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The demand for West Virginia coal lands, which has existed for some time, is not falling off. Many purchases of such lands are being made, and the areas accessible to railroad or river transportation are being rapidly taken up. Some of these purchases are for immediate development, while others are bought as reserves for the future.

Our news columns show that an unusual number of transfers of mining property are taking place in Colorado, and there are other signs that a large amount of money is going into mining in that State. The large production of the past two years and the success of many prominent mines have apparently convinced investors that there are opportunities there which should not be neglected.

Some time ago a plan was formed for organizing and uniting all the German producers of cement. The North German and Prussian makers organized the Cement Syndicate, which has been in a fairly prosperous state since then. Negotiations are now pending to bring the South German makers into the syndicate, and it is probable that they will succeed.

The Ore Concentration Syndicate, Limited, of London, which is operating the Elmore concentrating process, informs us that it is very anxious to obtain samples of corundum ore for testing by this process. We are also informed that some very successful experimental and practical work has been done at the company's works at Glasdir, in Wales.

The rights under the Elmore patents in the United States have recently been bought by Mr. Charles Butters, who proposes using it in his testing works at Salt Lake City, and also in Colorado, in New York, in San Francisco and in Mexico.

The Fayal Iron Mine on the Mesabi Range, in Minnesota, claims to hold the record this year. During the season it has shipped 1,200,000 tons of iron ore, which is believed to be the largest quantity ever shipped by one mine in a similar period. The work performed may be estimated when it is stated that this required the handling of 7,000 tons of ore a day during the entire season.

Exports of iron and steel from the United States, including machinery, during the ten months ending October 30th, were valued at \$109,492,297, which compares with \$86,167,205 in 1899, and \$67,290,560 in 1898.

There has not been much change in the relative position of different classes of iron and steel exports. In pig iron the October shipments were large, and the ten months show a total of 227,680 tons, or 19,973 tons more than last year, instead of the decrease shown in the earlier part of the year.

The notes from the Nome District, which we give on another page, serve to emphasize one point to which we have heretofore referred; and

that is the need of amendments to the mining laws applicable to Alaska, and of better administration of the law. At present there is a lack of definiteness in certain provisions of the law which has already caused much trouble and is likely to cause more in the future. The number of officers of the law in the Territory is entirely insufficient, and in many cases it is almost impossible for applicants for redress to reach the courts, or to obtain a hearing within any reasonable time. The consequence is, in the Nome District especially, a confusion of titles which makes it almost impossible to say whether there is any title to a claim except that of actual possession. Such a state of affairs is fatal to the proper development of a district, and should not be suffered to continue. It is much to be feared that Congress will not act at the present short session. In that case there will be no remedy for at least a year. Every effort should be made to call attention to this matter and to obtain some action.

The Talbot continuous steel process, already well known in the United States, is now being introduced in England, and a company has been formed to acquire the English patent rights and the rights in all other countries, with the exception of the United States and Canada. This company acquires the patents for £225,000, payable as to £141,670 in cash and as to £83,330 in shares in the company; and its business will be to issue licenses to steel makers. It is said that contracts have already been arranged that should bring in an income of £20,000 a year. It is not surprising to hear that that up-to-date Englishman, Sir Christopher Furness, was the first to make a contract for his Weardale and other companies. It is understood also that the Cammells of Sheffield have decided to use the process. The capital of the company is £300,000, but only £250,000 is being issued now, which will give a working capital of £25,000. There is little doubt that the subscription will go through all right, and as the directorate are all practical steel men, the future of the company should be prosperous.

Some months ago our London correspondent mentioned that the Sulphides Reduction New Process, Limited, owning the Ellershausen patents for treating zinc-lead sulphide ores had been reorganized on a larger scale under the name of the British Sulphides Smelting Company, Limited, the main object being to provide the necessary working capital for the erection of smelting works on the Manchester Ship Canal. Since then the directors have quite changed their minds as to the future policy of the company. Instead of erecting works in England they have decided to amalgamate with the French Company which owns the French patents and the mines of Alloue and Ambernac in Charente, and to erect the works there instead. The process has received much more investigation at the French works than it did in England and it is to be presumed that the French ores are suited to the treatment and are sufficiently extensive to make it unnecessary to buy ores on the market. To provide for the purchase of the French rights and ores it has been necessary to increase the capital from £500,000 to £800,000. The process has always been of considerable metallurgical interest, but the financial management has been open to objection. This radical alteration of policy is just an example of this. It is much to be regretted that the process is not given a proper trial, before all these promotions on a larger scale are entered into.

Some two or three years ago two American promoters in London, Messrs. J. C. Kemp van Ee and J. Hamilton Brotherton, considered it best to leave England because the shareholders of one of their companies, the London & Westminster Contract Corporation, had commenced an action against them for fraud. The offence was that they had sold to the corporation for £55,000 cash a miscellaneous collection of worthless shares in mining companies promoted by themselves. This action never came to trial, as the writs were not served. An echo of this case was heard in the London law courts the other day, when the corporation sued Brotherton in his capacity of late manager and secretary for annexing to himself profits which should have accrued to the corporation, the contention being that as he was manager of the corporation, all dealings carried through by him in connection with its business should be on behalf of the corporation, and thus the profits in this particular case should have come to it. The corporation won its case, but as the defendant is out of the country, the decision will be practically inoperative, for it will be impossible to collect the money and damages awarded. It will, however, prevent him from returning to England. Readers of the "Engineering and Mining Journal" will remember that Messrs. Brotherton and Van Ee were the promoters of the Poorman Company in Owyhee County, Idaho, some five or six years ago, and that their doings were fully exposed in these columns at the time.

COAL EXPORTS.

Coal exports in October showed a small increase over last year, the total rising from 537,133 to 577,811 tons; a gain of 40,678 tons, or 7.6 per cent. only. For the ten months of the current year ending with October there was an increase of some importance, as shown in the accompanying table:

	1899.	1900.	Changes.	Per ct.
Anthracite coal.....	1,364,668	1,401,733	I. 37,065	2.7
Bituminous coal.....	3,197,043	5,170,648	I. 1,973,605	61.7
Total coal.....	4,561,711	6,572,381	I. 2,010,670	44.0
Coke.....	218,427	298,704	I. 80,277	36.8
Totals.....	4,780,138	6,871,085	I. 2,090,947	43.8

The increase shown was chiefly in bituminous coal, as was to be expected. As the United States is the great producer of anthracite, that coal is peculiarly an American fuel, and is little known or used abroad. The distribution of the exports is shown in the following table, in tons:

	1899.		1900.		Changes.
	Tons.	Per ct.	Tons.	Per ct.	
Canada.....	3,407,119	74.7	4,511,173	68.6	I. 1,104,054
Mexico.....	476,277	10.4	568,204	8.7	I. 91,927
Cuba and Porto Rico.....	319,681	7.0	310,103	4.7	D. 9,578
Other W. Indies & S. America.....	266,828	5.8	458,317	7.0	I. 191,489
European countries.....	19,316	0.4	544,745	8.3	I. 525,429
Hawaii and the Philippines.....	66,282	1.6	74,068	1.1	I. 7,786
Other countries.....	6,208	0.1	105,771	1.6	I. 99,563
Totals.....	4,561,711	100.0	6,572,381	100.0	I. 2,010,670

It must be noted that from the beginning of the present fiscal year, July 1st, 1900, shipments to Porto Rico and Hawaii are not included in exports. This, however, makes only a very small difference in the totals.

The exports to European countries were divided as follows: Great Britain, 4,385 tons (51 tons, 1899); Germany, 10,756 tons (none, 1899); France, 149,950 tons (1,012 tons, 1899); other countries, 379,654 tons (18,253 tons, 1899). In the other countries, not reported separately, Russia and Italy hold prominent places. Exports of coke are not reported by countries, but the shipments were chiefly to Mexico and Canada. Nearly all the anthracite exported went to Canada, the shipments to other countries being chiefly of bituminous coal.

It will be seen that our next neighbors, Canada and Mexico, took by far the larger part—77.3 per cent.—of the exports. The trade with the West Indies and South America shows a considerable growth, as it ought to. Brazil and Argentina took most of the increase. The exports to European countries showed the greatest comparative growth, being nearly 29 times this year what they were in 1899, and rising from 0.4 to 8.3 per cent. of the total. The total, however, still represents only a very small trade, and must be multiplied by 10 at least before it can be considered an important and satisfactory business, or more than the beginning of one. That such an increase can be secured we do not doubt; but it will take time and work to do it.

Assuming that the coal output this year is about the same as in 1899, we have exported in 10 months somewhat less than 3 per cent. of our total output. This is not a large proportion, and we can afford to ship a good deal more if a fair return can be secured.

MICA AND MICA MINING.

Among the minerals of minor economical importance, none seems to have attracted more attention recently than mica. We have been in constant receipt recently of inquiries with regard to the possible value of mica deposits, and of reports of the discovery of such deposits in all parts of the country. Unfortunately most of these reports are based on mistaken ideas in relation to the mineral, and turn out to be of little or no value.

There are two or three probable reasons for this general interest. The first is the large increase in the consumption of mica due to its use in electric work, and the consequent rise in price. The second is that mica is very widely distributed, and is of very common occurrence; though, unfortunately, it is found in very few places in large quantities or in such form as to be of commercial value. Another reason, perhaps, is that very few are practically acquainted with mica mines and their workings and are, therefore, liable to be deceived by indications which the experienced mica miner would at once see to be of no value. A few words on this mineral may be of service to the many who seem to be in search of it.

The first requisite for commercial mica is the size of the blocks from which sheets can be split. In addition to this the sheets must be free from cracks and flaws of all kinds, must be fairly even in thickness and not too brittle. Formerly good color was also a prime requisite, and this is still the case for certain kinds of work; but for electric work, if the other requisites are met, color is of minor importance. The exception is the dark red or rusty color, which indicates the presence of iron as an impurity, which impairs its insulating properties. It may be of interest to prospectors to note that experienced miners say that where

the blocks of mica are checked, split and cracked on or near the surface, there is seldom any improvement in quality with depth.

The mining of mica is not usually a difficult operation. In those mines which are now worked hand labor is chiefly employed; and the preparation for market is chiefly done by hand labor also, the tools used being few and simple. It is due to this that the mines of India, where hand labor—usually dexterous through long practice—is paid at very low rates, are able to supply other countries at prices which meet competition everywhere. The preparation for market is comparatively simple, consisting only in freeing the blocks of mica from the gangue in which they are found, and splitting them into sheets. The waste in mining is very great. The mica is usually found in pegmatite dikes, which occur in gneissic or granitic rocks. In some instances in this country the mica constitutes as much as 10 per cent. of the total mass of the dike, but often it is less than 1 per cent. The quantity of waste rock to be handled is, therefore, very large. Moreover, of the mica taken out the proportion which has a commercial value as sheet mica varies in our best mines from 2 to 10 per cent., seldom approaching the higher proportion.

There are no by-products in mica mining, except the scrap. In its usual scrap form its value is small, but when pulverized there is a certain demand for it. As a fine powder it is compressed and used in some forms of insulators in electric work. In powder it is also used in making some kinds of paint, in manufacturing wall paper, as an absorbent in making dynamite and in making lubricants for large and heavy bearings. It will not, however, pay to mine small or scrap mica to pulverize. The supply is large already and it can only pay to grind and market the mica powder when the sheets meet the chief expense of mining.

We do not wish to discourage the search for this mineral; but it is certainly of advantage to prospectors to understand what they can expect from a deposit, and how much time or labor it is worth while to spend in looking for it.

NEW PUBLICATIONS.

"Galvanizing and Tinning." By W. T. Flanders. New York; the David Williams Company. Pages, 94; illustrated. Price, \$2.

This work has been written by a gentleman who has had much practical experience. He writes in a clear and practical way, and his notes will be serviceable to those who are engaged in the trade. It covers the various methods of coating iron and steel with zinc or tin very well, giving full details of the apparatus needed and of all the details affecting the success of the process. It is a practical and useful handbook.

"The Gas Engine Handbook." By E. W. Roberts. Second Edition, Revised and Enlarged. Cincinnati; the Gas Engine Publishing Company. Pages, 240; illustrated. Price, \$1.

The present edition of this useful handbook has been thoroughly revised and brought up to date. It includes also some new matter and an appendix giving data on the two-cycle engine. It is practical in its scope, being intended for users of gas engines who have been thus far without the innumerable guides, handbooks, instructions, etc., etc., which beset the steam engineer. Perhaps this is fortunate for the gas engineers, but there was really need of a practical instruction book, which this seems to supply.

"Illustrated Catalogue of Machine Tools." New York; Manning, Maxwell & Moore. Pages, 704; illustrated.

This book is not a simple catalogue, but may rather be called an illustrated encyclopedia of machine tools, so great is the variety of such tools and appliances, to which reference is made in its pages. Probably there is no other firm in the world which can show so extensive a list of iron and wood-working tools which it is able to supply to purchasers. After glancing over it one is quite ready to accept the firm's statement that it is ready to furnish a full equipment for a shop of any size. The engravings are numerous, and the descriptions, though condensed, are usually sufficient. It is certainly the largest and best catalogue of the kind with which we are acquainted.

"American Trade Index. Descriptive and Classified Membership Directory of the National Association of Manufacturers of the United States. Arranged for the Convenience of Foreign Buyers." Philadelphia; the National Association of Manufacturers. Pages, 672. Price (in the United States), \$5.

This is the third edition of the "American Trade Index," the descriptive and classified membership directory of the National Association of Manufacturers. This edition is printed in English and French and 7,500 copies are now being distributed gratuitously among the principal business houses of the world. This book is one of the practical methods adopted by this Association to bring its members into close touch with foreign buyers, and we believe that the value of this book will be obvious to you. The book, of course, has its defects and limitations. Changes have taken place since the first section of the volume was printed, and as the names of members only are included there are headings which appear incomplete. Nevertheless it is a valuable agency for the foreign distribution of information concerning American manufactures. As the book is designed for foreign circulation mainly the price given above is made only in the United States. To foreign business houses the book is sent free of charge.

"Indiana, Department of Geology and Natural Resources. Twenty-fourth Annual Report." W. S. Blatchley, State Geologist. Indianapolis; State Printer. Pages, 1,078; illustrated.

The present report consists largely of the usual progress reports and those of the mine inspector and supervisors of natural gas and oil. Outside of these reports, which contain much that is of interest, it deals more with the natural history than the geology of the State. When the department was first organized it was styled the Department of Geology and Natural History, a title subsequently changed to Geology and Natural Resources; and in its report much attention has been given to natural history. The special geological reports in this volume are one on the Natural Resources of the State, by Mr. Blatchley, which deals largely with petroleum developments; and two on the Geology of Southeastern Indiana, by J. A. Brice and A. F. Foerste. Much work has also been done by the Department in furnishing information to the people of the State and others who apply for it. Inquiries are constantly received as to the location of deposits of coal, fire-clay, glass-sand and other minerals, which can be and are answered from the past investigations made. The Department has been of much value to the State in this and other ways. A report on the Cement Resources of the State is now in preparation, and will be a feature of the next yearly report.

"Tennessee Coal, Iron and Railroad Company. Description of Plants and Mines, July, 1900." Birmingham, Ala.; published by the Company. Pages, 174; illustrated.

This exceedingly handsome volume contains an account of the organization of the Tennessee Coal, Iron and Railroad Company, a brief history of the corporation, and a description of its coal mines, blast furnaces, steel plants and other works. These show the extent of the property and its equipment, with the productive capacity and possibilities of future development. The plants are all in Alabama and Tennessee, and cover a large part of the iron and steel production of those States. The company's operations are not only extensive but are complete in themselves, since it controls its supplies of raw materials, operating coal and iron ore mines and coke ovens, as well as furnaces, steel works and rolling mills. The company, moreover, is enterprising and progressive, and does not hesitate to put capital into the latest improvements. Thus it has been the first to introduce the by-product coke oven in the South, and is even now adding a new block of Somet-Solvay ovens to those which it already works at Emsley. Here the by-products are saved and utilized, the gases being employed in the operation of the basic steel works, which are the latest addition to the property. At the same place also have been located cement works, where the basic slag from the furnaces is utilized.

The book is handsomely printed on fine paper, and is profusely illustrated by half-tone engravings from photographs of the plants and mines. Very good judgment has been shown in selecting and taking the photographs, and they present a record which very few companies can equal.

BOOKS RECEIVED.

In sending books for notices, 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.

"Electric Wiring Tables." By W. Perren Maycock. London and New York: Whittaker & Company. Pages, 144. Price, \$1.

"Nature's Miracles. Volume III. Electricity and Magnetism." By Elisha Gray. New York: Fords, Howard & Hurlbert. Pages, 248. Price, 60 cents.

"Geological Survey of Canada. General Index to the Reports of Progress, 1863-1884." Compiled by D. B. Dowling. Ottawa, Canada, 1900; Dominion Printers. Pages, 476.

"Annual Report of the Register of the Treasury for the Fiscal Year Ending June 30th, 1899." J. W. Lyons, Register, Washington; Government Printing Office. Pages, 20.

"The Michigan Engineer. Containing the Proceedings of the Michigan Engineering Society for 1900." F. Hodgman, Secretary. Climax, Mich.; published by the Society. Pages, 228; illustrated.

"Annual Report of the Mine Inspector for the Indian Territory for the Fiscal Year Ending June 30th, 1900." Luke W. Bryan, Inspector. Washington; Government Printing Office. Pages, 72; illustrated.

"Association des Maitres de Forges de Charleroi: Rapport General sur la Situation de l'Industrie Metallurgique en 1899." Charleroi, Belgium; published for the Association by F. Henry-Quinet. Pages, 224.

"The Complete Cost-Keeper. Some Original Systems of Shop Cost-Keeping or Factory Accounting." By Horace Lucian Arnold. New York and London: The "Engineering Magazine" Press. Pages, 408; illustrated. Price, \$5.

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.

Mining Engineers' Reports.

Sir: It would be a very useful and instructive supplement to your discussion of "How Mines Should be Examined" to consider "How Mine Reports Should be Written." The "ipse dixit" of an acknowledged authority in any field might be contained in a few lines and be all that is necessary; but, as a rule, we would prefer to have him give his facts and how they were obtained, together with his conclusions, in order that we may consider as to his care in the first instance and his judgment in

the second. What, therefore, should constitute a complete report? What ought it to cover and where is the mining engineer expected to stop? When we get away from gold, which may be said to have relatively a fixed value and a steady market, we go through a series to those substances which are most irregular in value and demand, and where the examination of the mine may become almost a secondary consideration in view of the business acumen necessary to discern the direction of competition and the inevitable trend of the markets. How fully is an engineer who is sent to examine a mine expected to go into these matters? It would surely be of interest to reproduce some of the typical reports on which large investments have been made, and which have been the basis often of a faith which has accomplished wonders—and not infrequently worked destruction. They would answer the above and other questions which will naturally arise.

Charles Catlett.

Staunton, Va., Nov. 26, 1900.

The Riecken Process for Treating Telluride and Sulphide Ores.

Sir: The Riecken process is an electro-chemical system for the recovery of the precious metals from ores by a single operation, without resorting to filtration. The machinery consists of an open iron tank with vertical ends, inclined sides and rounding bottom. The tank is provided with a horizontal shaft passing through stuffing boxes at each end of the tank, also with proper beaters to agitate the contents of the vat, and with suitable gear wheels outside the tank for rotation. The bottom and sides of the tank are lined with removable amalgamated copper plates and form the negative pole of the circuit; the positive poles being stationary.

By means of a small force pump a stream of mercury is caused to flow continuously over these amalgamated plates, and which, running down into the bottom of the vat, is drawn off through a mercury trap, and again elevated by the pump, thus maintaining a continuous circulation. This not only keeps the negative plates perfectly bright and active, rendering the apparatus the best of mechanical amalgamators, but is the essential condition which effects the precipitation of the gold in such a form that it cannot be scoured off by the attrition of the moving ore. This feature is covered by the broadest kind of a master patent and clearly distinguishes this process from all the unsuccessful attempts hitherto made. It has been declared valid by Fletcher Moulton, the well-known patent lawyer, and will not be subject to royalty to the cyanide process.

By means of this process the gold, whether in coarse particles or fine, is recovered in one operation, no filter presses are required, no precipitation by zinc is necessary, and the bullion commands a higher price by reason of its purity. The tank is partly filled with salt water (in Western Australia the natural salt water of the region answers admirably) and after starting the agitators the ore to be treated is fed in a finely pulverized condition into the water until an easily flowing pulp is produced. From 1 to 2 lbs. of potassium cyanide per ton of ore to be treated are now added and a weak current of electricity is passed through the tank, with the result that the gold which has been dissolved is deposited on the amalgamated plates as a dense amalgam, so hard as to quite resist the attrition of the coarser particles of ore. Any coarse gold under the brightening action of the current and of the cyanide will be mechanically amalgamated. When the operation is finished the contents of the tank are allowed to flow to waste, or, if water is scarce, to settling tanks, when, after settling, the clear water may be pumped back into the apparatus for further use, and the cycle repeated.

An apparatus has been shipped to Western Australia which will treat 15 tons of ore at a charge. It is only 10 ft. long, 8 ft. wide at the top, and 11 ft. deep. A larger one is nearing completion and will be forwarded when ready. Two charges of ore per day of 24 hours can be handled in each tank, so that their joint capacity will be about 70 tons per day. If desired these dimensions may be considerably increased.

Careful tests upon a practical scale have shown that not over 3 H. P. will be required to agitate the ore and produce the current for each 15-ton vat.

The operation of the plant being conducted automatically less labor will be required than is necessary in the ordinary cyanide process and the ore being handled as a sludge there is no hand labor in filling and discharging vats.

By this process the gold is rapidly dissolved and we have found that a solution containing 0.05 per cent. of cyanide is sufficient with most ores to run the tailings down to below 1 dwt. Careful tests by Professor Ramsay and Messrs. Johnson & Sons have been made to ascertain the loss of floured mercury. These gentlemen report that it will not exceed 2 oz. per ton of ore treated, and our own experiments confirm this. An estimate of cost is as follows: Cyanide, 2 lbs. at 28c. per lb., 56c.; quicksilver, 6c.; power, ¼ H. P., coal at \$10 per ton, 12c.; labor, 48c.; water, 200 gallons (recoverable), 24c.; labor and stores for engine and dynamo, 12c.; total cost per ton treated, \$1.58. To this must be added the cost of the necessary mechanical preparation of the ore, crushing, and, when treating tellurides and sulphides, the cost of roasting. Both operations if properly conducted will not exceed \$1.55 per ton. To this add 24c. for repairs, etc., and the total per ton treated amounts to \$3.36.

Oxidized ores are crushed wet in stamp batteries and the readily amalgamable gold is caught on the plates. The tailings from the plates are then sized in hydraulic classifiers to separate the leachable or coarse sands from the unleachable slimes; the sands are leached with cyanide; but as the coarse gold invariably present remains undissolved for a long time it is necessary in order to obtain a fairly good extraction to grind these tailings in amalgamating pans. The unleachable slimes are treated by agitation with cyanide and forcing the pulp into filter presses for the separation of the dissolved gold. The cyanide of gold solution obtained from both operations is then treated in zinc boxes for the precipitation of the gold. Having precipitated the gold upon the zinc a series of expensive and wasteful operations is required for the recovery of the precious metal in a marketable form. Further, the bullion so obtained is subject to a reduction of about ½ per cent. by the refiners on account of its impurity.

In the case of treating telluride or sulphide ores the procedure is dry crushing, roasting and then separating by means of pneumatic classifiers the fine unleachable dust from the coarser sands, after which the treatment becomes almost identical with the treatment of the sands and the slimes from the oxidized ores, with this important difference, that during the roasting of tellurides the gold assumes a dense globular form, in which condition it is capable of resisting almost indefinitely the solvent action of cyanide, and it therefore becomes even more imperative in this case to treat the tailings from the leaching vats by pan amalgamation; but as it is well known that in the act of roasting sulphides and tellurides the gold becomes coated with films which effectually prevent ordinary amalgamation; the extraction is incomplete and all the methods now being tried, which consist of only an agglomeration of well known and faulty processes, can never succeed in solving this difficult problem.

Bearing the above in mind, it is claimed that the superiority of the Riecken process is evident, as the operation consists merely in agitating the prepared product in the tanks with dilute cyanide solution and conducting through the vat a current of electricity, the coarse and fine gold being precipitated as an amalgam which can be reorted into a marketable form with a minimum of expense and loss.

Henry R. Cassel.

London, Oct. 10, 1900.

BRITISH IRON AND STEEL EXPORTS.—For the 10 months ending October 31st the value of the iron and steel exports from Great Britain is given by the Board of Trade returns as below:

	1899.	1900.	Changes.	Per ct.
Iron and steel.....	£22,681,467	£27,348,471	I. £4,667,004	20.6
Machinery	16,252,210	16,340,739	I. 88,529	0.5
New ships	6,732,101	7,159,248	I. 427,147	6.4
Totals	£45,665,778	£50,848,458	I. £5,182,680	11.3

While the quantities of pig iron, bar iron, sheets and other finished products showed increases, there was a heavy decrease in rails, the totals this year being 386,474 tons, while in 1899 it was 498,586 tons. The decrease was therefore 112,112 tons, or 22.4 per cent.

THE SYNTHESIS OF COAL.—The London "Colliery Guardian" says: "A step toward solution of the problem, synthesis of coal, appears to have been made in a communication to the International Geological Congress in connection with the Paris Exhibition by M. Lemiére, chief engineer of the Montvicq Collieries, who attributes the formation of coal to a bacterian action exerted by the cellulose of plants, taken in connection with an unintentional experiment made by Professor Arth of the Nancy University under the following circumstances: A piece of sound lignum vitae was used for the footstep of a 12-H. P. turbine making 112 revolutions per minute, the whole of the revolving portion weighing about 400 kgs. The end of the shaft resting on the lignum vitae is of steel; and, without being actually immersed in water, the footstep is always damp. After six months' working the bottom of the wood was found to be intact; but the upper portion, on which the turbine shaft rested, had become transformed into a black substance readily breaking into small pieces with bright fracture, and having all the appearance of some mineral fuels. Analysis of this black substance, dried in the air, showed powdered coke 56.88 and humidity 2.74 per cent., while after desiccation in vacuo 3.9 per cent. of ash, 4.86 of hydrogen and 69.76 of carbon were found. By its composition and properties, observes Professor Arth, this black product may be placed between the lignites proper and the more recent coals rich in oxygen, to which latter it approximates by its calorific power.

WIRELESS TELEGRAPHY BETWEEN BELGIUM AND ENGLAND.

—United States Consul George W. Roosevelt, at Brussels, Belgium, reports that there has been recently established at La Panne, Belgium, a station for the exchange of wireless telegraphic messages between Belgium and England. The receiving apparatus to be used on the English coast was taken across from Ostende on board the Dover-Ostende mail boat "Princess Clementine," which is also fitted up with temporary apparatus to be used in the experimental trials. La Panne has been selected on account of its being the point on the Belgian littoral nearest the English coast. The mast of the Marconi station at La Panne is 130 ft. high. To the foremast of the steamship "Princess Clementine" is affixed an additional mast, which increases its original height about 60 ft. From this extremity, the telegraphic waves will be projected toward each coast. A special room has been fitted up on board the steamer for the instruments, and from this room the cable will be carried to the top of the extended mast. It is confidentially expected to obtain communication between ship and shore for at least 30 miles, which is about halfway across. With stations at La Panne and Dover, those on board the vessel would be able to keep in touch with the land during the entire crossing.

On November 3d experiments began about 5 p. m. Telegrams were exchanged between the boat, then moored at the Ostende wharf, and the station at La Panne. Later in the evening, several of the Marconi men went on board the vessel and communicated with the land station throughout the crossing, except when they arrived in English waters. Communication was then discontinued, as the Belgian Government has not yet received from the English Government authority to telegraph from Dover by this new system.

The experiments showed that replies arrived with the same regularity and celerity as ordinary telegrams. When about 40 miles from Ostende the captain of the vessel was able to telegraph to the stationmaster at Ostende the probable hour of his arrival. Various telegrams were sent from the vessel to Ostende, Brussels, Dover, London, and to the officers of the chief bureau and branch offices of the Marconi Company. The reception of each message was acknowledged promptly, the first and last letters being given in each instance. Under date of November 12th the consul adds that a message was sent from the "Princess Clementine" to the station at Dover Court, Essex, a distance of nearly 90 miles, including many miles of cliffs and sea.

THE KERN RIVER OIL-FIELD IN CALIFORNIA.

By Our Special Correspondent.

In all the newly developed oil-fields of California none has thus far proved more productive than what is known as the Kern River District, located a little over 6 miles northeast of the town of Bakersfield, lying approximately in the central portion of the State. The Kern River Field is situated in the natural basin environed by the Sierra Nevada and Coast Range Mountains. This basin is filled with deposits of loose material such as sand, clay and shale. The oil sand lies between strata of clay. It is about 400 ft. above the sea-level, at the southern end of the largest valley in the State. It possesses all the usual surface indications of fossil limestone, etc., usually found in the vicinity of the western oil-fields. The frequency and abundance of relics of pre-historic animal and marine life are equaled by no other district, so far known in California. Oil was first discovered on the banks of the Kern River in May, 1899, from seepages which extended along the bank of the river for a distance of about 1½ miles. The discovery well was sunk with pick and shovel to a depth of 60 ft. by Mr. Elwood. At this depth quite a flow of oil found its way into the hole. The discovery soon became known, and in a few weeks prospectors and oil men flocked to Bakersfield to learn more of the wonderful find. A few months later a derrick was erected near the Elwood discovery, and the first well of the now famous Kern River Field was drilled. Its depth was 350 ft., and it produced in the neighborhood of 30 barrels per day.

By this time mineral locations, oil claims, leases and so on, were secured in every direction for a distance of between 25 and 30 miles.

Operations in this field are conducted principally by stock companies. Some of these, however, practically amount to personal ownership, as a certain coterie of wealthy operators hold the controlling interest in many of the best companies. The stocks are, however, divided among small holders of the general public. Several men have already become millionaires through their operations in the Kern River Oil District.

Land values vary in proportion to their remoteness from or proximity to the developed field. Within the known pool, land may be had at from \$3,000 an acre upward. Small tracts have been sold for \$5,000, and \$4,000 has been refused for large bodies. "In my opinion," said a prominent operator of this section, "\$30,000 per acre is a very conservative estimate as compared with the real value of these lands." The stories of the vast wealth acquired through land deals are almost beyond belief. Millions of dollars have been made here already, and more are certain to be made in the future. Where one well producing from 150 to 200 barrels per day is estimated to be worth at least \$50,000, it is easy to calculate what a vast amount of wealth the aggregate territory of this field represents.

Other improvements are keeping pace with the development of this district. A branch railroad has just been completed to the heart of the field. Numerous large storage tanks are now being erected, and everything is being done that is necessary to a flourishing oil center.

The cost of operating in this field varies according to location. The average cost per well will run about \$2,500. Transportation figures largely in the cost of operation. The price of oil will run about \$1 per barrel, varying from that to 85c. One of the most remarkable and at the same time favorable characteristics of this section is the few failures that have attended the efforts of exploitation. Taking it



DISCOVERY CLAIM ON ANVIL CREEK, NOME DISTRICT, ALASKA.

Since then the work of development has been carried on with feverish activity, so that the territory to-day extends in a northwesterly direction about 5 miles, northeasterly and southwesterly about 4 miles, making in all a demonstrated field of about 15 square miles. Within this extent the oil sand varies in thickness from 20 to 500 ft., lying very nearly horizontal. This is perhaps the most curious thing in connection with the field, as it contradicts the theories held by such eminent scientists as Dr. Joseph LeConte and Dr. Whitney.

The boundaries of the field before given include what may now be termed demonstrated territory. There is, however, a good deal of prospecting being done on outside land in nearly every direction, and scarcely a fortnight passes without the field being extended in some direction or other. The probabilities are, according to the best oil experts, that this pool will be, in time, extended to more than double its present size. Within the known belt there is no more certain district for finding oil than that of the Kern River Field. The stratum in which oil is found differs essentially from that of any other California field, being a body of sand saturated with oil. The percentage of oil in this sand has been estimated to be not less than 10 per cent., and some have placed it as high as 25 per cent. and over. The oil varies in gravity from 12° to 17°.

Wells yield from 30 to 200 barrels per day. There have been exceptional cases where a much greater production was found, but the average will run between the figures given. The present output of the district is difficult to compute, because there is no absolute means of ascertaining the aggregate product. There are in the neighborhood of 250 completed wells, and many others drilling. A well-known producer of this section has estimated the probable output of the field within the next few months at from 20,000 to 25,000 barrels per day. It may be interesting to note figures of another prominent oil man of California, who calculates that an acre of ground in the Kern River Field will yield 100,000 barrels of petroleum. Many have placed the total yield at a much greater figure. Where the oil sand is 500 ft. in thickness, estimates as high as 200,000 barrels per acre have been made. Based upon these figures, the average life of a well here should be 20 years or more. In fact conservative operators have figured it at nearly twice that.

all in all, Kern River stands to-day prominent among the oil-fields of California.

