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We are apparently at the beginning of another boom period. The reaction from the quiet which had prevailed in business for several months was first manifested in the speculative markets, which respond most quickly to current conditions. General business has followed the lead, however, and all sorts of new construction and other projects are coming forward, while the railroads are preparing for a period of heavy traffic. It looks as if a great deal of money is going to be put into new enterprises and the enlargement of old ones during the coming year. There is, as in all such periods, a danger of too much booming, and of overdoing the advance; but that is apparently inseparable from such periods, and cautious business men will make the necessary allowances to provide for it.

There is every indication that the mining industry will have its full share in the new expansion. A growing disposition to invest in mining enterprises has been shown of late, and much of the surplus capital now looking for investment will probably be put into mines of various kinds. It is important that this capital should be well invested, and that a careful watch should be kept up for the schemes which a certain class of dishonest promoters always have ready to bring out in boom times. The "Engineering and Mining Journal" now, as heretofore, will keep its readers posted on these schemes, besides giving full accounts of the progress of all legitimate mining enterprises, which are watched by its numerous correspondents in all parts of the mining field.

The manufacturers who expect to furnish machinery and supplies for the new mining developments, which are or soon will be in progress, should remember that the beginning of a period of expansion is the time to put themselves prominently before buyers, and thus secure their share of the new work.

We are informed that the suits which Mr. S. J. Richie has been prosecuting against the Canadian Copper Company in Canada have been finally withdrawn. The suits in the United States brought by Mr. Richie against Messrs. Burke and others are still before the courts, but his complaints are all settled so far as the Canadian Copper Company is concerned, and there is no longer any litigation pending against that company on his account.

A combination of manufacturers of calcium carbide is being organized in Europe. The arrangements were completed at a meeting held in Berlin about the end of October, at which there were present representatives of manufacturers in Germany, Austria, Switzerland, Sweden and Norway. No French nor British representatives were present. The organization was to be completed and the agreements signed at an adjourned meeting, which was to be held November 9th. The German makers hold the leading position in the syndicate, but those of Sweden and Norway are important. The manufacture of calcium carbide has flourished in those countries because they have abundant water-power and are able to manufacture at a low cost.

The railroads and mines in the Lake Superior Region are closing up for the winter, and only a small quantity is now expected to reach the docks. Navigation may be closed at any time now, should cold weather set in, and vessels are cautious about making further trips. The accounts are not made up yet, but the iron ore movement will not reach the anticipated total of 20,000,000 tons, though it will probably foot up considerably in excess of 19,000,000.

The Minnesota Railroad Commission intends to press this winter the proceedings in the courts to compel the ore-carrying roads to reduce their rates on ore from the mines to the Lake Superior shipping ports. It is quite probable that nothing will result this winter, since the case will be carried to the highest court, whatever may be the result of the first trial.

Though the season just closed has been in some respects a disappointing one, lake ship-owners believe in the future, if the number of new vessels ordered to be built is any indication. There are now over 25 large boats for carrying coal and ore under construction at the different yards, to be ready for the opening of navigation in the spring. Most of these will be able to carry 7,000 net tons or over.

The disappointment which lake carriers met with this year was due to the light tonnage toward the end of the season. Many owners had counted on the inability of the boats chartered for the season to carry all the freight, and looked for a rush for tonnage in October. The fact has been that no outside tonnage was needed, and some boats were laid up three or four weeks ahead of the usual time. So far as rates were concerned the season has been a good one.

In the "Engineering and Mining Journal," September 23d, 1899, we referred to the organization of a company for the purpose of prospecting for deposits of potassium salts in the United States. Mr. W. M.

Courtis, of Detroit, the manager of this company, informs us that nearly all the small capital of the company has been applied for, and doubtless the balance will quickly be taken. The prize, if potassium salts are found in paying quantity, seems so enormous, that the "gamble" is very inviting. The purpose of the company is to undertake work in certain localities where it is believed that such deposits exist, and in case explorations should prove this, to continue their exploitation. The very great value of such deposits is well known, and is a sufficient justification for undertaking the work of prospecting for them. There is reason to believe that potassium salts can be found in certain localities in the United States. At present Germany has the only deposits which are worked on a large scale, much to the advantage of their owners.

The English coal trade seems to be in an unusual position. Demand is falling off, the Cardiff shipping reports showing a very dull market and lower prices. In short, the production has not only overtaken the demand, but is beginning to exceed it and the natural consequences are becoming evident. Prices are still very much above those of a year ago, but there is an evident downward tendency, while wages remain at the highest point. Coal operators complain that they must lose money if a further fall occurs, but they are evidently in fear of a general strike which may follow any reduction in mining rates. The demand for coal for industrial purposes is declining rapidly, and the coal-owners are losing the control of the situation which they have held for nearly all the present year. They are beginning to look for customers; and where the consumers have been hunting for supplies they are now in a position to wait for offers.

The Paris Exposition, which was to record and illustrate the progress of the arts and sciences at the close of the nineteenth century, came to an end on November 12th, when the closing ceremonies were held. The Exposition has been a successful one so far as its extent and attractiveness were concerned; though political and other causes resulted in some disappointment in the matter of attendance. The number of people visiting the Exposition was very large, over 50,000,000 admissions being recorded. There were not, however, as many foreign visitors to Paris as had been expected, and the result was a disappointment to those who had made provisions for their entertainment. This was outside the Exposition proper, however, and did not interfere with its main features. A prominent part in the serious work was taken by the various congresses held in connection with the Exposition; and notable among these was the International Congress of Mining and Metallurgy, in which many prominent engineers and metallurgists took part.

The opening up of Egypt and the Soudan Provinces is being followed by scientific investigations as to the mineral resources of that country. At the present time little prospecting has been done, except round Suakin, though the neighboring country of Abyssinia has received visits from more than one eminent mining engineer. Emeralds have been prospected for in the mountains of Luxor, or at least the fields formerly celebrated for their production have been looked over. The former glories of Egypt as a source of gold, silver and precious stones naturally suggested opportunities for the prospector, just as the mythical and semi-historical traditions of Mashonaland attracted the mining man, when civilization once more reigned in those hitherto disturbed countries. An influential syndicate of London capitalists has just been formed to organize a prospecting expedition on the Red Sea under the charge of Mr. Charles J. Alford, a gentleman who has had considerable experience in various parts of Africa. It may be mentioned that Egyptian mining rights are jealously guarded by the Government and by the English advisers, so that it is impossible for the ordinary prospector to obtain a footing there. Everything is being done by Government concession. At the present time it is considered best that Egypt should be kept for the Egyptians, and any policy that would induce an influx of strangers is discountenanced. The same policy is pursued by the Indian Government where the obstacles placed in the way of mining enterprise are ridiculous and really harmful to the progress of the country.

The British iron trade, like our own, is showing lower prices, and the pressure of competition is beginning to be felt. Scotch pig iron is quoted by the latest reports at \$15.80 a ton, and Cleveland pig, which has been abnormally high, at \$15.75. Alabama pig iron, to arrive, is being offered in Manchester at \$15.24 to \$15.36 a ton. In finished iron, and steel the reduction is greater in proportion than that in pig iron, where the fall so far has been only from 50c. to \$1. Thus wrought iron bars are now selling at \$40.60 for ordinary and \$50.40 for specials, a reduction in both cases of \$4.80 a ton; while buyers are taking only for

present needs, anticipating a further fall. Plates have also been reduced \$4.80, and are now selling at \$36 a ton, while a further drop of \$1.20 has been made on ship plates to meet offers of German and American steel, which have been made as low as \$33.60 to \$34.80. Steel rails, which for some months have been firm at \$36, are now offered at from \$31.20 to \$33.60.

Meanwhile costs of production continue high, fuel, ore and wages having fallen less than iron. Makers have to face a reduced demand without knowing just how to reduce their costs. In Scotland the coal operators have offered a reduction of 25c. on furnace coal, but this is less than the furnacemen wanted, and they are threatening to blow out their furnaces. Of course, some of this is in the nature of a bluff to induce other people to lower prices; but there is no doubt that the British ironmasters are facing the difficulties that always follow a boom period, and that they find more trouble in accommodating themselves to the conditions than our own usually do.

#### THE ASHCROFT-SWINBURNE ZINC-LEAD SULPHIDE PROCESS.

In our issue of July 7th, 1900, in commenting upon the proposal of the Phoenix Syndicate to treat the mixed sulphide ore of the Tasmanian Copper Company, we described the Swinburne process, which is being exploited by the Phoenix Syndicate, as specified in British patent No. 10,829 A of 1897, the essential feature of that patent being the direct composition of zinc sulphide in an electrolyte of fused zinc chloride, sulphur vapor coming off at the anode and metallic zinc at the cathode; lead sulphide was claimed to be capable of decomposition in similar manner, and the separation of the two metals was to be effected by substitution or fractional electrolysis. We inferred that this was the process by which the Phoenix Syndicate proposed to treat the Tasmanian ore.

Our attention has been called, however, to a later patent granted to James Swinburne and Edgar A. Ashcroft for the treatment of sulphide ores, of which the complete specification was filed on March 23d, 1900, and the letters patent issued on July 11th, 1900, and we suppose that it is on this more recent process that Messrs. Ashcroft and Swinburne now base their expectations and had in mind during the negotiations with the Tasmanian Copper Company.

In the patent of July 11th, 1900, (designated No. 14,278 of 1899), it is proposed to mix the pulverized ore with fused zinc chloride and blow the chlorine gas through the mixture in a suitable vessel, like a copper converter, for example. At a low red heat, it is claimed that the chlorine attacks the metallic sulphides with evolution of sulphur which can be recovered. It is necessary, of course, to keep the temperature below that at which the chlorides are volatile; otherwise arrangements must be made to condense them. The fused zinc and lead chlorides are to be decanted and subjected to electrolysis. It is proposed to continue charging ore into the fused chloride in the converter until the accumulation of gangue in the latter makes the mass too thick for working. Iron, it is claimed, is converted into ferric oxide which remains with the gangue. Numerous details are explained in the patent specifications, but the essential features of the process are as outlined above.

Without entering into specific criticism as to the commercial practicability of this process, for which we have insufficient data, we may point out that it is open to one of the important objections which heretofore prevented the successful electrolysis of molten zinc chloride, namely, the difficulty of designing apparatus that will withstand the strongly corrosive action of that substance. It occurs to us also, that there may be considerable difficulty in regulating the temperature within the narrow limits that are required in order to effect a direct separation of the sulphur and volatile chlorides (including sulphur monochloride), while the recovery of zinc chloride from the gangue, when it has become too thick with the latter to be of further service, will be a rather awkward between process.

The fundamental idea of the present Ashcroft & Swinburne process is of considerable interest, since it is based upon what is, so far as we know, a chemical reaction that has not previously been described, namely, the conversion of a metallic sulphide into a chloride with corresponding liberation of sulphur by the action of chlorine gas. Inasmuch as the inventors describe specifically this reaction in their patent, we suppose that they have performed it in the laboratory. Our previous belief had been that metallic sulphides, when heated in a stream of chlorine, yielded metallic chlorides and sulphur monochloride ( $S_2Cl_2$ ), as, for example, in the reaction



If sulphur were obtained as an incident of such a reaction, our inference would have been that it was due to decomposition of the monochloride, which is not a stable compound, having a heat of formation of only 17,600, and is broken up at a temperature somewhere above its boiling point, which is 138° C. We have examined the various dic-

tionaries of chemistry for a record of the reaction indicated by Messrs. Ashcroft and Swinburne, but have failed to find any note of it. Messrs. Ashcroft and Swinburne state that with their process, at certain temperatures, sulphur monochloride may be liberated. It would be interesting as a contribution to chemical science if they would give us further data as to the reactions which they have found to take place.

## NEW PUBLICATIONS.

"Les Plaques de Blindages." By L. Baclé. Paris, France: Veuve Ch. Dunod. Pages, 233; illustrated. Price (in New York), \$3.50.

This history of armor-plate since the first armored ships were built during our Civil War has been that of a continued contest between the projectile and the protecting plate, first one and then the other gaining the advantage. The written history has been rather in fragmentary form, perhaps the most connected and complete story being that told in an admirable series of papers by Captain J. M. Callif, of the United States Artillery, in the "Railroad and Engineering Journal"; and those were written before the advent of nickel-steel plates and the Harvey hardening process. M. Baclé has given us a clear and connected story, written, of course, from the French point of view, and having reference chiefly to the practice at the great French steel works, especially those at Creusot. He traces the development of armor from the original wrought-iron plates through the various forms of compound plates which were suggested, tried and failed, to the solid steel plate; and up to the latest improvements, including the use of nickel and other alloys and the use of face-hardening processes. M. Baclé is familiar with his subject, and he also refers at some length to the improvements in machinery which engineers have devised from time to time to meet the requirements of the manufacture of the extremely thick and heavy plates which the naval constructors demanded. The 125-ton steam hammers at Creusot and Bethlehem and the 4,000-ton hydraulic presses at Creusot, Elswick and in the Carnegie Works are some of these developments. It may be said that in this direction the demands for war material have stimulated metallurgical progress. The book is one of much interest to naval constructors and artillerymen; and to steel-makers and engineers as well.

"Geological Survey of New Jersey. Annual Report of the State Geologist for the Year 1899." John C. Smock, State Geologist. Trenton, N. J.: State Printers. Pages, 564; with maps and illustrations.

The New Jersey Geological Survey, though its work has been nearly completed, finds abundant material for interesting and valuable reports. The present volume is divided into two parts. The first contains the administrative report, which, in 44 pages, sums up the work of the year. Besides this there is a report on the Paleozoic Formations, by Stuart Weller; one on Artesian Wells, by Louis Woolman; a paper on Chlorine in the Natural Waters, by William S. Myers; and the summary of the mining industry of the State during the year.

The second and longer portion of this volume is devoted to a very interesting and valuable report on the Forests of New Jersey. The forest question was referred by the Legislature to the Geological Survey several years ago, and this report is a result. It is divided into four parts, the first on the Forests of New Jersey, by C. C. Vermeule; the second on the Relations Between Forestry and Geology, by Arthur Hollick; the third on the Role of Insects in the Forest, by John B. Smith; and the fourth on Forestal Conditions and Silvicultural Prospects of the Coastal Plains of New Jersey, by John Gifford.

The forests of New Jersey are a most valuable feature of the State in themselves, and to a greater degree in their relation to the water supply, which is a matter of vital importance to the thickly-populated section of New Jersey. The investigations of the Geological Survey have been carefully and intelligently conducted, and the information now presented is timely, and ought to be extremely useful. In connection with the text there are given several maps showing the distribution of the forests and their relation to the geology of the State.

The report is prepared and edited with all the care which we are accustomed to find in the volumes of this series.

## 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.

"Drawbacks on Exports. The Customs Drawback Law." New York: Allen, Comstock & Company. Pamphlet; pages, 28.

"The Railway Map of South Africa, 1901." London, England; published by "South Africa." Folding map, with cover. Price (in New York), 35 cents.

"The Gas Engine Hand-book." Second edition, revised and enlarged. By E. W. Roberts. Cincinnati, O.: The "Gas Engine" Publishing Company. Pages, 242; illustrated. Price, \$1.

"Annual Report of the Inspector of Mines of the State of Kentucky for the Year 1899." G. W. Stone, Inspector; C. W. Logan, Assistant. Louisville, Ky.: State Printer. Pages, 236; illustrated.

"American Institute of Mining Engineers. Bulletin No. 2. The Progress of Mineralogy in 1899." By S. Herbert Hamilton and James R. Withrow. New York: published by the Institute. Pages, 96.

A NOVEL CLAIM NOTICE.—The following unique claim is posted on a mine in the Grand Encampment, in Wyoming: "We found it, and we claim it by the right of founding it. It's our'n. It's 750 ft. in every direction except southwest and northeast, and there is 300 ft. on each side of this writin'. It's called the Bay Horse, and we claim even the spurs, and we don't want nobody jumping on this Bay Horse—that's what's these trees is around here for, and we've got the same piece of rope that we had down in old Missouri."

## 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.

## Nuggets from the Atlin District.

Sir: In your notice of the "Famous Gold Nuggets of the World," on page 513 of the November 3d issue, you say: "Contrary to general belief, Alaska and the Yukon has produced no large nuggets."

Strictly speaking this may be so, but the Atlin District in British Columbia produces many fair-sized nuggets and has, to my certain knowledge produced at least two that may fairly be called large. While in the Atlin District recently, examining hydraulic propositions, it was my good fortune to see these two nuggets, which I photographed. One of these was picked up on a bench claim just below discovery on Pine Creek, July 21st, 1900, and weighs 29 ounces 10 pennyweights 11 grains, valued at \$472. The other was picked up on Discovery Claim, Boulder Creek, about August 1st, 1900, and weighs 48 ounces 12 pennyweight, valued at \$778. Both of these nuggets were almost absolutely free of quartz or other rock.

It is a notable fact that nearly every creek in the district produces nothing but coarse gold, which is very easily saved in the riffles without the aid of quicksilver. In fact, there seems to be little, if any, fine or flour gold in the gold-bearing gravels of this district, and, so far as my observations went, no methods for saving such gold are employed.

Permit me to say, while on this subject, that if the real facts with regard to this field were known and understood more fully by American capital and mining men, they would very soon embrace the opportunities that exist there. In no field that I know of personally, are the opportunities for large and long-continued operations in hydraulic and dredge mining as good as in the Atlin District.

In my opinion the district will prove a permanent and very profitable producer of the noble metal for many years from its alluvial deposits alone. Besides these the outlook for quartz mining is very promising. Gold, silver, lead and copper have been found in paying quantities under certain conditions, and as rapidly as the necessary capital can be secured development will be prosecuted on many claims of real surface merit.

E. P. Spalding.

Chicago, Nov. 8th, 1900.

[Our reference to the absence of nuggets from Alaska and the Yukon was not intended to cover the Atlin country. We have heretofore spoken of nuggets from that district, and published an illustration of one in our issue of August 19th, 1899, page 215.—Editor E. & M. J.]

## A Bit of Nome History.

Sir: The steamship "Senator," bearing the Judge of the United States District Court, Arthur H. Noyes and wife, arrived at Nome on July 20th, 1900. On July 21st, 1900, the Judge came ashore, and on the following Monday, July 23d, on a bill of complaint and affidavits, he appointed a receiver for a claim on Anvil Creek called "Discovery," and for several other locations on the same creek. The plaintiff was a man named Chipps, who came in on the same boat with the Judge; the receiver was Alexander McKenzie, who came in on the same boat with the Judge; McKenzie was formerly of Bismarck, North Dakota, and later of New York.

The bill of complaint alleged that Chipps was the owner of the claim by virtue of a location made in June, 1899; and the defendants were taking out \$15,000 a day, and asked for the appointment of a receiver "pendente lite." The court made an order appointing Alexander McKenzie, of Nome, Alaska, receiver, on a bond of \$5,000. The defendants asked to have the order appointing the receiver set aside, and on the hearing of the affidavits showed this: That Discovery was located by three men on September 22d, 1898; that two of them were citizens of the United States at the time of the location, and one of them had not declared his intention. Subsequently, on December 28th, 1898, a man named Stephenson jumped Discovery and thereafter in August, 1899, conveyed his right and title to the original locators. This conveyance was made subsequent to the declaration of intention of the alien locator.

Chipps jumped the ground, as stated in his notice of location, in June, 1899, upon the ground that a man could have but one location upon a creek under the rules of Cape Nome Mining District. This location Discovery was the first location made in this section of the country, the first on that creek, and was made long before the organization of any mining district or the adoption of any mining rules.

The question of alien locators has been decided by *Manuel vs. Wolff*, 152 United States, by *Billings vs. Aspen* (52 Federal Reporter), and by *Little Emily vs. Couch*, United States Circuit Court, Northern District of California.

If a man had the right to only one location on a creek, he had the right to the first one, and if any locations were made they would be subsequent locations. If he was an alien, he had the first jumper's title, and besides there were two citizens, either of whom could take 20 acres of ground, and this location did not reach 20 acres, but was less than 20 acres. Next, the law does not limit a locator to 20 acres; he may make as many separate locations of 20 acres each as he sees fit to monument or mark on the ground, unless limited by some local rule. There were no local rules in existence when these locations were made.

Several other suits of the same character were brought, and in nearly all of them the Alaska Court appointed McKenzie receiver. This action was naturally resented, and appeals were taken to the Circuit Court at San Francisco, where Judge Morrow has since reversed all of Judge Noyes' decisions. Recently several United States deputy marshals started from San Francisco for Nome to enforce Judge Morrow's decisions.

Meantime, however, McKenzie had worked the claims in his charge for all they were worth. He is now in custody of the circuit court in

San Francisco, charged with contempt of court. It may be of some interest to note that McKenzie represented in Nome a certain company in which one of the directors is a prominent politician, whose recommendation secured Noyes' appointment to the Alaska judgeship. I hope for the credit of all concerned this tangle may be straightened out.

J. A.

San Francisco, Oct. 24, 1900.

#### Nickel Refining in Ontario.

Sir: Some of the best posted people on the nickel question in Ontario are beginning to see that the Mines Act as it now stands has conferred powers upon the Ontario Government which the general public did not suspect at the time of its passage. We had all supposed that the act was passed for the sole purpose of compelling all nickel and copper ores and mattes produced in Ontario to be refined in Canada. Upon a careful reading of the act and a study of its provisions we find that the Government has the full power to not only compel the refining of nickel to be done in Canada, but to also compel all the fine nickel to be manufactured in Canada. The enforcement of such a policy would surely be popular with all parties from one end of Canada to the other, and your readers need not be surprised if the Ontario Government shall, at an early date, put in force this broad construction of the act.

It would greatly aid the new nickel-steel projects now being evolved at Hamilton, Sault Ste. Marie, Collingwood and in Nova Scotia. Both the Dominion and Ontario governments are giving large bonuses for the production of iron and steel, and the giving to all of the above-mentioned concerns the sole control of all the nickel produced in Ontario would be placing them at a great advantage over their American competitors.

The present Liberal Government has swept the country and is now safe in power for five years, and it may be taken for granted that they will now enforce a strong and purely Canadian policy, a policy that will do more to build up the material interests of the Dominion than anything heretofore has done.

The iron and steel interests of the United States are now going into practically one gigantic combination, and in view of that the Ontario Government will now doubtless use all of the resources within its reach to build up a large iron and steel industry in this country, and thus become, in a measure, independent of any other country in these great industries.

The fact that the iron and steel production in England is decreasing under the active competition of the United States should be another incentive for the Ontario Government to act promptly in this, a matter of such vital importance to all Canada.

Nickel.

Toronto, Ont., Nov. 10, 1900.

[There is one thing the Ontario Government seems to have overlooked—it did not arrange with nature to have placed all the nickel ores in Canada, and the result of the legislation above referred to will greatly stimulate the development of certain large nickel-cobalt properties that have recently been tested in a very convenient part of the United States.—Editor E. & M. J.]

**A SINGULAR COLLIERY ACCIDENT.**—The London "Colliery Guardian" says that recently, while the last cageful of men but one was being taken up the Madeleine shaft to the surface of the Mine des Bormettes, a large block of masonry weighing about 400 kilogs. became detached from the lining at the level of 170 m., and at the depth of 230 m. came into contact with the cage containing 6 workmen. One of the suspension chains was snapped and the cage roof was caved in by the blow, with the result that 3 of the men were killed, while the 3 others were protected by an angle-iron supporting the roof. The accident is due to an increased creeping of the measures caused by water infiltration; but nothing unusual was noticed during the bi-weekly inspection of the shaft that had been made on the previous evening.

**BIG LAKE CARGOES.**—The Cleveland "Marine Review" gives the following record of large cargoes on Lake Superior this season:

"Iron Ore—Steamer 'William Edenborn,' A. B. Wolvin, of Duluth, managing owner, 7,446 gross, or 8,339 net tons, Two Harbors to Conneaut; tow barge 'John Smeaton,' owned by Bessemer Steamship Company of Cleveland, 7,446 gross or 8,339 net tons, Duluth to Cleveland, draft 18 ft. 1 in.; tow barge 'Manila,' Minnesota Steamship Company of Cleveland, 7,300 gross or 8,237 net tons, Two Harbors to South Chicago, draft of 18 ft.

"Coal—Steamer 'I. L. Elwood,' owned by American Steamship Company, 7,688 net tons, anthracite, Buffalo to Duluth; steamer 'O. M. Poe,' owned by Bessemer Steamship Company of Cleveland, 6,585 net tons of bituminous, Erie to Duluth."

**WASTE IN COAL CARGOES IN AUSTRALIA.**—United States Consul F. W. Goding says that for many years there has been in vogue at Newcastle, New South Wales, a custom of taking certain percentages from the gross weight of coal cargoes and giving the bills of lading for the net quantity only. The idea was to allow for the wastage which it was thought took place in various ways between the time of weighing the mineral on the Government weighbridges and its delivery to the consignee at the port of destination. During the past 8 or 10 years, the practice has been to deduct in this way 2 per cent. from the gross weight of foreign exportations and 1 per cent. from those intended for intercolonial markets. In case of, say, a 6,000-ton cargo bound for a foreign port, there is therefore a deduction of 120 tons, and not only do colliery proprietors lose payment for this quantity of coal, but the shipowners likewise lose the freight upon it.

Complaints on this score have been made within the past 12 months, and it has been decided by the colliery proprietors that from January 1st next, the deduction for wastage in foreign cargoes will be reduced to 1 per cent., while no allowance whatever will be made in the case of intercolonial shipments.

#### MARCUS DALY.

Marcus Daly died in New York, November 12th, aged 57 years. His death was not unexpected, as he had been seriously ill for several months and had been confined to his rooms ever since he returned from his last trip to Europe, in September.

Marcus Daly was born in the County Cavan, Ireland, in 1843, and came to the United States when about 11 years old. He remained in New York for about three years, attending school most of the time. When about 14 years old he went to California, and after several years passed in such work as a boy could get at that time, he became a miner. He worked at several mines in California, and then went to Nevada, where he was employed at several of the mines on the Comstock Lode, holding finally the position of mine foreman. From the Comstock he went to Utah, where he became connected with Walker Brothers, of Salt Lake, who were largely interested in the Alice Mine at Butte City. His first visit to Butte, a camp with which he was to be so closely associated, was made about 1876, on behalf of the Walkers, who bought the Alice Mine, which was for years a successful silver mine, on his advice, Mr. Daly holding also an interest. After holding this for a time, he sold out to the Walkers in 1879 and purchased some property on his own account.

We next find him employed as mine superintendent and manager of the Anaconda Mine, in which Messrs. J. B. Haggin, Lloyd Tevis and Senator Hearst were interested. The Anaconda was then known only as a free-milling silver proposition, and Mr. Daly, after having ordered



MARCUS DALY.

a 120-stamp mill from Chicago, was much surprised when copper ore was found in the lower levels, about 1882, and he had to countermand the order.

The history of the Anaconda from that time on is well known. Mr. Daly remained at the head of the company, and under his management adjoining properties were bought, the workings greatly extended, reduction works built at the new town of Anaconda, which was connected with Butte by a railroad built and owned by the company. The Anaconda Company also acquired control of timber lands, coal mines and other property; built sawmills, coke works, fire-brick plant, and otherwise organized its work so as to control its own supplies of all kinds. The mine remained under the active control of Messrs. Daly, Haggin and Hearst, its profits supplying the means for all extensions. Mr. Daly also, during this period, acquired other property in and around Butte, notably the Washoe, which he reserved for future development.

In 1896, after the death of Mr. Hearst, the Anaconda Mining Company was reorganized with a capital stock of \$30,000,000, and the stock owned by the Hearst Estate, with some of the other holdings, was sold in London. Mr. Daly, however, remained in entire charge of the management. The Anaconda stock, however, owing to several causes, was not a favorite abroad, in spite of its intrinsic value, most of the shares being returned to this country. In 1899 the Amalgamated Copper Company was organized by a number of parties interested in the Standard Oil Company, who had been drawn into copper stocks, and by the Lewisohns and others, and the new company acquired Mr. Daly's stock in the Anaconda and his Washoe property. He was a large shareholder in the new company, however, and remained manager of the Anaconda property, though his health has permitted him to do very little active work during the past year.

Mr. Daly always took an active interest in politics, and for years after he went to Butte was a prominent figure; he finally reached a position where he practically controlled the politics of Montana, as territory and afterward as State. This position he owed not only to his control of large interests, but to personal popularity and his hold on the Butte Miners' Union. His position was not held without some severe contests, his chief opponent being Mr. W. A. Clark. In the early times in Butte the two were thrown together, and, indeed, were distant

connections, Clark's brother being Daly's brother-in-law; but they quarreled over a mining transaction and became rivals and bitter enemies. Generally Mr. Daly kept the upper hand, but in the recent election Mr. Clark, with the aid of F. A. Heinze, defeated his opponent badly. Probably this was largely due to Mr. Daly's sickness and absence from the State.

Mr. Daly acquired a large fortune, which he spent liberally. He was simple in his tastes, but very fond of fast horses. He was well known among racing men, and owned some of the most noted horses in America. He had recently bought a handsome house in New York, and purposed making his permanent residence in that city.

Mr. Daly was a man of great ability, as his successful career showed. He was almost entirely self-educated, what he knew having been learned chiefly from experience. His success was largely due to the fact that he recognized the value of Butte as a mining district, and turned this to practical account while others were still in doubt, and to the selection of capable assistants.

#### COPPER DEPOSITS IN NEW JERSEY.

In view of the attention recently called to copper deposits of the East, some data given in the latest report of the Geological Survey of New Jersey will be of interest. We therefore give here the notes on copper mines prepared for that report by Mr. Henry B. Kummel.

The copper deposits of New Jersey occur chiefly in the red shales and sandstones of the Newark formation, nearly always in close proximity to the trap-sheets, or dikes. Some of these localities were opened and ore mined as far back as Colonial days, and in a few cases the ore was shipped to England. For many years the low price of copper has rendered it impossible to work these low-grade ores at a profit and the mines have all been closed. In many cases so long a time has elapsed since they were worked that the dump-piles are overgrown with vegetation and the tunnels are filled with fallen rubbish. With the increased price of copper and the modern methods of handling and reducing ores, whereby material formerly thrown away is utilized, it may be possible in some cases to work profitably these low-grade deposits.

The Schuyler Mine, Arlington, is the oldest of the copper mines in the State, and among the earliest mining enterprises in the country. It has been worked more or less frequently since 1719, but for the past 30 years nothing had been done, until a few months ago, when a party of capitalists secured an option on the property. They are now (November, 1899) engaged in preliminary operations to determine whether there is a sufficient amount of ore to warrant the erection of a large separating and leaching plant.\* Narrow trap-dikes ramify through the sandstones and shale, and the rock adjoining the trap, particularly where it has been shattered and crushed so as to form a breccia, is impregnated with the copper ores—chiefly the sulphide and the carbonates. Selected lots of the ore also carry 7¼ oz. of silver per ton. There is no true ore vein with well-marked boundaries, but the copper minerals occur in strings and bunches, or as finely scattered particles, or as thinly diffused coloring matter. Unless the ore is treated on the spot, a large amount of it must be thrown aside as too poor to pay the cost of transportation. Numerous analyses made of the material of the old dump-piles have led the present parties to believe that the ore, if mined on a large scale and treated economically, is rich enough to pay a good return on the investment.

This American Copper Mining Company's mine is located at the base of the trap-sheet of First Mountain, about 3 miles north of Somerville, and was formerly called the Bridgewater Mine. The first opening was made during the last century, and mining has been carried on at intervals since. About 1881 work was renewed by A. H. Hovey, and a tunnel was driven into the hillside for a distance of 228 ft., following the dip of the shales and along the base of the trap-sheet. Side-drifts to the linear extent of 240 ft. were opened about that time from the main tunnel. Average samples of ore from these galleries yielded "19 per cent. of copper and 6 oz. of silver to the ton of ore."

For a few years following 1883, work was continued and the main tunnel was extended several hundred feet down the dip, but the operations as conducted were not profitable and work was abandoned. For the past two years or more, exploration has been carried on and a number of short galleries at right angles to the main tunnel have been opened at frequent intervals. All the openings are in the red shale at the base of the trap-sheet. At the time of writing (November, 1899) the work is being pushed with energy and the side galleries are being lengthened.

Above ground, at the mine entrance, a steam plant and air-compressing engine furnish power to operate the drills used in the mine. A small crusher and separating plant have been put up, and tubs for leaching the ore and precipitating the copper are in operation. The works so far has been for the purpose of thoroughly developing the mine and determining beyond a doubt the extent and value of the ore deposits; but the company has in contemplation the erection of a large separating and leaching plant, capable of treating economically a large output.

The large extent of the preliminary operations has disclosed the exact mode of occurrence of the ore. The shale for a distance of from 1½ to 2½ ft. from the base of the trap has been slightly altered from its normal condition. Within this altered zone the copper minerals occur. The alteration of the shale is due in part to its impregnation by the copper minerals, and in part to a slight baking, accompanied by a change in color from red to purple. The copper minerals occur in strings or bunches, or disseminated particles. They are usually more abundant near the trap, and when a well-marked pocket or sheet of ore occurs in this position, the adjoining part of the ore rock (1½ to 2½ ft. in thickness) is very lean. In other places the mineral is somewhat evenly disseminated throughout the entire ore-rock. Very frequently

thin films of ore occur on the faces of cracks and points in the shale, or along bedding planes. Locally it occurs in the basal portion of the trap, particularly where the latter is somewhat broken, and is of a spongy or vesicular texture. But the thickness of the trap thus impregnated is rarely more than 6 to 8 in.

Owing to the method of occurrence there is considerable variation within narrow limits in the richness of the ore rock. Seams and pockets of rich ore may end suddenly and be succeeded by several feet of very lean rock. But in spite of these local and constantly recurring variations in the disposition of the ore, there is a marked uniformity in its distribution, when the whole area explored is considered. The rock along one gallery is about as rich as that along any other gallery. The openings already made render it practically certain that ore of the same grade as that already exposed will be found in the rock between each gallery. Furthermore, there is no reason for thinking that the galleries may not be extended for some considerable distance beyond their present limits with the same results. That there is a much larger body of ore than is visible can hardly be doubted. On the other hand, the results already attained give no reason for believing that any marked increase in richness must necessarily be found with increasing depth. Nor in our opinion is there anything in the known or theoretical relations of the trap and shale necessitating or implying a richer ore-deposit at greater depths. This is not saying that the ore cannot become richer. It may or may not become high-grade, as it is followed down the dip.

A fault plane lies a few yards to the right (south) of the main tunnel, and the ore-bearing rock in each of the galleries on that side is lost at the fracture. The south side of the fracture has been uplifted, but there is strong evidence that the amount of dislocation is small, probably only a few feet, and that the ore-rock can readily be found again by extending the galleries a few yards to the eastward, in the direction of the dip.

The ores are chiefly the red oxide and the green carbonate. Strips and sheets of metallic copper, however, are not uncommon. Small specimens of rock can be obtained giving a very high per cent. of copper. The average for the entire ore-rock is high enough to warrant the hope that, with the present high price of copper and with economical treatment, the mine will pay. The fact that it is necessary to take out almost an equal thickness of barren red shale, in order to work the ore-rock, is, however, a drawback and adds considerably to the expense.

In excavating for the reservoir of the East Jersey Water Company, near Great Notch, Passaic County, a copper deposit of considerable richness was exposed. The reservoir is situated in a longitudinal valley on the back of First Mountain, just west of Great Notch. As was pointed out in the "Annual Report" of the State Geologist for 1897, pages 121-123, this valley is located along the line of the Garrett Rock-Upper Montclair fault, and owes its existence to erosion along the line of weakness produced by the fracture. In the bottom of the valley, beneath the accumulations of glacial drift, which are of considerable thickness, the red shale was found on the west side of the valley, dipping westward so as to pass beneath the ledge of trap which there bounds the depression and on the east abutting against the opposite ledge of trap along the line of fracture.

