THE ENGINEERING AND MINING JOURNAL AND COAL

(Published Every Saturday at 253 Broadway, New York.)
Entered at the Post-Office of New York, N. Y., as Second Class Mail Matter.

VOL. LXXI. JANUARY 12, 1901. No. 2.

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THE SCIENTIFIC PUBLISHING CO., Publishers.

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REMITTANCES should be made by bank drafts, post-office orders or express money orders on New York, payable to the Scientific Publishing Co.
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Main Office: 253 Broadway (P. O. Box 1833), NEW YORK.

Telephone Number, 3,095 Cortlandt.
New York Cable Address—"ROTHWELL." (Use McNeill's or A B C 4th Edition Code.
London Cable Address—"PULCINETTO." " " "

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English subscriptions to the JOURNAL may be paid at the London Office at the rate of $7 = £1 8s. 9d.; the publications of the Scientific Publishing Company may be bought at the rate of 4s. 2d. to the dollar, net.

CONTENTS.

The tendency to compete with the so-called trusts and combines is again illustrated by the statement that the Carnegie Steel Company is about to erect a plant for making tubes and pipes on a large scale. In this case, of course, there is no idea entertained of selling out to the combination. It is simply a business proposition, the Carnegie Company doubtless realizing that a part of its steel production can be marketed profitably in the form indicated. It is altogether probable that we shall see a great expansion of competing plants during the next year or two. Capital is abundant, and there are plenty of capable men ready to undertake the management of new plants.

The entrance of the Commonwealth of Australia into existence with the new year deserves especial mention in view of the importance of the new State from a mining point of view. There are few countries in which mining forms so large and important a part of the national wealth and resources as in Australia; and the union of the colonies will doubtless have a favorable effect on their mineral industries, as on all others. Uniformity of tariff and patent legislation will be a great advantage, and others will be manifest in time. There is great growth and prosperity before the new Commonwealth, and its mineral industry will contribute a full share of the gain.

The death of Lord Armstrong on December 27th has removed the last of the three "grand old men" of the steel industry of Great Britain. Sir Joseph Whitworth died some years ago, and Sir Henry Bessemer more recently. No one came within measurable distance of these three in their influence in the production and consumption of steel in Great Britain. Though both Armstrong and Whitworth were popularly identified with their engines of destruction, yet Armstrong was a great engineer and shipbuilder and inventor of the modern system of transmission of power by water, while Whitworth was the pioneer in the production of accurate machine tools. All three men were noted for their combination of scientific knowledge with business ability.

Coal exports in November, 1900, were smaller than in 1899, the falling off being due to very light shipments of anthracite. For the 11 months ending November 30th there was a decrease of 59,135 tons in the exports of anthracite; one of the results of the miners' strike in Pennsylvania. On the other hand, exports of bituminous coal, which were 5,639,836 tons in 1900, exceeded those of the preceding year by 1,995,157 tons. A large part of this was made up by a gain of 911,795 tons in the exports to Canada. Shipments to Europe reached a total of 591,083 tons, against 23,272 tons in 1899. Nearly all of the increase was in exports to France and the Mediterranean countries, Germany taking only 10,756 tons. The coal sent to Europe was practically all bituminous coal. With the increasing quiet of trade abroad, a decrease in our exports may be anticipated.

Exports of iron and steel, including machinery, from the United States in the 11 months ending November 30th are valued, by the Treasury Department returns, at $119,604,848, this sum comparing with $95,459,545 in 1899, and $74,722,161 in 1898. As the total exports of manufactures in 1900 amounted to $409,072,846, those of iron and steel constituted 29.2 per cent. of the value of manufactured goods. They formed 9.1 per cent. of the total values of the exports. Pig iron shipments were large in November, and for the 11 months reached a total of 257,265 tons, being 40,656 tons more than in 1899, and 39,469 tons more than in 1898. The quantity of rails exported in 1900 was 341,016 tons, which was 95,396 tons more than in 1899. The only other marked increase was in bars, of which 73,045 tons were sent abroad in 1900, against 28,868 tons in the preceding year. The indications are that the totals for the full year will show still further gains.

The industrial depression now prevailing in Germany and other European countries will have an unfavorable effect on the coal trade. The decreasing demand for coal and the resulting lower prices will operate against the growth in exports from this country. There is still, however, an opportunity to establish a trade, though our coal exporters will have to meet more active competition than they have had for the past few months. Naturally the European coal operators resist any reduction in prices. The Belgian and German syndicates are making strong efforts to maintain the rates which they have been receiving for coal, and will continue to do so. They will have to give way, however, unless trade improves. Our coal exporters will be able to meet these conditions to a certain extent, and we do not think that they will withdraw from the competition without an effort.

The London stock market seems to be gradually recovering from the collapse of the London & Globe Corporation, and it is even intimated that arrangements have been made by which that company will be put

upon its feet again. Many influential people are interested in preventing anything like a panic, and it is quite probable that some of them have come to the assistance of the shaky concern. At any rate, matters have quieted down and the market has been tided over the trouble tempo raarily; though it is quite probable the relief is not lasting. Those readers who have followed our London correspondence will understand what a complicated structure had been built up by the parties concerned in the London & Globe, and how far the consequences of its total failure might extend.

Incidentally, we may say that it is a matter of much regret that a man of the high reputation of Lord Dufferin has allowed himself to be drawn into prominent connection with the enterprises of the class which Whitaker Wright and his associates have been launching on the London market. It is true that he proved his sincerity by investing his own money; but his name has been used to draw in outsiders, and the whole affair seems to make a very regrettable ending to an honorable career.

THE ARIZONA, EASTERN & MONTANA.

In the "Engineering and Mining Journal" for February 10th and March 10th, 1900, and at various other times, we called attention to the operations of the Arizona, Eastern & Montana Mining and Smelting Company in a way which fully warned the investing public and brought out strongly worded denials from parties connected with that company. We have carefully watched the course of events since that time, and it is quite clear that our statements were fully justified. The stockholders, who bought shares in the company on the strength of its gorgeously worded advertisements and on solicitation by agents employed by the company, have lately formed a committee to protect themselves, and to try and save something from what seems to be a total wreck. It is claimed that over $500,000 was put into the company by those who bought its stock, though others say that this is an exaggeration, and that $375,000 is nearer the actual amount. The smaller sum is far too great to be involved in such a transaction.

The company claimed to own several mining claims, the most important of which—and probably the only one of any value at all—was the Lone Pine, in Yavapai County. Our correspondent, under the dates referred to, showed that it was doubtful whether the company owned anything at all, except some options on claims of more than doubtful value. It appears, however, that the company did go through the form of purchasing the Lone Pine Claim, but left it subject to a mortgage for $60,000, held by Mrs. Henry B. Clifford, wife of a well-known operator in Arizona prospects. Our news columns show that the Lone Pine was recently sold under foreclosure of this mortgage for a trifling sum; that what ownership the Arizona, Eastern & Montana Company had in the property is lost, unless it is redeemed within the statutory time—six months from the date of sale. Of this there does not seem to be the slightest probability, unless the stockholders are willing to advance more money on the chance of getting something back.

One moral of this little story is that a big advertisement and active agents can sell almost any mining stock, whether it is based upon any value or not. Once started, it is easy enough to increase the demand by paying a dividend or two out of the money received for stock. It is very unfortunate for honest companies and honest investors.

Another moral is that when the "Engineering and Mining Journal" denounces a so-called mining enterprise as unworthy of confidence it is well for investors to withhold their money. We do not take such action without good grounds, as results have shown again and again.

CONSOLIDATION IN THE ANTRACITE COAL TRADE.

The movement toward still further consolidation in the anthracite coal trade, for which preparations have really been in progress for some time, was brought prominently into public notice near the close of December when the purchase of the Pennsylvania Coal Company by the Morgan interest and its transfer to the Erie were announced. This week another important step is made public, the purchase by Mr. Morgan of the controlling interest in the Central Railroad of New Jersey. This interest has been held by a few men in New York, who have managed the road for a number of years back. It was practically the only important company which might be called independent of the Morgan-Vanderbilt combination, with the exception of the New York, Ontario & Western.

The New Jersey Central road handles about 5,500,000 tons of anthracite yearly, of which over half is produced from collieries which it controls through its ownership of the Lehigh & Wilkes-Barre Coal Company. The business of that company has not been profitable, since it stands in the same class with the Lehigh Valley Coal Company and the Philadelphia & Reading Coal and Iron Company, which bought anthracite lands at high prices. The Central Railroad, however, has been fairly profitable, its coal earnings being supplemented by a large general freight traffic and passenger business. It is announced that the road will be turned over to the Reading Company under a lease, and will be operated by that company. There are already close traffic relations between the two companies. It will be remembered that the New Jersey Central was leased to the Reading once before, when Mr. A. A. McLeod was president of the latter company. That gentleman projected the consolidation of the anthracite trade which is now going on, but the Reading's financial position was too weak, and his plans and leases fell through.

With this new acquisition and the final purchase by Mr. Morgan of the Packer stock in the Lehigh Valley, on which he has long held an option, the party which he represents controls about 65 per cent. of the total anthracite output. Moreover, in two of the remaining companies—the Delaware & Hudson and the Delaware, Lackawanna & Western—the Vanderbilt holdings of stock are large enough to secure the working of those companies in harmony with the others. The Pennsylvania Railroad Company, under its present management, can also be relied upon to make no trouble in the trade. The New York, Ontario & Western, while it remains independent, controls only about 4 per cent. of the total anthracite tonnage, and has never shown any disposition to disturb the trade. The same may be said of the Lehigh Coal and Navigation Company, which is now the only important independent operator of collieries which is not also a transportation company.

It may thus be considered an accepted fact that the anthracite trade is now under the control of a single interest, and will be managed in a very different fashion from that of former years. Of course, a great deal of nonsense has been written about the power of the combination to make great advances in the price of coal and to force whatever profit it may see fit out of the helpless consumers. That prices will be better and more evenly maintained than in the past, there is no doubt; but there are two important factors which will aid in limiting and controlling them. One is the competition of bituminous coal for manufacturing purposes, which is already of great importance; the other is the probability of the substitution of gas for domestic fuel in the large cities where anthracite coal now finds its most important market. The successful beginning made in Boston can be imitated in New York and elsewhere. The competition of fuel gas furnished by improved plants is that for which the anthracite companies have to look out in the future. We believe that the parties now controlling the trade are fully aware of this, and know that any attempt to exact exorbitant profits will be followed by competition which may result in leaving them no profit at all. The new anthracite control is not likely to risk this, if it can be avoided as it can be, if a moderate and sensible polisy is adopted.

NEW PUBLICATIONS.

"Traction Electrique." By Eric Gerard, Paris, France; Gauthier-Villars. Pages, 136; illustrated. Price (in New York), $1.25.

This is a treatise on electric traction, prepared in the first place for the use of students. The various problems presented are treated generally in a mathematical way and with the use of many illustrations. The general subject of the application of electricity to traction is first discussed. The principles thus laid down are applied to the study and analysis of the various systems in use for street railroads, which are carefully treated in turn. The question of the application of electric power on our present steam railroads is then studied. Finally the cost of electric traction is considered, with the different elements which serve to make it up. The general treatment of the subject is more analytic and mathematical than we are accustomed to see, following the French method.

"Poor's Manual of the Railroads of the United States." New York; H. V. and H. W. Poor. Pages, 1,562. Price, $10.

"Poor's Manual" has in the course of years grown to be as nearly indispensable to railroad men and bankers as "The Mineral Industry" is to those interested in mining and metallurgy. The two books resemble each other in many points. Both are the results of private enterprise, and both have come to be recognized as authorities in their respective fields; while their presentation of facts and statistics is made far in advance. Thus, "Poor's Manual" gives us in July more extensive statements of railroad operations than the report of the Interstate Commerce Commission, which is published a year later. To its columns everyone turns for information on railroads. This is given in condensed form, for individuals and companies' benefit. Long use has given readers some appreciation of both the value of the book and the labor required to compile it.

A very interesting part of the book is the general review which comes out with and as part of it. In addition to the general statistics, showing the total capital stock, debt, assets, earnings, traffic, etc., there are a number of tables, giving the operating results and traffic on the different roads. To this are added some special tables, such as those giving information about the reorganization of companies, the transfer of lines to other corporations, etc.

This year the introduction contains also an interesting retrospect of

the course of railroad construction and development in the United States.

It is hardly possible to criticise a book so well known and so generally used as "Poor's Manual." It is enough to say that it is indispensable and that it has no rival.

"Diamond Drilling for Gold and Other Minerals." By G. A. Denny. London, England; Crosby Lockwood & Sons. Pages, 160; illustrated. Price, $5.

The greater part of this work was written in the Transvaal, where the author has had extensive experience in drilling. It is largely based upon the records of that experience, and was primarily intended for the use of engineers and drillers operating in South Africa. It contains, however, much that is of general interest and application. With regard to machinery, while not wishing to discriminate, he has referred chiefly to those forms of drill which he has used, and with which he is familiar. There are 13 chapters, the first being introductory and the second treating generally of the applicability of diamond drilling to gold-bearing deposits. The third describes hand drills, the fourth power drills, while the fifth relates to the operation of both classes of drills. The sixth sets forth the incidental operations in diamond drilling. The important subject of the deflection in bore-holes is treated in the seventh chapter. The eighth relates of the cost of drilling. In the ninth the methods of computing the dip and strike of a formation are considered. The tenth has for its subject drilling by contract. The remaining three chapters describe the Bullock and the Sullivan drills and the apparatus used in connection with them. Finally the appendix gives various particulars relating to different drills, and the special tools and supplies required with them. This is meant for the use of intending purchasers. There are a number of illustrations, chiefly of Bullock and Sullivan drills, showing their construction and different parts.

The computation of costs is based upon South African conditions and practice, and would require revision for other countries where cost of labor and other points vary from those found in the Transvaal. The extending use of the diamond drill and the disposition to use it more and more in exploration, make this a useful book. It is carefully written and much of it is of general interest. A comparison with practice and costs in other countries would have been useful to the reader. This, however, can be supplied by comparatively simple calculation, if one wishes to ascertain the cost of any particular work.

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.

"Connecticut. Twelfth Annual Report of the Storrs Agricultural Station. Storrs, Conn.; printed for the station. Pages, 224.

"Statistical Bulletin of Roumania, 1900-1901." Bucharest, Roumania; issued by the Ministry of Agriculture and Commerce. Pages, 132.

"Annual Report of the Director of the Bureau of the American Republics." W. W. Rockhill, Director. Washington; Government Printing Office. Pages, 56.

"Movement of the Population of Roumania." By Leonida Colescu. Bucharest, Roumania; issued by the Ministry of Commerce and Agriculture. Pages, 56.

"The Design and Construction of Oil Engines." By A. H. Goldingham. New York; Spon & Chamberlain, and London; E. & F. N. Spon, Limited. Pages, 196; illustrated. Price, $2.

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.

The Riecken Process.

Sir: In the letter which you published in your issue of December 8th some sentences of mine have been omitted by you which alter its sense very materially, and without which the letter is apt to mislead. I dealt with this process in relation to existing methods in Western Australia, and after the estimate of cost I said as follows: "Advantages of the Riecken Process over existing methods on the Westralian field. The method at present employed for the treatment of oxidized ores is to crush them wet," etc., and then pointed out the various defects to be overcome in the treatment of the Westralian ores. Unfortunately you have left out the above quoted heading and started, after quoting the cost, simply with "Oxidized ores are crushed," so that as the letter now reads it would appear that these defects are also defects of the Riecken Process, whereas, as a matter of fact, they are entirely overcome by it. Without the omitted qualifying sentences the letter is not clear, and I therefore request you to correct this error in your next issue.

I would also like to point out that the costs given refer to prices prevailing in Western Australia, where everything is very high, coal, for instance, $10 per ton, and labor and everything else in proportion. For America the costs would be greatly reduced.

Mr. Hinman has been eminently successful with the plant in Western Australia, which has now been running for about ten days. Notices of his successful operation have appeared in various papers.

Henry R. Cassel.

London, Dec. 19, 1900.

[As our correspondent seems to think it necessary, we publish his correction; but we do not think that the first letter, as published, would mislead anyone disposed to read it carefully.—Editor E. & M. J.]

Stratton's Independence.

Sir: On my return from London I have read the editorial on the Independence matter appearing in your issue of December 15th. May I be permitted to refer to it in order to remove a possible misunderstanding of Mr. Hammond's action? When Mr. Hammond learned, as you state, of the probable serious discrepancy in the ore reserves, he suggested that the discovery be not announced until my return from London, it being known to him that I was about to start for Denver. This was done in order to permit of a sampling which would determine the real extent of the discrepancy, and at the same time permit me to announce the fact to my directors as soon as, on my arrival, I learned of it. I should be very sorry indeed if Mr. Hammond, in doing me a friendly action, should be supposed to have withheld information for any ulterior purpose, such, for instance, as the absurd charge, which has been made by irresponsible parties, that he took a hand in bearing the shares. To this last you will suppose, of course, that, in view of his reputation, it is needless to reply, but I would like to point out that there was no bear raid by anyone during the interval referred to, as can be proved by reference to the share quotations up to October 20th, when my cablegram, announcing the discrepancy, was received in London. T. A. Rickard.

Denver, Dec. 29, 1900.

[Mr. Hammond's excellent record would be sufficient to silence any suggestion of a dishonorable act. No such suggestion had, however, come to our attention.—Editor E. & M. J.]

Sir:—In the "Engineering and Mining Journal" December 15th you stated that I was appointed advisory engineer of Stratton's Independence, Limited, in September, 1900. As the discovery of the over-estimate of the ore reserves was not made until the early part of October, the inference is that I became associated with Stratton's Independence, Limited, before the true condition of the mine had been ascertained. As a matter of fact, I declined to have any connection with that company until I had personally examined the property. It was in connection with this preliminary examination that I ascertained that a serious overestimate of the ore reserves had been made. Before definitely accepting my present position of advisory engineer to the company, I cabled to the directors confirming Mr. Rickard's notification to them of the discovery of the shortage in the ore reserves. You will find this matter clearly explained in the statement made by the chairman of the company, Lord Chesterfield, at the last annual meeting of shareholders. For a correct report of this statement I refer you to the "Financial Times," of London, of Saturday, December 8th, 1900.

While my estimate of the ore reserves may be "conservative" and "safe," it was not made with the questionable motives you impute to me. I am surprised that you should condone the practice of wilfully under-estimating values of mines as per the concluding paragraph of your editorial, in which you say: "It may be remembered with profit by engineers generally that all estimates of ore values should be 'safe,' and in this case that the lower the estimate the more room there would be for credit to the administration which should realize more than the reported amount." John Hays Hammond.

Denver, Colo., Dec. 27, 1900.

[The "Engineering and Mining Journal" does not condone and never has condoned "the practice of wilfully under-estimating values of mines. Such a practice, if it exist, would be no less dishonest than wilfully over-estimating values, or falsifying in any other particular. There is a tendency, however, in the practice of all sanguine temperaments to give unwittingly undue importance to the influence of favorable facts and indications and too little weight to those that are unfavorable in determining the valuc of a mine. It is to these unconscious over-estimates that the "mistakes" of engineers are due, and it is by no means unnecessary to remind engineers of the importance of being safe, and where there is uncertainty to lean to the safe side. It has been due in some degree to his natural conservatism on these lines that Mr. Hammond enjoys his well established reputation as "a safe engineer."—Editor E. & M. J.]