SOME NOTES FROM THE NOME DISTRICT.

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

As Seattle is the leading port for the arrival and departure of miners bound to and from Cape Nome, it is the best place on the Pacific Coast to gain information about that country. None of the steamships on the Nome route will make a return trip before next May. The steamships "Oregon," "Portland," "Centennial," "Nome City" and a Government transport are the only ones that are expected in port from the Bering Sea this season. In all 13,835 passengers arrived on the 21 steamships on their first voyage to Nome, the first ship arriving there on May 21st. Several of the boats made three and four trips, but there was not more than 25,000 people in the camp all summer. Between 5,000 and 6,000 people will winter in Nome, York and the Golovin Bay mining districts.

Mr. Wing, Director of the United States Assay Office in Seattle, tells me that \$3,000,000 in gold dust and bullion has been received by them from Nome this year. He estimates that \$1,500,000 more has been shipped direct to San Francisco. After consulting the most reliable authorities that it is possible to meet here, including thousands of returning miners, it is a fair estimate to place the output from that section this year at \$5,000,000.

A general dissatisfaction prevails among the returning miners because of the encouragement given to claim jumpers, the appointment of receivers, and the extravagant manner in which affairs were administered, usually for selfish purposes. The Government officials proved to be very incompetent there, because of the fact that they did not properly administer the law, and a great many good claims are tied up in litigation caused by jumpers, and these claims cannot be worked next year unless these conditions are changed. As an instance of the way these affairs are conducted I would cite the case of Alexander McKenzie, the most prominent receiver. He was placed in charge of the Pioneer Mining Company's property by order of the District Court, and his bond placed at \$5,000, when the claims were yielding that amount of gold every day.

However, public sentiment compelled the judge to increase his bond to \$50,000, which amount even was inadequate. On October 15th he was placed under arrest, when he refused to obey the order of the court to turn over the gold to the owners of the property. The Pioneer Mining Company, C. D. Lane and Anderson, finally succeeded in getting \$280,000, but an investigation showed that McKenzie was \$40,000 short in his accounts. He arrived in Seattle on November 3d on the steamship "Senator," in custody of Marshals Shelby Monketon and George Burnham, en route for San Francisco, where the United States Court will call this leader of receivers to account for the various charges brought against him.

A miners' meeting was held in the Standard Theater of Nome City on October 15th, of which Senator Goucher, of California, was elected chairman. The crowded audience, composed of miners and business men in general, met for the purpose of drafting resolutions and electing representatives to urge the passage of laws suitable to the district. Captain George B. Baldwin, William Knight and Dr. Reninger were appointed delegates to go to Washington, D. C., with the resolutions which had been adopted, and instructed to use their influence for the best interests of the camp.

Congress should pass a law before it adjourns next spring, giving the original locators of mining claims in the District of Alaska absolute title, where they have complied with the law by making a valid location. The country has been overrun with an unscrupulous element who went there for the sole purpose of jumping the best mining claims. And these jumpers are backed by a lot of lawyers who undertake to make the original locators buy them off, or give them an interest in the ground, in order that they (the rightful owners) may work in peace.

Our laws are very liberal in giving them ground, but after a man has located a claim and complied with the law, he has no protection because of the fact that anyone can go on the claim, stick up a notice, and put up corner stakes beside the ones originally put up by him, and have the same recorded, and by this means cast a shadow on the original owner's title and cause litigation; or in other words, tie the claim up for about two years.

The miners are making an imperative demand that Congress pass a law making it a penalty for any person to jump a mining claim. Also there should be a law passed restricting location by power of attorney to one claim for any one person in any one mining district under the jurisdiction of a United States Commissioner.

The new law (the Carter bill) provides for the placing of several mining districts under the jurisdiction of one United States Commissioner. For instance, at Council City the commissioner has under his jurisdiction seven mining districts, comprising an area of 6,000 square miles. A big majority of the miners in the Northwest are very much in favor of a law compelling each locator to do \$50 worth of development work on his claim, and after that to fully comply with the United States statutes.

There should be an appropriation made by the Government for a wagon road from Nome or Teller City to Council City, a distance across the country of about 130 miles, passing its whole length through a mining country. This would require an expenditure of \$200,000.

The chief gold producing creeks are the Anvil, Snow, Rock, Glacier, Dexter, Dry, Buster, Osborne, Shovel, Big Hurrah, Oregon, Hungry, Council City, Ophir, Sweetcake, Crooked, Dutch, Nelson, Myster, Elkhorn, Warm, Ruby, Quartz, Banner, Willow and the Rivers Solomon and Eldorado. In addition to these, there are in the Teller District, which includes the Bluestone country, the streams Gold Run, Ruby and Garfield. In the Cougerock District considerable mining has been done on Harris and Horse creeks. There was some mining on the north and east of Norton Bay, but the production of gold was hardly worth mentioning.

The accompanying photographs—for four of which I am indebted to the courtesy of Mr. King, of Seattle—show some interesting scenes at Nome. The large one, No. 1, shows Discovery Claim and Nos. 1 and 2 above it on Anvil Creek. These claims have yielded \$1,000,000, and Anvil Creek has furnished about \$2,000,000 of the Nome output this year. Of the small photographs, No. 2 shows Claim No. 1 on Crooked Creek, 10 miles from Council City; it is owned by S. E. King and C. A. Harrington. No. 3 shows a crew of miners at work on the upper end of this claim. No. 4 shows work in progress on the lower end of the claim. No. 5 shows the hose and sluice-boxes on Crooked Creek. These photographs illustrate very well the nature of the country and the methods of work in use on the creeks back of Nome.

THE VOLUMETRIC ESTIMATION OF COPPER AS OXALATE.*

By Charles A. Peters.

The author takes issue with those chemists who deny the accuracy of Bournemann's method for separating copper from cadmium, by precipitating copper as the oxalate in the presence of nitric acid, filtering hot, and estimating the copper after ignition by gravimetric methods. The author believes that the precipitation of copper oxalate from solutions containing at least 0.0128 gm. of the oxide, and saturated with the oxalic acid is practically complete. The filtrate in such cases gives no blue color with ammonia, and only a faint brown color is developed when the filtrate is neutralized, made acid with acetic acid, and tested with potassium ferrocyanide. Moderate amounts of copper may be determined quantitatively as the oxalate by precipitation with oxalic acid and titration of the precipitate by potassium permanganate, and also moderate amounts of copper may be separated from other metals in the presence of nitric acid, by the addition of considerable amounts of oxalic acid.

As a result of experiments, it may be said that the presence of a certain minimum amount of copper, varying with the conditions, is essential to complete precipitation. Thus, at a dilution of 50 c. c. a saturated solution of oxalic acid will precipitate with practical completeness copper taken as the sulphate in amounts exceeding the equivalent

of 0.0128 gm. of copper oxide; that 2.0 gm. of oxalic acid will precipitate almost completely for the same volume of solution the equivalent of 0.03 gm. of copper oxide; and that 1.0 gm. or 0.5 gm. of oxalic acid will precipitate the equivalent of 0.064 gm. of the oxide.

In the quantitative separation of copper as the oxalate the method of treatment was in general as follows. Copper sulphate in 50 c. c. of water was thrown down by the addition of dry oxalic acid to the hot solution, and, after standing over night, the precipitate was filtered on asbestos, washed two or three times with small amounts of cold water. The precipitate, still in the crucible, was returned to the beaker in which precipitation took place, 5 or 10 c. c. of dilute sulphuric acid (1:1) were then added together with a convenient amount of water, and, after heating the liquid to boiling, the oxalic acid was titrated with permanganate, the oxalate of copper dissolving readily as fast as the excess of oxalic acid is removed by the permanganate.

It is noted that while ½ gm. oxalic acid is all that is needed for the complete precipitation of copper in the presence of 5 c. c. strong nitric acid, still oxalic acid may be added up to the point of saturation of the solution. If more is used a large amount of water is necessary to wash the precipitated oxalate. About 2 gm. of oxalic acid to 50 c. c. of water is a convenient proportion.

Experiments in the time required for precipitation seem to show that a solution containing copper may be precipitated hot as the oxalate and filtered either hot or after cooling with a very slight loss. Tests of the filtrates made with potassium ferro-cyanide confirmed these results. When nitric acid is present, however, the mixture must stand several hours or over night, after the addition of the precipitant.

The method was tried for a quantitative separation of copper and cadmium in the presence of 0.6 per cent. strong nitric acid. Copper was separated from more than twice its weight of cadmium with accurate results.

For the separation from arsenic, arsenious oxide dissolved in sodium carbonate, and di-hydrogen sodium arseniate were the forms of arsenic used. While the presence of nitric acid is not necessary for the separation of the copper from the arsenic; still the filtration in the absence of the nitric acid is so slow as to be objectionable. The presence of the nitric acid causes the precipitate to come down in a coarser condition, and in such condition it filters easily and is capable of being washed quickly.

For the separation of copper from tin a preparation of stannous chloride containing sufficient hydrochloric acid to prevent deposition of oxysalts was used. The solution of stannic chloride contained 1.0 gm. metallic tin to every 10 c. c., and was used without hydrochloric acid. The experiments go to show that while copper may be separated from small amounts of tin as stannous chloride, yet there is a limit to the amount of tin which may be present. One-tenth of a gram of metallic tin is the largest amount that can be present, with 0.15 gm. copper oxide taken as the sulphate, without significant error. Practically the same statement can be made of the separation of copper from tin taken as stannic chloride.

A solution of ferric nitrate was used for the work on the separation of copper from iron. Low results were obtained when a solution of ferrous or ferric sulphate was used as the source of iron. The results show that 0.20 gm. copper oxide as the sulphate may be separated from 0.2-0.3 gm. iron oxide taken as the nitrate. It is best to avoid the use of large amounts of nitric acid when the larger amounts of ferric nitrate are present.

For a practical application of the above separation of copper from iron 5 gm. of finely ground chalcocopyrite was roasted 2-3 hours in a porcelain crucible until all sulphur was driven off, washed in a beaker, strong nitric acid, about 5 c. c. was added, and, with the beaker covered, allowed to evaporate slowly on a hot plate, nearly to dryness. A little dilute nitric acid was added, the solution was filtered, the residue was washed with water containing dilute nitric acid, the filtrate, about 50 c. c. in volume, was precipitated with 2.0 gms. oxalic acid, and the precipitate was estimated after standing 12-16 hours, as previously described. The washing with water acidified with nitric acid is important because the finely ground ferric oxide remaining undissolved passes through the filter when washed with water alone, but gives no trouble if the water be acidic.

The separation of copper from zinc was not altogether successful owing to the tendency of the zinc oxalate to come down with the copper oxalate.

The separations of copper from bismuth and antimony were unsuccessful.

The work may be briefly summarized as follows: Copper exceeding in amount the equivalent of 0.0128 gm. of the oxide to 50 c. c. of solution as the sulphate may be separated completely, even in the presence of a moderate amount of strong nitric, by the addition of sufficient amount of oxalic acid. Copper may be separated from cadmium, arsenic, iron, and small amounts of tin, when precipitated by oxalic acid in a volume of 50.0 c. c. containing 5 c. c. strong nitric acid. Inasmuch as the completeness of precipitation of the copper depends upon the presence of a certain minimum amount of the copper salt, this method is not applicable when the amount of copper falls below 0.0128 gm. of the oxide to 50 c. c. of solution.

NEW MINERAL RAILROADS IN RUSSIA.—Two State lines of railway are about to be built for the purpose of still further developing the industrial region in Southern Russia lying south of the Catherine Railway. One of these projected lines will start at the station of Volnovacha on the Debalzevo-Mariopol line, and after crossing the lines leading to Berdiansk and Sebastopol at Alexandrovsk, will terminate in one branch line at Dolgiuzevo, a station on the Catherine line, while a second branch line will form a junction with the Cherson Railway. Thus the new line will run mainly parallel with the Catherine Railway. The second line, which will be considerably shorter, will start from the Ilovaiskoye Station on the Taganrog Railway, and be laid through the anthracite coal-fields of Alexeyeff as far as Debalzevo, while a branch line will run to the Makeyeff coal-fields.

*Abstract of article in the "American Journal of Science."

INFLUENCE OF COPPER IN RETARDING CORROSION OF SOFT STEEL AND WROUGHT IRON.*

By F. H. Williams.

The deterioration of iron and steel from rusting is so important a matter that every effort to discover a means of arresting or retarding this otherwise ultimately fatal disease ought to be encouraged, and any results attained should receive consideration. During the late spring of this year the writer made some tests on the corrosion of iron and steel on a small scale. They were made especially to find what influence the presence of copper might have, and are in line with recent investigations by Mr. H. M. Howe, as given in his paper, "Relative Corrosion of Wrought Iron, Soft Steel and Nickel Steel," read before the International Congress on Testing Materials.

Four samples of steel were selected, A, an ordinary soft Bessemer steel; B, C, and D, soft Bessemer steels to which copper had been added, so that they contained respectively 0.078 per cent., 0.145 per cent., and 0.263 per cent. copper. In addition to these another set of tests, consisting of one soft Bessemer sample and four wrought iron samples were similarly treated. It will be noticed that wrought iron sample No. 4 contained 0.393 per cent. copper. Small pieces of each were cut and filed to same dimensions, weighed and suspended on a frame so that all could be dipped simultaneously in water and left to hang in the

SINKING FUNDS FOR COAL COMPANIES.

The Delaware & Hudson Company, which owns a great anthracite coal estate, decided last year to make provision for the gradual exhaustion of the deposits, and adopted a plan which appears to meet the case so well that we give below—as an example—the text of the ordinance adopted by the stockholders. This is now in operation:

"Whereas, it is expedient that provision be made for the gradual retirement of stock and bonds of the company, contemporaneously with the mining and sale of its coal,

"Now, Therefore, it is hereby ordained and enacted as follows, by the Delaware & Hudson Company, acting at the regular annual meeting of its stockholders held in accordance with notice:

"First—A sinking fund is hereby established to provide for the gradual retirement of stock and bonds of the company, contemporaneously with the mining and sale of its coal. At the end of each year there shall be credited to said sinking fund upon the books of the company a sum equal to not less than 5c. for each ton of coal mined by the company during the year from lands owned or controlled by it, and any additional amount which the managers of the company may deem expedient. The sums credited to the sinking fund shall be charged against the profits for the year.

"Second—The sums so credited to the sinking fund shall be invested, under the direction of the managers or of any committee which they



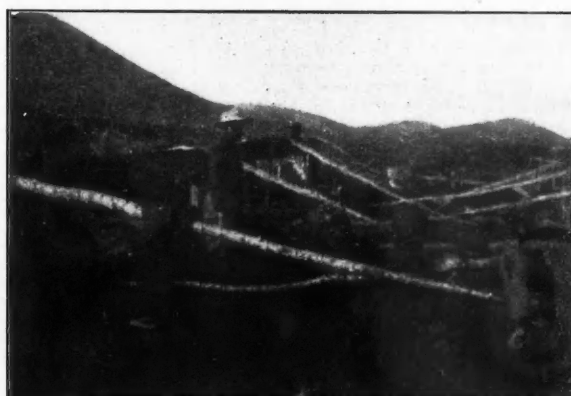
UPPER END, WITH CREW AT WORK.



CLAIM NO. 1, GENERAL VIEW.



SLUICE-BOXES ON CLAIM NO. 1.



WORK ON LOWER END OF CLAIM NO. 1.

VIEWS ON PLACER CLAIM, CROOKED CREEK, NOME, ALASKA.

air till dry. This treatment was repeated frequently each day for about a month. The daily increase in weight due to oxidation was small but of such a persistent character as to apparently indicate the retarding influence of copper upon the corrosion. Finally, when there appeared a tendency of the oxide to scale off, the treatment was concluded, and the pieces were thoroughly cleaned of all oxide, and weighed. The loss in weight appears in per cent. of the original weight of pieces, in the following tabulated form:

Loss from Atmospheric Corrosion.	
Loss%	Loss%
A.—Soft Bess. steel..... 1.85	Soft Bess. Steel..... 1.65
B.—Soft Bess. steel, 0.078 copper... 0.89	Wrought iron, 1..... 0.76
C.—Soft Bess. steel, 0.145 copper... 0.75	Wrought iron, 2..... 0.80
D.—Soft Bess. steel, 0.263 copper... 0.74	Wrought iron, 3..... 0.87
	Wrought iron, 4 (0.393% copper).... 0.53

The investigation of Mr. Howe upon large plates of metal extending over considerable time show that nickel exerts a similar retarding influence upon corrosion. The introduction of a small amount of copper into steel, where it is not already present in sufficient quantity, could easily be effected through the use of copper-bearing iron ore in the blast furnace.

Its presence in steel within the amount necessary for obtaining the above results has been shown by others not to be prejudicial to its physical qualities or to its mechanical production. It would seem as though the facts here presented might help to solve the problem of making soft Bessemer steel as capable of resisting corrosion as wrought iron, and thus end the debate as to whether the one or the other is the more rapidly corroded.

*Note read before the Engineers' Society of Western Pennsylvania, September, 1900.

may designate, every year. The same shall be invested in securities or shares of stock of the company, or of any corporation whose road the company may have leased or with which the company may have contracted for the use of its road for the transportation of coal or upon whose securities or stock the company may have become liable to pay interest or dividends. In case, however, such securities or stock cannot be purchased advantageously, when the sums so credited to the sinking fund shall be invested temporarily in such other interest paying securities as said managers or committee may determine.

"Third—Whenever investment of the sinking fund shall be made in the securities or stock of the company, the same shall under no circumstances be re-issued, but shall forthwith be retired and cancelled, and thereafter the amount of interest or dividends which would be payable upon such securities or stock, if they were still outstanding, shall be credited to the sinking fund and used for the purposes thereof as herein provided. Whenever investment of the sinking fund shall be made in other securities, the same shall be used for no purpose whatever save those herein specified, and, as soon as advisable in the judgment of said managers or committee, shall be sold, and the proceeds, with any interest or dividends received thereon in the meantime, applied to the purchase of securities or stock of the company which shall be retired and cancelled as above provided."

A GREAT LANDSLIDE.—The London "Engineer" says that the greatest landslide in the history of the slate quarries at Delabole, Cornwall, took place at midnight on November 18th, when 400,000 tons of rock fell from the head to the bottom of the pit with a terrible roar. The fall had been anticipated, and the plant and railways it would have overwhelmed had been removed.

A NEW PROCESS FOR THE MANUFACTURE OF WHITE LEAD.*

By Prof. Romyn Hitchcock.

A very large proportion, probably nine-tenths, of the white lead in use is manufactured by the old Dutch process of slow corrosion. In brief, we have acetic acid in pots with beds of fermenting tan-bark, "buckles" of metallic lead 2 ft. long by 4 in. wide and $\frac{3}{4}$ in. thick, the whole arranged in stacks within great chambers where it remains for three months or more, until it is presumed that the corrosion is complete. The persistence of such a primitive manufacturing process in a great industry to-day is an indication that the product is peculiarly adapted to the commercial requirements. On the other hand, it may also be, and one may reasonably presume that it partly is, indicative of a conservative, unprogressive spirit among the manufacturers. The chambers once filled and working, the operation is entirely automatic, indeed, it is quite beyond control. The corrosion may go on well or ill and the result is uncertain until the stacks are torn down. The temperature may or may not rise to 140° F. Some of the buckles may be corroded to the extent of 90 per cent., others only to 20 per cent. The amount usually ranges between 50 and 70, but the average is about 65 per cent.

The white lead is separated and the 35 per cent. of unchanged lead is remelted and recast into new buckles for the succeeding operation. But there is always more or less discoloration of the product from the tan-bark; therefore Dutch process white lead is never pure white. The corrosion is not uniform throughout the stacks; some of the product is hard, some soft and easily crumbled in the hand. All the operations of building up the stacks, tearing them down, replacing broken pots, filling the pots with acid, collecting the white lead, removing and replacing tan-bark, etc., is hand labor. Finally, the best product of such slow corrosion is hard and crystalline and has to be ground before it is suitable for paint.

Numerous processes have been devised for the manufacture of white lead to replace the Dutch process, but, although some of them are in operation, the Dutch process lead possesses such distinctive physical qualities, that it has held supremacy in the market until the present time.

There are a number of processes in which the first operation is the conversion of metallic lead into litharge. The Clichy or French process is of this character. Litharge readily dissolves in a solution of lead acetate and from the solution the excess of lead is immediately precipitated by carbon dioxide, as basic carbonate, leaving the neutral acetate which is used to dissolve an additional quantity of litharge. But there is more or less loss of acetate from each operation.

The Matthews process has been introduced in England at Hebburn-on-Tyne. The lead is oxidized to litharge in cupel furnaces. The litharge is fed into a rotary digester, where it meets a solution of litharge in acetic acid, containing 7 to 7.5 per cent. of glycerin. The litharge is dissolved and the solution run into tanks, then passed through a filter press into storage tanks. The white lead is precipitated by a current of CO₂. The glycerin is said to make a whiter and more uniform product. Without glycerin, the color is likely to be yellowish.

The Dale & Milner process has also been used to some extent in England. When litharge is mixed with a solution of common salt, there is a reaction accompanied with considerable evolution of heat and the mass swells greatly in bulk. When the reaction is complete there remains an insoluble, basic lead chloride held in suspension in an alkaline liquor. By passing CO₂ through the mixture a precipitate of basic carbonate of lead is thrown down, having the same chemical composition as ordinary white lead. The operation requires only two days.

The Orr & James process deserves more than passing mention because it has been so carefully worked out. So far as I am aware, the product is not used in this country, although efforts have been made to introduce it here. It has been in operation in Belgium since 1894, and more recently at Lille, France. The process of manufacture is in brief as follows: Lead is melted in a special furnace and oxidized to litharge, which is ground in water to an impalpable powder. The fine oxide is carried, suspended in the water, to settling tanks. From these it is conveyed to carbonators. In these it is acted upon by dilute acetic acid and at the same time a current of CO₂ converts it into carbonate. The charge is then run out, after about 2½ hours, and the acid is neutralized with carbonate of soda. The product is then washed, passed into filter presses and the cakes of white lead are dried.

The operations are carried out with specially devised machinery and the whole process is completed in about five days. The cost is said to be very much less than by the Dutch process, but until it is in operation in the United States one cannot make exact comparisons.

The Bunn process has recently been introduced and is now operated by the Bunn White Lead Company, of Peoria, Ill. Pure lead is melted in pots holding 6,000 to 8,000 lbs. and run through sieves into a large vat of water. This reduces the lead to small, irregular particles. It is then put into a powerful reducer which reduces it to a powder so fine that it is readily suspended in water. The water, holding the lead in suspension, is drawn into large cylinders called oxidizers, and into these air is forced under high pressure, whereby the lead becomes oxidized to litharge. The litharge is then subjected to the action of CO₂ under pressure, in carbonizing cylinders, whereby white lead is produced, which is then dried. The product is of good color and is said to have good covering power. It will be observed that no acetic or other acid is used. The product does not require to be ground and the manufacturers claim that its good qualities are partly due to its extremely fine subdivision. Microscopical examination has not confirmed this view, for the particles are larger and coarser than those of ordinary Dutch process lead.

Before describing the new process of Mr. J. W. Bailey, which has not been hitherto publicly presented, it is well to inquire to what par-

ticular feature of the Dutch process the superiority of the product may be attributed. Primarily it is a corrosion process; in other words, metallic lead is superficially acted upon by air, acetic acid vapor and carbon dioxide.

Experience indicates very clearly, that precipitated white lead has not the qualities most valued by painters. Therefore it is fair to presume that any process which requires the solution of the oxide in acetic acid, in the presence of a considerable volume of the solvent solution, yields a product which has more or less the properties of a precipitated white lead. This is not a chemical question, but it relates to the physical character of the product. Experience has shown that the simultaneous action of the acetic acid vapor and the gas on the surface of metallic lead yields the best commercial product. The idea immediately suggests itself, that the Dutch process could be materially hastened and the same physical and chemical product would be obtained, by the simple expedient of spreading out the lead in extremely thin sheets, or by mechanically disintegrating it so that a large superficial area will be exposed to corrosion. Numerous methods have been proposed to accomplish such a result, but mechanical difficulties have been encountered. The rolling out of thousands of tons of lead into thin sheets is manifestly impracticable, even if such sheets could be uniformly corroded. Moreover, it has been found that rolled lead does not corrode so well as cast lead. In the so-called German process, first used at Krems and later at Klagenfurth, Carinthia, sheet lead of $\frac{1}{2}$ in. or less in thickness may be corroded in 15 days, but the residue of uncorroded metal amounts to 20 per cent. The product, however, is said to be excellent.

A number of processes have been invented and patented in which the metal is reduced to a more or less finely divided or granulated form. In this condition it is subjected to the action of gases in presence of acetic acid, in various mechanical contrivances. For example, the granulated lead may be moistened with acetic acid and exposed to carbon dioxide in revolving barrels, as is done at Chicago, Omaha and elsewhere. There are objections, which may be to a considerable extent mechanical, to all such processes, and the product is likely to become more or less discolored by collecting dirt during the operation. When coke is used, as is commonly done, for the production of the CO₂, there is likely to be some contamination of the product with sulphur. The well-known English "BB" white lead is said to be made by the oxidation and solution of finely divided lead in tanks and the precipitation of the lead as basic carbonate. I understand that the Matheson lead is made in a similar manner.

The problem of exposing a large superficial area of lead to corrosion has been solved, however, by Mr. J. W. Bailey. His process is now in operation in Jersey City. The new process is carried out as follows: Lead is melted in a receptacle, elevated about 10 ft. above the floor of the factory. It is then run into a second, smaller pot, over an independent fire, the object of which is to keep the metal at the right temperature. At the bottom of this is a short horizontal nozzle about 2½ in. in diameter, terminating in a thin plate of steel which is perforated with about 150 or 200 minute holes, 0.009 to 0.010 in. in diameter. The melted lead is forced by the hydrostatic pressure of its own mass through the minute perforations and becomes immediately solidified as it falls through the air into fine, metallic fibers about 0.01 in. in diameter. So rapidly does it cool that one can hold the hand in the stream while the fibers form in festoons around it. As the fiber collects on an iron plate a man with a fork transfers it to trays, which are made of wood, with slats at the bottom, allowing free circulation through them. The size in use is 5 ft. by 3 ft. by 5 in. deep. Each tray is charged with 50 to 100 lbs. of fiber. The trays are made so that they can be piled one above the other, making stacks through which carbon dioxide gas can make its way from the bottom.

As the trays are filled with the lead fiber they are immersed momentarily, one by one, in a tank containing an 8 per cent. solution of (No. 26) acetic acid, after which they are allowed to drain a few moments on an inclined platform and immediately piled in stacks of 15 or 20, over openings in the floor on either side of the factory.

Connected with these openings is the apparatus for generating carbon dioxide. At the factory, as at present arranged, the CO₂ is produced by the burning of kerosene oil in ordinary house lamps of the largest size. This is doubtless the most expensive source of gas, but the factory was originally designed to demonstrate the cost of manufacture as well as the nature of the product, and it was found that the simplest way to produce the gas at a known cost was in the manner described, because the consumption of oil could thus be readily determined. The capacity of the factory is 3 tons of white lead a day. The gas is used moist, and it is important that the humidity should be maintained within proper limits. The temperature of the stacks is carefully regulated, at about 100° F., and the process is absolutely under control, as any tray may be examined at any time.

The corrosion is complete in three days. It seems not improbable that this time will be reduced, as at present there are no means of controlling the escape of the gas at the top, and weather conditions materially influence the rapidity of action. It is somewhat remarkable that the corrosion is nearly uniform throughout each stack. At the end of three days the contents of the trays are thrown into a tank of water, where complete disintegration immediately takes place. The white lead resulting is in such a fine and uniform condition of subdivision that no grinding is necessary. From the disintegrating tank the creamy mass is passed into the interior of a cylindrical screening apparatus covered with wire cloth having 120 meshes to a linear inch, revolving partly submerged in water. The pure white lead passes through the meshes, leaving a residue of unchanged lead with a small proportion of white lead attached. This residue amounts to only about 8 per cent. of the lead used, and being in a finely ground condition, it is admirably suited for the manufacture of lead acetate, or for other purposes. In this process there is no residue to be remelted, but all the lead used is converted into commercial products. It remains now to thoroughly wash the white lead and dry it for the market.

As for the character of the product, it is claimed that it is equal in color and body to the famous Cremnitz white lead.

*Paper read before Section C of the American Association for the Advancement of Science, at the New York meeting, June, 1900.

It is not clear why precipitated carbonate is inferior for paint to the corroded product. The statement is made that all precipitated white lead is crystalline in character and the crystals are translucent, therefore such a product does not possess the opacity of corroded lead. If this is true, it partly explains the superiority of the Bailey corroded lead, for it is known that slow corrosion tends to produce a crystalline product. In the Bailey process it has been observed that if the process is allowed to proceed slowly, or if it continued too long, the product becomes crystalline and is inferior to the best.

The author has undertaken a careful microscopical examination of the different kinds of commercial white lead, but this part of the work is incomplete. It may be said that the size of the particles in the Bailey process lead is smaller and more uniform than in "Atlantic" lead, which is produced by the Dutch process.

The total cost of manufacture of white lead by this process is less than \$5 per ton of dry product. The cost by the Dutch process, even under favorable conditions, cannot be less than \$18. The interest charges on material bound up for periods of three to five months in the stacks is a serious tax on the old process of manufacture. The cost of a plant is insignificant as compared with other processes.

The normal basic carbonate of lead is $Pb(OH)_2PbCO_3$, which has the composition PbO 83.52, CO_2 16.48. White lead manufactured by the Dutch process is not of constant composition, but the variation allowed for good paint is not large. Not all of the product is first quality white

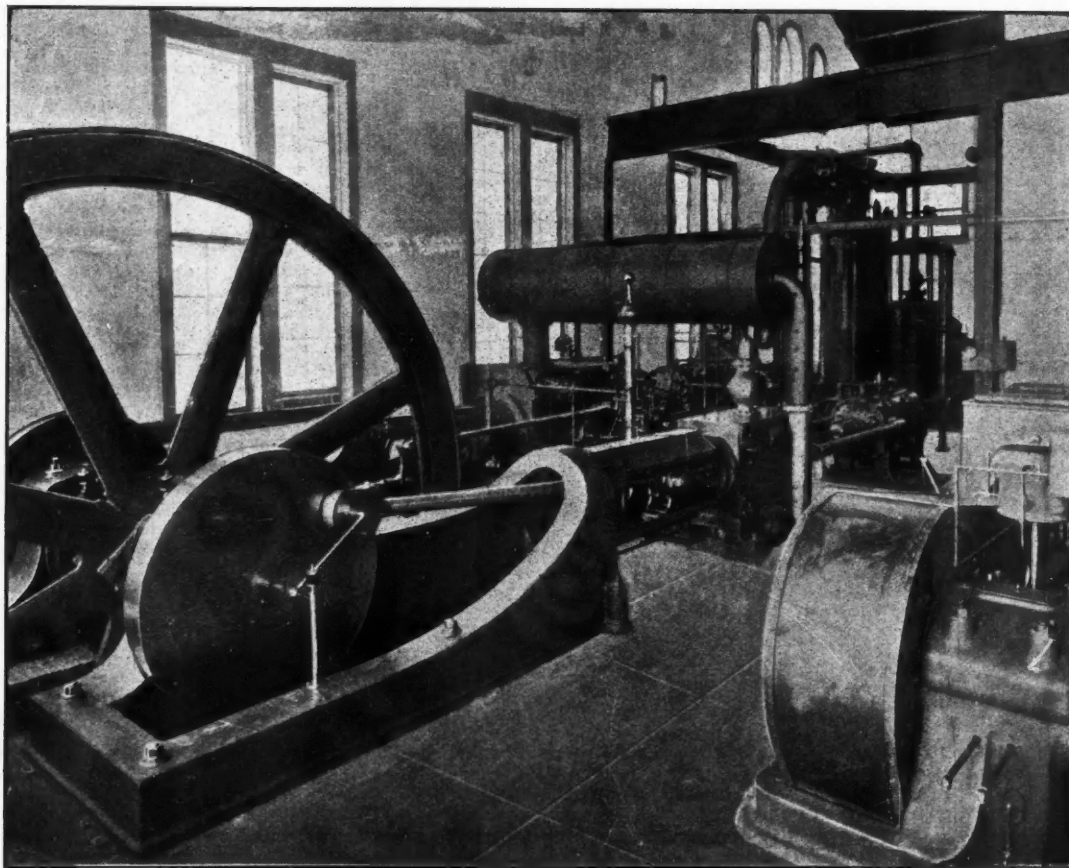
THE CRIPPLE CREEK DISTRICT, COLORADO. VI.—THE POWER PLANTS.

Written for the Engineering and Mining Journal by Dr. S. R. Hazlehurst.