The copper ores were found along the fault in the sandstone adjoining the trap. Through the kindness of Mr. Clemens Herschel, Chief Engineer, a number of samples of the ore were furnished the Survey, and analysis showed 9.32 per cent. of metallic copper. The trench was afterward filled with concrete in the construction of the dam and the locality is not accessible for further investigation.

**OFFICIAL TESTING WORKS IN SIBERIA.**—The Russian Government has decided to establish at Tomsk special works for the testing of gold-bearing sand and ore, similar to institutions of this nature in Australia.

**ZINC PRODUCTION IN SILESIA.**—The reports collected by the Oberschlesische Berg- und Huttenmannische Verein, show that the production of spelter in Silesia for the six months ending June 30th was 49,408 metric tons. This compares with 48,935 tons in the first half of 1899, showing an increase of 473 tons, or 0.96 per cent. only.

**REMAINS OF THE MAMMOTH IN ARIZONA.**—Prof. W. P. Blake, in the "American Geologist" for October, says that the upper jaw and teeth of a mammoth, presumably "Elephas Americanus," were recently exhumed from the ancient alluvions of the Colorado River at Yuma, Ariz. One of the lower molars, together with fragments of the tusks, were also found. The alveoli of the tusks are about 7 in. in diameter. Other bones were broken up and lost before the relics were brought to the notice of Mr. Herbert Brown, who sent them to the museum of the University of Arizona at Tucson. This discovery is interesting, showing the former presence of the mammoth in Arizona; extending knowledge of its range on the Pacific slope and in connection with the discovery of remains of the mastodon and of the giant bos or bison, indicating former conditions of greater precipitation, moisture and vegetation in that region, now noted for its aridity.

**ORIGIN OF CHEMICAL NAMES.**—The coal-tar derivative fuchsine is generally supposed to owe its name to the fuchsia, as its tint certainly resembles the color of that flower; but this is not the case. The inventor of fuchsine, whose death was lately recorded, M. Francisque Renard, and his brother desired to identify their name with the new product; but, not liking to adopt the appellation of renardine, they translated their family name Renard (fox) into the German Fuchs, and thus arrived at fuchsine, as mentioned by M. A. W. Hoffmann to a correspondent of the "Matin." The same journal seizes the opportunity of making known that the rare metal gallium owes its name to a similar circumstance. Its discovery is due to the French chemist, Leccoq de Boisbaubran, who, by adopting the Latin form of Gallium, identifies the name of Lecoq both with gallus, a cock, and Gallia, France,

\*This mine was very fully described in the "Engineering and Mining Journal" Feb. 3d, 1900; page 135.

## MINERAL PRODUCTION OF RUSSIA.

By Our Special Correspondent.

The production of metals and the more important minerals in Russia for 1897 and 1898 is given in the table below, from the official statement just published by the Mining Department of the Government. The figures are in metric tons and kilograms:

	1897.	1898.	Changes.	Per ct.
Gold .....	Kgs. 38,098	38,972	I. 874	2.3
Platinum .....	5,602	6,140	I. 538	9.6
Quicksilver .....	Tons 616	363	D. 253	41.4
Copper .....	6,132	6,359	I. 227	3.7
Zinc .....	5,874	5,664	D. 210	3.6
Pig iron .....	1,838,655	2,207,896	I. 369,241	20.1
Manganese ore .....	260,213	502,655	I. 42,442	16.3
Coal .....	11,192,455	12,235,860	I. 1,043,405	9.3
Crude petroleum .....	7,288,444	8,330,868	I. 1,042,424	14.3
Salt .....	7,539,892	1,487,500	D. 52,592	3.4

The notable increases were in pig iron, crude petroleum and coal. There was also a considerable increase in manganese ore. Outside of these items the changes were not of special importance.

## THE COAL SITUATION IN GERMANY.

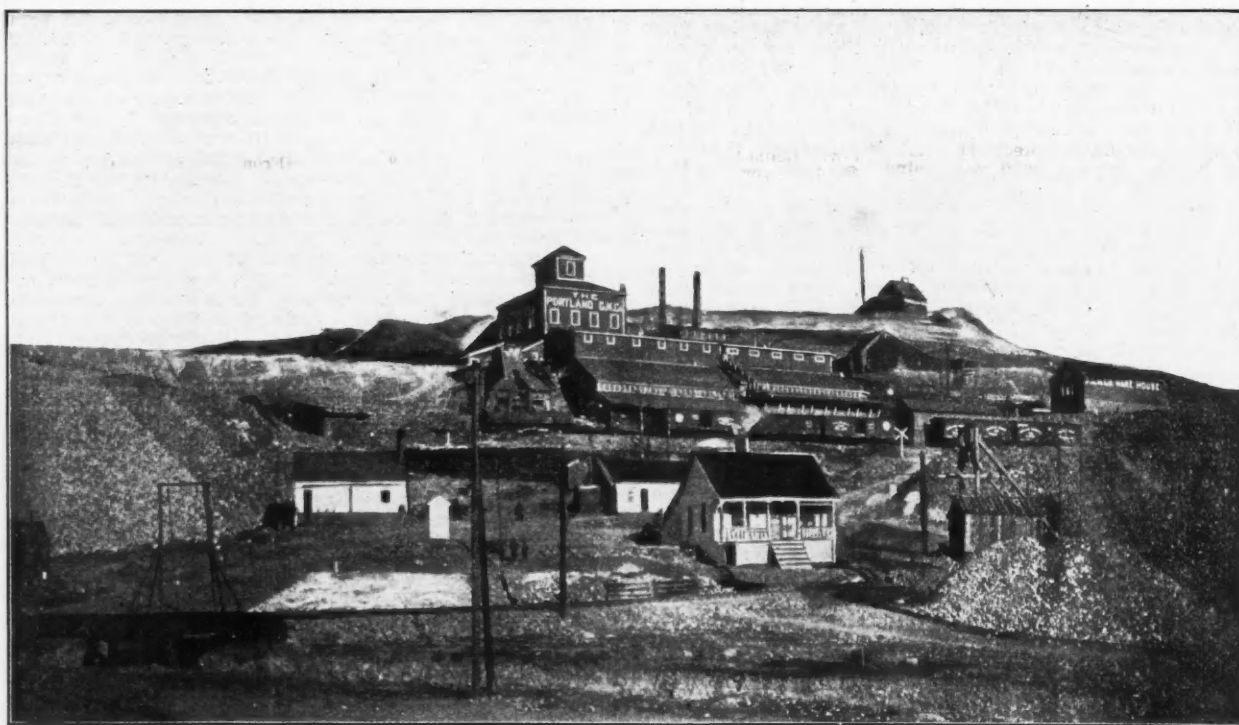
A recent report from United States Consul-General Frank H. Mason at Berlin, which has been made public by the State Department, is of much interest. Mr. Mason says that at present the most important element in the coal problem is the new and enlarged role which has been assumed by the United States as a source of coal and metals. The first

exclusively for domestic heating and cooking purposes; and, finally, the enormous expansion of manufacturing industries to which coal is indispensable, have combined to enlarge the consumption out of all proportion to any practicable increase in coal production.

Hamburg burned in 1899 a total of 3,065,900 tons of coal, of which 1,645,800 tons came from the Westphalian district, while 2,420,000 tons, or far more than half the entire supply, was imported from Great Britain. Berlin, during the same year, consumed 3,486,245 tons of mineral fuel—coal, coke and briquettes—classified as follows: English, 267,155 tons; Westphalian, 299,065 tons; Saxon, 4,181 tons; Upper Silesian, 1,530,148 tons; Lower Silesian, 328,360 tons; Bohemian brown coal and briquettes, 93,783 tons; Thuringian brown coal and briquettes, 963,553 tons.

Thus the requirements of two German cities, both remote from the nearest coal-field and wholly dependent upon purchases in the open market, amount to more than 6,500,000 tons per annum. Both cities are easily accessible by water to American coal—Hamburg with its open port and ample coal docks, Berlin with a river freight of only 75c. per ton in addition to the ocean rate—and both cities are now facing the setting in of winter with meager supplies and are resentfully paying prices from two and a half to three times higher than those of two and three years ago. The great coal syndicates that control the German supply have slightly increased their output, but this increase has been absorbed by iron works and other consumers in the immediate neighborhood of the mines; so that but a meager surplus is left for the great cities in which, as in Berlin, the population is increasing more rapidly than houses can be built to shelter it.

It is difficult, in presence of facts like these, to doubt that there



PORTLAND MINE, CRIPPLE CREEK, COLORADO.

reports that American coal had found a market in France and Italy and had been even tested successfully for gas-making purposes in London were received here with incredulity amounting to resentment. The fact was recalled that a trial shipment of American anthracite to Berlin some years ago had proved slaty and inferior, and the reported dissatisfaction of a French railway company with its first trial of American steam trade balance with the United States would never be still further increased by imports of coal. So that while dealers and certain consumers hailed the prospect of a new source of supply from beyond the Atlantic, the general sentiment of the press was distinctly hostile and incredulous.

Finally, a test of Ohio coal was made on the Bavarian State Railways, with excellent results. The fuel was superior to the best native coal, but at that distance from tidewater was naturally too costly to compete. Then the fact was revealed that the great trans-Atlantic German steamship lines use only American coal, and that the "Deutschland," before setting out to break the speed record of the sea, had filled her bunkers at New York. There was no arguing against a fact like this, and when, a few days ago, the "Berliner Rundschau" announced that West Virginia gas coal has been tested at Hamburg and found superior to the Cardiff standard, the conclusion became unavoidable that only scarcity of tonnage and exorbitant freights stand between the coal-famine prices in Germany and the coal deposits of the United States.

The farther and more closely the subject is studied, the more difficult it becomes to reconcile the indisputable facts with the theories of those who have sought to prove that the present demand for American coal in Europe is merely casual and likely to be of short duration. Against this hypothesis are the facts that the increase of population, especially in Germany, the substitution of steam, electric and gas motors—all dependent ultimately upon coal—for horse-power; the rapid growth of cities in which coal, briquettes and coke are used all but

is in Western Europe, as well as in Russia—where consumption has outgrown any present or immediate native supply—a definite and substantial demand for imported coal, nor that this demand, if met as it should be by American exporters, will prove large, profitable and permanent.

**GOOD ADVICE TO EXPORTERS.**—United States Consul Thornwell Haynes, at Rouen, France, writes: "Circulars printed in English are a waste of time and money. Circulars come to this office giving the analysis of gas, coal, etc. What does a man who talks, writes, speaks and thinks in French know about 'volatile matter' or 'fixed carbon' or 'ash'? A ton of 2,240 lbs. is as indefinite to a Frenchman as the word 'some' is to an American. Quotations, to receive attention, must be put in French weights and money in the French language."

**MEASURING STEAM BY METER.**—A steam meter, designed by Mr. A. Friedeberg, of Berlin, is described as follows in the "Abstracts" of Institution of Civil Engineers: Its action is to condense and measure continuously a portion of the steam flowing through the main steam pipe. Inside a horizontal length of the main a flap-plate hung from a horizontal axis actuates by means of an internal sector and rack a conical plug valve controlling an opening in the top of the main. When no steam is being used, the plate hangs vertically, and keeps the valve closed; when steam is flowing through the main, it turns the plate more or less toward a horizontal position, thereby opening the valve correspondingly; and the steam escaping through the valve is condensed in a worm. The water from the worm is either collected in a measuring tank provided with a gauge glass, or is delivered upon a bucket wheel, the revolutions of which are indicated upon a counter arranged to show the corresponding quantity of steam flowing along the main.

THE CRIPPLE CREEK DISTRICT, COLORADO.—III. SOME OF THE MINES.

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

In taking up the consideration of the various mines in the Cripple Creek district, it will be my plan to first take up those which have been and still are the principal producers, and the most noted in the history of the camp; giving as full facts as are obtainable as to the machinery which is used, the extent of the work which has been done, and the chief characteristics of the ores. In most cases it is easy enough to procure this information, but in some there is a disinclination to furnish it, and it becomes necessary to fall back upon outside sources from which to acquire the desired facts.

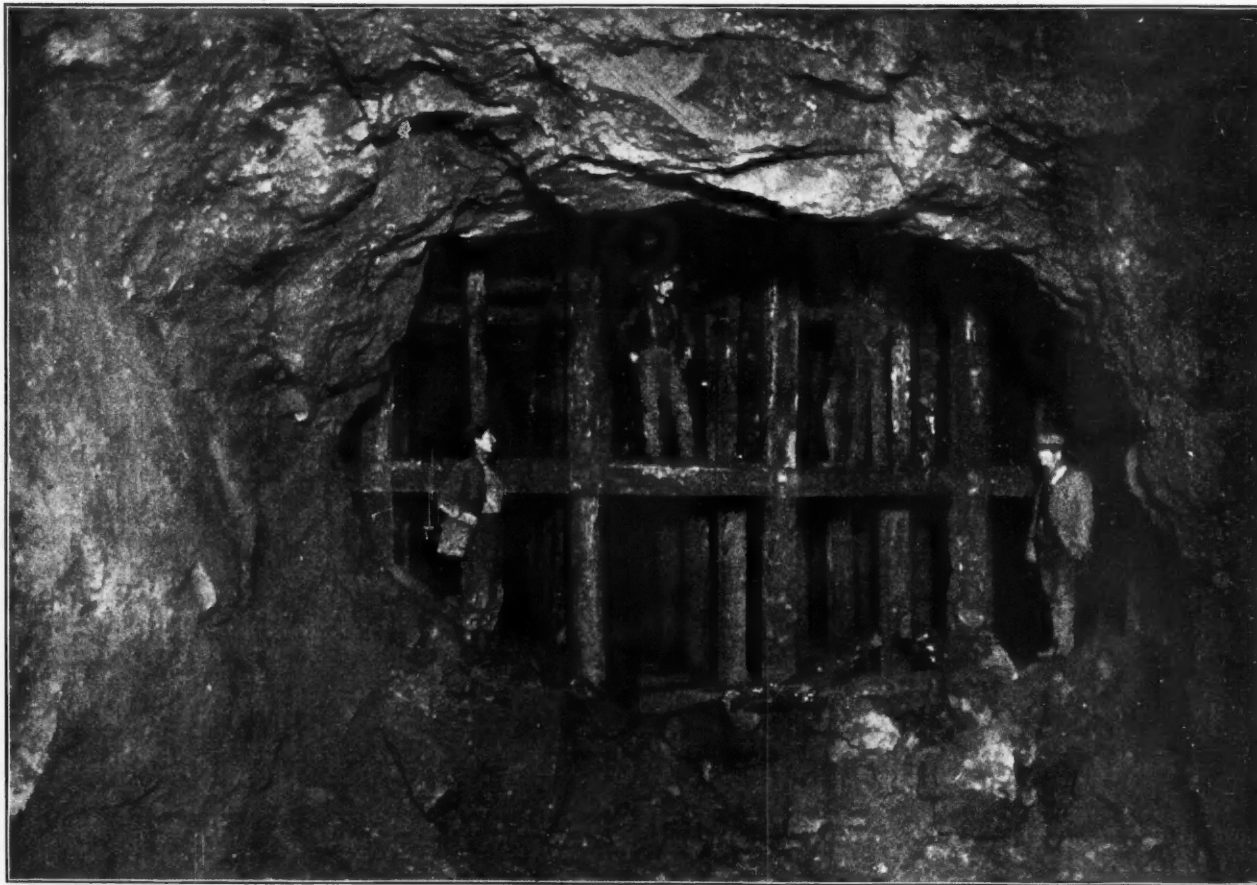
The Portland Gold Mining Company, on Battle Mountain, above the town of Victor, owns 183 acres of claims, all of which are patented and are situated in the very heart of the mineral bearing belt of the Cripple Creek District. There are a number of shafts on the property, but as the bulk of the work is carried on through the Burns shaft, a description of this shaft will embrace the principal machinery which is used in the mine, while the general figures will show the results for the whole property. The buildings of the company comprise 2 dwelling houses, general office, surveyor's office, assay office, 3 shaft houses with the usual complements of blacksmith and carpenter shops, magazines and oil houses. The main working shaft house is the Burns, 40 by 130

feet long. Turntables manufactured by the Chicago Link Belt Company are used on the tramways. To grease the cable use is made of compressed air thrown in a fine spray through a stream of grease against the cable, thus insuring its thorough lubrication; 1,000 ft. can be treated in 15 minutes.

The whole mountain, without regard to the character of the country rock, is intersected by a most intricate system of dikes and veins, the dikes being of andesite, phonolite and basalt. The veins which carry the high gold values sometimes follow the walls of the dikes, sometimes are mineralizations of whole dikes, and sometimes are wholly independent of any dike, occupying their own fissures either in the granite or the overlying volcanic rock.

Upward of 500 men are employed by the company. During 1899 the amount of development work done was 21,062 ft., while the output amounted to 38,468 tons of ore, with a gross value of \$1,951,219, or an average value of \$50 per ton. The company is now erecting a mill at Colorado City, which will in the near future handle all its products; a description of this plant may appear in a later article.

Before leaving the subject of the Portland Mine, I would like to reproduce the remarks of Mr. V. G. Hills, the consulting engineer for the company, on the "Anna Lee" ore chimney, which is a portion of the Portland Mine and connected with it by the underground workings: "This ore chimney occupies the pipe or neck of an extinct mineral spring. It follows one of the main basalt dikes and extends downward as far as yet followed, some 930 ft. It has several remarkable features.



EAST FORK DIAMOND VEIN, 600-FT. LEVEL, CRIPPLE CREEK, COLO.

ft., with additions for the various pieces of machinery, and for the use of the employees. The hoisting engine, made by Fairbanks, Morse & Company, is a duplex engine 600 H. P., cylinders 22 by 30 in., herring-bone geared teeth  $3\frac{1}{2}$  to 1, with air-clutch brake. The engine has a hoisting capacity of 4,500 ft.; the cable is a flat Roebling manufactured by the American Steel and Wire Company, and is able to lift 16,000 lbs. from a depth of 2,500 ft. The shaft has 3 compartments, one for the pumps and the others—each of which is 4 ft. by 4 ft. 6 in.—for the double-deck cages, which have a new improvement in their top gear reducing the weight by 800 lbs. There are 10 boilers; 2 were built by the Murray Iron Works, 4 by the Atlas Works, 1 by Fairbanks, Morse & Company, 1 by Hendrie & Bolthoff, and 2 by the Mine and Smelter Supply Company of Denver. They are all of the return tubular pattern with a total rating of 1,000 H. P. Two American stokers are used with forced draft; water is supplied to the boilers by Smith's water heater and feed, which is manufactured at Aurora, Ill. Electric signal calls are used, with an extra call system whereby the cage signals are entirely independent of the level signals, thus avoiding the chance of making mistakes. There are two Ingersoll-Sergeant air-compressors, one of 150 H. P. and the other of 300 H. P., with a capacity of 30 drills. They compress the air to 90 lbs. A 100 H. P. Fairbanks, Morse & Company engine is used for lowering pipes and timbers. For pumping there is a Knowles triple-expansion pump at the 900-ft. level, which can raise 1,200 gallons a minute, and one Snow pump at the 800-ft. level with a lifting power of 800 gallons. One each of the Cameron Sinkers No. 11, No. 9 B, No. 7, and No. 5 are used; also one Palmer sinker, tandem style, with 12-in. plungers and a capacity of 1,000 gal-

lons a minute. It is nearly circular and varies from 15 to 30 ft. in diameter and extends nearly vertically but with a sort of a corkscrew form into the earth. The ore filling this pipe consists of pebbles well rounded by the action of the ascending water and cemented together with material which is composed for the most part of the same rock pulverized. This ore containing from 9 to 15 per cent. of lime and 7 per cent. of iron, thus differing from any other ore body in the district. It is also a remarkable feature that the gold values contained in the pebbles and in the cementing material are about the same. The values are distributed with remarkable evenness through the mass, thus forming a notable exception to the rule of gold deposits."

Stratton's Independence, Limited, is the most famous mine in the district, being known both far and wide as the mine that made the first millionaire of the camp. This mine lies on the south slope of Battle Mountain, just to the northeast of the town of Victor, where it forms a compact group of 112 acres. The buildings comprise the shaft house, general office, ore house and various out-buildings used for blacksmith shop and other purposes. There are 3 Heine boilers, each of 300 H. P., with a 225 power H. P. hoisting engine built by the Stearns-Roger Company, equal to a depth of 1,500 ft.; there is one Ingersoll-Sergeant air-compressor equal to 3 drills, and 2 Norwalk compressors equal to 12 drills. The pumping plant consists of 2 Snow compound pumps at the 900-ft. level, each with a capacity of 1,000 gallons per minute. Wainwright heaters are used to heat the water for the boilers; they have a capacity of 1,000 gallons. A Westinghouse motor furnishes 400 lights for the works, both above and below ground. The workings consist of two shafts known as No. 1 and No. 2; they are down respec-

tively 920 and 625 ft. The aggregate length of the working is about 35,000 ft. There are 325 men employed.

From the opening of the mine to the end of 1899, the amount produced was 41,694 tons of ore, having a gross value of \$3,837,360, which gave a net profit of \$2,402,164 after deducting every expense. The following table gives the tonnage and gross value since April, 1900:

Month.	Tons.	Gross Value.	Per ton.
May .....	2,998	\$143,152	\$47.75
June .....	6,881	528,094	76.75
July .....	4,135	257,057	62.17
August .....	4,485	254,611	56.77
September .....	4,861	258,557	53.17
Totals .....	23,360	\$1,441,471	\$61.71

The gold in the ore of this mine is found as a telluride. In the surface ores and in the uppermost workings decomposition has liberated the gold and it is found in the native condition, but in the deeper levees the tellurides appear, accompanied by fluorite or fluor spar, a purple mineral, the color of which is characteristic of many of the ores in the Cripple Creek District. In the deeper workings of the mine—that is, below the sixth level—the ores become more complex on account of an increased percentage of baser minerals, inclusive not only of iron pyrites, but also galena. This change does not appear to affect the richness of the ore as regards its gold contents, but it has a bearing on the metallurgical treatment because the increase in sulphur adds to the cost of roasting the ore.

The two tellurides common to the mine are sylvanite and calaverite. Sylvanite is a double telluride containing both gold and silver, an average composition being 28 per cent. gold, 16 per cent. silver and 56 per cent. tellurium.

The Elkton Consolidated Mining and Milling Company's property is situated on the south slope of Raven Hill, where the company has a holding of 70 acres, having lately increased the territory by absorbing the adjoining claims of the Raven Gold Mining Company and the Tornado Gold Mines Company. The company is now putting up a new shaft house and a new ore house and making many changes in the machinery. This has somewhat retarded the regular work in the mine, but the new acquisitions and the convenience with which the properties can be developed as a whole by underground connections will lead to a larger output, and a more economical system of working the property in the future.

The principal shaft is being equipped with a steel gallows frame 55 ft. high, made by the Wellman-Seaver Engineering Company, of Cleveland. It carries a 6-ft. sheave with ring oil bearings.

The new hoisting engine is a duplex Webster, Camp & Lane with Corliss valves and patent friction clutch; the cylinders are 20 by 48 in., operating a Roebling flat steel cable 4 by 3/4 in., which is calculated for double-deck cages at 2,000 ft. There are 5 boilers made by the Denver Boiler and Sheet Iron Works Company, the Mine and Smelter Supply Company, and Hendrie & Bolthoff, with a total capacity of 625 H. P. They are supplied with water by a Warren Webster feed-water heater calculated for 750 H. P. There are 2 Knowles triple-expansion pumps at the 400-ft. level with a capacity for each of 700 gallons per minute. The water is pumped up to them by a Knowles compound with a capacity for 1,000 gallons at the 800-ft. level. There is also a Prescott pump at the same level, with a capacity for 800 gallons. There are 2 Norwalk compressors for 6 drills each, 1 Ingersoll Eclipse drill, 3 1/2 and 4 Sullivan drills ranging from 2 1/4 to 3 1/2 in. An Acklin generator of 110 volts is used for lighting purposes, while a Senn electric apparatus is used for signaling. The water hoisted amounts to nearly 850 gallons per minute. There are 275 men employed.

During the year ending May 31st, 1900, the gross production of the mine was 14,442 tons, having a gross value of \$44.79 per ton. The total amount of work done was 2,217 ft., besides a great deal of work which was done in cutting stations for the pumps. The average cost of railroad freight per ton was \$2.82, while the average treatment charges was \$8.37 per ton.

#### THE DECISION OF THE GERMAN PATENT OFFICE REGARDING THE WETHERILL PATENTS FOR MAGNETIC CONCENTRATION.

Since the novel process of separating weakly magnetic material by means of highly condensed magnetic fields, covered by United States Patent No. 555,792, granted to John Price Wetherill, was first brought to the notice of the mining profession in 1896, the applications of this process have been constantly spreading. This has in several cases led to experiments by others with a view to constructing machines which, although differing somewhat in mechanical details, employ the same process and attempt to accomplish the results in which the gist of the Wetherill invention lies.

In view of this, it will be of general interest to note the following decision of the German Patent Office, reached a short time ago in a suit brought by the Mechnischer Bergwerks-Aktien-Verein vs. Metallurgische Gesellschaft, in which suit the validity of the Wetherill process patents was questioned.

The Imperial Patent Office, after a minute examination of the complaint made against the validity of the German Wetherill Patent, and after hearing the parties concerned, has decided that:

Claim 1 of the patent No. 92,212 covering the process of separating the so-called weakly magnetic substances by direct magnetization, is upheld; the wording of claims 2 and 3 it was found necessary to change so as to preclude a possible misinterpretation, the new context to express without ambiguity that the constructions covered by either of the two claims are patented only in so far as they serve for carrying out the process as defined by claim 1. The remaining claims were not assailed by the complaint. Costs are divided among the parties, viz.: Complainant to bear four-fifths, defendant one-fifth.

The arguments in support of the decision are stated as follows: "For the consideration of the question, whether the process characterized by claim 1 was new and patentable at the time of the application, it is immaterial that long before the date of application the existence of

weakly magnetic and non-magnetic minerals was known, besides the strongly magnetic ores; likewise the classification given by M. Faraday 60 years ago dividing all substances into two classes, paramagnetic and diamagnetic, since constituting a common acquisition of scientific and technical knowledge, is by no means prejudicial to the patent.

"The Application Department knowing these premises has allowed the first claim on the well-justified ground that Wetherill was the first to recognize the applicability of these known facts to the magnetic separation of weakly magnetic substances, without first transforming them into the strongly magnetic state and to demonstrate their separation from non-magnetic substances upon a commercial scale.

"Magnetic concentration up to the time of Wetherill was developed only to a very small extent and still more limited in its practical application. It was principally applied to the dry concentration of iron ore which by roasting was convertible into ferroso-ferric oxide—FeO, Fe<sub>2</sub>O<sub>3</sub>—this being considered the only iron compound corresponding in its magnetic properties to the native magnetite and separable by means of the magnet.

"In Germany only a few works have attempted to concentrate by this method the spathic iron—FeO CO<sub>2</sub>—interspersed with zinc-blende.

"This process involved the difficult task of converting the spathic iron by roasting into ferroso-ferric oxide (artificial magnetite).

"It would be of no consequence to investigate here the difficulties connected with this operation and their chemical causes, may it suffice to mention that in many cases it was a complete failure, in most other instances it proved unsatisfactory in spite of great expense. The news that Wetherill's process required nothing more than the ordinary crushing before separation avoiding the extremely difficult roasting process created great satisfaction among experts.

"Before Wetherill the efforts of specialists in this branch were guided on the one hand by the sole aim to improve the construction of the magnetic apparatus utilizing the achievements of physical and electrical sciences; the progress made in metallurgy relating to the chemical nature of the roasting process on the other hand stimulating efforts toward converting iron compounds, thought to be practically non-magnetic into artificial magnetite.

"This problem was simplified to a remarkable extent also from an economic point of view when Wetherill demonstrated the possibility of direct separation of the weakly magnetic substances.

"The statement of the complainant relating to the alleged prior use of methods similar to the patented process producing essentially the same effects, is incorrect. Complainant has not given evidence in support of such statement. Referring especially to the old Buchanan separator the argument of the defendant has not been invalidated that the Buchanan separator before Wetherill's application for the patent has never been applied to the separation of weakly magnetic substances from non-magnetic admixtures.

"Complainant moreover adduced a laboratory method for separating feebly magnetic substances from non-magnetic ones, which in some respects bears slight resemblance to the context of claim 1 of the disputed patent. This method, described by Mann in 'Neues Jahrbuch für Mineralogie, Geologie und Paleontologie,' 1884, Volume 2, page 161, in its entirety, however, would not justify the annulment of claim 1 of the defendant's patent.

"In the first place the publication of Mann has no reference to concentrating complex ores for technical or industrial purposes, but serves merely for solving an interesting mineralogical problem by analyzing the constituents of certain minerals, it being understood that no further utilization or technical application of the products was contemplated. A conclusion as to the practicability of Mann's method for dry magnetic concentration of ores was by no means evident.

"Furthermore magnetic concentration has to deal with entirely different substances, with other classes of minerals than those which Mann experimented upon in connection with his research work.

"Finally the method itself is in a number of points essentially different from the Wetherill process."

**LEAD IN RUSSIA.**—Deposits of lead ore have been discovered at Karpowka, in the Dniester District, Government of Podolia, mostly in silurian lime and sandstone. Steps have been taken to exploit this discovery, and an analysis of the ore has proved it to contain 77 per cent. metallic lead.

**COAL PRODUCTION IN RUSSIA.**—A recent report gives the output of coal in Russia for the six months ending June 30th as follows: Donetz Basin, 331,000,000 poods; Poland, 121,792,260; Oural, 12,592,452; Central Russia, 9,113,812; Caucasus, 2,085,043; total, 476,584,567 poods; which is equal to 7,806,455 metric tons.

**NEW COAL EXPLORATIONS IN FRANCE.**—The scarcity of coal in France, with the circumstance that one-third the quantity of fuel consumed by that country has to be imported, is greatly stimulating exploration in several departments, says the London "Colliery Guardian." In Isère the Compagnie des Mines d'Anthracite de la Mure has applied for the concession of anthracite that it has discovered on the territory of Motte-Saint-Martin and Notre-Dame-de-Vaulx; but it has been asked to carry out some additional prospecting works in support of the application. The Société Vaulxoise de Recherches d'Anthracite has applied for a concession of the anthracite deposit that it has discovered on the territory of the above-named communes with that of Saint-Jean-de-Vaulx; and a decree of May 2d last accorded it the Majeuil concession, extending over 540 hectares. In the Vaulx Valley two rival companies—Mortier & Compagnie and Chavanne & Compagnie—have put down a shaft and borehole respectively, for proving the anthracite deposits on lands not conceded and not applied for by the above-named companies; but at present no satisfactory result has been obtained. On the Plateau of La Mure a shaft has been sunk to the coal-measure shales of Féteny by M. Mallet, engineer, of Saint-Etienne; and in the Oisans Basin working is being carried on in the concessions of Combe-Gillarde, Erpie, Combe-Charbonnière and the Mas des Combes.



## THE SANTA RITA COPPER MINES, NEW MEXICO.

Written for the Engineering and Mining Journal by W. C. Potter.

The copper mines of Santa Rita, located 14 miles east of Silver City, New Mexico, began the production of copper long before the American prospector had come into being. According to accounts found in the archives of the City of Mexico, the mines were abandoned by the Spaniards in 1780, having been operated by them for many years previous to that date, as is shown by the size of the dumps at the old workings.

History relates that two Spanish lieutenants, Romero and Charasco, with a number of Mexican peons and some few soldiers, held the mines against the Apache Indians and worked them in spite of their hostility. Two old adobe forts, shown in the accompanying photographs, are still to be seen located among the buildings occupied by the present company. These two, with another recently demolished, are capable of holding 50 men or more, and according to the historians were often put to good use in the hard battles with the Apaches.

The Spaniards hoisted their ore on the backs of the miners, as is proved by the discovery of some of their buckskin sacks in the old

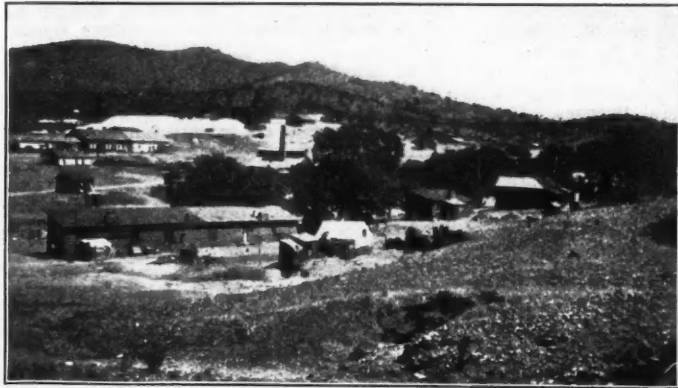
left about the property by leasers and former owners. The water question, one of the most serious difficulties to contend with, has been recently solved by encountering a stream of 11 miners' inches in sinking one of the shafts. This supply continues and furnishes a material almost as valuable as copper ore in this region.

The mines support a population of about 500 Mexicans and 200 Americans. The camp is reached by a spur from the Atchison, Topeka & Santa Fe Railroad.

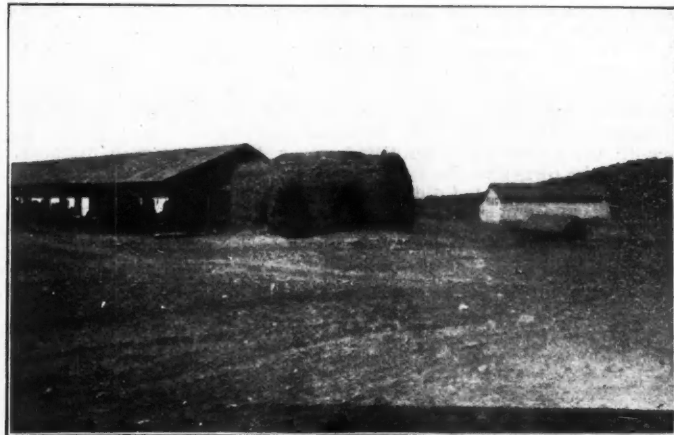
## THE PRINCIPLES OF MINING LAW.\*

By Charles J. Alford.

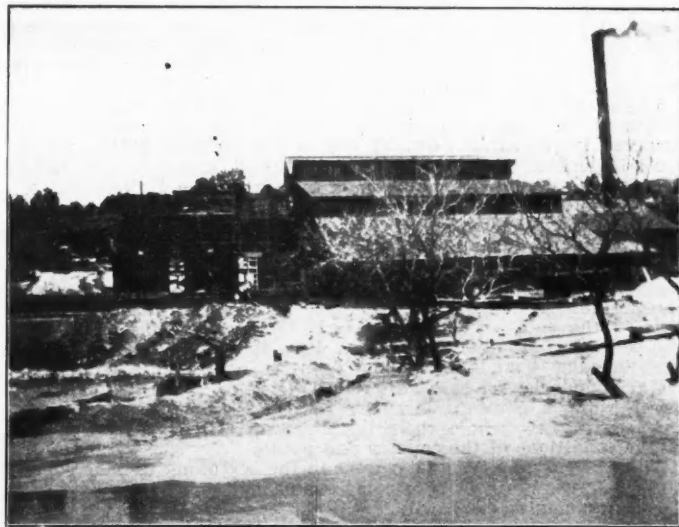
Alluvial gold mining is naturally the work of the independent individual miner, and its value in attracting a population to hitherto unpopulated countries is certainly very great; but to a country generally this appears to be its only value, as royalties or rents of alluvial claims are always difficult and often impossible to collect, and the riches ob-



GENERAL VIEW OF SANTA RITA CAMP.



OLD ADOBE FORT, SANTA RITA.



CONCENTRATOR AND LEACHING PLANT, SANTA RITA.



