quote Cookson's at 10 1/2@11c.; Hallett's, 9 1/2@9 3/4c.; U. S. Star and Hungarian at 9 1/2@9 3/4c.

Nickel is firm and demand very brisk. Quotations are firm at 40 and 45c., according to size of order.

Platinum.—Demand is good, and prices are firmer. In large lots we quote, \$17.75, and for smaller quantities, \$18 per oz., in New York.

For chemical ware (crucibles and dishes), best hammered metal, we quote as follows: In lots of 250 grams or more, 67 1/2c. per gram, and for smaller quantities, 70c. per gram; unmanufactured platinum will be supplied in same quantities at 2c. less per gram.

Quicksilver.—The New York price has been again raised, this time \$1, making it \$50.50 per flask. Small lots sell at \$52@53. The London price has been raised 2s. 6d., and is now £9 10s. per flask, with the same figure quoted from second hands.

Quicksilver receipts at San Francisco in October were 2,163 flasks; for the 10 months ending October 31st they were 19,367 flasks, against 19,462 in 1898 and 14,372 in 1897. Shipments by water from San Francisco in October were 577 flasks. For the 10 months they were: Siberia, 2; China, 4,000; Australia, 260; Central America, 1,480; Mexico, 3,406; British Columbia, 43; New York, 118; total, 9,309 flasks, against 5,190 flasks last year. Shipments by rail and directly from the mines are not reported.

Imports of quicksilver into Great Britain for the 10 months ending October 31st were 3,812,184 lbs. (4,023,491 lbs., 1898). Exports were 1,872,505 lbs. (1,887,951 lbs., 1898); showing 1,939,679 lbs. consumed or added to stocks, against 2,135,540 lbs. last year.

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

Table of minor metal prices for Aluminum, Magnesium, Phosphorus, Tungsten, and Ferro-tungsten.

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

LATE NEWS.

Advices from Pittsburg state that work is being actively pushed for the erection of the new steel plant of the Sharon Steel Company at Sharon, Pa. The company was incorporated not long ago with a capital of \$3,000,000, to go into the manufacture of pig iron and open-hearth steel.

The Tamarack Mining Company has declared a semi-annual dividend of \$6 per share (\$360,000), an increase of \$2 per share (\$120,000) over the previous dividend, and making \$10 per share (\$600,000) declared this year. The dividend is payable December 28th and makes a total of \$6,-270,080 paid to date.

The American Steel Hoop Company is to build a new furnace as an addition to the Isabella Group at Aetna, Pa., and in addition the 3 furnaces that now constitute this group are to be rebuilt and enlarged to a point that will increase the capacity of each individual furnace to about 600 tons per day.



MINING STOCKS.

Complete quotations will be found on pages 646, 647 and 648 of mining stocks listed and dealt in at:

Boston.	Spokane.	Mexico.
Colo. Springs.	Salt Lake.	Paris.
Denver.	San Francisco.	Rosland.
New York.	London.	Toronto.
Philadelphia.		

New York. Nov. 24.

The week showed a recovery in the copper stocks. Amalgamated on Friday last sold 300 shares on the curb at \$88, and a day later at \$87½@87¼. On Monday sales were again made at \$88@87¼, and on Tuesday at \$87½, while on Wednesday the stock was bid down to \$87. Anaconda, after gaining to \$46½ on Saturday, sold down to \$45½ on Wednesday. Tennessee remained at \$14 bid and \$16 asked, with no dealings being reported. British Columbia on inside buying rose to \$10½, but closes at \$10¼ bid. Union of North Carolina is not in demand and \$28 is the nominal asking price. Markeen of Arizona is featureless at \$8@9, and Whipsaw at \$12½@13½. Arizona Lead is quoted at \$9½@10¼.