La Bella Mill, Water and Power Company has a large plant at Goldfield for the purpose of supplying electric power and lights and compressed air to the various points in the district, and for that purpose has stretched its wires and pipes in every direction, thus becoming an important factor in the economy of mining in the camp. A substantial brick building is well equipped with the motive power for the above purposes, and its plant of machinery is the finest in the district.

There is a battery of six Babcock & Wilcox boilers, each of which is capable of developing 550 H. P. with natural draft. Coal is put into overhead steel bins direct from the cars. From the bins it is fed into traveling hoppers, made by the C. W. Hunt Company, of New York. Here it is weighed and then fed to automatic stokers of the Babcock & Wilcox chain-grate type; the ashes being dumped at the rear of the furnace into an ash hopper, which delivers them directly into cars for removal. A self-sustaining steel stack is used, which is 9 ft. in diameter and 200 ft. high.

There are three cross-compound condensing engines, each of 1,000 H. P., manufactured by McIntosh, Seymour & Company, Auburn, N. Y.



COMPRESSOR, LA BELLA MILL, GOLDFIELD, COLORADO.

lead. The best white lead contains from about 2 to 2.3 per cent. of water. But chemical composition does not tell the whole story for commercial purposes.

Two analyses of the Bailey white lead, by Ricketts & Banks of New York and Mariner & Hoskins of Chicago gave respectively the following results:

	R. & B.	M. & H.
CO	11.76	11.71
PbO	85.90	85.98
Water	2.34	2.49

By special modifications of the process the product can be materially changed in composition and physical properties.

A NEW APPLICATION OF ASBESTOS.—A "special dispatch" from New Castle, Pa., to the "New York Herald" says: "What is said to be a new species of fowl is being raised by Lineas Perkins, constable and chicken fancier, of this city. His hennery is in the Sixth Ward, near an asbestos works, and the chickens feed on asbestos siftings. Persons who have bought eggs from Perkins recently complained that they did not cook well. Fire had little effect on them. When eaten raw they seemed to be all right, but they could not be boiled or fried properly. Some young chicks were hatched from the eggs, and instead of having feathers the new brood is growing a covering of down that resembles asbestos. They are unlike anything ever seen by the chicken fancier, according to Perkins. Hundreds of persons have seen the chickens, and while Perkins is pleased at the excitement his fowls are creating there is no market for fireproof eggs. He says he will ship some of the chicks to the Smithsonian Institution, at Washington, for an explanation of the effects of the mineral wool feed."

They are so arranged that either the high or low pressure cylinder can be operated independently. The electrical generators are mounted directly on the engine shaft between the high and low pressure cylinders, each having a capacity of 6,600 volts. They were built by the General Electric Company, at Schenectady, N. Y. There are also two multipolar exciters, built by the same company.

Compressed air is supplied by a compound condensing Corliss engine, built by the E. P. Allis Company, of Milwaukee, which is capable of running 35 Ingersoll-Sergeant 3-in. drills.

A traveling crane, with a lifting capacity of 40,000 lbs., is installed in the engine room. It was manufactured by the Brown Hoisting and Conveying Machine Company, of Cleveland. A condenser and pumps are used, which were manufactured by the H. R. Worthington Company, of Brooklyn; a cooling tower is used to provide the condenser with a supply of cold water. An economizer, manufactured by the Fuel Economizer Company, of Matteawan, N. Y., is used for the feed water supplied to the boilers.

Compressed air is supplied to customers throughout the district by means of a 4-in. iron pipe at a pressure of 110 lbs., contracts being made on the basis of a 3-in. drill for so many shifts per month. Power is supplied to various hoisting plants by General Electric motors of from 5 to 30 H. P., as desired, while lights are also distributed to the towns and mines wherever desired, the company always being willing to extend its facilities as the need arises.

The Colorado Electric Power Company has its plant at Canon City whence the current is transmitted by means of No. 3 Brown & Sharp gauge wire to two power houses from which it is distributed throughout the Cripple Creek District. The Mershon glass insulators are used for the support of the 20,000-volt wires. At Canon City the electric current

is generated by means of Westinghouse alternating current dynamos adapted for operating the Tesla three-phase system, which is the means of transmission used. Each machine has its armature mounted on the shaft of a Hamilton-Corliss cross-compound condensing engine, and the combination of engine and dynamo forms a generating unit. There are three of these units at present, one of which is kept as a reserve in case of an emergency.

For exciting the fields of the main dynamos there are two Kodak exciters, each of which is capable of exciting all three of the main dynamos; one of these is always held in reserve for an emergency. The engines are all supplied from a battery of Heine water-tube boilers, and the exhaust from the engines driving the main dynamos is taken care of in a surface condenser; while that from the pumps and exciter engines passes through feed-water heaters. The condensers, air and circulating pumps and feed pumps are all of the Snow make. The electric and steam machinery is capable of supplying 2,000 H. P.

The current from the generators is transformed from 500 volts to 20,000 volts, at which pressure it is delivered to the transmission line to the Cripple Creek District, 24 miles away. At the sub-stations in the district the current is again transformed from 20,000 volts back to 500 volts, at which pressure it is delivered to the mines for any use to which steam power can be put, such as hoisting, operating mills, crushers, samplers, pumping, running air compressors, blowers and fans, lighting, etc.

The company owns and rents 63 electric hoists, in addition to those owned by the mines and individuals. These are of different sizes from 5 H. P. to 30 H. P., and are all of the induction type, manufactured by the Westinghouse and General Electric Companies. The transformers at the sub-stations are of the Westinghouse, General Electric and Stanley types; they reduce the voltage to 6,000, at which pressure it is transmitted to the District Railroad, where it is again reduced by step-down transformers from 6,000 to 365 volts, at which voltage it passes to the 200 kilowatts General Electric rotary transformers, where it is transformed to 500 volts direct current for use on the railroad system. The Wurts lightning arresters are used.

Cost of Ore Treatment.—In the treatment of the ores of the Cripple Creek District, the following figures can be quoted, but they are always liable to change either on account of competition between the various mills or else because of contracts being entered into; the figures embrace the mills situated in Florence or Colorado City.

Freight rates to the mills per ton are: \$1.50 for ore running from $\frac{3}{4}$ up to 1 oz.; \$1.75 for ore running from 1 up to $1\frac{1}{4}$ oz.; \$2 for ore running from $1\frac{1}{4}$ up to $1\frac{1}{2}$ oz.; \$2.50 for ore running from $1\frac{1}{2}$ up to 2 oz.; \$3 for ore running from 2 up to 3 oz.

The mill rates for treatment are as follows, per ton: \$50 for ore running up to $\frac{3}{4}$ oz.; \$6.50 for ore running from $\frac{3}{4}$ up to 1 oz.; \$7.25 for ore running from 1 up to $1\frac{1}{4}$ oz.; \$8 for ore running from $1\frac{1}{4}$ up to $1\frac{1}{2}$ oz.; \$8.50 for ore running from $1\frac{1}{2}$ up to 2 oz.; \$9 for ore running from 2 up to 3 oz.; \$9.50 for ore running over 3 oz.

Freight rates to the smelters in Pueblo and Denver per ton are: \$3 up to a valuation of \$30; 4 at a valuation of from \$30 to \$100; \$9 at a valuation of from \$100 to \$150; \$6 at a valuation of from \$150 to \$200; \$7 at a valuation of from \$200 to \$300; 7, plus 1 per cent. of valuation, at over \$300.

The smelter charges are \$9 straight. The sampler charges in the district are from 75c. to \$1 per ton. To this has to be added the cost for hauling, which, of course, varies according to the distance.

The cost of mining supplies is as follows: Powder: Hercules, $\frac{7}{8}$ per 100 lbs., \$14.25; gelatine, $\frac{7}{8}$ per 100 lbs., \$14.75; caps, 3 x per 1,000, \$6.50; fuse per case of 6,000 ft., German, \$28, and American, \$24; Canton steel by the 1,000 lbs., 9c. per lb.; Verona picks, 5 lbs., \$1.50; native lumber costs \$22.50; cribbing, 3 by 8 or 4 by 8, \$25; coal costs from \$6 to \$7. All wages in the District are adjusted on the eight-hour basis, for which a miner receives \$3, all wages being paid on the 10th day of each month.

A feature of mining in Cripple Creek has been the system of leasing, which prevailed at once time to a very large extent, and its effect was seen in the multiplication of prospect holes and the great increase in the amount of development work which was done.

A great many of the mine-owners were unable, through lack of money to work their properties, so they executed leases which called for royalties ranging all the way from 15 to 50 per cent., according to the quality of the ore. In some cases a bond would be given with the lease, and an enormous amount of development work was done in this way; but the pocketty condition of many of the veins, the broken continuity of the same, and the general conditions of the ground which baffled the most experienced miners, proved in the long run disastrous to the majority of the lessors. This trouble was enhanced by the disposition of the owners on the slightest provocation in the shape of a new strike anywhere within a mile radius of their property, to stand out for royalties which meant a certain loss to any one attempting to pay them.

The system certainly did a vast amount of good in the early days, by leading to a thorough prospecting of the district, but it has now come to be understood that the nature of the deposits calls for depth in operating, and it is necessary to be ready to meet this additional expense; so the day of the leaser is drawing toward a close.

The great day, and the crowning triumph of Cripple Creek, will come when some process is discovered by means of which the millions of tons of low-grade ore, now on the dumps, can be treated at a profit. Then every one of the dumps, both small and great, will teem with life.

In concluding this series of articles descriptive of the Cripple Creek Mining District it will not be amiss to recognize the men of Colorado Springs, who, by their energy and pluck, by their untiring and honorable exertions, have done so much to promote the welfare of the camp. Taking up the subject as they did, advancing in an untiring way, and many of them lacking previous training in this particular work, they used all of their exertions to attract Eastern capital, bringing to aid them all of their best efforts and influence to interest their friends and to induce them to send their money out for investment.

The Mining Exchange, which was started in Colorado Springs, has seen many imitators rise and fall, but it has always maintained the

highest standard for probity and honesty; it has dealt out to delinquents justice with an unsparring hand, and it has established a record which is a credit to its members! The task has been an onerous one, but it has been carried through in a manner which reflects great credit upon the managers who have formed its policy and the members who have supported them in their decisions.

Such a conclusion cannot be arrived at in the history of many mining exchanges, so it stands out in bright contrast to the many failures, and Cripple Creek owes a debt of gratitude to the Colorado Springs Mining Stock Exchange.

ABSTRACTS OF OFFICIAL REPORTS.

Grand Central Mining Company, Mexico.

This company's statement for the year ending August 31st, 1900, shows receipts from bullion of £140,946; interest, etc., £1,651; total, £142,597. The working expenses were £93,106; general expenses, £2,144; total, £95,250, leaving a net balance of £47,347 for the year.

The directors' report says: To the net profit of £47,347 shown must be added a sum of £31,359 carried forward from the previous year, making a total of £78,706, out of which £16,368 has been spent on improvements to the property, properly chargeable to capital expenditure, but which, following the method adopted in previous years, with the approval of shareholders, has been written off revenue account, leaving a balance of £62,338. Out of this sum a dividend of 2s. per share was paid on December 30th, 1899, amounting to £25,000 and £1,225 for income tax, leaving a balance of £36,112, to be carried forward, as against £31,459 brought forward.

"The development of the mine during the past year has been greatly retarded owing to the failure of the manufacturers to deliver the new air compressor, without which it has been impossible to contend with the difficulties of ventilation and prevailing high temperature in the lower workings. Due to this fact, but little prospecting and exploratory work has been possible, and in consequence the mill has overtaken the ore reserves, which now stand at about 42,000 tons. Now that the air compressor has been erected and is at work, a policy of active development work upon the whole of the property has been begun, and it is hoped that the requirements of the mill will be met without trenching further upon the available reserves of ore. The directors have not thought it prudent to make any distribution of the profits of the mine since January 1st, and there is, therefore, a substantial sum of cash in hand to pay for development work. The reduction plant for the treatment of tailings has now been in operation for five months. Experiments, charges of treatment, etc., have considerably delayed the profit expected from its workings, but your directors are pleased to report that over 8,000 tons a month are now being treated, out of the 9,000 for which the plant was designed, showing a recovery for the month of September of \$37,582 at a cost of \$21,436."

THE PASSIVE STATE OF METALS.

The veteran scientist Hittorf, of Muenster, Westphalia, has for some years been occupied in the study of the peculiar features which the so-called active and passive states of certain metals, notably iron and chromium, offer; and, as a result, he laid a new communication on this problem before the summer meeting of the German Electro-Chemical Society in Zurich. But we cannot say that he has quite probed the problem to its root, says "Engineering." If iron is dipped into concentrated nitric acid it turns passive and behaves like platinum, which nitric acid cannot attack. If the acid is diluted below the density 1.3 the iron is at once dissolved. On the authority of Schoenbein and of Faraday this passivity has been ascribed to the formation of a film of oxide on the surface of the metal, which oxide is not soluble in strong nitric acid. No positive proof for the existence of this oxide film has ever been given, and Hittorf, who has not been able to discover any traces of it, is convinced that it does not exist. Ordinary iron and chromium, cleaned with emery, if necessary, are in the active state, and are attacked by many acids and salts. But if they are made the anode, in a galvanic couple, containing certain of their own salts, as electrolyte and a platinum cathode, then, without applying any external current, the electromotive force, which in the case of the active chromium is 1.8 volt, at once goes down to almost nothing and the metal proves to be in the passive state. The passive state slowly disappears again, and as the oxides to which the passivity might be due are insoluble in the respective salt solutions, Hittorf concludes that there is no such film. If an external current is applied to a chromium anode the metal dissolves as acid, or in its highest state of oxidation. Iron does not, as a rule, form ferric acid under these circumstances; but it does in concentrated solutions or fusions of caustic alkalies, a subject to which F. Haber referred more fully at the same meeting; oxygen is generated at the iron anode. The slow return from the passive to the active state can be hastened by making the metal a cathode; but the introduction of free hydrogen is useless. Nickel and cobalt behave similarly to a much smaller degree; however, the phenomena can only be observed when special precautions are taken. When iron is tinted by heating it under access of air it is covered with a fine film of oxide, which is not soluble in concentrated nitric acid, but soluble in diluted nitric acid. This is Schoenbein's experiment. But this iron (or chromium) is, according to Hittorf, not in the passive state, as had been assumed, for in a galvanic cell it gives almost the same high electromotive force as a fresh, untarnished iron surface. Hence, Hittorf argues, the small electromotive force which passive iron shows cannot be due to a still finer, inappreciable oxide film. Yet one cannot help feeling that we have in these phenomena to deal with polarization effects. It need not come to a real oxidation; a condensed film of gas on the metallic surface, an approach of oxygen, as Principal O. Lodge put it in his address on "The Volta Contact Force," would suffice to explain its peculiarities; and we rather wonder that attention has not been drawn to this possible explanation.

BIBLIOGRAPHY RELATING TO TEXAS GEOLOGY.

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

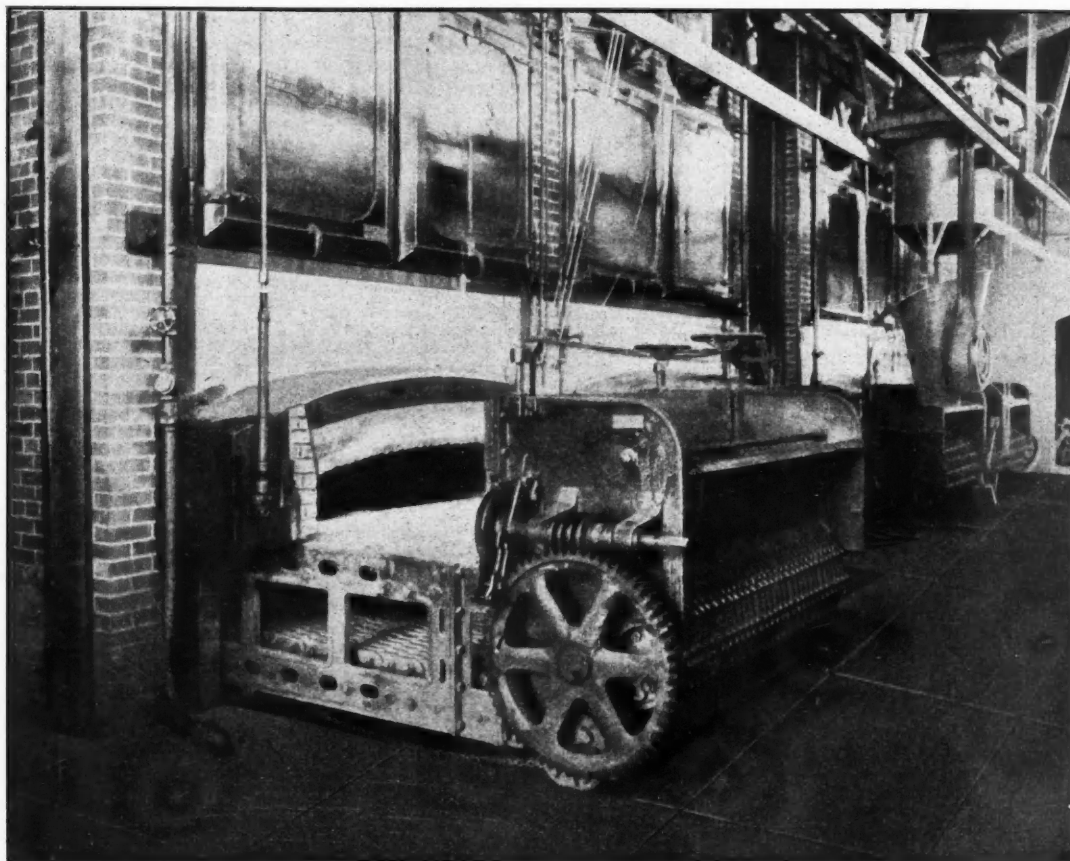
The recent publication of Volume III. of the "Transactions" of the Texas Academy of Science calls attention anew to the great mass of information that has been gathered in respect to the geology, mineralogy, topography, etc., of this State. By far the greater part of the work of 308 pages is taken up with a continuation of the "Bibliography" which was published as "Bulletin No. 45" of the United States Geological Survey in 1887 by R. T. Hill. This continuation is by Dr. Frederic W. Simonds, professor of geology in the University of Texas, and brings the matter down to the close of 1896, as Mr. Hill's list terminated with January 1st, 1886. During the decade ending with January 1st, 1896, a great deal was done in and for Texas, and in reviewing and listing the publications Dr. Simonds has rendered a notable service to the State and to contemporaneous scientific literature. The work has been well and thoroughly done. How great the task was may be known when it is stated that the list of authors quoted comprises 123 names, that there are 466 citations and that the copious index embraces 928 separate

items. All the articles of any note that have appeared in technical publications are here given, many of them with considerable abstracts. Mr. Hill states in his "Bibliography" that Alexander von Humboldt collected such information as was available 100 years ago for the "Voyage au Regions Equinoxiales du Nouveau Continent," by A. de Humboldt et A. Bonpland, but he regards the work of William Kennedy, 1841, as the most trustworthy and the most complete compilation of the early Spanish, French and Mexican authorities. Kennedy was sent out by the British Government in 1838 upon a diplomatic mission to the young Republic of Texas. In 1841 he published a book in London with the title, "Texas; the Rise, Progress and Prospects of the Republic of Texas;" and Mr. Hill says of it that it gives the first carefully compiled topographic map of the region, that it presents the first geologic description of the country, and that it has the first intelligent description of the natural history of the country. The readers of "Philip Nolan and His Friends" may be interested in knowing that the first description of Texas that was printed in the United States was given in a small book written by Nolan about 1798, some three years before he was shot by the Spaniards for returning to Texas. A county in Texas bears his name. The first geological survey of Texas was authorized by the Legislature, February 10th, 1858, and Dr. Benjamin F. Shumard was appointed State Geologist by Governor Runnels in August of the same year. Dr. Shumard continued in office for 26 months and was removed by Governor Houston, but the survey does not appear to have come to an end until 1867, although for several years but little was done. A second survey was authorized August 13th, 1870, and early in 1873 Governor Davis appointed John W. Glenn State Geologist. He held the office for not quite a year and then resigned, whereupon Governor Coke appointed Dr. S. B. Buckley to the position, but vetoed the appropriation at the end of the fiscal year and the second survey came to an end in 1874.

continued in office until 1893. During his administration a great deal was done for the geology, mineralogy, topography, etc., of the State and the reports are full of interesting and valuable information. The work of the United States Geological Survey in Texas has been productive of excellent results, and Mr. R. T. Hill has devoted several years of his life almost exclusively to this part of the country and has published a great deal on the subject. Probably no one man knows as much about the subject as he does, and certainly no one knows any more. Born in Tennessee, he has given the best years of his life to the elucidation of the problems in Texas, both as professor in the University and as a geologist attached to the United States Survey.

An attempt is now to be made by the University of Texas to revive the survey with special reference to economic and industrial features. Questions of purely geological interest will not be entered upon as fully as those of an economic character.

The land area of Texas covers more than 262,000 square miles, and within this scope of territory there are coal, lignite, salt, sulphur, oil, gas, gypsum, greensands and marl, almost all varieties of building stones, and ores of iron, copper, gold, silver, lead and quicksilver. A great deal is known, but there remains a great deal still to know and



AUTOMATIC STOKERS, LA BELLA MINE, GOLDFIELD, COLORADO.

work of the kind contemplated can employ the best efforts of the best men for years to come.

PERMITS TO PROSPECT FOR PETROLEUM.—The Russian Government has decided to permit private persons to explore for petroleum on the estate of Chatma, in the Siguakh Region of the Tiflis District, and has authorized the Minister of Agriculture and State Domains to grant permission when necessary, and, after arriving at an understanding with the Governor-General of the Caucasus, to explore and produce petroleum on other Government estates in the Caucasus.

ELECTRIC DREDGES IN VICTORIA.—The first electrically-driven plant for the recovery of gold by the dredging process has recently been introduced into Victoria, Australia. The plant consists of a 500-kilowatt two-phase alternator from which current is transmitted about ½ mile overhead to two barges, each barge containing a 50 H. P. motor driving a gravel pump, and a 150 H. P. motor for the hydraulic pumps. The motors drive the pumps through friction clutches and a rope drive.

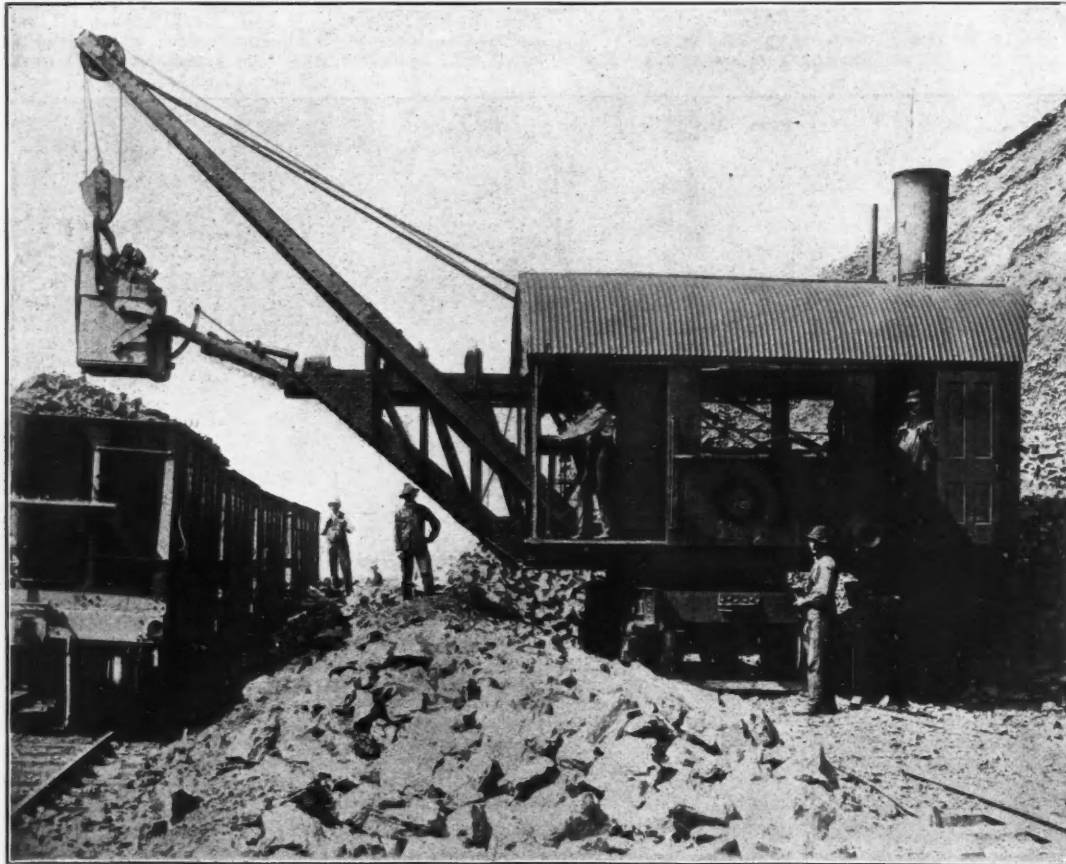
ALUMINUM FOR COOKING VESSELS.—A great deal has been said in the past about the suitability of aluminum for the construction of cooking utensils; but a further advantage accruing from the use of the new metal, of which nothing has hitherto been written, depends on the greater economy in fuel it permits. A report on this branch of the subject has lately been published by the superintendent of the Madras Lunatic Asylum, where aluminum cooking utensils, procured from the Madras School of Arts, have been adopted. The asylum usually contains some 400 odd inmates, and their food is cooked by means of wood fuel. During six months of the last year before the introduction of aluminum vessels, the monthly weight of wood burnt per head in cooking was 34 lbs.; after the change consumption fell to 19 lbs.—a reduction of nearly 45 per cent. In view of the present cost of coal the London "Engineer" thinks that this is a matter worth attention.

The first "Report of Progress" of the survey under Mr. E. T. Dumble appeared in 1888. He was appointed State Geologist in 1888 and con-

THE ATLAS PIPE WRENCH.

The accompanying illustration shows a novel pipe wrench, made by the Atlas Pipe Wrench Company, of New York and San Francisco. This wrench is strongly made and will stand hard usage. It is made of special steel, drop forged, and every wrench is tested. The movable jaw is not a screw jaw. The makers claim that there are no nuts on this device to jam, and there are no delicate parts to get out of order or break. The movable jaw, as shown in the illustration, is in slot 3, which is for the larger sizes of pipe. By shifting to slot 2 the wrench can be used for medium size pipe, and shifted to slot 1 it can be used on smaller sizes. For example, on the 18-in. wrench slot 1 is for 1/4 to 1-in. pipe, slot 2 for 1 1/4 to 1 1/2-in. pipe, and slot 3 for 2-in. pipe. A set of four wrenches will handle all sizes from 1/8-in. wire to 4 1/2-in. pipe. In the illustration herewith, which is an 18-in. wrench in operation on a 2-in. pipe, it will be seen that the teeth grip the pipe at an angle,

to be operated to advantage where the layer of gravel is of slight thickness. Another feature of advantage in placer mining work is the operation of the shovel in a complete circle, enabling the machine to excavate in front or at either side and to deliver the excavated material in the rear of the machine or at any other point desired. The truck frame is constructed of heavy I-beams and channels and is provided with draw-heads at each end. A draw-bar is furnished of proper length to enable ordinary cars to be attached to the shovel for switching purposes. The wheels are of the heaviest railroad type 33 in. in diameter, with axles forged from open-hearth steel. The journal boxes are supplied with heavy phosphor-bronze bearings and vulcanized rubber buffers to absorb shock and vibration. The jackstays are of cast steel, swiveled to brackets on the truck frame so as to swing close to the truck when not in use, and are held in position by diagonal braces when working. The center pin, about which the superstructure of the machine rotates, is of cast steel, bored and fitted with bronze bushings for



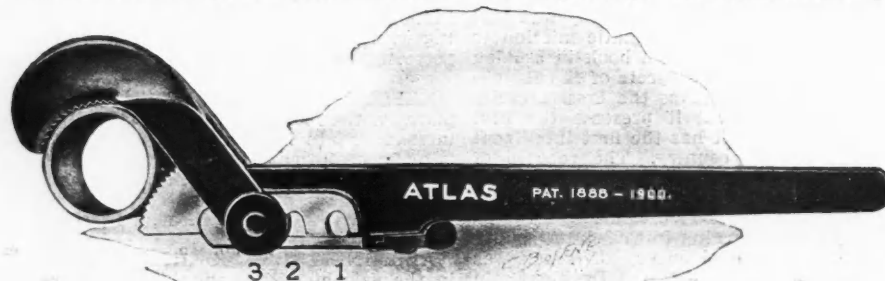
THE THEW SINGLE TRUCK SHOVEL.

and the gripping point is far in advance of the handle, showing that in screwing a pipe the operator is pushing it ahead, and that the tool does not dig into the pipe and drag it, thereby preventing crushing the pipe. The makers also claim that this wrench will not lock on a pipe. It is supplied in four sizes, 10, 18, 24 and 36-in. lengths, when open.

THE THEW SINGLE TRUCK SHOVEL.

We illustrate herewith type No. 3 single truck shovel as made by the Thew Automatic Shovel Company, of Lorain, Ohio, and used in placer mining work at points in the West and in foreign countries. The feat-

ures of this shovel that render it particularly fitted for placer work are many, a few being that a horizontal movement can be imparted to the scoop as a result of the method of suspension from a trolley moving horizontally. This enables the scoop to clean up the surface of the bed-rock upon which gold-bearing gravel is usually found; an important feature, since the bulk of the gold is apt to settle to the sub-stratum of rock or hardpan. Further, this horizontal motion enables the machine



THE ATLAS PIPE WRENCH.

braced, is hinged at the lower end to the bed-plate and supported at the upper end by adjustable guy rods, anchored to the rear end of turntable structure. The house surmounting the turntable has a steel frame with corrugated iron roof, and is provided with necessary doors and shutters.

The hoisting, swinging and trolley motions of the machine are each operated by independent, double, slide-valve, reversing engines, of mod-

ern design, compact in size and of sufficient power to secure the most satisfactory results for the various operations. The engines are operated in either direction, at any desired speed, by reversing steam valves suitably connected to the operating levers at the front end of the shovel. Each engine is at rest excepting when required to perform the particular duties for which it is intended, thus avoiding waste of steam and unnecessary wear of parts when the machine is not in action. The hoisting and swinging engines are fastened to the bed-plate and suitably geared to secure ample power and proper speed for the different movements. The trolley engine is attached to the trolley outrigger, and is geared to the drum shaft, actuating the motion of the trolley. All pinions on engine shafts are located between bearings. The boiler is of the vertical multi-tubular type, of ample capacity, designed for 100 lbs. working steam pressure, and is subject to a rigid inspection and test. The stack is hinged to permit lowering or removal for transportation. All valves and gauges are of approved design. A steel water tank of size sufficient to carry water for 5 hours continuous operation, a coal bunker, having fuel capacity for 10 hours work, ash-pan and all necessary fire tools, oil cans and wrenches are furnished with the machine.

The hoisting drum is controlled by a belt friction of simple but powerful design. This friction being set, the speed of the hoisting engine may be varied to suit the conditions and the material that is being handled. The hoisting drum is also provided with an efficient brake operated by a foot lever on the front platform. The suspended load may be securely held in position or lowered by either the brake or the friction at the pleasure of the operator. The travel mechanism is operated from the hoisting drum shaft by means of a positive clutch. When this clutch is disengaged all gears connected with the travel mechanism are at rest. The swinging mechanism consists of a horizontal and a vertical shaft with bevel gears and a spur pinion meshing into the circular racking gear on the truck frame. The trolley motion is controlled by wire cables operating over sheaves of ample size and actuated by drums geared to the independent trolley engine. A winch head for use in shifting cars is attached to the side of the turntable and is actuated by a pinion sliding on its shaft into mesh with hoisting gear.

The dipper is constructed of steel plate and forgings, with hardened chisel-pointed teeth. The door is so hung as to close at the least angle below the horizontal line. The dipper arm is adjustable vertically and hinged to the trolley. It is so made as to permit the dipper to turn or swivel when striking obstructions, thereby relieving the parts of undue strains. The trolley is rigidly constructed of shapes and steel castings, and is provided with suitable means of adjustment for wear of sliding parts. The wire cables are of extra pliable, soft plow steel, of a size to afford ample strength and the greatest durability. In general, the machine is built to do hard work and to stand the hard usage which a steam shovel usually receives.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

(We shall be pleased to receive specimens of ores and minerals, and to describe and classify them, as far as possible. We shall be pleased to receive descriptions of minerals and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like, will be reproduced whenever possible. Specimens should be of moderate size and should be sent prepaid. We cannot undertake to return them. If analyses are wanted we will turn specimens over to a competent assayer, should our correspondent instruct us to do so and send the necessary money.—Editor E. & M. J.)