OLD FORT, HOIST AND DUMP, SANTA RITA.

workings. The ore was carefully sorted and then packed by means of burros either to Chihuahua or the City of Mexico. History also tells us that a large cave occurred in the workings, killing 14 Mexicans, and that on this account, and the difficulties with the Indians, work was finally stopped on the mines. Ample evidence of this cave is shown on the surface even to-day.

The present company, the stock of which is largely owned in Boston, is developing these mines after a systematic manner for the first time in their history. Three shafts are being sunk by the company and drifts being run to connect them, while about 40 leasers are sinking shafts on the territory thrown open to them. Some of these are working considerable forces on their leases. All of the leasers agree to sell their ore, which runs above 10 per cent. in copper, for \$1 a unit to the company, which takes it on the dumps.

The territory owned by the mining company comprises an area of about 1 square mile, the center portion of which is reserved for development, while the remainder is thrown open to leasers. The ore occurs in a stockwork of veins in a very soft, decomposed, porphyritic rock, the veins varying in width from knife-blade seams of native copper to bodies of low-grade oxidized ore of 6 or 8 ft. in width. The ore is of almost all varieties, including a considerable quantity of native copper, but the carbonates and oxides predominate at present depths.

A 90-ton concentrator, in connection with which is a plant for leaching the tailings with sulphuric acid, is working on the various old dumps

tained on gold diggings are soon dissipated. It is not necessary to discuss this subject here. As the more remote corners of the world are becoming quickly opened up, the chances of discovering important alluvial diggings near to any important centers of civilization pass away, and with them the necessity for considering the laws which were framed for their regulation. We shall more usefully occupy our time in considering those which apply particularly to the mining of metaliferous minerals in veins or other analogous deposits.

An analysis of the mining laws of the world shows a grouping of the principles of their construction under two great primary heads: (1) That under which the owner of mining property, be that owner the state or a private individual, has the right to grant concessions of such mining property to individuals or corporations at discretion. This, for the sake of convenience, we will call the "Concession" system. (2) That under which any individual has the right to locate, on discovery or otherwise, certain limited areas of mining ground, and, under certain conditions, to hold, work, or deal with the same. This we will call the "Claim" system. The concession system had its origin in ancient days in the rights of kings and feudatory lords to the mineral products of the ground, and to the disposal of them, and it prevails at present, in a more or less modified form, under all the ancient civiliza-

\*Abstract of paper read before the Institute of Mining and Metallurgy, in London, October 17th.

tions of the world. Public attention has of late years been so much centered on the newer countries of the world, where the claim system is in use, that some persons may be surprised to learn that more than five-sixths of the mining areas of the world are worked under concessions. Its great advantage is that as the State or other owner of the ground has the right to grant or withhold mining rights at discretion, they are usually only granted to those who have the means to do good work, and the cases before described in connection with the working-man mine owner do not occur. The claim system originated in the early days of mining in the Western States of North America. Great numbers of energetic men in the earlier years of the present century rushed to the alluvial fields of California, and later on to those of Australia, where, for the sake of public peace, some arrangement had to be made on the spot to determine the ground which it was allowable for a man to hold, and the conditions under which he could hold it. Hence arose the "claim." Then the necessity for a controlling power close at hand gave rise to the "warden," with his summary powers of confiscation and protection. As the alluvial mining waned, and was succeeded by vein mining, the system was continued, with some modifications, until upon it grew up the present mining law of the United States of America, from which several other modern codes have been more or less copied.

We will not proceed to review very briefly the principles of mining law of the various more important countries of the world with the view of classifying them under the above headings, and, to some extent, of appreciating the general bearing of the fundamental tenets.

The United Kingdom.—Our home laws need but little notice here, as, with the exception of gold and silver, the property in minerals is vested in the owner of the soil, who has a right to lease them on terms at his own discretion. Gold and silver are technically the property of the Crown, and when worked at all are worked on concessions granted by the Government. There is no codified mining law, and but little statutory legislation on the subject; such as there is relates to inspection and working, and partakes more of the nature of regulations than of law, and legal questions are generally based on the decisions of the courts in bygone cases.

France and French Colonies.—Concessions by Government—usually to first applicants—surface owner has certain rights to royalty and taxes, which are partly fixed and partly proportionate to output or profits. Prospecting is only allowed by surface owners, or, in certain cases, by authority of the Government, when the surface owner has right to indemnity. Concessions are granted entirely at the option of the Government, and there is always much Government control.

Germany and German Colonies.—Concessions by Government, usually to first discoverer or first applicant. Royalty on gross produce of mine to the Government. Prospecting is allowed anywhere under certain restrictions, but the proprietor of the soil has to be indemnified. In case the surface owner declines to allow prospecting on any reasonable terms, the Government may authorize it at discretion under restrictions. In different parts of the empire there are special regulations regarding certain minerals.

Austria-Hungary.—Concessions by Government on much the same lines as in Germany, but the royalty usually takes the form of a permanent tax on the net revenue of the mine, and prospecting is only allowed by permission of the Government, by whom prospecting areas are granted.

Italy.—Concessions by Government. In some parts with preference to surface owner, and in others with preference to discoverer. Prospecting rights are granted under certain restrictions, and a royalty of about 10 per cent. of the net produce of the mine is imposed, with a small fixed tax on area.

Spain.—Concessions by Government to discoverer, subject only to rent and royalty, otherwise permanent. Royalty about 1 per cent. on gross production, with a fixed rent on area. Prospecting only allowed by permission of Government.

Portugal.—Concessions by Government to discoverer, with certain rights to surface owner. Prospecting by Government permission only. Royalty about 10 per cent. on net produce of mine, half of which goes to surface owner, if any; also a small fixed rent according to area.

Russia.—Gold, silver and platinum belong to the Government, and can only be worked by imperial concession on terms determined by the concession. Other minerals can be worked or concessioned by surface owner under Government restrictions. There are very large areas of Government lands in Russia, and the Government exercises a strict control over the working and disposal of minerals.

Turkey.—Metalliferous minerals can be worked only on a royal concession, on terms stated in the concession. All laws are very uncertainly administered in Turkey, and everything depends upon the favor, or otherwise, of the local authorities.

Spanish America.—Including almost the whole of North and South America, with the exception of the United States and Canada. In these countries any inhabitant may obtain a Government concession to explore or work mines. Concession usually granted by preference to the surface owner, if any, or to the discoverer or first applicant. A fixed rent on area and a royalty on gross production are generally imposed, failure of a regular payment of which is the only circumstance which can invalidate the title.

British India.—Concessions are granted by Government for working metalliferous minerals on Government lands, and private lands may be expropriated for mining purposes on certain conditions, and on compensating the owner. Regulations regarding prospecting and royalties have lately been promulgated in several of the provinces of India, but the general principle is that concessions are only revocable on non-payment of taxes, rents or royalties.

Japan has a rather complete mining law on the basis of concessions with title only abrogable on non-payment of imposts, or political disability, but no foreigner can hold mining property or take part in any association or company which holds it.

The Gold Coast Colony and Ashanti.—All landed and mineral rights are vested in the native chiefs, but no contracts made with them are

recognized without the consent of the Colonial Government, who will, at discretion, register the contract and grant a certificate of title.

The above list comprises all the older countries of the world, and covers more than five-sixths of its mining areas. In these the concession system, as previously defined, prevails, the conditions of tenure are arranged to suit each respective case, and the title to the property is adequately secured.

We now come to consider a group of countries in which the principles of mining law show a gradual passing from the concession into the claim system, with a corresponding lessening of the fixity of tenure and security of title.

The Transvaal.—Metalliferous minerals belong to the State. Certain districts are proclaimed by the Government as gold-fields, and on these any person may locate claims, each measuring about 400 by 150 ft., according to certain regulations. In certain cases arrangements are made for long leases of areas of mining ground. The rent of each claim is 10s. per month, and there is no obligation of continuous work, the claims only becoming forfeitable on non-payment of rent. The regulations also provide for prospecting and diggers' licenses, alluvial claims, mill sites, water rights, alluvial digging, residential sites, and a number of other matters. If honestly and adequately administered, which, unfortunately, has not hitherto been the case, the system of the Transvaal would form by far the most promising of modern mining laws for countries suitable, in climate and other conditions, for occupation by the working European.

Cape Colony.—Metalliferous minerals on Government lands are workable on monthly claim licenses by persons holding the prescribed diggers' licenses. Continuous work is, theoretically, enforced, and unworked claims are forfeitable. Minerals on private lands, unless specially reserved by the Government, are at the disposal of the landowner, but may be expropriated by the Government for working under certain circumstances.

Natal.—In the case of land in occupation prior to 1887, minerals belong to, and may be dealt with by, the landowner. In all other cases they belong to the Crown and the Government proclaims certain areas as gold-fields on which any duly licensed person may prospect and locate claims on prescribed conditions, rent and royalties. Claims are forfeitable on non-continuance of work.

There has hitherto been little development of metalliferous mining in South Africa, outside of the Transvaal. Were there to be any important progress, a revision of mining law in these colonies would become necessary.

Canada.—In the eastern provinces, with few exceptions, minerals are the property of the surface owner, be that the Government or a private individual, and concessions or leases are granted by, and the royalties accrue to, the same. In the central and western provinces, generally, mining rights are reserved to the Government, and a mining law analogous to that of the United States prevails, with the important difference that in all cases the boundaries of properties are perpendicular, and the pernicious system of giving rights to follow veins underground beyond the surface limits of the property is not in force.

United States of America.—The law varies somewhat in different States of the Union. In the Eastern States certain mining rights are reserved to the surface owner; but in the Western States, where the most important mining districts are situated, mines become the property of the discoverer, he being a citizen of the United States, and the tenure of the property in its earlier stages depends upon the execution of a certain value of work upon the ground during each year. After a certain value of work has been done, the owner can obtain a "patent," which constitutes a sound and indefeasible title. This is the one saving condition of the whole system, as however uncertain the preliminary stages may be, there is always a prospect of a valid title in the end. There are certain technical regulations regarding the following of mineral veins on dips, spurs and angles beyond the perpendicular boundaries of the property, and others regulating the claim boundaries by the position of the vein, which are troublesome, as affording a constant incentive to fraud, and consequent legal actions; but on the whole, the principle of the law appears to be suitable to the conditions of the country and people.

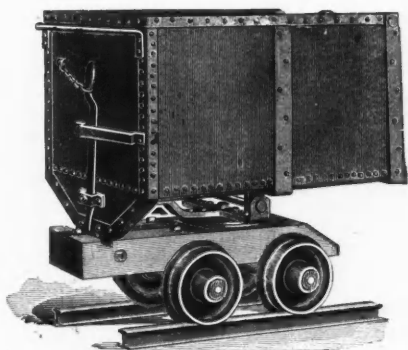
The Australasian Colonies appear in the beginning to have copied the United States mining law to some extent, but the development of democratic principles on a wild scale has produced the most pernicious system of procedure which has probably ever been developed. In the first instance, mines become the property of the discoverer, but are held on the condition of the continuous employment of a certain number of men per acre of ground held; these are the so-called "labor conditions." The rights of tenure, and all matters connected with mining, are subject to the almost irresponsible control of a local and poorly-paid official called the warden, and it speaks volumes for the integrity of these men that so few glaring injustices have yet been perpetrated. At the will of the warden properties can be declared forfeited, or protection and exemptions can be granted, the labor conditions made practically impossible, or relaxed to nothing, and payments suspended, enforced or remitted. In the early days of the country, when the mining districts were isolated and the means of communication with the centers of civilization irregular and slow, it was necessary to place great discretionary power in the hands of local authorities and to allow them more or less to administer the law according to local and temporary requirements; but this was but a necessary evil which ought to have been altered as soon as circumstances permitted, and a well-understood invariable law, with no exemptions from its provisions, promulgated and enforced. A law to the provisions of which ill-defined exemptions are necessary is, *prima facie*, a bad law.

The system of labor conditions was introduced for the twofold reason of preventing the holding of mining property unworked, and also to promote the continuous employment of workmen; but for both of these purposes it has signally failed. Owing to the constant exercise of the prerogative of exemption by the wardens the objects of the system are frustrated, and innumerable properties lie idle waiting a

buyer at a more or less exorbitant price, while the men who are supposed to be earning wages on them go to swell the ranks of the unemployed and become a burden on the State. The system carries within itself the elements of failure, in that no law can possibly be framed to cover all the conditions under which men can be bound to work or employers bound to employ them. To make such conditions effective, the law would have to fix and enforce a rate of wages, then to compel men to work, and to regulate and enforce the quantity and quality of the work to be done for the wage, and so on through an ever-lengthening vista of logical consequences to absurdity. Neither does this Australian system of labor conditions promote the employment of labor better than any other system, for while work goes on upon a mine labor must be employed, and usually a far larger number of men than provided for by the law—at least, after the first initiatory work is completed; while to employ a large number of men on such development work as sinking a deep shaft or driving a long adit, is generally impossible. To enforce the employment of useless labor would probably only result in the abandonment of the property, and the object of the law would be defeated by itself.

We have now briefly reviewed the principles of the mining law of the most important countries of the world; from that of the older countries where, by the concession system, the title to mining property is, theoretically at least, secure under circumstances within the control of the holder, down to that of the system of labor conditions which confers no security at all. We will now pass on to the last part of our subject and consider the principles of mining law applicable to—

The Chartered Companies.—The more important of these are the British South Africa, the British East Africa, Nyassa, North Borneo and Mozambique companies. All these administer territory in more or less tropical countries which, with the exception perhaps of the more southern parts of the territory of the British South Africa Company, can never become the permanent home of the European working man. The conditions of these countries, climatic and ethnological, render the presence of the ordinary strolling independent prospector



KILBOURNE & JACOBS MINE CAR.

undesirable, apart from the detrimental results of his operations, and the development of the mineral resources of these countries would be far better carried out by capitalized corporations.

In all countries the conditions prevailing must determine the principles of their mining law. Where the white man cannot work well and economically, the black or yellow man must take his place. Where the conditions of climate and contact with native races render the presence of the lower class of white men undesirable in independent positions, such should only be admitted under the control of those who can be made responsible for their well being and their personal conduct. Fortunately the mining laws of these chartered companies are all, up to the present, more or less tentative, and by the time their mining industries have developed any considerable proportions we may hope that they will have seriously considered the principles on which their laws should be framed.

The first principles of any mining law are, firstly, the right of the mine holders to a title to their property which is absolutely secure so long as they fulfill certain conditions altogether within their own control; and secondly, the right of the State to certain rents and royalties, and to the continuation of work on the mines whereby national capital, represented by property and labor, is not left unemployed. The means for securing these have been here, in a very superficial manner, suggested. In conclusion, the author would plead for the better recognition of capitalized corporations, as apart from the individual working miner, in the framing of new or redrafting of old mining laws.

A STEEL ORE CAR.

The illustration herewith represents one of the very latest patterns of steel ore cars built by the Kilbourne & Jacobs Manufacturing Company, of Columbus, Ohio. These cars have met with much favor in the Coeur d'Alene and other mining districts of the West. The car is simple in design and is made of the best steel, equipped with either Anaconda wheels and axles or the McCaskell wheels and axles. The capacity of the car shown is 26 cu. ft.; length of box, 48 in.; width, 34 in.; depth, 28 in. The sides, ends and bottom are of 1/4-in. steel, 4 2 by 1/2-in. oval iron straps bracing the bottom. The extreme outside dimensions are: 57 in. long, 38 in. wide and 48 in. high. The wheels are chilled face and 12 in. in diameter. The axles are of 2 1/4-in. round steel. The gauge of track required for these cars is 18 in. The entire car weighs 1,355 lbs.

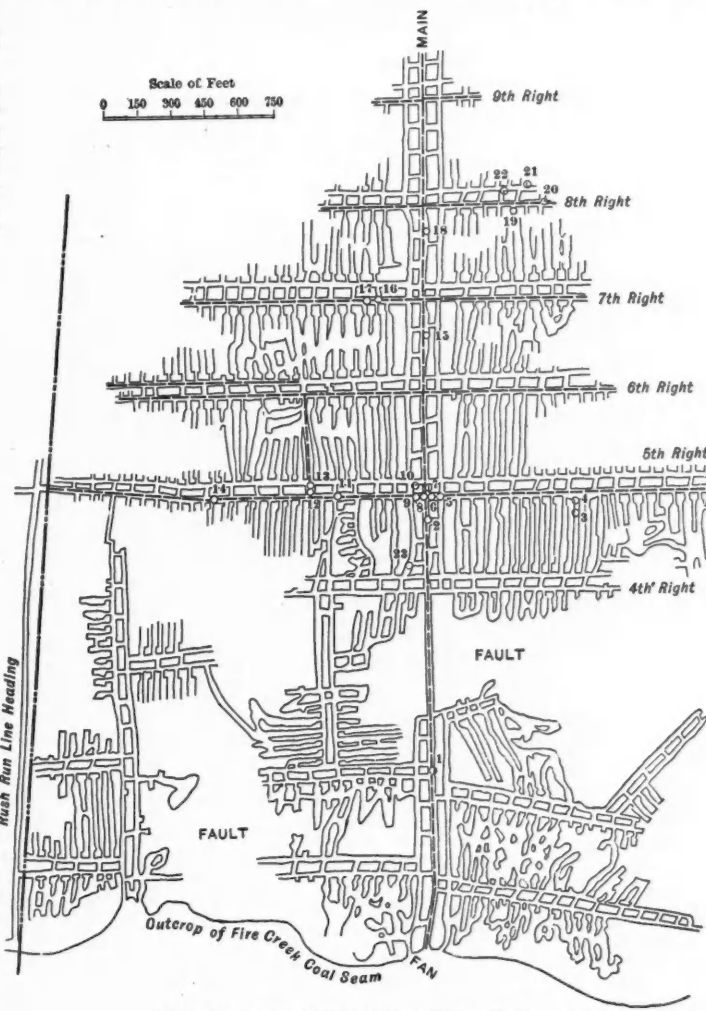
THE EXPLOSION OF THE RED-ASH COLLIERY, FAYETTE COUNTY, WEST VIRGINIA.\*

By W. N. Page.

The Red-Ash colliery was the scene, March 6th, 1900, of an explosion by which some 50 men were killed or wounded, and much property was injured or destroyed. On March 19th, the earliest date at which entrance was practicable, I examined the mine with the view of determining the extent, cause and point of origin of the explosion, and with the permission of Mr. F. Howald, the manager, and the owners of the property, for whom the examination was made, I present in this paper some results of that examination, comprising the essential portions of my report to them.

The Red-Ash colliery, situated on the south side of New River, next below the Rush Run Mine, with which the underground workings are connected, is a drift-mine, the entrance to which is on a slope, about 500 ft. above the river. (Fig. 1 is a plan of the workings, in which the points where human bodies were found are designated by numbers.)

The main entry has been driven north about 4,000 ft. from the surface, with parallel entries on either side from the fourth set of cross-entries, interrupted by a squeeze—marked "Fault" on the plan—cross-entries



PLAN OF RED ASH COLLIERY, WEST VIRGINIA.

and about 70 ft. of chain-pillar between the parallels. Except where have been driven east and west at intervals of 400 ft., with parallel air-ways, constituting a complete double-entry system, remarkably regular and uniform, aside from the squeeze referred to. About 75 ft. west of the entrance, an exhaust-fan, built by Messrs. Thayer, of Charleston, W. Va., is located in the mouth of the parallel air-way on the left or west side of the main entry, which parallel is broken by the squeeze, but connected at the fourth set of cross-entries, through workings to the westward, giving about the same effect as if the air-way had been continuous. I did not measure the efficiency of this fan; but the mine-workings have been planned for an excellent system of ventilation, which should be ample for every requirement, with any standard centrifugal machine proportioned to the work. The fan is driven by compressed air, which is frequently used for such purposes, and I understand that several others of the same model and make are employed in the district, giving satisfactory results. Under the plan of ventilation, the main entry is the intake, with an average cross-section of about 6 by 12 ft., or 72 sq. ft. of area, which is more than enough for the safe working-requirements of the mine. The current is directed to the head of the intake, where it is split, and conducted across the face of the workings to the east and west, through a system of trap doors, brattices and stoppings; that on the east returning through an overcast at the fourth cross-entry. With the double entries and break-

\*Paper read at the Canadian meeting of the American Institute of Mining Engineers.

throughs from room to room, as shown on the plan, there is no reason why the circulation should not have been as nearly perfect as any artificial system of ventilation can be made, as the entries and air-ways are unusually straight, with ample cross-sectional areas to reduce friction and resistance to a minimum. I feel safe in saying, therefore, that if there was lack of circulation at the time of the explosion, it cannot be attributed to any defect in the system or the general plan of the mine-workings.

The main entry showed no evidence of unusual heat or flame, beyond what might be expected along the intake, from an ignition of gases in some other part of the mine; the heated air and flame being necessarily thrown toward this entry, as offering the line of least resistance to daylight. Beyond the ninth cross-entries, the force had been exerted toward the face or inward, and from these entries, outward, everything had been swept toward the entrance like shot from the barrel of a gun—to which this entry may be likened, the expanded air and gases in the extensive workings representing those of the enlarged powder-chamber of the gun. From the 5th cross-entry there were three escapes for the pressure they produced, the main entry being the shortest, and the only straight one. A second was the parallel air-way on the west (left), which turned squarely to the west at the 4th entry, and had to pass through the "squeeze" by a devious route, before reaching daylight at the fan, which also operated to obstruct this outlet. The third way was down the west 5th entry to the Rush Run workings. Between these and the Red-Ash there was a brattice, or stopping, which was blown out; and in addition to which there must necessarily have been, in that direction, other resistance due to old workings.

The walls and roof of the main entry were covered with white dust from the floor, showing that the clay in the tracks and road-beds had been swept out through this channel with considerable force. At the 4th cross-entry the overcast timbers were blown straight down, showing that the contracted area of the stone drift through the squeeze had dammed back the force and equalized the pressure from the east workings, the return from which was through the overcast at this point.

The 4th cross-entry east shows the effect of heat, as if it had been filled with flame, the ribs and roof being covered with coked dust. The indications here also point to the conclusion that the forces were dammed back by the stone drift, which probably gave the flame more time for action. At the 5th, 6th, 7th and 8th cross-entries the doors on the west were blown in, and down the main entry, toward daylight; while those on the opposite side were thrown eastward toward the faces of the workings. The door of the 8th west entry was found several hundred feet down the main entry, toward No. 7, and the six men found at point 18 on the plan, as well as the cars wrecked there, evidenced a violent force from the west, coming down this 8th cross-entry. On the main entry at No. 2 west, 5 bodies were found badly mangled and burned. As this point is near the beginning of the stone drift, the force and heat were probably concentrated by the contracted area inside, but had room to expand through the old workings toward the outcrop, before reaching the entrance. Enormous forces were exerted down the 19th and 20th rooms, coming from the direction of No. 4, with which they were connected by break-throughs. The tracks and everything movable, including a Harrison mining machine, were thrown out of these rooms against the rib of No. 5 entry, where the force seems to have been divided, one part being directed toward the face of the entry, the other toward the main entry. There are only two ways of accounting for this curious reversal of forces. One is, by supposing that a local pocket of gas was fired, and followed the line of least resistance, which must have been toward No. 5, possibly on account of the stone drift; and the other is the assumption of a secondary or later explosion, due to either a pocket or fire-damp, or of carbon monoxide, known as "white-damp" by miners, which might have been produced by reduction of the carbon dioxide, or "black-damp," passing over the red-hot carbon, of the presence of which there is ample evidence in both the 4th and the 5th entries. A molecule of carbon dioxide ( $\text{CO}_2$ ), in passing over red-hot carbon (in this case, coke) takes up another atom of carbon in chemical combination, making two molecules of carbon monoxide ( $2\text{CO}$ ), which is a combustible (and when mixed with air before ignition, an explosive) gas, being the principal constituent of the furnace-gases used for heating the blast and boilers at all modern iron blast-furnaces. The latter alternative strikes me as the more reasonable, as the partial vacuum, created by the first explosion, would have directed the line of least resistance from these rooms inward, or toward No. 5, a fact hard to account for without such a partial vacuum. As a further evidence that there was little resistance from within, this force seems to have been expended to the east, before reaching the face of the entry, near which a car was found standing on the track, with a sheet of white paper stuck in the side, neither of which had been disturbed; consequently the direction of least resistance must have been westward and inward.

Entries 6 and 7 east, as already observed, had their doors blown eastward, showing that the force originated in or beyond the main entry, and not in these east workings, in which there is little evidence of violent disturbance, though coked dust on the walls and roof shows flame and heat. No. 8 east was little disturbed by heat or force, especially near the faces of the workings; and I am confident that the explosion did not originate in these or any other workings east of the main entry.

The faces of the main, parallel, and cross-entries No. 9 all show the effects of considerable force, coming up the west parallel from No. 8; and the intersection of this parallel with No. 9 west is indicated as the point at which the greatest force of the explosion was exerted within the mine. On entry No. 8 west, near the mouth of the second room shown in Fig. 1, the waves of force were projected in every direction; the track and timbers having been thrown east and west on the entry, and north and south through the rooms and air-ways. As no other point in the mine exhibited like conditions, it is reasonable to assume this as the origin of the explosion; and, in my opinion, the gas was first lighted at or near this point. Everything was swept through this room No. 7 entry with great violence; the indications being that the forces directed south through this room, east to the main entry, and

north up the parallel air-way, were about equal, while that along the entry to the west was breeched by the faces of the workings, distant only a few hundred feet in that direction. All indications in the west workings point to the movements of the forces from that point to daylight along the lines of least resistance, through rooms, air-ways and main entry, and along No. 5 west, in both directions; eastward to the main entry, and westward to the Rush Run Mine. The workings being extensive, there were large areas to receive the expanded gases; and a considerable portion of the forces had evidently been thus dissipated by the time they reached No. 5 cross-entry; otherwise, the fan would probably have been demolished.

The primary cause of the explosion was evidently fire-damp, a carburetted hydrogen gas, the principal constituent of which is  $\text{CH}_4$ , or marsh-gas. We know that a mechanical mixture of more than one part of this gas to 14 of atmospheric air is explosive—the most explosive proportion being about 1:9.5. With more than 15 or less than 5 parts of air to 1 of gas, the mixture is not explosive; but by reason of the diffusion of gases, this mixture must always be found variable where there is any ventilation or circulation of air. As all coal will give off at least its own volume of gas (and some coal much more), its presence is easily accounted for, and would be detected in all coal mines, but for its tendency to escape through every crack and crevice toward higher outlets, owing to its density being less than that of air. Taking the density of air as unity, that of methane, or marsh-gas, is 0.559, or a little more than one-half as great. If sufficient time is allowed, air and fire-damp will make a complete mechanical mixture, according to the law of diffusion of gases; but the latter is usually found at the top in mine-workings, owing to lack of time for complete diffusion, before the gas is removed by natural or artificial ventilation. In coal mines above water level, where the covering can crack, or break, fire-damp is rarely noticed in workings with less than a mile of the escarpment, or outcrop. Within this limit it is carried off by the usual methods of ventilation, assisted by the movement of cars, the upward escape by levity, through crevices, etc.; but below water level, or where the lines of escarpment embrace larger areas, with a heavy, unyielding cover, gas may usually be expected to give more or less trouble.

At Red Ash there is no escarpment northward or westward, in the direction of the workings, for many miles, and the overlying rocks are too massive to break, in consequence of which gas had been found within 4,000 ft. of the entrance, and was probably given off freely in all the workings inside, and including the 8th cross-entry. During a period when the fan was idle, on Monday night, there must have been in these workings an accumulation of gas and a mixture of it with air, which by the operation of the fan on Tuesday morning was started back in the return air-course, where it was met by a naked light on the 8th west entry near the main return air-way. About sufficient time (30 minutes) had elapsed, since the starting of the fan, for the air to travel down the intake, 4,000 ft. of the main entry, and back on the return to the point indicated—the total travel being about 4,500 ft., which would make the velocity about 150 ft. per minute, and (taking the section of main entry at 72 sq. ft.) would be equivalent to a volume of nearly 10,800 cu. ft. per minute—probably as much, or more than as much, as the fan was doing on the start.

The theoretical requirements for ventilation given by Andre, in his "Practical Treatise on Coal Mining," a standard authority for the world, are 24 cu. ft. of air per minute for each man and light, 72 for each horse, 192 for each 1 lb. of powder burned, 100 for each cu. ft. of coal mined, and 1 cu. ft. per minute for each square yard of coal-surface in the mine.

Assuming that 150 men were employed underground in the Red-Ash colliery, with 15 horses or mules, that 12 lbs. of powder were burned per hour, and 18 cu. ft. of coal were mined per minute (or 400 tons in 10 hours); and that 1,000 sq. yd. of coal surface was exposed, a simple calculation will show that 10,000 cu. ft. of air per minute would be required to satisfy Andre's requirements. But this would leave no factor of safety, whereas such a factor, of 2 to 5—according to actual tests of the amount of gas produced in the mine—should be allowed.

From the effects observed, I think the dust had little or no influence on the primary cause, though it must necessarily play an important part in all explosions, when the gas is once ignited, by adding to the forces evolved. I was satisfied from all I could see and hear, that the general plan and conduct of this mine was fully up to the standard of the New River District, and above the average in many respects. The presence of gas in dangerous quantities, however, was not fully realized, consequently some of the expense and precautions for a nightly gaseous mine were omitted. Nor could the precautions necessary for such conditions have been instituted, in my opinion, without a loss at the prevailing market prices, as the additional costs would necessarily have exceeded the profits.

Both the operators and operatives of this district are unaccustomed to gaseous mines, and both must be educated to the requirements. The operator may comply strictly with every requirement, regardless of cost; yet the ignorance or carelessness of a single operative may bring about disaster without warning, and none may live to tell the tale. Many such cases are on record, and nothing but time, strict attention, and experience, will provide an adequate remedy.

As already observed, I did not measure the volume of air handled by the fan during my visit. Under the conditions as I understand them, however, the capacity of the fan would have had little effect upon the result, as it was not running more than 30 minutes before the explosion. The larger the capacity of the fan, the sooner the gases would have been drawn out and the mine rendered safe; but the danger existed as long as they remained in the return, where they were liable to ignition anywhere between the fan and the working-faces where they had been generated or accumulated.

AN OLD COLLIER.—The oldest collier now running regularly on the British coast is the steamer "Carbon" of Newcastle-on-Tyne, which was built in 1855. The vessel was recently sold for \$11,500, and is in good condition.

## THE IMPROVED WITTE GASOLINE HOIST.

The latest improved Witte gas and gasoline hoist will use any grade of gas or liquid fuel capable of generating heat; it is shown in the cut herewith. This machine is a compact and well-proportioned hoist and so designed that it is easy to make adjustments or repairs. It is self-contained, the bed having bolted to it the engine and all the working parts, levers included; thus only one foundation is necessary. Six foundation bolts fasten down the machine. The crank shafts are very heavy but are reduced where drive pulleys are attached, so that the key-way does not interfere. A loose drum is bushed with phosphor-bronze. Bearings have large spring grease cups to properly lubricate them. The gears being on the outside of the bed can therefore be changed to any ratio of speed required for different classes of work. The hoist is so constructed that different sized drums may be furnished for different classes of work. The hand levers are so arranged that the tripping device will operate with the palm of the hand or fingers by simply changing a pin.

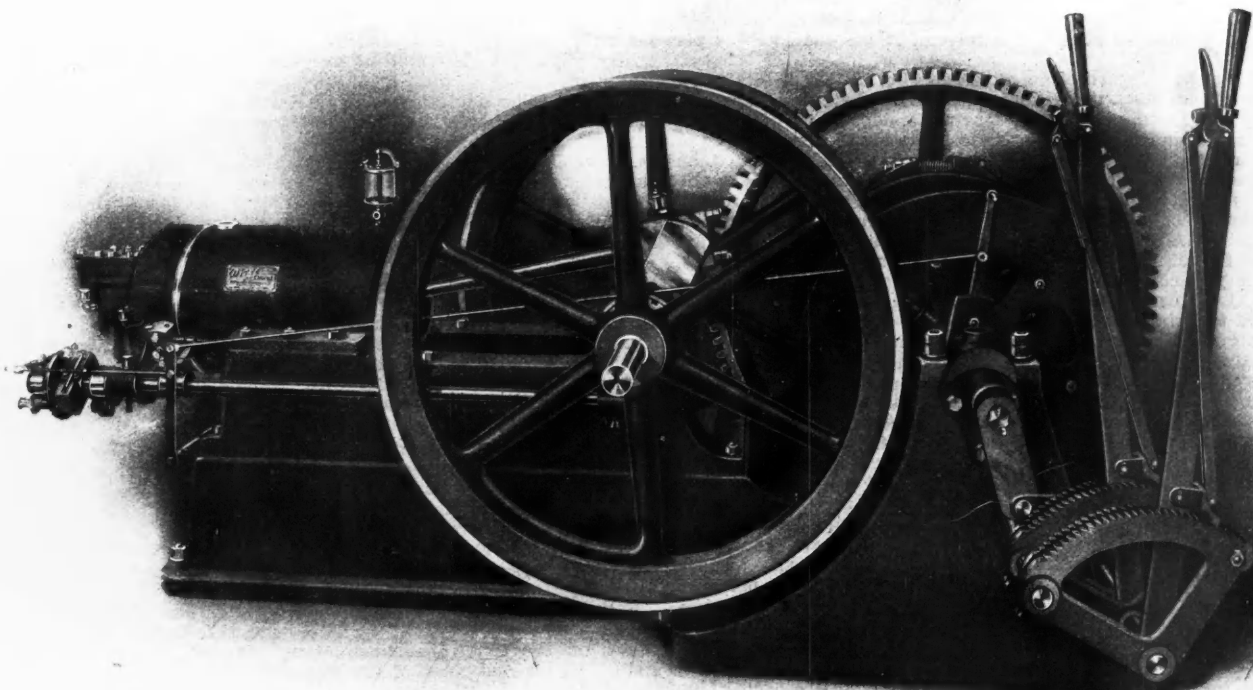
There are 6 key seats for the adjustment of the power thrust-screw, the speeder attachment being on the inner side of the fly-wheel, permit-

## The revenue account is as follows:

Sales of ore.....	£705,762
Less freight and treatment.....	122,117
Net sales .....	£583,645
Royalties and rents.....	1,499
Ore on hand.....	10,104
Total .....	£595,248
Mine expenses .....	£63,089
Repairs and improvements.....	11,363
Shipping and selling.....	3,601
General charges .....	14,331
Development .....	12,867
	105,251
Net balance .....	£489,997

The profit and loss account shows as follows: Net balance as above, £489,997, less exchange, £2,152, leaving net, £487,845; interest and transfer fees, £2,224; total, £490,069. The charges were: London office expenses, £9,274; dividends, 40 per cent., £400,003; income tax, £706; total, £409,983, leaving a balance of £80,086.

A circular from the London office, under date of October 25th, says:



GASOLINE HOIST MADE BY THE WITTE IRON WORKS COMPANY.

ting easy starting. The engine is dowel-pinned on the hoist bed to prevent any movement whatever. A variation of 100 per cent. can easily be obtained by the use of the speeder. The two fly-wheels of the engine are close up to their main bearings, preventing springing of the crank shaft. The hoister bed being of the box frame type does not admit of any springing. The engine and hoist are both constructed in parts as a high-grade machine, permitting economical repairs. In distant and inaccessible parts of the country this is a valuable consideration.

Full instructions and drawings accompany each machine so that an inexperienced person may be able to properly install the machine without assistance from the factory. The hoist is furnished complete with necessary tanks, pipes, fittings, etc., everything ready to be set up and run. They are sold under a guarantee for five years against all defective workmanship and material; this also is intended to cover proper design of the machine, which has been thoroughly tested by hard usage in hundreds of plants and at all altitudes up to 14,000 ft. above sea level. Engines are also built in sections for burro transportation at a very small extra expense.

The engine, which is shown in the accompanying illustration, is built by the Witte Iron Works Company, of Kansas City.