Sir:—At the annual meeting of the above company in London, on December 7th, the chairman Lord Chesterfield, read the following telegram, dated October 20th, 1900, from Mr. T. A. Rickard to the company: "Sampling, which commenced after Stark's dismissal, indicates serious misrepresentation by old management of the value of the ore discovered since my original report, causing serious overestimation of ore reserves; sampling not yet completed. I will report fully when it is completed."

The attempted explanation made by Mr. T. A. Rickard at the annual meeting of how he came to estimate the ore reserves remaining at $13,000,000 is too lengthy and intangible for quotation here, but its unmistakable object was to lay the blame on others, to wit, "the old management," and thereby, as far as possible, to escape it himself.

I was engaged continuously at Stratton's Independence Mine for about 5 years prior to its being turned over to the English company on May 1st, 1899, and from October, 1896, I acted as superintendent of the mine. On the English company's taking possession on May 1st, 1899, I continued to act as superintendent until the latter part of May, 1900, when my connection with the property ceased. From the time that the English company took possession on May 1st, 1899, with Mr. T. A. Rickard as consulting engineer, it was the practice for me as superintendent to make monthly verbal reports to Mr. Rickard of the quantity of ore taken out, the locations from which taken, the approximate value of such ore as shown by assays, which quantity and value were invariably practically confirmed by the subsequent returns from the smelters or mills. Such monthly reports by me to Mr. Rickard never included or professed to include any estimate of the ore still in sight. It now seems that, using my verbal reports as an alleged basis, he made monthly written reports to the company in London. I never saw such reports either before or after they were sent, with the exception of one or two brief notices in a London financial paper.

With reference to the ore reserves still in sight, even after the phenomenal ore production, Mr. Rickard always struck me as being too optimistic, if not somewhat visionary. I positively disclaim all respon-

sibility of furnishing him with the basis of such estimates, which have since proved to have been exaggerated. I never heard of his estimating the remaining ore reserves in the mine at anywhere approaching $13,000,000, until some time in September or October last, several months after my connection with the mine had ceased, and then I only heard of it from third parties in general conversation. As superintendent of the mine up to the latter part of May, 1900, and to that extent open to be referred to as "the old management," I never gave an over-estimate, nor any estimate, of the extent and value of the ore reserves, and, as a matter of fact, was never asked for an estimate by any one. I absolutely deny that Mr. Rickard's over-estimates were legitimately based on any information furnished by me. As to anything that took place after I left the property at the latter end of May, 1900, I know nothing.

I have postponed taking action in this matter until Mr. Rickard returned to Colorado, expecting that he would then make some statement. His statement in the Denver dailies of to-day is of such a general character as to leave the former impression created as to myself undisturbed, and I therefore write as above, to put the facts before the public.

From my six years' personal experience of the mine, I am firmly of the opinion that it is not by any means "played out"; that the recent report of Mr. John Hays Hammond is emphatically conservative; and that, with further development work and efficient and economical management, ore can be taken out of the property at a profit for years to come.

J. H. Emerson.

Denver, Colo., Dec. 25, 1900.

Concentrating Difficult Silver-Lead Ores.

Sir: In the "Engineering and Mining Journal" of December 29th, 1900, there was a query from W. P. K. as to the proper system of concentrating ore of the following composition: Silver, 19 oz.; lead, 13.7 per cent.; silica (quartz), 43.9; barytes (heavy spar), 23.9. The writer states that in order to effect separation from the barytes they must grind the ore to 40 mesh and by so doing and concentrating 4¼ tons into one they save 99 per cent. of lead, but the tailings assay 17.50 oz. of silver and that the gray copper and barytes pass off together; he also states that a neighboring plant has quartz for gangue instead of barytes and has the same trouble in attempting to save the silver.

All practical mill men recognize the great difficulty of separating two substances of an equal specific gravity, and this is apparently one of the many cases mentioned above. As the writer has had a large experience with similar ores, both in Europe and America—as, for instance, the silver-lead ores of Boulder County, Colo., and the lead-zinc ores of Missouri and eastern Tennessee, both carrying a large amount of barytes, which is of the same specific gravity as zinc blende—it might be well to give herewith an outline of some similar cases that came under his notice. The specific gravities are: Galena, lead sulphide, 7.2; gray copper (argentiferous), 4.70; heavy spar (barytes), 4.5; quartz (silica), 2.6; zinc blende, 4.0; iron pyrites, 4.8. From these specific gravities it can be seen that lead is easily saved in any mode of concentration mechanically by the reason of its heavy weight, but in the case of the gray copper that carries the silver values, it being 4.7 and the barytes (heavy spar) being 4.5, the two are so near alike that it would seem impossible to attempt a separation. The same can be said of zinc blende and the barytes; also zinc blende and iron pyrites. On the other hand, as in the case of quartz, it is 2.6 and comparatively easy to separate from any one of the other mentioned by the use of the proper apparatus.

The writer found that in concentrating a difficult ore that two substances to be separated must have at least one unit difference in specific gravities to be treated on ordinary concentrator. It makes no difference how fine the ore is ground, as that does not alter its weight, and close sizing, whether by revolving screens or by hydraulic separators, of such an ore before concentrating is, in the writer's opinion, one of the gravest mistakes that the mill man can undertake.

Having thus an ore and gangue of so near the same weight to be separated by concentration, we must find a mode of changing one or the other's gravities. As this cannot be done by grinding or equal sizing we have to resort to the consideration of the hardness of the ore; that is, to leave one in larger particles than the other, so as to give extra weight. By so doing the larger cube becomes the heavier and settles down to the bottom as in the case of jigs, and the lighter which is the smallest will flow over. In this case the large and small particles are both together sent on a plunger jig to be separated by gravity and no screen sizing is even attempted. If the two ores in question should be of equal hardness and when in the process of crushing come out in equal size, then this system would be a failure as the former, and we would have to resort to roasting the ores before concentrating, so as to change the specific gravity of one by driving off either the sulphuric acid or the barium sulphate which would lighten one or the other ore considerably. In case of W. P. K. this mode of changing the gravities by the difference of hardness will work well, as the hardness of barytes is 3.0 and that of gray copper is 4.5. Hence, in crushing the spar will break up the finer and pass over the jig to the waste dump, providing no attempt be made to size the ore first.

At Cariboo, in Boulder County, Colorado, we had an ore much similar, except that it carried iron pyrites and zinc blende. A test made in concentrating that ore on an old mill of 200 tons gave the following results: Ore sent to the mill raw, and crushed and concentrated 6 into 1 ton. We saved 40 per cent. of the silver-gold values, but by first subjecting the ore to a slight roasting and then crushing and concentrating a saving was effected of 90 per cent. of the values on the same ore. The mill consisted of a stamp battery, three 3-cell Hartz jigs and three Rittinger bumping tables, also two canvas tables. In operating this mill we found that the coarser the crushing the greater was the values saved and that the bulk was saved on the jigs. Such a mill would, at this time of modern milling be considered among the relics of ancient mining practice. At that time it simply served to test an ore that was considered difficult.

In the Missouri zinc-lead district the ore varies in different camps. In some cases the miners run into large bodies of iron pyrites and barytes mixed with the zinc blende which is the most difficult ore to separate so as to make it marketable. Many attempts have been made to change the specific gravities of these gangues by careful crushing and the use of the most modern jigs, followed by concentrating tables of the Bartlett and Wilfley types, but with no success, owing to the uniform hardness of the gangue in the zinc blende. In trying to crush the blende much finer than the rest it became evident that sliming the ore became a serious question, and the attempt had to be abandoned. Here, of late years, the system of roasting the ore has been extensively inaugurated in some of the most extensive plants and has proved to be a success. The system is to first crush the ore and concentrate the chert out of the ore, which is accomplished by one 5-cell jig, leaving the zinc blende and pyrites or barytes—as the case may be—together. It is then charged into a reverberatory furnace which is fired with coal, the ore being charged at one end, and is gradually moved toward the fire end, where it is discharged. Thence it goes to the jigs for a complete separation. Subjecting the ore to heat expelled the sulphur from the pyrites and left the iron and the barium sulphate from the barytes with a lime crust. Both of these are easily separated from the zinc on jigs or vanner tables.

The modern concentrating plant of the Missouri Zinc District is as follows: The power consists of a 100 H.-P. tubular boiler, one 60 H.-P. engine, feed pump and feed-water heater and purifiers; one 40 to 50-light incandescent dynamo and a fire pump for protection. The mill consists of a large storage bin of conical shape that will hold 100 tons of ore. Connected to this bin is an automatic crusher feeder that delivers the ore into a 16 by 24-in. Blake crusher then to a set of 30-in. Cornish rolls, from which it goes to a revolving sizing screen. All the ore too coarse to pass through the screen goes to another set of 30-in. rolls to be reground and then passes up to the same screen again. All the ore fine enough to pass through the meshes of the first screen (½-in.) goes to a second screen with ⅛-in. mesh, the overflow of which goes to the roughing jig. The ore that is discharged through ⅛-in. mesh goes direct to the cleaning jig. This last screen has a strong jet of water playing on the ore on the inside. The object of this arrangement in screens is to prevent any slimes from entering the roughing jigs. As it is supplied with a strong flow of water and has a long, slow strike of the plunger, any slimes entering upon that jig would go over the tail together with the coarse worthless tailings and be lost. The ore from the first two screens on the rougher—lead first, zinc next, if both are together—is clean and ready for the market. The last three screens discharge into a trough that carries the middlings to a third set of rolls of 24-in. diameter to again go over the screens. All the hutch discharge ore goes to the cleaner jig. This cleaner jig has six cells; the first sieve has clean lead, second and third clean zinc, the last three middlings that go back to the rolls and screens. The first hutch has clean lead; the second, third and fourth has clean zinc; the fifth and sixth discharge sand and slimes that go to the sand jig. The discharge over the tail from the cleaning jig goes into a settling box or separator that consists of a box 5 ft. long and 4 by 4 ft. in width, standing on end at the tailing discharge of the jig and having a tapered bottom and a partition from the top down to within 4 in. of the bottom with a bottom discharge. The object of this box is to force the jig discharge down 5 ft. past the partition, then up 5 ft. and to the waste heap. Any particles of ore settle in the bottom of the box and are discharged and sent to the sand jig for separation.

The roughing jig is 5 ft. 5 in. high, 5 ft. 10 in. wide and 20 ft. long, having five cells 30 by 42 in., and a pitch of 12 in. in the entire length. It is run at a speed of 140 revolutions per minute. The cleaner jig is six cells 26 by 42 in. and runs at a speed of 170 revolutions per minute. The sand jig has four cells 25 by 30 in., and runs at a speed of 100 revolutions per minute. The crusher has a speed of 400 revolutions and rolls 35 revolutions; screens, 20 revolutions, and all elevator travel 325 ft. per minute. The capacity of the mill is 100 tons in 10 hours, and it requires four men per shift to operate. It requires 500 gallons of water per minute and its total cost of building is $8,000. By this system a saving of 98 per cent. of lead and 98½ per cent. of zinc is made, and material of a fineness of 150 mesh is readily handled without loss.

It is not my purpose to write a treatise on modern concentration, but I will give briefly some of the latest and most successful methods in use. First let us assume that the least slimes that are made in crushing, the least water used in the mill, and the least handling of the material will give the best results. I am prepared to show that these points are best gained by the use of modern high-speed rolls, single screening and direct conveyance to the jigs or tables, without sizing or further handling. To this end we adopt a system in conformity with what has already been described. Whether we employ jigs or tables, or both, in sizing ore there may be found three to six comparatively even sizes produced for treatment, easily worked, but there is left as a result of this sizing a very fine material, not easily treated by any system, and on which there is bound to be a heavy loss. I claim that the loss on this fine is always greater, in proportion to the original ore, than would be the case if it were treated at once and together with the coarser materials. It is well known and easily demonstrated that if a mixture of coarse and fine ore, either in water or dry, be rapidly agitated in a confined space, the finer will go to the bottom and that the coarse material protects the fine. It is also known that if fine ore be sifted over coarse material it goes to the bottom. This principle is taken advantage of in the Missouri roughing and cleaning system; it will also apply to gold-silver-lead ores. The mills would consist of one or two jigs, the middlings to be re-crushed and returned to a set of Wilfley tables and all slimes to be taken direct from the rolls and mixed with the material on the cleaner for treatment, instead of trying to work it by itself. In districts where water is scarce it will be best to use tables altogether. It requires one cleaning table to four roughing. In Colorado the cost of a well-constructed mill of 100-ton capacity is about $15,000, and the cost per ton of treating the ore is 75c. In Missouri the cost per ton of concentrating is 41c., owing to cheaper fuel, labor and the nature of the ore.

Eric Hedberg.

Joplin, Mo., Jan. 2, 1901.

THE COLORADO SPRINGS & CRIPPLE CREEK DISTRICT RAILROAD.

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

With the completion of the Colorado Springs & Cripple Creek District Railroad six months hence, another masterpiece of railway engineering will have been accomplished. The distance between Colorado Springs and Cripple Creek by the new road is 44 miles. Three-quarters of the grading is now completed and the track has been laid and excursion trains are now being run for a distance of 17 miles from Colorado Springs. While the main line of the road will be only 44 miles in length, the corporation will own and operate approximately 70 miles of track, the remaining 25 miles being represented by what is now known as the Cripple Creek District Electric Railroad and by branches to the more important mines and to the ore reduction works in the vicinity of Colorado Springs.

From an engineering point of view the line is interesting. Beginning at a point where the mountains and plains meet, the line follows no natural topographical route, but at once begins to climb the mountains.

The company was organized wholly by Colorado Springs men and its stocks and bonds to the amount of $3,300,000 were subscribed by the capitalists and mine-owners of that city and Cripple Creek. It is an independent line, having no special traffic agreements with any other road. Its directors and stockholders own, operate or control mines at Cripple Creek which at the present time produce more than 50 per cent. of the total output of the district.

The board of directors of the company is composed of Irving Howbert, W. S. Stratton, James H. Burns, William Lennox, H. M. Woods, H. G. Lunt, E. W. Giddings, K. R. Babbitt and William P. Bonbright. Directors and stockholders are among the heaviest owners of such mining properties as the Portland, Anchoria-Leland, Raven-Isabella, Gold Coin, Strong and Jack Pot.

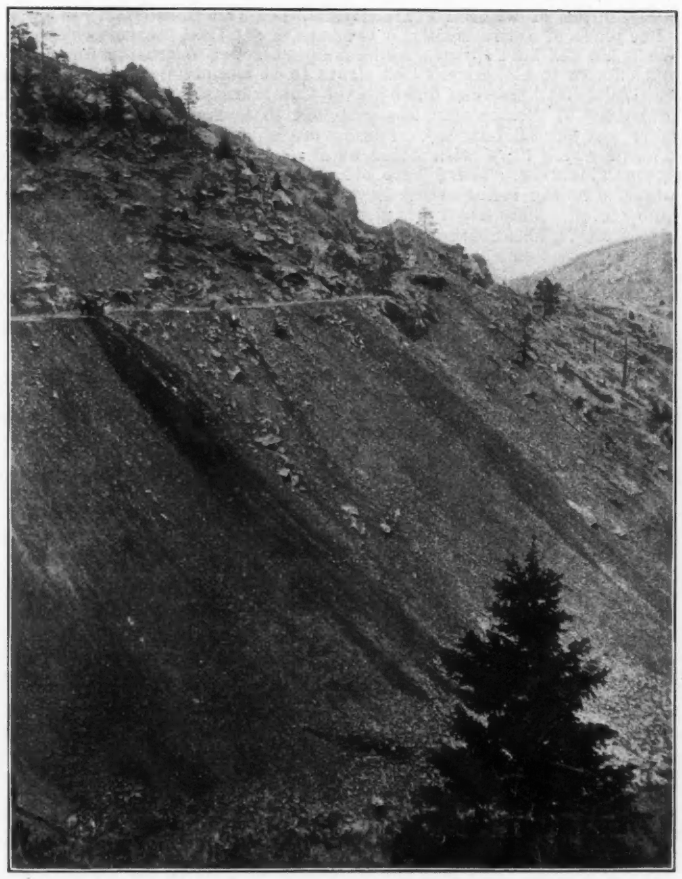
The grades and curvatures of the line are not extraordinary for a mountain road. The maximum grade for the eastern or Colorado Springs end is only 3¾ per cent. and its maximum curvature 16°. On the Cripple Creek side of the mountains the maximum adverse grade is only 2 per cent. Engineering has been shown in avoiding heavier grades without very great sacrifice of distance. The road, moreover, is remarkable for the beauty and variety of the mountain scenery through which it passes.

Cripple Creek has had two lines of railroad for the past five years and their earnings have been large.

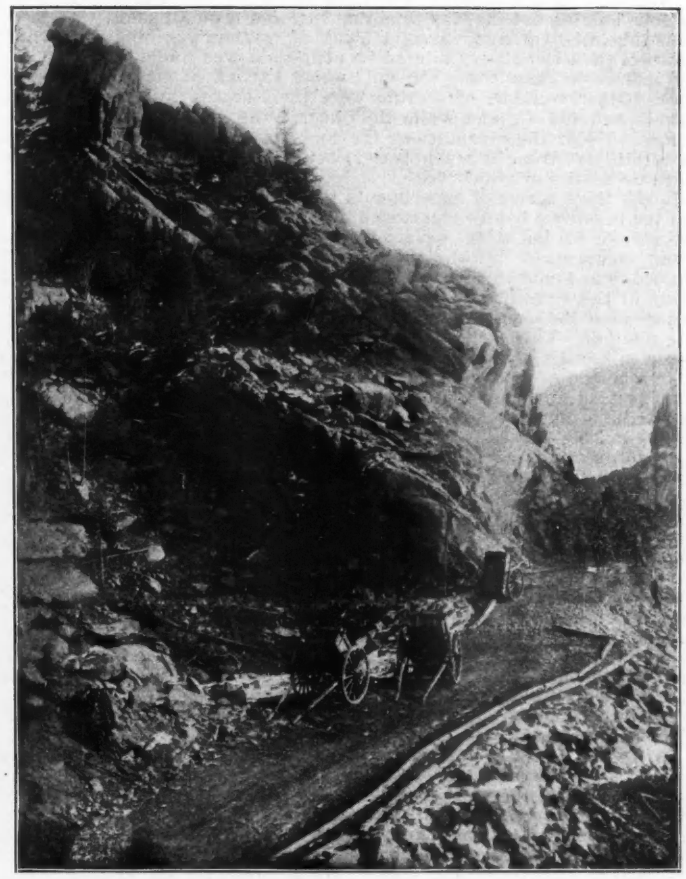
The advantage of this road over present competing lines is a saving in distance between Colorado Springs and Cripple Creek of 15 miles.