244.—Cuprite.—Some fine specimens of cuprite, red oxide of copper, are being found in the Ludwig Mine, Yerrington, Nevada.

245.—Hubernite.—Gaby, Burton & Doyle, of Osceola, White Pine County, Nevada, are producing good hubernite specimens.

246.—Bornite.—A number of copper claims at Index, Wash., are turning out some beautiful specimens of bornite and chalcopryite, particularly, it is said, the Index Independent Mine.

247.—Volcanic Tuff.—The gray rock containing copper stains is apparently of volcanic origin and is an agglomerate or tuff. The fact that such rock is found at depth of 375 is not surprising, nor does such rock indicate anything concerning ore values. It may contain rich vein, it may not. The famous Bassick and other rich mines at Rosita and Silver Cliff, Colo., were in rocks of similar origin. The "pebbles" are rounded fragments of igneous rock. As to the formation of volcanic tuffs and agglomerates, consult any good work on volcanoes or any textbook of geology.

248.—Vein Minerals.—The bits of rock you send show little concerning the probable value of the vein. An analysis is necessary. The rocks are plainly from near the surface; they contain kaolinized feldspar, calcite, hematite and secondary quartz. The rock contains no visible gold or silver and evidently contains no copper. If you are told it is valuable have it analyzed by a competent assayer.

249.—Minerals from New Mexico.—J. R. W.—No. 1 is a complex sulphide ore, undeterminable without analysis. It does not contain more than a trace of nickel. No. 2 is a greenish igneous rock, conveniently classified as a "greenstone." It may be a diabase, but it is too fine grained for determination without microscopic examination. No. 3, the black mineral, is an iron-zinc oxide. No. 4, the yellow mineral, is probably vanadate of lead or vanadinite. No. 5 is apparently a rounded fragment of an oxydized volcanic rock. The red color is due to hematite.

252.—Rhodocrosite.—In the Eagle Mine of Bonanza District, Saguache County, Colo., while straightening the shaft and preparing for making a regular output, the operators encountered a seam of rhodocrosite ore, which, upon being followed, widened out to 7 ft. The ore is of the same general character as that in the main vein, with black sulphurets and wire silver scattered through the mass of rhodocrosite. At a recent meeting of the New York Mineralogical Club Mr. Lazard Cohn

exhibited a magnificent clear and deep-colored crystal of this mineral from another Colorado locality, the Grizzly Bear Mine at Ouray.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.—Editor E. & M. J.)

Sulphide Antimony Ores.—Can you, or any of your readers, inform me where I can obtain a supply of sulphide antimony ores carrying silver and gold?—H. F.

Answer.—In further answer to this question, which appeared in this column August 11th, 1900, Mr. A. D. Arundel, of Silver City, South Dakota, writes that he is working a claim near that place, and is taking out ores of the class called for.

Uranium Ore.—I have discovered a large body of uranium ore of low grade carrying, on an average, about 10 per cent. oxide. It is found in sandstone, and is very easy to work and close to a railroad. I would like to get all the information I can concerning the working of the ore. I think there is some method of concentrating the ore so as to get it sufficiently high grade to ship. Can you give me that information or put me on the track of it?—J. W. W.

Answer.—There is very little information of a special kind relating to uranium ore. There have been notes on the subject in the "Engineering and Mining Journal" from time to time, and some information will be found in "The Mineral Industry," Volume VII. The ore mined and shipped in Colorado and elsewhere in the United States averages about 50 per cent. uranium oxide. Probably some simple experiments will show you whether your ore can be concentrated up to that grade. As there is an over-supply of 50 per cent. ore, it is hardly likely that buyers would care to take a low-grade ore.

Concentrating Silver-Lead Ores.—Will you please consider the following problem in concentration of silver-lead ores: The ore is galena, carrying gray copper, which in turn seems to carry the silver. The gangue matter is heavy spar, or barytes. Analysis shows the ore to run: Silver, 19 oz.; lead, 13.7 per cent.; silica, 43.9; barytes—BaSO₄—23.9. In order to effect separation from the barytes we have found it necessary to grind to 40 mesh. By doing this and concentrating at the rate of 4.25 to 1, we save 99 per cent. of the lead, but the tailings assay 17.50 oz. silver. The gray copper and the barytes seem to pass off together. Our neighbors, who have quartz for gangue matter instead of barytes, have the same difficulty in attempting to save the silver.—W. P. K.

2. In your issue of November 3d, page 524, I note an inquiry from "W. P. K." regarding concentration of silver-lead ores. I have a precisely similar case, viz., tetrahedrite in a gangue of barytes, and recognized the impossibility of wet concentration. Can you suggest through your columns a method for recovering both copper and silver values in such a case?—L. P. C.

Answer.—In further answer to this question, which was published in the "Engineering and Mining Journal" November 3d, the Ore Concentration Syndicate, Limited, of No. 4 Bishopsgate street Wittins, London, E. C., England, sends us the following note:

"We note the query in the Questions and Answers column of your issue of November 3d on the subject of concentrating silver-lead ores. If your correspondent will send us a sample of, say 2 lbs., of the raw ore and an equal quantity of the tailings which he refers to we will be glad to make tests for him, as we believe from experience on similar ores that we can save practically all the gray copper and a large proportion of the silver by means of the Elmore process. In drying the sample of tailings care should be taken to keep the temperature below that of boiling water, so as not to run the risk of oxidizing any of the constituents of the ore. As the separation of various minerals does not depend, in our process, upon their respective specific gravities, we think the particular case under consideration very favorable to our method of treatment."

PATENTS RELATING TO MINING AND METALLURGY.

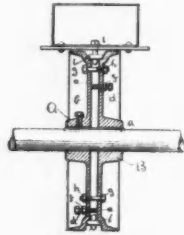
UNITED STATES.

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 20th.

- 661,993. CRUSHING MACHINE. Thomas R. Jordan, New York, N. Y., assignor to the Jordan Gravitation Process Company, of New York. The combination of a tubular spindle, a pan centrally mounted on the spindle and supported on rollers, said pan having an annular recess in its bottom, a false bottom removably seated in the recess having an annular groove for containing mercury, runners or rolls adapted to revolve on said false bottom, spindles on which the runners or rolls are mounted, said spindles being pivoted at one end and guided at the other end, and a vertically-adjustable syphon pipe arranged within the tubular spindle and discharging below the same, said pipe having a number of radial branches extending into the pan at intervals, whereby the depth from which the water and material are withdrawn may be regulated.
- 661,994. APPARATUS FOR CONCENTRATING MINERALS, ETC. Thomas R. Jordan, New York, N. Y., assignor to the Jordan Gravitation Process Company, of New York. A plurality of tubes having inlets toward their lower end for water in controllable quantity, one of the tubes having between its ends an inlet for material, and an adjustable syphon connection affording a passage between the upper portions of certain of the tubes.

- 661,970. CONVEYOR PULLEY. Michael Garland, Bay City, Mich., assignor to the M. Garland Company, same place. In a conveyor pulley comprising a fixed section and a section movable along the shaft toward or from the fixed section; means for adjusting said sections relatively to each other, comprising in combination set bolts

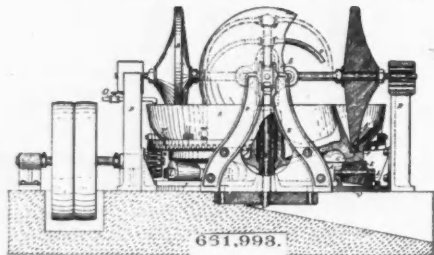


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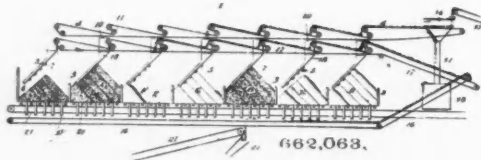
screwed into one section and bearing against the other section, and bolts passing through both sections for clamping said sections in position.

- 661,995. AMALGAMATING APPARATUS. Thomas R. Jordan, New York, N. Y., assignor to the Jordan Gravitation Process Company, New York. The combination with a vertical spindle, and means for rotating the same, of a tube surrounding the spindle having at its upper end a drip cup for oil, a sleeve surrounding the tube and keyed to it and the spindle, said sleeve being formed in separable sections, and a receiving dish and delivery dish fixed to each section.

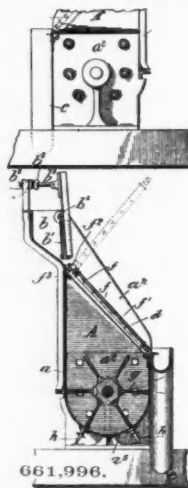
- 661,996. SCREENING APPARATUS. Thomas R. Jordan, New York, N. Y., assignor to the Jordan Gravitation Process Company, of New York. A hopper having an inclined bottom, an inclined screen having its upper end contiguous to the hopper bottom, a regulable gate forming a wall for the hopper, means for adjustably moving the



661,998.



662,063.



661,996.

- gate to allow material and water to discharge from the hopper and distribute or spread over the screen, and a frame of water-jet pipes adjacent to the screen to discharge thereagainst said frame being movable in a vertical plane for the purpose specified.

- 661,997. CONCENTRATING APPARATUS. Thomas R. Jordan, New York, N. Y., assignor to the Jordan Gravitation Process Company, of New York. A concentrating tube having an upper cylindrical chamber and a lower cylindrical chamber of uniform diameter throughout, said chambers being connected by a restricted passage the walls of which gradually taper, a conical valve seat at the restricted passage, a conical valve having a vertically-presented apex, means for adjusting said valve to or from said seat to control the area of water current, an inlet for water below the valve, and an inlet for material and an outlet for gangue in the upper chamber.

- 661,998. CRUSHING MACHINE. Thomas R. Jordan, New York, N. Y., assignor to the Jordan Gravitation Process Company, of New York. In combination with the rotatable pan of a crushing or reducing machine, a syphon pipe having a flexible short leg extending into the pan, means for vertically adjusting the syphon pipe, and separate means for adjusting the short leg whereby through such double adjustment the inlet of the syphon pipe may be positioned at any point in the pan.

- 662,019. MELTING FURNACE. Albert Plat, Paris, France. In a smelting furnace, the combination with a fireplace or chamber, of a crucible chamber located above said fire chamber, passages connecting the fire chamber with the crucible chamber, and a crucible located entirely within the crucible chamber, said crucible being formed with projections on its outer face which fit closely the walls of the crucible chamber and are so arranged that the projections above overhang the spaces between the projections below, whereby said projections act as baffles to cause the flames to take a zigzag course in ascending about the crucible.

- 662,055. BURNER FOR PETROLEUM AND COMPRESSED AIR. Louis Charon and Frederic Manaut, Paris, France. A petroleum burner for engines using heavy petroleum and the like, comprising a body having an oil inlet and an air inlet thereto, a plug supported in the lower portion of said body and provided with oil and air passages and an exterior screw thread, the oil outlets discharging above the screw thread, and the sleeve attached to the body and forming, with the plug and screw thread thereon, a tortuous duct for the flow of air to the oil outlet.

- 662,062. STEAM SUPERHEATER FOR GAS PRODUCERS. Edward J. Duff, Liverpool, England, assignor of one-half to the United Alkali Company, Limited, same place. A superheater for use in connection with gas-producing apparatus, consisting of a vertical chamber provided with an inlet and an outlet for air and steam, and with compartments above and outside the vertical chamber, and provided with manholes; dust boxes below and outside the vertical chamber; pipes passing vertically through the said vertical chamber and communicating in pairs at their upper ends with the said compartments, and communicating at their lower ends through openings in the bottom of the vertical casing, with the dust boxes.

- 662,063. PROCESS OF SAMPLING AVERAGING, MIXING AND STORING MATERIALS IN BULK. Thomas A. Edison, Llewellyn Park, N. J. The process of averaging material in bulk, which consists in forming the material in a deposit composed of a series of layers,

in simultaneously drawing off material from each of the layers of which the deposit is formed, in redistributing the material in a deposit, and in finally withdrawing the material therefrom.

- 662,090. PROCESS OF MANUFACTURING CARBONS FOR ELECTRICAL PURPOSE. Eduard Pohl, Kalk, Germany, assignor, by direct and mesne assignments, to Adolph Schenk, Bergedorf, Germany. The process consists in forming a body of carbon, and enclosing the same in an intimate mixture of carbon particles and carbon-yielding gas under the action of heat, said gas being generated outside of the carbon body.

- 662,143. CALORIMETER. Rolla C. Carpenter, Ithaca, N. Y., assignor to Schaeffer & Eudenberg, New York, N. Y. The combination with a vessel adapted to contain a medium to which heat may be imparted, of a movable combustion chamber within such vessel, provided with stirrers and with means for moving it, whereby circulation may be maintained within said vessel.

- 662,205. COMPOUND FOR PREVENTING BOILER INCrustATIONS. Johannes Smit, Leeuwarden, Netherlands. A composition of matter for coating the inside of steam boilers for the prevention of the formation of incrustations, consisting in a mixture of a consistent fat, train oil and horse fat, with water, liquid creosote, black-lead, zinc-white and lampblack.

- 662,210. DREDGING APPARATUS. Harry R. Wheeler, New York, N. Y. An apparatus, comprising in combination a scow or float, a suction pipe carried by the same, with its lower end in contact with the bottom to be dredged, two vacuum cylinders on the scow or float, branch pipes connecting the suction pipe with said vacuum cylinders, mechanically-operated valves in said branch pipes, a common discharge pipe leading from the scow or float, auxiliary discharge pipes connecting the vacuum cylinders with the common discharge pipe.

- 662,251. PROCESS OF RENDERING COPPER WELDABLE. Howard Cornick, Knoxville, Tenn., administrator of Charles L. Leiby, deceased, assignor to the Leiby Company, same place. The process of rendering copper and alloys thereof weldable and malleable, which consists in placing them in a vessel with a fused compound containing potassium nitrate and a cyanide.

- 662,258. PROCESS OF STORING ACETYLENE GAS. Edward N. Dickerson, New York. The process of preventing explosions and reducing the pressure of acetylene gas, which consists in mingling liquefied acetylene gas in suitable, miscible proportions with a solvent, such as fusel oil, and maintaining the same under a reduced pressure.

- 662,286. ELECTROLYTIC APPARATUS. Emanuel Motz, Jefferson, S. C. In an electrolytic apparatus, the trough or flume having the longitudinal sides provided with terminals for making contact with an anode plate, and the bottom made up of sections, each having on its upper face a flat portion at an angle to the plane of the lower face adapted to receive a metallic plate, a transverse rib at the end of the flat portion, and a concavity on the other side of the rib extending below the plane of the flat portion, each bottom section being provided with a terminal for making contact with the metallic plate.

- 662,288. LINING BRICK OR BLOCK FOR METALLURGICAL FURNACES AND METHOD OF PREPARING SAME. Elwood F. McDowell, Philadelphia, Pa. The mode of preparing blocks or bricks for the linings or internal parts of metallurgical furnaces, consisting in first burning the bricks and then impregnating the same with liquid hydrocarbon.

- 662,292. WHIM. John H. O'Brien, Nasby, S. D. A hoisting apparatus comprising a frame, a drum, a hoisting rope, a sweep detachably engaging the drum, a foot lever controlling the engagement between the sweep and drum, said lever extending to a point adjacent the depending end of the rope, a brake for the drum, a brake rod terminating adjacent to the foot lever, an elbow lever pivoted to the brake rod and fulcrumed on the frame, a dog carried by the lever, and a brake lever for throwing the brake rod.

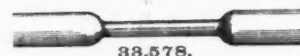
- 662,293. DREDGING APPARATUS. Maurice M. J. O'Connor, Drumshambo, Ireland. A vessel capable of being sunk to the bed of a river or other waterway to be dredged, and of being afterward refloated by inflation, and formed with an open receptacle for dredged material and with a part adapted to direct material being dredged into said receptacle, and means whereby said vessel can, when sunk, be caused to travel over said bed and cause a portion of said bed to enter said receptacle.

- 662,319. APPARATUS FOR BURNING LIQUID FUEL. John Smith, London, England. The combination of a central tube or passage for compressed air, a shallow annular chamber surrounding the outlet thereof, and having an inlet for the liquid fuel, another tube or passage extending from said annular chamber, in line with said air passage, and a vaporizer and spreader, open at its ends and having converging sides joined at the top by bridge pieces, and a narrow, elongated opening between said bridge pieces.

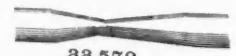
- 662,338. DOUBLE HYDROSULPHITE AND METHOD OF MAKING SAME. Max Bazlen, Ludwigshafen, Germany, assignor to the Badische Anilin und Soda Fabrik, same place. The process for the production of a double hydrosulphite of zinc and a metal of the alkaline earths, which consists in treating zinc hydrosulphite with a salt of a metal of the alkaline earths, washing the separated product with a volatile medium and drying.

- 662,348. TRANSFER TABLE FOR ROLLING MILLS. James W. Bryson and James A. Everts, New Castle, Pa. A pair of horizontal beams, a series of shafts journaled therein, and each carrying a plurality of pulleys, belts passing over the pulleys, said belts being constructed to bear the metal, and end sections hinged to the ends of the table and carrying the end pulleys for the belts.

- Design Patents 33,578 and 33,579. TUBES FOR CONCENTRATING MINERALS. Thomas Rowland Jordan, New York, N. Y., assignor to the



33,578.



33,579.

Jordan Gravitation Company, of New York. Term of patent, 14 years. The designs for tubes for the concentration of minerals, etc., as shown.

GREAT BRITAIN.

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

Week Ending October 27th, 1900.

- 13,771 and 13,771 A of 1899. CHLORINE RECOVERY. R. Naef, New York, U. S. A. Improvements in the ammonia-soda process, by means of which the chlorine is recovered.
- 15,562 of 1899. COAL SCREEN. W. C. Blackett, Durham. Improved form of classifier for coal, of the type consisting of a cylinder with graduated holes, and the coal moved along by a spiral conveyor.
- 20,352 of 1899. STAMP-MILL FEEDER. W. Hosking, Norseman, West Australia. Automatic feeding apparatus for stamp mill.
- 8,376 of 1900. BORING BIT. W. George, Dines, Glamorgan. Improved boring bit for deep boring in coal or shale.
- 14,889 of 1900. ALKALI MAKING. C. W. Roepper, Philadelphia, U. S. A. Method and apparatus for recovering alkali oxides from alkali amalgam, in electrolytic processes for decomposing salt.

PERSONAL.

Mr. Otto Gramm, of Laramie, Wyo., is at Coarse Gold, Cal.

Mr. Reginald W. Truman, a mining man from Kelvin, Ariz., is in San Francisco.

Mr. Oliver La Plant has been elected a director of the Keswick Electric Light Company of Keswick, Cal.

Mr. D. W. Brunton, of Denver, Colo., is at present on the Mesabi Iron Range in Minnesota on professional business.

Mr. J. Milner, late superintendent John A. Logan Mine, Cripple Creek, Colo., has returned there from Nome, Alaska.

Mr. H. J. Mattern, of Los Angeles, Cal., is making tests on copper ore from the Dos Cabezas Mine near Wilcox, Ariz.

Mr. G. Moore, formerly with the Consolidated Kansas City Smelting and Refining Company, Salt Lake, Utah, goes to California.

Mr. C. E. Potter, of Los Angeles, Cal., and Mr. F. M. Nicholson, of Philadelphia, Pa., recently visited Cedros Island, Mexico.

Mr. J. F. Humphreys, president of the Britannia Mining Company, of Howe Sound, B. C., has returned to Vancouver, B. C., from the East.

Mr. William A. Farish, the mining expert of Denver, Colo., is examining Gilpin County mining property in the interest of Easterners.

Mr. L. M. Terry, representing the Guggenheim Brothers Smelter, was in Salisbury, N. C., and the mines in that district on November 27th.

Mr. J. F. McClellan, a Colorado mining engineer, is in California examining a gold property in Madeira County in the interests of Eastern men.

Mr. J. C. West, of Birmingham, Ala., representing the Sullivan Drill Company, of Chicago, has been visiting the mines of North Carolina.

Mr. Percy S. Craddock, a steel manufacturer of Wakefield, Eng., has been on a visit to the copper mines about Houghton and Calumet, Mich.

Mr. W. A. Watson, who resigned the position of superintendent of the Economic Gold Extraction Company's mill at Victor, Colo., is on a trip to Cuba.

Mr. R. V. Norris has been appointed chief engineer of the coal and water companies controlled by the Pennsylvania Railroad, vice Mr. J. H. Bowden, deceased.

Mr. C. C. Sharp, of Corning, O., has resigned his position as superintendent of the Sunday Creek Coal Company and will be succeeded by Mr. Roan, of New Straitsville, O.

Messrs. P. C. Gibbons, C. E. Gable and J. T. Keil, of Pittsburg, Pa., stockholders in the Pennsylvania-Central Gold Mining Company, operating in Gilpin County, Colo., visited the property recently.

Dr. Richard G. G. Moldenke, secretary of the American Foundrymen's Association, announces that, as it has become necessary for him to spend the greater part of his time in New York, his address will be in that city.

Mr. M. M. O'Shaughnessy, consulting engineer, has returned to San Francisco, Cal., from the Hawaiian Islands. Mr. O'Shaughnessy has been consulting engineer for the Mountain Copper Company of Shasta County at Keswick, Cal.

Mr. George E. Price, who has been managing large mining concessions in Surinam, S. America, for a Dutch company, is returning home, going to London first. Mr. Price says Surinam is no country for American miners to consider.

Mr. J. O'Neill, who has been in charge of mining operations of the Anaconda, St. Lawrence, Never Sweat and Parrot mines at Butte, Mont., has been appointed general superintendent of all the Amalgamated Company's mines.

Secretary and General Manager H. W. Hoyt, of the Gates Iron Works, was elected president of the National Founders' Association at its recent convention in New York. The association represents a capitalization of more than \$200,000,000.

Mr. Otto H. Tittman, who has been assistant superintendent of the United States Coast and Geodetic Survey, has been appointed superintendent to succeed Dr. Henry S. Pritchett, now president of the Massachusetts Institute of Technology.

Dr. Clement Le Neve Foster, inspector of metalliferous mines for North Wales, has been awarded the William Bolitho Gold Medal by the Council of the Royal Geographical Society of Cornwall, in recognition of his distinction as a

mineralogist, and of the many services rendered to the society.

Messrs. T. Hoy Soy, Chief of the Bureau of Mines, and Kimpachi Kames, a mining expert, representing the Japanese Government, were in Hazleton, Pa., recently investigating the methods employed in the mining and preparing of anthracite coal. They visited most of the collieries in that region, and continued their tour through the other anthracite districts.

Mr. J. B. Hastings has given up his position of resident director and consulting engineer of the Center Star and War Eagle Mines at Rossland, and of the St. Eugene mines at Moyie, B. C., as well as the management of the Gooderham-Blackstock Syndicate of Toronto. Mr. Hastings is now on a visit to southeastern Nevada and after January 1st will occupy offices in New York City.

Mr. Joseph McDonald, one of the prominent mining men of Montana, has been appointed manager of the Alaska-Treadwell Mine on Douglas Island, Alaska. He has resigned his position as manager of the Helena-Frisco Mine in the Coeur d'Alenes, Idaho, and will leave about December 15th for Alaska, accompanied by his family and by Mr. Harry Sterling, who has been his bookkeeper at Gem and will hold the same position at the Treadwell. Mr. McDonald has been manager of the Helena-Frisco almost from the time of its purchase by Helena men. He had a large block of stock in the old company and bought more when the Frisco Consolidated Mining Company was organized. He still retains his interest there. Mr. Gus Ehrenberg, Mr. McDonald's assistant at the Helena-Frisco, will succeed him there as manager, temporarily, if not permanently.

OBITUARY.

Mr. Jacob Fegley, aged 70 years, died suddenly at Pottstown, Pa., recently of heart disease. Mr. Fegley was for years treasurer of the Warwick Iron Company, and was an official in many other enterprises at Pottstown. He organized the Hope Iron Company, serving as its president until its plant was sold to the Pottstown Iron Company. He was born near Bechtelsville and was one of the principal owners of the Warwick mines there.

Mr. James Wood Tyson, 73 years old, president of the Tyson Mining Company and the Elizabeth Copper Mine Company, of South Stratford, Vt., and one of the largest stockholders of the Baltimore Chrome Works, died December 3d at his home in Baltimore, Md. Mr. Tyson was a native of Baltimore and had always resided there. He had been engaged in mining for a number of years and was largely instrumental in opening and developing the copper mines at Bare Hill, Baltimore County. He also developed the chrome mines at Soldiers' Delight, Baltimore County, and the copper mine at Mineral Hill, Carroll County, Md. He founded the Elizabeth Mining Company, of South Stratford, Vt., one of the most important industries in the State. He was also a large stockholder in many other companies. Mr. Tyson was twice married. He is survived by his second wife, 3 sons and 5 daughters.

SOCIETIES AND TECHNICAL SCHOOLS.

American Society of Mechanical Engineers.—At the second session of the annual meeting in New York on December 5th the following officers were elected: President, Samuel T. Wellman, of Cleveland, O.; vice-president, David Townsend, of Philadelphia; Jesse M. Smith, of New York; James M. Dodge, of Philadelphia; Stevenson Taylor, of Hoboken; Arthur M. Waitt, of New York; Ambrose Swasey, of Cleveland; Edgar C. Felton, of Harrisburg, Pa.; R. H. Soule, of New York; John H. Bashear, of Allegheny, Pa.; A. M. Goodale, of Waltham, Mass.; Alfred H. Raynal, of Washington, D. C.; W. F. M. Goss, of Lafayette, Ind.; De Courcy May, of Scranton, Pa.; and D. S. Jacobus, of Hoboken; treasurer, William H. Wiley, of New York.

About 500 members of the society from all parts of the country had registered before the evening of December 4th. After the reading of 3 papers on technical subjects the members of the society were shown the workings of automobiles by representatives of various manufacturers.

Gus C. Henning was appointed to represent the society at a council meeting of the International Society for Testing Materials, to be held at Zurich, Switzerland.

Washington Agricultural College and School of Science.—The Department of Mining Engineering is enjoying the most successful year in its history; 34 students are regularly enrolled in mining and metallurgy, and a larger attendance than ever before is expected in the short (12 weeks) course for practical men in mining and assaying, which will begin January 7th. The department equipment includes crushers, a Wilfley concentrating table, cyanide plant, 2-stamp mill, Rand drill and various other machinery; a

3-compartment Hartz jig is now being installed. This machinery is all contained in a 3-story brick building built upon a side hill, in order to facilitate handling of ore by the various methods of concentration. A chlorination plant, a shaft and a reverberatory furnace are soon to be built, when the department will be in a position to make practical tests upon ore sent from the various mining districts of the State or elsewhere. This college, located at Pullman, Wash., in virtue of its endowment by the United States Government with a land grant of 100,000 acres, constitutes the State school of mines. Such important mining centers as the Coeur d'Alenes, in Idaho, the Baker City District, Oregon, and the Republic and Rossland camps in Washington and British Columbia, besides many smaller districts, are easily accessible by students.

INDUSTRIAL NOTES.

It is definitely decided that the Rogers Locomotive Works at Paterson, N. J., are to close indefinitely.

The Schenectady, N. Y., Locomotive Works are preparing 10 freight locomotives for shipment to the Cape Government Railways in South Africa.

The Globe Engineering Works of San Francisco recently secured a contract for furnishing two 300-H. P. Stirling boilers to the Yellow Aster Mining Company, of Randsburg, Cal.

The American Car and Foundry Company of Detroit, Mich., has received an order for 600 cars for the Northern Spain Railway. The cars are to be made in Detroit. The contract has to be filled by March 1st.

The Stilwell-Bierce & Smith-Vaile Company, of Dayton, O., has shipped via direct steamer from New York to the Sao Paulo Light and Power Company at Sao Paulo, Brazil, 14 carloads of water-wheel machinery.

The Pittsburg Coal Company has contracted with Wm. B. Scaife & Sons, Pittsburg, Pa., for a number of new mine buildings of steel frame construction; also a steel frame bridge and trestle to be erected at Bridgeville, Pa.

Heyl & Patterson, of Pittsburg, Pa., builders of conveyors and coal conveying machinery, have installed a complete coal haulage plant at the new works of the Dominion Iron and Steel Company, at Cape Breton, Sydney, Canada.

The American Bridge Company is furnishing from one of its Chicago plants 36 plate girder spans for the Rio Grande Western Railway. The Sterling White Lead Company of New Kensington, Pa., has placed the order for 7 buildings with the American Bridge Company.

As an instance of the foreign trade it is transacting, the B. F. Sturtevant Company, of Boston, reports orders for its blowers, engines and other apparatus aggregating 200 for Japan, 75 for Russia, 40 for Germany, 32 for Canada and 24 for Sweden, besides a number of smaller transactions with Cuba, Mexico, and Central and South America.

J. Geo. Leyner, of Denver, Colo., has shipped a Leyner air compressor and a full complement of new Leyner drills to the Gopher Mining Company of Hill City, S. D., of which W. E. Haskell, of Minneapolis, Minn., is manager; also a 16-drill Leyner compressor and additional Leyner drills to the King of Arizona Company at Mohawk Summit, Ariz.

The J. H. Montgomery Machinery Company, of Denver, Colo., has recently sold ore cars and fittings to W. F. Tyler, Durango, Colo., blacksmith shop complete to C. A. Hull, Debeque, Colo.; consignment Crescent steel to Santa Fe Gold and Copper Mining Company, N. M., and equipment for mill to San Cristobal Gold Mining Company, Lake City, Colo.

German railway interests have contracted with the Richmond, Va., Locomotive Works for 24 improved locomotives. The same manufacturer is executing an order from Finland for 12 locomotives for delivery in March or April. The Government of Finland wanted 36 locomotives in all, but the Richmond Works could not turn them out within the time specified.

The Monterey Steel and Iron Company will, it is said, at an early date complete arrangements for delivering at its works in Monterey, Mex., 1,000 tons of ore from the Carrizal Mountains north of Monterey, 75 miles. The company has under way plans for equipping the iron deposit at the Carrizal Mountain, with the latest improved machinery, cables, tracks, etc.

The Allegheny Steel and Iron Company will erect a steel plant at Brackenridge, Pa. The contract for the buildings has been let to the American Bridge Company. This includes 2 producer sheds, a boiler house, a main building, an open-hearth building and a crane run-way. The main building will be 72 ft. by 252 ft., with 4 lean-tos. The open-hearth building will be 72

ft. by 161 ft., with 3 lean-tos. About 500 tons of steel will be required.

The Homestake Mining Company, of Lead, S. D., has placed an order with the Gates Iron Works, of Chicago, for 10,000 special stamp shoes. This order is probably the largest order for stamp shoes ever placed by one company. The Gates Iron Works has been supplying the Homestake Company with its shoes for several years, having secured the trade under severe competition on the point of quality. The order will require 51 freight cars to transport it.

The Pittsburg Locomotive Works, of Pittsburg, Pa., has booked an order for engines to be shipped to Gualajara, Mexico. There was recently shipped from the Allegheny works of the company an engine to Progreso, Yucatan, Mexico, where the Shultz Bridge and Iron Company, branch of the American Bridge Company, is now completing large warehouses.

Shipments of mining machinery to South Africa have been resumed by Fraser & Chalmers, of Chicago, Ill. Large quantities of machinery which could not be delivered because of the South African war are now going forward, and new orders from the Transvaal are coming in rapidly. The consignments now being made are intended for Delagoa Bay, East London and Port Elizabeth. From these points the machinery is transported to various parts of the interior.

Fire was drawn from the Cohansy Glass Company's window glass tank at Bridgeton, N. J., November 28th, and the tank has gone out of blast for the season, throwing 350 hands out of work. The tank is controlled by the American Window Glass Company and the blowers went on strike last Monday, alleging that the green cutters who are employed there in consequence of the dispute between the blowers' and the cutters' unions have made it impossible for them to get satisfactory settlement with the company.

The Krogh Manufacturing Company, of San Francisco, Cal., has delivered and installed at the Copper King Mine, in Fresno County, Cal., a fine 200-H. P. compound, condensing Corliss engine, the high-pressure cylinder being 12 in. diameter, low-pressure cylinder 20-in. by 36-in. stroke. The condenser is of the latest type Krogh independent air pump and jet condenser. This firm has also furnished to the Copper King, Limited, for the smelter at Seal Bluff Landing, in Contra Costa County, a 250-H. P. condensing Allis Corliss engine, cylinder being 18 in. diameter by 48 in. stroke. Also one Allis vertical jet condenser and air pump.