## ABSTRACTS OF OFFICIAL REPORTS.

## Stratton's Independence, Limited, Colorado.

This company has just issued from the London office a report covering the period of 14 months, from May 1st, 1899, to June 30th, 1900. The report gives the figures only in sterling, with no comments.

The balance sheet, as of June 30th, shows liabilities as follows: Shares issued (authorized, £1,100,000), £1,000,007; accounts and balances payable, £35,114; profit and loss, balance, £80,086; total, £1,115,207. The assets were: Cost of property—mine and land, £973,001; buildings and plant, £26,999—£1,000,000; ore and supplies on hand, £11,359; balances due, £28,663; cash, £75,185; total, £1,115,207.

"At a meeting of the directors held October 15th, the sixth interim dividend was declared for the quarter to September 30th last, at the rate of 40 per cent. per annum, being 2s. per share, less income tax. The payment of this dividend makes a total of £566,670 distributed to the shareholders for the 17 months since the incorporation of the company.

"With reference to the general meeting the consulting engineer, Mr. T. A. Rickard, who had come to London to attend the general meeting, was unexpectedly called away on professional business, and the meeting was postponed, as the directors thought it would be of great interest to the shareholders to have Mr. Rickard's verbal statement on the position and prospects of the mine. Mr. Rickard is expected to return to London about the end of November, when it is the intention of the directors to hold the general meeting."

Mr. Rickard sailed from New York last week and is now in London. Certain important statements will be made at the meeting accounting for the recent decline in the stock. We shall refer to this in our next issue.

**REINFORCED CAST-IRON PIPES.**—A prize was awarded at the Paris Exposition to the Societe Anonyme des Hauts-Fourneaux et Fonderies de Pont-a-Mousson, Meurthe-et-Moselle, whose chief exhibit is made up of cast-iron pipes, strengthened by steel hoops in accordance with the method of M. X. Roge, managing director. These pipes are cast vertically of ordinary iron, with external transverse ribs, on which the rolled steel hoops are shrunk. Numerous trials have shown that a cast-iron pipe of normal thickness thus strengthened with steel hoops can stand violent shock and great internal pressure far better than an ordinary pipe; that for the same strength the thickness of the ordinary pipe must be so much increased that its cost is far greater than that of a strengthened hoop affording the same resistance; and that, while an ordinary pipe that bursts generally opens over its whole length, or nearly so, allowing a large volume of water to escape, such opening is, in the strengthened pipe, limited by the hoops, so that the volume of water escaping is far slighter. The first application of this system was made at Lyons in 1898; and not a single pipe then laid has given way.

## 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.)

233.—Telluride Ores of Cripple Creek and Kalgoorlie.—In a paper presented at the Canadian Meeting of the American Institute of Mining Engineers, Mr. T. A. Rickard says of the commoner Colorado and West Australian tellurides:

"Sylvanite, although it does not carry the largest portion of the gold obtained from the Cripple Creek ores, is the telluride most frequently seen in specimens from that district. It is uncommon at Kalgoorlie, but is particularly characteristic of the ores of Boulder County, Colo., especially in the mines around Salina. Its brilliant silver-white twinned crystals are often distributed over the faces of pieces of rock so as to look like Arabic writing. Hence the alternative name of "graphic tellurium." The mineral contains about 60 per cent. tellurium, 16 per cent. gold, and 14 per cent. silver. Krennerite is a telluride with prismatic, brilliant, vertically-striated crystals which occurs in the ores of the Moon-Anchor and other mines on Gold Hill, Cripple Creek. The color of krennerite is like that of sylvanite, but it has a greater tendency to a slight brassy-yellow tinge. It is the most beautiful of all the tellurides. Its composition is about 59 per cent. tellurium, 36 per cent. gold, 4 per cent. silver."

"While visiting the Kalgurli Mine, at Kalgoorlie, in 1897, I received a specimen of so-called 'black tellurium,' which, when held in a tube over the blowpipe, volatilized completely, leaving a deposit of quicksilver globules at the cold end of the tube. It was coloradoite, the telluride of mercury, which was first detected in specimens from the Mountain Lion Mines at Magnolia, Colo. It contains 38.5 per cent. tellurium and 61.5 per cent. mercury. It is iron-black, with a sub-conchoidal fracture and the rich unctuous luster which characterizes several other tellurides, notably calaverite. At Kalgoorlie, native mercury and native amalgam have also been found. In addition to these previously-known minerals, there is a variety of coloradoite which has been named kalgoorlite containing about 11 per cent. mercury, 21 per cent. gold, 31 per cent. silver and 37 per cent. tellurium, with small percentages of copper and sulphur. As the crystallographic features do not differ materially from coloradoite, it can hardly be considered as more than an impure variety of the latter, and may be looked upon as a mixture of petzite and coloradoite."

"At the Associated Mines, Kalgoorlie, there occurred a mineral which resembled this supposed kalgoorlite. Analyses proved that it was petzite containing 40.5 per cent. silver, 24.6 per cent. gold, 34.6 per cent. tellurium with traces of mercury."

"Petzite is not common, either at Kalgoorlie or at Cripple Creek. In the former district it occurs in the Associated Mine, in the Great Boulder Main Reef; and presumably in other mines. At Cripple Creek in the Geneva, on Gold Hill, and in the Porter Gold King, above Anaconda. Petzite is the characteristic mineral of the Golden Fleece Mine, an isolated occurrence of tellurides, in Lake County, Colo., which, between 1894 and 1896, produced \$1,400,000 from a comparatively small tonnage of ore. It is very probable that future investigations will lead to the recognition of several new varieties of tellurides, but it will be necessary for this purpose to obtain crystalline specimens."

"Of the minerals which seem to be specially associated with tellurides two are particularly notable; fluorite and roscoelite. Fluorspar or fluorite, the fluoride of calcium, is a frequent companion of lead-ores, not so much in the United States as in England and Saxony. In Colorado it characterizes the telluride ores of both Boulder County and Cripple Creek, especially the latter, and is also found with native tellurium at the Vulcan Mine in Gunnison County. Hence it was at one time supposed to be a favorable indication of richness in the lode; but later experience has exploded this generalization. The prevailing color of the fluorite at Cripple Creek is from amethyst to purple. Large crystals are rare. Much of the coloring which serves as a beautiful background for the lustrous tellurides is but a stain upon the silicified breccia and other lode-matter. The presence of fluorite in the granite outside the gold-mining-area checks the inference which might otherwise be made from its prevalence in the veins."

"Fluorite does not characterize the lodes at Kalgoorlie; but calcite may be said to be a feature of their mineralization, particularly as the ordinary free-gold veins of Coolgardie do not carry it in notable amount. Calcite is rare at Cripple Creek. It is occasionally encountered, lining cavities in the eruptives. The small percentage of lime in the ores, as reported by the smelters, comes from the fluorite. Calcite is frequent in the telluride lodes of Boulder."

"Roscoelite has a peculiar interest for the student of telluride-ores. It is a brownish-green micaceous mineral, belonging to the hydro-mica group, and carrying a large percentage of vanadium. This uncommon mineral was found in handfuls in the form of small dark greenish-brown micaceous spangles, by the miners who worked the placer ground in the ravine below Sutter's Mill, where gold was first discovered in California. It accompanies the tellurides of Boulder to such an extent that the miners consider it a gold-bearing mineral in itself, instead of a mere accessory. The Boulder variety is grayish-green to olive-green. It frequently stains the quartz and other vein-stuff, so as to give them a strong green color, resembling that of ordinary chlorite. It contains about 45 per cent. of silica, and 20 to 28 per cent. of vanadium oxide with aluminum magnesium and potassium as accessories. In 1897 several specimens of the ore from the Great Boulder Main Reef Mine at Kalgoorlie were sent to me, and I thought that roscoelite was discernible. Subsequent analysis confirmed this opinion."

234.—Graphite.—D. S. M.—The sample of crystalline graphite you send occurs in what appears to be a fine grained igneous rock. The graphite is tough and of good quality, but the specimen is apparently from a

very small vein, altogether too small to be worth working. If the vein is several feet wide and uniformly as good as the sample, the deposit would be of value. Such graphite has been mined in the Adirondacks. The mineral is suitable for lead pencils, paint, foundry facings, etc.

235.—Gold Ore.—G. C.—Your specimen shows a narrow vein of white quartz carrying iron pyrites or "fools' gold" and possibly some copper pyrites. There is no free gold visible; the gold values, if any, are probably in the pyrites. The shiny flakes are mica. The mineral marked is probably copper pyrite. The vein is so narrow that it would need to be rich to pay for working. There is no way of finding out how rich the ore is except by assaying and no way of opening a mine except by the outlay of time and money.

## 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.)

Pyrites.—Can you tell me what a deposit of pyrites is worth? So far as prospected the deposit is extensive, and mining would not be costly. What is the value of pyrites? And what grade is salable?—Hamilton.

Answer.—The quotations for pyrites will be found in our Chemical Market each week. American pyrites are sold on the basis of 42 to 44 per cent. sulphur, and bring in New York, at the present time, from \$4.75 to \$5.50 per long ton. Spanish pyrites run 46 to 51 per cent. sulphur, and bring from \$6 to \$7 per ton. The value of a deposit of pyrites would depend very largely upon its location. Nearness to transportation and low freight rates are essential, as the value is not high enough to warrant or support a heavy cost of transportation.

Testing for Natural Gas.—Can you tell me through the columns of your valuable journal how to test for natural gas? Given a spring with a gas bubbling up with the water, should it not ignite or explode if a pint bottle of it be collected by displacement of water and exposed to the flame of a match at the orifice of the bottle? Or would the orifice of the bottle be too large to produce such phenomena? If it is not possible to test the nature of the gas in this way, please suggest some simple way to determine it.—T. J. B.

Answer.—Carbureted hydrogen, or natural gas, should ignite under the circumstances you mention. The simple test usually employed is the flame test. Natural gas should burn with a yellow, luminous flame. If you will consult an article on "Prospecting for Petroleum in California," by State Mineralogist A. S. Cooper, published in the "Engineering and Mining Journal," May 12th, 1900, page 556, it will give you some ideas on prospecting for and testing natural gas and petroleum.

Estimating Contents of Dumps or Tailings Heaps.—I shall consider it a favor if you will kindly enlighten me, through the medium of your paper, on the following point: Many enterprises have recently been started in various parts of the world for the purpose of dealing with the waste heaps, either rock or tailings, of previously worked properties; now, which is the best way to set about in order to ascertain the quantity of material in a large heap stacked on undulating ground? I have found the estimates of smart and thoroughly competent surveyors to differ considerably.—W. H.

Answer.—To estimate the contents of dumps or tailings piles ought to be a comparatively simple matter. The ordinary works on surveying or on estimating earthwork will give all the necessary rules. The difference in the estimates which you refer to has probably been due to different allowances for the undulating surface of the ground on which the heaps rest. Of course, if you want a very close estimate, it will be necessary to ascertain the depth of the dump at as many points as practicable, so as to get the surface as accurately as possible.

NEW COAL FINDS IN GERMANY.—The Eschweiler Mining Association has struck a seam of coking coal 1.2 m. thick, at the depth of 414 m.; and this find is regarded as very important (observes the Essen correspondent of the "Organe Industriel"), because it proves that the bituminous seams of the Aachen, or Aix-la-Chapelle, basin continue to the north.

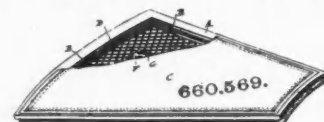
## PATENTS RELATING TO MINING AND METALLURGY.

## 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 October 30th, 1900.

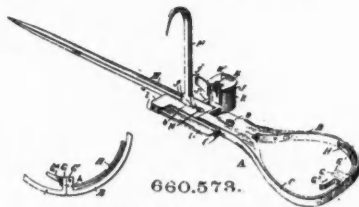
660,569. CLEANER FOR SHAKING-SIEVES. William D. Gray, Milwaukee, Wis., assignor to The Edward P. Allis Company, same place. The combination of a frame formed of a relatively soft wood; a wear-



ing-surface of a relatively harder material for the inner face of the frame; a sieve-surface secured to the frame; and a cleaner for the sieve-surface working in the frame and adapted to contact with

said relatively hard material as the brush is thrown or moved about in the frame.

- 660,573. **MINER'S CANDLESTICK AND COMBINATION IMPLEMENT.** Frederick Herbst, Ouray, Colo. The combination with a miner's tool having recessed pivoted jaws, of a candle-support, comprising a



660,573.

hook member having a neck adapted to be engaged by and clamped between the recessed portions of said jaws, means for supporting a candle on said hook portions, and means for locking the jaws together.

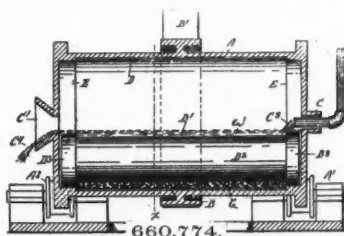
- 660,579. **GALVANIZING OR METAL-COATING APPARATUS.** William A. Leonard, Wareham, Mass. A furnace, a container for the articles to be galvanized or metal-coated, adapted to be heated by said furnace, a water-tank, a casing surrounding the delivery-end of the container and having its lower opening below the surface of the water in said tank, and a scraping device for the container.

- 660,720. **PROCESS OF DETERMINING HARDENING HEAT FOR STEEL.** Eugene Childs, Boston, Mass. The process consists in subjecting a portion of the metal to be tested to a graded heat ranging from minimum to above maximum temperature requisite to properly temper the same, comparing such heated portion of the metal with a test color-scale graded in color to correspond to the gradations in temperature; indexing the portions thus compared, and cooling; testing such cooled portion for the requisite hardness; determining from the relative position of the properly-hardened portion the corresponding color division of the test-scale, and adopting such color for subsequent heating.

- 660,724. **ELECTRIC CONVEYING AND ELEVATOR APPARATUS.** George K. Fischer, Salt Lake City, Utah, and Frank Klepetko, Great Falls, Mont. In combination with the rails and trolley-conductors of an electric railway, an elevator-car therefor, car rails, and one or more trolley-conductors carried by the elevator-car and means for locking a blocking device, a crank-shaft, a crank-arm on said shaft, and a link connecting said crank-arm and blocking device.

- 660,753. **ARTIFICIAL FUEL.** Ferdinand Christoph von Heydebrand und der Lasa, New York, N. Y. A composition of matter for artificial fuel consisting of earth and a sulphur-containing substance in suitable proportions.

- 660,774. **AMALGAMATOR.** Thomas H. Hicks, Fort Wayne, Ind. The combination with a rotatable tank having a metallic lining coated with mercury, of means for rotating said tank, a rolling amalgamator



660,774.

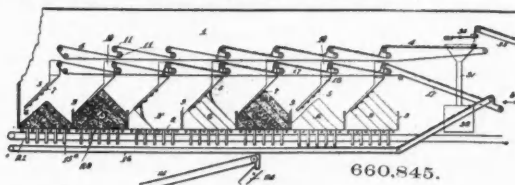
arranged within said tank and spaced therefrom and caused to be set in rolling motion by the rotation of said tank, and mercury arranged within the space between said rolling amalgamator and said tank to supply said lining and rolling amalgamator with mercury.

- 660,775. **INGOT-MANIPULATOR.** Albert T. Keller, Wilkensburg, Pa., assignor of one-half to Philip Keller, Edgewood Park, Pa. The combination of a feed-table for rolling-mills, a lifting-head arranged under said table, a lifting mechanism arranged to one side of the feed-table or outside of the path of movement of the ingot on the table, a pivotal connection of the mechanism to the head, and means for holding the head in a vertical or approximately vertical position.

- 660,824. **MACHINE FOR COALING OR SLACKING BALLAST-KILNS PREPARATORY TO BURNING.** George Snyder, Mount Pleasant, Iowa, administrator of John B. Faulkner, deceased. The combination with a pair of booms mounted upon a suitable car of a trolley adapted to travel thereon, a scoop depending from said booms and connected at its forward end with said trolley, a hopper and discharge-pipe carried by said car, and means for causing the trolley to travel along the boom and thereby bring the scoop into a position over the hopper.

- 660,844. **DEVICE FOR COLLECTING FINELY-DIVIDED MINERALS AND SLIMES.** Wilton E. Darrow, Sonora, Cal. An apparatus comprising a stationary tank having upper and lower compartments and a floor separating one compartment from the other and corrugated transversely, said upper compartment having an inlet at one end portion and an overflow at the opposite end portion, a series of superposed collecting-surfaces submerged beneath the surface of the water in the tank and extending in the direction of the flow of the water.

- 660,845. **APPARATUS FOR SAMPLING, AVERAGING, MIXING, AND STORING MATERIALS IN BULK.** Thomas A. Edison, Llewellyn Park, N. J. Apparatus comprising a bin into which material is



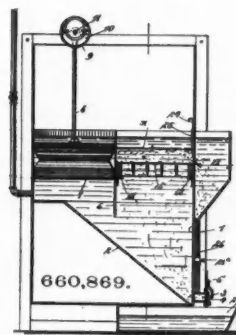
660,845.

deposited, a second bin in which the material is redeposited, a feed-belt for depositing the material in the first bin, a belt below the bin for withdrawing the material therefrom, a mixing-belt onto which the material is deposited and by which the material will be deposited in the second bin, and a belt beneath the second bin for withdrawing off the material.

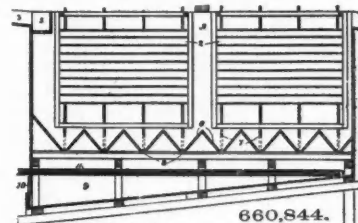
- 660,846. **PROCESS OF DEOXIDATING METALS.** Emil Ehrensberger, Essen, Germany, assignor to Fried. Krupp, same place. The proc-

ess consists in adding to the molten metal an alloy containing a metal having a greater chemical affinity for oxygen than the metal to be treated, and a non-metallic element the oxygen compound of which is an acid which combines with the basic oxygen compound of the metallic element of the alloy to form a fusible slag readily separating from the molten metal, and the alloy being added to the molten metal in such proportion that less than 0.1 per cent. will remain in the finished casting.

- 660,869. **SLIME JIGGING MACHINE.** Carroll B. Rogers, El Paso, Tex. A machine comprising a two-compartment tank having vertical side walls, a plunger in one of said tank-compartments, and a screen in the other tank-compartments, a bottom portion for said tank, the said bottom portion consisting of a horizontal section, a substantially V-shaped base, extending from said horizontal section



660,869.



660,844.



660,982.

- 660,884. **METAL-DEPOSITING APPARATUS.** Hermann R. Boissier, New York, N. Y. A tank for containing a solution, arms supported on said tank and having connection with an electrical supply device, said arms being adapted to support anodes and cathodes, a tube extended upward in the tank, a rod movable in said tube, means for moving said rod upward and downward, arms extended outward from said rod, and an agitator carried by each arm, each agitator consisting of a downwardly-extending rod and a horizontally disposed rod at the bottom.

- 660,956. **EXCAVATING APPARATUS.** William Henderson, Washington, D. C., assignor of one-half to Isaac O. Gordon, same place. The combination with the rotary excavator, of the receiving-tank located to receive the material from the excavator and adapted to swing in the arc of a circle about the axis of rotation of the excavator and independently of the excavator, and a suction-pipe for lifting the material from the tank.

- 660,968. **DRILLING-MACHINE.** Oliver E. Oakes, Webb City, Mo. The combination with a driven shaft carrying a friction-wheel, and a bull-wheel, of spring-supported friction-rollers interposed between the peripheries of the friction-wheel and bull-wheel, and means for throwing said rollers into engagement with said wheels.

- 660,982. **HEARTH FOR ROASTING ORES.** George Clary, Zacatecas, Mexico, and George W. Garrison, Goldfield, Colo. A plate, rollers carried by said plate, a frame mounted on said rollers, a table having an inclined top pivoted to said frame, a shaft supported by the said plate, means carried by said shaft for moving the said frame and table rearwardly when the said shaft is operated, and a separate means for throwing the said frame and table forwardly.

- 660,983. **ART OF HARDENING AND TEMPERING COPPER, GOLD, OR SILVER.** Daniel E. Conner and Orville Bagby, Covington, Ky.; said Bagby assignor of his right to Louis Fritz, same place, and said Conner assignor of his right to George M. Pearce, Washington, D. C. The process consists in first cooling the metal to a temperature at least 50° below zero, Fahrenheit, and then rapidly heating it to a temperature of at least 1,000° F.

- 660,997. **COOLING MEANS FOR MOTOR-COMPRESSORS.** John T. Nicolson, Manchester, England. In an air-compressor, a rotary compressor-valve having an annular chamber in communication with an end air admission, a port in the outer wall corresponding with a cylinder-port, a central cavity communicating with the delivery-outlet, said cavity having also a port corresponding with the cylinder-port, and a tube forming part of a water-circulating system.

- 661,017. **ROLLING-MILL.** Cornelius Kuhlewind, Knoxville, Pa., assignor to the Hydraulic Valve and Regulator Company, Limited, Pittsburg, Pa. A rolling-mill having an adjusting-screw, and an automatic relief device comprising a sleeve surrounding the screw, and arranged to be actuated by it, and a yielding-pressure device arranged to be actuated by the sleeve when the pressure reaches a determined limit.

- 661,021. **DRIVE-CHAIN AND WHEEL THEREFOR.** John C. Pratt, Hartford, Conn., assignor of one-half to Arthur L. Foster, same place. A drive-chain comprising a series of metal links formed from one piece of metal, and having two parallel sides between which one end of the block is supported, said sides below the block-receiving portion thereof converging toward each other and constituting bearing surfaces adapted to enter a V-shaped groove in the periphery of a pulley for rotating the latter, combined with blocks pivotally uniting said links.

GREAT BRITAIN.

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

Week Ending September 29th, 1900.

- 21,267 of 1899. **MAGNETIC SEPARATOR.** C. F. Courtney, Broken Hill, N. S. W. A magnetic separator for zinc-lead sulphides, designed to act in the wet state.
- 22,519 of 1899. **CRUSHER.** W. H. Baxter, Leeds. Improvements in the operating mechanism for jaw crushers.
- 23,664 of 1899. **PYRITES TREATMENT.** O. Meurer, Cologne, Germany. Method of manufacturing sulphates of iron from pyrites.
- 9,187 of 1900. **STEEL MAKING.** J. Maurer, Bochum, Germany. Method of regulating the carbon constituent of steel without the use of ferro-manganese.

Week Ending October 6th, 1900.

- 19,171 of 1899. **GOLD ORE LEACHING.** The Golden Link Company, London. Removing refractory elements from gold ores by alkaline polysulphides, under heat and pressure.

## PERSONAL.

Mr. C. S. Herzig, lately manager of the Auburn Iron Company, of Virginia, Minn., is now in Canada on professional business.

Mr. Edmund B. Kerby, general manager of the War Eagle Mine, Rossland, B. C., is on a visit to Toronto and other Eastern points.

Mr. Edward J. Berwind, of the Berwind-White Coal Mining Company, who has been in Europe for some weeks past, has returned home.

Mr. Geo. Kislinsky has returned to San Francisco, after an extended trip to the southern part of Mexico, where he spent several months examining mining properties.

Dr. Theo. B. Comstock, of Los Angeles, Cal., has returned home after an absence of 2 months. He has been examining mining properties in Nevada in the interests of foreign capitalists.

Dr. Malvern W. Iles, whose return from Europe we recently noted, has settled down for the present at his home in Denver, Colo., where he purposes devoting some time to study and writing.

Mr. C. H. Macintosh has left Rossland for London, England, where it is understood he will present to the financial public certain mining and other enterprises in Kootenay and Yale Districts of British Columbia.

Mr. W. Y. Williams, superintendent of the Miner-Graves Syndicate, who has been making a visit to the principal mining points in the Western States, recently returned to the Boundary country of British Columbia.

Mr. Melvin Dempsey, one of the pioneers of the Copper River, Alaska, gold discoveries, spent a few days in Denver, Colo., recently, while on his way to his early home in Michigan. Mr. Dempsey was for many years a Colorado prospector.

Mr. C. E. Robinson, who is at head of the rod and wire mill at Joliet, Ill., was in the Birmingham district last week looking after a law suit filed just after his retirement from the Alabama Steel Wire and Rod Company against the latter company.

Mr. Arthur Boyd, of Saginaw, Mich., surveyor for the Piere-Marquette Coal Company at that place, has resigned to accept the position of superintendent and engineer with the Boomer Coal and Coke Company at Boomer, Fayette County, W. Va., December 1st.

Mr. W. F. DeCamp has resigned his position as superintendent of the Lillie Mine at Cripple Creek, Colo., to accept a position with a syndicate of Pittsburg, Pa., mining men which owns large mining interests in the west. Mr. DeCamp will make his headquarters in Denver, Colo.

Mr. Anthony J. McMillan, of Rossland, managing director of the British Columbia (Rossland & Slocan) Syndicate, Limited, which owns the Snowshoe Mine, in Boundary District, intends leaving shortly for England to confer with the other directors respecting the further development of the mine.

Mr. J. D. Kendall, the English mining engineer who lately examined the Britannia Group at Howe Sound, B. C., on which group the Valentine Syndicate, of London, has an option, has since looked over the Jewel Mine, in Long Lake Camp, Boundary District, on behalf of its English owners, the Jewel Gold Mines, Limited.

Mr. Jos. H. Williamson, who for nearly 18 years has been the business manager of the Manufacturers' Advertising Agency, New York City, has severed his relations with that company to connect himself with the Viennet Advertising Agency, of Philadelphia, as its business manager in the place of Mr. Thompson, resigned.

Mr. J. A. Rice, who has been surveyor for the Cochiti Gold Mining Company at Albemarle, N. M., has assumed the superintendency of the Lone Star Mine for the Navajo Gold Mining Company in Bland. Mr. E. T. Washburn, in charge of the Star for the past 6 months, has resigned and will leave in a short time for his old home in Grass Valley, Cal.

Mr. J. F. Stone, of Columbus, O., vice-president, secretary and treasurer of the Boomer Coal and Coke Company, and C. C. Sharp, of Corning, O., general superintendent of the Sunday Creek Coal Company and secretary of the Raven Coal and Coke Company, were visitors at the Boomer and Raven Mines in Fayette County, West Virginia, on November 9th.

Mr. Julius Baier, who was recently appointed manager of the Conrey Mining Company, arrived recently from Boston at the company's ground near Virginia City, Mont. While on his way west he stopped in St. Louis and ordered a large amount of material for the new dredge soon to be built on the Conrey ranch. The com-

pany has a force of surveyors making survey for a flume.

Mr. J. W. Mercer, superintendent of the Liberty Bell Gold Mining Company's properties at Telluride, Colo., is about to start for South Africa, where he goes to make an examination and report upon the gold mining properties of a company of New York investors which have been closed because of the Boer war. During the absence of Mr. Mercer, Arthur Winslow, general manager for the company, will have personal charge of the mines.

Mr. J. H. Turner, Minister of Finance for British Columbia, recently paid a visit to the Granby Consolidated Mining and Smelting Company's smelter, at Grand Forks, B. C., and to the Old Ironsides & Knob Hill Mines at Phoenix. Afterward he was urged by the Greenwood Board of Trade to use his influence with his colleagues in the Provincial cabinet to arrange for the representation of the mining industry of British Columbia at the exhibition to be held in Glasgow, Scotland, next year, by a comprehensive display of mineral specimens.

## OBITUARY.

Guy De Yaulus, 35 years old, a mining engineer and financial agent of the Anglo-American Consolidated Gold Mining Company, with offices in New York City, died suddenly of heart disease on November 12th, in New York.

H. C. Freeman, a mining engineer, died November 3d at his home in Helena, Mont., of pneumonia, after an illness of less than a week. His wife survives him.

Mr. Freeman was born at Newark, N. J., in 1829. He was in the Civil War, becoming chief engineer of the 3d Army Corps, rendering distinguished service on several occasions. Mr. Freeman was a member of the American Institute of Mining Engineers many years and was contributor to the publications of the society. He came to Montana from Alto Pass, Ill., 4 years ago.

## SOCIETIES AND TECHNICAL SCHOOLS.

University of Michigan.—The total registration to date is 3,648, including literary, 1,537; law, 840; medicine, 520; engineering, 345. The total registration last year was 3,441, of whom 167 matriculated after the end of October.

Civil Engineers' Society of St. Paul.—At the meeting on November 5th 10 members and 6 visitors were present.

A rather informal and indefinite verbal proposition from the Commercial Club, touching the appointment of committees to confer on the advisability of closer relations between the two, was referred to the government of the society for more refined development. That resignation of Mr. H. N. Elmer was accepted.

Mr. Oliver Crosby read a paper on "The Manufacture of Steel Castings by the Tropenas Process." He made special reference to the plant of the American Hoist and Derrick Company and exhibited some striking and curious specimens of the steel, together with drawings, tables, etc.

Lehigh University.—Through the will of Frank Williams, '87, the trustees of the university are left a bequest of \$300,000, the total income of which, after 5 years, is to be loaned to poor and worthy young men who are attempting to educate themselves and earn a living at the same time. The plan outlined by Mr. Williams is to loan the money to students on their personal notes, which are to be made payable, with interest, at the expiration of 10 years. All money and interest paid back by graduates will be added to the fund, which will thus increase in ratio to the honesty and worldly success of the former beneficiaries. At a moderate rate of interest, Mr. Williams' fund would yield \$15,000 a year at the start, enough to pay the tuition fees of at least 150 students, or enough, if judiciously expended, to educate and support 50 students a year, on the basis of living expenses in the town of South Bethlehem. Mr. Williams' gift, in other words, would pay the tuition fees of nearly ½ the students enrolled at Lehigh this year, or would educate and support, during their college course, about 1/7 of all of the undergraduates now at the university.

Engineers' Club of Philadelphia.—At the meeting on November 3d, 74 members and visitors were present. Messrs. W. E. Bradley, H. J. Edsall and Willibald Trenks were elected active members.

Mr. James Christie opened a topical discussion upon "American Isthmian Canals," and confined his remarks chiefly to a description of the engineering features of the Nicaragua and Panama routes. Maps were shown illustrating the shortening of steamship routes that would be effected by an isthmian canal, as well as the directions and cross sections of the several routes proposed.

Mr. Edwin F. Smith presented a written discussion, which was read by the secretary. He pointed out the fact that the Lake Nicaragua route is the shortest practicable one to connect the Atlantic and Pacific seaports of the United States, and will prove the best one if the works can be made safe against climatic conditions. The changes which the present commission has made in the earlier plans of Childs and Menocal were pointed out and criticised, and the desirability of the United States becoming the owner of the Nicaragua Canal was emphasized.

Mr. L. Y. Schermerhorn briefly described the different routes, especially for the purpose of calling attention to the advantages of other routes in comparison to that through Lake Nicaragua.

## INDUSTRIAL NOTES.

The Aultman Company, of Canton, O., has shipped a 40-ton charging device to the Carnegie Steel Company and a rock crusher to New Mexico.

The Denver Engineering Works Company, of Denver, Colo., report that during October it shipped out 7 carloads of machinery and mining supplies.

The Bethlehem Steel Company, of South Bethlehem, Pa., states that it has again opened an office in St. Louis, and will be represented in that city by Mr. S. E. Freeman.

The Minas Prietas Reduction Syndicate, of Torres, Mex., is using a Heyl & Patterson conveyor made by Heyl & Patterson, of Pittsburg, Pa., to handle partly dried sluicings.

The Risdon Iron Works, of San Francisco, Cal., has secured from Manager Panting, of the Burnt River Mining Company, an order for 5 stamps, 2 Johnston concentrators, and other machinery, for the Gold Hill Mine, Baker City, Ore.

The Federal Salt Company has been incorporated under New Jersey laws, with \$500,000 capital. It is stated that this company will act as an ally for the National Salt Company, the promoters planning to control the salt business of the Pacific Coast.

The Pressed Steel Car Company, of Pittsburg, Pa., has received an order for 167 cars, of 60,000-lb. capacity each, for use in South Africa. They are of a new type for South Africa, and will be used by several large gold mining companies for carrying coal to the gold mines. The order is worth nearly \$200,000.

At a recent meeting of the Board of Directors of the H. W. Johns Manufacturing Company in New York City R. H. Martin tendered his resignation as president and director, which was accepted. H. W. Johns, Jr., was then elected president; F. S. Miller, vice-president; G. W. Gladwin, 1st vice-president, and W. H. Porter, director of the company.

Messrs. Charles H. Besly & Company, of Chicago, Ill., report their business as very good. They state they are receiving orders for Gardner grinders for finishing flat surfaces, a number of these machines being sent to manufacturers of electric motors for finishing brass parts. Many contracts have been closed on "Bonanza" oil cups and "Helmet" oil. They are very busy in the tap and die department at their factory, Beloit, Wis.

Three large iron smelting plants located in South Buffalo were recently consolidated under the name of the Buffalo Union Furnace Company, which was incorporated at Albany last week with a capital of \$1,200,000. The plants in the consolidation are the Buffalo Furnace Company, the Union Iron Works and the Buffalo Charcoal Iron Company. The management of the new company will be in the hands of Frank S. Baird.

The J. H. Montgomery Company, of Denver, Colo., has sold one 2-H. P. whim and equipment, 2 ore cars with 200 ft. of track, switches, etc., to E. E. Souther Iron Company, Estacion Bajan, Mexico; blower and air hose to Lake George Mining Company, Lake George, Colo.; one 8 by 9 air compressor, one 20-H. P. vertical boiler with all necessary attachments, one boiler feed pump, one deep well pump, with pipe, to Samuel Andrews & Company, Evans.

The Witte Iron Works, of Kansas City, through its Denver agents the Hendrie & Bolt-hoff Manufacturing and Supply Company, has reported the following installations of the Witte Gasoline engines and hoisters. One 20-H. P. hoisting plant for the Chloride Gold Mining Company, Pitkin, Colo.; one 8-H. P. engine and triplex pump at Saratoga, Wyo.; one 12-H. P. hoist for the Alden Mine, Gaskill, Colo.; one 4-H. P. engine and Sturtevant Blower for tunnel ventilation at the Hilda Mining Company, Fair-play, Colo., and another at the Joe Reynolds Mine, Lawson, Colo.

The Sullivan Machinery Company during Oc-



tober made these Colorado sales: Two drills and equipment to G. E. Wrockloff, at Cameron; and 2 more large drill outfits to the Stanley Mining Company; orders for 4 large drills and accompanying outfits for Lamb & Roe, the contractors at the Big Kanawha at Creede and from C. H. Abbott, operating the Holy Moses property at the same place. In coal cutting machines the firm sold 8 to the Northern Coal Company, 3 to the Victor Fuel Company, and 3 to the Colorado Fuel and Iron Company.

Many rumors have prevailed in Birmingham, Ala., concerning a movement to purchase a majority of the stock of the Tennessee Coal, Iron & Railroad Company. The Standard Oil Company, the American Steel & Wire Company, private parties and others have been the rumored purchasers. Mr. Nathaniel Baxter, Jr., president of the Tennessee Coal, Iron and Railroad Company, however, has stated that he knew nothing concerning any contemplated change either in the directorate of the company or in officials, and that he had not been advised that any one man or corporation had purchased any large amount of stock recently.

One of the features of the power plant to be provided for the approaching Pan-American Exposition at Buffalo, is a complete duplex induced draft apparatus which will comprise 2 full housing upblast steel-plate fans, standing about 17 ft. high, with overhung wheels and water cooled bearings. These fans are direct connected each to a 12 by 14 horizontal center-crank engine with automatic governor and are designed to serve 17 Manning boilers of about 3,000 H. P. capacity, discharging the gaseous products of combustion into 2 short stacks of sheet steel. The fans, engines and breeching connections for the boilers, together with steel-plate stacks themselves, are constructed complete by the Buffalo Forge Company, of Buffalo, N. Y. The same company is also building for the exposition a horizontal center-crank Class A tandem compound engine of 300 H. P. The cylinders of this engine are 17 and 28 in. in diameter, with a common stroke of 18 in. This machine will be applied to electric lighting purposes. In addition it may be mentioned that the heating and ventilating plant for the permanent New York State building, of which Mr. George Cary is the architect, will be constructed by the same company. The apparatus will consist primarily of a heater and a large centrifugal fan, the latter driven by a direct connected 15 by 10 Class A Buffalo Forge Company engine.