The construction and equipment of the road are of the best character. It is standard gauge, and the track is being laid with 75-lb. steel rails, the bridges being red spruce sub-structure and Oregon pine decks. All bridges have guard rails; the track is ballasted with disintegrated granite. There is a gravity water supply for the entire road. The present equipment consists of nine 170,000-lb. Schenectady locomotives, a sufficient number of passenger, mail and baggage coaches for two complete trains, and 200 freight cars.

The effect of the building of the road on the business of Colorado Springs is already manifest. The Portland Gold Mining Company has begun the construction of a chlorination plant of 300 tons daily capacity and the Philadelphia & Colorado Ore Reduction Company is building additions which will increase the daily capacity of its present works by 200 tons. Neither of these enterprises would have been projected if it were not for the advantages afforded by the new railroad line.



SIDE HILL CUT, COLORADO SPRINGS & CRIPPLE CREEK RAILROAD.



CUT AT DIVIDE, COLORADO SPRINGS & CRIPPLE CREEK RAILROAD.

THE THIRTEENTH ANNUAL MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA.

Specially Reported for The Engineering and Mining Journal by E. O. Hovey.

The thirteenth annual meeting of the Geological Society of America was held at Albany, N. Y., from the 27th to the 29th of December last under the presidency of Dr. George M. Dawson, C.M.G., F.R.S., Director of the Geological Survey Department of Canada. The attendance of members was large and the meeting was a very successful one.

The society has lost but one member by death during the past year, Mr. Franklin Platt, of Philadelphia. Mr. Platt was one of the six assistants chosen by Professor J. P. Lesley when the second geological survey of Pennsylvania was organized. He selected bituminous coal as his field of work, but after a few years he left the pursuit of pure science and went into commercial life as the head of a coal company.

Eleven new names have been added to the list of members during the year, and the present enrollment is 248. The treasurer's report, furthermore, showed the society to be in flourishing financial condition. The new officers elected for the ensuing year are: President, Dr. Charles D. Walcott, director of the United States Geological Survey, and vice-presidents, Professor Newton H. Winchell and Mr. S. F. Emmons. The sessions of the society were held in the assembly room of the Boys' Academy, which was the room in which were held the meetings of the Albany Institute, an organization which for many years was active in promoting work in the various branches of science and which originated the movement which resulted in the establishment of the State geological survey of New York. The room furthermore has historic interest in the annals of science, since it was here that Joseph Henry made his public demonstration of the practicability of the electric telegraph. Addresses of welcome were made by Hon. T. Guilford Smith, representing the Board of Regents of the State University; Dr. F. J. H. Merrill, State Geologist, and Dr. J. M. Clarke, State Palaeontologist. The social features of the meeting were the usual informal and enjoyable annual dinner and a very elaborate reception by Dr. Merrill.

Thirty-eight papers in all were presented, 11 of which, in the absence of their authors, were read only by title. This left ample time for the discussion of the papers which were actually read in whole or in part. The subjects treated of covered a wide range of topics in geology, but only those which seem to have a direct interest for mining men will be

noticed in this report. The presidential address, by Dr. Dawson, was entitled, "On the Geological Record of the Rocky Mountain Region in Canada." This was an elaborate memoir, and an abstract of it is given on another page.

After the president's address, the first paper on the programme was by Professor Frank D. Adams on "Experimental Work on the Flow of Rocks Recently Carried Out at the McGill University, Montreal." The communication gave the results of an investigation in which the effects of very heavy pressure on rocks were studied with a view to ascertaining how the gigantic movements which geologists observe in the strata of the earth's crust had taken place. Marble was the rock on which most of the work was carried out, but harder rocks, such as granite, are now being studied as well. Small columns of marble 1 in. in diameter and 1¼ in. high were carefully turned and polished and were then very accurately fitted into heavy wrought iron tubes constructed on the plan of heavy ordnance by wrapping strips of wrought iron around a core of soft iron and welding the whole together; the core of iron was then bored out and the marble substituted for it. Heavy steel pistons were then fitted into each end of the tube and the rock thus submitted to very high pressures, often for several months continuously, in specially constructed machines capable of developing pressures reaching nearly 100 tons to the square inch. Under high pressures, the marble was found to flow, bulging out the iron tube that inclosed it on all sides. When the iron tube was cut away a solid block of marble was obtained, which, however, had completely altered its shape. It was found, however, that the marble in these cases was only about half as strong as the original rock. Other columns of marble were then heated to temperatures of 300° C. and 400° C., and while thus heated the pressure was applied as before. Under these conditions the rock was found to flow readily and to retain its strength much better, being nearly as strong after compression as the original rock.

In the third series of experiments the marble was not only heated to the temperatures before mentioned, but at the same time water under a pressure of 460 lbs. to the square inch was forced through it while it was being compressed. Under these conditions, the marble, after being molded, was found to be as strong as it was originally. A microscopical study of the structure of the deformed marble shows that in these two latter cases the crystalline grains composing the marble had glided on one another. This structure is exactly the same as that which is produced in a billet of iron when it is heated and then hammered or rolled, or in a button of gold when flattened in a vise. The marble flows, therefore, just as any metal does, when submitted to pressure, except that under the ordinary conditions at the surface of the earth the brittleness of the marble causes it to break before the flow point is reached. In the depths of the earth, however, being hemmed in by other rocks, it flows as in the experiments.

The paper was elaborately illustrated by specimens and by many lantern slides showing the machines employed, marble before and after compression, and its structure as compared with that of various rocks found in the earth's crust and with hammered iron.

Professor S. L. Penfield, in a paper on the use of stereographic projection in map construction, showed by means of simple apparatus how this method of making maps has advantages over the globular projection commonly used. His simple apparatus will be fully described in an early number of the "American Journal of Science." It gives an easy method of making direct measurements between localities on maps which are accurate to within 1 to 5 miles. Professor Penfield has also applied the stereographic projection to certain uses in crystalography with very great success.

Dr. David White prepared a paper on the age of the coals at Tipton, Blair County, Pennsylvania, of which the following abstract was all that was presented at the meeting. The appearance of the paper itself in the "Bulletin" of the society will have much interest to specialists in this branch of mining. The Tipton Run coals lie in the banks of a deep ravine at the foot of the Allegheny escarpment, and nearly 1,000 ft. below the eastern outcrop of the upper carboniferous on the mountain top. Similarity in attitude and juxtaposition of the terranes along the strike of the Pocono (lowest Lower Carboniferous) caused their repeated correlation with the latter by the geologists of the State surveys, by whom the coals were regarded as local dilations of some of the thin Pocono coals, comparable to the workable deposits of this formation in Virginia. As the result of the examination of some fossil plants at the Tipton mines, the true age of the beds was discovered by Dr. I. C. White, who, in 1889, announced their identity with the Allegheny series. This led to a reinvestigation by the State geologists, who unqualifiedly reaffirmed their former correlations, referring the beds to the Pocono in subsequent reports and the final map. A small collection of plants, made by the writer in 1899, only confirms the conclusions of Dr. White, whose evidence was in reality decisive. A later hasty examination shows the presence of the Pottsville and a portion of the Mauch Chunk in regular sequence beneath the coals, the whole being included in a block faulted against the Pocono and upper Catskill.

Dr. Charles R. Keyes, in a paper entitled, "A Depositional Measure of Unconformity," stated in part that a plane of unconformity at the base of the coal measures had long been known, and had proved to be of wide extent, certainly from the Ozarks to southern Minnesota. It was evidently an old land surface, and the question as to the disposition of the material eroded has long been a matter of study by the author of the paper. Considering the coal horizon as a stratigraphic plain along which coal has formed and which may be coal-yielding or not, the extent of individual workable seams is extremely variable. There is no correspondence between thickness and aerial extent, some of the thickest beds being the most limited in their geographic distribution. The Versailles, Morgan County, Missouri, deposits, which are 60 ft. in thickness, are less than a mile across. The Mystic seam, of southern Iowa and northern Missouri, though only 3 ft. thick, extends over many hundreds of square miles. In Iowa, Missouri and Kansas the chief coal-bearing beds belong to the Cherokee terraine near the base of the Coal Measures. The whole formation is only 300 ft. thick and tapers out toward the east, but it has furnished more than nine-tenths of the total output of coal from these States and will probably continue to do so in the future.

The chief producing strata in the South are, according to J. C. Branner, not at the base of the Coal Measures, but some 18,000 ft. higher, While some thin coals are known at other levels, the whole coal supply of Arkansas and Indian Territory south of the Arkansas River comes from a terrane higher above the Kaskaskia beds of the Mississippian group than the whole carboniferous section of Missouri and Kansas. The maximum thickness of the Iowa-Missouri section is only 1,600 ft.

According to the accumulated stratigraphic evidence there begins south of the Kansas boundary a formation having no representative terrane to the north. This formation rapidly gets thicker and thicker to the southward and eastward until, if Branner's estimates are correct, it attains the enormous vertical measurement of 20,000 ft. This great terrane, composed almost entirely of shales and sandstones, lies entirely below the basal horizon of the Des Moines series (Lower Coal Measures) of Missouri, but is above the Kaskaskia beds. The so-called Permian of the Indian Territory seems to be the upper part of the Missourian series.

Without more exact stratigraphic knowledge than at present exists of the intervening area, all attempts at correlation of the sections of this region with those of the Allegheny Mountain region can be considered only as broad approximation. The principal data have recently been gathered plant remains, and according to David White, the Des Moines series, in western Missouri, is to be regarded as representing the Alleghany series, of western Pennsylvania.

The plane of unconformity at the base of the Coal Measures represents clearly an old land surface which was subjected to erosion for a period long enough to allow the tilted strata to be completely beveled off from the Kaskaskia limestone down to the Cambrian sandstones. Heretofore the extent of this erosion has been but little appreciated. The topography was quite diversified. There were hills several hundred feet high, some of which have been noted by H. F. Bain and others of the Iowa geological survey. There were broad drainage basins and deep narrow gorges, and the relief certainly was as marked as it is to-day in the same region. That the horizon is really a great hiatus has never been fully considered, and that the interval represents a period in the history of the region of much longer duration than the time taken to form all the coal measures above it is a phase of the subject which has never before been suggested. All evidence goes to show clearly that in Arkansas sedimentation was continuous during the Carboniferous, that enormous deposits were laid down during the period, and that while the beds were being formed there was in the region no marked orogenic movement. It is now clear that at least 19,000 ft. of the 24,000 ft. of carboniferous strata in Arkansas were laid during the period represented by the stratigraphic break at the base of the northern coal measures. Furthermore, the sediments came from the north and were obtained by the denudation of the old land surface above referred to. The Ozark uplift had no effect in determining the deposition of the Coal Measure, because it did not occur until long after the close of the Carboniferous age. The Poteau group, of Arkansas, and the Cavaniol, of the Indian Territory (containing the Grady and McAlister coals), are practically coextensive with the Des Moines series further north, while the Poteau group, of Indian Territory (Drake), corresponds about to that part of the Missourian below the Platsmouth limestone and entirely overlies the Poteau of Arkansas. The whole of this elaborate paper is full of interest and suggestiveness.

The next meeting of the society will be held in connection with Section E of the American Association for the Advancement of Science at Denver, Colo., in August.

RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

FAILURE TO GIVE DIRECTION OF INITIAL POINT.—A location notice of a mining claim which fails to give the direction of the initial point or permanent monument from the point of discovery is void.—Clearwater Short-Line Railway Company vs. Sam Garde (61 Pacific Reported, 137); Supreme Court of Idaho.

POSSESSION OF SURFACE POSSESSION OF VEIN—Possession of the surface of a mining claim is a possession of a vein or lode having its apex within the surface lines of the claim, although, in extending downward, such vein may pass beyond the vertical lines of the claim, and will support an action of trespass for the removal of ore from such vein, beneath the surface of an adjoining claim.—Montana Mining Company vs. St. Louis Mining and Milling Company (102 Federal Reporter, 430); United States Circuit Court of Appeals, Montana.

EFFECT OF MISTAKE IN LOCATING LINES.—Where, by mistake, a mining claim is located across, instead of along, the vein passing through the location point, the rights of the locator are governed by the facts as they exist with regard to such vein. His side lines as located become end lines, and he is not entitled to any extralateral rights thereunder, although another vein, extending traversely to the one intended to be located, may have its apex inside of such surface lines.—Cosmopolitan Mining Company vs. Foote (101 Federal Reporter, 518); United States Circuit Court, Nevada.

CONSTRUCTION OF CONVEYANCE OF MINERAL RIGHTS.—In compliance with a decree for specific performance of a contract made between the owners of two adjoining mining claims, in settlement of a dispute brought to settle a disputed boundary line, the owner of one claim conveyed to the other the strip in dispute "together with all the mineral therein contained, together with all the dips, spurs and angles, and also all the metals, ores, gold and silver-bearing quartz rock and earth therein." It was held that such conveyance had no other effect than to fix the surface boundary line between the two claims in accordance with the original contention of the grantee, and did not deprive the grantor of any extralateral rights under the ground so conveyed; such boundary being a side line of its claim.—Montana Mining Company vs. St. Louis Mining and Milling Company (102 Federal Reporter, 432); United States Circuit Court of Appeals, Montana.

THE GEOLOGICAL RECORD OF THE ROCKY MOUNTAIN REGION IN CANADA.*

By Dr. George M. Dawson.

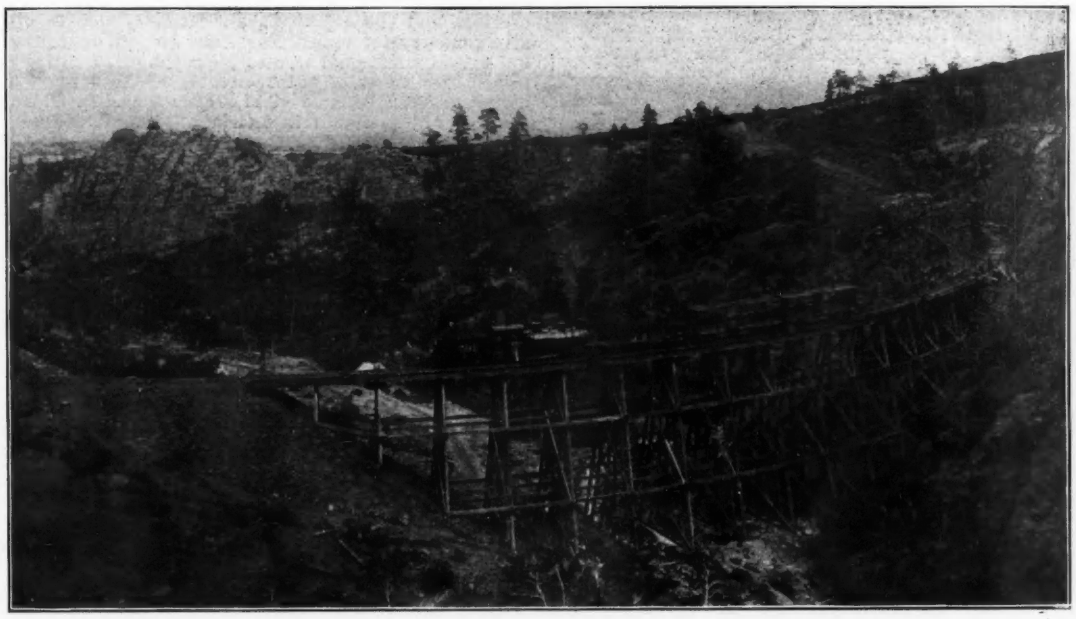
Twenty years ago, after six seasons of work in British Columbia or on its borders, the author read a paper before the Geological Section of the British Association for the Advancement of Science, at Swansea, entitled, "Sketch of the Geology of British Columbia," which was afterward published in the "Geological Magazine." So far as they go, the general outlines then laid down still hold; but much has been accomplished since that time, the relative importance of the observations recorded has been considerably changed, and opinions stated from time to time have had to be modified as the work progressed.

The region dealt with is in many respects one of particular geological interest, but its older rocks are separated from those of the eastern parts of Canada by the whole width of the great plains and the newer formations found in it are generally unrepresented in other parts of Canada. Nor until the work was well advanced did any satisfactory standard of comparison exist in the far West. California could be referred to in regard to certain defined formations of the Tertiary and Cretaceous, but a great intervening region of the Cordillera remained practically unknown geologically, except for the earlier results of the Hayden surveys and some reconnoissance surveys by other explorers along lines of travel. It was in this region also that the occurrence of contemporaneous volcanic materials as important constituents of the Mesozoic and Palaeozoic rocks of the Cordilleran belt was first recognized. Previous to the earlier reports of the Canadian Geological Survey, the existence of such volcanic materials had been admitted only as regards the Tertiary formations of the western portion of the continent.

As compared with the Cordilleran Region of the western United States, that of British Columbia is much less diffuse and more strictly parallel with the corresponding part of the Pacific Coast. Its length is approximately the same, but its width is usually only about 400 miles. The geological features follow the main physical features, the rock series represented differing much in age and composition within comparatively short distances as the Cordilleran belt is crossed, while they run far and with closely accordant characters in the direction of its length. This depends upon two conditions, both of which have been imposed by the position of the zone of recurrent crustal movements coincident with the western border of the continent: 1. The occurrence of successive zones of deposition, whether sedimentary or volcanic, parallel to the continental edge. 2. The actual compression of the original area of deposition by folding and fracture produced by pressure from the Pacific side, by means of which the superficies may have been reduced to about one-third of its original width since early Palaeozoic times.

The ruling orographic features of the Cordilleran region in Canada at the present time are the Rocky Mountains proper, forming its high eastern border, and the Coast Ranges of British Columbia on the west. It has been proposed by Dand to name the first of these ranges the "Laramide Range," since its origin was coeval with the close of the Laramic period. This mountain system seems to begin about the 46th or 47th parallel of north latitude, from which it runs in a northerly direction to the Arctic Ocean. Its width is about 60 miles and the height of many of its peaks exceeds 11,000 ft. The rocks composing it are for the most part referable to the Palaeozoic series, and it is found to be affected by numerous great faults parallel to its direction and overthrust to the eastward. The Coast Ranges of British Columbia form a belt of about 100 miles in width that extends along the border of the Pacific for at least 900 miles, beginning near the estuary of the Fraser and eventually running inland beyond the head of Lynn Canal, where the coast changes its trend to the westward. These ranges are composed chiefly of granitic rocks, with minor included masses of sedimentary strata. It is later in date of origin than the Cretaceous period, but is neither so lofty nor so ragged as the Laramide range. The remarkable fiords of the Pacific Coast, both those of British Columbia and those of the southern part of Alaska, are the submerged valleys of this coastal system of mountains, their erosion being probably referable to Eocene and Pliocene times, during which the land stood at a relatively high level.