The Colorado Iron Works, of Denver, Colo., is filling an order from the El Paso branch of the Mine and Smelter Supply Company for a 10-stamp mill to go into Mexico. It recently shipped some Bartlett tables to the Greenwood Mining and Milling Company at Melrose, Mont., and is building a set of high-speed crushing rolls 42 by 6 in. for the Union Iron Works, San Francisco, and a complete crushing plant, including boiler and engine, for Morris & Elsposa, of Pueblo, Colo. Among other orders lately taken are a 48-in. round copper furnace, complete with all equipments, for the Hoffman Smelting and Reduction Company; a set of 12 by 20 rolls for the Salisbury Mill at Idaho Springs, Colo., and 6 double-bowl slag tanks and several water jackets for the Arkansas Smelting Company, at Leadville, Colo.

TRADE CATALOGUES.

The Consolidated Telpherage Company, of New York, continues to issue its series of illustrated pamphlets describing the advantages and merits claimed for its system of small electrical motors as applied to aerial tramways and to tubular dispatch. The system employs motors running on a wire cable, the load being suspended beneath or drawn on a small track. Some figures are given showing results obtained at a couple of New Jersey plants.

Witte gas and gasoline engines are described in an attractive 32-page pamphlet sent free on application by the Witte Iron Works Company, of Kansas City, Mo. The company states that it has given the past 10 years entirely to gas and gasoline engine building and that it makes but one grade of engines and sells them under a guarantee. The company makes single and double drum mine hoists and builds them sectionalized for transportation over rough country.

Catalogue No. 28, a 48-page pamphlet, issued by the Second Hand Supply Company, of Denver, Colo., contains price lists of pipe and pipe fittings and tools, valves, pulleys, pumps, wire rope, engines, blowers, rock drills, ore cars and other mine and mill supplies. The company states that in the past year it has dismantled the Holden Lixiviation Works at Aspen, the Denver White Lead Works, the Beam Process Mill at Empire, Colo., Royal Gorge Mill, Canyon City, Colo., and many other mills, shaft houses, etc., throughout the West.

"Pumping Machinery" is the title of Catalogue No. 10 published by the Risdon Iron Works of San Francisco, Cal. This 118-page pamphlet, like other publications of the company, is well illustrated and contains a great variety of information. The company states that it is prepared to furnish pumps for town supply, irrigating, hydraulic mining, power pumping, mine pumping either by hydraulic, steam, compressed air or electric systems, or by Evans hydraulic elevator; also Cornish engines. Most of the pumps shown are of the crank and fly-wheel pattern. For mine pumping the company states that it advocates the Joseph Moore Hydraulic Pump, which it considers the best all-round mining pump. The illustrations show, among others, a compound condensing pump of 10,000,000 gal. capacity per day, triple expansion, high duty pump capable of elevating 12,000,000 gal. in 24 hours to a height of 390 ft.; Risdon triplex power pumps, the Joseph Moore hydraulic pump and the installation of the Evans hydraulic elevator at the C. & C. shaft, on the Comstock Lode.

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 of any kind, and shall be pleased to furnish them information, catalogues, etc.

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, and have no pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

November Oil Production.—On November 30th there were 494 rigs and 707 wells drilling in the Pennsylvania fields; 98 rigs and 249 wells drilling in the Ohio fields and 38 rigs and 97 wells drilling in the Indiana fields, says the Oil City "Derrick." A total of 1,086 wells completed is reported for the oil fields; the dry holes numbered 225 and the new production figured up 17,959 barrels. As compared with October, there was an all-round decline of 175 completed wells, 2,155 bbls. production and 17 dry holes.

ALASKA.

Douglas Island.

Alaska-Treadwell.—The October report of this mine shows the dropping of 540 stamps on 60,022 tons ore, the outcome of which was \$66,512 in gold and 969 tons sulphurets, valued at \$30,521. The total bullion for the month was \$104,488, showing an average of \$1.74 per ton. The expenses were \$34,000.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Keystone.—A small shaft has started at the extreme south end of this property, at Amador City, to prospect that part of the mine. The shaft is down 50 ft. and will continue to depth as soon as an engine and hoist can be put in. New levels are being run in the old workings, and the 40-stamp mill is worked to its full capacity. Recent developments have opened up a shoot of ore said to be 600 ft. long, most of which is high-grade. A crosscut is being run east from the 900-ft. station to cut the east vein. W. A. Prichard is superintendent.

Mutual.—The crosscut now in 500 ft. has encountered a 4-ft. ledge, which assays from \$3 to \$20 per ton. The main shaft is to be continued several hundred feet. This mine is at Fernando Ranch. S. R. Porter is superintendent.

Oneida.—A 75-H. P. electric motor has been installed at this mine to increase the milling capacity to 50 stamps. Heretofore only 25 stamps have been dropping. C. C. Derby is superintendent.

Zeile.—About 120 men have been employed at the mine and mill in Jackson, but until the repairs in the main shaft have been made, the underground force will be laid off. The mine is still a good producer. W. F. Detert is superintendent.

Butte County.

(From Our Special Correspondent.)

Cherokee.—The Spring Valley Mining Company, operating this hydraulic property at Cherokee, has contracted for 3,500 ft. of 22-in. iron pipe to carry the water to the monitors. The pipe will be made at the mine.

Calaveras County.

(From Our Special Correspondent.)

Demorest.—At this mine near Fourth Crossing, 14 men are at work clearing out the shaft and extending the 300-ft. level.

Gold Cliff.—A slide occurred at this mine at Angels Camp, which destroyed the gallow's frame and engine house. The works are under

a cliff and the recent rains caused the bank to slide. The tunnel mouth is covered and one of the cables broke. No one was injured.

El Dorado County.

(From Our Special Correspondent.)

Vandalia.—This mine about ½ mile northwest from Oro Fino, has been purchased by San Francisco parties, price not given, but supposed to be about \$100,000. This old mine is opened up by a 450-ft. tunnel, which taps the ledge at a depth of 350 ft. The ore body, which is extensive, is said to be high-grade.

Kern County.

(From Our Special Correspondent.)

Yellow Aster Mining and Milling Company.—In the United State Circuit Court, on November 28th, Judge Ross rendered a decision in favor of plaintiffs in the case of the Yellow Aster vs. O. B. Stanton, E. J. Baldwin, R. H. Lloyd, et al. The suit was brought to quiet title to mines in Kern County, and the decision establishes the company's title beyond question.

Nevada County.

(From Our Special Correspondent.)

Coe.—At this mine, 1½ miles east from Nevada City, a new ledge 4 ft. in width has been uncovered on the 500 ft. The rock is said to assay high in gold. The shaft is down 700 ft. and when the 500 and 600-ft. drifts are extended the extent of the ledge will be determined.

Deadwood & Colbert.—These quartz mines, about 2 miles east from Nevada City, in Willow Valley, are reported to have been bonded to Eastern capitalists, who will reopen the mine and continue the development work.

Riverside County.

(From Our Special Correspondent.)

Grand Canyon Mining and Dredging Company.—This company has been organized with the following officers and directors: W. G. Riffenburg, Jno. Wolfskill, R. H. Variel, E. E. Mallette and A. Gassell. The company will develop the Gold Standard and other mines in the vicinity. A 70-H. P. engine, crusher, etc., including a cyanide plant, will be put in.

San Bernardino County.

(From Our Special Correspondent.)

Parker Mining Company.—Sixty-five miles south of the Needles, a large force of men is working on the property of this company. The mine is located 4 miles from the river. Good ore is being stoped out and sent to the mill, which is on the river. The road to the mill is being improved.

Shasta County.

(From Our Special Correspondent.)

Washington.—This mine, 4 miles northwest from French Gulch, comprising 82 acres, is worked by the Blagrove Brothers under lease. About 20 tons per day are milled, which yields from \$4 to \$6 per ton in gold.

Siskiyou County.

(From Our Special Correspondent.)

McKinley.—Twelve tons of ore shipped from this mine, owned by Perkins & Marlin, yielded \$50 per ton. The ore was taken across the ledge from wall to wall. Development work will be continued. The property is located on Sucker Creek in the Humburg District.

Needham.—At this mine, near Hornbrook, a strike has been reported at the end of the 400-ft. tunnel, recently completed. The ledge, which is said to be high-grade, is 18 in. wide. A Michigan company owns the property.

Trinity County.

(From Our Special Correspondent.)

Union Consolidated.—This company is engaged in developing a group of mines on Hickory Creek, and several on Union Creek, the whole comprising 560 acres. The principal work this winter will be done on the Dorleska Claim. M. H. McIlwaine, of Abrams, is superintendent.

Tuolumne County.

(From Our Special Correspondent.)

Standard.—This claim near Soulsbyville is being prospected and at a depth of 20 ft. the ledge was found to be 10 in. wide, rich in free gold. A test run will soon be made at a custom mill to determine the kind of plant to be put in.

COLORADO.

Gilpin County.

(From Our Special Correspondent.)

December finds capital being invested in the county, several properties being reopened and new plants of machinery going up. Shipments of ores are increasing and there is steady employment for good miners.

Bertha Gold Mining and Milling Company.—A new shaft building 20 by 50 ft., with addition 14 by 28 ft., is to be erected on the Colfax, the best of a group of 21 claims, which are cut at a depth of 2,200 ft. by the Newhouse Tunnel. A 22-H. P. gasolene hoist of Fairbanks, Morse & Company's make has been ordered and the company intends carrying on extensive work. M. W. Tanner, Russell Gulch, is manager.

Carr Mine & Colorado Company, Limited.—A 19 by 14-in. cylinder friction hoist made by the Vulcan Iron Works, of Denver, has been installed on Carr Mine, and alterations have been made to shaft building. The shaft is being straightened and retimbered to its depth of 500 ft., and the company intends to sink it 500 ft. S. Hoskin, Central City, is manager.

Caucassone Gold Mining Company.—Sinking goes on and the shaft is 175 ft. deep. The company intends putting up a gasoline hoist. H. E. Corn, Russell Gulch, is manager.

Chicago-Carr.—This property adjoins the Carr on the east and in sinking at 100 ft. a vein of smelting ore carrying good assay values has been opened. The Chicago operators intend putting up a gasoline plant. Bruce M. Myers, Central City, is manager.

Gold Investment Mining Company.—A good strike is reported in sinking the shaft on the West Calhoun, the ore averaging from 8 to 10 in. wide, with high assay values. Prominent Easterners, such as A. E. Stevenson, J. H. Eckels and others are interested. J. F. Tully, Central City, is manager.

Gowers Mines Syndicate, Limited.—This company owns and works the Running Lode, which is turning out splendidly. Good ore is opened and regular shipments are made of milling, concentrating and smelting ores, the latter running over \$100 per ton. Dr. Gower, Denver, is manager.

National.—A gasoline hoist is being installed for Chicago parties, who are going to carry on extensive developments. J. J. Reilly, Central City, is manager.

Unexpected.—Boston men have a lease and bond on this property and are going to erect a shaft building 24 by 50 ft. and install machinery. The property is owned by Hal Saye, of Boulder.

Lake County—Leadville.

(From Our Special Correspondent.)

Leadville Production.—Increased shipments from the Small Hopes and the Home Mining Company, run the output up to 2,500 tons per day, a large part of which is good-grade iron ore.

A. V.—This new shaft, being put down by the Sheedy-Kountz people of Denver, has been supplied with one of the finest surface plants in the camp.

Bohn Mining Company.—The shaft is to be sunk another lift of 50 ft. and the lower levels developed. A vein followed showed assays as high as 600 oz. silver.

Capital Hill Mining Company.—A first-class surface plant and other improvements are to be put in. Meantime, sinking has been suspended.

Cloud City Mining Company.—The new shaft is carrying out one of the most remarkable enterprises in the district, involving an amount of preliminary labor and expense unprecedented. The company has secured 39 acres and 80% of this territory has been paid for; for mineral rights the company pays \$400 a lot. The new shaft is 190 ft. from the new Alice shaft of the Home Mining Company.

Coon Valley.—The recent strike has opened up into a well-defined vein, and ore is being hoisted for shipment.

Coronado Mining Company.—The shaft has been sunk 60 ft. deeper, giving a depth of 660 ft., the deepest shaft in the Leadville Basin. At this point in the Coronado the diamond drill showed an enormous iron shoot and this is to be developed. Drifting on the ore has commenced and shipments are expected to run 150 tons per day after the first of the new year.

Galesburg.—Lessee Gilroy is developing this property at a depth of 200 ft., where some low-grade ore has been struck. He is prospecting for the extension of the Penn or Ballard shoots.

Gambetta.—New lessees have taken hold of this property and started an extensive system of prospecting work.

Home Extension Mining Company.—Ore and water were struck at the same time in the new shaft this week. The water rushed in so fast that the extent of the find cannot be determined until pumps are put in.

Home Mining Company.—Machinery is in place, enabling the company to ship 500 tons of ore daily after January 1st. Sinking the Penrose shaft 50 ft., making the lower level 600 ft., has enabled the company to develop the ore shoot tapped by the diamond drill. Apparently it is an entirely new shoot, showing 40 ft. of carbonate ore averaging 18% lead and from 20 to 100 oz. silver. Ten crosscuts have been run, while for 100 ft. the main drift has been in solid iron ore. It is intended to run the lower drift 700 ft. and crosscut along the line. A conservative estimate shows a net of \$6 a ton on this iron ore alone. Both the Starr and Bon Air are steadily opening up their ore bodies and shipments are regular.

Mab.—The water has receded from the second

level, and after 2 months' idleness shipments are resumed and will be 100 tons daily.

Muldoon.—New lessees are working on this shaft of the Chrysolite Mining Company, which has been idle for many years. They are hoisting iron ore from 130 ft. The water has receded from the old workings and the drifts will be cleaned out and developed.

Nisi Prius Leasing Company.—The new shaft is completed and drifts are being run at the bottom level, 800 ft.

Northern.—New lessees have taken hold and in addition to shipping are doing a large amount of dead work with favorable indications.

Rose-Emmet.—The new shaft is to open up the ore shoot extending from the A. Y. & Minnie. Three properties around the new shaft are developing, a good ore body.

Vivian.—The strike in this Rock Hill property has developed into a rich carbonate ore shoot. It shows a blanket vein 8 ft. thick carrying 30% lead and 11 oz. silver. The ore was found at a depth of 350 ft. The company is also shipping from a large iron body at the 340-ft. level.

Mineral County.

Commodore.—This company is installing an 18-drill Rand compressor at Creede. It is a cross-compound, with steam and air cylinders 24 by 14 in. each.

San Juan County.

(From Our Special Correspondent.)

Challenge-Union.—The breast is in 5 ft. of copper sulphide, with low values in gold and silver. The tunnel is in 390 ft. and is being driven by Dr. N. C. Potts, of Silverton, under bond and lease.

Cliff Dweller.—This property in Arrastra Basin, operated by Malchas Brothers, shows a 3-ft. body of fair-grade gold ore in the 300-ft. tunnel. The vein proper measures 18 ft. between walls.

Delaware Mining Company.—This company is developing some of its properties on Boulder Mountain, chiefly in the Ranchman cross-cut.

Emma.—Regular shipments have been made of high-grade ore all summer. Three shafts, 1 of 40 ft. and 2 of 30 ft. depth, have been sunk from the upper tunnel, all of which are in solid galena.

Emma Tunnel.—Adolph Zang, of Denver, is driving this big bore, which is now in 850 ft. and will go considerably further. Several high-grade veins have been cut and adjacent property is being rapidly secured.

Empire Consolidated Mining Company.—The output is about 80 tons per day, which is concentrated at the mill 4 into 1. Immense bodies of ore are in sight.

Queen City.—This Silverton claim is under bond to A. S. Kennedy et al. and preparations are being made to work all winter.

Red Mountain District.—The Alexander is being worked under lease by McLeod Brothers. The Newman and Saratoga Group has started and is being developed by a small force; the St. Paul is working 10 men and has 5 car-loads of ore awaiting shipment; a 4-ft. vein of good ore has been cut in the Ironsides in the new cross-cut at its intersection with the lead.

Sunsite.—A cross-cut being driven by 2 shifts to intersect the vein is now in over 200 ft. A high-grade streak opened in the upper workings is sought.

Syndicate Gold Mining Company.—This Silverton property is worked by Chas. Wisebecker, of New York, one of the owners, under lease. He will continue development all winter with a considerable force.

Teresa.—Theodore Dick has men working on a cross-cut for the gold quartz vein on this claim near Silverton. The bore is in 150 ft.

Unity Tunnel.—Several new buildings are under construction and will be finished shortly. The buildings are designed to accommodate 135 men.

Teller County—Cripple Creek.

(From Our Special Correspondent.)

Cripple Creek Output.—The total output from the Cripple Creek District for October was as follows: 8,633 tons of smelting ore, valued at \$604,310, and 34,278 tons of milling ore, valued at \$856,950, making a total of 42,911 tons, valued at \$1,461,260.

Acacia Gold Mining Company.—The directors of this company met in Colorado Springs on November 19th and declared the regular quarterly dividend of 1c. per share, amounting to \$15,000, to be paid December 15th. The sampler returns on the last carload of ore were 13.07 oz. gold to the ton. This ore was from the Wrockloff lease and netted \$5,337.

Carrie S. Gold Mining Company.—A syndicate is being formed to rescue the property of this company, which was sold some time ago for a debt of \$4,500 before December 28th. The syndicate will be composed of some of the largest stockholders, who will form a new company to

take up the indebtedness and act as creditor to the old company.

Colonial Dames Gold Mining Company.—The directors of this company have granted a lease to Robertson Brothers on the south end of the Dames group of claims on Galena Hill, near the recent strike on the Sunshine. The lease is for 8 months and 20% royalty is called for. There are 4 sets of lessees at work on the different properties.

Doctor.—This mine has been closed down temporarily on account of bad air. It is expected that operations will begin again in a few days.

Ida May Gold Mining Company.—The stockholders met on November 28th, and voted to increase the capitalization of the company from 500,000 shares to 1,000,000 shares in order to secure funds to pursue work. It was also reported that an offer had been made for Mountain Girl Claim, and if the offer is accepted it will not be necessary to place the new issue of stock on the market.

Independence Consolidated Gold Mining Company.—It seems that litigation is not at an end, as a suit will probably be filed soon to revoke the deal whereby the company obtained possession of the Independence Town and Mine company, and the Wilson Creek Company. The Secretary of the Interior has denied the application of the Wilson Creek Company for a patent on the Minnie Bell Lode.

John A. Logan and American Eagles.—These properties on Bull Hill, belonging to W. S. Stratton have been temporarily closed on account of a breakage in the water pipe. Everything will be running in a few days.

Kimberly Gold Mining Company.—At the annual meeting on November 26th, directors were elected as follows: George Bernard, president; Phil. S. Delaney, vice-president; S. S. Bernard, secretary and treasurer; J. M. Jordan, assistant secretary and treasurer; T. C. Delaney and J. W. Mahoney. The report of the president and general manager shows the condition of the property about as follows: Block 1 has a shaft 350 ft. deep. At the 330-ft. point what is known as the El Paso vein has been drifted on, also an east drift 94 ft., showing the Tillery Vein, about 18 in. wide, of a value of \$50 per ton. Block 2 has a shaft 350 ft. deep. From the 300-ft. level a drift was run 95 ft. on the El Paso Vein, from which pay ore was taken the entire distance; from the same level a south drift was run from which a 20-ft. winze was sunk, showing about 2 ft. of \$50 ore. From the 350-ft. level a drift was run 85 ft., showing some pay mineral. Block 3 has a shaft 240 ft. deep. The last work was at the 190-ft. level, where a crosscut was run 55 ft., showing the Tillery Vein, from which some good ore has been shipped. Block 4 has a shaft 225 ft. deep. From the 170-ft. level a crosscut was run 55 ft., disclosing the Tillery vein, on which a drift was run 50 ft. and a winze sunk 18 ft., showing 2 to 3 in. of high-grade sylvanite. At this same level a 90-ft. drift has been run south on the vein from which several thousand dollars' worth of pay ore has been shipped.

The report concludes that from the different developments the company has at least 500 ft. of the El Paso Vein and nearly 1,000 ft. of the Tillery Vein.

Little Puck Gold Mining Company.—This company has transferred its interest in the St. Thomas Claim on Beacon Hill for a consideration of 600,000 shares in a new company called the St. Thomas Gold Mining Company. This claim is its only property.

Mollie McGuire.—W. S. Stratton has purchased this claim, which lies near his group, for \$8,000.

Orphan Bell Mining and Milling Company.—This company has filed suit in the District Court to have a transfer of certain property to the Arrow Gold Mining Company 18 months ago, set aside, claiming that there was a fraudulent conspiracy between former officers of the Orphan Bell Company and other parties to defraud and to profit by selling said property for a sum far less than its actual market value. The sale was for \$210,000, while the plaintiff claims the market value to have been \$400,000.

Portland Gold Mining Company.—An action is begun by Margaret Ahern, Catherine Dougherty et al. against this company, claiming that Jas. Parker and Frank Caley, who had a bond and lease on the Black Diamond Lode on Battle Mountain, had contracted with Eugene Dougherty to work for them on the claim, for which work he was to receive 1/2 interest in the bond and lease. Dougherty was killed in the shaft and soon after Parker and Caley sold out to the Portland Company. The Black Diamond comprises a valuable 10 acres of the company's holdings. The plaintiff asks for a 1-12 interest in the Black Diamond Lode and an accounting of \$2,000,000 worth of ore shipped from the claim.

Stratton's Independence.—John Hayes Hammond arrived on November 20th to take charge. Mr. Hammond stated that the depression in the price of shares was due to the fact that the mine had been worked too hard to maintain a large

dividend rate. The 4th level of the mine has never been stoped out to any extent and contains some of the richest ore ever found in the mine. The management expects to cut the ore body at the 900-ft. level in a few days.

IDAHO.

Boise County.

I. X. L.—This mill at Pearl is of 40-ton capacity per day and uses Bartlett tables. The building is 30 by 40, and is so located that the ore is dumped direct from the mouth of the tunnel into the chute that runs directly to the rolls without handling. The engine is 30-H.-P., with a 40-H. P. boiler. The mill is expected to be ready for turning out concentrates by January 1st. Most of the machinery is on the ground, while the remainder will arrive within a short time.

Custer County.

Clayton Mining and Smelting Company.—Manager Lawrence Greene, of this company, closed down the furnace on November 10th, when it had on hand and in transit 1,700,000 lbs. of high-grade lead-silver bullion, making the most successful run in the history of the plant. The plant has a capacity of 6 tons a day, and has been run for about 100 days each year during the summer months, since 1894, during which period it has turned out near \$1,000,000 worth of bullion.

Yankee Fork.—This group of claims, owned by J. McFadden, of Ogden, is reported bonded by Chas. N. Thayer and associates, of Boston, Mass., for \$100,000.

Idaho County.

Homestake.—This mine and the mill at Neal are closed for the winter. Manager Balbach is to spend the winter months at his home in Omaha, Neb. The Homestake is, as always, with a large body of excellent ore, and it will begin next season's operations with a greater reserve and larger output than ever before.

Lemhi County.

Queen of the Hills.—This property at Salmon City has been bonded to New York capitalists by Dr. P. A. H. Franklin of the Blackbird mining syndicate, which has controlled the property. The New York capitalists will take immediate possession. The option will expire November 1st, 1901, and by that time the new operators are to enlarge the present mill, and to cross-cut a number of veins, in addition to sinking the present 250-ft. shaft.

Owyhee County.

De Lamar Mining Company.—The October report of Manager D. B. Huntley states that during the month 4,282 tons of ore were treated, which assayed \$9.01 gold and \$1.17 in silver. The tailings assayed \$1.78 gold and 62c. silver. The total estimated income is \$39,027 and the expenses \$33,696, leaving an estimated profit of \$5,331.

Trade Dollar Mining Company.—The power plant of this company, some miles from Silver City, is progressing. One of the turbines is being installed and 3 others are expected to arrive soon. The electric generators are supplied by the Westinghouse Electric and Manufacturing Company of Pittsburg, Pa. More than half of the poles of the transmission line are up and the wire strung. The first generator is expected to start early in January. The concrete work of the dam is completed and the power house nearly erected. The plant is expected to give 12,000 H. P. Over 7,000,000 ft. of lumber and 5,000 bbls. of cement have been used. All supplies are hauled from Mora on the Oregon Short Line, 16 miles away.

MICHIGAN.

Copper—Houghton County.

Calumet & Hecla.—This company is installing a conveying belt in the Calumet Mill to convey the mass copper from the mill to the rock shoot outside the building. The belt, which is said to be the largest single piece of its kind ever brought to the upper peninsula, is 960 ft. long and about 24 in. wide. Should the arrangement prove satisfactory in the Calumet Mill, a similar one will be installed in the Hecla Mill, which adjoins the other. The new plan will do away with the old method of handling and carrying the rock outside the mill by means of wagons and wheelbarrows.

(From Our Special Correspondent.)

Atlantic.—This mine's November output, exclusive of its mass copper, was 265 tons of mineral.

Baltic.—As a result of a series of experiments timber may be entirely discarded in constructing the crib work for the concrete foundations for the heads of the new stamp mill. The iron blocks below the mortar will be extra-heavy to take up the jar.

Calumet & Hecla.—The work of installing 6 lines of 5-in. pipe at Whiting Shaft is approaching completion. Air for the drills is now piped along the surface to the mouth of the shaft, but when the present work is completed it will be obtained through the old workings.

Franklin.—The lode recently found at the Quincy has been struck 260 ft. in at a crosscut west from the 19th level of No. 3 shaft at the old Franklin. As soon as the Quincy strike became known to the management work was started.

Oneco.—Work at this mine, south of the Calumet & Hecla, comprising the old Hungarian and adjoining lands, has stopped for the winter. John C. Watson, Charles G. Sengfest, Wm. F. Fitzgerald, Geo. N. Towle and Wesley Clark are the directors.

Tamarack.—A winze is being sunk in the bottom of No. 4 shaft, North Tamarack. A 14-in. tile pipe is being laid about ½ mile to a dam back of the mine location. This will supply water to the condenser at No. 5 shaft.

Wolverine.—This mine's November product was 249 tons and 1,400 lbs. of mineral.

Copper—Keweenaw County.

(From Our Special Correspondent.)

Mohawk.—This mine has just made a shipment of 60 tons of Mohawkite to smelters at Swansea, Wales.

Copper—Ontonagon County.

Belt.—Capt. W. A. Dunn, who had a hand in floating the Baltic Company, has taken an option on this property, comprising 2,000 acres of land, including the old Great Western and Bohemian locations near Greenland. On what is known as the Butler Lode considerable development was done and some mass and barrel copper taken out. The property was worked by an English company. The equipment includes a mill with 3 heads of Ball stamps, 40 washing machines, 2 slime tables, a large pump 14 by 24 in., and boilers and engines. The Knowlton shaft is equipped with 2 large hoisting plants and one small one. The Butler shaft is provided with a small hoist and rock house, with 2 Blake crushers, 32-drill compressor, 7 Rand drills, engines and boilers. A railroad with sufficient rolling stock connects the mine and mill.

(From Our Special Correspondent.)

Mass Consolidated.—Stirling water tube boilers are being installed at the engine house adjoining the stamp mill.

Iron—Gogebic Range.

West Colby.—A new lens of good ore 10 ft. thick is reported struck in this mine at Bessemer, adjoining the Colby.

MINNESOTA.

(From Our Special Correspondent.)

The several iron ore roads appeared before the State railway and warehouse commission last week for a date for the hearing on the question of freight rates. They wanted a hearing to begin after they had been given sufficient time to prepare, but the commission set the hearing for December 3d. It will be little more than a farce, as the roads have not had time to prepare and the commission is determined to make a ruling that shall have an effect on a subsequent commission. The present commission goes out of office December 31st, and is succeeded by another under which the rates on ore that can be affected by the present hearing will take effect. It is a matter of time to judicially determine the equity of rates, especially under the Minnesota supreme court's ruling as to the value of a railway, and it will be absolutely impossible for the board to determine in several months the actual condition. To make the matter still more peculiar, there has been no demand on the part of any shipper, so far as known, for any hearing or any reduction, the board acting on its own volition.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Adams Iron Company.—This mine has closed with an output from 5 shafts of 775,000 tons. This is the first year Adams has been an entirely underground property, an open pit to the east of the shafts having furnished a considerable tonnage in 1898 and 1899. The mine is underground henceforward. Its record this year is the best of any underground mine in Minnesota.

Fayal Iron Company.—This company has stopped shipments with a total of a trifle over 1,200,000 gross tons for the season, the largest shipment in one season ever made by any mining company in the world. It is 7,000 tons a day for every day of the shipping season. Fayal has 3 shafts and a pit, and the shafts work all winter. The shipments would have been larger had not rains filled the pit and No. 3 underground working with water. They were not free in 6 weeks. This happened when No. 1 and 2 shafts had shipped their stockpiles and the burden of keeping up the output could not be shifted. In the winter of 1894-5 the first shovel of dirt was lifted to make a mine of Fayal. It will in 1901 make a larger shipment. It has been employing during the season about 800 men besides the 400 to 500 men for the stripping firm engaged in enlarging its open pit. A brick machine shop, over 200 ft. long, and filled with the best tools, is the chief addition to the equipment this year.

Spruce Mining Company.—This mine has closed its first year of shipments with a total of 110,000 tons. It was in November, 1899, that the first earth was turned on the location. In the year since then the mine has been made a larger shipper, without detriment to its future. Two shafts have been sunk, substantial buildings erected and the best machinery put in. It is in shape to mine 350,000 tons next year. It is a producer of high-grade Bessemer ore, and has a reserve of 7,000,000 tons or more.

White Iron Company.—The new owners will reopen the 2 test shafts sunk the past summer by the Minnesota Iron Company and sink 2 more. One of the Minnesota shafts stopped at 94 ft., of which about 70 ft. were in good soft ore, though not so high-grade as had been expected from drill samples. The mine will be opened underground and if a large enough amount of ore is found will be stripped for steam shovel mining. A number of dwellings, etc., will be put up at once, as there are no accommodations near Mesaba Station.

Near the White the Minnesota Iron Company and the Oliver Iron Mining Company have crews at work drilling and exploring for ore.

Wyoming.—The lease for this property has been filed to H. Roberts, of Duluth, on a royalty of 20c. and a ground rent of \$10,000 per year, meaning a minimum of 50,000 tons. The shaft is into ore. The Wyoming Company is supposed to be largely the property of one A. E. Humphries, who was a Mesabi Range boomer in 1892, though his name does not appear in the list of officers. The lease is for the northerly 40 acres of the village site of Virginia. The ore lies between Commodore on the east and Saunroy on the northwest, and is reported better than the latter.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The market was stronger last week than for some weeks, and several offers of \$29.50 per ton were made for ore assaying above 60%. About 75 tons of the Brookfield Zinc Mining Company's ore at Joplin brought \$28.50 and the bulk of the Joplin ore and all of the Oronogo ore sold for \$28 per ton, and the balance of the district ore ranged from that price down to \$14 per ton for the silicate at Aurora. At the end of the week, the buyer for one of the big Kansas gas smelters bought the Boston-Loy Zinc Company's ore at Stotts City for \$30.75 per ton on assay, the ore averaging 62% and over. It is believed that \$30 will be paid for several lots next week, as all the big smelting concerns have been buying very little high-grade ore for several weeks. Lead was steady at last week's price, \$23 per 1,000 lbs. The shipments were much smaller than last week on account of the inability of the railroads to furnish cars and the lay-off of loaders and freight crews during Thanksgiving; so next week's shipments will probably show a large increase. Following is the turn-in by camps of the Joplin district for the week ending December 1st:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	2,227,330	485,650	\$41,795
Galena-Empire	1,355,370	142,140	19,533
Cartersville	1,533,760	378,910	27,119
Webb City	216,280	61,290	4,094
Cave Springs	162,900	8,120	2,505
Oronogo	702,700	36,660	10,156
Aurora	765,790	17,090	9,283
Belleville	287,680	.....	4,090
South Jackson	237,960	17,530	3,553
Duenweg	121,280	5,740	1,466
Carthage	115,000	.....	1,610
Neck City	132,500	.....	1,855
Carl Junction	64,240	.....	835
Alba	48,690	.....	632
Springfield	44,000	.....	616
Ozark .....	.....	87,500	2,012
Stotts City	181,880	.....	2,512
Wentworth	40,620	.....	406
Granby	338,080	14,900	3,900
Spring City	70,500	23,130	1,397
Spurgeon	149,710	97,650	3,893
Total for district.....	8,796,290	1,376,310	\$142,576
Total, 48 weeks.....	447,683,250	53,618,330	\$7,383,908

During the corresponding week last year, top grade zinc ore sold at \$32.50 per ton and lead at \$27 per 1,000 lbs. The lead sales were less than last week by 181,520 lbs., the zinc sales greater by 3,425,960 lbs., and the value greater by \$64,050. For the corresponding 48 weeks last year the lead sales were less than this year by 9,083,488 lbs., the zinc sales greater by 24,100,930 lbs., and the value greater by \$2,730,027. As compared with the previous week, the sales were less by 1,787,200 lbs. of zinc and 156,480 lbs. of lead and the value was less by \$23,901.