American Smelting & Refining shares are higher; common gained from \$36½ to \$40, and preferred from \$89¼ to \$90¼. Sloss-Sheffield new common stock sold at \$35½@36, and the preferred was quoted at \$74¼@75½. Flemington Coal and Coke was held at \$28@30, and Virginia Coal and Coke at \$28@29. There has been considerable bidding for the Agricultural Chemical Company's stock, but few sales are reported; common is quoted \$37@38 and preferred at \$78@79. Of Standard Oil there were some sales at \$457¼@455½ ex-dividend. Of New England Gas and Coke there was offered on the curb a block of over \$75,000 bonds, and sales were made at \$76¼@76, while for the stock \$24¼ was bid on Wednesday. National Salt advanced sharply to \$49 and closed on that day at \$48 bid.

Homestake of South Dakota sold 110 shares at \$75—the first transaction in many weeks. The company has just listed \$8,500,000 additional capital stock on the New York Stock Exchange, making \$21,000,000 listed to date.

Kingston & Pembroke of Ontario gained 30c. since the last trade a few weeks ago, selling this week at 90c. Alice of Montana also made its first sale in many weeks at 51c.

Brunswick of California sold at 24c., and Standard Consolidated is quoted at \$2.75.

In the Colorado section Isabella's bonanza shipment of \$160,675 from the tenth level recently has bolstered the stock up to \$1.35@1.40, at which sales were made this week. Mt. Rosa sold at 39@41c.; Work at 32@33c.; Acacia at 38c.; Golden Fleece at 30@32c.; Mollie Gibson at 26@27c.; Damon at 27c.; Anaconda at 50c.; Argentin Junia at 21c.; Zenobia at 20c.; and Cripple Creek Consolidated at 16½@16c.

Of the Comstocks Ophir brought \$1.30 on report of a new ore find, and Mexican 56@60c. Of the Comstock Tunnel Company \$2,500 bonds were sold at 4½.

Auction sales were \$6,000 Avondale Marble Company 6% gold mortgage bonds at \$680 per bond, and \$51,000 at \$279 per bond; 9 shares New Jersey Zinc Company at \$136. Miscellaneous dividends declared are National Lead Company, quarterly of 1¼% on the preferred stock, payable December 15th; National Tube Company, dividend No. 2, of 1¼% on preferred stock, payable January 2d, 1900.

Boston. Nov. 23.

(From Our Special Correspondent.)

The predictions of a coming bull movement, an upward movement in coppers, etc., which have been so freely indulged in of late, have fallen very flat indeed. The public has entirely failed to respond and shows no disposition whatever to come in; while insiders have too heavy loads to allow them to carry the market any further. We have had the narrowest and dulliest market known for a long time. Yesterday only 9 mining stocks were traded in, and those lightly.

Calumet & Hecla sold at \$762; Montana, \$319; Quincy, \$155; Arcadian, \$33; Butte, \$70 bid; Old Colony, \$6¼; Centennial Eureka, \$28; United States Mining, \$32¼ bid; Centennial, \$22½ bid; Utah, \$37¼; Ysabel, \$10.

The fact is that Boston is loaded down with trash bought at high prices during the boom, and the people who have this stuff are looking for ways to get rid of it without complete loss. They are not to be caught again—just yet.

The "Transcript" of November 21st gives the following note of present fact and past history, which is interesting: "The report comes from Bangor that New York and Boston capitalists are interested in reopening some of the abandoned Maine copper mines and that their agents are investigating at Gouldsbrough and Blue Hills, assays showing 'that some of the mines contain deposits of mica and silver which could be operated for in connection with the mining of copper at a profit.' It was in 1880-81 that the

Maine mining boom reached its zenith in Boston. In that year there was a Maine Mining Exchange on Devonshire Street, if memory is correct, and the town was fairly wild over the 'boom.' Blue Hill reached \$10, its par value, in the spring of 1880, with drop to 3 July 1; Douglas was another favorite, selling \$1 above par, or at \$6; Milton reached 3, Sullivan 15, Waukeag 9½, Copperopolis \$2.23, Deer Isle, \$1.70, Pine Tree \$3.55, Twin Lead \$1.51 and Young Hecla 73c. The interest held in part during 1882 but pretty well died out in 1883, when Blue Hill reached 2c., Deer Isle 3c., Douglas 20c., Pine Tree 6c. and Sullivan 56½c. In 1884 only Sullivan was left, and it disappeared, at 2c., with that year."

Salt Lake City. Nov. 17.

(From Our Special Correspondent.)