To the west of the Laramide Range, and separted from it by a remarkably long and direct structural valley, is a somewhat irregular and sometimes interrupted series of mountain systems to which the general name of the Gold ranges has been applied. This embraces the Purcell, Selkirk, Columbia and Cariboo mountains, all including very ancient rocks and evidently representing the oldest known axis of elevation in the Province, although it has not remained unaffected by movements of a much later date. Peaks surpassing 10,000 ft. in elevation still occur in these mountains. Between the Gold and Coast ranges, with a width of about 100 miles, is the interior plateau of British Columbia, a peneplain referable to the early Tertiary, which has subsequently been greatly modified by volcanic accumulations of the Miocene and has been dissected by river erosion at a later date. This plateau country is well defined for a length of about 500 miles, sloping northward from a height of more than 4,000 ft. near the 49th parallel to one of less than 3,000, and with an average elevation of about 3,500 ft. It is then interrupted for some 4° of latitude by a mountainous country chiefly composed of disturbed Cretaceous rocks, beyond which the surface again declines to the plateau lands of the Upper Yukon Basin, with its separated mountain ranges. The interior plateau is throughout very complex in its geological structure, but except where covered by Tertiary accumulations, it has been found to be chiefly underlain by Palaeozoic and Mesozoic rocks.



BEAR CREEK BRIDGE, COLORADO SPRINGS & CRIPPLE CREEK RAILROAD.

One more mountain system remains to be noted. This stands upon the real border of the continental plateau and is represented by the long, ridge-like highlands of Vancouver Island and the Queen Charlotte islands. It is apparently wanting between these islands and is not clearly continued in the archipelago of southern Alaska, which seems to be more closely connected with the Coast Ranges of the mainland. The formations chiefly comprised in this outer mountain system range in age from the Carboniferous to the Cretaceous.

The following table shows at a glance the relations of the beds in the two great geosynclines and their thickness::

Geological Age.	Western Geosyncline.	Feet.	Laramide Geosyncline.	Feet.
Pliocene	Horsefly gravels, Quartz drift of Klondike, etc.			
Miocene	Upper Volcanic group	3,100		
	Tranquill beds	1,000		
	Lower Volcanic group	5,300		
Oligocene	Coldwater group (Similkameen beds, etc)	5,000		
Eocene	Puget group (on coast only).	3.000	Upper Laramie	3,000
			Lower Laramie	2,500
Cretaceous	Nanaimo group	2,700	Montana, Colorado	3,140
	Queen Charlotte Ids. group (in Queen Charlotte Ids.).	9,500	Dakota, Kootanie	9,750
Triassic	Nicola group	13,500	(Red beds to S., Marine to N.) say	600
Carboniferous	Cache Creek group	9,500	Banff series	5,100
Devonian	? ? ?	?	Intermediate limit	1,500
Silurian	? ? ?	?	Halysites beds	1,300
Ordovician	? ? ?	?	Graptolithic shales	1,500
			Castle Mt group (upper part)	.
Cambrian	Adams Lake series	25,000	Castle Mt. group (lower part)	8,000
	Nisconlith	15,000	Bow River series	10,000
		89,600		46,390
Archaean	Shuswap series	5,000		

The address then took up in order the great formations represented in the area and described them in more or less detail before passing on to a compendious account of the physical history of the region. The most striking points evidenced by the geological record of the Rocky Mountain region of Canada may be summarized as follows:

There was an enormous thickness of strata accumulated both to the

*Abstract of the presidential address before the Geological Society of America, December 29th, 1900.

east and to the west of the Archaean axis. In the Laramide geosyncline (that of the Rocky Mountains proper) the beds no doubt attained the full thickness of more than 46,000 ft. In the western and wider geosyncline it is not so certain that all the formations in their full thickness were ever actually superposed at any one place or time, but their volume cannot have been less than those in the Laramide geosyncline; and their total measured thickness is much greater.

There is a great proportion of volcanic materials in the western geosyncline and the region is characterized by the recurrence of vulcanism throughout the geological time-scale, resulting in the production of massive volcanic formations in the Cambrian, Carboniferous, Triassic, Cretaceous and Miocene.

The recurrence of folding and disturbance parallel to the border of the Pacific Ocean basin and the concurrent great changes in elevation of the land relatively to the sea both continued down to quite recent geological times, the latter even into the Pleistocene.

There was tremendous energy of denudation, in part due to the events just referred to, but also dependent upon the position of the region on the eastern border of a great ocean, where, in northern latitudes, an excessive rainfall must have occurred at all periods on the westernmost mountain ranges. No comparable denuding forces have been probably exercised on the eastern side of the continent in similar latitudes since the definition of the Pacific and Atlantic Ocean basins.

MINERS' CONTRACTS IN ENGLAND IN 1766.

The following "bond" was found among the "Delaval Papers," and exhibited before the Newcastle Society of Antiquarians. In these days of strikes, workingmen's independence and employees' attempts to dictate the management of factories, etc., the willingness on the part of the men in the olden time to agree to anything and everything is noticeable. Not content with binding themselves to work nowhere but on the estate of their employer, they further agree for their wives and children. They were, in fact, little better than slaves. Miners' wages of 1s. 6d. (36c.) and putters' and trammers' wages 9d. (18c.) per day, do not compare very well with prices paid in Pennsylvania mines to-day. We give the "bond" in full.

"Articles of agreement made and fully agreed upon this the 8th day of December, 1766, between the pittmen, hewers, and putters in Ford Colliery, whose names are under wrout, on the one part, and Sir John Hussey Delaval, of Ford Castle, in the County of Northumberland, Baronet, on the other part, as follows, that is to say—

"First, the hewers whose names are under wrout doth by these present, for the consideration hereafter mentioned, bind themselves unto Sir John Hussey Delaval, Baronet, from the date of their presents until Whitsunday, 1768, to work or hew each day out of the stoney coals 35 bolls of good measure, and clean coales and free from dross, etc.

"And we, the putters, doth, for the consideration hereafter mentioned, bind ourselves from the date of their presents untill Whitsunday, 1768, to put each man's work being as above expressed 35 bolls of coales.

"And the said Sir John Hussey Delaval, Baronet, doth by these presents agree to and with the said pitmen and putters, they performing all the covenants herein expressed, to pay each pitman or hewer per day one shilling and sixpence, and each putter ninepence for the coale one pittman works in one day, being the precise quantity of 35 bolls as aforesaid. And the said pitmen and putters do further agree to and with the said Sir John Hussey Delaval, Baronet, that if any of us do put out or work any more coals more than shall be given in to the agent of Sir John Hussey Delaval, Baronet, or do anything that may be to the prejudice of the colliery, or that may in any measure be so liable to stop the work. Then and in such wise we, the said pitmen and putters, do hereby agree that it shall and may be lawful for the said Sir John Hussey Delaval, Baronet, or his agent, to stop of one week's wage, one-half of which shall go to the former, and for the second offence two weeks wage.

"And we, the putters, do further agree to and with the said Sir John Hussey Delaval, Baronet, to put the length of 70 yds. from the middle of the work, and for every 10 yds. further, the said Sir John Hussey Delaval, doth agree to pay 1d. per day advance.

"And in such case when there is not a sufficient number of putters than we, the said hewers, do agree to put in our turns. And the said Sir John Hussey Delaval, Baronet, doth further agree to pay candles and to pay each putter and hewer three tubs of coal per week for fires.

"And we, the said putters and pitmen, doth further agree to and with the said Sir John Hussey Delaval, Baronet, that if any of our wives or selves do shear at all to do it at no place but at Flodden or Westfield during the harvest. . . . And we do hereby agree to work on coast work at 12d. per day such as ocationaly happens about the pit: sinking and mettal or stone drift only excepted. . . . And we the putters do agree to mend our own barrow-ways, etc., etc.

"Signed....."

MINING IN PORTUGAL.

By H. R. Jastrow.

Possibly no European country that possesses mneral deposits to any extent has been so unfortunate in the development of its mining industries as Portugal. Among the list of natural resources existing in this little kingdom, mines occupy a front rank. In many districts there are deposits of iron, antimony, copper, tin and coal. These minerals, which abound in various sections, would be a source of considerable wealth to the country under a system of serious and energetic development. But up to the present little or no practical progress has been made in this direction, with the result that the country is gradually being left far behind in industrial and econominc advancement.

Thus far, altogether 560 mining concessions have been granted in Portugal, covering an area of about 110,320 acres; 512 concessions represent mines with an area of 67,386 acres, producing metallic ores; 29, with 18,340 acres, produce coal; 12 are coal and iron mines (22,700 acres), while 7 concessions represent ground containing deposits, amounting to 1,894 acres, of asphalt, graphite, asbestos, etc.

Even the mines, for which concessions have been obtained are little developed, the majority being untouched, notwithstanding the fact that few need deep boring. On the contrary, almost all the large deposits can easily be worked for many years before heavy expenditures for shaft sinking will become necessary.

Practically the only Portuguese mines in actual operation at present are the copper deposits of San Domingos and Tinoca; the coal mines of Pejao, Buarcos, Passal de Baixo and San Pedro da Cova; the manganese mines of Freixal, Ferragudo and Cerro das Camas Freixas; the lead mines of Bracal and Malhada; the iron mines of Ayres and San Bartholomeco and the antimony mines of Tapada do Padre and Valle de Achas. In these mines the production is comparatively small, only about 8,000 persons in all being employed in the combined industries.

Aside from matters of finance, another great obstacle in the way of Portugal's growth as a mineral producer is the serious lack of transportation facilities. Almost all the mines are located in the interior, some distance from both the railroads and the sea. The shipment of ores to the chief markets is therefore attended with considerable expense, and as long as the want of such facilities is felt little will doubtless be done in the mines farthest inland. There are, however, numerous deposits so rich in ores that it would pay to lay tracks either to the main railroad lines or to the water.

During the past year Portugal's iron mines have been the subject of careful investigation and study at the hands of engineers, owing to the fact that several enterprising Portuguese have conceived the plan of building blast furnaces and iron works, and thus laying the foundation for a home iron industry. There is plenty of iron ore, easily accessible, and the deposits are sufficiently rich to provide for an extensive industry for many years, not only enough for home consumption but for export. Coal is also plentiful. San Pedro da Cova alone possesses 4,000 acres of anthracite, while the supply of soft anthracite in San Pedro is estimated at 11,500,000 tons. In addition there is a large supply of brown coal in Leiria, the suitability of which has already been proven, as well as the lump coal mines of Cabo Mondege, whose wealth is considered inestimable, and which will produce easily between 80,000 and 100,000 tons annually. Other products useful in the steel industry that exist in quantities, and of good quality, are limestone and manganese ore.

THE COAL MINING INDUSTRY OF JAPAN.

Marketable coal in Japan is principally confined to the islands of Kiushiu in the southern and Hokkaido in the northern part of the empire. There is, however, a coal field of considerable extent on the coast northeast of Tokio, and a few small inaccessible deposits in the northern part of the mainland of Nphon. The important coal beds of Hokkaido are said to be of mesozoic age, and are much broken and dip at steep angles, while those of the Island of Kiushiu are undoubtedly tertiary and lie much nearer the horizontal.

Those of Hokkaido are owned and controlled by the Hokkaido Coal Mining and Railway Company. This field is reported to promise well. The coal is principally sold to supply ships and the local demand, though a small amount is shipped to China and Korea.

The coal field on the coast supplies about one-fourth the demand at Tokio and Yokohama. It is principally burned under stationary boilers. It contains an exceptionally large quantity of ash. It now brings about 4 yen per ton in market. It is too low-grade to compete with coals of anything like good quality. The coal mining industry of Kiushiu is the most important in the empire. There are considerable small mines in about 6 localities. The industry is controlled by the Mitsui family in Tokio, who do business under various company organizations. The coal-fields most developed in this island lie along or not far from the coast. There is a small coal basin in the interior of the northern part of the island, whence coal is brought by rail to Moje and other shipping points. This is probably the best coal now mined in the island and is principally sold to vessels under contract at a little over $3 gold per ton.

The coals of this island are generally in comparatively small bodies, and in some cases pinch out 400 ft. or more from the outcrop; in others the beds are more persistent. Water is generally encountered in mining. The largest colliery in Japan is the Miiki Mine at Omosta on the bay and railroad, about 60 miles northeast of Nagasaki. It is owned by the Mitsui Mining Company. The concession covers about 25 square miles, but is not all underlaid by coal. At these mines 5 shafts are operated through which an area 3 miles long (the length of outcrop) and 1 mile down the dip has been worked by pillar and stall system, and a large part of the pillars have been extracted. At the face of development 30 per cent. is extracted and 70 per cent. left standing. The coal is all picked down and averages from 40 to 60 per cent. dust. There is one bed which averages about 8 ft. and dips at an angle of 5°. About 2,000 tons are mined daily, but a great deal of water is encountered. A new shaft now sinking has reached a depth of 520 ft. and is expected to cut the coal at a depth of 900 to 1,000 ft., and about 2 miles from the outcrop.

In the northern part of the island the beds are thinner, and contain more bone and low-grade coal generally than at the Miiki Mine. There is also a great quantity of water to be handled.

The Takashima mines, near Nagasaki have been operated profitably for many years, but the output has been greatly reduced.

The coals mined in Kiushiu differ somewhat in different mines. They are typical tertiary coals, of a brownish-black color, highly bituminous coking coals.

The quantity of coal mined in Japan at present is estimated by best authorities to be a little less than 7,000,000 tons annually. Of this about 6,000,000 tons come from the Island of Kiushiu and the remainder from Northern Japan, while 600,000 tons is probably mined in Hokkaido. The Miiki Mine produces 600,000 tons, 50,000 of which is exported to China, Hong Kong and Singapore. In 1899 about 2,000,000 tons were exported.

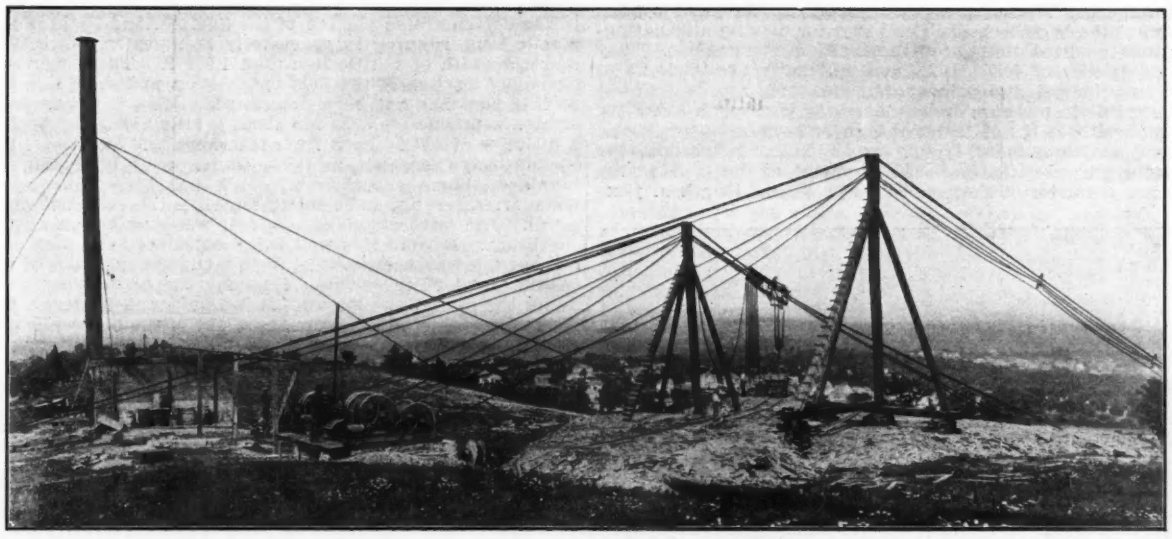
During the first seven months of 1900 exports are reported at 1,897,779 tons. This year the great demand and advance in prices has enabled dealers to clean out large quantities of low-grade coals which had accumulated about their docks. The demand for good steam coal is now greater than Japan can supply of good quality in the near future.

A coal trust is now being formed in Japan to maintain prices.

Coal mining in Japan has to contend with uneven quality; a great quantity of water to be handled and inefficient native labor. The deposits are also, as a rule, fragmentary.

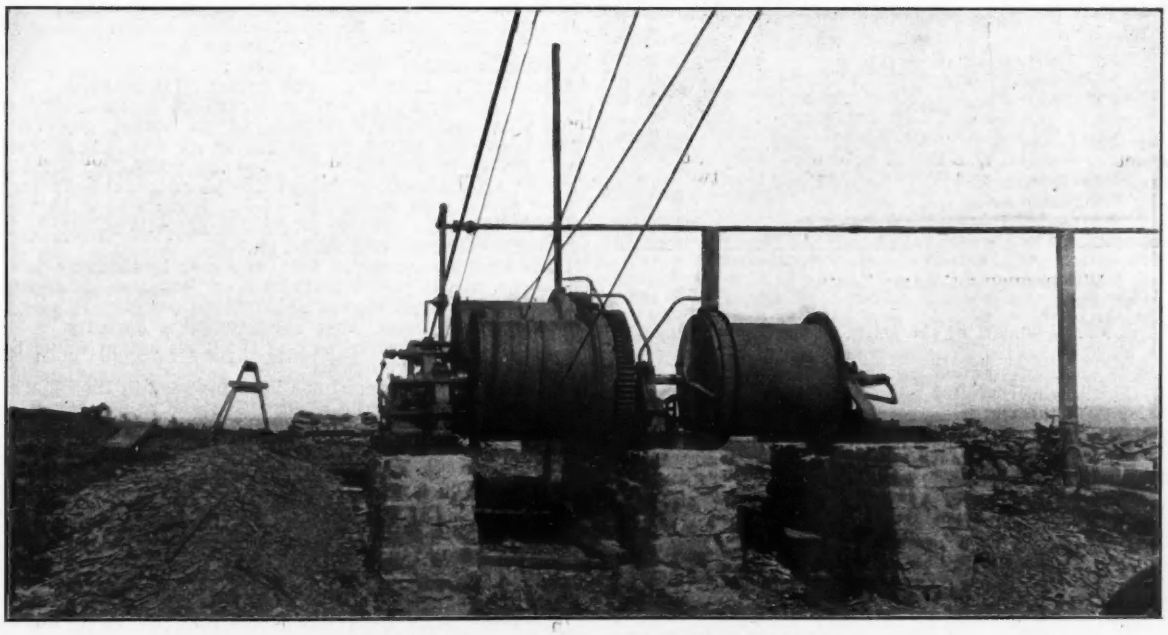
HOISTING PLANT AT THE NEWTON SLATE QUARRY, N. J.

The slate quarries at Newton, in Sussex County, New Jersey, which had been idle for several years, were recently purchased by the firm of Hopkins & Williams, lately incorporated as the New Jersey Slate Company. A large quantity of slate has been taken out of these quarries at different times, and the new managers purpose working them on an extensive scale. A new and complete plant for hoisting and transferring slate and waste has been put up at the quarries by the S. Flory Manufacturing Company, of Bangor, Pa. Two views of this plant are shown in the accompanying illustrations.



WIRE ROPE TRAMWAYS IN SLATE QUARRY, NEWTON, N. J.