Boston-Springfield.—Beidelman & Brown have purchased the Fairmount lease and will spend \$5,000 in development. The lease comprises 5 acres and a big run of ore was driven to the line by the adjoining operators. Messrs. Beidelman & Brown have drilled the ground, struck the same ore body and are sinking 2 shafts, which will be connected by an air drift.

Brenner & Shellaberger, of De Kalb, Ill., who own the Anderson Mine at Joplin, have just

completed and started a 125-ton mill to work the large ore body developed.

Gladys B. Lease.—The Springfield Mill, a new mill which was never run 2 months after it was erected, has been sold to W. E. Beatty and has been moved from its old location, adjoining the Three Friends ground at Belleville to this lease on the Missouri Zinc Fields ground at Carterville.

Nicholasville Lease.—This lease in Chitwood Hollow, just west of Joplin and adjoining the ground of the Consolidated Lead and Zinc Company, has been sold, together with the mine and machinery, by A. B. Wilgus, of Joplin, to Chicago parties who will form a stock company. The ore has been cleaned on hand jigs. Last week 4 hand jigs cleaned up 65,665 lbs. of zinc and 18,000 lbs. of lead ore.

St. Louis-Laura S.—The property of this company on the Get There lease at Carterville was attached by the sheriff last week on suits aggregating \$2,640. The mine sold about a year ago for \$75,000 and paid dividends on that valuation, but a lot of wildcat land was added, the company was capitalized at an enormous sum and the usual result followed.

MONTANA.

Granite County.

(From Our Special Correspondent.)

Mussigbrod Mill.—This mill at Garnet has closed for the winter. Development work on the Lead King and Red Cloud mines is going on with 24 men. The highest ore shipment from Red Cloud, it is said, assayed 38.2 oz. gold, and 21 oz. silver; Frue vanner and Wilfley concentrators run 7.5 oz. gold, 14 oz. silver. Canvas plant concentrates 10.6 oz. gold, 14.5 oz. silver.

Nancy Hanks.—The claim at Garnet is only pumping the water, pending the arrival of machinery.

Robert Emmett.—This claim at Granite is leased by Mitchell & Mussigbrod to Mr. Sanders of Cincinnati, who must sink 100 ft. on the vein.

Shamrock.—This claim is under lease to Pat Mullin and Martin Buckley (formerly superintendent of W. A. Clark's Ruby Mine), and has started to ship ore to the Colorado Smelter at Butte.

Jefferson County.

Basin & Bay State Mining Company.—At the recent meeting of the stockholders at Basin the only persons present were E. P. Chapin, of Springfield, Mass., who held proxies from Eastern stockholders for about 7,000 of the 10,000 shares issued; H. T. Hoadley of Basin, and A. J. Glass, of Basin, representing himself and his brother. Mr. Glass entered a protest against any proceedings on the ground that the meeting was held without lawful authority. He took no part in the proceedings. Messrs. Chapin and Hoadley, who thus constituted the meeting, then elected the following trustees: C. C. Lewis, E. P. Chapin, James T. Abbe, Springfield, Mass.; James Tillinghast, Darwin Almy, Providence, R. I.; B. A. Buell, Woonsocket, R. I.; O. P. Walker, Edward H. Howe, J. M. Stanley, Marlboro, Mass.

Elkhorn Queen.—This mine at Elkhorn has shipped 15 cars of ore to the East Helena Smelter. The mine has been idle for about 7 years, but is now being operated by W. H. Robinson. Power for the machinery will be furnished by the Missouri River Electric Power Company.

Madison County.

Bowery.—Glass Brothers, of Basin, are working this old mine near Silver Star. The mine has been worked for a number of years and produced possibly a million dollars. A few years ago work was discontinued and John Berkin, of Boulder, secured a bond on it. He worked the property with a profit for some time, and then made a deal with the Glass Brothers, who built a cyanide plant. Recently they took to Helena a gold brick worth \$4,100 from a 12-day run of the mill.

Conrey Company.—Julius Baier, who was recently appointed manager of the Conrey placers at the mouth of Alder Gulch, has had surveyors making survey for a new flume. A large amount of material ordered for the construction of the new dredge is now en route.

Red Chief Mining Company.—The new 50-ton concentrator being built by this company, which is operating the Waterlode and Red Chief Mines at Red Bluff, is completed. The company has done a large amount of development work and is reported to have struck bodies of rich ore in the Waterlode Claim. These mines are situated within 1½ miles of Red Bluff. It is reported that there are 700 tons of concentrating ore on the dump of the Red Chief and nearly as many on the dump of the Waterlode.

Meagher County.

Porcupine Mining Company.—The machinery for this company, of Thompson Gulch, amounting to 39,000 lbs., arrived at Dorsey recently, and is being transported to the mine. Preparations are being made to inclose the mill and it will be put in running order during the winter.

The manager of the company, Mr. Permont, will personally supervise the work.

Park County.

Saint Julian Mining Company.—J. F. Nolan is manager of this company, in the Emigrant Mining District. The machinery of the new stamp mill and concentrator is working very satisfactorily, and the saving on the plates and the results generally are good.

NEVADA.

Lyon County.

Nevada Consolidated Copper and Gold Mining and Milling Company.—This company, owning a number of groups of copper properties in this county, has, it is stated, engaged Mr. W. E. Terhune, of Salt Lake City, to manage the smelter on the property at Yerrington. Active work has been going on at this mine for several months, and a large quantity of ore is now on the dumps. The stock is largely held in Boston and New York City.

NORTH CAROLINA.

Rowan County.

(From Our Special Correspondent.)

Gold Hill.—The mines are keeping the pumps in daily operation, holding the water at the 400-ft. level pending the settlement of claims now in the hands of the receiver, Capt. W. Murdock Wiley, who will sell the property for the benefit of the creditor on January 28th.

Union Copper Mines.—The new concentrating plant is being erected. Miners are still developing ore and have a large reserve. One car-load of ore was shipped in November for testing purposes.

OHIO.

Wood County.

Longbard, Ayers & Company recently closed a deal whereby leases on about 500 acres of land, covering 5 farms in Plain Township, were sold to C. Newell & Company, of Cleveland, for \$63,000. There are 32 producing oil wells on the farms having a settled production of 80 bbls. per day.

OREGON.

Baker County.

Bald Mountain.—This mine near Baker City is to install a 10-stamp mill made by the Joshua Hendy Company.

Gold Hill.—A new 10-stamp mill is being completed on this mine near Express, 32 miles southeast of Baker City. The mine has been under the management of James A. Panting for 3 years. There are 11 claims and several ledges have been opened by crosscut tunnels to a depth of from 200 to 500 ft. A water system has been located.

Gold Ridge.—This mine, located about 5 miles south of the Gold Hill, is being developed and is expected to be in shape to start the mill before spring opens.

Mammoth.—This mine, near Baker City, is installing a Bryan Mill recently purchased of the Joshua Hendy Company, of San Francisco, Cal., and the mill is soon to be running.

Grant County.

Concord.—J. H. Robbins, of Sumpter, has made first payment on this mine in the Granite District as vice president of the Concord Gold Mining Company. About \$20,000, it is stated, has been spent on the property under the bond which calls for a purchase price of \$35,000.

Josephine County.

Oscar Creek.—These placers of A. H. Carson and H. B. Miller, near Grant's Pass, are ready to run when water comes. The property lies below the Hayes, Jewell & Moore Mine. It is equipped with 8-in. pipe and a 3-in. nozzle, with 110 ft. head, and with sufficient water to run for 6 months.

PENNSYLVANIA.

Anthracite Coal.

Lehigh Valley Coal Company.—This company's statement for October and the 11 months of the fiscal year from December 1st to October 31st is as follows:

	October.	Year.
Earnings	\$679,000	\$16,496,049
Expenses	776,406	17,311,908
Deficit	\$97,406	\$815,859

For the 11 months the earnings decreased \$549,841, or 3.2%, and the expenses \$73,977, or 0.4%; leaving an increase of \$475,864 in the deficit.

Bituminous Coal.

William Hawkins, of Uniontown, has purchased 2,000 acres of coal land in the western end of Green County. James Toot, of Uniontown, has purchased 400 acres of coal land from William F. Blair, of Waynesburg, the consideration being \$20 per acre. This tract lies in Wayne and Perry townships along Dunkard Creek.

The Oliver Iron and Steel Company has bought 1,635 acres of coal land on the Monongahela River, near Elizabeth. The price paid for the tract was \$400,000, which includes the surface.

(From Our Special Correspondent.)

John S. Douglas, of Uniontown, has sold for Judge R. E. Umbel, L. A. Fraser, Joseph Long, J. K. Bryson, J. A. Walters and others, of Uniontown, a tract of coal land including 2,513 acres in Harrison County. The price was \$130,000.

Grant Leighty, of Vanderbilt, has sold the mining rights of his Vanderbilt farm to the H. C. Frick Coke Company for \$2,700.

The H. C. Frick Coke Company has taken options on the Keaggy and J. R. Hayden farms. The tract consists of 440 acres of coal land in Hempfield County, the price being \$200 an acre.

A tract of 50,000 acres of coal land in the Freeport vein in Westmoreland County with Mendon as a center, has been taken up by Peter Tarr, of Scottsdale, and William Johnston, of Carnegie. The price paid was \$35 an acre.

Penn Gas Coal Company.—This company is mining from its Penn mines at Penn station with the new electric plant. An electric motor brings the coal to the surface, and electric mining machines are used.

SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

Chicago Mica Company.—This company shipped a car-load of mica to Valparaiso, Ind., recently. The company is opening up the Monarch Mine.

Copper Butte Company.—This company has crosscut a ledge of copper and gold ore showing copper pyrites. A shaft is to be sunk. The company has made first payment on the ground, consisting of 16 claims. The officers are: President, W. H. Buffum, New York; vice-president, Gerald Pierce, Chicago; treasurer, W. D. Lowry, Minneapolis; secretary, W. N. Nelson, Custer.

New York.—A car-load of mica will be shipped this week to the works of the Sils-Eddy Mica Company, at New York City. W. H. Sils has been at Custer, superintending the shipment. The vein is said to show 4 ft. of mica on each wall. Two shafts are down 100 ft. each. The mica is colored, but is free from iron. C. A. Dow, of Sioux City, Ia., owner of the mine, is superintending the mining.

Lawrence County.

(From Our Special Correspondent.)

Homestake Company.—The water from the headwaters of Spearfish Creek has arrived at the reservoir at Lead. At the time the water arrived at the city most of the stamps at the mills were hung up, but every stamp in the 4 mills is now dropping. There is a report at Lead that the Homestake Company has placed an order with the Gates Iron Works for a new stamp mill, probably 200 stamps.

Two Bit Mining Companies.—The indebtedness of the Hardin Mining Companies is reported settled and it is stated that work will be resumed at one of the old shafts.

Pennington County.

(From Our Special Correspondent.)

Antimony Ores.—A. D. Arundel, of Minn., is working on a gold and antimony proposition at Silver City, 1½ miles from Rapid River; 2 shafts are sunk. One, 40 ft. deep, follows a vertical of gold and antimony ore 2 ft. wide. Assays are said to give 42½% antimony, with gold and silver. In this shaft 5 kidneys of ore have been taken out averaging 5 ft. long. Tests have been made on the ore at the Mystic electric-chlorinating plant.

TENNESSEE.

East Tennessee Mining and Manufacturing Company.—This company, with a capital stock of \$2,000,000, was recently organized. The chief purpose of the company is reported to be to purchase, lease and develop coal and iron properties in east Tennessee. The company will make Bristol its headquarters. The directors are: E. A. Sawyers, Washington; Wm. P. Hoskins, H. M. Hoskins, O. L. West, Charles Dawes, on all sizes.

Lawrence County.

(From Our Special Correspondent.)

Smith.—This iron ore mine of the United States Iron Company near Paul, Tenn., has been closed down indefinitely.

WASHINGTON.

Ferry County—Republic.

Jim Blaine Gold Mining Company.—At the recent annual meeting in Spokane it was decided to move the offices of the company from Spokane to Republic. The question of future plans was not taken up at the meeting, being left in the hands of the new board of trustees, elected as follows: Clarence J. McCuaig, Fayette Brown, Andrew F. Burleigh, D. F. Hallahan, James Hutchison, A. A. Ayer and D. H. Burrell. No reports as to the condition of the mine were submitted, as no work has been done on the property for a long time.

Quilp Gold Mining Company.—At the recent annual meeting in Spokane 1,347,300 shares out of the 1,400,000 issued were represented. The control of the company was found to be in the

hands of Eastern stockholders, but the old Spokane management was re-elected for 2 years. The trustees elected were: A. A. Ayer, of Montreal; Andrew F. Burrell and George H. Braley, of Republic; and E. J. Roberts and W. J. C. Wakefield, of Spokane, thus placing the actual operating control in the hands of the Western trustees. The officers elected by the trustees were: President, E. J. Roberts; vice-president, A. A. Ayer; secretary and treasurer, Charles Dawson, of Spokane, and general manager, E. L. Tate, of Spokane.

Republic Consolidated Gold Mining Company.—At the recent annual meeting the following board of trustees was elected: Robert Jeffrey, Toronto; A. A. Ayer, Montreal; James Hutchinson, Montreal; Abner Kingman, Montreal; James Catron, Montreal; S. P. Sterns, Montreal; David H. Burrell, Little Falls, N. Y.; William E. Spiers, New York City, and D. F. Hallahan, Republic.

WEST VIRGINIA.

Broxton Coal Company.—This company, with \$2,000,000 capital, is being organized. Among the directors will be A. B. White, governor-elect of West Virginia; H. C. Jackson, and B. E. Cartwright, of the Little Kanawha Railroad. The company proposes to pay especial attention to export trade. It is said that interests backing the company have purchased upward of 25,000 acres of drift coal property along the Little Kanawha River, and also the Little Kanawha Railroad, connecting Parkersburg and Palestine, W. Va., and will extend this 78 miles up the river through the coal tract to Burnsville on the Pittsburg & West Virginia road. A large system of coke ovens is to be erected and a fleet of river barges and steamers built. Most of the product of the mines will, it is said, be sent down the river to New Orleans and exported.

Petroleum.

The production of the Copley and Turner gushers at Sand Fork, Lewis County, is slowly but surely declining. The gauge of the Copley well for the 24 hours ending at 7 A. M., November 30th, was but 1,280 bbls., and the Turner's for the same time 960 bbls.

Southwest of the Wallace development, in Harrison County, the Federal Oil Company has drilled its test well on the Carl Bailey farm into the 50-ft. sand and has a producer that started to flow at the rate of 350 bbls. a day. The Carter Oil Company has completed its test on the S. C. Rage farm and has a 220-bbls. producer.

Fayette County.

(From Our Special Correspondent.)

Two parties have under consideration leasing the Robson-Prichard 1,000-acre tract of coal land on Kanawha River above Janets Branch and on the Kanawha & Michigan Railway. One of these parties is composed of Cincinnati people headed by C. G. Blake, of Cincinnati, O., president of the Longacre Colliery Company, of Longacre. The other party is composed of Columbus, O., and New York men headed by Tracy W. Guthrie, general manager of the Congo Coal Mining Company, of Congo, O. The land contains the No. 1 or Eagle seam, the Powelton and the No. 2 or gas coal, all in workable thickness from 4 ft. 8 in. to 7 ft. The No. 1 coal is about 500 ft. above the level of the railroad and will require an incline about 1,000 ft. long. The No. 2 is about 650 ft. above the railroad and will require an incline 1,200 ft. long.

Boomer Coal and Coke Company.—This company of Boomer is going to start work at once on a mine on the 1,000-acre lease on upper Boomer Branch and is receiving bids for grading the extension of tracks to this lease. The extension will be about 1½ miles long and will cost from \$10,000 to \$12,000 to grade. The No. 1 or Eagle coal is 6½ ft. thick and at the proper height to bring on to the tippie without an incline, while the No. 2 is 140 ft. higher and about 6 ft. thick and will require an incline.

Falls.—This colliery at Ferris, F. W. Pritchard president and J. W. Straugh superintendent, has its tippie well under way, the incline finished, 4 entries in the mine started and about 15 dwellings completed; also part of the track laid. The company expects to start shipping coal in small quantities in about 10 days.

WYOMING.

Carbon County.

(From Our Special Correspondent.)

Great Lakes Copper Mining Company.—This company, Dr. B. E. Binger, general manager, controls a group of 12 claims, mainly on the west end of the Kurtz-Chatterton Hill near Willow Creek. On the Kalamazoo Claim is an office, barn and two other buildings, with a shaft 30 ft. deep. On the Western Slope are 2 shafts and 1 shaft house. The Eureka has 2 shafts about 50 ft. deep. The Paragon has a large shaft house, containing a \$5,000 plant of machinery, consisting of boiler, hoist and sinking pump. The shaft is about 125 ft. deep. At 75 ft. 2 drifts are now being run on the vein. A shaft

is also being sunk on a "blow-out" near the southwest corner of the Eureka Claim, and a shaft house erected. Quite a number of men will be employed this winter, but no considerable body of shipping ore has yet been disclosed. The shafts are mainly in diorite.

Kurtz-Chatterton Copper Mining Company.—This company has done considerable development and erected a concentrating plant. The mine was put in steady operation about November 1st. It is located a short distance down the gulch from the dump of the 1,800-ft. tunnel. The ore is run into the upper part of the mill on cars and dumped on a grizzly. The coarse material is crushed to about ½-in. size and drops into a bin with the material which passes through the grizzly. From the bin the ore passes through an automatic feeder to one set of 26 by 15-in. rolls, which reduces to not to exceed ¼ in. in size. The product is raised above the crusher floor and delivered to a revolving screen, the oversize from which screen is returned to the rolls, while the crushed product is sent to a second revolving screen covered with steel wire cloth, 3½ mesh, No. 13 wire, corresponding to a 3/16-in. opening. The oversize goes to a 3-compartment Hartz jig. The screenings pass to a third revolving screen, whose oversize goes to a second 3-compartment Hartz jig. The final screenings from the third screen pass through a hydraulic classifier to 2 Hallett concentrating tables which make a very clean product. Power is furnished by a boiler and engine using wood as fuel. Water is brought through a large ditch which taps both Miner Creek and its branch copper creek. The company or an allied company owns a sawmill about 1 mile away.

Several good veins of ore are reported cut by the main tunnel, on which some drifting has been done. In cutting the ditch at a point just above the concentrator the outcrop of a large vein higher in grade than those in the tunnel was uncovered. This outcrop seems to be the junction of 2 leads which diverge from this point and have recently been traced for some distance by trenching. The ore body is about 16 ft. wide. At 20 ft. 3 grades of ore are sorted out; smelting ore, an excellent concentrating ore and a decomposed oxidized material, which may possibly be used in the Encampment Smelter. Up the hill, 40 or 50 ft. from the discovery at the ditch, a vein of higher grade ore has recently been disclosed, from a few inches to 30 in. thick. About 100 ft. farther up the hill what was supposed to be an outcropping boulder has proved to be a low-grade vein fully 20 ft. wide. The copper in all the company's veins occurs mainly as chalcocopyrite in quartz.

Rambler.—This somewhat noted Doane or Rambler Mine, located 1½ miles from Battle, has been sold for \$250,000 to people supposed to be stockholders in the Union Pacific. The buyers are in possession and will work all winter, with E. Stover Tice, of Cripple Creek, as superintendent. The Rambler is the first copper location made in the Battle District, and at the time of sale was owned by George Doane, the locator, W. E. Heathcote and Congressman J. C. Sibley, of Pennsylvania. It is rumored that the company will put in a concentrating mill.

FOREIGN MINING NEWS.

AFRICA.

Rhodesia.

The Rhodesian Chamber of Mines reports the gold output for October at 10,668 oz., being 68 oz. more than in September, and 6,392 oz. more than in October, 1899. For the 10 months ending October 31st the total was 73,095 oz., which compares with 55,341 oz. in 1899; showing an increase of 17,754 oz., or 32.1%, this year.

AUSTRALASIA.

New South Wales.

Broken Hill Proprietary Company.—This company reports that for the four weeks ending November 7th the output of the refinery was 3,103 tons lead, 64 tons hard (antimonial) lead and 443,248 oz. silver.

Queensland.

Mount Morgan Gold Mining Company.—This company reports for the month of October a total of 21,480 tons of ore, treated by chlorination. The result was 16,663 oz. gold, an average of 0.78 oz. to the ton.

CANADA.

British Columbia—Boundary District.

Granby Smelter.—This plant at Grand Forks recently handled in 24 hours 763 tons of ore. The run was made with 2 stacks in use, the total estimated capacity of which is but 500 tons. The ore was from Knob Hill and Ironsides, mines at Phoenix, requiring but little flux, as the record shows. The matte produced averaged 60% copper. A. B. H. Hedges is in charge.

British Columbia—West Kootenay District.

(From Our Special Correspondent.)

Rosland Ore Shipments.—The shipments from Rosland mines for the 11 months ending No-

vember 30th amount to 200,000 tons, valued at \$3,000,000 gross.

Center Star Gold Mining Company.—At the annual meeting in Toronto on November 27th the report for the year ending Sept. 30th was submitted, showing a reduction of 30% in the cost of mining during the year and development work progressing satisfactorily.

The Canadian Pacific Railway Company's smelter reduced treatment \$1.25 per ton to go into effect under an increased tonnage, and negotiations were still pending.

The report contains the expert opinions of Wayne Darlington, mining engineer, which is very favorable. It says great progress has been made in development in surface improvements and in the successful operation of the contract system. The following were elected directors: George Gooderham, T. G. Blackstock, W. H. Beatty, W. G. Gooderham, A. Gooderham and Charles R. Homer. G. Gooderham was elected president and T. G. Blackstock vice-president. A dividend of 1% on the capital stock, amounting to \$37,500, was declared payable January 1st.

Le Roi.—According to the statement of Bernard MacDonald, general manager, the output of the mine for October was 16,100 tons, valued at \$223,000, the average value per ton gross being \$13.85. There were produced from the 16,100 tons of ore 7,466 oz. of gold, 11,691 oz. of silver and 201 tons of copper.

Nova Scotia—Cape Breton.

Dominion Coal Company.—This company's coal shipments in November were 173,000 tons. For the nine months of the fiscal year from March 1st to November 30th the total shipments were 1,587,700 tons; which compares with 1,351,306 tons in 1899, and 1,043,063 tons in 1898.

Ontario—Algoma District.

(From Our Special Correspondent.)

Algoma Central Company.—The shipments of the Helen Mine of this company for its first year have been almost exactly 62,000 tons, all but 2,400 tons of which were to Hamilton and Midland, Ont. The mine is being prepared for extensive shipments another year, and the company hopes to send down at least 3,500 tons daily during the season of navigation. There has been some very wild talk in Cleveland newspapers as to this mine affecting ore shipments from Lake ranges on the American side, and hurting the prices of ores at lower lake ports. It is safe to say that no such effect will happen. It is probable that other mines will be opened in the district in a year or two, for the company has some very promising explorations. The shipments from the Helen Mine would have probably been larger this year, but for the delay of contractors at the mine and in machine shops, who have been very backward in delivery of material. There is now nearly 3 ft. of snow at Michipicoten, and the mine and road there are practically shut out from communication for the next five or six months. The company has taken in nearly \$100,000 worth of food supplies for the winter months, and a large amount of other material necessary for the works.

Ontario—Hastings County.

(From Our Special Correspondent.)

Atlas Arsenic Company.—This company, at Deloro, is not making arsenic yet, but intends to put in a small Brown horseshoe furnace next spring with a capacity of 12 to 15 tons daily. The company is also negotiating with Fraser & Chalmers, of Chicago, for the erection of a cyanide plant. The company has been milling ore since last March, having erected a 10-stamp mill at the Five Acres, where is also a 10-compressor working 5 drills. The company states that it has had success in treating its mispickel ores by amalgamation, saving 82% of the value and \$10 per ton on the plates. The company is also working a mispickel property 6 miles north of Deloro, known as the Atlas. The company states that the vein is 5 ft. wide and contains fully 20% mispickel. A number of samples averaged \$8 per ton in gold.

Ontario—Lake of the Woods District.

(From Our Special Correspondent.)

Pine Portage.—This old mine, about 5 miles from Rat Portage, has been sold by the court at the suit of one of the owners, Mr. Dobbie. The sum realized for the property was \$20,000. Mr. Dobbie, the plaintiff, has a preferred claim of \$3,000. The judge is preparing to distribute the proceeds among those entitled to receive it. This mine was opened many years ago; in fact, was one of the earliest in the district. A 5-stamp mill was put up and the shaft carried down over 100 ft. The vein is said to be very good in width and gold contents. Mr. Scott, of Hamilton, Ont., is the purchaser.

Wendigo.—Work has stopped until teams can travel on the ice.

Ontario—Rainy Lake District.

(From Our Special Correspondent.)

A Hamilton syndicate has acquired a large property at Sturgeon Lake, and a road is being built there from the Canadian Pacific line. This property is a large reef, and is said to have an

excellent showing. The new owners will take in a mill and make tests of the rock, it is stated. They have not yet done much development.

Gold Winner Company.—This company has made tests with the 10-stamp mill it took in last season, but has met with discouragements. It will push things this winter in the hope of developing a good property.

Hammond Reef Gold Mining Company.—There is much speculation as to the future of this property. It has been unfortunate, and what it has done has been at great expense. The rock is not satisfactory.

Minnesota-Ontario Gold Mining Company.—This company, which has several locations on Bad Vermillion Lake, in a gabbro formation, will probably do nothing this winter.

Round Lake Copper Mines.—Work on these properties, which have been examined by Montana experts, are to be opened at once. Roads are now being cut and supplies taken in. The properties will be worked this winter, and it is understood an effort will be made to take advantage of the municipality's offer of a bonus of \$25,000 for a copper smelter at Port Arthur.

Shores Gold Mining Company.—This company has bought a second location on Sturgeon Lake, and is hauling in supplies. The company is 3½ days' journey by team off the Canadian Pacific line and the government will be petitioned to build a road.

Zenith.—This zinc mine has resumed work for the winter and a large amount of ore will be taken out for shipment. Supplies will also be sent in for a considerable mining operation next summer.

EUROPE.

Great Britain—Wales.

St. Davids Gold and Copper Company.—This company reports for the quarter ending October 31st 30 stamps in operation. The ore crushed was 4,961 tons, and the yield was 3,302 oz. gold, an average of 0.67 oz. to the ton.

COAL TRADE REVIEW.

New York. Anthracite.

Dec. 7.

The demand for hard coal continues brisk; the operators find it difficult yet to get forward coal to the points where it is most wanted and prices are very firm. Consequently, all newspaper stories about losses of millions of dollars on account of the strike are tough yarns, if nothing worse. Consumers in all anthracite-burning territory want coal. Throughout the West and Northwest at inland points and along the inland seaboard the present combination of large demand and good prices has not been equalled in years. Lake navigation is still open and the mining and transportation companies are trying their best to get coal forward, as navigation may close any day. The movement of coal from Buffalo, considering the lateness of the season and the danger of storms, is heavy, but there are said to be many loaded cars standing on tracks there waiting for boats. The receipts of hard coal at Duluth are still fully 200,000 tons below last year's figures at this time. The high lake freight rates, 75c. from Buffalo to Lake Michigan ports, will probably help reduce the movement of coal by water to Chicago territory, and correspondingly increase rail shipments. Receipts by rail and lake are still far below demands. Chestnut is the size most wanted. In the East consumers at points east of Cape Cod are anxious, and those dealers at Boston who delayed placing orders are now after coal at most any price, so that spot coal commands a premium. Bad weather is interfering with coastwise transportation, and down East consumers will find coal high this winter.

There are already rumors of a great strike in the coal fields next April. It is not unlikely that the operators will then undertake to settle the wage question for some time. At present the mine employees, particularly the young men and breaker boys, do not seem to realize the part that national politics played in settling the recent strike and are inclined to stop work on very small provocation.

We continue to quote free-burning white ash f. o. b. New York Harbor ports as follows: Broken, \$4; egg, \$4.25; stove and nut, \$4.50; pea, \$3.

Bituminous.

There is a steady, fair-sized demand for coal in the Atlantic seaboard bituminous trade. The high-grade coal are just about as hard to get as for several months, while the poorer grades are in good supply. It is currently reported that the main-line roads have informed those producers who have been talking of lower prices for coal next year that there is to be an advance of 10c. per ton in through freight rates. Car supply is still the controlling factor in the market. It is better than last week, though not as good as producers desire.

In the far East consumers are thought to have fair supplies on hand as compared with

those in other regions, but are calling for considerable coal, keeping what supplies they have for the winter. Producers are tending to the last of the shoal water port orders and all hands are trying to get this coal forward. If ice does not form for a week or 10 days it is thought that consumers at those ports will have enough supplies to last all winter. Along Long Island consumers still clamor for the better grades of coal, seemingly unable to get enough. New York Harbor trade demand has increased and will likely become stronger as an effect of the short car supply at the mines. All-rail trade is getting better service than the other branches; consumers are filling up on the poorer grades, where they are unable to get the better grades.

Transportation from mines to tide is slower and is irregular. Shippers cannot count on anything more than the coal actually at tidewater. Car supply has increased until it is now from 50% to 75% of the demand.

In the coastwise vessel market there are few large vessels at the loading ports and practically none of the smaller ones. This is due to stormy weather and adverse winds. We quote current rates from Philadelphia as follows: Providence, New Bedford and the Sound, 65@70c.; Boston, Salem and Portland, 75c.; Portsmouth, 80c.; Wareham, 85c.; Lynn, 85@90c.; Newburyport, 95c.

Birmingham, Ala.

Dec. 3.

(From Our Special Correspondent.)

The demand for coal is growing stronger every week. The Republic Iron and Steel Company, which owns mines supplying its needs, found its production a little short one day last week, causing a temporary shut-down in some of its works. The mines are working quite steadily and production is at the top notch. There are no doubts but that the year's production will be over 1,000,000 tons greater than last year. While no figures are at hand, the production during November just past is said to have been the largest of any month in the history of Alabama. The production in December will not be as great as it was in November because of the Christmas holidays.

During the coming fortnight coal will be shipped from the Stout Mountain Coal and Coke Company's mines in Blount County, the railroad to that point being completed. This company proposes to develop the property on a large scale and the mines will be pushed. This makes the second coal company starting business during the past 2 months. The Stout Mountain Company has good backing and it is stated that the property is quite rich.

There is a very active demand for coke and this product brings a higher price than ever before. All demands of the furnaces and other works in this immediate district are being met right along and the manufacturers of coke say that they have very little of the product to place on the market.

The Semet-Solvay By-Product Company is erecting more coke ovens at Ensley and the statement is made that shortly after the new year other companies in this district will begin the erection of several hundred more ovens.

Chicago.

Dec. 4.

(From Our Special Correspondent.)

Anthracite Coal.—Through the West and Northwest there is a good demand, but supplies are limited, sales in most all cases are for less than actual wants. Lake supply is exceedingly short and soon this market will have to depend entirely on rail shipments. It is very doubtful whether anthracite will sell all winter at a lower price than it now commands—\$6 f. o. b. Chicago on all sizes.

Bituminous coal sales are not as heavy as expected, though there is a fair demand from large manufacturing concerns and the railroads. Such has been the rush of the better grades of soft coal to this market that prices have depreciated and now the buyer is paying much less than a few weeks ago. Pocahontas coal is quoted \$3.75 @ \$4; Raymond, \$3.30 @ \$3.40; Brazil Block, \$2.75; Thacher, \$3.30 @ \$3.40; Hocking Valley, \$2.90 @ \$3.

Cleveland, O.

Dec. 5.

(From Our Special Correspondent.)

The coal shipment on the Lakes has ended for the season. The last cargoes were sent up today. More coal is waiting to be shipped, but the outlook is that the cargoes will lack ships. This week has been an active one, shippers seeing that the end was near and rushing to get their last consignments to the upper lake docks. While they have been anxious for quick delivery, shippers have been jealously guarding the rates, shutting off the efforts of the owners to boost the rates beyond 75c. All charters made have been on that basis. The shipment to Duluth ended several days ago, when the shippers announced that they were through for the season. There will be, of course, a few boats running yet—those that have run without insurance thus far in the season and which are willing to take the great risk attending fall storms and the ice of early winter—but the main movement of the year is at an end. Most of the attention of the coal operators therefore is now being

directed to the shipment of commercial coal the demand for that being excessively large. The shippers are still hampered by a lack of coal cars. There is some talk of the prices at which coal contracts in the Northwest will be made for next year, but this question is not likely to be settled until after the miners' conference, at which the wage scale for next year will be fixed.

Pittsburg, Pa.

Dec. 5.

(From Our Special Correspondent.)