Surprises the past week have all been declines, several hitting the toboggan hard. There is a dearth of buying orders, and many holders seem determined to let go at any price. From top to bottom of the active list there is not a stock that is not lower than a week ago.

Ajax sold down to \$1, the low point for some months. Bullion-Beck holds well; it did business to-day at \$3.85. Chloride Point has softened under 20c., and the offerings are a drug. Daisy is a heavy seller; it took an astonishing header, some 20,000 shares changing hands on Friday's call, of which 12,000 sold below 10c. Dexter had a small crash, selling at \$2.55@2.22, but recovered somewhat. Four Aces continues soft, and its champions are less buoyant relative to holding the vein on its dip in South Swansea territory. Grand Central is around \$5.50. Homestake is fairly firm, apparently. Ingot had another collapse, dropping back under 10, in spite of fresh reports of ore values. Lower Mammoth fluctuates, though the trend is downward. Mammoth did business at \$3 flat this morning, the low point for November. Mercur rules under \$7, with very little inquiry. Ontario is in less demand, though it holds strong. Sacramento is a shade lower. Swansea is firm at \$3.73 bid, \$3.75 asked.

San Francisco. Nov. 18.

(From Our Special Correspondent.)

A little life was imparted to the market this week by reports of the finding of some good ore in Ophir ground. That stock was run up accordingly, but outsiders failed to take hold, and the result was not very great.

Some quotations noted are: Consolidated California & Virginia, \$1.45; Ophir, \$1.10@1.15; Mexican, 47c.; Sierra Nevada, 44c.

The California Oil Exchange is doing a fair business. Some quotations reported are: Field Wave, \$2.30; Caribou, \$1.10; Barker Ranch, \$1.10; Century, \$75c.

The Truckee River General Electric Company—the Comstock "cheap power concern"—has secured some property and rights of way, and is now receiving bids for electrical machinery.

According to the sworn monthly statements, the following companies report having had cash on hand, November 1st, 1899, with all expenses paid, unless otherwise stated: Alpha Consolidated, \$3,114; Andes, \$3,791; Alta, \$19, with \$1,000 due the bank; Belcher, \$7,586; Best & Belcher, \$3,257; Bullion, \$5,207; Caledonia, \$4,207, with October mine expenses unpaid; Consolidated California & Virginia, \$16,852; Chollar, \$8,210; Challenge Consolidated, \$1,415; Consolidated Imperial, \$994; Consolidated New York, \$149; Confidence, \$807, with October mine expenses unpaid; Crown Point, \$1,693, with mine expenses for October amounting to \$644 to be paid; Exchequer, \$119; Gould & Curry, \$295; Julia Consolidated, \$789; Justice, \$711; Ophir, \$1,178; Overman, \$5,187, with October mine expenses to be paid; Potosi, \$5,099; Segregated Belcher, \$1,532; Savage, \$3,050; Scorpion, \$36; Standard Consolidated, \$132,543; Syndicate, \$1,666; Union Consolidated, \$8,982 and Utah Consolidated, \$966. Owing to the payments for pumping and on account of the cheap power contract, during the past 30 days, the amounts in the treasuries of some of the companies have become quite small, but most of them are collecting assessments, which will put them in better condition.

The Mexican Mining Company had an indebtedness of \$1,022 on November 1st, 1899. The Hale & Norcross Mining Company had an indebtedness at bank of \$666, besides bills payable amounting to \$1,755.

London, England. Nov. 11.

(From Our Special Correspondent.)

The London mining market this week has been mostly occupied with speculating in African land shares and Rhodesian shares. The passing of the dividend by the Consolidated Gold Fields of South Africa has brought the fact home to the people's minds that, although the result of the war will be to put mining on better conditions, yet the cost of rehabilitating the mines and the necessary taxes to pay for the war will prevent any immediate reduction in working expenses. Consequently gold and diamond shares

are let alone and land shares looked into more than usual. The agreement with Germany with regard to the Pacific Islands and also with regard to the building of a branch line from the Rhodesia Railway through German West Africa has had a strengthening effect on the market, as it shows that England and Germany are willing to work harmoniously in Africa.