The clear span of each cable is from 400 to 500 ft. from the top of the derrick to the lower anchorage. Each cable is provided with a 50-H. P. 10 by 12-in. double cylinder, double friction drum and reversible link motion hoisting engine. The front drum is used to control the endless or traction rope and the second for hoisting. Usually at slate quarries the inclination is sufficient to operate with a single drum engine, allowing the carriage to pay out by its own gravity. Where this is the case the endless rope is controlled by a large sheave placed at the derrick or near the engine, but independent of it. This sheave is provided with a brake which enables the operator to hold the carriage fixed at any point on the cable, but has no propelling power. The chief office of this arrangement is to hold the carriage while the fall block is lowered into the pit and the load hoisted, when the brake is taken off and the carriage conveyed to the top by means of the hoisting rope. Where the inclination is not sufficient it is necessary to have this arrangement attached to the engine in order to control the carriage in the opposite direction, and at the same time the engineer has full control to stop at any point desired. For holding up the slack in the fall line a series of trollies connected by a chain are supplied on each plant and throughout equipped with all modern improvements. One of the engines is arranged with a third drum for the purpose of operating a plane to carry the refuse as well as other material out on the rubbish dump and the blocks to the shanties for the slaters. The plant is now steadily at work in the quarries.



HOISTING DRUM IN SLATE QUARRY, NEWTON, N. J.

ABSTRACTS OF OFFICIAL REPORTS.

Copper King, Limited, California.

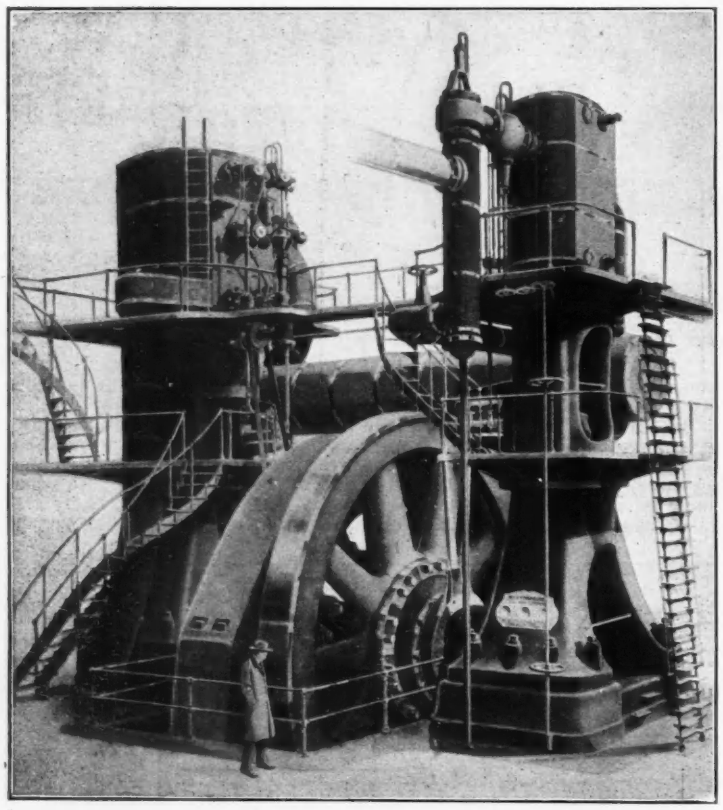
This company's report for the year ending September 30th, 1900, as issued from the London office, shows that the sum of £19,281 has been expended on machinery and £14,320 on mine development. The London expenses have amounted to £3,713.

The directors' report says: "Since the incorporation of the company, steps have been taken to obtain the patent of the property, which has been granted by the United States Government and transferred to the company, which is now registered as the owners. Steps have also been taken to equip the mine with a thoroughly up-to-date plant. There are more than 120,000 tons of ore in sight, the average assay value of which is stated to be 6.71 per cent. of copper, 2.1 dwts. of gold, and 1½ oz. silver per ton, which will show a very large margin of profit on treatment. The mine has been opened up to a depth of over 400 ft. from the surface, and has been developed by means of five levels below the adit level, and a large amount of rich ore opened up, the width of the ore body opened up so far, down to the fifth level, varying from 2 to 19 ft. A very valuable discovery was made in August last disclosing the existence of a parallel lode in No. 4 level, varying in width from 1 to 5 ft. and the assays ranging from 9 to 32 per cent. of copper. This lode appears to have no identity with the original lode cut in the upper levels, from which it is separated by a clay selvage. Further development of this

lode will be put in hand as soon as the new mine equipment is completed. A very satisfactory contract has been entered into for the sale of the whole of the company's output for next year. Many difficulties were experienced in obtaining a suitable site for the smelting works, and long delays were thus unavoidably caused. A site was eventually secured on the Bay of San Francisco, and the erection of the smelting works with a present capacity of 100 tons per day is proceeding rapidly. The general manager has notified your board that this plant will commence work during the month of December."

A LARGE WESTINGHOUSE-CORLISS ENGINE.

The Westinghouse Machine Company has recently built two vertical, condensing, cross-compound engines of 5,000 H. P. each, for the Kings County Electric Light and Power Company, of Brooklyn, N. Y. One of these engines is here illustrated, as it appeared when temporarily set up, at East Pittsburg. The engines were especially designed by Mr. Cyrus Robinson, of the Westinghouse Company, for driving alternating-current generators mounted directly on the shafts of the engines. They have a nominal capacity of 4,000 H. P., and will carry overloads up to 7,500 H. P. The principal dimensions of the engines are as follows: Height from floor line to top of cylinders, about 35 ft.; length along the shaft, 38 ft. 6 in.; width, 28 ft.; diameter of high-pressure cylinder, 46 in.; diameter of low-pressure cylinder, 86 in.; stroke, 60 in.; revolutions per minute, 75; steam pressure, 180 lbs. The diameter of the shaft at the wheel-fit is 39 in.; diameter of shaft at bearings, 34 in.; length of journal bearings, 60 in.; total weight of the shaft, without crank checks or flywheel centers, about 75,000 lbs. The shaft is of hydraulic forged open-hearth steel, and is hollow its entire length, the hollow space being 16 in. in diameter. The flywheel has 100 tons in the rim, and the diameter is 28 ft. The velocity of the rim will be 6,600 ft. a minute.



WESTINGHOUSE-CORLISS ENGINE.

There is room left between the cylinders for a Westinghouse generator, which will furnish current for both light and power. The revolving part of this generator is mounted directly on the steel shaft of the engine, and is bolted to the flywheel. The reheating receiver is shown in the illustration, and there is also an improved form of Corliss valve-gear. The journal bearings and guides are water-jacketed. The generators have an output of 2,850 Kw. each, giving a 3-phase current of 250 amperes in each phase, at 6,600 volts, with 3,000 alternations per minute. They have separately excited fields and operate in multiple with other Westinghouse units. The bed-plate of one of these engines weighs over 43 tons and is cast in one piece. The flywheel is built up in segments.

Besides the two engines described above the Westinghouse Machine Company is building a number of similar and even more powerful engines, among which are 16 engines of 5,000 H. P. each for the Third Avenue line of the Metropolitan Railway of New York; two engines of the same capacity for the Boston Elevated; two engines of 1,500 H. P. for Manchester, England; and eight engines of 6,500 H. P. for the new Waterside power plant of the New York Gas, Electric Light and Power Company.

COAL MINING IN COLOMBIA.—According to the "Echo des Mines," of Paris, a company is being formed, chiefly with Swiss capital, to work large coal deposits, situated partly on the Atlantic and partly on the Pacific slope, near the Isthmus of Panama.

SUBMARINE OIL WELLS IN CALIFORNIA.

Written for The Engineering and Mining Journal by W. G. Young.

Unique among the oil districts of California is that of Summerland, where wells are sunk in the bed of the ocean, and the underlying deposits of petroleum pumped from submarine pools. There is a distinctive feature about this field that is possessed by none other in the State, or probably in the world. Here wells are drilled and pumped both on land and under the sea. The district contains in all about 325 producing wells. Nearly two-thirds of these have been sunk on the beach and on the headlands lying immediately back of the shore, the remaining third being submarine wells. Those on the headlands are drilled in the usual way, while those in the ocean are drilled and operated through wharves and trestles extending out into the sea. In all, 17 of these wharves have been built, the longest being the Treadwell Pier, which is in the neighborhood of 1,250 ft. in length, about 850 ft. of which are occupied by derricks.

The demonstrated portion of the Summerland Field is a fraction over a mile long, running in an easterly and westerly direction. It has an average width of a little less than 1,500 ft. These figures relate to the developed portion of the field only. As a matter of fact the real extent of this pool has not been determined. The drill has thus far demonstrated a productive area for about a mile along the beach running for a distance of 600 ft. back from the shore line and about 350 ft. into the ocean. Anywhere within these limits, good producing wells may be obtained. Some experimental work has been done outside of these boundaries, but not sufficient to establish the existence or non-existence of oil. The farthest inland producer was obtained at about 600 ft. from the beach. Beyond this well a few attempts have been made to secure oil, but not to a sufficient depth to settle the question of there being an inland trend of the strata. How far the oil bearing stratum extends under the sea no one knows. It is significant, however, that at the extreme distance of 850 ft. from shore one of the best wells of the field was secured, and it may be said in general that the wells sunk farthest from the shore have so far proved not only better producers than those inland, but their output is also of a better quality. Experienced operators at Summerland are of the opinion that the oil-bearing sand extends for a great distance into the ocean. This belief seems warranted from the fact that several miles off the shore a considerable area of the ocean is covered with petroleum, which must have risen to the surface through seepage from the bed of the ocean. The theory is further sustained by the character of the formation found on the channel islands. One or two of these are now looked upon as good prospective oil territory, and several companies are interesting themselves in a closer examination of the islands, with a view to exploiting them for oil.

Another distinctive feature of the Summerland oil wells is their unusual shallowness. It is claimed that in this respect they differ from any other wells in the United States. Some of the wells on the headlands and on the beach are not more than 125 ft. deep, running from that to 250 and 300 ft. in depth. The submarine wells vary from 200 to 500 ft. in depth, and are the most prolific, while the gravity of the oil found in them is higher than that of the shore wells. The submarine oil will average about 14° gravity, although it is sometimes found in considerable quantities of 16° gravity, and several producers have made a claim of 20°. This oil comes from a lower stratum than that which is produced from the shore wells. On account of the water, the upper stratum, from which the oil on shore is taken, is cased off by the submarine operators. As is usually the case in oil operation, the lower stratum is thicker than the upper, that under consideration being from 25 to 75 ft. in thickness. The output of these ocean wells ranges from 5 to 40 barrels a day, with an occasional exception which will produce more. A conservative estimate of the output, however, will average between 5 and 15 barrels per day to the well. It is recorded that one well drilled in this field some time ago yielded an output of 800 barrels a day; after a week or two of this phenomenal behavior the well subsided into a good average producer. From 1 to 12 barrels per day may be said to be the average production of wells on shore. The petroleum from these ranges from 8° to 14°.

The total output of this field, as shown by shipping data, is nearly 100 cars per month, the capacity of a car being on an average 140 barrels. This gives a production of about 14,000 barrels. It may be said in this connection, however, that a considerable quantity of the oil is consumed by the operators, so that the gross output would be somewhat in excess of the above figures.

A great deal of capital has been invested in the oil industry at Summerland, mostly for the construction and equipment of wells, pumping plants, tanks and other adjuncts. There are 11 pumping plants used in the operation of the Summerland field.

In comparison with the other oil districts of California, Summerland would appear to make rather an unfavorable showing from the statements above given. As a matter of fact, however, this is one of the most favorable points for oil operators, principally because of the small expense entailed in handling the business under the conditions here prevalent. In the first place, the Summerland wells are the cheapest to drill and the most economical to operate in the United States. The prevailing contract prices for drilling is about $1 per foot up to 300 ft., after which depth a fraction more is asked. In general figures a Summerland well fully equipped should cost about $2.25 per foot, including drilling, casing and incidental costs. This, however, does not apply to the submarine wells, where, of course, the cost of wharfage or trestle must be taken into consideration. These are constructed, however, in such a manner as to involve small additional expense. In marketing their petroleum producers in this field have an advantage. Their facilities for shipping by rail are the best possible, as the oil is transferred directly from storage tanks to the tank cars. Shipment by water, of course, is more easy from this point than anywhere else.

Summerland has not the prospective interest that many other districts in California possess. The chance for striking a gusher of from 100 to 500 barrels capacity are nil. This, however, is offset by the fact that within the known boundaries oil is a certainty and can be had at a minimum cost.

SOME NOTES FROM THE ALASKA COAST.

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

The steamer "Bertha" brought quite a few miners into this city from Cook's Inlet and Valdez to Seattle on her November voyage. Among the number was Mr. S. W. Wible, of Bakersfield, Kern County, Cal. He has purchased several miles of placer claims on Six-Mile and Canyon creeks, on Turnagin Arm, Cook's Inlet, in the last three years, and has a complete hydraulic plant in operation, and will put in another next season. He is using a hydraulic elevator of his own invention and patent with very good success. He was elevating 40 ft., and not reaching bedrock; over 1 mile of ditch was excavated after September 20th in order that a higher pressure could be used in the future. Mr. Wible states that there are a dozen hydraulic plants being started or in construction on the different creeks in the district. He estimates the yield of gold from the Cook's Inlet section for 1900 at $100,000.

There are some copper claims on Prince William Sound that have had quite a little development work done on them in years past. The owners are still doing their assessment work. They have not succeeded yet in getting sufficient capital to defray the expense of mining and shipping much ore.

A new discovery of gold in placer diggings has been made since July on the Copper River, 500 miles from its mouth, on Slate Creek, a tributary of the Chistochina. About 1 oz. an hour per man was taken out by sluicing. The party stayed until their provisions were about exhausted, and when they were obliged to come out they had $30,000 in dust. Since their arrival in Seattle a quarter interest in one of the claims changed hands for $10,000. This new district lies on the divide between the watersheds sloping toward Cook's Inlet, Tanana and Copper River. The shortest and most accessible route is over the Government trail, now building, from Valdez, a distance of 240 miles or thereabouts. The discoverers will return in February to Valdez with a year's supplies, which will be sledded over a broken mountainous country to their claims.

The Government has erected some very substantial barracks for the soldiers near the harbor of Valdez and is pushing the work of the military telegraph with the expectations of having a continuous line of some 2,000 miles in operation next year, connecting with Nome. Poles made of 3-in. pipe are used for supporting the wire where timber is scarce.

The interior of Alaska, in Circle City, Jack Wade, Munock and Kyokuk districts has produced considerable gold, probably $1,000,000, but it will be a difficult task to form an accurate estimate, owing to the fact that the bulk of the gold is sold in Dawson and that camp gets credit for everything shipped.

I was pleased to notice that you made mention in your editorial of December 8th the need that Congress should give immediate attention to Alaska legislation. A number of wrecks have occurred this fall and winter in Alaskan waters, due to the absence of lighthouses, which should be maintained by the Government.

There are scores of locations in Alaska now being explored for coal. But no considerable quantity has yet been taken out. The prospects are good that a great industry will yet be developed when the required capital is properly used in mining the Alaska coal-fields.

IMPORTS OF IRON ORE.—Imports of iron ore into the United States for the 11 months ending November 30th were 838,262 tons, which compares with 560,424 tons in 1899 and 163,703 tons in 1898.

A REMARKABLE WEIGHING MACHINE.—Probably the most remarkable scales in the country have been installed at the Washington Navy Yard for the purpose of weighing large guns. This machine cannot only outweigh the largest railroad scales by full 50 tons, but its results are accurate to a pound, a qualification which is not always found in the railroad apparatus. The platform of the machine is 48 ft. long and 12 ft. wide. The machinery is installed upon a cement base resting upon long piles. The capacity of the scales is 150 tons, but experiment has proven that the machine will weigh with absolute accuracy anything from the smallest weight up to a pair of 13-in. guns. For comparison it may be stated that the maximum capacity of the average railroad scale is in the neighborhood of 100 tons.

IRON ORE IN NEW SOUTH WALES.—The "Australasian Mining Standard" says that the last official report of Mr. Jaquet, New South Wales Geological Surveyor, on deposits of iron ore near Carcoar, was of a very interesting character. Great prominence has also been given to the subject of the manufacture of iron and steel in New South Wales, owing to the offer of the Blythe River Company. The publication of further information from Mr. Jaquet has therefore been somewhat eagerly looked for. The Minister for Mines, Mr. J. L. Fegan, however, replying to a question in the House, said that Mr. Jaquet has been engaged for some time past in locating and examining the iron ore deposits of the colony, and, as this is necessarily a work of some magnitude, it will take some few months longer before his report can be completed. Mr. Jaquet is frequently having fresh deposits brought under his notice.

THE PRODUCTION OF ALLOYS BY PRESSURE.—In an article on the plasticity of metals, M. Spring, of Liege, in a recent number of the "Revue Generale des Sciences," has given an account of his experiments on the combination of metals to form alloys, under the joint action of heat and pressure. He finds that pressure alone is sufficient to cause agglomeration of the particles of all plastic metals with the formation of an alloy; thus, copper and tin in the form of filings can, by pressure alone, be converted into bronze, while in the same way brass can be formed from zinc and copper. These results are explained by the assumption that a solid solution is produced at the inter-faces of the contiguous particles of the different metals, and that diffusion then occurs, as has already been proved by the experiments of Sir W. Robert Austen, on the diffusion of solid gold into solid lead. In this way molecules of the one metal pass into the mass of the other, and so a homogeneous mixture is produced. Some interesting "welding" experiments were also carried out; thus, in one series of trials, small cylinders of various metals were prepared, with their ends planed as flat as possible; they were then superimposed, in pairs, in furnaces at temperature far below the melting point of any of the metals, and, after a sufficient lapse of time, the cylinders, even in the case of platinum, were found to be so completely welded that, after polishing, the joint could not be detected. In the case of brass and zinc a layer of brass 0.01 in. thick was formed at the junction, although the pressure applied was only that due to the small superimposed cylinders. The experiments have also been extended to sand and grains of limestone, with the object of finding out whether rocks could be formed in this way. This part of the investigation was not, however, successful.

DIAMOND-BEARING DEPOSITS IN BRITISH GUIANA.—We have heretofore referred briefly to these deposits. A fuller statement is given in a recent report of the Commissioner of Mines, published in the "Imperial Institute Journal," London. The report says: "Diamonds were found in the Putareng Creek, a tributary of the Mazaruni River, situated in 6° 14′ latitude north and 60° 18′ longitude west, in 1890, by Edward Gilkes, a gold digger, while prospecting for gold; and the discovery was the result of accident rather than design, the stones being first found at the bottom of the conical wooden dishes called battels (Brazilian batea) commonly used in the colony in prospecting for gold. The journey to the creek from Georgetown occupies from 12 to 20 days, according to the state of the river. Of this period one day is consumed in proceeding by steamer from Georgetown to Bartica, at the confluence of the Mazaruni and Essequibo rivers, 5 to 7 days are taken up in getting as far as the mouth of the Puruni River, a branch of the Mazaruni; and the river channel is for the whole distance impeded by cataracts. From the Puruni River there are alternate stretches of rapids and still water for about 2 to 3 days up to Tiboku Fall; from this fall upward the river is still and flows between low-lying banks, varied here and there by hills. This portion takes from 4 to 6 days to cover. The diamonds are found in a formation consisting of sandy pulverulent clay mixed with rounded and subangular pebbles and nodules of ironstone, of pieces of quartz, felsite and ironstone conglomerates with much ilmenite sand, rounded pebbles of schorl, pleonaste, small, white and faintly colored corundum and topaz. The depth to which digging has been carried is 7 ft. from the surface, and the amount excavated in one place is only 150 cu. yds. From this over 1,000 stones have been extracted of a generally pure color and water and shape, but of small size, the largest weighing, perhaps, 2 carats. In another part of the diggings close by, where digging was carried on first, about 100 cu. yds. have been worked, yielding over 1,000 stones. The gravels here are peculiar for the large number of transparent quartz crystals free from any trace of erosion. The whole formation appears to overlie granite. Diabase is common in the neighborhood, and mica schist occurs in the Mazaruni at the commencement of the path into the diggings, which are situated some 3½ to 4 miles from the Mazaruni. In practice locally, the diamondiferous soil is carried down to a small creek by men in small wooden trays and washed in sieves of 1/16-in. fineness, and the gravel residue is sorted while wet by two men and a small boy. The district is fairly healthy, though subject to frequent rainfall and heavily forested. Game abounds and fresh vegetable food can be sparingly obtained from the Indians, of whom there are a few (Akawoios) living in the vicinity."