#### TRADE CATALOGUES.

The Allgemeines Elektrizitäts Gesellschaft, of Berlin, Germany, has issued a handsome 16-page pamphlet describing its exhibit of Nernst lamps, and of dynamos and motors, at the Paris Exposition.

The "Spry" post drill for coal miners is described in a circular sent out by the Howell Mining Drill Company, of Plymouth, Pa. The company states that the drill's adjustable cutters will drill any size hole and are quickly removed for sharpening, doing away with the necessity of packing many bits to and from work. The company also claims that the drill cleans its hole well and will work as clean in a wet hole as in a dry one. A sample drill is sent on trial.

The Hug tangential water wheel is described in a 41-page pamphlet sent out by D. Hug, of Denver, Colo. In this wheel the bucket is stated to be of such form that the direction of the water during its passage through the bucket is completely reversed and the water issues from the discharge ears in such manner that it cannot strike the back of the following bucket. Tests of the wheel in the engineering laboratory of Cornell University showed an efficiency of 86.5%. The catalogue gives specifications of the various sizes of wheels, directions for installing wheels and useful tables on the flow of water over weirs and through pipes.

Pumping engines using gas, gasoline or distillate as fuel are described in a neat 40-page pamphlet—Catalogue 47—published by Fairbanks, Morse & Company, of Chicago, Ill. The pamphlet points out the advantages of such pumps for intermittent service as for railroad tanks or at all points where water steam boilers must use impure feed water. For small water works a gasoline engine connected to a triplex pump by belt or a friction clutch is recommended. The pamphlet contains some useful tables on the capacity of pumps, flow of water through pipes, and concludes by giving numerous testimonials from users of Fairbanks-Morse pumping machinery.

#### 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.

**Oil Production.**—Another increase in the net stocks held in tanks by the various pipe lines in the Pennsylvania and Buckeye oil fields was recorded during October. Shipments of Pennsylvania oil took a drop of over 4,000 bbls. a day, while nearly 6,000 bbls. a day increase was made in the runs. The Buckeye shipments were the heaviest of the present year, while the runs were in excess of those for September, says the Oil City "Derrick."

The average daily runs of Pennsylvania oil were 103,128 bbls. in October, a gain of 5,779 bbls. over the average for September. The greater portion of this increase is to be credited to the marvellous well on the Copley farm, in Lewis County, West Virginia. For 3 months of this year, June, August and October, the Pennsylvania runs have exceeded 100,000 bbls. a day, which had not occurred previously since September, 1897.

The shipments of Pennsylvania oil declined 4,202 bbls. in October, the average being 96,846 bbls. a day. The stocks of Pennsylvania oil increased 144,623 bbls. and those of Buckeye oil, 396,130 bbls., making a total gain of 540,753 bbls. for October. The net stocks of Pennsylvania oil were 13,163,819 bbls. at the beginning of the present year, and 13,358,401 bbls. on October 31st.

The net stocks of Lima oil held by the Buckeye and Indiana pipe lines on January 1st amounted to 10,545,927 bbls. and were the lowest on record for 10 years past. Lima stocks on October 31st had reached 14,678,274 bbls.

The Buckeye pipe line runs averaged 53,325 bbls. in October, a gain of 3,035 bbls. a day during the month.

The average daily shipments of Lima oil during October were 49,123 bbls., a gain of 4,954 bbls. a day over September and the largest on record for the present year.

The daily runs from the Eastern and Western oil fields amounted to 156,454 bbls. and the shipments to 145,969 bbls. a day in October.

**Oil Exports.**—In October the exports of mineral oils from the United States were as follows: Crude, 11,012,295 gal.; naphthas, 1,534,904 gal.; illuminating, 71,237,292 gal.; lubricating and paraffin, 6,131,019 gal.; residuum, 3,274,320 gal.; total, 93,189,830 gal., against 86,562,810 gal. last year; an increase of 6,627,020 gal. In the 10 months ending October 31st the exports amounted to \$21,410,963 gal., against 801,354,616 gal.; an increase of 20,056,347 gal., or 2.4%, in 1900.

#### ALASKA.

##### Juneau District.

(From Our Special Correspondent.)

**Juneau Alaska Gold Mining Company.**—This company, working a mine on the mountain side above Silver Bow Basin, has shut down after a full season's run. A series of stringers is worked from the surface in terraces like a quarry. Owing to the high altitude, winter working is impossible. The company has 35 stamps and has been employing about 80 men.

**Rodman Bay Gold Mining Company.**—The little test mill has been sending concentrates for some time to the Tacoma smelter. Mr. George Bent, manager of the company, has gone to London to consult with the owners.

**Windham Bay Gold Mining Company.**—This company has completed the construction of a 10-stamp mill, the first in the section. Stamps will be dropping within a few days. Development work has been going on for 3 years. Wm. M. Ebner is president and Wythe Denby superintendent.

#### CALIFORNIA.

##### Amador County.

(From Our Special Correspondent.)

**Kennedy.**—The new east shaft is down over 1,700 ft. and sinking continues. The 40-stamp mill is crushing steadily. J. F. Parks is superintendent.

**Keystone Consolidated.**—The drift being run north on the 500-ft. level is progressing at the rate of 175 ft. per month, and is in over 500 ft., with ore in the face. A prospecting shaft has been started at the south end of the property. W. A. Pritchard is superintendent.

**Lincoln.**—The west crosscut from the 500-ft. level of this mine at Sutter Creek has been run about 65 ft. The south drift of the 650-ft. level has been cleaned out and retimbered 44 ft., making a total distance from the center of the crosscut south 228 ft. The face of this drift exposes about 8 ft. of good grade ore, carrying free gold and sulphurets. The north drift on the 1,200-ft. level is now in over 95 ft. The last cleanup at the mill from 580 tons of ore yielded \$4,673 net.

#### Calaveras County.

(From Our Special Correspondent.)

**Morning Star.**—This quartz mine, 8 miles northeast from Milton, in the Jenny Lind District, is being developed by local parties, who are taking out some good ore.

#### Contra Costa County.

(From Our Special Correspondent.)

**Pacific Smelting and Refining Works.**—At Seal Bluff Landing, on Suisun Bay, about 42 miles from San Francisco, the Copper King Limited, a London corporation, is constructing these works. The site chosen has many advantages, the principal one being accessibility to water and railway transportation. The company owns several hundred acres of land, including approaches to the Santa Fe and Southern Pacific tracks, while at its own docks steamers from all parts of the world can unload. The connecting railway, together with the rolling stock, is owned by the company. The works, which are almost completed, consist of a 500-H. P. engine and boilers, crushers, two 50-ton roasters, a reverberatory furnace, converters, electric plant, etc. The buildings cover several acres.

All the ores which come from the mines of the company in Fresno County, 188 miles away, are to be handled and converted into merchantable copper.

In reply to announcements, the company is receiving offers of large quantities of silica ores for fluxes.

#### Kern County.

(From Our Special Correspondent.)

The claims being developed by Wettel & Miller in Studhorse Canyon, 10 miles east of the railroad, and 1 mile south from Caliente, are shipping some very rich ore. The croppings of the low-grade main ore body are said to be 200 ft. wide.

**Caliente Mining Company.**—This company, developing the Barossa Beauty Mine, 7 miles northeast of Keene Station, reports an 18-ft. ledge of \$15 ore, the principal values being in the sulphurets. Arrangements are being made to put in machinery. Several other mines in the vicinity with veins running from 2 to 20 ft. are having assessment work done. The ledges are well defined and carry free gold near the surface.

#### Nevada County.

(From Our Special Correspondent.)

**Lecompton.**—In this mine on Deer Creek, which is being worked under bond by San Francisco capitalists, a body of rich smelting ore has been uncovered.

**Spanish.**—This old low-grade property, 3 miles west from Washington, is still paying dividends, although the ore only averages 98c. per ton. Water power is used under 600-ft. pressure.

#### Placer County.

(From Our Special Correspondent.)

**Fairview.**—The shaft on the ledge is about 70 ft. in depth and a tunnel has been started which will be continued all winter. Some of the ore is high grade. Eight men are on the payroll. The property is located 16 miles southwest from Cisco. W. C. Giles is superintendent.

**Girard.**—The new 8-stamp mill at this mine, about 6½ miles west from Cisco, is ready to start up. The 6-ft. ledge is being developed under the superintendency of E. R. Edwards.

#### Riverside County.

(From Our Special Correspondent.)

**Red Cloud Mining Company.**—This company has shipped a large lot of machinery to its group of 16 mining claims located in the Chuckawalla Mining District. The shipment consisted of engines, boilers, roller mill and concentrator. On arrival, work will commence on a large scale.

#### San Bernardino County.

(From Our Special Correspondent.)

**Black Nugget Camp.**—The dry placers in this district, 20 miles north of Barstow, continues to produce from \$5 to \$20 per day to the man. The pay dirt is from 6 in. to 3 ft. in depth.

**Copper World.**—At this mine, 55 miles northwest from Vanderbilt, near Valley Wells, a rich ledge of copper 6 ft. wide is reported to be uncovered, and arrangements are being made to develop the property. Shipments of high-grade ore were made before the works were closed down on account of litigation.

**Orange Blossom.**—This group of mines located about 9 miles north of Bagdad, is being developed by the Desert Prospecting and Development Company of Needles. The property is said to be very rich in free gold.

#### Shasta County.

(From Our Special Correspondent.)

**Bowery Belle.**—This group of mines, 2½ miles northwest from Shasta, has been developed by 2 tunnels and a fine body of rock averaging \$7 has been uncovered in both tunnels.

**Midas.**—At this mine at Harrison Gulch, about 200 men are on the payroll. The mines are de-

veloped by several miles of drifts, open cuts, etc. The veins are from a few inches to several feet wide, carrying from \$8 to \$15 per ton. Fifty tons of ore are cyanided per day. The mines are lit by electricity. L. A. McIntosh is superintendent.

#### Siskiyou County.

(From Our Special Correspondent.)

Dewey.—A complete 20-stamp milling plant and concentrators have been ordered by the owners of this mine in the Gazelle District. W. A. Monroe is superintendent.

Greenhorn No. 2.—The owners of this gravel claim south of Yreka appear to have had luck, the new pump having fallen into the shaft. Other pumps will be put on to get out the water when the big pump will be raised and work continued.

#### Tuolumne County.

(From Our Special Correspondent.)

Goldwin.—Sinking has been resumed with 8-hour shifts at this mine near Jamestown. The bottom of the 250-ft. shaft is in good quality ore.

Grizzly.—The ledge in both drifts on the 800-ft. level varies from 3 to 6 ft. wide, carrying fair grade ore.

Jumper.—The shaft has been retimbered from the 600-ft. level to near the surface. Men are stopping and general operations will be resumed.

Marshall Gold Mining and Milling Company.—This company is about to install an engine and boiler at the Spring Gulch & Junction Mines located 2½ miles east from Carters. Stahl & Sisty hold the bond.

Tuolumne Water Company.—Water has been turned into the ditches and the electric power plant at Phoenix Lake is again in operation. Water will also be furnished to the mines throughout the county, which were compelled to close during the dry season.

### COLORADO.

#### Clear Creek County.

(From Our Special Correspondent.)

Garden Mining Company.—The Newhouse Tunnel cut this vein on November 4th at 1,900 ft. beneath the apex of the vein, and about 9,000 ft. in from the mouth of tunnel. The streak was about 20 in. wide. It runs where cut 1 oz. gold and 11 oz. silver besides the copper and lead. The vein will be drifted on to the east for the purpose of reaching the Sun & Moon side line, a few hundred feet east. The Sun & Moon has the lode for 3,000 ft.

John Owen Mining and Milling Company.—This company, working a group of claims on Seaton Mountain at Idaho Springs, has added the Aududdell Group, just over the line in Gilpin County, to its purchases. They paid \$75,000 for the group, of which \$25,000 was paid over on November 8th. They are to put on a larger plant of machinery and sink the shaft to the Newhouse Tunnel, which will reach the vein in about 7 months and cut it at 2,400 ft. on the dip. It is the same vein as the Frontenac and Kokomo, the 3 properties having a record of producing \$3,000,000. The Owen Company is composed of Boston and Buffalo capital.

Lord Byron Mining Company.—It looks as if all work were to be abandoned. A few months ago the management pulled the pumps and stated that a tunnel would be driven 4,000 ft. to cut the lode, thus affording drainage. Now it is stated that satisfactory arrangements cannot be made and the entire scheme will be abandoned. The company sold stock and has about \$40,000 on hand. Stockholders will doubtless criticize the management.

#### Gilpin County.

(From Our Special Correspondent.)

Mining Deeds and Transfers.—P. Peterson to H. Schradsky et al., ½ interest in the Eclipse, Parish and Comstock No. 2 lodes; H. M. Steele to the Gettysburg Mining Development and Milling Company, the Gettysburg group and Gold Nugget Placer; A. J. Smith to F. G. Patterson, ½ interest in the Justice Extension Lode; J. S. Jaffa to New Haven and Denver Consolidated Mines Company, the Justice and Evelyn Claims; A. L. Collins et al. to T. H. Stryker, ½ Gardner Lode; A. Keugel to W. J. Keugel, the Cora H. Lode; T. Tregay to H. Schradsky et al., ½ interest in Comet Lode and Farish Placer; Horace Humphrey to E. M. Baldwin, the Plumbic Lode in Central City District.

East Notaway.—A rich strike has been made in the 300-ft. level of the Chaffee shaft, which is worked under a 6 months' lease and option by S. A. Josephi for Eastern parties. The property has been a consistent producer of high-grade ore. G. W. Mabee, Sr., Central City, is manager.

Gettysburg.—The Metal Miners' Corporation has taken hold of this property under a lease and bond. F. W. Kroenke, Central City, is manager.

Hillside Mining Company.—This company has taken a 3 years' lease and bond on the Hamlet and Number One claims on German Hill and after putting up a new building is going to sink

the Number One shaft to cut the Hamlet Vein. C. S. Nicolls, Central City, is manager.

Kansas Burroughs Consolidated Mining Company.—During October the ore shipments were 271 cars, or 2,303 tons. Shipping was hampered by the installation of new machinery and other top work. P. McCann, Central City, is manager.

New Haven & Denver Consolidated Mines Company.—This company has incorporated, with \$200,000 capital, with A. A. Weil, Joseph S. Jaffa and F. E. Goldsmith as incorporators. The company has taken hold of the Justice Mine in Lake District and intends to carry on extensive operations.

#### Grand County.

Touraine.—These Willow Creek placers, not far from Sulphur Springs, which were sold to Boston parties through the efforts of H. H. Daniels, of Denver, are to be equipped with flume and hydraulic apparatus. The holdings of the company comprise about 500 acres, which includes the Gold Run placers, on which there is a hydraulic plant.

Another Boston company is putting in a ditch for placer work on Willow Creek, 12 miles above the Touraine, and a Denver concern is doing similar work in the same locality.

#### Lake County—Leadville.

(From Our Special Correspondent.)

Leadville Output.—With an increased output from a number of the downtown iron ore mines and also several of the gold belt producers the tonnage has gone up to about 2,500 tons per day.

Benton Mining Company.—A new shaft has been started near Breece No. 1 shaft to catch the Penn ore shoot. At Park shaft No. 1 of the Benton extensive prospecting is going on at the 400 level.

Hibschle.—A streak of ore averaging 6 in. to 2 ft. has been opened up, evidently the extension of the Wolcott Shoot, and runs 40 to 60% lead and 12 oz. silver. Shipments have started.

Muldoon.—This claim is to be started up soon after a long idleness. The shaft is 250 ft. deep and the new lessees will work a large iron ore body and prospect for a richer ore shoot.

New Monarch Gold Mining Company.—Sulphide ore is opened in the second level of the Winnie Claim. The sulphides were first encountered in this shaft at 300 ft. Another 100 ft. was sunk and the ore has again been encountered. This proves the existence of the ore shoot between the Monarch Shaft and the Winnie, a distance of over 1,000 ft. Seventy-five tons a day of sulphide are shipped from the Winnie and 25 tons oxides daily. Arrangements are being made to largely increase shipments from the Lida and Monarch claims. Messrs Kortz, Miles, Weirick and DeGraw, Eastern owners are here and are greatly pleased with results.

New Pittsburg.—After a long idleness the Discovery Claim is being worked by lessees. Pockets and small streaks of lead carbonates are encountered in prospecting. This claim in the early days produced \$3,000,000 in a short time from pockets.

Poverty Flat Mining Company.—An extensive iron body has been opened up and prospecting shows indications of richer ore.

President.—This new Breece Hill producer is opening up a fine gold bearing body which promises well. The management is shipping about 250 tons per month.

Spot Cash.—The shaft is down 650 ft. and is going deeper. This shaft is not far from the Ibeax and is going after the lower contacts.

#### San Juan County.

(From Our Special Correspondent.)

Mining Transfers.—Monarch Mining Company to Gold King Consolidated Mining Company, Monarch Lode; Michael Lonergan to Ludwig Vota et al., Enterprise Lode; Joseph Frank to Kankakee Mining Company, Kankakee Lode; Ed. M. Brown, trustee, to William P. Vaile, Bonanza Tunnel Site; Orville Bradford to William Feigel, Lake View Lode; Thos. J. Hurley to Natalie Mining and Milling Company, Gold Bar No. 1 Lode.

Columbia.—Leasers recently shipped 2 carloads of high-grade ore, the first in many months.

Henrietta Group.—The Kendrick Promotion Company is installing a power plant for operating electric drills, lighting and ventilation. Gasoline power will be used and 3 Gardner drills will be put in.

Last Dollar Group.—A vein of free milling gold quartz has been encountered in 2 tunnels on this property on Stony Pass, and a mill may be built in the spring. The property is owned by Peter Rudellat.

MacMillian.—Charles Carlstrom, while doing assessment in a 25-ft. shaft, has struck a rich streak of silver-lead ore, with small values in gold.

Occidental Mining Company.—A 400-ft. upraise has been completed between the lower and middle tunnels at Silverton, furnishing ventilation for 2,000 ft. of workings. A new vein 2 ft. wide

has been opened in the lower tunnel 1,200 ft. from surface. This tunnel, when driven 2,000 ft., will connect with the Natalie Tunnel by an upraise. Thos. J. Hurley, of New York, is president.

Quartz Mining and Milling Company.—This Silverton company has been organized with the following directors: E. P. Watson, G. H. Stoiber, R. W. Watson, T. F. Neely and M. B. Holt.

Queen Anne Group.—Negotiations for a sale of this Silverton property are pending with Eastern parties.

Ridgway.—A carload of very rich ore has just been shipped from the lower workings of this Silverton claim. The output will be 2 car-loads per month.

#### Teller County—Cripple Creek.

(From Our Special Correspondent.)

Acacia Gold Mining Company.—The Wrockloff Lease on the Burns Claim continues to ship considerable rich ore, and some is shipped by the company from the old Brady Lease, also from the Banker's Lease on the Morning Star Claim.

Blue Bird.—The shaft, which is now down 500 ft., will be sunk to the 1,000-ft. point, making it one of the deepest in the district. For some time past there has been no work done. The mine is equipped with a commodious shaft house and an electric hoist capable of hoisting from 1,000 ft. The property is situated on the summit of Battle Mountain near the Union and Dante.

Coriolanus.—A new 2-compartment shaft has just been completed to 500 ft. Levels will be run at the 200, 300 and 400 ft. to exploit ore shoots which are known to cross the property. The new plant of machinery is in place and ready to begin work.

Flower of the West Gold Mining Company.—The stockholders held their deferred annual meeting in Colorado Springs on November 8th and ratified the sale of the Mary Gold claim to W. S. Stratton for \$18,000. The money will be retained in the treasury to develop the company's other properties consisting of the Tipton and Flower of the West on Squaw Mountain and the Dollie V. on Gold Hill. On the latter claim the lessees are meeting with very encouraging prospects.

Last Dollar Gold Mining Company.—This company has declared a dividend of 2c. per share, amounting to \$30,000. The mine is reported in good condition.

Nugget Gold Mining Company.—The Smith lease on the Elizabeth Cooper Claim is producing well, beyond the expectation of both company and lessee. It is expected that the Nugget Company will finally obtain the apex of the famous Jack Pot Vein over which there has been considerable talk of litigation.

Stratton's Independence.—The announcement is made from the company's office in Denver that John Hays Hammond has been retained as consulting engineer and that he will take up his residence in Denver.

### GEORGIA.

#### Lumpkin County.

Dahlonega Consolidated Gold Mining Company.—At a recent meeting of the directors Capt. G. H. Breyman was chosen general manager of the company. Mr. William E. Jacobs, of Columbus, O., was elected a director to fill a vacancy.

### IDAHO.

#### Boise County.

Altamore.—This claim near Quartzburg, and above the forks of Dixie Creek, has been sold by T. M. Ray and Wiley Howell to U. Babcock and J. F. Rogers, who will start development. The claim is an old one.

Consolidated Stanley Mining Company.—This company has started suit in the Illinois circuit court against Charles A. Gehrman for a claim of \$150,000. The title to the property is in Chicago, as the Chicago Title and Trust Company is now the company's receiver. Gehrman is reputed to be an organizer of mining companies, and the complainants allege that he contracted to purchase the mine. He claims that it was merely a lease and the suit has resulted.

#### Owyhee County.

Pauper.—This property is now worked under bond to the Pauper Mining Company, Fred. R. Reed, president and manager; Dr. E. K. McKenzie, secretary and treasurer, with John Russell superintendent. A tunnel is in 1,400 ft. tapping the vein at 400 ft. deep, while a shaft is down 525 ft. There is here, as is common on War Eagle Mountain, a series of veins. The shaft is to be sunk to 700 ft. this winter. John Russell is superintendent.

Trade Dollar.—This company's holdings cover very nearly the whole of Florida Mountain near Silver City. James Hutchinson is manager and his son, Joseph Hutchinson, is superintendent. The country rock is granite, cut by porphyry dikes. A new find was recently reported at a depth of 1,500 ft., where machine drills are work-

ing, about 600 ft. apart. The Florida Tunnel, which starts at the town of Dewey, is now in 2,600 ft., and is expected to cut the Trade Dollar ledge in a few hundred feet, about 500 ft. below the present deepest workings.

**Shoshone County.**

Pierce District.—Bad roads have interfered with teaming. There is still a 2-stamp mill and a hoist at Orofino to be brought in as soon as the ground freezes and snow comes.

The rain has made water plentiful and placer mining is on the increase. Every quartz mill in the camp except the Mascot is shut down just now. The Mascot Mill, the largest in the district, has 9 stamps. The other mills are the Crescent, Fleetwood and Klondike (now building), each of 5 stamps; the Golden Gate, 2 stamps, and the union roller mill of the Alaska. Milling is yet new and mine-owners have much to learn regarding the best way to handle the ores.

**MICHIGAN.**

**Copper—Houghton County.**

The Calumet & Hecla, the Tamarack and the Osceola mining companies have laid off about 50 surface men employed around the stamp mill and coal docks, due to the approach of winter. It is reported that fully 100 men will be laid off in the next 30 days.

Quincy Mining Company.—The copper output for October was 798 tons, compared with 741½ tons in October, 1899; the output for 10 months was 7,220½ tons, compared with 7,644½ tons last year.

(From Our Special Correspondent.)

Osceola Consolidated.—This company has purchased from the Wolverine Mining Company 13 38-100 acres of land in section 7, T. 56, R. 32. The consideration named in the deed was \$1, but the revenue stamps attached would indicate \$13,500. The transfer includes the right to mine within 15 ft. of the surface. The Wolverine reserves the surface rights and all buildings now on the land.

**Copper—Ontonagon County.**

(From Our Special Correspondent.)

Adventure Consolidated.—At this mine, which comprises the old Hilton, Adventure, and Knowlton properties, operations are confined to 3 shafts, Nos. 1 and 2 on the Knowlton lode and No. 3 on the Butler lode. No. 1 shaft is down 300 ft.; No. 2, 328 ft., and No. 3, 400 ft. The Knowlton lode is receiving the most attention. It is about 15 ft. wide. The copper occurs in heavy masses and stamp rock.

Halliwell.—Development work continues. The mine is about 13 miles from Ontonagon and is controlled by Cleveland parties. It formerly belonged to A. Meads, of Marquette, and J. Halliwell, of Cleveland, O.

Trimountain.—The drift on the 1st level south from No. 1 shaft is now about 20 ft. from the Champion line.

**Marquette County.**

Ropes.—Corrigan, McKinney & Company, of Cleveland, O., state that they have suspended work at this gold mine near Ishpeming for the winter, but will continue working over the old tailings dump next year. J. F. Orr is superintendent of the plant.

**Iron—Menominee Range.**

Armenia.—This mine, near Crystal Falls, also known as the Smith, has been reopened by Corrigan, McKinney & Company, and will ship next season. The former operators stopped on account of a bad cave. A new shaft being sunk in the foot well is now down 50 ft. A fine plant of machinery has been put on the property. About 20 men are at work.

Voos.—This exploration near Crystal Falls is being equipped with machinery and the 50-ft. shaft will be sunk deeper. Ore assaying 66% iron and .022% phosphorus was found here last year, but Oglebay, Norton & Company, who had the option, did not explore the property thoroughly, the shaft soon going through the rich ore.

**MINNESOTA.**

(From Our Special Correspondent.)

The Duluth, Missabe & Northern road closes ore shipments this week with a total of about 3,875,000 gross tons. Mines on this road shipped for the year about as follows: Oliver Iron Mining Company, 1,320,000 tons; Biwabik, 925,000 tons; Adams, 772,000 tons; Lake Superior group, including the Pillsbury, Sellers, Rust, Hull and Burt, 426,000 tons; Franklin up to the time it changed to the Duluth & Iron Range Road, 145,000 tons; Duluth, 128,000 tons (its business was summarily curtailed by a cyclone); Ohio before it was turned over to the Carnegie Company, 99,000 tons; Spruce, 60,000 tons. The road has made quite a test this summer of pressed steel cars. It is not announced that it will make any additional purchases; probably no Lake Superior road will be in the market for much rolling stock for a year. Any one of the Minnesota roads and some in Michigan can handle

a million tons or so more without additional equipment.

Orders have been issued to the mines controlled by the Minnesota Iron Company and associated interests to ship as much ore as possible from now out, and the Duluth & Iron Range will keep its docks going till ore is too badly frozen. The road will probably reach a total for the year of 4,000,000 tons, about 1,000,000 tons less than it was prepared to handle during the season. The road will have a winter traffic of not far from 140,000,000 to 150,000,000 ft. of logs.

The Eastern Minnesota road closes its docks this week with a total shipment of about 1,600,000 gross tons. The mines that have shipped over it are the Mahoning, 911,000 tons; the Corrigan, McKinney mines, 300,000 tons; Penobscot, 170,000 tons; American Mining Company, 125,000 tons. These shipments are far under the capacity of the road and will probably be much increased another year.

The 12 steel ships of the American Steamship Company, a concern affiliated with the American Steel and Wire by the fact that its stockholders are largely the same, have sold to the latter for a sum said to be \$5,250,000. The ships cost new less than \$3,500,000, and are from 6 years old to new. Rates for carrying ore are falling materially and in 1901 will not be half what they were in 1900, while the profit to such ships as these during the present year has been about 75c. a ton on contract ore, it is not likely it will be more than 30c. at the outside in 1901. As good a fleet of new ships could be built today on the lakes under \$3,000,000.

**Iron—Mesabi Range.**

(From Our Special Correspondent.)

Adams Iron Company.—This company is the latest shipper off the line of the Duluth, Missabe & Northern road, and at the end of last week there were some 10 ships waiting on Adams ore. The mine will end the year with shipments of 772,000 tons, against 720,000 tons last year, and with a total for the 6 years of its existence of 2,350,000 tons. Its stocks are cleaned up and a large force of men will be employed all winter underground. The mine now has 5 active shafts, 2 of them equipped with steel headworks. A large part of its product is sold ahead for a number of years. About 750 men are now employed.

**MISSOURI.**

**Jasper County.**

(From Our Special Correspondent.)

Joplin Ore Market.—There was no change in the price for fancy-grade zinc ores, the best price being \$28.50 for 25 tons from the mines of the Ajax Mining Company. Outside of this one lot, \$28 was the top and all the Oronogo, most of the Joplin and a small quantity of Carthage ore sold at this figure. Lower grades advanced from \$1 per ton to \$1.50, but sellers refused to accept last week's figures for ore that would assay 60% and over and the entire output of strictly choice ore has been carried over for 2 weeks. Lead remained unchanged at \$23 per 1,000 lbs., as for weeks past. Following is the turn-in by camps of the Joplin District for the week ending November 10th:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin .....	1,698,890	490,860	\$34,225
Galena-Empire .....	1,785,520	108,020	22,410
Cartersville .....	2,119,310	317,780	32,741
Belleville .....	316,500	3,950	4,354
Oronogo .....	568,870	.....	7,698
Central City.....	182,850	6,290	2,248
Spring City.....	53,580	41,760	1,371
Spurgeon .....	28,360	46,670	1,271
Cave Springs.....	168,620	5,750	2,324
South Jackson.....	84,990	3,770	1,107
Webb City.....	342,480	37,120	4,964
Carthage .....	210,370	.....	2,735
Aurora .....	540,000	27,310	6,207
Duenweg .....	128,510	14,780	1,625
Granby .....	264,300	8,200	3,000
Stotts City.....	120,360	46,750	2,789
Carl Junction.....	114,750	.....	1,491
District total.....	8,679,260	1,159,010	\$132,561
Total, 45 weeks....	418,673,780	49,574,340	\$6,933,436

During the corresponding week last year fancy-grade zinc ore sold at \$35 per ton and lead at \$26.50 per 1,000 lbs. The lead sales were less than last week by 126,960 lbs., the zinc sales greater by 273,810 and the value greater by \$26,127. For the corresponding 45 weeks last year the lead sales were less by 8,215,762, the zinc sales greater by 20,917,990 lbs. and the value greater by \$1,565,946. As compared with the previous week the lead sales were greater by 95,180 lbs, the zinc sales less by 1,158,130 and the value less by \$11,597.

Bunker Hill.—Immediately after election the inquiry for good zinc properties became active and several deals which had been pending were at once closed. Among them one for the Bunker Hill Lease and the Dew Drop Mine and Mill on the land of the Granby Mining and Smelting Company, at Oronogo, which were sold by C. W. Reed to Stone & Sweet, of Chicago, for \$40,000. The properties will be under the management of C. J. Hamlin, of Webb City.

Madison.—J. W. Baker & Company have sold to the Federal Zinc and Lead Company, of Bos-

ton, this mine and mill and the Cotton Tail Mine at Aurora. The Federal Company owns the fee of the 20 acres on which these properties are situated and have had the purchase under consideration for some time. Both properties are good producers.

Magnet.—A small interest in the Magnet Mine on the Ledy lease at Central City was sold last week by J. W. Baker & Company for \$2,000. The Magnet is a hand jig proposition only, but it is one of the greatest producers on the lease and has an immense ore body developed.

War Eagle Mining Company.—The mill on North Heights, Joplin, was burned November 8th. The plant was nearly new and cost a few months ago about \$12,000. There was only \$5,000 insurance and the loss is estimated to be between \$5,000 and \$6,000. The origin of the fire is unknown. The principal owners are G. H. Eggermier, of Richmand, Va., and W. F. Thomas, of Joplin, who acted as superintendent.

**MONTANA.**

**Beaverhead County.**

Montana Copper and Gold Mining Company.—Two Chicago companies have been formed to develop Stone Creek copper claims. The corporations which have purchased the Manser properties are the Montana Copper and Gold Mining company and the Verdi Mining Company. The Montana Company is sinking a double compartment shaft on the main vein to below water level. The Verdi Copper Mining Company is driving a tunnel just above water level to tap veins running through its property. This tunnel is already in 335 ft. and 300 additional ft. is being contracted. This will be driven with 2 shifts of men.

**Granite County.**

(From Our Special Correspondent.)

Albion Copper Mining Company.—This company has been organized to operate the Albion Revenge and Teutonic copper claims, 10 miles from Flint Station on the Northern Pacific Railroad. The capital stock is \$75,000, divided into 1,500,000 shares at 5c. par; 500,000 are in the treasury. The officers are: President, C. F. Arnold; secretary and treasurer, J. M. Hinkle; vice-president, L. G. Wagner. The principal office is in Butte.

Bloomington Mining Company.—The 10-stamp mill at this property has been sold at sheriff's sale and will be taken apart and moved away.

**Jefferson County.**

(From Our Special Correspondent.)

Ada.—At this property on Rocker Creek, 10 miles from Basin, owned by Downey and Axe, several carpenters are building quarters for men and machinery. The shaft is 80 ft. deep. A cross-cut at the bottom has exposed an ore body 53 ft. wide without finding either wall. The ore is clean and some samples run 22% copper. So far as developed it is the best strike made in the county in years. The ore shipped has averaged about \$700 a car, net.

Big Chief.—This old property, situated 3 miles from Jefferson, on Golconda Creek, and which was worked at a profit some 20 years ago, has been sold to F. W. Ellis and Frank Kanenbley. Mr. Kanenbley will superintend the re-opening of the mine. A tunnel some 600 ft. long was run years ago and produced several hundred tons of lead-silver ore. The ledge is large and a body of concentrating ore is exposed. A concentrating plant is contemplated for next summer. During the winter a deep shaft will be started and the tunnel put in working condition.

Elkhorn Queen.—This property, near Elkhorn, is shipping 15 cars a week to East Helena. W. H. Robinson is in charge. An air compressor has been shipped to the mine. The power to operate the same will be furnished by the Missouri River Electric Power Company from the new line being extended to Butte. This mine had lain idle since 1893, previous to that time it had produced several hundred thousand dollars.

**Madison County.**

Lake Shore Mining Company.—E. L. Shafter, of Cleveland, O., accompanied by Col. Kinne, of Buffalo, N. Y., recently inspected the company's mine on Wisconsin Creek. A 20-stamp mill is expected to be running in 60 days. There are at present 26 horses hauling the heavy machinery to the mill site, while the sawmill, already in operation, is sawing lumber and timbers for the plant. The 4 tunnels that are already in the vein quite a distance will each be driven in 1,000 ft. further.

(From Our Special Correspondent.)

August Flower.—This claim near Brandon, belonging to Elling & Walter, has opened up 18 in. of fine copper ore at a depth of but 5 ft.

Bowery Mining Company.—At this mine the Glass Brothers have added 10 stamps, making 20 in all. They will also double the capacity of the cyanide equipment, giving them a vat capacity of 60 tons per day. It is the intention of Glass Brothers gradually to increase the mill equipment from the mine's production.

**Old Joe.**—John F. Cowan, who secured this property for the Salt Lake Mining and Development Company on a bond, has relinquished it to the owners. Two hundred and fifty tons of ore was put through the Strawberry Mill, but the returns were not satisfactory.

**Strawberry.**—Twelve miners are at work on this mine. The 10-stamp mill will be kept running all winter. John F. Cowan, of Pony, has the full charge of mine and mill.

Silver Bow County.

**Bell.**—Fire broke out in this shaft, one of the properties controlled by the Amalgamated Copper Company, on November 11th. It is reported under control, but the amount of damage is unknown.

(From Our Special Correspondent.)

**Ticon.**—Judge Clancy has made the order requested by J. A. Creighton for a survey of this property and to inspect the workings to determine if same extend into the ground of the Speculator Mine, in which Creighton and the Lary estate are owners.

#### NEVADA.

Esmeralda County.