Other sections of the mining share market have not been at all conspicuous, though West Australian shares in the Kalgoorlie District continue to find a ready market at good prices. Copper shares continue strong, though the metal dealers are predicting a gradual decline in the prices of the metal.

Another new company introduced to the public this week is the Egyptian Salt and Soda Company, Limited, which has been formed to acquire from the Egyptian Government the Mex salt grounds on Lake Mareotis near Alexandria, and the soda deposits 35 miles west of Khatatbeh, between Cairo and Alexandria. The company also calculates on starting a cotton-seed oil refinery and the manufacture of soap. Dr. Lunge of Zurich is consulting chemical adviser, and Mr. A. H. Hooker, at present Government director of the salt works, transfers his services to the new company. The salt deposits on Mareotis are inexhaustible, as they are continually being formed by natural evaporation. The carbonate of soda occurs in three forms: 1, Dissolved in the water of the lakes; 2, Separated in masses on the surface on the bottoms of the lakes; 3, As an efflorescence on the bulrushes and similar vegetation.

Paris. Nov. 12.

(From Our Special Correspondent.)

The stock market, as a whole, is stronger and more active than for some weeks past. Money is cheaper and loans are more easily secured.

The copper stocks are steady, notwithstanding the lower prices of the metal. Many rumors are current about the copper market, some of them exceedingly absurd, though they seem to find believers.

Le Nickel has declared dividends for the year ending June 30th last of 10 fr. on the old stock and 2 fr. on the new stock lately issued. From the dividend on the old stock the company retains, however, 3.40 fr. for certain advances made; so that only 6.60 fr. is actually paid.

The market for the Transvaal gold stocks is still uncertain and fluctuating. There is again a good deal of quiet selling, and many of our people are parting at a heavy loss with shares they bought for investment long ago. For this much blame attaches to our anti-British papers, which are predicting all sorts of disasters—some of them with very little knowledge of the facts, apparently. The total defeat of the English forces and the confiscation of the mines are among these prophecies. In most cases it is the wish for an issue disastrous to Britain, rather than any facts, which inspires these writers.

The metallurgical shares are still very strong. The only doubtful point in their future seems to be difficulty in securing sufficient supplies of raw material, especially fuel. Coke is very scarce and some establishments cannot secure enough, even at the high prices now charged. Several blast furnaces and steel mills have had to limit work on this account.

The Russian group is somewhat uncertain, but, on the whole, most of the stocks are stronger than one might have expected.

In our coal stocks there is usually little speculation, the values of those of the well-known and established companies being very high. This week, however, an interesting attempt has been made to sell at high prices shares in Les Houilleres d'Ahun, a concern of which very few have ever heard. It appears that this company owns a small colliery, and has existed for nearly 20 years without paying a dividend. Recently most of the stock was bought by certain speculators, who then began to exploit its merits on the strength of the present high prices of coal. They have succeeded in selling most of their stock at a very large profit.

The movement of gold and silver in France for the nine months ending September 30th is reported by the Ministry of Commerce as below:

	Imports, Francs.	Exports, Francs.	Excess Francs.
Gold:			
1899.....	262,474,850	91,909,498	Imp. 170,565,352
1898.....	100,222,638	239,112,940	Exp. 138,890,302
1897.....	224,811,550	48,716,085	Imp. 176,095,465
Silver:			
1899.....	144,117,683	170,014,462	Exp. 25,896,779
1898.....	149,581,662	147,418,397	Imp. 2,163,265
1897.....	123,929,132	119,013,125	Imp. 4,916,007

The imports of copper, bronze and nickel coins, rated at their face or coinage value, amounted to 55,800 fr., against 70,200 fr. in 1898 and 72,900 fr. in 1897; the exports of such coins were 491,400 fr., against 479,700 fr. in 1898 and 2,633,400 fr. in 1897. The gold movement this year is in favor of France, as it was directly the reverse last year.

Azote.

STOCK QUOTATIONS.

Table with columns: NAME OF COMPANY, Location, Par Val, Nov. 17, Nov. 18, Nov. 20, Nov. 21, Nov. 22, Nov. 23, Sales. Includes companies like Acacia, Adam, Alamo, Amalgamated, Anaconda, etc.