INHABITED SAFETY VALVES.—The "Locomotive," published by the Hartford Steam Boiler Inspection and Insurance Company, says, in a recent issue: "Overalls, monkey-wrenches, hammers, loose rivets and all sorts of things are sometimes found in boilers by our inspectors, as we have frequently related in 'The Locomotive.' It may be mentioned, too, that pop safety valves also frequently serve as receptacles for unexpected things, though in this case the foreign articles are usually deposited there by our friends of the world of fur and feathers. Pop valves, in fact, are growing to be quite fashionable places for birds' nests, and it is not uncommon to find that the English sparrow has utilized such a valve as a hatchery and nursery. When a number of boilers are always run together as a single battery, it usually happens that there are slight differences in the blowing points of the different valves, so that under ordinary circumstances only one or two of the valves blow, relief enough being obtained in this way to keep the pressure below the blowing points of the others. An enterprising sparrow may then rear her brood in a lazy way, by building her nest where the temperature is just right. All she has to do, then, is to turn the eggs from day to day, and the rest of the time she can go to picnics or attend circuses or grand opera, according to her taste, with the full knowledge that the proper temperature is being maintained at home. She has, in fact, quarters that are up to date. They are heated by steam, and the boiler is cared for by her janitor, the engineer, who is paid for this service by the otherwise soulless corporation that owns her flat.

"Occasionally, however, she and her little family are evicted—literally 'fired out.' We hear, in the larger world, of the janitor giving a tenant 'a good blowing up,' and this is what happens, from time to time, to our little bird families, through no fault of their own. One of the inspectors from the Hartford office of this company recently had a pop valve blown in his presence, so that he might be satisfied that it was in good condition. A straight escape pipe led from the valve out through the side of the building, and when the valve blew, out through this pipe came nests and other things galore, and immediately there were flats to rent in that valve and pipe.

"Squirrels, too, are coming to regard pop valves with increasing favor, both as nesting places and as safe-deposit vaults for the storage of nuts. A few days ago one of the Hartford Company's inspectors found a pop valve that was filled almost solid full of hickory nuts by some industrious squirrel. It is not likely that these nuts would have prevented the valve from blowing, and yet, when considered from an engineering standpoint, they could not be regarded as an improvement to it. A pop valve loaded with hickory nuts and provided with a straight, horizontal escape pipe, would, when it blew, be likely to make the neighbors think the Spanish war was still with us!"

THE HUG WATER WHEEL.

The accompanying illustration shows a water wheel of the tangential impulse type which has been devised and is manufactured by Mr. D. Hug, of Denver, Colo. This wheel is now in use in a number of places, and has been very successful. Its chief point of difference from other wheels of the same type is in the form of bucket, which, the inventor claims, is better than any previously designed.

In Fig. 4 is shown a full-size view of a Hug bucket, and in Figs. 1, 2 and 3 an assembled view, showing wheel, buckets, nozzle and case, in their proper relative positions. The direction of the water during its passage through the buckets is completely reversed; and it issues from the discharge ears in such a manner that it cannot strike the back of the following bucket. The peculiar form of the bucket channels is such that they present an exceedingly small area of wetted surface, which together with their gradual curvature throughout serves to greatly reduce the ordinary losses of efficiency due to friction and impact.

In wheels of 12 in. in diameter and under, the buckets are cast on the rim of the wheel, but in larger sizes, they are made detachable, to allow replacement when worn by sand, or damaged by stones issuing from the nozzle. The patented form of bucket fastening, as shown, is superior to the usual bolt fastening in strength and security, and in ease of attaching and detaching buckets. The bucket is provided with a tenon which fits a mortise in the rim of the wheel. A steel key, driven through a hole in the tenon, engages the web of the wheel rim, thus drawing the tenon to its proper seat in the mortise, and causing the rear support of the bucket to bear firmly against the face of the rim. The bucket is so adjusted to the wheel rim that the tenon will be firmly seated in the mortise as soon as the rear support bears against the rim. This support relieves the tenon of all bending stress due to the force of the stream. The renewal of buckets, when necessary, can be made quickly and at small expense.

In all cases there are wetted surfaces in the buckets, and the water thrown from these surfaces by centrifugal force will be carried round by the wheel when in a closed case, unless caught and deflected by some means. The Hug protector is a guard or frame, which, in connectior with the extended end of the case opposite the nozzle, prevents water from being carried round by the wheel.

The smaller wheels, or motors, are enclosed in cast-iron cases and ready to be connected to the supply pipe. The wheel and buckets of the 6-in. and 12-in. motors are cast in one piece, and are of phosphor-bronze. The buckets are formed entirely in dry sand cores. The casing is of cast iron, neat in appearance, and properly designed as to strength, and space for discharged water. All bearings are lined with the best grade of babbitt metal, and are made self-aligning and ring-oiling, so as to require the least possible care or attention. The nozzle is furnished with three interchangeable tips of different diameters, to provide for a change in either the pressure of the water, or the load under which the wheel is to run. The smallest stream that will do the work should always be used. If more power is required, a larger tip may be substituted. In the 6-in. and 12-in. motors, the tips may be changed by unscrewing the nozzle from the outside of the case. In the larger sizes, a suitable handhole is provided in the side of the case, through which the nozzle can be reached.

For larger wheels a heavy framework of timber, if well built, will answer for general purpose where the power developed is not great. When a large amount of power is to be developed, and for permanent plants in general, it is best to have the wheels mounted on an iron framework seat in masonry, and enclosed in an iron housing. Wheels provided with cast-iron cases are shipped ready to be bolted to the foundation, being fully adjusted before leaving the works. It is claimed that the mechanical construction is of the highest order, and according to the best modern practice. Durability and efficiency are maintained for a long time, except when gritty water is used, in which case a new set of buckets may be required from time to time.

In August, 1898, a 12-in. Hug motor was tested under 182.23 ft. head by Professor R. C. Carpenter at Cornell University, Ithaca, N. Y. This motor is designed to receive water from nozzles ranging in size from ¼ in. to ½ in. in diameter. The efficiencies attaining this test with the different nozzles are as follows: ½-in. nozzles, 86.5 per cent.; 7/16-in. nozzle, 86.5; ⅜-in. nozzle, 85.5; ¼-in. nozzle, 71.0 per cent. The efficiency of 86.5 per cent. for the ½ and 7/16-in. nozzles, is the highest ever reached under similar conditions. The efficiencies of 85.5 per cent. and 71.0 per cent., obtained when using the ⅜-in. and the ¼-in. nozzles, respectively, are exceptionally high, for these nozzles deliver to the wheel quantities of water equal to only 56.25 per cent. and 25.00 per cent. of the maximum capacity of the wheel. The average efficiency from one-half to maximum water supply (one-half load to full load), is 86.1 per cent., while the average efficiency from one-quarter to maximum water supply (one-fifth load to full load), is 82.6 per cent. A very desirable feature is the range of speed that is possible, without materially developing the power; for example, at full load, a variation in speed of 10 per cent. from the normal, will decrease the power only 2 per cent.

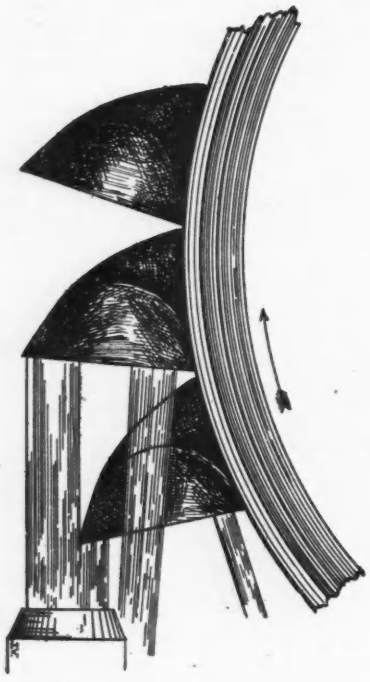


FIG. 1.

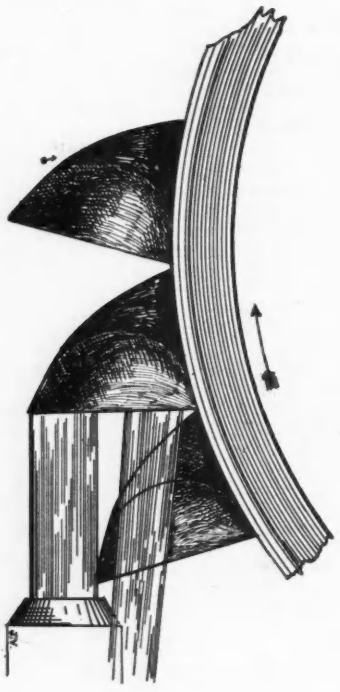


FIG. 2.

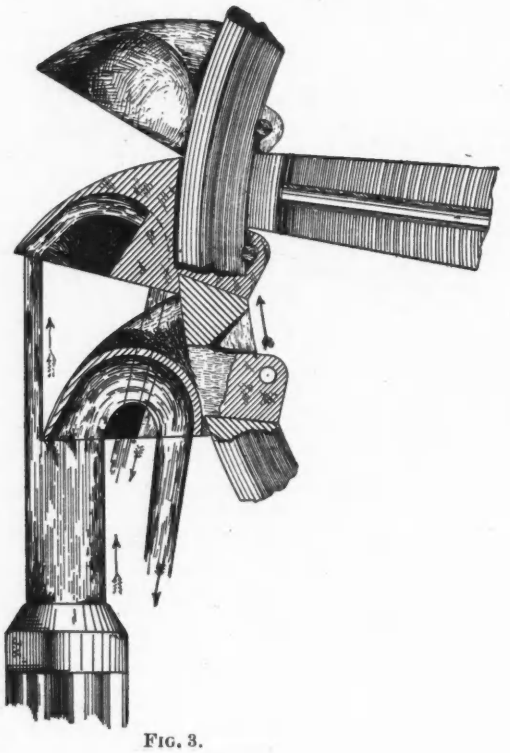


FIG. 3.

THE HUG TANGENTIAL WATER WHEEL.

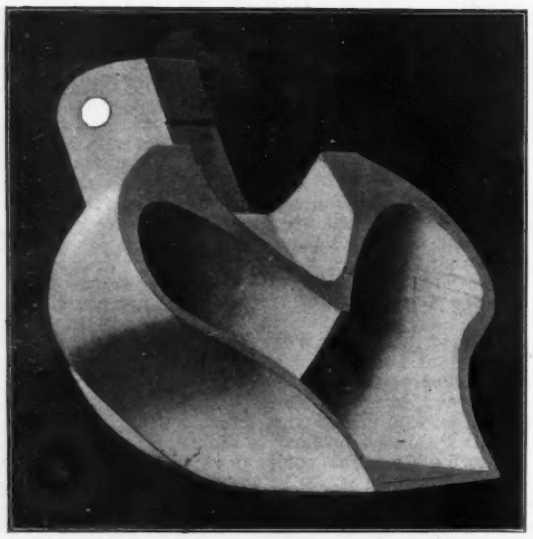


FIG. 4.
THE HUG WATER WHEEL.

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.)

263.—Quartz Pseudomorphs.—Some fine pseudomorphs of quartz, after calcite and baryte have been taken from the De Lamar Mine at De Lamar and the Oro Fino, near Silver City, Idaho. Native gold and silver are frequently found associated with these pseudomorphs which, when polished, make very attractive cabinet specimens.

264.—Moldavite.—Peculiar glassy bodies, occurring in sandy deposits of late tertiary or early quaternary age, in Moldavia, are attracting the attention of Austrian and Bohemian geologists. These glassy masses are ovals from 1 in. to 1½ in. long, and are characterized by various markings, some of which suggest finger impressions, while others form a network of furrows, often with a rough radial arrangement. They have been regarded as relics of prehistoric glass manufacture, but this view is not supported. Dr. F. E. Suess, the Austrian geologist, finds resemblances between them and meteorites, and there is a disposition now to consider them of extra-terrestrial origin. Resemblances have further been pointed out between them and some obsidian volcanic bombs found in Australia.

265.—Badenite.—This new mineral is described in the Annals of the University of Jassy, Roumania, by Prof. P. Poni. It is an arsenide of cobalt, nickel and iron, containing nearly 5 per cent. of bismuth. It is found in the Valley of Neguletzul, near the village of Badeni-Ungureni in the district of Muscel. It occurs massive with granular to fibrous structure; specific gravity, 7.104; color steel-gray, becoming dull on exposure to the air. An analysis gave: As, 61.54; S, 0.27; Bi, 4.76; Co, 20.56; Ni, 7.39; Fe, 5.98. This gives a ratio of 2:3 nearly for (Co, Ni, Fe) : (As, Bi, S). The composition is somewhat analogous to that of rammelsbergite.

266.—Brostenite.—This is another new mineral from Roumania, described by Professor Poni. It is a hydrated magnite of iron and manganese, analogous to chalcophanite in composition, and occurs in large quantities in crystalline schists of the Region of Brosteni, District of Suceva. It is compact, friable; of a black color; luster semi-metallic on the fresh fracture but becoming dull on exposure to the air. Treated with hydrochloric acid, it gives off chlorine freely. Different samples yielded varying results upon analysis; but one showed MnO_2, 52.40; MnO, 6.16; FeO, 11.47; CaO, 3.05; H_2O, 11.97; Gangue (SiO_2), 14.75. The formula calculated is: $2MnO_2.RO + 2H_2O$, where R = Mn, Fe, Ca. Prof. Poni thinks the deposits of manganese oxides have probably been formed by the action of carbonated waters upon manganese carbonate.

267.—Quartz Crystals and Galena.—Through the courtesy of Mr. E. P. Backus, of Newark, N. J., we have received from J. O. Poole, of Ellenville, N. Y., some handsome specimens from the old lead mine near Ellenville. The specimens show crystallized quartz and galena. The quartz crystals are unusually bright and clear and the crystal faces are sharply defined. Some of the crystals show rhombohedral terminations. Other specimens show pyrite in quartz.

268.—Newfoundland Rocks.—C. A. M.—No. 1 is a very basic igneous rock—an old lava. It shows flow structure nicely. The white flecks are probably broken and pulled out feldspar crystals—not lucite, as you suggest. The rock for convenience may be called a porphyrite. No. 2 is apparently one of those pegmatite-like masses occurring with gabbro intrusions. The green mineral, as shown by its crystalline form, was originally pyroxene, but is now altered in large part to chlorite. The reddish mineral, much crushed, is a basic feldspar. The analysis you send, in its proportion of silica to alumina, approaches that of labradorite.

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.)

The Dynolectric Instrument.—Can you tell me anything about an instrument with this name? It is described in the accompanying circular. —P. R.

Answer.—This correspondent calls our attention to one of the least substantial and wildest circulars that we have seen among a good many of that kind. It is entitled "A startling discovery and a desirable investment," and contains claims for a certain indescribable invention called a "dynolectric gold extraction method or instrument," virtues which certainly do not exist in any instrument ever discovered or thought of.

It starts, as in common in such cases, with the unfounded assertion that no modern analytical methods can determine the amount of precious metal in ore, and it asserts, without any proof or explanation, that this dynolectric gold extraction process will extract three or five times as much gold as can be found by any other means. This kind of humbug we have seen a good deal of, but it still seems to crop up from time to time, and, no doubt, finds people with little enough sense to part with their money for it. The president of the company is said to be Mr. J. A. Marshall; the secretary, Mr. George L. Taylor, and the attorney, Mr. J. William Taylor, and they hail from that hot-bed of fakes, St. Louis, Missouri.

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 December 18th, 1900.

663,862. HIGH-PRESSURE FLUID COMPRESSOR. Niels A. Christensen, Milwaukee, Wis. The combination with a cylinder having a suction port and a discharge port, means for closing such suction port after partial compression, but before complete compression, and a safety-valve device communicating with said suction port.

663,904. PROCESS OF PRODUCING ARTIFICIAL BUILDING STONES, BRICKS, ETC. Peter Kleber, Malatatt-Burbach, Germany. The process consists in first mixing moist sand and unslaked lime so as to hydrate a portion of the lime only; second, adding sufficient water to hydrate the lime; thirdly, bringing the mixture into a plastic, cohesive condition by the addition of a minimum amount of water, molding said plastic mixture into blocks, and finally subjecting such blocks to the action of high-pressure steam.

663,910. STEAM PUMPING ENGINE. Frank M. Leavitt, New York, N. Y., assignor to the E. W. Bliss Company, same place. A vacuum pumping engine comprising an upright standard having within it a condenser, the engine cylinder mounted on said standard, above a condenser.

663,914. ART OR PROCESS OF TREATING ORES. Harry Luckenbach, Seattle, Wash., assignor of one-half to William McPhee, Arlington, Wash. The process of treating and disintegrating ores, which consists in heating the ore to a high temperature, applying niter cake thereto and, while still hot, treating the same with water.

663,945. LADLE FOR MOLTEN METAL. John A. Waldburger and William J. Smith, McKeesport, Pa. A combination of a metallic shell; a non-metallic lining for the bottom and the lower portion of the sides, and a metallic lining for the upper part of the ladle.

663,946. POWER APPARATUS FOR REMOVING SKULL FORM LADLES. John A. Waldburger and William J. Smith, McKeesport, Pa. The combination of a ladle having a metallic shell with an opening in its bottom; a plug in said opening, and an ejecting power cylinder and ram.

663,993. GOLD-SEPARATOR. White W. M. Hickey, San Francisco, Cal. A gold-separator, including an inclined screen, an amalgamated plate below the screen, and having riffles, a water tank, a chute connected with the amalgamated plate, and an amalgamated drum or cylinder below the discharge end of the chute.

663,999 and 664,000. CONCRETE MIXER. Samuel P. McKelvey, Chicago, Ill., assignor of one-half to O. G. Hurson, same place. An outer and an inner drum, the outer having open ends, the inner drum open at one end, short wings set at an angle projecting from the inner surface of each drum.