Coal.—Fully 15,000,000 bush. of coal loaded in the pools and harbor have been shipped during the week. The waters receded, but the rain of yesterday is bringing them up again and a coal boat stage is expected to-night. This will probably let out all the coal loaded here. The only coal left is loaded in boats and it requires a 12-ft. stage of water to ship it. The coal loaded in boats is destined for the New Orleans market. The prospects now are that it will all get out and that enough empty barges and coal boats will be returned to keep all the mines of the Monongahela River Consolidated Coal and Coke Company in full operation for several months. These mines have been closed for a lack of craft to load. Negotiations are now pending with the Pittsburg Coal Company, the railroad coal combination, and individual operators to furnish to the New England Gas and Coke Company 60,000 tons of coal monthly. It is to be shipped to Boston, Mass. At present the contract is being filled by the Dominion Coal Company, of Nova Scotia.

Connellsville Coke.—There has been but little change in the coke situation during the week. Prices are the same—\$2 for furnace and \$2.25 @ \$2.50 for foundry—while prices for coke of outside producers continues to rule at 50c. a ton less. Of the 20,960 ovens in the region, 14,879 are in operation and 6,081 are idle. The production last week was 155,746 tons, a decrease of 636 tons compared with the previous week. The shipments aggregated 8,379 cars, distributed as follows: To Pittsburg and river tipples, 3,541 cars; to points west of Pittsburg, 3,405 cars; to points east of Connellsville, 1,433 cars. This was a decrease of 120 cars compared with the previous week's shipments.

The Pennsylvania Railroad Company reports the tonnage of coal originating on its lines for the 11 months ending December 1st as follows, in short tons:

	1899.	1900.
Anthracite coal	3,432,133	3,495,369
Bituminous coal	15,154,295	18,570,255
Coke	6,975,208	6,660,231
Totals	25,561,616	28,665,855

The increase in anthracite was 63,236 tons, and in bituminous 3,355,960 tons, while there was a decrease of 314,977 tons in coke. The net increase was 3,104,194 tons, or 12.7%, in the total.

Shanghai, China.

Oct. 31.

(Special Report of Wheelock & Co.)

Coal.—Japan is firm. Cardiff is weaker. Sydney Wollongong shows no transactions. Arrivals of all coals during the fortnight were 20,831 tons. We quote per ton: Welsh Cardiff, 27@28 taels (\$17.98@18.65); Australian Wollongong, cargo, ex-go-down, 13 taels, (\$3.66); and other sorts, 7.50@8.50 taels (\$4.99@5.96); Chinese, Kaping lump, 7.50@10 taels (\$4.99@6.67); dust, 5 taels (\$3.33), and mixed, 5.50@6 taels (\$3.66@4); Japan, all contracted for.

Kerosene Oil.—Very weak. Stocks are 916,500 cases American Devoe's, and 243,300 cases Russian Batum; total, 1,159,800 cases. Quotations per cases are as follows: American Devoe's, 1.90 taels (\$1.28); Russian Batum Anchor Coal, 1.87½ taels (\$1.25); Ram Chop 1.86½ taels (\$1.24); bulk oil, in 2 tins, 1.75 taels (\$1.17).

Foreign Coal Markets.

Messrs. Hull, Blyth & Co., of London and Cardiff, report under date of November 24th that there has been more inquiry for coal, but no improvement in prices, chiefly on account of a scarcity of tonnage. Quotations are: Best Welsh steam, \$4.92@5.16; seconds, \$4.68@4.80; thirds, \$4.32@4.56; dry coals, \$4.65; best Monmouthshire semi-bituminous, \$4.44@4.56; seconds, \$4.44; best small steam coal, \$2.25@2.76; seconds, \$2.16@2.40; other sorts, \$1.80.

These prices for Cardiff coals are f. o. b. Cardiff, Penarth or Barry, while those for Monmouthshire coals are all f. o. b. Newport, exclusive of wharfage, and are for cash in 30 days, less 2½% discount.

In freights a steadier tone continues, with an upward tendency. Rates quoted are: Cardiff to Marseilles, \$2.30; Genoa, \$2.40; Naples, \$2.34; Las Palmas, \$1.92; St. Vincent, \$2.04; Buenos Aires, \$3.24; Rio Janeiro, \$3.60.

The German coal trade has maintained its recent firmness, but the question of the probable exportation of fuel by the Ruhr Syndicate to Belgium has provoked some discussion. The imports of coal into Germany in the nine months were 5,485,547 tons, as compared with 4,669,593 tons in 1899; of coke 400,262 tons, as compared with 342,723 tons; of briquettes, 94,949 tons, as compared with 60,779 tons, and of lignite, 5,537,223 tons, as compared with 6,444,172 tons; mak-

ing an aggregate of 11,518,281 tons, as compared with 11,497,267 tons. The exports of coal from Germany in the first nine months of this year were 11,356,651 tons, as compared with 10,247,597 tons in the corresponding period of 1899; of coke, 1,628,022 tons, as compared with 1,624,103 tons; of briquettes, 409,370 tons, as compared with 285,340 tons, and of lignite, 45,116 tons, as compared with 15,360 tons; making an aggregate of 13,430,159 tons, as compared with 12,172,400 tons.

The French trade is well maintained so far as prices are concerned, though some of the talk about a coal famine has subsided, and there is less concern about the future, especially as the demand for metallurgical fuel is less pressing. There is, however, much complaint of the cost of household fuel.

No large export contracts are reported this year. Freight rates continue practically unchanged. A charter is reported of a steamer from Philadelphia to Lisbon, Portugal, at 16s 3d. (\$3.90) per ton.

SLATE TRADE REVIEW.

New York. Dec. 7.

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

Size, inches	Monson or Br'n. ville.	Bangor.	Bangor Ribbon.	Alb'n. or Jackson Bangor.	Chap'n. Keys ne	Peach Bottom.	Sea Gr'n.	Unfed'g Green.	Red.
24 x 14	6.50	3.50	3.00	3.00	3.80	5.10	2.90	3.75	.....
24 x 12	6.60	3.50	3.00	3.00	3.80	5.25	2.90	3.75	.....
22 x 12	6.60	3.50	3.25	3.00	4.00	5.25	2.90	3.75	.....
22 x 11	6.50	3.75	3.25	3.00	4.00	5.25	2.90	4.00	.....
20 x 12	6.90	3.75	3.00	3.00	4.00	5.25	2.90	3.75	.....
20 x 11	6.80	4.25	3.50	3.25	4.00	5.35	2.90	4.25	10.50
20 x 10	6.80	4.25	3.50	3.00	4.00	5.25	2.90	3.50	.....
18 x 12	6.80	3.75	3.00	3.00	4.00	5.25	2.90	3.50	.....
18 x 11	7.00	4.25	3.50	3.25	4.00	5.35	2.90	4.00	10.50
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	2.90	4.00	10.50
18 x 9	7.00	4.50	3.50	3.25	4.00	5.35	2.90	4.25	10.50
16 x 12	6.80	3.75	3.00	3.00	4.00	5.25	2.85	3.50	.....
16 x 10	7.00	4.25	3.50	3.25	4.00	5.25	2.85	4.00	10.50
16 x 9	7.00	4.25	3.50	3.25	4.00	5.35	2.85	4.25	10.50
16 x 8	7.00	4.50	3.50	3.25	4.25	5.35	2.85	4.25	10.50
14 x 10	6.60	3.75	3.25	3.00	4.00	5.25	2.70	3.75	10.50
14 x 9	6.50	3.75	3.25	3.00	4.00	5.25	2.70	3.75	10.50
14 x 8	6.60	3.75	3.25	3.00	4.00	5.10	2.70	4.25	10.50
14 x 7	6.40	3.75	3.25	3.00	3.75	5.10	2.50	4.25	10.50
12 x 10	5.75	3.00	3.00	3.00	3.75	5.10	2.50	3.25	.....
12 x 9	5.00	3.00	3.00	3.00	3.75	5.10	2.50	3.25	.....
12 x 8	5.50	3.00	3.00	3.00	3.75	4.85	2.50	3.50	9.00
12 x 7	5.00	3.25	3.00	3.00	3.75	4.85	2.25	3.50	9.00
12 x 6	4.80	3.25	3.00	3.00	3.75	4.75	2.25	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof

Shipments are being rushed as quickly as possible, so as to clean up the quarry banks before the severe weather sets in. Yet dealers complain that the deliveries on their orders are very slow. This is due to some extent to the limited supply of cars at the quarries. In the week ended November 29th, shipments from Slatington and Walnutport, Pa., were 4,058 squares roofing slate, 25 cases school slates and 470 crates blackboards.

Exporters find in the foreign markets that building operations have been much curtailed, and the good supply of Welsh slate causes much cutting of prices. Ocean freights are 15s. to London, while contracts for room ahead have been booked at 13s. 6d. When the trade was most prosperous something over a year ago it was considered inexpedient to export slate at a contract freight rate over 12s. 6d.

The exports of slate from the United States in the 10 months ended October 31st were valued at \$696,557, as against \$1,051,228 last year; a decrease of \$354,671, or 33.7%. The roofing slate shipped this year amounted to 107,539 squares, against 209,730 squares in 1899; a decrease of 102,191 squares. Mill stock exported in 1900 was valued at \$109,854, against \$113,392 last year; a decrease of \$3,538. Mostly school slates were exported as mill stock.

IRON MARKET REVIEW.

NEW YORK, Dec. 7, 1900

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending				From Jan., '99.	From Jan., '00.
	Dec. 8, 1899.		Dec. 7, 1900.			
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
An'racite & Coke.	257	333,428	171	267,959	12,879,146	12,757,367
Charcoal.	30	8,743	30	8,150	262,610	357,535
Totals..	287	342,171	201	216,109	13,141,756	13,114,902

The iron trade is comparatively quiet, with an absence of the excitement shown in November. In raw materials a good business has been done in foundry irons and basic pig, though Bessemer is still quiet. Steel billets show no change, the price of \$19.75, Pittsburg, being firmly held.

A large business is reported in structural steel,

bars and merchant steel. Some orders for rails have been placed, though the railroads are holding back all except absolute necessities. Plates are in fair demand.

The railroads will make a reduction, probably of 40c. a ton, in rates from Pittsburg to the seaboard. This is distinct from the reduction on export business.

Discussion of next year's prices on ore and fuel has already begun. Nothing definite has yet been decided as to ore prices, though furnacemen seem confident of a lower rate on Lake Superior ores. Some contracts for coke have been made at \$2 a ton, f. o. b. ovens, and that rate seems to be generally accepted as probable for the year.

Birmingham, Ala. Dec. 3.

(From Our Special Correspondent.)

The pig iron market remains firm and the predictions are that December will show up well in demand, business transacted and actual shipments. November was most satisfactory to the furnacemen as sales were greater than during any month since last May. Shipments are heavy and the export trade is keeping up well. Quotations remain steady, no further advance being anticipated just yet. The furnace companies will make every effort possible to prevent much time being lost by the laborers for the holidays. It is figured that within a few weeks the iron which accumulated during the dull period in August, September and October will have been worked off. The local demand is improving.

A visit was made to the district last week by Peter Donaldson, of Glasgow, Scotland, representing the firm of Watson Brothers, well-known Scotch dealers in pig iron, who handle the product of the Tennessee Coal, Iron and Railroad Company.

The production in this State has been increased by blowing in a furnace at Sheffield. Another furnace there is being made ready to go in blast within a week or so. The Little Belle furnace at Bessemer, belonging to the Tennessee Company, will blow out shortly and will be succeeded by another furnace at the same place. There are 5 furnaces in blast at Ensley.

The steel plant at Ensley has 5 open-hearth furnaces in operation, with 2 others undergoing repairs. The steel wire and rod plant are in full operation.

The rolling mills are working better than for some time. The mills at Bessemer, Birmingham, Gate City, Anniston and Sheffield are busy in pretty nearly every department. There is but little finished iron accumulating and prospects are exceedingly bright.

The following figures prevail in the pig iron market: No. 1 foundry, \$11.50@12.50; No. 2, \$10.50@11.50; No. 3, \$9.50@10.50; No. 4, \$9.25@9.75; gray forge, \$9@9.50; No. 1 soft, \$11.50@12.50; No. 2, \$10.50@11.50.

Chicago. Dec. 1.

(From Our Special Correspondent.)

Pig Iron.—Much iron has been sold during the week. The largest sale of the week was 2,500 tons. The demand continues excellent. Most of the business placed during the week was booked by the Northern furnaces, prices being slightly under Southern iron. The stronger companies are now so filled with business that for the time being they will practically be out of the market. A few Northern furnaces are quoting higher. Quotations are: Lake Superior charcoal, \$18.50@19; local coke foundry, No. 1, \$15@15.75; No. 2, \$14.50@15.25; No. 3, \$14@14.75; local Scotch, No. 1, \$15@16.25; Ohio strong softeners, No. 1, \$16@16.50; Southern silvery, according to silicon, \$16.10@16.60; Southern Coke, No. 1, \$15.50@16.35; No. 2, \$14.50@15.35; No. 3, \$14@14.85; Southern, No. 1, soft, \$15.50@16.35; No. 2, soft, \$14.50@15.35; malleable Bessemer, \$15@15.50; standard Bessemer, \$15@15.50.

Cleveland, O. Dec. 5.

(From Our Special Correspondent.)

Iron Ore.—Within a few days the shipment of iron ore from the upper lake ports will be discontinued for the season; not that the shippers are not desirous of moving more of it this year, but because there will be few, if any, boats running with which to carry it. The insurance companies have decided that no policies will be extended beyond the time they are contracted to run, hence after noon to-day most of the vessels will be without insurance protection. This is tending to drive them into winter quarters, leaving the frozen ore in the pockets at the head of the lakes without tonnage for transportation. The reports have not been compiled as yet covering the shipment to date, but the indications are that the movement will exceed 18,000,000 tons. No sales have been made, but future prices are being discussed, the general opinion seeming to be that Bessemer will sell for about \$4 and non-Bessemer on a commensurate basis. In the absence of a new price, however, if any quotation would be made it would be on the basis of \$5.50 for Bessemer and \$4.25 for non-Bessemer. Mesabi ores would be on about the same basis as non-Bessemer.

Pig Iron.—The sales of foundry pig have been

numerous, but the quantities have not been as large as in the weeks preceding. The business was brisk, but not sensational in any degree. Prices hold firm at \$14 on No. 1 and \$13.50 on No. 2. The sales of basic iron has been heavy, the price holding firm at \$13. Some off irons have been sold this week at \$12. Nothing is being done in Bessemer, the few sales being confined to the furnaces not in the association. No effort has been made to blow in idle stacks.

Finished Material.—The pace that was struck two weeks ago in the finished material market seems to be maintained. The buying still appears heavy in all branches and in some grades the mill capacity is pretty well filled for the few weeks to come. The heaviest buying of the week was in shapes. One order of 1,000 tons was placed and others of less size. Many buyers are rushing now to finish their contracts on building before the cold weather sets in. The demand for plates keeps up, and while prompt deliveries are practically impossible, sales are being made, the buyers taking the material when they can get it. The price holds firm at 1.35c., Pittsburg. The inquiry for bars is enormous and the price is strong at 1.25c. The prospects of delivery are about on a par with that on plates. No agreement has been reached as yet between the millmen and the railroads as to the price of rails, although there are inquiries on the market for 30,000 tons for steam roads and for 5,000 tons more for an electric line. These will be closed, it is thought, by the end of the week.

Old Irons.—The scrap market is unsettled just now. The dealers have great quantities of stock on hand, but are holding for a much higher price than the buyers are willing to pay.

Philadelphia, Pa. Dec. 6.

(From Our Special Correspondent.)

Pig Iron.—Brokers report more inquiry than sales. Consumers are willing enough to buy, but erroneous opinions are to the probable course of prices prevail. Some refuse to buy because they are confident of a drop next month. Others who use foundry are buying certain brands freely, in some cases paying a little advance over a month ago. Makers of No. 1 foundry are not courting business at lower figures. No. 2 is strong, but is not selling to any extent. The mill owners are anticipating large bar iron orders and are figuring on large lots for mid-winter. There is a disinclination to take a decided stand on the part of either buyers or sellers. No. 1 X is \$17; No. 2, \$16@16.25; plain, \$15.50; standard forge, \$15; basic, \$14.50.

Billets.—Users of billets have been purchasing in a moderate way. Eastern work is increasing and some fine contracts have been booked which will necessitate purchases from mills. At \$21 for Bessemer buyers are not objecting, though most have bought at less.

Merchant Bar.—The bar mills are doing an excellent business and at good prices. The smaller customers have begun to buy more liberally and the big orders placed will give our mills something to do far into the winter. Strong at 1.50.

Sheets.—The stores are doing a good business in sheets for immediate delivery. Orders at mills are slacking up a little. Sheet mills will be well employed all winter at good prices. No. 10 is 2.20; No. 28, 3.40.

Pipes and Tubes.—There is a good line of work coming along and no difficulty in getting good prices. Pipe orders for midwinter work and spring delivery are now being figured on.

Merchant Steel.—While our business does not aggregate much, the tone of the market is strong.

Plates.—Only a local business has been done this week. All mills are fairly supplied with work for the next 3 or 4 months. Quarter-inch, 1.60; flange, 1.80; shell, 1.65.

Structural Material.—Bids are being made this week on 3 or 4 office buildings. The managers report business all around. The prices realized are satisfactory and a busy winter is in sight. Beams and channels, 1.70@1.75.

Steel Rails.—A representative of the Cambria Steel Company said that the railroad companies were ordering rails as fast as needed and that there would be no difficulty in selling all the rails wanted at \$26.

Old Rails.—Small lots are being handled at \$17.50@18.

Scrap.—Choice railroad is \$17.50; heavy steel scrap, \$15; iron axles, \$21; steel axles, \$18; No. 1 yard scrap, \$13.50@14.

Pittsburg. Dec. 5.

(From Our Special Correspondent.)

There are no features in the iron and steel markets this week of any special note. The dullness of the past week continues. Few sales of Bessemer pig iron were made and the sales of foundry and gray forge were not as large as last week. Prices, however, are firm and small sales of Bessemer pig iron have been made at 25c. a ton higher. Preparations are being made to start three more blast furnaces at Sharon and Sharpsville. Hall Furnace of the Republic

Iron and Steel Company is being relined and will be started by January 1st. Alice Furnace of Pickands, Mather & Co., at Sharpville, is also being repaired and will soon be put in blast. The steel market, as far as Bessemer steel billets are concerned, is extremely dull. There is an unusually heavy demand for plates and the mills here have orders enough on hand to keep them busy for months. The pool prices established last month still rule. It is reported that at a meeting held in New York last week a change was decided upon, but this could not be verified. It is known that the leading manufacturers of steel plates had been in secret session for several days, but the object of the meeting and the result have not been made public. Sheets continue to be in demand, but there is no change in prices since the advance of last week. The general advisory board of the Amalgamated Association met in secret session here on Monday and decided to send organizers into every non-union mill in several of the industrial combinations. The object is to strengthen the organization.

Pig Iron.—There was but little demand for Bessemer pig iron this week and not more than 1,000 tons were sold. The price was \$14@14.25. No. 2 foundry is quoted at \$14.75@15 and gray forge at \$13.25@13.50. Not more than 2,000 tons of forge and foundry iron were sold this week.

Steel.—But few sales of Bessemer steel billets were made this week, not more than 500 tons having been sold at the association price of \$19.75 delivered in Pittsburgh. There is no change in the prices of plates, but a new schedule of prices is likely to be made at any time. The result of the recent meeting has not yet been announced.

Sheets.—The market is stronger this week, but there is no change in prices. No. 28 remains at 3c. and No. 27 at 2.90c. Galvanized continues strong at 70, 10 and 5% off, with a freight allowance of 15c.

Ferro-manganese.—The price remains at \$65 for 80% domestic in large lots and \$75 for small lots.

New York, Dec. 7.

The local iron market is active and generally strong. In foreign trade we note shipments of \$37,000 worth of manufactured steel, \$10,000 worth of pumping machinery, and \$20,000 of street railroad material to India; \$35,000 worth of machinery to France; \$40,000 worth of sugar machinery and \$175,000 of street railway material to Havana, and \$25,000 worth of finished iron to Mexico.

Pig Iron.—Buying has fallen off somewhat, but prices are firm. We quote for Northern irons, tidewater delivery: No. 1 X foundry, \$16.75@17.75; No. 2 X, \$15.50@16; No. 2 plain, \$15@15.25; gray forge, \$14.50@14.75. For Southern irons on dock, New York, No. 1 foundry, \$15.25@15.75; No. 2, \$14.50@15; No. 3, \$14.25@14.50; No. 4, \$13.50@14; No. 1 soft, \$15.50@15.75; No. 2, \$14.25@14.50.

Bar Iron and Steel.—Demand holds up pretty well. We quote common bars at 1.35c. for large lots on dock; refined bars, 1.45c.; soft steel bars, 1.40c.

Plates.—Business is as good as it has been recently. We quote for large lots at tidewater: Tank, 1/4-in. and heavier, 1.50c.; shell, 1.55c.; flange, 1.60c.; marine, 1.70c.; universal, 1.50c.

Steel Rails and Rail Fastenings.—The rail pool seems determined to keep up prices. There are numerous inquiries for small lots from abroad. Light rails are selling between \$25@30. Standard sections are quoted at \$26. Splice bars are 1.30@1.35c.; spikes, 1.45c.; fish plates, 1.30c.; bolts, 2.05@2.25c.

Structural Materials.—Demand is steady. We continue to quote large lots at tidewater: Beams, 1.65c.; channels, 1.65c.; angles, 1.30c.; tees, 1.70c.; zees, 1.65c.

METAL MARKET.

New York, Dec. 7.

Gold and Silver.

Gold and Silver Exports and Imports at all United States ports in October and year.

Table with columns for Metal, October (1899, 1900), Year (1899, 1900), and Excess. Rows include GOLD, SILVER, and Excess.

These figures include the exports and imports at all United States ports, and are furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York For the week ending December 6th, 1900, and for years from January 1st, 1890, 1899, 1898, 1897.

Table with columns for Period, Gold (Exports, Imports), Silver (Exports, Imports), and Total Excess, Exp. or Imp. Rows include We'k, 1900, 1899, 1898, 1897.

Imports of gold were from the West Indies, of silver from Mexico. Exports of gold were to the West Indies; those of silver went chiefly to London.

The United States Assay Office in New York reports the total receipts of silver at 49,000 oz. for the week. Total since January 1st, 4,601,000 oz.

Average Prices of Silver per oz. Troy.

Table with columns for Month, 1900, 1899, 1898, and sub-columns for Lond'n, N. Y., Pence, Cents. Rows include January through December and Year.

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

Average Prices of Metals per lb., New York

Table with columns for Month, COPPER, TIN, LEAD, and SPELTER, and sub-columns for 1900, 1899. Rows include Jan through Dec and Year.

Commencing with March 17th, the prices given in the table for copper are the averages for electrolytic copper; this is the case for both 1899 and 1900. The average price for Lake copper for the year 1899 was 17.61c. For January, 1900, the average price of Lake copper was 16.33c.; for February, 16.08c.; for March, 16.55c.; for April, 16.94c.; for May, 16.55c.; for June, 16c.; for July, 16.16c.; for August, 16.38c.; for September, 16.63c.; for October, 16.64c.; for November, 16.80c.

Prices of Foreign Coins.

Table with columns for Bid, Asked, and rows for Mexican dollars, Peruvian soles and Chilean pesos, Victoria sovereigns, Twenty francs, Twenty marks, Spanish 25 pesetas.

Financial Notes of the Week.

Business continues active and the speculative markets strong. The demand for money in Europe is still so strong as to hold back gold shipments. The report of the Secretary of the Treasury is published this week, but is a statement of well-known conditions and contains no recommendations of importance.

Under purchases of silver for India account, the amounts offering have been readily absorbed. Buyers are careful about advancing prices in their efforts to secure the bullion output.

The statement of the United States Treasury on Wednesday, December 5th, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week:

Table with columns for Gold, Silver, Legal tenders, Treas. notes, etc., and rows for Nov. 27, Dec. 5, Changes.

Treasury deposits with national banks amounted to \$96,142,700, showing a decrease of \$641,065 for the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House for the week ending December 1st—gives the following totals, comparison being

made with the corresponding week in 1899 and 1898:

Table with columns for 1898, 1899, 1900 and rows for Loans and discounts, Deposits, Circulation, Reserve, Specie, Legal tenders, Total reserve, Legal requirements, Balance, surplus, Changes for the week.

Imports and Exports of Metals.

Large table with columns for Port, Week, Dec. 5, Year 1900, and sub-columns for Expts, Impts. Rows include New York (Aluminum, Antimony, Chrome ore, Copper, Ferro-Chrome, Ferro-manganese, Iron ore, Lead, Manganese ore, Metals, old scrap, Nails, Nickel, Rail'd material, Rails, old, Spiegeleisen, Steel bars, plates, Tin, Zinc), Baltimore (Antimony, Chrome ore, Copper, Ferro-manganese, Iron pig, bar, etc., Manganese ore, Metals, old & Rails, Nails, Pipe iron & steel, Silicon, Spiegeleisen, Steel, bars, etc., Tin, Zinc), Philadelphia (Antimony, Chrome ore, Copper, Ferro-manganese, Iron pig, bar, etc., Manganese ore, Metals, old & Rails, Nails, Pipe iron & steel, Silicon, Spiegeleisen, Steel, bars, etc., Tin, Zinc).

Total United States.

Table with columns for Articles, Oct. 1900, Year 1900, and sub-columns for Expts, Impts. Rows include Antimony, Copper, Iron, Lead, Manganese ore, Nickel, Nails, Quicksilver, Steel, Tin, Zinc.

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, 3/4c. a lb. Lead, 1 1/2c. a lb. on lead in ores; 2 1/2c. per lb. on pigs, bars, etc.; 2 1/2c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb. Quicksilver, 7c. per lb. Spelter or zinc, 1 1/2c. per lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

creases of \$11,778,000 in loans and discounts, \$13,019,600 in deposits, and \$2,152,500 in specie; decreases of \$18,200 in circulation, \$310,200 in legal tenders, and \$1,412,600 in surplus reserve.

The Treasury Department's estimate of the money in the United States on December 1st is shown in the following table:

	Total Stock.	In Treasury.	In Circulation.
Gold coin (inc. bullion in Treas.)	\$1,099,184,997	\$243,235,735	\$624,702,913
Gold Certificates	.....	.....	231,246,349
Silver Dollars	500,403,541	4,978,800	73,811,334
Silver Certif.	.....	.....	421,613,407
Subsid. Sil.	87,200,371	5,482,866	81,717,500
Treas. Nts of 1890.	63,448,000	86,670	63,361,330
U. S. Notes	346,681,016	11,321,657	335,359,359
Currency Certif.	.....	.....	1,690,000
Nat. Bank Notes	332,292,300	5,343,131	326,949,170
Totals	\$2,420,210,225	\$270,448,858	\$2,158,761,367

For redemption of outstanding certificates an exact equivalent in amount of the appropriate kinds of money is held in the Treasury, and is not included in the account of money held as assets of the Government. This statement of money held in the Treasury as assets of the Government does not include deposits of public money in national bank depositaries to the credit of the Treasury of the United States, and amounting to \$89,013,973. The estimated circulation per capita is \$28.04. The amount in circulation shows an increase of \$19,579,955 over November 1st, 1900; and of \$180,232,634 over December 1st, 1899.

The coinage executed at the Mints of the United States in November and the 11 months of the year is reported by the Bureau of the Mint as below:

Denominations	November		Jan.-Nov.	
	Pieces.	Value.	Pieces.	Value.
Double eag. es.	613,000	\$12,660,000	4,150,542	\$83,010,840.00
Eagles	.....	.....	374,918	3,749,180.00
Half eagles	105,000	525,000	1,573,677	7,728,295.00
Quar. eagles	.....	.....	27,136	67,840.00
Total gold	778,000	\$13,185,000	6,126,273	\$94,556,155.00
Dollars	2,462,000	2,462,000	23,062,612	23,062,612.00
Half-dollars	912,000	456,000	9,294,612	4,647,306.00
Quar.-dollars	690,000	172,500	11,013,197	3,510,799.25
Dimes	620,000	6,200	21,938,882	2,193,888.20
Total silver	4,594,000	\$3,130,000	68,339,303	\$33,414,605.45
Five c. nickels	3,518,000	175,900	23,915,195	1,197,759.75
One c. nickels	5,422,000	54,220	53,249,664	532,049.64
Total minor.	8,940,000	230,120	77,160,159	\$1,729,809.39
Total Coinage	11,272,000	\$16,545,120	151,625,735	\$149,700,569.81
Total, 1899	22,365,120	\$9,511,070	125,719,936	\$129,531,379.69

There is very little change in the total coinage this year as compared with 1899.

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

Banks.	1899		1900	
	Gold.	Silver.	Gold.	Silver.
N. Y. Ass'n	\$145,314,500	.....	\$166,895,000	.....
England	155,653,445	.....	159,270,105	.....
France	377,537,490	\$233,944,895	461,965,385	\$222,438,105
Germany	120,080,000	61,860,000	132,765,000	68,300,000
Spain	68,000,000	70,615,000	69,370,000	81,800,000
Neth'lds	18,300,000	29,280,000	21,390,000	27,755,000
Belgium	14,815,000	7,410,000	14,075,000	7,185,000
Italy	77,040,000	7,455,000	77,255,000	8,675,000
Russia	432,410,000	24,005,000	360,695,000	30,630,000

The returns of the Associated Banks of New York are of date December 1st, and the others are of date November 30th, 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 22d, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
India	£4,749,725	£6,820,557	£2,070,832
China	1,285,978	2,016,136	£ 730,158
The Straits	269,536	764,316	£ 494,780
Totals	£6,285,239	£9,601,059	£ 3,315,850

Arrivals for the week, this year, were £189,000 in bar silver from New York, and £3,000 from Australia; total, £192,000. Shipments were £119,000 in bar silver to Bombay and £34,670 to Hong Kong; total, £153,670.

Indian exchange has been a shade higher, at 15.97d. per rupee, and the demand for Council bills in London has exceeded the supply. The Indian Government has already met about all the charges payable in London for the year, and will need to remit very little for some months to come.

Other Metals.

Daily Prices of Metals in New York.

December.	Sterling Exchange.	Silver.			Copper.			Lead	Spelter.	
		Fine oz. Cts.	London. Pence.	Lake. cts. # lb.	Electrolytic # lb.	London # ton.	Tin, cts. # lb.		N. Y. cts. # lb.	St. L. cts. # lb.
1	4.85 1/4	64 3/4	29 3/4	16 1/2	16 1/2	.....	27 3/4	4.32 1/2	4.35	4.17 1/2
3	4.85 1/4	64 3/4	29 3/4	16 1/2	16 1/2	7 1/2	27 3/4	4.32 1/2	4.35	4.17 1/2
4	4.85 1/4	64 1/4	29 1/4	16 1/2	16 1/2	7 1/2	27 3/4	4.32 1/2	4.35	4.17 1/2
5	4.85 1/4	64 1/4	29 1/4	16 1/2	16 1/2	7 1/2	27 1/4	4.32 1/2	4.35	4.17 1/2
6	4.85 1/4	64 1/4	29 1/4	16 1/2	16 1/2	7 1/2	27 1/4	4.32 1/2	4.35	4.17 1/2
7	4.85	64 1/4	29 1/4	16 1/2	16 1/2	7 1/2	27 3/4	4.32 1/2	4.30	4.12 1/2

London quotations are per long ton (2,240 lbs.) standard copper, which is now the equivalent of the former g. m. b.'s. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The market is quiet. Consumption continues good, but manufacturers, having covered their early requirements, are holding back. From information we have gathered it appears that next year consumption will be even larger than it has been this year. Slightly lower prices have in some cases been named, and we quote Lake copper at 16 1/2c.; electrolytic in cakes, wirebars and ingots at 16 1/2c.; in cathodes at 16 1/2c.; casting copper at 16 1/2c.

The market for standard copper in London, which closed last week at £72 5s. for spot, £73 for three months, opened 7s. 6d. higher. On Tuesday, however, it declined 5s., and on Wednesday further 2s. 6d. On Thursday it was £72 7s. 6d. for spot, £73 for three months, and the closing quotations are cabled as £72 5s. for spot and £72 17s. 6d. for three months.

Statistics for the second half of November show a decrease of 200 tons. Refined and manufactured sorts we quote: English tough, £75 10s. @ £76; best selected, £78 @ £78 10s.; strong sheets, £85; India sheets, £82; yellow metal, 7d.

The steamer "Orwell," which arrived at New York this week, brought 4,942 ingots (150 tons) of copper from Japan.

Tin.—The market this week has experienced a violent slump, London having declined fully £5 and New York prices having gone from 27 1/2 to 26 1/2c. However, in the American market spot tin has not declined to any extent, as it is selling still at 27 1/2c., the reason being that it is extremely scarce and no large arrivals in sight until late in December. The London market appears to be entirely at the mercy of speculators who operate without regard to the statistical position. At the close we quote spot tin in our market at 27 1/2c.; January delivery at 27c.

The London market, which closed last week at £124 5s. for spot, £124 for three months, opened 7s. 6d. higher. It declined £1 on Tuesday and £4 on Thursday. At the close the quotations are cabled as £120 12s. 6d. for spot and £120 7s. 6d. for three months.