Table with columns: NAME OF COMPANY, Par Val, No. of shares, Nov. 16, Nov. 17, Nov. 18, Nov. 20, Nov. 21, Nov. 22, Sales. Includes companies like Aetna, Adams, Alhough, Am. Z & S, Anaconda, etc.

Table with columns: NAME OF COMPANY, Location, Par Val, Nov. 16, Nov. 17, Nov. 18, Nov. 20, Nov. 21, Nov. 22, Sales. Includes companies like Am. Sm. & Ref., Am. S & W Co., Central of N. J., etc.

Table with columns: NAME OF COMPANY, Location, Par Val, Nov. 16, Nov. 17, Nov. 18, Nov. 20, Nov. 21, Nov. 22, Sales. Includes companies like Am. Alkali, Bethlehem Iron, Cambria Iron, etc.

Table with columns: STOCKS, No. of shares, Par Val, Bid, Asked, STOCKS, No. of shares, Par Val, Bid, Asked. Includes companies like Alcoa, Anchor, Buckeye, etc.

Table with columns: NAME OF COMPANY, Par Val, Nov. 18, Nov. 19, Nov. 20, Nov. 21, Nov. 22, Sales. Includes companies like Alamo, Anaconda, Argonum, etc.

Table with columns: NAME OF COMPANY, Par Val, Prices, Sales, NAME OF COMPANY, Par Val, Prices, Sales. Includes companies like Admiral Dewey, Anaconda, Ashabasca, etc.

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

\*Official quotations Spokane Stock Exchange. Total sales, 128,876.



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. Total sales, 121,000 shares.

SAN FRANCISCO, CAL.

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

Official telegraphic quotations of San Francisco Stock Exchange.

TORONTO, ONT.

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

Official quotations of the Standard and Toronto Mining and Industrial Exchanges. Total shares sold, 310,910.

LONDON.

Nov. 10.

Table of stock quotations for London, listing various international mining and industrial companies with their share prices, dividends, and market activity.

\* Ex-dividend. † Dividend pending.

PARIS.

Nov. 2.

Table of stock quotations for Paris, listing various international mining and industrial companies with their share prices, dividends, and market activity.

STOCK QUOTATIONS.

MEXICO. Nov. 10. Table with columns: NAME OF COMPANY, No. of shares, Last div'd, Prices (Op'g, Cl'g), NAME OF COMPANY, No. of shares, Last div'd, Prices (Op'g, Cl'g).

MEETINGS. Table with columns: NAME OF COMPANY, Location, Meeting, Date, Place of Meeting.

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.

ASSESSMENTS.

ASSESSMENTS. Table with columns: NAME OF COMPANY, Location, Date, Amt., OFFICE.

ROSSLAND, BRITISH COLUMBIA.\* Nov. 16.

ROSSLAND, BRITISH COLUMBIA.\* Table with columns: NAME OF COMPANY, No. of shares, Par value, Selling price, NAME OF COMPANY, No. of shares, Par value, Selling price.

From Our Special Correspondent.

DIVIDENDS.

DIVIDENDS. Table with columns: NAME OF Co., Date, Am't., Paid 1899., Grand Total, NAME OF Co., Date, Am't., Paid 1899., Grand Total.



DIVIDEND-PAYING MINES.

Main table listing dividend-paying mines with columns for Name and Location of Company, Capital Stock, Shares (No., Par Val), Dividends (Total Paid, Date and Amount of Last), and Name and Location of Company, Capital Stock, Shares (No., Par Val), Dividends (Total Paid, Date and Amount of Last).

NON-DIVIDEND-PAYING MINES.

Main table listing non-dividend-paying mines with columns for Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last), and Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last).

G., Gold. S., Silver. L., Lead. C., Copper. Z., Zinc. This table is corrected up to Nov. 1. Correspondents are requested to forward changes or additions.

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

Table with multiple columns listing various chemicals and minerals such as Abrasives, Calcium, Manganese, Quartz, and others, along with their current prices and units.

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. This table is revised up to Oct. 26th. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Review of Chemicals and Minerals.