664,001. ROLLS FOR REDUCING OLD RAILWAY RAILS TO BARS. Adam Nisbett and William G. Ives, Chicago, Ill. The combination of means for spreading one side of the base and the same side of the head away from each other, rolls having grooves for receiving the base and head thus distorted and shearing rolls.

664,010. SUBMARINE EXCAVATOR. John E. Walsh, New York, N. Y. A pumping apparatus for dredging purposes having a pump suspended upon a hinged guide and vertically movable thereon.

664,017. PROCESS OF MANUFACTURING COKE. Arthur M. Edwards, Newark, N. J. A process for manufacturing artificial fuel, consisting in mixing diatomaceous earth and crude petroleum, and then heating said mixture for removing the vapors and the illuminating oil from the petroleum, and finally cooling it.

664,037. HYDRAULIC EJECTOR. Matthias Crowther, West Pittston, Pa. The combination of a stand-pipe, a reservoir, a force pump emptying said reservoir into said stand-pipe, an ejector having its discharge pipe leading to the reservoir and provided with a shut-off valve, the nozzle of said ejector receiving its actuating jet from the stand-pipe, and a supply pipe connected to said ejector and leading to the various pools or reservoirs throughout the mine, this supply pipe and its branches being provided with shut-off valves whereby a portion of the water pumped into the stand-pipe will be employed to automatically collect the water from the various pools of the mine and empty it into the reservoir; and the supply pipe and its branches may, in case of fire, be supplied with water from the stand-pipe.

664,059. ORE-MIXING MACHINE. John P. Schuch, Jr., Cripple Creek, Colo. An open tank provided at the bottom with a solution drain, a perforated false bottom, an ore-discharge pipe communicating with the interior of the tank, and a revoluble agitator.

664,060. PROCESS OF EXTRACTING PRECIOUS METALS FROM THEIR ORES. John P. Schuch, Jr., Cripple Creek, Colo. A method which consists in combining the crushed ore with a cyanide solution while both are in a warm condition, mechanically mixing the ore and solution by agitation, charging the mixture during the agitation with hot air, and finally separating the ore and slush or pulp from the metal in solution.

664,066. PROSPECTING PAN. John Tobin, New York, N. Y. A prospecting pan having a plate secured to and extending over its side to form a pocket between said plate and side, and a series of separated projections depending from the free edge of said plate and constituting a grid.

664,073. HOISTING MACHINERY. Hans C. Behr, San Francisco, Cal., assignor to the Fraser & Chalmers Company, Chicago, Ill. The combination of a pit-head sheave, over which the rope passes immediately from the mine shaft, the rope-winding drum, a rope-guide sheave adjacent to the winding drum, a swinging frame, carrying both said sheaves, pivoted above the mine shaft in line with the rope depending into the shaft and operating to hold the sheaves approximately in alignment with each other throughout the movement of the frame.

664,086. REGULATOR FOR ELECTRICALLY-ACTUATED AIR COMPRESSORS. Edward M. Hewlett, Schenectady, N. Y., assignor to the General Electric Company, of New York. The combination of a switch having two circuit-closing positions, means for causing the switch to assume one or the other position when the pressure reaches its superior and inferior limits, respectively, means for shunting the switch by a circuit of low resistance when in one position, and means for opening the shunt when the switch reaches the second position.

664,091. ART OF WORKING METAL. George S. Merrill, Beloit, Wis., assignor to the Merrill Process Steel Company, St. Louis, Mo. The process consists in, first, rolling the metal while hot, next sub-

jecting the article to practically simultaneous compression from all directions, and partially cooling the article.

664,114. VALVE FOR PUMPING ENGINES. James S. Atkinson, Louisville, Ky., assignor of one-fourth to William C. Atkinson, Nashville, Tenn. The combination with a cylinder piston and steam chest and intermediate exhaust passages of a valve adapted to reciprocate in the steam chest, and having a central chamber provided with an induction port on one side and two eduction ports on the other.

664,128 and 664,129. APPARATUS FOR ROLLING SHEETS. William C. Cronmeyer, Pittsburg, Pa., assignor of one-half to Samuel Diescher, same place. Apparatus for manufacturing black plates and other sheets without doubling, consisting of a series of roughing rolls in which the metal is subjected to a continuous roughing rolling operation; shearing mechanism; reheating furnace, and a series of finishing rolls.

664,136. BRICK KILN. Henry C. Dunn, Erie, Pa. The combination in a brick kiln of permanent side and central longitudinal walls, a series of permanent transverse walls extending from the side walls to the central wall forming the ends of the kiln, and also dividing it into a series of chambers.

664,153. ORE-ROASTING FURNACE. Frederick W. Holtman, Richmond, Va. A furnace, having a vertical series of beds therein, the walls being slotted horizontally, adjacent to the upper surfaces of said beds, sleeves and rack-bars supported thereby, and rake teeth carried by said bars.

664,154. HEAT-INSULATING PAINT. Jacob Hommel, Los Angeles, Cal. A composition of vinegar, asbestos, saltpeter, alum and glue.

664,173. ANNEALING FURNACE. George W. Packer, Chicago, Ill. The combination of an upper and a lower heating chamber, separate charging means for each chamber.

664,193. MACHINE FOR MAKING EXPANDED METAL. Geo. A. Turnbull, Chicago, Ill. The combination with cutting-rolls and forming-rolls, of expanding-rolls provided with means for engaging a sheet of metal received from the forming-rolls.

664,230. AIR COMPRESSOR. Harry M. Salyer, New York, N. Y. The combination with a central block having an externally-threaded neck on each side, cylinders having their inner ends threaded and screwed on said necks, pistons in the cylinder piston rods, a central shaft passing through the boss, and necessary ports and passages.

664,248. CRUCIBLE FURNACE. George W. Emmerson and James Ward, Newcastle-upon-Tyne, England. The combination with a series of connected chambers adapted to enclose crucibles, of an antecedent gas-heating chamber.

664,269. PROCESS OF RECOVERING ZINC. Carl Hoepfner, Frankfort-on-the-Main, Germany. The process consists in acting upon zinc oxide or a material containing it, with a solution of calcium chloride at a temperature above normal, and a pressure above atmospheric, and precipitating the zinc as hydroxide.

664,304. METHOD OF GENERATING HEAT BY COMBUSTION OF FUEL. Wilbur B. Wilkinson, New York, N. Y. The method consists, first, in supplying air thereto from below the fuel to assist in producing a partial combustion and decomposition of the fuel; second, in supplying air and steam from above the fuel to the gaseous fuel elements arising therefrom; and third, in supplying vapors of a hydrocarbon to the escaping gases.

664,319. OIL STONE. Milton B. Hill, Worcester, Mass, assignor to the Norton Emery Wheel Company, same place. The combination with particles of abrasive material, of a vitrified, waterproof bond and a soft filler.

664,330. AMALGAM PRESS. Angus Mackay, Douglas Island, Alaska, assignor of one-half to Robert M. Mein, San Francisco, Cal. An appliance comprising a frame, a threaded apertured plate, rods connecting the plate to the frame, a cylindrical receptacle having open ends and screwed at its top in the aperture of the plate, a ram movable in said receptacle, and means for actuating the ram.

664,333 and 664,334. MANUFACTURE OF CARBIDE OF CALCIUM. John M. Morehead, Chicago, Ill., assignor to the Union Carbide Company, same place. The improvement, which consists in passing a current of electricity and thereby establishing a region of reduction under a gas-tight hood, feeding raw material under the hood into the region of reduction, removing the product downward.

664,355. GAS APPARATUS. John P. Johnston, Oak Park, Ill., assignor to himself and Edward E. Morrell, same place. The combination of a heating chamber, a stack, a gas chamber and a feeder.

Week Ending December 25th, 1900.

664,427. CONVEYING APPARATUS. Staunton B. Peck, Chicago, Ill., assignor to the Link Belt Machinery Company, same place. The combination of links or connecting pieces provided with pivots, by means of which they are connected in position, a projecting part or end on each link projecting past one of said pivots and in substantially the same plane with both pivots of said link, and a bucket between two of said projecting parts.

664,437. TREATING WHITE LEAD. Thomas C. Sanderson, London, England. Improvement in the direct treatment of white-lead pulp precipitated from a basic acetate solution without intermediate washing, consisting, first, in partially removing the mother-liquor; secondly, in separating the remaining mother-liquor by adding considerable excess of oil; thirdly, in expelling the excess of oil and the separated mother-liquor by pressure in the cold, and, fourthly, reducing the proportion of oil in the final product to the required limit.

664,438. COMPOSITE METAL CASTING. William D. Sargent, Chicago, Ill., assignor, by mesne assignments, to the American Brake Shoe Company, same place. Composite metal castings consisting of a relatively hard cast metal cast upon or about a ductile metal reduced to the form of a sheet of commercial expanded metal, said cast and ductile metal being integrally united by fusion.

664,488. BATH FOR RENDERING ORE FRIABLE. Karl Miller, London, England, assignor to the Karl Miller Ore Reduction Syndicate, Limited, same place. The composition of a bath for rendering friable red-hot ore dipped therein, consisting of a mixture of a solution of equal quantities of sodium carbonate and caustic soda having a density of 15° Baume, and about 1½ per cent. of peroxide of hydrogen.

664,502. TRIPOD. Patrick H. Reardon, San Francisco, Cal. In a support for a rock-drill, the combination of a cylindrical head comprising two parts and each provided with an integral arm, a leg hinged between said arms.

664,526. REGENERATIVE HEARTH-FURNACE. Eduard Blass, Essen, Germany. The combination, with the hearth, the arch, two regenerators and reversing-valve, of two sets of gas-injecting nozzles arranged in diverging planes above the arch.

664,537. PROCESS OF EXTRACTING COPPER. James Douglas, New York, N. Y. The process of reducing copper ore and matte, which consists in electrolyzing solid cuprous chloride and employing the gases evolved in the treatment.

664,550. ELECTROLYTIC TREATMENT OF IRON FOR PRESERVATION THEREOF. Henry L. Hollis, Chicago, Ill. The method consists in temporarily inserting the object to be treated in a solution of caustic soda as an electrolyte, temporarily connecting said object as a cathode with a source of electricity, passing an electric current from said source through the electrolyte and iron object to remove foreign material from the object, thereafter temporarily connecting said object as an anode with a source of electricity, passing an electric current from said source through the iron object and electrolyte, whereby oxidizing conditions are furnished at the surface of the iron object and oxygen will there be united with the iron to form a protective coating.

664,562 and 664,563 UNLOADING MEANS FOR AIR-COMPRESSORS. Geo. de Laval, Cambridge, and George P. Aborn, Boston, Mass., assignors to the George F. Blake Manufacturing Company, New York, N. Y. In a multiple-stage compressor, the combination with cylinders operating at different pressures, of means for unloading the pistons including an unloading-valve controlled by the final-receiver pressure and controlling unloading-ports for the different cylinders.

664,587. TUYERE. Joseph Schoeler, Hamilton, Ohio. The combination, with an air-chamber provided with a fuel-basin and means for the admission of air, of two rotatable plates at the bottom of the basin, one on top of the other.

664,626. MACHINE FOR COLLECTING PRECIOUS METALS FROM RIVER BEDS. James R. Dake, Merrill, Wis., assignor of one-half to Romuald A. Oleshak, same place. A machine comprising a frame, a shaft mounted in said frame, a current-pressure wheel attached to the said shaft, the said wheel having laterally-swinging blades and adapted to be entirely submerged, an endless carrier operated from said shaft, buckets on said carrier, and a sluice into which the buckets discharge.

664,628. DREDGING APPARATUS. Frederick Ecaubert, New York, N. Y. The combination of a chain-and-bucket conveyor, a supporting-platform upon rotating mechanism whereby with the operation of the conveyor and the removal of the material the same sinks by gravity.

664,630. METHOD OF MAKING SULPHURIC ANHYDRIDE. Hans A. Frasch, New York, N. Y. The method of making sulphuric anhydride by catalysis, which consists in burning a ferric-oxide-producing substance upon a body of ferric oxide in a cenverter and in the presence of air, and then conducting sulphur dioxide, derived from an external source, through the converter and over the contact substance while the latter is in a state of combustion.

664,635. ORE SEPARATOR. Augustus C. Hartung, Galena, Kan. The combination, with a table adapted to rotate as described, of a plow or scraper, a bar arranged radially over the table, means for suspending the scraper from said bar, and a lever and pawl whereby the scraper may be forced inward.

664,645. ROLLING-MILL. Julian Kennedy, Pittsburg, Pa. Vertical rolls, having a bearing at each end, a slide-bar for each of said bearings and a laterally and vertically movable support for the lower bearing of each of said rolls.

664,650. ELECTROMAGNETIC ORE-SEPARATOR. Emil Kreuser, Mechernich, Germany. A pair of closely-placed co-operating rotary cylindrical electromagnets recessed at points intermediate their ends for inducing-coils, the winding of one cone being opposite that of tne other, so that the lines of force pass through a single air-space constituting the magnetic field.

664,677. PROCESS OF WASHING GAS. Richard E. Pippig and Otto F. F. Trachmann, Kiel, Germany. The process consists in washing the gas with an amin capable of combining with bisulphide of carbon.

664,712. GRADING-AMALGAMATOR. Alfonso Z. Baldenebro, Mexico, Mexico. A funnel-shaped amalgamating vessel having an inlet at the the top, an axially-disposed water-supply pipe located in the said vessel and provided with a spraying device adjacent to the tapered bottom of the receptacle, an interior lateral channel extending downward from said inlet along the inclined wall of the vessel and and terminating above the level of the spraying device, the forward wall of said channel having a convex inner face parallel with the opposing concave face of the vessel and an elbow pipe near the bottom.

664,723. APPARATUS FOR ACTUATING LIQUID WITH COMPRESSED GAS. Rudolph Conrader, Erie, Pa. The combination of two pump-chambers arranged to bring the liquid to be actuated and the actuating-gas into contact within said chambers, and automatically-actuated valve mechanism for controlling the movement of compressed gas.

664,764. PYROMETER. Henry von Koehring, Seguin, Tex. In a pyrometer, an indicator, means for operating the movable member thereof, an inclosing tube closed at top and open at bottom, an open framework composed of columns of low expansive capacity, a tube entering the upper end of the inclosing tube and having a column of balls therein adapted to operate the movable member of the indicator.

664,768. ORE-SEPARATOR. Alexander R. McDonald, Jr., Montreal, Canada. A sluiceway for ore-separators, comprising a sluice; a series of depressions formed therein; and bands extending vertically in series around the lower side of said depressions, the ends of bands of alternate series being joined, whereby the material passing over said sluice will be given a backward rotary movement.

664,782. FILTERING MATERIAL. Eduard von Rittershausen, Vienna, Austria-Hungary. A filtering material in the form of slabs or hollow bodies composed of particles of syenite that have been caused to adhere together superficially by baking.

GREAT BRITAIN.

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

Week Ending November 24th, 1900.

24,469 of 1899. ELECTROLYTIC RECOVERY OF ZINC. S. Ganelin, Berlin, Germany. Introducing zinc-lead compounds in the form of oxide into molten zinc chloride and electrolyzing for the recovery of the metals.

25,516 of 1899. ROCK BREAKER. R. A. Hadfield and A. G. M. Jack, Sheffield. Improvements in the mechanism of rock breakers of the jaw type.

10,370 of 1900. WHITE-LEAD MAKING. F. J. Corbett, Melbourne, Australia. The use of aldehyde and acidulated water for corrosion in the manufacture of white lead.

11,252 of 1900. STEEL TEMPERING. O. Gentsch, Madgeburg, Germany. Material for use in the tempering of steel.

17,138 of 1900. SLAG HANDLING. Wellman Seaver Company, Cleveland, Ohio, U. S. A. Improved mechanism for handling the slag in open-hearth furnaces.

17,459 of 1900. POTASSIUM-SODIUM ALLOYS. G. F. Jaubert, Paris, France. The production of liquid alloys of potassium and sodium.

Week Ending December 1st, 1900.

20,142 of 1899. BLAST-FURNACE CHARGER. F. Dawson and J. Kuhr, Middlesbrough. Improvements in plant for charging blast furnaces.

253 of 1900. LEAD AND ZINC ORE TREATMENT. G. E. and A. R. Davis, Manchester. Separating lead and zinc as nitrates or chlorides by adding oxide of zinc and passing carbonic acid through.

1,004 of 1900. CRUCIBLE FURNACE. A. Reynolds, Sheffield. Crucible furnaces arranged with movable bottoms to facilitate tapping without moving the crucible body.

8,518 of 1900. ALUMINUM SOLDER. J. Novel, Geneva, Switzerland. Fluxes for use in soldering aluminum with tin solder.

PERSONAL.

Mr. E. L. Erickson, of Nome, Alaska, has been in New York City.

Mr. H. W. Hardinge, mining engineer of Denver, Colo., returned from California a few days ago and left at once for Mexico.

Mr. Lyman S. Ailes, of Seattle, Wash., who has been in Alaska since early in 1897, is to sail for Europe from New York on January 12th.

Mr. D. A. Wales, of Detroit, Mich., recently resigned as general manager for the Detroit & Deadwood Mining Company, of Deadwood, S. Dak.

Mr. R. Henry Jeffrey, representing the Globe Mineral Exploration Company, of London, Eng., has been looking over mining properties near Salisbury, N. C.

Mr. J. Ralston Bell, mining engineer, of Denver, Colo., left there recently for Lower California, Mexico, on professional business. He expects to be absent about 6 months.

Mr. John T. Williams, a prominent engineer of New York City, accompanied by Mr. Herzig, mining engineer, is inspecting mining properties in the vicinity of Gold Hill, North Carolina.

Mr. David H. Lawrence, late superintendent of the Waldo Gold and Copper Smelting Company, of Waldo, Ore., is leaving San Francisco to take a position in Sonora, Mex., for a London company.

Mr. S. W. Tyler, mining engineer, of Denver, Colo., has returned there after several months absence on professional business in Utah, where he was employed as expert in important mining litigation.

Mr. Forest Rutherford, assistant superintendent of the Guggenheim smelter at Aguas Calientes, Mex., was recently in Denver and Pueblo, Colo., where he resided for several years previous to going to Mexico.

Mr. W. L. Mercer and Chas. L. Vaughan, of New York City, have dissolved their partnership as stock brokers and Chas. L. Vaughan and West Pollock, Jr., have formed the partnership of Pollock & Vaughan.

Mr. Walter Techow, vice-president of the Investors' Bond and Security Company of New York City, is representing the company in London, where he has charge of the company's affairs pertaining to mining matters.

Mr. Alexander Stewart, formerly manager of the Tharsis Copper Mine in Spain and at present general manager of the Chilagoe Railway and Mines Company, of Queensland, Australia, is now on his way to London, and will pass through New York City.

Mr. Capt. William J. Richards, formerly mining captain at the Fayal Mine and later Mesabi Range superintendent for the Corrigan-McKinney interests in Minnesota, has been chosen to succeed Captain Bennett as range superintendent of the Corrigan-McKinney mines on the Menominee Range in Michigan.