The visible supply of tin on December 1st is estimated as follows, in long tons:

	Store.	Afloat.	Totals.
London	6,087	4,564	10,651
Holland	2,720	408	3,128
U. S., exc. Pacific ports	2,130	2,015	4,145
Totals	10,937	6,987	17,924

The total shows an increase of 2,123 tons over November 1st; but a decrease of 1,148 tons as compared with December 1st, 1899.

Exports of tin from the Straits in November were 4,510 long tons, which compares with 3,020 tons last year, showing an increase of 1,490 tons.

Lead.—The market continues firm and a good business is doing at last prices, 4.32 1/2 @ 4.37 1/2c. New York, 4.22 1/2 @ 4.32 1/2c. St. Louis.

Our cables from Europe report the market somewhat lower, Spanish lead being quoted at £16 12s. 6d., English lead 2s. 6d. higher.

Spelter.—A good business has been done this week both for near-by and distant deliveries at slightly lower prices, 4.12 1/2c. St. Louis, 4.30c. New York.

The foreign market is somewhat lower, good ordinaries being quoted at £18 17s. 6d., specials 5s. higher.

Exports of zinc ore from the United States for the 10 months ending October 31st were 31,602 tons. In 1899 the exports were 20,259 tons, showing an increase of 11,343 tons, or 55.9%, this year.

Antimony.—There is no change. We quote Cookson's at 10c.; Hallett's at 9 1/2c.; U. S. Star at 9 1/2c.

Nickel.—The price continues firm at 50 @ 60c. per lb., according to size and terms of order.

Exports of nickel, nickel oxide and matte from the United States for the 10 months end-

ing October 31st were 5,065,006 lbs., against 3,978,455 lbs. in 1899; showing an increase of 1,086,551 lbs., or 27.3%, this year.

Platinum.—Consumption continues good and prices are strong. For ingot platinum in large quantities \$18.20 per Troy oz. is quoted in New York. In London a recent quotation gives 75s. per ounce, unmanufactured, and 77s. 6d. @ 80s. for crucibles, etc. This is very nearly on a parity with New York prices.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 72c. per gram.

Imports of platinum into the United States for the 10 months ending October 31st were 6,305 lbs., against 5,090 lbs. in 1899.

Quicksilver.—The New York quotation continues unchanged at \$51 per flask for large lots, with \$52.50 @ \$54 asked for small quantities. San Francisco prices are \$48 on local deliveries, and \$43.50 @ \$44 on expert orders. The London price is £9 2s. 6d. per flask, with the same price named from second hands.

Exports of quicksilver from all United States ports for the 10 months ending October 31st were 671,574 lbs., which compares with 1,158,052 lbs. in 1899; showing a decrease of 486,478 lbs., or 42%, this year.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

Aluminum.	Per lb.	Ferro Titanium (20%).	Per lb.
No. 1, 99% ingots	33 @ 37c.	Ferro-Tungsten (37%).	32c.
No. 2, 90% ingots	31 @ 34c.	Manganese (over 99%).	\$2.75 @ \$3
Rolled sheets	42c. up	Manganese Cop. (2% Mn)	32c.
Alum.-bronze	20 @ 23c.	Manganese Cop. (3% Mn)	35c.
Nickel-alum	33 @ 39c.	Molybdenum (Best)	\$1 4 1/2
Bismuth	22 1/2	Phosphorus	50c.
Chromium (over 99%)	1.00	Ferro-Molybdenum (50%)	\$1.00
Copper, red oxide	50c.	American	70c.
Ferro-Titanium (10%)	90c.	Tungsten (Best)	86c.

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

LATE NEWS.

It is announced that the New England Gas and Coke Company, of Boston, has contracted for 60,000 tons of slack or run-of-mine coal from the Pittsburg District, to be used in its coke and gas plant near Boston. Heretofore this plant has used Nova Scotia coal. It is understood, however, that the Dominion Coal Company at present can sell its Cape Breton coal in Canada at better prices than are obtained under its contract with the New England Company. Just now, therefore, there is an advantage in buying Pittsburg coal, which is also of better quality than the Nova Scotia article.

(Special Report of Rogers, Brown & Co.)

Buffalo, N. Y., December 5th.—There has been a let-up in the sales of foundry and mill iron in this district, but there has been no sign of an abatement in the demand for early shipment on existing contracts. Local furnaces continue to be hampered by lack of cars, and are thus prevented from supplying the stock most foundries have delayed putting in. Prices remain very firm on the basis mentioned below for cash, f. o. b. Buffalo: No. 1 Strong Foundry coke iron, Lake Superior ore, \$15.75; No. 2, \$15.25; Southern Soft, No. 1, \$16; No. 2, \$15.50; Lake Superior Charcoal, \$18; Coke Malleable, \$15.

Lawrence County—South Dakota.

(From Our Special Correspondent.)

New Cyanide Plants.—Clean-ups have been made at the Cleopatra, Detroit & Deadwood, Wasp No. 2 and Portland companies' new cyanide plants, and the managements seem well satisfied. A peculiar thing is that no two ores are treated alike, but each district requires a different process. Three of the plants treat dry and the fourth wet. The slimes in the wet process bother considerably. At the start, the plants have about paid expenses. This week the new 200-ton cyanide plant of the Spearfish Mining Company will start. The officers of the company will be present from Colorado Springs. The Homestake cyanide plant is all enclosed, all tanks are in place, and it is expected that the first ore will be treated January 15th. The machinery for the enlargement of the Golden Crown Mill in North Lead District is placed. The McLaughlin cyanide plant below Crook City, on Whitewood Creek, will be ready to start in January. The Shawmut Mining Company, of Boston, will make a clean-up this week at the Esmeralda Mine, in the Blacktail District. The Cook & Gibbs plant, at the mouth of Blacktail, is now running steadily on ore from the Omega Mine, at Terraville. At Ragged Top, Allen, Small and associates are treating 20 tons of ore daily with success.

Hardin Companies.—A number of the officers of the Hardin companies will arrive from Chicago soon to start work again in Two Bit Gulch. The original Hardin Mine will probably be the first to start. All indebtedness of the companies has been settled, amounting to \$5,500, and a consolidation of the companies effected.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 690.)

New York. Dec. 7.

The imports and exports of chemicals, etc., at all United States ports in October were as below:

Table with columns: Articles, October (Imports, Exports), Year, 1900 (Imports, Exports). Rows include Bleaching Powder, Caustic Soda, Sal Soda, Soda Ash, Chlorate of Potash, Copper Sulphate, Nitrate of Soda, Muriate of Potash, Phosphate Rock, Pyrites, Brimstone, Saltpeter.

The October statement shows an increase in a number of articles, chiefly in those imported.

Heavy Chemicals.—Contract booking for 1901 absorbs most attention. Prices on future business are based on quotations below, while immediate shipments are made at a slight advance.

We quote per 100 lbs. as follows: Domestic soda ash in bulk is worth 2 1/4 c. per 100 lbs. less than quotations below.

Table with columns: Articles, Domestic (F.o.b. Works, In New York), Foreign (In New York). Rows include Alkali, Caustic Soda, Sal Soda, Bicarb. Soda, Bleach, Chl. Pot. Cryst. powder.

Acids.—November contract deliveries of sulphuric and muriatic acids show an increase over the previous month. Acetic makers are to confer on next year's business.

Table with columns: Articles, Domestic (F.o.b. Works, In New York), Foreign (In New York). Rows include Acetic, Blue Vitriol, Aqua Fortis, Muriatic, Sulphuric.

Tin Crystals.—Raw material being easier, tin crystals have dropped in price to 22c. per lb. for barrel lots.

Copperas.—Keen competition forced the price in car-load lots from 7 1/2 c. per 100 lbs. to 45c. Lower prices are anticipated.

Brimstone.—New York arrivals this week were 2,920 tons. Spot unmixed seconds sold at \$22 per ton, and shipments are worth \$20.75@21.

Pyrites.—The Virginia mines are increasing their production. We hear of a charter of 1,931 tons from Huelva, Spain, to Philadelphia, at 11s. (\$2.64).

Fertilizing Chemicals.—Southern buying of the leading ammoniates is better. Sulphate of ammonia, gas liquor, for this and next month's delivery sold at \$2.75@2.80 per 100 lbs.

\$1.85 and 10c. per unit f. o. b. Chicago; Calcutta bone-meal, regular grade, \$22.50 per ton, and off grades, \$19; domestic steamed ground bone, \$18@19 per ton.

Nitrate of Soda.—This market is quiet, owing to the arrival of the steamer "Cumbal" with 37,150 bags, and the "Bellaggio" at New York with 37,939 bags.

Messrs. Mortimer & Wisner's monthly statement of nitrate of soda, dated New York, December 1st, gives the following statistics:

Table with columns: 1900, 1899, 1898. Rows include Imp. into Atlantic ports, Stock in store and afloat, Deliveries past month, Total yearly deliveries, Prices current, Dec. 1.

Salt-peter.—Crude on spot is easier at \$3.40 per 100 lbs., and to arrive at \$3.35. Imports for the 11 months were 54,452 bags, against 59,481 bays last year.

Phosphates.—New business is limited. On export account charters were booked at 1,165 tons from Pensacola to Cette, France, at 25s. (\$6) December sailing, and 1,046 tons from Tampa to St. Nazaire, France, at 23s. 6d. (\$5.52).

Table with columns: Phosphates, Per Ton F. o. b., C. i. f. Un'd Kingdom or European Ports. Rows include Fla. hard rock, Fla. land pebble, Tenn. rock, etc.

* Fernandina. † Mt. Pleasant. ‡ At mines. § On vessels, Ashley River.

Liverpool. Nov. 21. (Special Report of Joseph P. Brunner & Co.)

The market for heavy chemicals continues in a strong position and there is a steady trade going on.

Soda ash is in good demand at full prices. Quotations vary according to export market, but the range for tierces may be called about as follows: Lebanc ash, 48%, £5 12s. 6d.@£5 17s. 6d.

Bleaching powder receives a fair amount of attention from buyers and hardwood is held for £6 10s.@£7 per ton, net cash as to market.

Chlorate of potash is reported in better request at 3 1/4 d. per lb. net cash.

Bicarb. soda is unchanged at £6 15s. per ton, less 2 1/2% for the finest quality in 1 cwt. kegs,

with usual allowances for larger packages; also special terms for certain export markets.

Sulphate of ammonia is quiet, but at the same time prices are stiffer at £11 2s. 6d.@£11 5s. per ton, less 2 1/2% for good gray 24@25% in double bags f. o. b. here.

Nitrate of soda is in light demand on spot, but remains steady at £8 10s.@£8 15s. per ton, less 2 1/2% for double bags f. o. b. here as to quality.

MINING STOCKS.

Complete quotations will be found on pages 687 and 688 of mining stocks listed and dealt in at:

Table with columns: Boston, Colo. Springs, Denver, New York, Philadelphia, Salt Lake, San Francisco, Spokane, Toronto, Montreal, London, Mexico, Paris.

New York. Dec. 7.

Little business was transacted outside of the copper list. In the copper group Amalgamated weakened from \$96 to \$90 1/2; Anaconda from \$49 to \$46 1/2; British Columbia from \$21 1/2 to \$19 1/2.

In the gold and silver stocks Ontario, of Utah, sold at \$7, and Horn Silver at \$1.35@1.25; Iron Silver, of Colorado, at 85c. on declaration of a 10c. dividend payable this month; Isabella, of Cripple Creek, sold at 69c.; Anaconda Gold at 40@48c., and Gold Dollar at 26c.

Standard Oil shares broke the record on December 3d, selling up to \$825. It is said that certain employees of the company who bought small blocks of the stock at low prices are the sellers on the curb.

Auction sales recently were 75 common shares Alabama & Georgia Iron Company at \$8, and 75 preferred at \$21; \$1,000 in 6% bond of the Chateaugay Ore and Iron Company at 32 1/2; \$15,000 in 5% first mortgage gold bonds Virginia Iron, Coal and Coke Company at 35 1/2; 562 shares Batopilas Mining Company, of Mexico at \$1 per share.

Boston. Dec. 5.

(From Our Special Correspondent.)

The reaction from the boom of the past three weeks is now painfully apparent, and we are coming down again to a dull and narrow market. The declaration of dividends by several companies has not helped matters and we can hardly look for much recovery now until after the holidays.

Amalgamated Copper has been dull and heavy, and its allied stocks have followed suit, with the exception, perhaps, of Boston & Montana, which had a little spurt to-day to \$329, but lost most of the gain later.

In the gold stocks, business was not active, but Centennial-Eureka was higher, selling up to \$25@25 1/2. Cochiti was steady, about \$9@9 1/2.

The stockholders of the Cochiti Gold Mining Company at a special meeting voted to increase the capital stock 25,000 shares, to 200,000, par \$10. This will liquidate the floating debt of \$141,400 and leave working capital.

The dividend record of Lake Superior copper mines in 1900 is completed with the Calumet & Hecla declaration. Six companies paid, against five in 1899. The Calumet & Hecla paid \$70, against \$100 last year; Tamarack \$17, against \$10; Quincy \$9, against \$9.50; Osceola, \$6, against \$6; Wolverine \$4, against \$3.50, and Atlantic \$2, against nothing in 1899.

Colorado Springs. Dec. 1.

(From an Occasional Correspondent.)

John Hays Hammond, at the request of the Board of Directors of the Stratton's Independence Mine, has made his examination of that property and submitted his report and recom-

mentations, which were summarized in the columns of the "Engineering and Mining Journal," last week. To the newspaper men here he said that he did not profess to be infallible, and he did not claim to be able to see either into the ground or the future of a mining property any further than other men.

Remarkable as it may seem, the first rumors that the Independence Mine had been worked out had only the most transient effect on the Colorado Springs stock market. The small decline in the prices of stocks on the day the news was received was recorded on the following day, demonstrating the real stability of the market.

To the initiated, however, the Independence incident occasioned no great surprise. It was known the property was being worked under high pressure and on a policy that could not long continue without collapse. The mine was sold for a sensational price—\$10,000,000, which was double the par value of the shares. Next the price of the stock rose £3 per share, or a valuation of \$15,000,000. To make such a price for the stock look reasonable, the property was forced to pay dividends of 40% on the par value of its stock, or \$488,000, every three months. Had the company employed a press representative the mine could not have been boomed more effectively than it has been. One of the most effective incidents of this booming policy was the contract made by the management with Tutt & Penrose to furnish them 5,000 tons of ore a month for five years.

A sequel to this was the rumor to-day that Tutt & Penrose were arranging to bring suit against the Independence Company for the fulfillment of this contract. Yet the Independence has been a wonderful mine, and there are possibilities of rich ore bodies still undiscovered in its territory.

Salt Lake City. Dec. 1.

(From Our Special Correspondent.)

Notwithstanding the Thanksgiving holiday, the volume of trading in Utah mining shares records another handsome increase for the week, with more outside inquiries coming to hand than at any time during the year. Sales on the Exchange for the 5 days are officially reported at 152,400 shares, which brought \$91,267. On Tuesday the sales aggregated \$27,455, the largest business of any day thus far in 1900.

The feature of the week is the advance of Daly-West from \$24.02 to \$25.82½, another high mark for this favorite.

Ajax is higher and stronger. Bullion Beck remains firm. The little spurt in Centennial-Eureka fell away in keeping with the softening in Boston. Consolidated Mercur again sags. It is quite generally known that Captain De La Mar is offering his entire holdings. Dexter is higher in view of the anticipation that the new Dexter-Tuscarora will soon be on the dividend list. Grand Central closes the week in better form and somewhat firmer. The Grand Central-Mammoth trespass suit, now on trial at Nephi, is the attraction in Utah mining circles, judging from the market quotations. This is one of the most important cases ever tried in Utah. Mammoth closes rather weak at \$2. Lower Mammoth holds firm at 77. May Day showed improvement up to Saturday, selling above 40, but closed a shade weaker. Star Consolidated rules above 90 and a further advance is intimated. Yankee Consolidated closed strong, 10½ bid, 11 asked.

Swansea has declared the regular \$5,000 dividend and also an extra of \$5,000 premium, both payable December 20th. The shares have advanced to \$4.06 bid, \$4.38 asked. Silver Shield, a Bingham property, with 300,000 shares, is just listed on the Exchange and announces a dividend of ½c a share, or \$1,500 in all, payable December 10th. The Rocco-Homestake-Nevada has declared a 1½c dividend, or \$4,500 in all, payable December 10th. On the same day the Silver King will pay the customary \$75,000 dividend.

San Francisco. Dec. 1.

(From Our Special Correspondent.)

The dullness of the mining stock market was increased this week by the holiday on Thursday. Trading was light, though prices are generally higher. Gould & Curry stock kept up, though it is stated that the opposition to the present management has secured a majority.

Some prices noted are: Consolidated California & Virginia, \$1.40; Gould & Curry, \$1.05; Ophir, 85c.; Caledonia, 44c.; Silver Hill, 45c.; Sierra Nevada, 37c.. For Standard Consolidated \$3.35 was bid, with no sales.

On the Oil Exchange business was very active, with a strong demand for stocks. The highest price yet reached for any oil stock was recorded this week in a sale of 10 shares of Hanford at \$118 per share. Some other quotations noted are: Kern River, \$17.25; San Joaquin, \$9.50; Home Oil, \$4.45; Twenty-eight, \$2.50; McKittrick, 68c.; Caribou, 61c.; Petroleum Center, 27c.

While dividend-payers are in demand, there is a growing call for prospects, and speculation in them is increasing. In fact, a boom in these stocks is well under way.

London. Nov. 24.

(From Our Special Correspondent.)

The mining stock market continues in very low water and everyone has given up hope for any improvement at present. With the Transvaal still unsettled, with West Australia under a cloud and with no other mining district of the world showing any special features, the present dullness is after all only natural. What the London market wants is a new gold district sufficiently far away for distance to lend enchantment to the view. A discovery of an extraordinarily rich gold deposit in, say, Thibet would give just the fillip that the London market requires.

Though the market is so dull, it has not prevented one group of promoters from appealing to the public for subscriptions to a mining company. This company is the Rose of Sharon & Shamrock Gold Mining Company, which is being floated by the Buluwayo Exploration Company to acquire mines of this name in the Gwelo District of Rhodesia. A considerable amount of development has been done and there appears to be plenty of ore in sight averaging \$20 per ton. The company comes out under influential auspices and a sufficient amount of working capital has been guaranteed by the underwriters, so the venture will go through all right. I do not suppose, however, that any money will come in from the general public in response to the advertisements, but that does not matter to the promoters. Rhodesia has not suffered so much from the Transvaal war as might have been expected, so that mining and exploration have not been interrupted to any serious extent. There are many properties awaiting flotation, but underwriters are so full of old things left on their hands that there is very little encouragement to proceed.

In the general gloom of London financial circles, it is pleasant to find that the directors of the Ymir Gold Mines Limited, in British Columbia, have found it advisable to duplicate the plant so as to provide an additional capacity of 100 tons a day, and that the money required for this has been provided entirely out of the profits of the past few months. This is one of the few successful British Columbia mines on the London market. At the commencement of the nature of the ore gave some trouble, but the skilled management has overcome these. The shareholders are to be congratulated on the success of their property.

Mining Stock Dividends.

The total dividends disbursed by the various companies identified with the mineral industry of the United States in the 11 months ending November 30th as far as reported to the "Engineering and Mining Journal" amounted to \$114,567,452, paid by 200 companies. Of the total, the gold, silver, copper, lead, zinc and quicksilver mines contributed \$48,750,942, or 42.5%, while the remaining \$65,816,510, or 57.5%, was paid by the petroleum, coal and coke, iron and steel and other companies. Were the dividends paid by private corporations, which are not reported, added it would appear that the returns received by capital invested in the mineral industry exceed those of any other industry in this country.

Copper mines paid \$30,439,529, or 62.4% of the total mining dividends. The Amalgamated Copper Company paid out \$6,000,000, or 8%, on its capital. This was derived from dividends of the companies controlled by it, including the Boston & Montana, which paid \$6,450,000, or 172%, per annum on its share-capital; Anaconda, \$4,800,000, or 16% per annum, and Parrot, \$1,379,100, or 60%. The Calumet & Hecla in Michigan paid \$5,000,000, or 200%, per annum on its capital stock. The Quincy, also of Michigan, paid \$900,000, or 36%, on its capital of \$2,500,000.

Gold and silver mines are credited with paying \$14,292,200, or 29.3% of the total. Stratton's Independence, Limited, of Cripple Creek, paid \$1,789,337, or 40%, per annum on its capital, while Portland in the same district paid \$750,000, or 25%, per annum. Homestake, of South Dakota, paid \$1,155,000, or 6%, per annum, and Silver King, of Utah, \$825,000, or 30%, per annum. Lead and zinc mines paid \$772,396, or 7.8% of the total mining dividends. California quicksilver mines paid \$201,500.

The American Smelting and Refining Company paid \$2,113,803, or at the rate of 7%, on its preferred stock, the National Lead Company, \$782,460, or 7%, on the preferred and \$149,054, or 1%, on the common stock.

Petroleum companies paid \$37,707,947, or 32.9% of the total dividends. Of this amount the Standard Oil Company paid \$37,050,000, or 48%, per annum on its outstanding capital stock. The remaining \$657,947 were paid by independent California and West Virginia companies.

Under iron and steel only those concerns are noted that are producing their own raw material. These paid \$20,110,623, or 17.6% of the total. The largest payer was the Federal Steel Company, with \$5,059,794, or 6% per annum on the preferred stock, and \$1,743,162, or 3% on the common. American Steel and Wire is next, with \$2,800,000 on the preferred and \$2,625,000 on the common; both at the rate of 7% per annum.

Republic Iron and Steel paid \$1,421,483, or 7% on the preferred stock, and National Steel, \$1,417,500, or 7% on preferred. The Tennessee Coal, Iron and Railroad Company paid \$902,144 on common and \$143,840 on preferred stock.

Coal and coke companies paid \$5,171,766, or 4.5% of the total. The Pittsburg Coal Company paid \$2,240,000, or 7% on its preferred stock, and the Pennsylvania Coal Company \$300,000, or 16% per annum.

Miscellaneous companies paid \$2,826,174, or 2.5% of the total dividends. The leading payers in this class were the American Agricultural Chemical Company, \$1,020,000, or 6%, on preferred stock; the Virginia-Carolina Chemical Company, \$800,000, or 16%, on preferred, and \$270,000, or 4%, on common; the National Salt Company, \$350,000, or 7%, on preferred and \$140,000, or 3½%, on common; Pacific Coast Borax Company, \$220,000, or 12%, on its capital.

DIVIDENDS.

NAME OF COMPANY.	Latest Dividend.			Total to date.
	Date.	Per share.	Total.	
†Acacia, Colo.	Dec. 15	\$.01	\$15,000	\$45,000
†Am. Sheet Steel, pf.	Jan. 15	1.75	.....	.....
Butte & Bost., Mont.	Dec. 10	5.00	1,000,000	1,000,000
Calumet & Hecla	Dec. 28	20.00	2,000,000	73,850,000
Center Creek, Mo.	Dec. 1	.20	20,000	40,000
Colo. Fuel & Iron, pf.	Dec. 20	8.00	180,000	1,160,000
Delaware & Hudson.	Dec. 15	1.25	437,500	.....
†Elkton Co., Colo.	Dec. 20	.03	75,000	979,461
*Empire State, Ia.	Dec. 4	.30	29,554	672,687
Hocking Valley, pf.	Jan. 16	2.00	254,508	.....
Iron Silver, Colo.	Dec. 20	.10	50,000	2,550,000
Maryland Coal, pf.	Dec. 31	3.00	86,550	640,869
*Nat'l Lead, pf.	Dec. 15	1.75	290,820	10,579,280
†National Steel, pf.	Dec. 31	1.75	472,500	3,307,500
*N. Y. & Hon. Rosario	Dec. 15	.40	60,000	1,415,000
*Osceola Con., Mich.	Dec. 2	3.00	279,000	3,638,500
†Republic, I. & St. pf.	Jan. 2	1.75	355,371	2,132,225
*Rocco, Homestake, Nev.	Dec. 10	.01½	4,500	9,000
*Silver King, Utah.	Dec. 10	.50	75,000	3,350,000
Silver Shield, Utah.	Dec. 10	.00½	1,500	1,500
*Swansea, Ut.	Dec. 10	.10	10,000	281,500
Standard Oil of N. J.	Dec. 15	10.00	9,750,000	73,125,000
Tamarack, Mich.	Dec. 28	10.00	600,000	7,290,000
Tomboy, Colo.	Dec. 14	.24	72,000	956,000

* Monthly. † Quarterly. § Extra.

ASSESSMENTS.

NAME OF COMPANY.	Location.	No.	Delinq.	Sale.	Amt.
Alta	Nev.	66	Dec. 6	Dec. 27	.05
Andes	Utah	52	Dec. 14	Jan. 4	.05
Annie	Utah	1	Dec. 1	.....	.00½
Badger	Ore.	66	Nov. 13	Dec. 4	.05
Bost & Belcher	Nev.	72	Dec. 7	Dec. 28	.15
Brunswick Con.	Cal.	15	Dec. 26	Jan. 28	.03
Bunker Hill	Utah	...	Dec. 6	Dec. 22	0.14
California	Cal.	...	Jan. 7	.....	.02
Caledonia	Nev.	49	Dec. 18	Jan. 8	.15
Centennial	Mich.	...	Dec. 12	.....	3.00
Centennial	Mich.	...	Apr. 12	.....	2.00
Challenge Con.	Nev.	30	Nov. 20	Dec. 11	.10
Chollar	Nev.	53	Dec. 6	Dec. 27	.10
Christmas	Utah	7	Dec. 13	Jan. 15	.00½
Con. Cal. & Va.	Nev.	16	Dec. 10	Dec. 10	.25
Con. Imperial	Nev.	46	Dec. 28	Jan. 23	.01
Crown Point	Nev.	80	Nov. 30	Dec. 21	.05
Crusader Con.	Utah	2	Dec. 10	Dec. 31	.00½
El Rey	Utah	2	Dec. 4	Dec. 21	.03
Eutonia	Utah	4	Dec. 10	Dec. 28	.00½
Four Aces	Utah	Jan. 4	.....	.....	.02
Golden Star	Cal.	2	Dec. 1	Jan. 2	0.14
Gonyon	Cal.	...	Dec. 1	Jan. 2	.00½
Hilda Gravel	Cal.	...	Dec. 22	.....	.01
Home	Cal.	...	Dec. 24	.....	.05
Ingot	Utah	Jan. 4	.....	.....	.01
Jefferson	Utah	1	Nov. 20	Dec. 10	.00½
Larkin	Cal.	8	Dec. 1	Dec. 24	.02
La Suerte	Cal.	...	Dec. 10	.....	.02½
Little Chief	Utah	5	Dec. 26	Jan. 14	.01
Mexican	Nev.	65	Dec. 18	Jan. 8	.15
Mooney Con.	Cal.	...	Dec. 10	.....	.20
Omaha Con.	Cal.	...	Dec. 22	.....	.50
Osceola Con.	Cal.	10	Nov. 19	Dec. 10	.01
Overman	Nev.	6	Dec. 11	Dec. 31	.05
Phoenix Silver	Utah	...	Nov. 13	Dec. 13	.00½
Potosi	Nev.	57	Nov. 22	Dec. 12	.10
Reward	Cal.	...	Dec. 11	.....	.02½
Savage	Nev.	102	Dec. 21	Jan. 11	.10
Sharp	Utah	2	Jan. 3	Jan. 23	.00½
Shoebridge Bonanza	Utah	6	Dec. 5	Dec. 21	.008
Sierra Nevada	Nev.	120	Nov. 20	Dec. 10	.15
Silver Bow	Utah	...	Jan. 10	Jan. 30	.00½
Tetro	Utah	16	Dec. 17	Jan. 5	.01
Texas	Cal.	...	Dec. 18	.....	.10
Union Con.	Nev.	60	Dec. 5	Dec. 26	.15
Valeo	Utah	4	Nov. 22	Dec. 15	.45
Yellow Jacket	Nev.	...	Nov. 6	Dec. 19	.10

ANNUAL MEETINGS.

Name of Co.	Locat'n.	Date.	Place of Meeting.
Cripple C. Colum.	Colo.	Dec. 17	Colo. Springs, Colo.
Enola	Colo.	Dec. 29	Colo. Springs, Colo.
*Holmes	Nev.	Dec. 19	San Francisco, Cal.
Little Bessie	Colo.	Dec. 18	Colo. Springs, Colo.
Maria A.	Colo.	Dec. 20	Colo. Springs, Colo.
N. Y. & Hond. R.	C. Am.	Dec. 14	45 Broadway, N. Y.
New Cent'l Coal.	Md.	Dec. 14	1 B'dway, N. Y. City.
Old Colony Cop.	Mich.	Dec. 12	Boston, Mass.
Princes	Colo.	Dec. 26	Colo. Springs, Colo.
*Sterl'g W. Lead.	Pa.	Jan. 15	Pittsburg, Pa.

*Special meeting.

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing companies like Alamo, Amalgamated, Anaconda, etc., with columns for location, par value, and sales for various dates in November and December.

BOSTON, MASS.

Table of stock quotations for Boston, Mass., listing companies like Adventure Con., Aetna Con., Alouez, etc., with columns for location, par value, and sales for various dates in November and December.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stocks including Am. Sm. & Ref., Am. S. & W. Con., Col. Fuel & I., etc., with columns for par value and sales.

Total sales, 508,067.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, Cal., listing companies like Belcher, Best & Belcher, Caledonia, etc., with columns for location, par value, and sales.

CALIFORNIA OIL STOCKS.

Table of California oil stocks including Blue Goose, Buckhorn, Cal. Standard, etc., with columns for par value and sales.

* Producers' Oil Exchange, San Francisco. Total sales, 56,438 shares.

PHILADELPHIA, PA.

Table of stock quotations for Philadelphia, Pa., listing companies like Am. Alkali, Am. Cement, etc., with columns for location, par value, and sales.

Total shares sold, 43,332. Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia.

SALT LAKE CITY, UTAH.

Table of stock quotations for Salt Lake City, Utah, listing companies like Ajax, Alice, Bullion Beck & Ch., etc., with columns for shares, par value, bid, and asked prices.

TORONTO, ONT.

Table of stock quotations for Toronto, Ont., listing companies like Ontario, Golden Star, Ham Reef, etc., with columns for par value and sales.

Total shares sold, 157,214. * Holiday.

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo., listing companies like Acacia, Alamo, Am. Con., etc., with columns for dates (Nov. 24-30) and prices (B, A).

Colorado Springs Mining Stock Exchange. Total sales, 1,365,288 shares. * Holiday.

MONTREAL, CANADA.

Table of stock quotations for Montreal, Canada, listing companies like Big Three, California, Can. Gold Fields, etc., with columns for dates (Week, Dec. 3) and prices (H, L, Sales).

* Montreal Stock Exchange. Total sales, 47,333 shares.

MEXICO.

Table of stock quotations for Mexico, listing companies like Durango, Barradon y Cab., Candalaria de Pan., etc., with columns for dates (Nov. 23) and prices (No. of shares, Last div'd, Prices).

DENVER, COLO.

Table of stock quotations for Denver, Colo., listing companies like Acacia, Anaconda, Arg. J., etc., with columns for dates (Nov. 24-29) and prices (B, A).

* Official Quotations Denver Stock Exchange. Total sales, 248,000 shares.

SPOKANE, WASH.

Table of stock quotations for Spokane, Wash., listing companies like Crystal, Deer Trail Con., Evening Star, etc., with columns for dates (Week Nov. 30) and prices (B, A).

PARIS.

Table of stock quotations for Paris, listing companies like Acieries de Creusot, Anzin, Boleo, etc., with columns for Country, Product, Capital Stock, Par value, Latest divs., and Prices (Opening, Closing).

LONDON

Table of stock quotations for London, listing companies like Alaska-Mexican, Alaska, Anaconda, etc., with columns for Country, Authorized capital, Par value, Last dividend, and Quotations (Buyers, Sellers).

DIVIDENDS. GOLD, SILVER, COPPER, ZINC, LEAD AND QUICKSILVER COMPANIES.

Table with columns: Number, Name and Location of Company, Authorized Capital Stock, Shares Issued, Dividends (Paid, Total to Date, Latest), and similar columns for a second set of companies.

COAL, IRON AND OTHER COMPANIES.

Table with columns: Number, Name and Location of Company, Authorized Capital Stock, Shares Issued, Dividends (Paid, Total to Date, Latest), and similar columns for a second set of companies.

This table is corrected up to October 24th. Correspondents are requested to forward changes or additions.

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

Table with multiple columns listing various chemicals and minerals such as Abrasives, Borax, Magnesium, Silver, and others, along with their respective prices and units.

THE RARE ELEMENTS.

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

Table listing rare elements such as Barium, Beryllium, Boron, Cadmium, and others, with their 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 Nov. 21. 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 Reviews.