**Silver Peak Mines Company.**—The mines belonging to the late J. I. Blair, of Blairstown, N. J., are reported sold for \$600,000—\$100,000 of which has been paid and a mortgage given on the property to secure the balance. The purchasers are designated in the deed (which is now on record in this county) as the "Silver Peak Gold and Silver Mining Company," composed of New York men. D. C. Blair, son of John I. Blair, deceased, does, by this sale, dispose of all the property of the Silver Peak Mines Company, including the mines, mill, etc. When the new owners will begin work is not known.

Lincoln County.

(From Our Special Correspondent.)

**New Era Mining Company.**—This company has been incorporated with a capital stock of \$300,000 for the purpose of developing a group of mines in the Searchlight District.

#### OREGON.

**Jump-Off-Joe.**—This hydraulic property, lying partly in Jackson and partly in Josephine County, owned by Howland & Cook, has been leased to W. E. Davis and associates, of Chicago. It was formerly known as the C & C property, of which W. D. O'Brien was manager. The property consists of 3 miles of creek bottom, embracing 9 claims, and a lease of 320 acres of patented land. The property is equipped with 3 miles of ditch and one pipe line, with 2 giants. The ditch carries 1,200 miners' inches of water, with 250 ft. pressure. The property has also a reservoir and a sawmill. The gravel banks are 5 to 6 ft. high, with a good dump. The water comes out of Jump-Off-Joe Creek. The property is located about 20 miles from Grant's Pass, and was only worked last season with the present equipment. It has been worked by primitive methods for many years. J. B. Wetherell will have charge.

Baker County.

**Sumpter Consolidated.**—This company, composed of Portland and Oregon City men, is developing some claims on Cracken Creek, near Sumpter.

**Tempest.**—A body of rich silver ore is reported struck in this claim and arrangements have been made for shipments via Sumpter. Work has started on a 150-ft. tunnel.

Grant County.

**Concord.**—A strike of gold ore is reported in an 800-ft. tunnel on this claim adjoining the Red Boy Mine. J. H. Robbins, of Sumpter, is the principal owner.

**Phoenix.**—W. C. Saunders and C. N. Chatham are working this mine near Robinsonville, under a 2-years' lease. The old mill and concentrator have been torn down.

Jackson County.

**Blue Jay.**—The new 10-stamp mill at this mine, near Cole's, is now pounding away on ore that averages from \$12 to \$15 per ton. There is a force of 25 men at work under the supervision of S. J. Fore.

Josephine County.

**Beach & Platter.**—J. Conant, of Ashland, has bonded this placer tract of 502 acres near Alt-house belonging to McCourt Brothers. The deal will call for the payment of \$25,000. The ground will be worked by a dredge. Eastern parties are reported to be behind Mr. Conant.

#### PENNSYLVANIA.

Anthracite Coal.

As one outcome of the recent miners' strike it seems likely that many, if not all, of the mining companies will pay their employees bi-weekly instead of monthly. The State law requires bi-weekly payment at all collieries where a majority of the workmen ask for it. The companies have always paid monthly, however, because a majority of the workmen did not care to change. The United Mine Workers, however,

have started the men circulating petitions for the change and the monthly pay-day will probably have to go.

**Buck Mountain.**—At this colliery, near Mahanoy City, on November 9th, one man was instantly killed and 25 others injured by an explosion of gas. The explosion took place in the fourth lift of the West Buck Mountain gangway, where 30 men had just started work for the day. The explosion started in an abandoned breast into which a workman went with a naked lamp. Four of the injured men have since died.

**Henry Clay.**—This colliery at Shenandoah, belonging to the Philadelphia & Reading Coal and Iron Company has resumed work. The company, when the strike was declared, gave orders to abandon it.

**Natalie Anthracite Coal Company.**—The Pittsburgh Trust Company, receiver of this company, which became insolvent about 3 years ago, has been authorized by Common Pleas Court to release the mines of the company to the Shamokin Coal Company for 14 months. The minimum coal to be mined is 30,000 tons per month. The receiver to get \$8,333.33 in advance monthly on account of the royalties paid. The royalties are to be 35c. per ton for coal above 7/8-in. mesh.; 25c. for pea coal; 20c. for No. 1 buckwheat; 10c. for No. 2 buckwheat and 5c. for 1/4-in. mesh.

**Williams.**—This colliery at Fishbach will resume as soon as the necessary repairs are made and the company reorganized. It will be several weeks before the necessary repairs can be completed. The colliery employs about 350 men and boys.

Bituminous Coal.

**Pittsburg Coal Company.**—Office employees of this company have formed an association on the building and loan plan and each person subscribing for as many shares of stock as he desires, on which he pays the sum of \$1 per share a month. No officer of the company except the treasurer holds office and already 1,000 shares of the stock of the concern has been bought on the open market. The company aids the employees to become part owners and is said to be carrying a certain amount of the stock. The company pays 50 for all money that it uses, belonging to its employees, and in addition furnishes the men with a bookkeeper. All dividends on the stock are paid into the treasury and whenever the amount of money, interest and dividends paid in, equals the amount paid for the stock, full paid shares will be paid to those entitled to receive the same. If any person withdraws before his stock matures, he receives the amount he has paid in, less 5%.

#### SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

**W. R. Buffum,** of New York City, is at Custer erecting a number of buildings for a camp at a copper prospect on Spring Creek. A contract has been let for a 200-ft. shaft.

**Black Hills Porcelain Clay and Marble Company.**—Another small shipment of marble has been made from this company's quarries east of Custer.

**Mayflower.**—F. C. Graydon has let a contract for 140 ft. of sinking at this mine, which will make the shaft 200 ft. deep. The mine is to be sold to Chicago men.

**North Star.**—Omaha parties will sink the shaft 200 ft. from the 325-ft. The ledge is reported 8 ft. wide at the lowest level.

**Silts-Eddy Mica Company.**—This company, of New York City, has decided to open mica claims. The New York quarry will be opened first. Mr. Silts is now at Custer.

**Yale.**—This company has changed its name to the Saginaw Mining Company. The incorporators are Michigan men, who purchased 3 claims north of the North Star. A shaft is to be sunk.

Lawrence County.

(From Our Special Correspondent.)

**Detroit & Deadwood Company.**—The new 100-ton cyanide plant on Annie Creek is treating 60 tons of ore per day. Ore is hauled from the Alameda Group of claims, at Portland, recently purchased from the Canadian owners, and from the South Dakota Mine. A high per cent. extraction is reported.

**Iron Hill.**—W. A. Remer, lessee of this mine, in Carbonate Camp, is making regular shipments to the Deadwood Smelter and to Kansas City. A manganese gold ore and horn silver is being broken.

Pennington County.

(From Our Special Correspondent.)

**Black Hills Copper Company.**—George M. Thresher, general manager; John E. Barns, president; John Robinson and T. L. Wilkinson, stockholders of this company, residents of Benton Harbor, Mich., are in the Black Hills looking over the company's copper property in Rochford District. The company is sinking an incline on a 12-ft. ledge of gold and copper ore. A steam hoist is in place.

**Elizabeth Mining Company.**—The name of the Big Hit Mining Company has been changed to the Elizabeth Mining Company. John Barth, of Milwaukee, is the principal owner. The company owns the Bismarck Mine, west of the Holy Terror. The shaft has been sunk another 100 ft., making a total depth of 300 ft. Drifting is now in progress.

**Lena.**—The Gopher Company, of Minneapolis, will erect a gasoline hoisting plant and will sink on the 2-ft. ledge of ore.

**Mary Bell.**—Des Moines, Ia., capitalists are running a tunnel 300 ft. to tap ledge. A steam drill has been put in.

#### UTAH.

(From Our Special Correspondent.)

**Bullion and Ore Shipments.**—During the week ending November 10th there were forwarded from the several smelters 30 cars, or 1,246,655 lbs., lead-silver bullion; 4 cars, or 206,353 lbs., copper bullion. In the same week there were sent from the different camps 107 cars, or 4,524,000 lbs., lead, gold and silver ore and concentrate products and 2 cars, or 66,800 lbs., copper ore, which were consigned to smelters outside of the State for treatment. Of the 4 cars of copper bullion, 2 cars, 120,340 lbs., were shipped from the Utah Consolidated Smeltery.

Juab County.

(From Our Special Correspondent.)

**Tintic Shipments.**—In the week of November 9th there were shipped from the 3 railroad points of the district 126 cars of ore and 7 cars of concentrates, made up as follows: Centennial-Eureka, 57 cars; Grand Central, 22 cars; Gemini, 10 cars; Mammoth, 8 cars ore, 2 cars concentrates; Swansea, 6 cars; South Swansea, 6 cars; Eureka Hill, 7 cars ore, 5 cars concentrates; Carissa, 5 cars; Eagle & Blue Bell, 3 cars; Godiva, 1 car; Joe Bowers, 1 car.

**May Day-Yankee Consolidated.**—A basis of settlement for the trespass of Yankee on May Day ground is agreed on. Yankee is to pay \$3,000 and also turn over to May Day all ore in its bins.

Summit County.

(From Our Special Correspondent.)

**Park City Shipments.**—In the week of November 10th there were marketed through the Mackintosh sampler 3,361,200 lbs. of smelter products, which represents the camp's output, and was contributed as follows: Silver King, 1,391,000 lbs.; Daly-West, 1,164,000 lbs.; Anchor, 409,000 lbs.; Barnes Bros., 37,000 lbs.; Ontario, 277,000 lbs.; Quinn, 26,000 lbs.; Loring, 9,900 lbs.; California, 7,300 lbs.

#### WASHINGTON.

Ferry County—Republic.

(From Our Special Correspondent.)

**Butte & Boston.**—The cross-cut struck the hanging 100 ft. from the shaft and passed 13 ft. through ledge matter to the footwall. After driving the cross-cut 140 ft. the superintendent says he drifted 30 ft. south and struck quartz 2 1/2 ft. wide.

**Chico.**—The south drift on the 300-ft. level is in 165 ft. and still running in the footwall. Some better-looking quartz is coming out.

**Flag Hill.**—Some ore has been found in the west drift from the bottom of the 56-ft. winze below the main tunnel. The property has 3 veins. The lower one trends along the base of the hill and is 5 ft. wide, with values averaging \$15.25 per ton, principally gold. The next above it runs east and west and is 12 in. wide, with higher values, the richest rock showing much native gold. The third vein is 20 in. wide. This is opened by a short tunnel. A tunnel has been driven into the hill from its base and is in 155 ft., with 2 cross-cuts, 1 in 60 ft. east and the other 90 ft. west. It is expected the former will cut one of the veins 20 ft. further. At 70 ft. in the tunnel intersected 12 in. of rich black quartz and cross-cut through ledge matter 15 ft. to another band of quartz.

**Hercules.**—The shaft is down on a 7-ft. fissure vein 67 feet. The vein at the surface is mixed with country rock. The bottom of the shaft is in solid quartz. The shaft shows a clean hanging wall, but no footwall. From 40 to 50 samples have assayed from \$2.50 to \$7 in gold per ton. All the samples assay from 1 to 3 oz. in silver. The company has 1,800 ft. of ground on the vein.

**Republic Exploration and Cyaniding Company.**—The straight-line roasting furnaces are in use and the mill is running all departments. The machinery is reported to be running satisfactorily.

**San Juan.**—A new shaft sunk 130 ft. encountered a wall at the bottom, with bunches of good-looking quartz. A drift has been started to ascertain the width of the vein.

**San Poil.**—The men have been removed from the winze to the south drift on the No. 2 level. The quartz at the bottom of the winze is reported better than anywhere else in the mine and the values are stated to be improving.

### WEST VIRGINIA. Kanawha County.

W. D. Boyer, E. P. Mucklow and others of Scranton, Pa., have organized two different corporations with a capital of \$75,000 each. They are the Paint Creek Coal Company and the Scranton Splint Coal Company. Mr. Boyer is president of each company and Mr. Mucklow secretary and treasurer of them. William Mucklow, of DuPont, Pa., is the general manager. These 2 companies own 2,500 acres of land near Diego, West Virginia, about 15 miles east of Charlestown. There are 2 veins of coal on the property, one 8 and the other 11 ft. thick. It lies on the main line of the Chesapeake & Ohio Railroad. Two tipples are being erected. The companies expect to mine and ship coal soon.

### WYOMING. Carbon County.

(From Our Special Correspondent.)

Numerous new companies have been incorporated to work in the Battle Region the past six months, averaging 2 or 3 a week. The treasury stock of these companies find ready sale, the usual starting price being 15c. Considerable blocks of the stock of these companies are often taken by the small Carbon County capitalists. Throughout the whole Battle, Lincampment and Beaver Creek region more claims have been patented during the past 4 months than during all previous time.

Ruddefeha.—Work is pushed with vigor at this copper mine, about 160 men being employed. Quite a hamlet has grown up during the past season. A new boiler, compressor and dynamo for lighting mine and buildings have been installed at the shaft house. A larger supply of water has been brought in and a stone reservoir built above the buildings to give good pressure. The manager, I. C. Miller, has had weir tests made of the flow of North Spring Creek and its branches, with a view of building a smelter on this stream next season at a point on the east side of the range about 2 miles from the mine. The vein in the lower levels is wider than at 1st level, while its grade is nearly as high. A concentrating plant is built below the dump to treat the dump, which contains some 8,000 tons of rock carrying considerable copper in some places. This plant, owned by Messrs. Plummer, Foote and others, consists of an Englebach crusher, 1 set of rolls, a revolving screen, a set of 2-compartment jigs, 2 Cammett tables and a 30 H.P. boiler and engine. Some of the better portions of the dump are sorted and sacked without crushing. The plant is running night and day and is turning out very clean concentrates which are hauled to Wolcott, Wyo., and shipped to Denver and Chicago.

Iron King.—A good strike is reported on this claim, owned by the Wheeler Brothers, on Cow Creek. The vein is large and most of the ore high grade.

Keener.—The Keener strike of copper ore is one of the finest as to grade yet made in the Battle region. The claim is about 3 miles south of Battle.

Kelsey.—This property near Copperton is owned by Messrs. Kelsey, Douglass, Hardenburg, Ferguson and others. The vein appears to be about 30 ft. wide, with copper values all through it, and seams of native copper and copper glance. The shaft is 50 ft. deep. It is now in litigation on a grub stake proposition and is not worked.

### FOREIGN MINING NEWS.

#### AUSTRALASIA. Queensland.

The Mines Department reports that the gold yield of the Colony for September was 77,339 oz. crude, or 5,695 oz. less than in September, 1899. The total this year was equal to 56,485 oz. fine gold, or \$1,167,545. For the nine months ending September 30th the total was 739,470 oz., crude, which compares with 685,824 oz. in 1899; showing an increase of 53,646 oz., or 7.8% this year.

#### CANADA.

##### British Columbia—Boundary District. (From Our Special Correspondent.)

Jewel.—Between 100 and 200 tons of gold quartz from this mine have lately been shipped to the British Columbia Bullion Extracting Works, at Silica, near Rossland, for treatment by the Pelatan-Cleric process as an experiment. The English owners have under consideration the installation of a reduction plant at the mine, so are making tests. The Jewel is the only gold-quartz mine in the district opened up sufficiently to keep a stamp mill and reduction plant regularly supplied with ore.

Old Ironsides & Knob Hill.—Shipments of ore from this group to the Granby Company's smelter at Grand Forks from July 11th to November 1st total about 31,000 tons. The daily output is now 600 tons, but an exception was made one day recently, when 31 cars, each containing about 30 tons, were sent out.

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

Rossland Ore Shipments.—For the 10 months and 8 days ending October 8th the shipments from Rossland mines amounted to 178,000 tons, valued at \$2,848,000 gross.

Slocan Ore Shipments.—The shipments from Slocan Lake this year so far exceed last year by 1,500 tons, valued at \$125,000. The shipments this year amount to 3,700 tons.

B. C.—The shaft in this mine at Summit is to be sunk from the 292-ft. level to 392 ft. and is to be a 3-compartment one.

Le Roi.—Owing to the want of smelter facilities the management has made a reduction in the working force and shipments will not be as great until the smelter's capacity has been increased. The heavy machinery for the new hoist is about to be installed.

Rambler-Cariboo.—This group comprises the Rambler, the Cariboo, the Antelope, the Best Fraction and the Humphrey, in all 225 acres. The mine is developed by tunnels to a depth of 350 ft. on the first or No. 1 shoot. A winze has been sunk from the bottom of No. 3 tunnel 135 ft. The management intend to sink this winze to the 650-ft. level and to drift along the ledge at each 100 ft. Recently 38 tons of high-grade ore were taken from a drift on the 350-ft. level. Seven additional car-loads were sent to the smelter and yielded from \$1,200 to \$1,500 net each. The 7 car-loads were taken from the old workings and the 38 tons from the new drift. At the bottom of the winze on the 450-ft. level there is a full face of ore which is said to carry over 262 oz. silver and 60% lead to the ton. The mine is equipped with a 80-H.-P. boiler, a 9-drill compressor, hoist and pumps.

### Ontario—Sudbury District.

(From Our Special Correspondent.)

The Orford Company's refining plant now being erected at Copper Cliff upon the lands of the company consists of a main building 180 by 245 ft. The Orford Company has heretofore refined all the matte made by the Copper Company, but this new plant is being put up by a corporation styled the Ontario Smelting Company, being composed of the principal members of both of the old companies.

The Orford Company has sent Major Leckie to Norway to contract for nickel ores to supply the New Jersey refinery as soon as the Ontario mines act is put in force, compelling the Canadian Copper Company to refine all its matte in Ontario.

Canadian Copper Company.—This company now employs about 1,200 men at an average wage of \$2 per day. It is running 9 furnaces and smelting about 900 tons of ore per day. The ores average about 4%, about equally divided in copper and nickel. The production is about 600 tons per day, so the stockpiles are reduced 300 tons per day.

### COAL TRADE REVIEW.

#### New York. Anthracite.

Nov. 16.

The anthracite coal trade is as active as anyone should wish it to be. Seasonable weather has started retail buying and dealers in all hard coal consuming districts are after coal. The demand is so widespread that it cannot be said to be more pressing from one quarter than another; but the great bulk of the shipments so far has been to all-rail points inland, and comparatively little coal has been sent forward to stock up yards at shoal water points along the coast where ice is likely to form before long.

In the West demand is brisk. Some coal has arrived at the head of the lakes, but supplies on the docks there are short and it is doubtful if enough gets forward to bring supplies up to normal before navigation closes, as the Sault may freeze over within a couple of weeks. It is not unlikely that consumers at St. Paul will have to take considerable all-rail coal before spring. At Chicago and Milwaukee retail trade is active and dealers are anxious about supplies. Supplies on the docks are low, with little prospect of getting up to normal unless lake navigation remains open much later than usual. Lake freights from Buffalo are up to 75c. and may go higher. At the lower lake ports and tributary territory buying has been active and coal is wanted.

Buyers at Eastern points are clamoring for coal, but will have to wait. All domestic sizes are in demand, chestnut being most wanted. This size is going to be scarce all winter. Pea coal and the other steam sizes are in very short supply, with little prospect of being up to the demand for months.

There have been scattered strikes at the collieries, most of which are adjusted; the miners do not realize the forces that compelled the settlement of the strike and are likely to be more or less uneasy all winter. Some collieries are troubled by a short supply of water, seriously curtailing their output. Most collieries are complaining of short car supply. The anthracite

operators say that the bituminous trade secured coal cars during the strike, which cars are only getting back to the anthracite mines by degrees.

With demand heavy and output somewhat limited, prices are naturally firm, but are not likely to go higher. Some papers have said that the Delaware & Hudson and Lehigh & Wilkes-Barre Coal Companies have advanced the price of coal at the breaker chutes to their employees and the local trade 75c. per ton. The advance is really but 25c. and is to offset the increase in wages. The old prices had been in force 20 years or so.

We quote free-burning white ash, f. o. b. New York Harbor ports: Broken, \$4; egg, \$4.25; stove and nut, \$4.50; pea, \$3, buckwheat, \$2.50.

#### Bituminous.

The Atlantic seaboard soft coal trade is easier than it was 2 weeks ago, while coal is going forward more slowly. Transportation from the mines to the shipping ports is troubling shippers somewhat. Most contractors can now see the end of shipments to the down East shoal-water ports where ice is likely to form early, but there is still in the aggregate a fair tonnage going forward to consumers at those points. It is believed that nearly all, if not all, the requirements for the main ice ports have now gone forward and shippers are turning their attention to cleaning up orders from the shoal-water ports along Long Island Sound and up the Hudson River.

Trade in the far East is calling for and receiving a fairly heavy tonnage. The better grades are most wanted, but large amounts of the lower grades are taken. Along Long Island Sound trade is easier, though demands keep up. New York Harbor trade is fairly active. All-rail trade is taking all the better grades of coal procurable and filling up deficiencies with the poorer grades, thus satisfying all needs. Little is heard now of foreign shipments, but cargoes continue to go out.

Transportation from mines to tide is variable; it is best on the Pennsylvania and very irregular on the Baltimore & Ohio. Car supply at the collieries is 65 to 90% of demand. In the coast-wise vessel market vessels are in short supply at the loading ports. A considerable fleet is due, but has been kept back by head winds. We quote current rates from Philadelphia as follows: Providence, New Bedford and the Sound, 65c.; Boston, Salem and Portland, 75c.; Wareham, 80c.; Lynn, 90@95c.; Newburyport, \$1; Bath and Portsmouth, 80@85c.; Bangor, \$1.05; Gardiner, \$1.05 and towages; Saco, \$1.10@1.15 and towages.

Clearfield coal can be had at \$2.35@2.75 f. o. b. New York Harbor loading ports.

#### Birmingham, Ala.

Nov. 12.

(From Our Special Correspondent.)

There is need for every ton of coal that can be mined, though production is greater than it ever was. The miners are working for 5c. per ton less than during the last 14 or 15 months, a result of the reduction in the price of pig iron during October. However, as pig iron has gone up, it is believed that a 5c. advance in wages will be announced in December.

The railroads are doing everything possible to enlarge their facilities for handling coal, and more cars are to be brought to this State. Initial lines in the coal-fields have made recent purchases of equipment, while all the roads have recently made large additions to their locomotive power. Some railroads have recently seized coal in transit to supply their needs.

#### Pittsburg, Pa.

Nov. 14.

(From Our Special Correspondent.)

Coal.—There is but little change in the coal situation. The Pittsburg Coal Company is complaining again of a scarcity of railroad cars and is getting further behind in its deliveries. This company has taken some contracts for delivery in Baltimore destined for the export trade, but has no foreign contracts. Several mines of the combination were idle for two days this week on account of a grievance of the diggers over the price paid for coal shipped to the Eastern markets. The matter was temporarily adjusted and the men returned to work. A convention of miners in the Irwin Field will be held on Saturday, at which a rate is to be fixed for all coal shipped to Eastern points. E. Saeger, general sales-agent of the Pittsburg Coal Company, has resigned on account of ill health and he is succeeded by J. M. Walsh.

Connellsville Coke.—The conditions remain about the same, but an improvement is looked for before the end of the month, as several furnaces have been put in blast. W. J. Rainey has shipped 130 cars from the Locust Point ovens to Germany. This is the largest export order ever received in the region. Prices are the same as last week, \$2 for furnace and \$2.25@2.50 for foundry. For outside coke furnace sells at \$1.50 and foundry at \$1.75@2. Of the 20,760 ovens in the region, 14,984 are active and 5,776 are idle. The production last week was 153,737 tons, a gain of 1,710 tons over the previous week. The shipments aggregated 7,235 cars, distributed as follows: To Pittsburg and river tipples, 2,544

cars; to points west of Pittsburg, 3,069 cars; to points east of Connellsville, 1,622 cars. This was an increase of 118 cars.

**Shanghai, China.** Oct. 3.

(Special Report of Wheelock & Co.)

Coal.—A syndicate has recently been formed in Japan to control the output of the various mines. Prices have consequently advanced. This, coupled with the fact that large contracts have been made with the governments operating in the North, has made the market here very firm, especially for the better kinds of coal. Common kinds have also participated in the rise, but not to the same extent. Welsh Cardiff coal is still in demand for the men-of-war visiting the port, and prices are firm. Wollongong shows no improvement. Arrivals of all kinds of coal during the past fortnight amounted to 19,641 tons. Quotation, per ton, are as follows: Welsh Cardiff, 27@28 taels (\$17.98@18.65); Australian Wollongong, cargo, ex-godown, 13 taels (\$8.66); and other sorts, 7.50@8.50 taels (\$4.99@5.96); Chinese, Kaiping 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.—Little has been done by importers and sales have been made at the Tea House at lower prices than last reported. Until the stock in native hands is exhausted we can look for no advance. Stocks are estimated at 967,500 cases American; 507,170 cases Russian, and 2,899 cases Sumatra; total, 1,477,569 cases. Quotations per case are as follows: American Devoe's, 2.03½ taels (\$1.36); Russian, Batum Anchor Chop, 1.96½ taels (\$1.31); Star & Crescent and Horse Chop, 1.94½ taels (\$1.30); Ram Chop, 1.95 taels (\$1.30); bulk oil, in 2 tins, 1.85 taels (\$1.23); Sumatra Langkat, bulk oil in 2 tins, 1.85 taels (\$1.23).

**Foreign Coal Markets.**

Messrs. Hull, Blyth & Company, of London and Cardiff, report under date of November 3d that the coal market is weak, with little demand. Prices are: Best Welsh steam coal, \$4.92 @ \$5.16; seconds, \$4.68@4.80; thirds, \$4.32@4.56; dry coals, \$4.68; best Monmouthshire semi-bituminous, \$4.44@4.56; seconds, \$4.44; best small steam coal, \$2.52@2.75; 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 from Welsh ports a further decline is noted. Some rates quoted from Cardiff are: Gibraltar, \$1.92; Marseilles, \$2.10; Genoa or Naples, \$2.16; Port Said, \$2.64; Las Palmas, \$1.98; St. Vincent, \$2.16; St. Lucia, \$2.28; Buenos Ayres, \$3; Rio Janeiro, \$3.42; Santos, \$3.60.

In France coal remains high, and a strike of miners in the Pas-de-Calais causes much uneasiness.

The heavy fall in iron and steel in Germany, and the semi-panic in industrials have effected a fall in coal prices, which is, however, not very large yet.

Foreign inquiries for coal continue to be received here. The heavy fall in prices of Welsh coal noted above will bring prices in Mediterranean ports down to a competing level again. There is no change in freights from Atlantic ports. A charter is noted from Norfolk to Naples at \$4.56. Also one from Norfolk to Manila at \$8.50.

**SLATE TRADE REVIEW.**

**New York.** Nov. 16.

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. of ville.	Bangor	Bangor Ribbon.	Alb'n or Jackson Bangor.	Chap'n Keys ne	Peach Bottom.	Sea Gr'n.	Unfad'g Green.	Red.
34 x 14	6.50	3.50	3.00	3.00	3.00	5.10	2.90	3.75	.....
24 x 12	6.60	3.50	4.00	3.00	3.80	5.25	2.90	3.75	.....
22 x 12	6.60	3.50	3.25	3.00	.....	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	.....	5.25	2.90	3.75	.....
20 x 11	6.80	.....	3.25	3.25	.....	5.25	2.90	.....	.....
20 x 10	6.80	4.25	3.50	3.25	4.00	5.35	2.90	4.25	10.50
18 x 12	6.80	3.75	.....	3.00	.....	5.25	2.90	3.50	.....
18 x 11	7.00	.....	.....	.....	.....	.....	2.90	3.75	.....
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	2.90	1.00	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	.....	.....	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	.....	3.25	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	.....	5.25	2.70	3.75	10.50
14 x 9	6.50	.....	.....	.....	.....	.....	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	.....	.....	.....	.....	.....	2.50	3.25	.....
12 x 9	5.60	.....	.....	.....	.....	.....	2.50	3.25	.....
12 x 8	5.50	3.50	.....	2.85	.....	4.85	2.50	3.50	9.00
12 x 7	5.00	3.25	.....	2.85	3.25	4.85	2.25	3.50	9.00
12 x 6	4.80	3.25	.....	2.85	3.25	4.75	2.25	3.50	8.50

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

Notwithstanding the difficulty of filling old orders, quarrymen continue to cut prices on

new business. Thus orders for roofing slate are being booked at 15@65c. per square, less than the list prices.

Production is not as large as last year, as many of the quarries are "guttled," owing to the heavy output in 1899.

Export business is small in comparison to what it has been. Freight rates to London are 13s. 9d. on contract, and 15s. in the open market. Some contracts for freight room have been booked for next year's business at 13s. 9d.

**IRON MARKET REVIEW.**

**NEW YORK, Nov. 16, 1900**

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

Fuel used	Week ending				From Jan., '99.	From Jan., '00.
	Nov. 17, 1899.	Nov. 16, 1900.	F'ces.	Tons.		
An'racite & Coke.	258	282,775	171	267,950	11,522,379	12,133,517
Charcoal.	29	7,375	30	8,150	243,147	333,085
Totals..	287	290,150	201	216,100	11,765,526	12,466,602

The anticipated rush of orders has set in and the mills are receiving numerous orders for finished material of all kinds, as well as inquiries and specifications. The amount of business already placed is very large, and it is evident that much work which has been held in suspense is now to be pushed.

In raw material the transactions have been chiefly in foundry irons and basic pig. Not much has been done in Bessemer pig. The Bessemer Association has taken no action as yet on prices.

Naturally there is a tendency to advance quotations, and some increases are reported on bars, plates and other finished material. No change has been made on structural steel. There is even talk of a \$2 advance on rails, making the price for heavy sections \$28; but this is not generally credited.

At last week's meeting the steel people came to an agreement on billets, and fixed the base price at \$19.75 a ton at Pittsburg. The agreement was made with some difficulty, and it remains to be seen whether it will last. The plate mills also succeeded in coming to an agreement, both as to prices and division of work. Some similar arrangements on bars is talked of.

The November reports of the blast furnaces show another decrease in the capacity of the stacks at work. There was a decrease in stocks unsold on November 1st of about 25,000 tons; the first reduction noted for several months.

**Birmingham, Ala.** Nov. 12.

(From Our Special Correspondent.)

Pig iron conditions in Alabama have improved greatly in the last two weeks. The day after the election some companies announced an advance of 50c. on the ton, while others announced an advance of \$1. The sales during the last week have been very large and it is admitted that business has picked up in all directions. The export trade promises to be active for some little time.

It is stated in some quarters that domestic orders have been received which will take the production of certain furnaces until March, 1901. It is now expected that the quotations will have to regulate the demand and further advances can be looked for in the very near future.

The finished iron market is quite brisk. The foundries and machine shops have felt the better conditions. The car foundries and the car wheel works are doing more business. The rolling mills are in full blast and 4 of the 12 open-hearth furnaces at the Ensley steel plant. The steel wire and rod mill and the plow factory at Ensley are both running with a full complement of men.

The following quotations are given: No. 1 foundry, \$11.50@12; No. 2, \$10.50@11.50; No. 3, \$10@10.50; No. 4, \$9.50@10; gray forge, \$9.50; No. 1 soft, \$11.50@12; No. 2, \$10.50@11.

**Buffalo.** Nov. 14.

(Special Report of Rogers, Brown & Co.)

The foundry iron market in this vicinity has been further stimulated this week by the still further reduction in active furnace capacity and stocks of pig iron on hand. It is becoming more evident that the market will be on a somewhat higher basis before very long. Some furnaces have taken on all the orders they can handle, and have practically withdrawn from the market, while many others are rapidly filling their order books. The decline in the price of iron had been so sudden it stopped the furnaces resuming operation on the unnatural price basis before large stocks were accumulated, as in times past, so that now when buyers are feeling more inclined to stock up they have not this reserve to draw from. Prices have been marked up to the basis mentioned below: No. 1 strong foundry coke, Lake Superior ore, \$15.50; No. 2, \$15; Southern soft No. 1, \$15.50; No. 2, \$15; Lake Superior charcoal, \$18; coke malleable, \$14.50.

**Philadelphia, Pa.** Nov. 15.

(From Our Special Correspondent.)

Pig Iron.—Less than the predicted volume of business in pig iron has been transacted in eastern Pennsylvania during the week. Buyers have asked for quotations and all representatives say to-day that the decks are being cleared for action. No large orders have been placed since Monday. Prices are strong. Foundrymen are purchasing about as before. Makers are asking old prices for ordinary brands. Forge iron is strong. No. 1 X foundry is \$16.50@17.50; No. 2, \$15.50@16; No. 2 plain, somewhere near \$15; Standard gray forge, \$14@14.50; basic, \$14.

Billets.—The commotion in billets, due to proposed combination and large deals and advances made, has had the effect of drawing some needy buyers, but the utmost secrecy is preserved as to prices to be paid. This gives rise to the report that billets were bought subject to changes. Those on the inside believe it is probable that the attempt will be made to put billets on a \$20 basis at mills.

Merchant Bars.—The rumor has been growing for several days that the rush of car-building orders during October and now in progress will soon bring a big rush of business to middle and eastern Pennsylvania mills. All through the Schuylkill Valley mills are being filled up with business and this fact accounts for some pending large forge iron orders. The prospect of a combination in the bar trade does not attract comment here.

Sheets.—All our sheet iron people are doing more business during the past few days. Prices have not been advanced and there is no intention to do so, so far as local manufacturers know.

Pipes and Tubes.—All Eastern producers are having a satisfactory run of fall and winter orders. Pipe orders have been coming from places outside of our territory and mill agents now in the West are in sight of some of the heaviest orders of the year.

Merchant Steel.—A general increase of labor force is reported in those establishments where merchant steel forms the chief raw material. The only change to be noted in prices is that concessions offered in August have been withdrawn.

Plates.—The advance in plate under the new arrangement will harmonize prices with shapes and rails. The unity effected will meet with genuine co-operation by all eastern Pennsylvania interests. The developments of the past week in trade have been held up by the negotiations in progress at New York and the after-talk at Pittsburg.

Structural Material.—There has not been at any time for years as much bridge building in sight as now. Quite a number of inquiries and not a few orders have been filed or booked since last Thursday. There are also some very heavy South African orders going through and the American agents in South Africa have been working the cable during the past few days.

Steel Rails.—Makers here refuse to talk much. In a roundabout way it is ascertained that emergency requirements, some of them heavy, are being placed, that personal conferences between representatives of steel makers and railroad buyers have taken place, particularly in the West, that makers do not propose concessions.

**Pittsburg.** Nov. 14.

(From Our Special Correspondent.)

There has been a decided improvement in the iron and steel markets since the result of the national election was known last week. The buying movement that began at the close of October has increased and the result is a stiffening of prices in all lines. The price of Bessemer pig iron for the first quarter of next year was not fixed at the meeting of the association at Cleveland last week as was expected. Definite action was not taken, it is believed, as better conditions are likely to prevail before the close of the year which will warrant a much higher rate than the present market indicates. It had been intended to fix the price for delivery after January 1st at \$14 at the furnace. Sales this week were for delivery during the last quarter of this year and were at prices ranging from \$13.75 to \$14, Pittsburg. Prices of foundry and forge iron are firmer this week, but there were no unusually large sales. The improvement in the iron trade has resulted in the starting of the blast furnaces of the Republic Iron and Steel Company, at Hazelton, near Youngstown, on Monday. These furnaces have been out of blast since June 7th, and some extensive improvements have been made. Atlantic Furnace, at New Castle, Pa., was also put in blast on Monday. Spearman Furnace, an independent plant, will be lighted this week, after an idleness of several months for repairs.

The leading steel interests of the country suc-

ceeded in coming to an agreement on prices at the New York meetings which closed on Saturday. A pool on plates was formed and prices were advanced. A billet pool was also formed and the price fixed was \$19.50 at makers' mill and \$19.75 delivered in Pittsburgh. It is believed that this rate will be still further advanced before the opening of the new year. Prices for sheets are firmer this week, with an increased demand. The American Sheet Steel Company this week put the large plants at Piqua, O.; Canal Dover, O., and the Falcon Works, at Niles, O., in operation. With the exception of two four-mill works, one at Dresden, O., and the other at Dennison, O., the American Sheet Steel Company has all its plants in full operation. All the independent sheet plants of any importance have been in continuous operation since the Amalgamated Association wage scale was signed last July. Some large orders for steel cars have been received this week by the Pressed Steel Car Company. Plans are now being made for an addition to the McKee's Rocks works of the company which will increase the capacity. The bi-monthly examinations of the Amalgamated Association are being made this week to determine the wages to be paid in the union rolling, sheet and tin plate mills for November and December. The returns of sales made by the American Tin Plate Company during September and October were examined at the Amalgamated Association headquarters yesterday. They showed that the average sales were less than \$4.20 a box during the past 6 months. This is the base of the scale, and as a result the members of the Amalgamated Association will suffer a reduction in wages for November and December of 8%. Some members of the workers' examining committee disputed the returns and last night President T. J. Shaffer and a member of the committee went to New York to examine the books of the American Tin Plate Company to verify the figures. It is claimed that the average sales were expected to be higher.

**Pig Iron.**—The sales of Bessemer pig iron during the week did not exceed 1,500 tons and the price ranged from \$13.75 to \$14, delivered in Pittsburgh. This is for delivery this year. No price has yet been fixed for next year's delivery. Foundry iron is higher this week, No. 2 being quoted at \$14@14.50 and gray forge at \$12.74@13. There were only a few small sales recorded.

**Steel.**—There is a notable improvement in the steel market this week. The price of Bessemer steel billets has been advanced to \$19.50 at makers' mill and \$19.75 delivered in Pittsburgh. The price of plates has also been advanced, the increase being \$2 a ton. Tank plate is now quoted at 1.35c. Steel bars are firmer and sales are made at 1.20@1.25c.

**Sheets.**—There is but little change in the sheet market. Prices are firmer and an advance is expected before the close of the month. No. 28 is quoted at 2.90c. and No. 27 at 2.80c. Galvanized sheets remain at 75% off, with 15c. freight allowance.

**Ferro-manganese.**—The price for 80% domestic remains at \$75 for large and \$85 for small lots.

**New York, Nov. 16.**  
The local iron market is firmer in all lines and the volume of business is increasing. In foreign trade we note a shipment of 13 locomotives valued at \$172,500 to Egypt, shipments of \$30,000 worth of steel rails, \$50,000 worth of agricultural machinery, \$18,000 worth of mining machinery and \$44,000 of other machinery to Australasia; shipments of \$45,000 worth of mining machinery to Mexico; a shipment of \$12,000 worth of mining machinery to Scotland, shipments of \$52,000 worth of electrical machinery to Italy and shipments of \$20,000 of metal-working machinery to Holland.

**Pig Iron.**—Prices are firmer, orders more numerous. We quote for Northern irons, tide-water delivery: No. 1 X foundry, \$17.25@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, \$15.50@15.75; No. 2, \$14.50@14.75; No. 3, \$13.75@14.25; No. 4, \$13.25@13.75; No. 1 soft, \$15.50@15.75; No. 2, \$14.25@14.50.

**Bar Iron and Steel.**—Demand which had fallen off of late is improving. We quote common bars at 1.20@1.25c. for large lots on dock; refined bars, 1.35@1.40c.; soft steel bars, 1.30c.

**Plates.**—Mills have advanced prices. The number of orders received is fair. 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.**—Buying shows improvement. Light rails are still 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 increasing. 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.  
Gold and Silver.

Nov. 16.

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

Metal.	October.		Year.	
	1899.	1900.	1899.	1900.
<b>GOLD.</b>				
Exports	\$379,752	\$428,925	\$33,257,590	\$53,005,470
Imports	8,542,254	9,810,882	42,810,675	45,915,798
Excess	I. \$8,162,502	I. \$9,381,957	I. \$9,553,085	E. \$7,089,672
<b>SILVER.</b>				
Exports	4,687,226	6,093,119	43,421,657	53,595,010
Imports	2,321,695	2,966,356	25,045,790	33,117,506
Excess	E. \$2,365,531	E. \$3,126,763	E. \$18,375,867	E. \$20,477,504

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 November 15th, 1900, and for years from January 1st, 1900, 1899, 1898, 1897.

Period.	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$3,100	\$2,739,592	\$679,057	\$204,995	I. \$2,262,430
1900..	36,647,103	10,059,314	34,786,193	4,322,426	E. 14,381,740
1899..	11,648,849	13,667,526	2,519,132	3,297,194	E. 20,202,161
1898..	7,439,729	95,709,724	29,731,104	2,725,831	I. 61,264,722
1897..	48,175,528	13,493,757	40,851,016	2,724,983	E. 72,807,804

Imports of gold were from England and France; exports were to the West Indies. Imports of silver were from the West Indies and South America; exports went chiefly to London.

The United States Assay Office in New York reports the total receipts of silver at 107,000 oz. for the week. Total since January 1st, 4,342,000 oz.

**Average Prices of Silver per oz. Troy.**

Month.	1900.		1899.		1898.	
	London Pence.	N. Y. Cents.	London Pence.	N. Y. Cents.	London Pence.	N. Y. Cents.
January..	27.30	59.30	27.42	59.36	26.29	56.77
February..	27.49	59.76	27.44	59.42	25.89	56.07
March.....	27.59	59.81	27.48	59.64	25.47	54.90
April.....	27.41	59.59	27.65	60.10	25.95	56.02
May.....	27.56	59.96	28.15	61.23	26.31	56.98
June.....	27.81	60.42	27.77	60.43	27.09	58.61
July.....	28.23	61.25	27.71	60.26	27.32	59.06
August.....	28.13	61.14	27.62	60.00	27.48	59.54
September..	28.85	62.63	27.15	58.89	28.05	60.68
October....	29.58	63.83	26.70	57.98	27.90	60.42
November..	.....	.....	27.02	58.67	27.93	60.60
December..	.....	.....	27.21	58.99	27.45	59.42
Year.....	.....	.....	27.44	59.58	26.76	58.20

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**

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1900.	1899.	1900.	1899.	1900.	1899.	1900.	1899.
Jan.....	15.58	14.26	27.07	22.48	4.68	4.18	4.65	5.34
Feb.....	15.78	17.02	30.58	24.20	4.675	4.49	4.61	6.28
March....	16.29	16.35	32.90	23.82	4.675	4.37	4.60	6.31
April.....	16.76	17.13	30.90	24.98	4.675	4.31	4.71	6.67
May.....	16.34	17.20	29.37	25.76	4.181	4.44	4.53	6.88
June.....	15.75	16.89	30.50	25.85	3.901	4.43	4.29	5.98
July.....	15.97	17.10	33.10	29.63	4.030	4.52	4.28	5.82
August..	16.35	17.42	31.28	31.53	4.250	4.57	4.17	5.65
Sept.....	16.44	17.34	29.42	32.74	4.350	4.58	4.11	5.50
October..	16.37	16.94	28.54	31.99	4.350	4.575	4.15	5.32
Nov.....	.....	.....	.....	28.51	.....	4.575	.....	4.64
Dec.....	.....	15.85	.....	25.88	.....	4.64	.....	4.66
Year.....	.....	16.67	.....	25.12	.....	4.47	.....	5.75

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, 16.88c.; for September, 16.69c.; for October, 16.64c.

**Prices of Foreign Coins.**

	Bid.	Asked
Mexican dollars.....	\$ 50 1/2	\$ 51 1/2
Peruvian soles and Chilean pesos ..	46	47 1/2
Victoria sovereigns.....	4.85	4.88
Twenty francs.....	3.85	3.88
Twenty marks.....	4.74	4.80
Spanish 25 pesetas.....	4.78	4.82

**Financial Notes of the Week.**

Some reaction has been felt from the first boom of the speculative markets after election. General business is showing much activity, and there is a prospect of its continuance through the winter. Higher rates of interest with European markets have temporarily checked shipments of gold to this country, and no more are reported.

Silver has been fairly steady, with moderate demand. No large orders have appeared sufficient to carry up the price, but receipts have been absorbed without causing any special decline.

The statement of the United States Treasury

on Wednesday, November 14th, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week.

	Nov. 7.	Nov. 14.	Changes.
Gold.....	\$93,301,453	\$94,840,561	I. \$1,539,108
Silver.....	6,619,910	8,910,193	I. 2,270,283
Legal tenders.....	10,491,021	10,201,808	D. 289,213
Treas. notes, etc....	38,522	107,592	I. 69,070
Totals.....	\$110,470,906	\$114,060,154	I. \$3,589,248

Treasury deposits with national banks amount-

**Imports and Exports of Metals.**

Port.	Week, Nov. 14.		Year 1900.	
	Expts.	Impts.	Expts.	Impts.
<b>New York.</b> (N. Y. Metal Exchange.)				
Aluminum..... long tons	4	.....	137	87
Antimony ore..... " "	.....	150	.....	2,668
regulus..... " "	.....	70	.....	1,600
Chrome ore..... " "	.....	.....	.....	1,500
Copper, fine..... " "	1,254	162	90,590	17,401
matte..... " "	19	.....	3,759	248
ore..... " "	.....	.....	.....	50,261
ash..... " "	.....	.....	.....	98
Ferro-Chrome..... " "	.....	.....	.....	31
Ferro-manganese..... " "	.....	.....	.....	710
Iron ore..... " "	.....	.....	.....	21,477
pig, bar, rod..... " "	966	.....	17,760	6,125
pipe..... " "	988	.....	13,131	157
plates, sheets..... " "	.....	.....	1,016	18
Lead..... " "	1,110	360	68,955	60,374
ore..... " "	.....	.....	.....	9,700
dross..... " "	.....	.....	.....	24
Manganese, ore..... " "	.....	.....	.....	9,492
Metals, old, scrap..... " "	362	11	4,712	6,190
Composition..... " "	124	.....	3,093	385
Nails..... " "	277	.....	17,447	.....
Nickel..... " "	73	.....	2,173	.....
ore, matte..... " "	.....	.....	.....	5,393
Railroad material..... " "	879	70	6,261	5,743
Rails, old..... " "	289	.....	7,774	518
Spiegeleisen..... " "	.....	.....	.....	3,377
Steel bars, plates..... " "	1,255	104	43,837	15,711
rails..... " "	3,556	158	59,073	176
wire..... " "	1,297	.....	26,328	78
not spec'd..... " "	1,540	78	12,707	2,601
Tin..... " "	.....	15	5	22,308
and black plates..... " "	.....	117	.....	32,579
Zinc..... " "	.....	7	675	442
dross..... " "	44	.....	745	50
ashes, skim..... " "	37	.....	1,165	20
ore..... " "	.....	.....	13,304	.....
<b>Baltimore.</b> (Special Correspondence.)				
Chrome ore..... long tons	.....	.....	.....	3,730
Copper, fine..... " "	651	.....	35,196	4,364
matte..... " "	.....	.....	.....	155
Ferro-manganese..... " "	105	.....	4,790	22,406
Iron pig, bar, etc..... " "	.....	10,532	.....	376,574
ore..... " "	.....	.....	.....	37,475
pyrites..... " "	.....	.....	.....	117,913
Manganese ore..... " "	.....	.....	.....	568
Metals, old & Rails..... " "	85	.....	1,446	.....
Nails..... " "	.....	.....	.....	5,450
Pipe, iron & steel..... " "	.....	.....	.....	85
Silicon..... " "	.....	.....	.....	1,131
Spiegeleisen..... " "	.....	320	38,341	4,198
Steel, bars, etc..... " "	1,531	.....	919	157
wire..... " "	.....	11	73,805	.....
rails..... " "	120	.....	.....	295
Tin..... " "	.....	.....	.....	2,965
and black plates..... " "	.....	53	.....	.....
<b>Philadelphia.</b> (Week ending Nov. 10.)				
Antimony..... long tons	.....	.....	.....	14
Chrome ore..... " "	.....	.....	.....	3,650
Copper, fine..... " "	.....	.....	3,891	.....
ore..... " "	.....	.....	.....	35,595
pyrites..... " "	.....	.....	.....	100
Iron, pig..... " "	.....	.....	1,355	3,827
ore..... " "	.....	17,575	13,120	270,95
pyrites..... " "	.....	.....	.....	87,455
Manganese ore..... " "	.....	426	.....	77,326
Spiegeleisen..... " "	.....	.....	.....	4,153
Tin..... " "	.....	.....	.....	648
and black plates..... " "	.....	66	.....	2,590
Zinc..... " "	.....	.....	.....	67
ore..... " "	.....	.....	.....	4,307

**Total United States.**

Articles.	Sept. 1900.		Year 1900.	
	Expts.	Impts.	Expts.	Impts.
Antimony..... long tons	.....	202	.....	1,208
ore..... " "	.....	80	.....	1,753
Copper, in all forms..... " "	10,425	11,785	126,151	54,394
Iron, pig & bar..... " "	42,888	4,876	169,432	59,542
ore..... " "	16,259	59,995	37,026	697,297
Iron & steel plates..... " "	4,539	105	33,728	4,793
Iron & steel rails..... " "	33,132	2	294,4	

ed to \$97,224,597, showing a decrease of \$1,979,354 for the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House for the week ending November 10th—gives the following totals, comparison being made with the corresponding weeks in 1899 and 1898:

	1898.	1899.	1900.
Loans and discounts	\$687,867,400	\$678,385,000	\$785,656,500
Deposits	777,000,000	741,801,000	831,091,800
Circulation	15,759,100	16,366,400	30,705,700
Reserve:			
Specie	156,406,000	137,034,100	156,256,700
Legal tenders	52,855,800	46,377,200	56,122,300
Total reserve	\$209,261,800	\$183,411,300	\$212,379,000
Legal requirements	194,250,000	186,200,250	207,775,450
Balance, surplus	\$15,011,800		\$4,603,550
Deficit		\$2,788,950	

Changes for the week, this year, were decreases of \$6,673,800 in loans and discounts, \$10,683,400 in deposits, \$12,100 in circulation, \$1,786,400 in specie, \$2,228,800 in legal tenders, and \$1,344,350 in surplus reserve.

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

Banks.	1899.		1900.	
	Gold.	Silver.	Gold.	Silver.
N. Y. Ass'n	\$137,034,100		\$156,256,700	
England	162,205,116		158,650,755	
France	377,463,365	\$233,398,940	460,049,680	\$222,717,585
Germany	117,110,000	60,330,000	126,835,000	68,330,000
Spain	68,000,000	89,530,000	68,755,000	83,230,000
Aus-Hun	153,615,000	52,340,000	190,100,000	48,510,000
Neth'lds	15,740,000	28,910,000	21,350,000	28,200,000
Belgium	15,005,000	7,500,000	13,865,000	6,530,000
Italy	77,320,000	7,215,000	77,080,000	8,380,000
Russia	427,800,000	22,535,000	353,555,000	30,290,000

The returns of the Associated Banks of New York are of date November 10th, and the others are of date November 9th, 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.

Exports of specie by water from San Francisco in October included \$101,715 gold and \$1,311,316 silver. For the 10 months ending October 30th the shipments were as follows:

	Gold.	Silver.	Totals.
Hongkong	\$118,402	\$11,328,394	\$11,446,796
Shanghai		1,297,031	1,297,031
Japan	15,863	63,530	79,393
Pacific Islands	1,180	5,000	6,180
Central America	15,175	6,450	21,625
Mexico	1,500		1,500
Total foreign	\$152,120	\$12,700,405	\$12,852,525
Honolulu	264,600	53,500	318,100
New York	3,493,420	393,322	3,886,742
Totals	\$3,910,140	\$13,147,527	\$17,057,667
Totals, 1899	11,581,089	5,411,407	16,992,496

The silver exports this year included \$993,916 for October and \$8,954,146 for the 10 months, in Mexican dollars; against \$29,488 and \$1,921,061 for the respective periods last year. Shipments to Honolulu in October included, besides gold and silver, \$1,500 in nickel 5c. pieces.

Shipments of silver from London to the East for the year up to November 1st, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
India	\$4,509,525	\$5,310,307	1. 18.0,782
China	1,088,682	1,902,916	1. 814,234
The Straits	265,586	741,316	1. 475,730
Totals	\$5,863,793	\$7,954,539	1. 2,090,746

Arrivals for the week, this year, were £229,000 in bar silver from New York, £18,000 from Australia, and £10,000 from Chile; total, £267,000. Shipments were £133,500 in bar silver to Bombay and £40,000 to Shanghai; total, £173,500.

Indian exchange is steady at 15.94d. per rupee, with a large demand for Council bills in London. The Indian Government has now shipped in all £1,500,000 gold from India to London, and this will reduce the amount of Council bills to be offered.

Exports of merchandise from the United States in October were the largest yet reported, being valued at \$163,093,597, or \$37,127,070 more than in October, 1899. For the 10 months ending October 31st the statement is as follows:

	1899.	1900.
Exports	\$1,028,441,027	\$1,194,775,205
Imports	658,134,636	695,107,209
Excess, exports	\$370,306,391	\$499,667,996
Add excess of exports, silver		20,477,504
gold		7,089,672
Total apparent balance		\$527,235,112

The gold and silver movement in detail will be found in the tables at the head of this column.

Other Metals.

Daily Prices of Metals in New York.

November.	Sterling Exchange.	Silver.		Copper.				Spelter.		
		Fine oz. U.S.	London.	Lake.	Electrolytic.	London.	Tin.	Lead.	N. Y.	St. L.
10	4.84 1/2	64	29 1/2	16 3/4	16 3/4	72 1/2	27 3/4	4.32 1/2	4.30	4.07 1/2
12	4.84 1/2	61 1/2	29 1/2	16 3/4	16 3/4	72	27 3/4	4.32 1/2	4.30	4.10
13	4.84 1/2	61	29 1/2	16 3/4	16 3/4	72 1/2	27 3/4	4.32 1/2	4.30	4.10
14	4.84 1/2	64 1/2	29 1/2	16 3/4	16 3/4	72 1/2	28 1/4	4.32 1/2	4.30	4.12 1/2
15	4.84 1/2	63 1/2	29 1/2	16 3/4	16 3/4	72 1/2	28 3/4	4.32 1/2	4.30	4.12 1/2
16	4.84 1/2	64	29 1/2	16 3/4	16 3/4	72 1/2	28 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.

Owing to an error in transcribing in our table of daily prices last week, the price of Lake copper on November 8th was given at 16 1/2c. It should have been 16 3/4c., and that figure will be used in making up our monthly averages.

Copper.—The market continues firm, with indications of further strength. Domestic consumption is improving in all branches, and the European demand, which at one time had been slow, is considerably better again since the national elections took place. While a number of manufacturers here have provided for a portion of their requirements as far ahead as next spring, European buyers have covered their immediate wants only so that large orders from that direction may be looked for in the immediate future. We quote Lake copper at 16 3/4c.; electrolytic in cakes, wirebars and ingots at 16 1/2c. to 16 3/4c., in cathodes at 16 1/2c. to 16 3/4c.; casting copper at 16 1/4c. to 16 3/4c.

The London market for standard copper has again ruled somewhat higher. It closed last week at £72 for spot, £72 12s. 6d. for three months, at which prices it opened. On Monday it advanced 5s., of which 2s. 6d. were lost on Wednesday, but regained these again on Thursday, and the closing quotations are cabled as £72 2s. 6d. for spot, and 15s. higher for three months.

Refined and manufactured sorts we quote: English tough, £75 5s. to £75 15s.; best selected, £78 5s. to £78 15s.; strong sheets, £86; India sheets, £83 to £84; yellow metal, 6 1/2 to 6 3/4d.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the companies, was as follows for October and the ten months ending October 31st, in long tons (2,240 lbs.) of fine copper:

	October.	Ten months.		
1899.	1900.	1899.	1900.	
U. S. reporting mines	20,680	19,945	190,601	189,487
U. S. outside sources	3,300	3,400	24,600	34,000
Total, U. S.	23,980	23,345	215,201	223,487
Foreign reporting mines	7,834	7,920	73,984	74,096

Total U. S. production for the month shows a decrease of 635 tons from last year; for the ten months there was an increase of 8,286 tons, or 3.9%. The reporting mines showed a decrease this year of 1,114 tons, but there was a gain of 9,400 tons in the copper from outside sources. The United States exports this year show an increase of 45,278 tons, or 48.4%; they amounted to 62.1% of the production.

Tin.—Early in the week the market was dull and featureless, but the middle of the week a complete change occurred and a large business was done both for early and distant deliveries. A sharp advance in price took place, spot tin selling at 28 1/2c., distant futures at 28c. At the close we quote spot tin at 28 1/2c., January delivery at 28 1/4c.

The London market, which closed last week at £126 15s. for spot, £124 for three months, opened 7s. 6d. lower. On Tuesday it improved 2s. 6d., but on Wednesday declined to £126 for spot, £124 for three months. On Thursday, in consequence of heavy buying orders from this side, the market advanced to £128 for spot, £126 7s. 6d. for three months, and the closing quotations are cabled as £128 5s. for spot and £127 for three months.

Lead.—A large business is reported this week, which has, however, not as yet resulted in a change of price. We quote New York at 4.32 1/2c. to 4.37 1/2c., St. Louis 4.25 to 4.32 1/2c.

Our cables report the market for Spanish lead as £17 10s., English lead 2s. 6d. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is strong but quiet; 4.25c. is the price of Missouri metal. Desilverized lead continues 4.32 1/2c. Trading has been fairly active within the last few days at these rates.

Spelter.—The market this week has been strong and advancing. Consumption is very good and it appears that production has decreased through the closing down of the coal smelters. The advance in the price of ore has made smelters reluctant sellers, and higher prices have been paid. We quote St. Louis at 4 1/4c., New York 4.30c.

The European market is also somewhat higher, good ordinaries being quoted at £19 5s., specials 5s. higher.

Antimony.—There is no change. We quote Cookson's at 10c.; Hallett's at 9 1/4c.; U. S. Star at 9 1/4c.

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

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.

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

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

	Per lb.	Per lb.
Aluminum	33@37c.	
No. 1, 90% ingots	31@34c.	
Rolls sheets	42c. up	
Alum.-bronze	20@23c.	
Nickel-alum	33@39c.	
Bismuth	\$2.25	
Chromium (over 99%)	1.00	
Copper, red oxide	50c.	
Ferro-Molyb'dum (50%)	\$1.00	
Ferro-Titanium (10%)	\$1.00	
Ferro-Titanium (20%)	\$1.00	
Ferro-Tungsten (37%)	32c.	
Magnesium	\$2.75@85	
Manganese (over 95%)	\$1.05	
Manganese Cop. (2% Mn)	32c.	
Manganese Cop. (30% Mn)	38c.	
Molybdenum (Best)	\$1.45	
Phosphorus	50c.	
American	70c.	
Tungsten (Best)	86c.	

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

LATE NEWS.

(From Our Special Correspondent.)

Pittsburg, Pa., November 16th.—The executive committee of the steel manufacturers who compose the billet pool formed in New York last week has completed the details on prices. The figures were announced to-day, and are as follows: The price on Bessemer slabs and blooms and billets down to 4 by 4 is \$19.50 at mill, or \$19.75 delivered Pittsburg; prices delivered at the following points are: Chicago, \$20.75; Cleveland, \$20.25; Philadelphia, \$21, and New York, \$21.40. Prices to various middle western points are based on the \$19.50 mill price, with the freight added. For billets smaller than 4 by 4 down to 1 1/2 square an advance of \$1 is charged, and open-hearth billets are \$1 a ton higher than Bessemer.

(From Our Special Correspondent.)

Cleveland, O., November 14th.—All hope of any further movement of ore this season has been abandoned. Wild cargoes ceased with the termination of the contract season from the head of the lakes and the few loads that are coming down from Escanaba are not considered. These are being carried for 50c. It was expected that some ore would be sold for delivery the remainder of the year, but shippers are sending all of their tonnage to the docks to tie up for the winter, thus disproving any such belief as that. The report shows the receipts of ore at the docks of Lake Erie to have been 2,402,887 tons during the month of October this year, as against 2,649,424 for the same month last year. The total shipment to date, since the opening of the season of navigation, has been 17,287,952 tons. There being no sales, the association prices are quoted—\$5.50 for Bessemer and \$4.25 for non-Bessemer and Mesabi ores. These prices do not represent the present market.

The coal shippers find that the lack of coal cars earlier in the fall is embarrassing them severely now in the late lake shipment. Now that they are getting coal to ship they are not getting the boats, which is an exact reversal of the conditions existing a short time ago. The movement is very light now, with rates climbing. The chief inducement to lake vessels is the down cargoes. These almost disappeared with the end of the ore movement and hence the boats are going to their docks rather than carry coal up and come back light. The shippers, however, are in hopes of inducing more boats to go to both Lake Michigan and Lake Superior and are offering better rates, 30c. having been paid to Duluth and 55c. to Portage, while the only increased rate to Lake Michigan has been 35c. to Green Bay. The coal supply for domestic purposes is light. Some of the dealers are being compelled to buy in the open market to fill their contracts, not being able to get enough from the mines. While the demand is big, the prices have not changed in the least.



CHEMICALS AND MINERALS.

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

New York. Nov. 16.

Heavy Chemicals.—Stronger, particularly for shipments. Domestic alkali and caustic soda makers, being well sold up for this year, are asking an advance in price for early shipments, while 1901 and 1902 contracts are taken at quotations below. A good trade in sal soda is noted. Bleaching powder is firmer. Continued pressure is manifest among second-hands holding domestic chlorate of potash. For next year's delivery makers quote \$8.50 per 100 lbs. 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:

Articles.	Domestic.		Foreign.
	F.o.b.	Works. In New York	
Alkali, 58%.	70@75		
" 48%.	75@80		
Caustic Soda, high test.	\$1.70@1.75		
powd. 60%.		2.75@3.00	
70@74%.		2.85@3.25	
98%.		3.25@3.50	
Sal Soda.	60@70		3.75@4.00
" conc.	1.12@1.15		65@67 1/2
Bicarb Soda.	1.12@1.25		1.75
" extra	3.25@3.50		1.37 1/2@1.75
Bleach Pdr., Engr. prime.			1.87 1/2@2.00
other brnds.			1.75@1.85
Chl. Pot. Cryst.		8.50@8.75	9.50@9.75
powd.			9.75@10.00

Acids.—A large business for 1901 oxalic acid at \$5.62 1/2 @ \$5.75 per 100 lbs. is noted. The other acids are unchanged with a good consuming demand reported.

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

Acetic, No 8 in lbs.	\$1.62 1/2	Nitric, 36°	3.87 1/2
Blue Vitriol.	5.25@5.50	Nitric, 38°	4.12 1/2
Aqua Fortis, 36°	3.29 1/2	Nitric, 40°	4.37
Aqua Fortis, 38°	3.87 1/2	Nitric, 42°	4.75
Aqua Fortis, 40°	4.12 1/2	Oxalic	5.97 1/2 @ 6.00
Aqua Fortis, 42°	4.50	Sulphuric, 66°	1.20
Muriatic, 16°	1.20	Sulphuric, 68°	1.00
Muriatic, 20°	1.35	" bulk 50° ton	11.00
Muriatic, 22°	1.50		

Brimstone.—Quiet. New York imports this week were 1,500 tons, to be delivered principally on contract. Spot sales of best unmixed seconds are reported at \$22 per long ton, while shipments are held at \$20.75@21, according to position. Best thirds are \$2 per ton less. The average price of spot best unmixed seconds in New York in October was \$23.25, and shipments \$20.75 per ton. These prices compare with \$24.00 and \$21.72 respectively in September.

Fertilizing Chemicals.—Continue dull. Sulphate of ammonia, gas liquor, for this and next month's delivery, sold at \$2.72 1/2 @ \$2.75 per 100 lbs., though holders now ask 5c. per 100 lbs. advance. Other quotations are: High grade blood, \$2.15 per unit f. o. b. Chicago; and New York soft, \$2.25; tankage, 9@20¢, \$1.85 and 10c. per unit, f. o. b. Chicago; Calcutta bone meal, \$23 for regular and \$20 for other grades; domestic steamed ground bone, \$17.50@18 per ton.

Pyrites.—Demand is good, and prices continue unchanged. No imports at New York this week. We quote as follows: Mineral City, Va., lump ore (basis 42%), \$4.75 per long ton and fines \$4.20. Charlemont, Mass., lump, \$5.50, and fines \$5. Spanish pyrites, 12@14c., as to percentage of sulphur contents, delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46@51% of sulphur; American from 42@44%.

Nitrate of Soda.—No imports at New York this week. Importers firm in their views, asking \$1.82 1/2 @ \$1.85 per 100 lbs. for spot and future shipments. Consumers are not yet desirous of buying, anticipating lower prices with a fall in ocean freight rates, which importers contend is not likely for some time yet.

Messrs. Jackson Brothers, of Valparaiso, Chile, write us as follows, under date of October 6th: The market has continued dull throughout the fortnight and producers have offered to sell at lower prices than last quoted without finding much interest on the part of exporters. Transactions amount to about 140,000 qtls. at 5s. 6d. @ 5s. 5 1/2 d. for 95% and 5s. 7 1/2 d. for 96%, both steamer terms. The exports during September reached 2,339,000 qtls., making a total for the 9 months of 18,188,000 qtls., being a decrease of 1,351,000 qtls. as compared with last year. We quote 95% October, 5s. 5 1/2 d.; November, 5s. 5d.; December-January, 5s. 4 1/2 d., and February, 5s. 4d., while the 96% quality can be had at 5s. 7d., all ordinary terms. The price of 5s. 5 1/2 d., with an all-round steamer freight of 35s., stands in 7s. 10d. per cwt. net cost, and freight without purchasing commission.

Phosphates.—In the absence of new business prices are nominal. The unsatisfactory market for South Carolina rock has caused some of

the plants to close down, while other plants are working only half time. In the latter class is the Coosaw Company with over 50,000 tons of rock on the dumps ready for shipment. The Beaufort Company, which has about 25,000 tons, and the Empire Works of the Virginia-Carolina Company, both closed down awaiting the spring trade.

The shipments of Tennessee rock from Pensacola, Fla., in October amounted to 8,768 tons, making a total for the 10 months of 112,581 tons. Of the recent exports of Florida pebble we note 1,049 tons for Melbourne, Australia.

Phosphates.	Per Ton F. o. b.	C. i. f. Un'd Kingdom or European Ports.	
		Unit.	Long ton.
*Fla. hard rock (77 @ 80%)	\$7.50@8.00	8 1/2 @ 8 3/4 d	\$13.26@13.66
*Fla. land pebble (68 @ 73%)	4.35	7 1/2 @ 7 3/4 d	10.50@10.85
*Fla. Peace River (58 @ 63%)	3.00@3.50	6 1/4 @ 7 1/4 d	7.50@9.00
†Tenn. rock 78% export.	3.50@3.75	7 1/2 @ 7 3/4 d	11.70@12.09
†Tenn. .... 78% domestic.	3.00@3.50		
†Tenn. .... 75%	2.75@3.00		
†Tenn. .... 72%	2.25@2.65		
‡So. Car. rock, crude.	4.00		
‡So. Car. rock, dried.	4.50	6 1/4 d	8.10
Algerian, rock... (63 @ 70%)		7 @ 7 1/4 d	9.38@10.05
Algerian, rock... (58 @ 63%)		6 1/4 @ 7 1/4 d	8.10@8.70

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

Liverpool. Nov. 7.

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

The export demand for chemicals is moderate, but the market is very firm all round and the recent advanced prices are fully maintained.

Soda ash is meeting with a fair inquiry at late rates. The range for tierces is about as follows: Leblanc asn, 48%, £5 10s. @ £5 15s.; 58%, £6 @ £6 5s. per ton, net cash. Ammonia ash, 48%, £4 10s. @ £4 15s.; 58%, £4 15s. @ £5 per ton, net cash. Bags, 5s. per ton under price for tierces. Soda crystals are steady at £3 7s. 6d. per ton, less 5% for barrels, or 7s. less for bags, with special terms for certain favored markets. Caustic soda is quiet, but prices are firm, as follows: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s. @ £10 17s. 6d.; 76%, £11 5s. @ £11 10s. per ton, net cash.

Bleaching powder is dearer for delivery over balance of this year, at £6 10s. @ £7 per ton, net cash, for hardwood, and a moderate business is reported.

Chlorate of potash is still quoted at 3 1/4 d. per lb., net cash, and makers report a better inquiry.

Bicarb. soda is selling to a fair extent 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 dull and lower, at about £10 17s. 6d. @ £11 per ton, less 2 1/2% for good gray 24@25% in double bags f. o. b. here, while buyers hold aloof.

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

MINING STOCKS.

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

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

New York. Nov. 16.

Amalgamated Copper was the feature this week, selling at \$92 up to \$96, and then down to \$94. The death of Mr. Marcus Daly had some effect on this and Anaconda stock, but it appears more likely that the inside operators of Amalgamated are trying to bring to grief a certain large "short" interest that has been manipulating the market. On the other hand, speculation in this stock on curb has been so mysterious of late that outside buying is in abeyance. With each rise in price there is much profit-taking, causing a constant "see-saw" movement in the market. Anaconda fluctuated between \$45 1/2 @ \$48 1/2, closing around \$47; sales on 'change were good. British Columbia manifests much strength, sales of the stock are reported at \$17 1/2 @ \$18 1/2, closing around \$18. Further inside buying of Union, of North Carolina, is noted at \$3 @ \$3 1/2. The Arlington Copper Company, with property at North Arlington, N. J., was called on "curb" on November 12th, when quotations for the shares were \$5 1/4 @ \$5 1/2, at which about 1,000 shares are said to have changed hands. The company is capitalized at \$2,500,000, divided into 250,000 shares at \$10 each. There is also a bond issue of \$400,000, of which \$160,000 remains in the treasury.

Homestake, of South Dakota, sold 100 shares at \$78 1/2, the first transaction in months. Deadwood Terra brought 60c. Horn Silver, of Utah, sold up to \$1.30, Daly at \$1.10 and Ontario at \$7.

Standard Consolidated, of California, sold at \$3.15; Quicksilver common at \$1.25, and the preferred stock at \$9 1/4 @ \$9 3/4.

Of the Colorado stocks Isabella slumped from 78 @ 67c. on report that the present ore uncovering is not satisfactory. Elkton brought \$1.90; Anaconda gold, 53c., and Iron Silver, 73 @ 77c.

Of the other Colorado stocks Argentum-Juniata sold at 27 @ 30c.; Cripple Creek Consolidated at 14 @ 15c.; Gold Dollar at 18c.; Golden Fleece, 20c.; Little Chief, 18c.; Mollie Gibson, 24 @ 25c., and Pharmacist, 12 1/2 c.

In the Comstock section the customary trading was reported, Consolidated California & Virginia selling at 95c.

Included in the Comstock sales were Belcher at 15c.; Crown Point at 12c.; Mexican at 13 1/2 @ 25c., and the Comstock Company's bonds at 4%. Some more assessments are announced this week, and when the year's total has been made up it will be found quite large. Stockholders in some of the companies are complaining of these assessments and are seriously considering whether or not they shall continue to support a few laborers on the properties and the officials of the companies.

Auction sales were 100,000 shares New St. Elmo Gold and Copper Mining Company, of British Columbia, at \$2.20, or 2 1/5 c. a share; 60 common shares Alabama & Georgia Iron Company at \$10, and 239 preferred at \$33; also 8,074 shares Ford Gold Mining Company, Cal. (hypothecated); 100 shares Amador Construction Company (hypothecated); all interest in the shares of the capital stock of the Amador Construction Company (when issued) now represented and evidenced by two receipts of \$1,000 each, which receipts were originally issued to F. Rawolle (hypothecated), \$410 for lot.

Boston. Nov. 4.

(From Our Special Correspondent.)

The boom which followed the close of the election, to which I referred a week ago, ran its full course up to Monday, and was then followed by a reaction. This was evidently from the inside, and may have been arranged by some of the big traders, who were afraid that too rapid advances might lead to too much kiting and a consequent fall. At any rate the reaction was arranged and was a moderate one only, followed to-day by a good rally. The market continues broad and trading on a liberal scale.

The Amalgamated group led in both the reaction and the rally, and were the most prominent stocks in the trading. Amalgamated sold down to \$94 yesterday, recovering to-day. Boston & Montana brought \$32; Butte & Boston, \$67; Parrot, \$49; Arcadian, \$20. The Lake coppers showed well, Calumet & Hecla being quoted at \$810; Tamarack, \$287; Quincy, \$160; Osceola, \$77; Wolverine, \$46; Atlantic, \$26 1/2. The smaller Lake companies showed more sales and better prices than for many weeks, Copper Range being a special favorite. Among the miscellaneous coppers Utah Consolidated was \$34; British Columbia, \$18 1/2; Santa Fe, \$7 1/2 @ \$8.

The gold stocks were less in demand than the coppers, but some business was done. Centennial-Eureka sold at \$25 1/2; Cochiti, \$8 1/2. Merced was \$5 1/2 bid; Santa Ysabel, \$3 1/2 @ \$4; Melones, \$2. Sales of United States Mining were made at \$11 1/2.

Aetna Quicksilver was quoted at \$1 1/2, while Boston Quicksilver was held at \$3 1/2. Little has been done in these stocks for a long time.

In the general list United States Oil was quoted \$16 @ \$17. There were sales of Dominion Coal common at \$4, and New England Gas and Coke at \$16, a little below the highest price of a day or two ago. A new stock on the Exchange is the Dominion Iron and Steel Company, which was traded in for the first time this week. It opened at \$25 and advanced \$2, selling at \$27; to-day there was a further advance to \$30 1/2, closing strong.

A circular states the new Santa Ysabel Gold Mining Company, of Merced County, Cal., is organized with an authorized capital of 150,000 shares under Colorado laws. The old company had 130,000 shares, under Wyoming laws. In the reorganization \$1 per share was paid in on 130,000 shares, 20,000 new shares being retained in the treasury. The new superintendent, Mr. Gorrie, is an old Butte miner and has spent eight years on the Mother Lode of California. In a letter dated November 7th, the company states that all its outstanding notes have been paid, and there is on hand a cash balance of \$44,389. The officers are: Charles Pfaff, president; Walter B. Mosman, vice-president; John W. Belches, treasurer; Wilson S. Belches, assistant treasurer and assistant secretary. The following are directors: Charles Pfaff, Walter B. Mosman, Boyd B. Jones, John W. Belches, Simon Rothschild, Kalman Haas, Edward H. Mason, William F. Fitzgerald, John G. Wright.

Colorado Springs. Nov. 10.

(From Our Special Correspondent.)

The week closes with the mining stock markets in excellent shape. Prices have advanced materially all along the list while the volume

of trading has increased fully 50%. The advance has been too rapid to be long sustained and a reaction may be looked for in the near future. The rush is attracting the buying class who always get in when the markets are rising, and therefore any falling off in prices which may occur will in all probability be soon corrected by sheer impetus of oncoming trading.

Elkton's advance from \$1.89 1/4 to \$1.94 was one of the leading bull features of the week. The official report of the company's operations for the month of September show that that month's output was \$99,000. Portland oscillates between \$3.36 and \$3.40 a share, while mining circles are filled with reports that this mine is being sought out by English capital. Such report is emphatically denied by all the officers of the company. Isabella was again a disagreeable feature of the market this week. It dropped from 85c. to 67c. and recovered to 70c. to-day. There was heavy selling, aggregating 80,000 shares this week, which is quite unusual. The sales of the week are 5,041,000 shares. The weekly bank clearings are \$854,524, which shows a loss from last week.

**Salt Lake City. Nov. 10.**

For election week the volume of business in Utah mining shares held up well. Prices rule firm in the dividend class and a few other favorites, though the speculatives on the whole are weak. It is now assured that more exploration will be carried on than in the past season, which should help the mining share market. Sales for the 5 days of the week, on which the Exchange did business, are reported at 47,172 shares, which sold for \$44,292.

Consolidated Mercur is soft, thus far offerings exceed demand. Dalton well holds the advance. Daly-West continues to supply the interesting feature of the market, making a new high record, selling at \$23.55. Dexter holds at \$1. Eagle & Blue Bell is firm, doing business from 83c. to 85c. Grand Central has declared a dividend of 10c., or \$25,000, payable November 15th, and though it is affirmed that this will be a monthly happening for a considerable period, the shares fail to hold the recent advance. Horn Silver is higher and stronger, with inquiries from the East. Mammoth is weak and there is a report that dividends will be stopped for 2 months, if not longer. Yankee Consolidated has recovered to 9c. on the report that there is paying ore on its own ground.

Dividends paid to-day are: Silver King, \$75,000; Swansea, \$5,000; Rocco-Homestake—mines at Eureka, Nev.—\$4,500, or 1 1/2c. a share. This is the first dividend for the latter.

**San Francisco. Nov. 10.**

(From Our Special Correspondent.)

A little firmness early in the week soon gave place to declining quotations and light business. There was no news of any importance to excite interest.

Some quotations noted are: Consolidated California & Virginia, \$1.05; Gould & Curry, 83c.; Ophir, 82c.; Caledonia, 49c.; Mexican, 28c.; Yellow Jacket, 25c.; Hale & Norcross, 22c. For Standard Consolidated \$3.25 was bid, with no sales.

On the Producers' Oil Exchange a very satisfactory business is being done. The bidding this week has been active and the volume of transactions large. Investors are showing a great deal of interest in these stocks, and the prospect is for a lively market for some time to come. The dividend-paying stocks, which are increasing in number, attract special attention.

Some quotations noted are: San Joaquin, \$9.25; Home, \$4.55; Twenty-eight, \$2.25; Four Oil, 42c.; California Standard, 28c.; Hanford, 28c.; Caribou, 26c.; Petroleum Center, 20c. The special features of the market were Home Oil and San Joaquin Oil and Development Company.

**London. Nov. 3.**

(From Our Special Correspondent.)

In absence of any doings in the regular markets, the newly invented West African market continues to attract the attention of the professional speculator, though I do not think the general public take much interest in it. Some of the leaders of this market are influential men with plenty of money behind them and already some expensive prospecting parties have been organized, under reliable leadership, so if the Ashanti country is any good at all, it would seem to stand a good chance at present of coming to the front. The nature of the country and our comparative ignorance of its resources, however, make the speculation at present a mere gamble.

The market has been somewhat amused this week by the report of a company called the Consolidated Copper Company, Limited, a company which is not of so great importance as its name would indicate. The company is the third or fourth reconstruction of a concern that many years ago worked a property in Eberhardt, Nevada, and also properties in Corsica. The American properties were abandoned years ago, and the present report now says that it has been decided to dispose of the Corsican property as it

has been proved to be unpayable, and to acquire a new property in Mexico. In a postscript to the report, however, it is stated that the vein at the Corsican property has at last been struck and appears to be of great value. The public are somewhat mystified by this report, for if the new discovery is really so important it might have been worth the directors' while to rewrite the report, instead of sending out two contradictory statements in one envelope. The company has not a great following, so the incident is not of any importance.

The Indian mines have attracted some attention this week by the publication of a report by the Oregum Company, announcing the issue of further share capital. This company has been doing well lately and interim dividends for the current year at the rate of 30% per annum have already been paid. It has been found necessary to spend considerable sums on an air shaft for the 1,000-ft. level, equipping other shafts with necessary machinery and providing a hundred new head of stamps and cyanide plant. It is proposed to issue 26,500 new £1 shares at £3 each and so to raise £79,500. There is no doubt that the money will be readily forthcoming, if not from the present shareholders, certainly from the outside public, who are always ready to get Indian shares at reasonable prices.

With regard to the battle royal between Mr. Whitaker Wright and Mr. Kaufman for control of the Ivanhoe, I ought to mention that although Mr. Wright has partially yielded to his opponent's demands, he has no intention of abandoning the action at law by his London & Globe Finance Corporation against Mr. Kaufman for breaches of trust, secret commissions, etc., while he was agent of the corporation in West Australia. It is alleged that Mr. Kaufman played his own game instead of that of the corporation, his employer, and made big profits by bearing the stocks of the various companies the corporation was interested in. Though a great show of fight is now being shown by Mr. Wright, it is quite possible that eventually this action will be compromised and that the pot and kettle will cease to call each other black.

The position of Stratton's Independence, of Cripple Creek, on the London market has been the source of much disturbance in the minds of holders recently. Rumors have been passed around relating to the exhaustion of the mine and dwindling of the contents, and considerable blocks of shares have changed hands in consequence. The shipments are suspended at present by a strike and this fact also has been made the most of by professional speculators. Then, again, the appointment of Mr. John Hay Hammond as consulting engineer over the head of Mr. T. A. Rickard has been used by certain parties to mean that Mr. Rickard's estimates have been wrong and that he is being degraded in consequence. The fact is, however, that Mr. Hammond has been brought in at the request of the South African houses—Wernher, Beit & Co. and J. B. Robinson—who have recently gone in largely with the Venture Corporation and may practically be said to have absorbed it. The pending deal in the Camp Bird property shows that these South African houses provide the bulk of the capital required for the Venture Corporation's projects. As regards the exhaustion of the mine, there appears to be nearly \$7,000,000 of ore in sight and there is still a considerable area not yet developed, besides which the mine is not exhausted in depth. It is obvious, of course, that the present price of £2 for the shares is too high, but London always capitalizes a mine at a greater sum than its commercial value.

**Paris. Nov. 4.**

(From Our Special Correspondent.)

There is nothing new to report as to mining stocks, and our Bourse is in a condition of doubt. The fact is that the state of semi-panic which began with the Russian industrial crisis six months ago, and which has overcome the bourses of Vienna, Berlin and lastly Brussels, is threatening us also. Everyone is in doubt and fears to move, so that speculation is at a standstill, though no actual crisis can be recorded.

The causes of this condition are various. In part, it is the reaction from the great speculation of the past two years industrial stocks, which has especially affected Berlin and Vienna. In part also the locking up of a great amount of French and German capital in Transvaal mining stocks, which have been unproductive for over a year. The sudden cutting off of the supply of gold from the Transvaal had its effect also. The South African war and the anxiety over the Chinese complications have furnished their share. Lastly, though this is a minor cause, the failure of the companies holding concessions at the Exposition has been a vexatious disturbance to capitalists. The causes of the present condition are therefore complex, but the condition itself is none the less real.

In another week the Exposition will be really finished and the demolition of the temporary buildings will begin. We must admit that though the Exposition was great, from certain points of view it has been a failure. It has attracted few

foreigners and has brought less business to Paris than the Exposition of 11 years ago.

A strike of coal miners in the Pas-de-Calais causes some apprehension, and it is feared that it may extend through that district and the Nord. The miners' complaint is that the companies have required longer hours, in order to increase the output, and have refused to pay sufficiently for the overtime.

I hear of an extensive combination in Paris, which is formed by three parties or companies. One of these will have its headquarters in America and will be the purchasing agency for American coal. The second will have its offices probably at Marseilles, and will arrange the transportation, chartering vessels to carry coal and arranging as far as possible for return freights; while the third party will be the selling agent, with headquarters in Paris and branches in the larger cities. The main difficulty, of course, will be in the high freight rates. The new combination, it is said, has a large capital to work on.

It is stated that certain negotiations by agents of the Baltimore & Ohio Company for the establishment of a depot for American coal at Havre have fallen through, the authorities of that port being unable to furnish the accommodations needed. The company was planning to use steamers of the largest class.

There seems little doubt that American coal will become an important factor in our markets. Azote.

**DIVIDENDS.**

NAME OF COMPANY.	Latest Dividend.			Total to date.
	Date.	Per share.	Total.	
†Bethlehem Steel Pa.	Dec. 1	\$ .50	\$150,000	\$1,050,000
Boston & Mont. Con.	Nov. 20	15.00	2,250,000	20,750,000
Croesus, Cal.	Nov. 1	.08	15,200	127,300
*Daly-West, Utah	Nov. 15	.25	37,500	570,000
*Grand Central, Utah	Nov. 15	.10	25,000	691,250
Last Dollar, Colo.	Nov. 21	.02	30,000	120,000
Lehigh Coal & Nav'n	Nov. 27	1.50	430,995	18,516,999
National Salt, com.	Dec. 1	1.50	105,100	245,000
*N. Y. & Hond. Rosario	Nov. 19	.10	15,000	1,355,000
†Ohio & Ind. 'on Gas	Dec. 1	1.00	.....	.....
Standard Con., Cal.	Nov. 22	.10	20,000	3,979,226
Standard Oil of N. J.	Dec. 15	10.00	9,750,000	73,125,000
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....

\* Monthly. † Quarterly. ‡ Semi-annual.

**ASSESSMENTS.**

NAME OF COMPANY.	Loca- tion.	No.	Delinq.	Sale.	Amt.
Alta	Nev.	66	Dec. 6	Dec. 27	.05
Andes	Nev.	52	Dec. 14	Jan. 4	.05
Belcher	Nev.	66	Nov. 13	Dec. 4	.10
Best & Belcher	Nev.	72	Dec. 7	Dec. 28	.15
Ben Butler	Utah	6	Nov. 16	Dec. 6	.004
Bingham Placer	Utah	.....	Oct. 16	Nov. 17	.10
Bullion	Nev.	57	Nov. 15	Dec. 5	.03
Bunker Hill	Utah	.....	Dec. 6	Dec. 22	.004
California Borax	Cal.	.....	Nov. 19	.....	.75
Challenge Con.	Nev.	30	Nov. 20	Dec. 11	.10
Chollar	Nev.	53	Dec. 6	Dec. 27	.10
Con. Cal. & Va.	Nev.	16	Dec. 10	Dec. 10	.25
Crown Point	Nev.	80	Nov. 30	Dec. 21	.05
El Rey	Utah	2	Dec. 4	Dec. 21	.03
Goleta, Con	Cal.	2	Oct. 25	Nov. 24	.15
Gonyon	Utah	.....	Dec. 1	Jan. 2	.004
Gould & Curry	Nev.	92	Nov. 28	Nov. 29	.15
Hilda Gravel	Cal.	.....	Dec. 22	.....	.01
Jefferson	Utah	1	Nov. 20	Dec. 10	.006
Larkin	Cal.	8	Dec. 1	Dec. 24	.02
Live Oak Con.	Cal.	.....	Dec. 3	.....	.05
Mammoth Garfield	Cal.	.....	June 5	Dec. 1	.17 1/2
Mariposa Con'l & Mg.	Cal.	.....	Dec. 5	.....	10.00
Meteor	Utah	.....	Oct. 19	Nov. 21	.006
Mooney Con.	Cal.	.....	Dec. 10	.....	.20
Old Colony & Eureka	Utah	1	Nov. 13	Nov. 29	.004
Oscuela Con.	Cal.	10	Nov. 19	Dec. 10	.01
Ovman	Nev.	6	Dec. 11	Dec. 31	.05
Phenix Silver	Utah	.....	Nov. 13	Dec. 13	.006
Potosi	Nev.	57	Nov. 22	Dec. 12	.10
Ridge & Valley	Utah	1	Nov. 3	Nov. 19	.01
Sailor Con.	Cal.	.....	Dec. 5	.....	.01
Scorpion	Nev.	8	Oct. 26	Nov. 19	.03
Seg. Belcher & Mides	Nev.	26	Nov. 7	Nov. 27	.03
Shoebidge Bonanza	Utah	6	Dec. 5	Dec. 21	.008
Sierra Nevada	Nev.	120	Nov. 20	Dec. 10	.15
South Bingham	Utah	2	Nov. 1	Nov. 30	.01
Spanish Bar	Cal.	.....	Nov. 24	.....	.01
Star	Utah	.....	Nov. 7	Nov. 28	.02
Texas	Cal.	.....	Dec. 18	.....	.10
Union Con.	Nev.	60	Dec. 5	Dec. 26	.15
U. S. Grant	S. D.	9	Nov. 7	Nov. 24	.006 1/2
Valco	Utah	4	Nov. 22	Dec. 15	.05
Wandering Jew	Utah	5	Nov. 17	Dec. 5	.00 1/2
Yellow Jacket	Nev.	.....	Nov. 6	Dec. 19	.10

**ANNUAL MEETINGS.**

Name of Co.	Locat'n.	Date.	Place of Meeting.
Challenge Con.	Nev.	Nov. 17	San Francisco, Cal.
Cripple C. Con.	Colo.	Dec. 7	Denver, Colo.
*Holmes	Nev.	Dec. 19	San Francisco, Cal.
Ida May	Colo.	Nov. 28	Colorado Spgs., Colo.
Mexican	Nev.	Dec. 5	San Francisco, Cal.
N. Y. & Hond. R. C. Am.	R. C. Am.	Dec. 14	45 Broadway, N. Y.
Occidental Con.	Nev.	Nov. 20	San Francisco, Cal.
*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, Anaconda, and others with columns for location, par value, and prices for various dates from Nov. 9 to Nov. 15.

BOSTON, MASS.†

Table of stock quotations for Boston, Mass., listing companies like Adventure Con., Allouez, and others with columns for shares issued, par value, and prices for various dates from Nov. 8 to Nov. 14.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stock quotations, listing companies like Am. Sm. & Ref., Am. S. & W. Con., and others with columns for par value and prices for various dates.

Total sales, 932,832.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, Cal., listing companies like Belcher, Caledonia, and others with columns for location, par value, and prices for various dates.

CALIFORNIA OIL STOCKS.\*

Table of California oil stock quotations, listing companies like Blue Goose, Buckhorn, and others with columns for number of shares, par value, and prices for various dates.

\* Producers' Oil Exchange, San Francisco. Total sales, 29,369 shares.

PHILADELPHIA, PA.‡

Table of stock quotations for Philadelphia, Pa., listing companies like Am. Alkali, Am. Cement, and others with columns for location, par value, and prices for various dates.

† Official quotations Boston Stock Exchange. Total sales, 218,241 shares. ‡ Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia.

SALT LAKE CITY, UTAH.

Nov. 10.

Table of stock quotations for Salt Lake City, Utah, listing companies like Ajax, Alice, and others with columns for shares, par value, bid, asked, and sales.

TORONTO, ONT.

Table of stock quotations for Toronto, Ont., listing companies like Ontario, Golden Star, and others with columns for par value and prices for various dates.

Total shares sold, 93,100.

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo., listing companies like Acacia, Alamo, Am. Con., Anaconda, etc., with columns for Par val., Nov. 3, Nov. 5, Nov. 6, Nov. 7, Nov. 8, Nov. 9, and Sales.

Colorado Springs Mining Stock Exchange. Total sales, 1,362,302 shares. \*Holiday.

MONTREAL, CANADA.

Table of stock quotations for Montreal, Canada, listing companies like Big Three, California, Can. Gold Fields, etc., with columns for Par val., Week, Nov. 13, and Sales.

\* Montreal Stock Exchange. Total sales, 62,900 shares.

MEXICO.

Table of stock quotations for Mexico, listing companies like Durango, Barrados y Cab., Candelaria de Pan., etc., with columns for No. of shares, Last div'd, and Prices.

DENVER, COLO.

Table of stock quotations for Denver, Colo., listing companies like Acacia, Anaconda, Arg. J., Dictator, etc., with columns for Par val., Nov. 3, Nov. 5, Nov. 6, Nov. 7, Nov. 8, Nov. 9, and Sales.

Official Quotations Denver Stock Exchange. Total sales, 174,000 shares.

SPOKANE, WASH.

Week Nov. 9.

Table of stock quotations for Spokane, Wash., listing companies like Crystal, Deer Trail Con., Evening Star, etc., with columns for Par val., Nov. 3, Nov. 5, Nov. 6, Nov. 7, Nov. 8, Nov. 9, and Sales.

PARIS.

Oct. 25.

Table of stock quotations for Paris, listing companies like Acieries de Creusot, Firminy, Fives-Lille, etc., with columns for Country, Product, Capital Stock, Par value, Latest divs., and Prices.

LONDON

Nov 2

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

DIVIDENDS.

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

Main table containing dividend information for Gold, Silver, Copper, Zinc, Lead, and Quicksilver companies. Columns include Number, Name and Location of Company, Authorized Capital Stock, Shares Issued, Dividends (Paid, Total to Date, Latest), and Number, Name and Location of Company, Authorized Capital Stock, Shares Issued, Dividends (Paid, Total to Date, Latest).

COAL, IRON AND OTHER COMPANIES.

Table containing dividend information for Coal, Iron, and other companies. Columns include Number, Name and Location of Company, Authorized Capital Stock, Shares Issued, Dividends (Paid, Total to Date, Latest), and Number, Name and Location of Company, Authorized Capital Stock, Shares Issued, Dividends (Paid, Total to Date, Latest).

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

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

Abrasives—			Cust. Meas. Price.			Cust. Meas. Price.			Cust. Meas. Price.			Cust. Meas. Price.		
Carborundum, f.o.b.			Borax.....	lb. #	07 1/4 @ 07 1/4	Magnesium—			Silver—			Chloride.....	oz.	\$0.65
Niagara Falls, Powd.			Calcined.....	"	.40	Nitrate.....	lb.	\$0.60	Nitrate.....	"		Nitrate.....	"	.40
F. F. FFF.....	lb.	\$0.10	Bromine.....	"	.40	Sulphate.....	"	.01 @ 01 1/4	Oxide.....	"		Oxide.....	"	.85 @ 1.10
Minute No. 1.....	"	.15	Cadmium—Metallic.....	"	1.40	Crude, pow'd	"		Slate—Ground, black.....	sh. ton	7.50 @ 8.75	Ground, red and olive.....	"	20.00
No. 15.....	"	1.00	Sulphate.....	100 lbs.	2.00 @ 2.50	70 @ 75% binoxide.....	"	.01 1/4 @ 01 1/4	Sodium—Acetate, com'l.....	lb.	.04 1/2	Bichromate.....	"	.06 1/2
Corundum, N. C.....	"	.07 @ .10	Calcium—Acetate, gray.....	"	1.55	75 @ 85% binoxide.....	"	.01 1/2 @ 02 1/2	Chlorat., com'l.....	"	.08 1/4 @ 08 1/2	Hyposulphite, Am.....	100 lbs.	1.75
Chester, Mass.....	"	.04 1/2 @ .05	Carbide, ton lots, f. o. b.	sh. ton	75.00	85 @ 90% binoxide.....	"	.02 1/2 @ 03 1/4	German.....	"	2.10 @ 2.20	Nitrite, 96 @ 98%.....	lb.	.08
Crushed Steel, f. o. b.	"	.05 1/2	Niagara Falls, N. Y.....	sh. ton	.90	90 @ 95% binoxide.....	"	.02 3/4 @ 05 1/2	Peroxide.....	"	.45	Phosphate.....	"	.02 1/2
Emery, Turkish flour,	"	.03	Carbonate, ppt.....	lb.	.05	Carbonate.....	"	.16 @ .20	Prussiate.....	"	.14 1/2	Silicate, conc.....	"	.05
in kegs.....	"	.04 1/2 @ .05	Chloride, com'l.....	100 lbs.	1.00	Chloride.....	"	.04	com'l.....	"	.02 1/4	Sulphate, com'l.....	100 lbs.	.85
Grains, in kegs.....	"	.03	Best.....	"	.05	Ore, 50% Foreign.....	unit	.30	Gran., puri'd.....	lb.	.08	Sulphide.....	"	.01 1/2
Naxos flour, in kegs.....	"	.03	Sulphite.....	lb.	.05	Domestic.....	"	.30	Sulphite.....	"	.02 1/2	Tungstate, com'l.....	"	.35
Grains, in kegs.....	"	.03	Cement.....	"	.05	Marble—Flour.....	sh. ton	5.50 @ 6.00	Strontium—Nitrate.....	"	.06 1/2 @ 06 3/4	Sulphur—Roll.....	100 lbs.	1.75
Chester flour, in kegs.....	"	.03	Portland, Am., 400 lbs.....	bbl.	1.50 @ 2.00	Fine.....	"	.05 @ 06	Flour.....	"	1.80	Flowers, sublimed.....	"	2.05
Grains, in kegs.....	"	.04 1/2 @ .05	Belgium.....	"	1.95 @ 2.20	Sheets, N. C., 2x4 in.....	"	.30	Talc—N. C., 1st grade.....	sh. ton	13.75	N. Y., Fibrous.....	sh. ton	8.00 @ 9.00
Peekskill flour, in kegs.....	"	.01 1/2	English.....	"	2.45 @ 2.55	3x3 in.....	"	.80	French, best.....	100 lbs.	1.25	Italian, best.....	"	1.75
Grains, in kegs.....	"	.02 1/2	German.....	"	2.30 @ 2.70	3x4 in.....	"	1.50	Tar—Regular.....	bbl.	2.20 @ 2.25	Oil barrels.....	"	4.15 @ 4.30
Crude, ex-ship, N. Y.....	"	22.00 @ 24.00	"Rosendale," 300 lbs.....	"	.95	4x4 in.....	"	2.00	Tin—Bichloride.....	lb.	.09 1/2 @ 10	Crystals.....	"	.24 1/2
Kuluk (Turkey).....	lg. ton	26.50 @ 30.00	Sand cement, 400 lbs.....	"	1.55 @ 1.95	6x6 in.....	"	3.00	Muriate, 36°.....	"	.09	52°.....	"	.15
Abbott (Turkey).....	"	32.00	Slag cement, imported.....	"	1.65	Scrap, f.o.b., Dillsboro,	sh. ton.	25.00	Oxide, white, ch. pure.....	"	.41	Uranium—Oxide.....	"	2.25 @ 3.00
Naxos (Greek) h. gr.....	"	.01 1/2 @ .02	Ceresine—			N. C.....	"	20.00	Zinc—Metallic, ch. pure.....	"	.07 1/2 @ 09 1/4	Carbonate.....	"	.15
Pumice Stone, Am. powd.....	lb.	.01 1/2 @ .02	Orange and Yellow.....	lb.	.11 1/2	Mineral Wool—			Chloride.....	"	.07 3/4 @ 07 3/8	Dust.....	"	.02 @ 02 1/4
Italian, powdered.....	"	.01 1/2	White.....	"	.13 1/2	Slag, ordinary.....	sh. ton	20.00	Sulphate.....	"	.02 @ 02 1/4			
Lump, per quality.....	"	.04 @ .04	Chalk—Lump, bulk.....	sh. ton	2.15	Selected.....	"	25.00						
Rotenstone, ground.....	"	.02 1/2 @ .03	Ppt. per quality.....	lb.	.04 @ .07	Rock, ordinary.....	"	32.00						
Lump, per quality.....	"	.05 @ .14	Chlorine—Liquid.....	"	.30	Selected.....	"	40.00						
Rouge, per quality.....	"	.10 @ .30	Water.....	"	.15	Monazite—32%.....	"	140.00						
Steel Emery, f.o.b. Pitts-	"	.07	Chrome Ore			Nickel—Oxide, No. 1.....	lb.	1.00						
burg.....	"	.07	(50% ch.) ex ship, N. Y.....	lg. ton	22.00	No. 2.....	"	.60						
Acids—Acetic, 30% pure.....	100 lbs.	3.50	Sand, f.o.b. Baltimore.....	"	33.00	Sulphate.....	"	.20 @ .21						
30% ch. pure.....	"	6.00	Bricks, f.o.b. Pittsburg, M	"	175.00	Oils—Black, reduced 29 gr.....								
80% pure.....	"	7.50	Clay, China—Am. com.....			25 @ 30 cold test.....	gal.	.09 1/4 @ 10 1/4						
Benzoic, English.....	oz.	.13	ex-dock, N. Y.....	lg. ton	8.00	15, cold test.....	"	.10 1/4 @ 11 1/4						
German.....	lb.	.45	Am. best, ex-dock, N. Y.....	"	9.00	Zero.....	"	.11 1/4 @ 12 1/4						
Boracic, cryst.....	"	.10 1/2	English, common.....	"	12.00	Summer.....	"	.09 1/4 @ 09 3/4						
Powdered.....	"	.11	Best grade.....	"	17.00	Cylinder, dark steam ref.....	"	.08 1/4 @ 10 1/4						
Carbolic, crude, 60%.....	gal.	.27	Fire Clay, ord.....	sh. ton	4.00	Dark filtered.....	"	.11 1/4 @ 16 1/4						
Cryst, 37% drums.....	lb.	.23	Slip Clay.....	"	5.00	Light filtered.....	"	.14 1/4 @ 17 1/4						
Liquid, 95%.....	gal.	.45	Coal Tar Pitch.....	gal.	.08	Extra cold test.....	"	.21 1/4 @ 26 1/4						
Carbonic, liquid gas.....	lb.	.12 1/2	Cobalt—Carbonate.....	lb.	1.75	Naphtha, crude 68 @ 72°	bbl.	.16 @ .21						
Chromic, crude.....	"	.20	Nitrate.....	"	1.50	"Stove".....	gal.	.50 @ .63						
Chem. pure.....	"	.50	Oxide—Black.....	"	2.28 @ 2.36	Boiled.....	"	.65						
Hydrochloric, ch. pure.....	"	.07	Gray.....	"	2.28 @ 2.40	Calcutta, raw.....	"	.76						
Hydrofluoric, 36%.....	"	.03	Small, blue ordinary	"	.25	Graphite, lubricating,	"	.10						
48%.....	"	.05	Best.....	"	.30	Am. dry.....	lb.	.12						
Nitric, chem. pure.....	"	.09	Copperas.....	100 lbs.	72 1/2	In oil.....	"	.08 1/2 @ 10						
Sulphuric, chem. pure.....	"	.07	Copper—Carbonate.....	lb.	.18	Axle grease.....	"	.05 @ 06						
Sulphurous, liquid anhy.....	"	.08	Nitrate, crystals.....	"	.35	Wood grease.....	"	.12						
Tartaric, cryst.....	"	.31 1/2	Oxide, com'l.....	"	.19	Ozokerite—Foreign.....	"	.12						
Powder.....	"	.32	Cream of Tartar—Crys.....	"	.23 1/4 @ 23 3/4	Chrome green, common	"	.05						
Alcohol—Grain.....	gal.	2.43	Powdered.....	"	.23 1/4	Pure.....	"	.20						
Refined wood, 95 @ 97%.....	"	.75 @ .80	Cryolite.....	"	.06 1/2	Yellow, common.....	"	.10						
Purified.....	"	1.50	Explosives—			Best.....	"	.25						
Alum—Lump.....	100 lbs.	1.75	Blasting powder, A, 25 lb. keg	"	2.50	Silica Graphite, thick.....	"	.12						
Ground.....	"	1.85	Blasting powder, B.....	"	1.25	Thinned.....	gal.	1.15						
Powdered.....	"	3.00	"Rackarock," A.....	lb.	.25	Lampblack, com'l.....	lb.	.03						
Chrome, com'l.....	"	2.75 @ 3	"Rackarock," B.....	"	.18	Refined.....	"	.07						
Aluminum—Nitrate.....	lb.	1.50	Judson R.R. powder.....	"	.10	Litharge, Am. powd.....	"	.05 1/2 @ .06						
Oxide, com'l, common.....	"	.06 1/2	Dynamite (20% nitro-	"	.18	English flake.....	"	.09 1/2						
Best.....	"	.20	glycerine).....	"	.13	Glassmakers, Foreign	"	.06 1/2						
Pure.....	"	.80	(30% nitro-glycerine).....	"	.14	Metallic, brown.....	sh. ton	19.00						
Hydrated.....	100 lbs.	2.60	(40% nitro-glycerine).....	"	.15	Red.....	"	16.00						
Sulphate, pure.....	"	1.50 @ 1.75	(50% nitro-glycerine).....	"	.16 1/2	Ocher, Am. common.....	"	9.25 @ 10.00						
Com'l.....	"	1.15 @ 1.30	(60% nitro-glycerine).....	"	.18	Best.....	"	21.25 @ 25.00						
Ammonia—Aqua, 16°.....	lb.	.08	(75% nitro-glycerine).....	"	.21	Dutch, washed.....	lb.	.04 1/2						
18°.....	"	.09 1/4	Glycerine for nitro	"	.14 @ 14 1/2	French, washed.....	"	.01 1/4 @ 02 1/4						
20°.....	"	.09 3/4	(32 2-10° Be.).....	sh. ton	8.00 @ 9.00	Orange mineral, Am.....	"	.08 @ 08						
25°.....	"	.05 1/2	Feldspar—In bulk.....	"		Foreign, as to make.....	"	.08 @ 10 1/2						
Ammonium.....	"	.52 @ .53	Am. lump, 1st grade.....	"	12.40	Paris green, pure, bulk.....	"	.06 1/2						
Carbonate lump.....	"	.08 1/4 @ 08 1/4	2d grade.....	"	11.90	Red lead, American.....	"	.08 1/2						
Powdered.....	"	.09 1/4 @ 09 1/4	Gravel & crushed, 1st g.....	"	11.40	Foreign.....	"	.08 1/2						
Muriate, gran.....	"	.06 1/2	2d grade.....	"	10.90	Shellac, "D. C.".....	"	.28						
Lump.....	"	.09 1/4	Ground, 1st grade.....	"	15.90	Native.....	"	.15						
Nitrate, white, pure (99%).....	"	.10 1/2	Foreign, lump.....	"	8.00 @ 12.00	Turpentine, spirits.....	gal.	.41 1/2 @ .42						
Phosphate, com'l.....	"	.12	Ground.....	"	11.50 @ 14.00	Ultramarine, best.....	lb.	.25						
Chem. pure.....	"	.60	Fuller's Earth—Lump, 100 lbs.	"	.75	Vermilion, Amer. lead.....	"	14 @ 15						
Antimony—Glass.....	"	.30 @ .40	Powdered.....	"	.85	Quicksilver, bulk.....	"	.64						
Needle, lump.....	"	.05 1/2 @ .06	Refined lump.....	"	1.25	English, imported.....	"	.80						
Powdered, ordinary.....	"	.05 1/2	Graphite—Am. f. o. b.			English, domestic.....	"	.74						
Best.....	"	.08 1/2	Fulverized.....	sh. ton	8.00	White lead, Am., dry.....	"	.05 1/2						
Oxide, com'l white, 95%.....	"	.09 1/2	German, lump.....	lb.	.01 1/4	Whiting, common.....	100 lbs.	.40						
Com'l white, 99%.....	"	.12	Fulverized.....	"	.01 1/2 @ 02	Gilders.....	"	.54						
Com'l gray.....	"	.16	Ceylon, common.....	"	.08 1/2	Zinc white, Am. ex. dry	lb.	.04 1/4 @ 04 3/4						
Sulphuret, com'l.....	"	.16	Fulverized.....	"	.06 @ .10	American, red seal.....	"	.07 1/4 @ 07 3/4						
Arsenic—White.....	"	.04 1/2 @ 04 5/8	Italian, pulv.....	"	.01 1/4	Green seal.....	"	.07 1/4 @ 08						
Red.....	"	.07 1/4 @ 07 3/4	Gypsum—Ground.....	sh. ton	8.00 @ 8.50	Foreign, red seal, dry	"	.06 1/4 @ 08 1/4						
Asphaltum.....			Fertilizer.....	"	7.00	Green seal, dry.....	"	.06 1/4 @ 08 1/4						
Ventura, Cal.....	sh. ton	32.00	Rock.....	lg. ton	4.00	Potash—Caustic, ord.....	"	.04 1/2 @ .05						
Cuban.....	lb.	.01 1/2 @ 03 1/4	English and French.....	14.00 @ 16.00		Elect. (90%).....	"	.06 1/2						
Egyptian, crude.....	"	.05 1/2 @ 06	Infusorial Earth—Ground.			Bicarbonate cryst.....	"	.08 1/4						
Trinidad, refined.....	lg. ton	35.00	American, best.....	"	20.00	Powdered or gran.....	"	.14						
San Valentino (Italian).....	"	15.00	French.....	"										