We wish to state that Mr. H. F. Evans, of Rossland, British Columbia, is no longer connected with the "Engineering and Mining Journal" or the Scientific Publishing Company in any way; and that he has no authority to make contracts, to take orders or to receive money on account of the "Engineering and Mining Journal" or the company.

Mr. Philip Argall, having completed his 6 years' engagement as manager of the Metallic Extraction Company, of Cyanide, Colo., has resumed the practice of consulting engineer, with headquarters at Denver. Mr. Argall will examine and report on mining properties and design or erect reduction work. His specialty is the treatment of low-grade gold and silver ores.

Mr. Jacob L. Greatsinger, president and manager of the Duluth & Iron Range Railroad, has been elected president of the Minnesota Iron Company, to succeed Mr. Don H. Bacon, who moves to New York City to become chairman of the Tennessee Coal, Iron and Railway Company. Mr. Greatsinger has been in the employ of the Minnesota Iron Company since 1888, when he went to Duluth as master mechanic of the road. In 1890 he was made general superintendent, and two years after general manager, to which position was almost immediately added the presidency. He has held the dual place ever since. He has been noted for his care of his employees, his executive skill, and thorough management. He began railway service as fireman on a wood-burning locomotive out of Chicago 40 years ago.

SOCIETIES AND TECHNICAL SCHOOLS.

Montana State School of Mines.—C. W. Goodale, of Great Falls, Mont., has presented to the museum of the school his large collection of ores and minerals, which include about 1,000 specimens, many of which are rare. The collection contains specimens from localities in Arizona, New Mexico, Colorado, Utah, Nevada, Montana, Wales, etc., and adds much to the value of the school collection. Mr. Goodale has also presented to the library of the School of Mines several partial series of scientific journals, including the "Engineering and Mining Journal."

Engineers Club of Philadelphia.—At the anniversary meeting, the 23d anniversary of the founding of the club, on December 15th, 86 members and 173 visitors were present.

President Edgar Marburg opened the exercises with an historical sketch of the development of the club from its foundation, on December 17th, 1877, to the present time.

Mr. Carl Hering delivered a lecture upon the "Popular Features of the Paris Exposition," which was profusely illustrated with photographs reproduced by the electric lantern.

At the close of these exercises an informal reception was held, during the course of which light refreshments were served, and music was rendered by an orchestra.

Massachusetts Institute of Technology.—The students of the senior class taking steam engineering are making boiler tests as a part of the work in the engineering laboratory. The first test is to last 96 hours and the second 88 hours. The students are divided into watches of 4, each watch serving for 8 hours. December 31st the fires were cleaned and ash-pit cleared; the position of the water in the gauge glass was noted and the test began. An instructor is in charge of each watch. One student keeps the log of the test, weighs the coal, takes the temperature of the feed-water, that of the outside air, that of the room and of the draught in 4 places—in the ash-pit, at the bridge, over the grate and at back of boiler—another weighs the water used by the boiler and checks the work of another student who cares for the calorimeter by which the quality of steam made by the boiler is determined; a fourth student analyzes the flue gas of the same places for which the temperature was read and reads the flue temperature and measures the draught in the flue. The boilers on which the first test is being made are 100 H. P. each. Two boilers have Hawley down-draught furnaces and two have Sheffield shaking grates. Every 12 hours and at the end of the 96 or 88 hours, the boilers are cleaned, the ash-pit cleared, and the water brought to the position of the start, then the data are collected and the students calculate the results.

Central Mining Institute of Western Pennsylvania.—At the recent meeting the following named officers were chosen for the ensuing year: President, T. B. DeArmitt; vice-president, Charles Connor; secretary, James Blick; editor of journal, F. C. Keighley; auditors, Reuben Street and John Butt. These officers comprise the executive committee.

The principal topic of discussion at the session of December 19th was, "Would the Establishment of a National Mining Bureau at Washington Promote the Advancement of the Science of Mining and Be Conducive to the Interests of the Mining Industry in General and Be a Benefit to the Public at Large?" Thomas K. Adams and Josiah Evans led the debate. William Seddon, of Brownsville, read a paper on mine management and some of its responsibilities. Bernard Callaghan led an interesting discussion upon the subject, "Mine Ventilation—the Proper Methods for Its Distribution to Obtain the Best Results."

The June meeting of the institute will be held in Johnstown. on the invitation of Josiah T. Evans, of this city, mine inspector of the Sixth Bituminous District and a member of the institute. The meetings heretofore have been held in Pittsburg. Instead of spending the whole time in discussion of papers, as formerly, the 200 or so persons attending will probably visit the Cambria Steel Works and pay especial attention to the use of coal and coke. They will also make a visit to the Berwind-White mines at Windber.

INDUSTRIAL NOTES.

The Union Steam Pump Company, of Battle Creek, Mich., reports that it now has contracts for over 3,000 pumps for future delivery, and thinks that the trade for 1901 will be equal at least to that of 1900.

The Geo. V. Cresson Company, of Philadelphia, reports that inquiries hold up well and the outlook for this year's trade is good. Recent foreign shipments include crushing rolls to Japan and power transmission machinery to England and to Rotterdam.

The largest foreign order ever filled in Ansonia, Conn., is now awaiting shipment. It consists of 1,000,000 lbs. of trolley wire for a road in India. Between 15 and 20 cars will be needed to ship it to New York, where it will be placed aboard a steamer.

The National Metal Company, of the City of Mexico, which last August chose as directors C. B. Lewis, W. B. Lewis, Walter Keenan, J. B. Strong and Samuel Riker, of New York City, has succeeded to the business hitherto carried on in Mexico by the Lewis Company.

An order has been secured by Mr. H. E. Maxfield, of the Lawrence Machine Company, of New York City, for an electrically driven centrifugal pumping plant, to have a capacity of 5,000 tons of water per hour, to be installed at the Kawasaki dry dock, at Kobe, Japan.

The business of the S. H. Supply Company, of Denver, has increased to such an extent lately that it has been obliged to enlarge its warerooms. These now cover a space of over 20,000 sq. ft. In addition to its stock of machinery the firm now carries an assortment of pumps and plumbers' supplies.

H. K. Porter & Company, of Pittsburg, Pa., last month shipped to Iona Island, on the Hudson, for the Government, the largest compressed air locomotive yet made. The engine is standard gauge and weighs 22 tons. The air pressure in the main tanks is 950 lbs. It will be used to haul ordnance.

The A. Leschen & Sons Rope Company, of St. Louis, Mo., is to open an office and warehouse in New York City. The house owns and manufactures the Leschen Company's patent aerial wire rope tramway for transporting ore, rock, dirt, timber, etc., not only over mountainous, but also over level country.

Dickman & Mackenzie. assayers and mining engineers, of Chicago, have recently greatly extended their laboratories and are now able to make analysis of organic compounds, their work heretofore having been wholly in mineral products. Prof. J. D. Schoer, a graduate of the University of Zurich, is in charge of the laboratory.

The Baldwin Locomotive Works, of Philadelphia, Pa., will this month send to Marseilles, by the steamer "Fortuna," 10 locomotives for the Paris, Lyon et Mediterrane Railway Company. The works turned out during 1900 some 1,217 locomotives, of which 363 were for export. In 1899 it built 901 locomotives, of which 338 were for export.

The J. H. Montgomery Machinery Company, of Denver, Colo., reports recent sales of a lot of cars and rails for Sunset, Colo.; a 10-stamp mill with engine, boiler and crusher to Dr. Richmond, of Denver; a complete coal mine equipment to Evans, Colo.; a whim to Utah, and a Challenge automatic ore feeder and slugger drill outfit to Boulder County.

Wm. H. Strout & Son, mining engineers and chemists, have removed their office from Ouray, Colo., where the senior member of the firm has been established since 1876, to Denver. Mr. W. H. Strout previous to coming to Colorado had had about 15 years' experience in the mines and the metallurgical works of Nevada, and his son is a graduate of the State School of Mines of '96.

It is stated that the American Clay Working Machine Company has decided to rebuild its large plant at Willoughby, O., partially destroyed by fire some time ago. Two large buildings are to be erected—a machine shop and foundry. The buildings are to be of steel and brick and there will be sidings from the Lake Shore and Nickel Plate roads. The machine shop will include in its equipment an electric plant and electric traveling cranes.

The Gates Iron Works, of Chicago, has recently installed a new 80-ft. span 20-ton electric traveling crane and equipped its machinery shop with 6 heavy lathes, 4 boring mills and other new tools, increasing the capacity 40%. The company reports a steady increase in business, especially from South America and Australia. The increase in export trade in 1900 over 1899 was about 25%, while the increase in the entire trade was 40%.

The East Jersey By-Products Coke Company has been formed in New Jersey, with a capital stock of $2,500,000, to manufacture coke, gas and the by-products of coke. The attorney who formed the company is E. L. Bushe, who also formed the New York By-Products Coke Company some months ago. The latter has a capital stock of $6,000,000, all of one class of stock. It was said at the time of the formation of this company that it would enter the local gas field with plants similar to those owned by the New England Gas and Coke Company, of Boston.

The Hanover Fertilizer Company, of Baltimore, has been incorporated with a capital stock of $25,000, with the privilege of increasing it to $75,000 by an issue of $50,000 of preferred stock. The company will purchase of the Hanover Fertilizer Bone Company, Limited, of Hanover, Pa., and will manufacture and deal in fertilizers, fertilizer material, etc. Mr. Robert H. Pollock has been elected president, with the following board of directors: Messrs. Robert H. Pollock, William B. Thomas, J. Wesley Myers, S. Miley Miller, Edward C. Carrington, Jr., James F. Cowan and Charles B. Kranz.

Messrs. Charles H. Besly & Company, of Chicago, Ill., report their business as very good, with indications of increased business for 1901.

Complete equipments of small tools and supplies have been shipped to Ohio, Indiana, Iowa, Texas, Kansas, Nebraska, Montana and Utah. The firm is receiving many letters from foreign countries for circular matter and full particulars regarding its specialties. Recent shipments have been made to Argentina, Uruguay, Brazil and England. The firm also reports numerous orders for its Gardner grinders and states that it is very busy at its factory at Beloit, Wis., where it has increased the output fivefold.

The Bullock Electric Manufacturing Company, of Cincinnati, O., is to equip its fine factory at Norwood, O., with additional machinery to manufacture alternating-current apparatus, and contracts to install some large power transmission plants have been taken already. The company will build its machinery under an arrangement with the Oerlikon Company, of Switzerland, which has an international reputation for its alternating work. It is understood that one of the engineers of the Oerlikon Company is to supervise the construction of some of the first machines, and that Mr. Bullock has secured the technical services of Mr. B. A. Behrend, at one time a prominent member of the Oerlikon staff.

The Carnegie Company has decided to erect without delay the largest pipe and tube works in the world at Conneaut Harbor, O., at a cost of $12,000,000. The plant will cover 5,000 acres which were recently acquired by the company. The works will stretch over a mile of the lake front and will include all essentials for pipe and tube manufacturing, from the ore to the finished product, the ore being unloaded from vessels at one end and worked through the successive stages to the finished pipe and tubing at the other end. Electric power will be principally employed. The blast furnaces to be built will probably exceed in capacity the 2 stacks now being finished by the company at Rankin. The investment, exclusive of ground, will reach about $12,000,000.

The Jeanesville Iron Works Company, of Jeanesville, Pa., recently closed a contract with the Montana Ore Purchasing Company, Butte, Mont., for 2 compound condensing mine pumps, and 2 duplex jet condensers; the Butte & Boston Consolidated Company, Butte, Mont., for a triple-expansion mining pump for a 1,400-ft. lift, and for the same company a 1,000,000-gal. compound mining pump with a 600-ft. lift. The firm has also closed a contract with the Consolidation Coal Company, Frostburg, Md., for a 2,000,000-gal. capacity mine pump to be operated by compressed air, and a 7,000,000-gal. mining pump for the Jefferson & Clearfield Coal Company, near Reynoldsville, Pa., the second one of the same type made within the past 2 months.

The Gruson Company, which has obtained from the Krupp Company the exclusive American rights to manufacture the Gruson turret for coast defense, is erecting several buildings on its land at Eddystone, 12 miles south of Philadelphia, and expects to start manufacture in the spring. At first the company will confine itself to machine and foundry work, including heavy castings and rolls for rolling mills. The Gruson Company has 5 buildings in course of construction, an office, 33 by 57 ft.; a foundry for heavy work, 122 by 200 ft.; a machine shop, 122 by 100 ft.; a pattern shop, 40 by 75 ft., and a power house, 45 by 90 ft. This latter will be equipped with 500 H. P. boilers and a 400 H. P. Harrisburg engine; also the Crocker-Wheeler electrical equipment.

TRADE CATALOGUES.

The Detroit Valve and Washer Company, of Detroit, Mich., manufacturer of leather specialties, issues a neatly-printed little folder describing the company's hydraulic leather and its "Wear Well" leather packings. Numerous testimonials from satisfied buyers are given.

Hoffman-Pinther & Company, of the City of Mexico, Mex., have published a new illustrated catalogue and price list of assayers' and chemists' supplies and apparatus. The list includes glassware, balances, electric batteries, crucibles, muffles, furnaces, blowpipe outfits, scientific books, etc. The list comprises 116 pages.

Mining plant construction is the special business of the firm of Frederick T. Snyder & Company, mechanical metallurgical engineers, of Chicago, Ill. In a little pamphlet the company gives particulars of its methods and states that it is prepared to make examinations or tests or furnish specifications of stamp mills, reduction works and hoisting, pumping and power plants.

The new shops of the Canadian Rand Drill Company at Sherbrooke, Que., are described in a neat little 8-page pamphlet issued by the company. Work on these shops began May 1st, 1899, and the first machinery was installed in November of the same year. The company claims to have the most modern and convenient shop for the manufacture of machinery of any kind in Canada.

"Hints on Painting Structural Steel," an interestingly-written 34-page pamphlet by Houston Lowe, is published at Dayton, O., at the instance of the Lowe Brothers Company. The pamphlet is intended to be a study of practical conditions in steel making, the reasons of failure in metal coverings and the best methods of protecting steel products. It contains, therefore, hints that will be of use to engineers generally.

The American Steel and Wire Company of New York and Chicago issues a little 32-page pamphlet describing the electrical wires and cables for telegraph, telephone, light and power circuits that are made by its Washburn & Moen department. Price lists are given of trolley wire, line wire, magnet wire, cables, rail bonds, etc. The pamphlet also contains tables of comparative sizes, tensile strengths, weights and resistances of copper wire.

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.

ALASKA.

Juneau District.

(From Our Special Correspondent.)

An important transaction just completed is expected to change the history of the Nowell properties at Berner's Bay. The United States District Court has authorized the receiver to issue $150,000 of receiver's certificates with which to pay outstanding indebtedness, take up the first issue of receiver's certificates and continue development. These certificates are all taken for New York. It is understood that a consolidation of all the Nowell interests at Berner's Bay will soon be completed and that the control of the properties will pass into other hands. The receiver's certificates are but the first step toward reorganization. This will not affect the American Gold Mining Company, a Nowell corporation operating the Silver Bow Basin and the Sheep Creek mines.

The Portland-Alaska Gold Mining Company will again operate the 10-stamp mill at Seward City. Differences among stockholders caused a shutdown of the mine 2 years ago, but these are ended. A new tramway 9,000 ft. long will be built as soon as the weather permits.

Mr. J. P. Corbus has resigned as manager of the Alaska-Treadwell mines and is succeeded by Mr. John McDonald, of the Helena & Frisco mines in the Coeur d'Alene District of Idaho. Mr. Corbus has been in entire charge of the Treadwell interests since the death of Mr. Robert Duncan and for many years was Mr. Duncan's assistant.

Snettisham.—This mill will not run until the spring, although practically all the work on the new 20-stamp mill is complete. John N. Tisdale, president of the company, will spend the winter in New York City, and work will be resumed early in March. The freezing of the water supply stopped work.

ARIZONA.

Pinal County.

Hawley & Souffrien.—Colorado parties are reported to have bonded these lead mines near Globe.

Yavapai County.

Arizona, Eastern & Montana Mining Company.—Local papers state that Under Sheriff A. A. Johns has sold under execution the Lone Pine mine belonging to this company. It was knocked down for $3,000, the purchaser presumably having bid it in for Mrs. Maud M. Clifford, who has a claim of $60,000 against the company. The hoist, the air compressors, drills, etc., belonging to the company were sold by the sheriff to Brown Brothers for $1,500. Tools and other personal property had previously been sold for $700, making a total for the entire property of the company of $5,200. The company has 6 months in which to redeem the property.

Local correspondents state that H. B. Clifford, who promoted the company, now affects to be an injured party. Clifford is said to be at work on the Belcher Mine, and on the Kicker and Sibel claims of the Amalgamated Gold, Silver and Copper Company.

Black Warrior Copper Company, Amalgamated.—This company, according to reports, is working about 50 men in mining, smelting and building. The concentrator building is about completed and will be ready for the machinery, which is expected to arrive shortly.

Seven Stars Gold Mining Company.—The Territorial Supreme Court has decided the case of the Seven Stars Stockholders vs. Lawler & Wells in favor of the defendants. The case will now go to the Supreme Court of the United States.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Gwin.—A new level is to be opened up below the 1,600-ft. The 80-stamp mill is running continuously on fair-grade ore. During December $20 was paid in dividends.

Lincoln.—Drifting is progressing on the 500,650 and 1,200-ft. levels and everything is in good shape for a successful run.

Peerless.—The shaft at this mine, 2½ miles south from Jackson, is down 572 ft., and fair-grade ore 3 ft. wide has been struck at the bottom. The management intends to sink to the 1,200-ft. before cross-cutting for the other vein.

Butte County.

(From Our Special Correspondent.)

Chico Ochre Mineral Paint Company.—This company is shipping paint from its mill near Lovelock, and it is reported that a stratum of decomposed quartz has been encountered in the tunnel, which prospects well in gold.

Calaveras County.

(From Our Special Correspondent.)

Consolidated Gold Hill Mining Company.—This company is making preparations to work its gravel claims on Esperanza Creek, about 8 miles from Mokelumne Hill. Several men are employed on the channel, which is said to be large and rich in gold.

Morning Star.—It is reported that a 6-ft. vein of rich ore has been struck at this mine in Salt Spring Valley. The ore is said to carry galena. The strike was made about 600 ft. south of the point at which the Buffalo Company is running a tunnel to tap the Addison vein.

Utica.—This mine and mill at Angels is closed down to allow extensive repairs in the shaft, hoist and mill. Work will be resumed in a few days.

El Dorado County.

(From Our Special Correspondent.)

Rosebud.—At this mine near Fairplay, a steam drill is to be used and the 5-stamp mill near Mosquito is being moved to the property.

Mariposa County.

(From Our Special Correspondent.)

Garibaldi.—Work on the old shaft has been discontinued, and the hoist and boilers have been moved up the hill, where a new 3-compartment shaft in the footwall is down over 40 ft. The work on the mill is progressing rapidly.

Mariposa.—Sinking will be discontinued at this mine until the gallows frame has been altered to accommodate 2 skips. The rock crusher is running in connection with the new 20-stamp mill.

Mono County.

(From Our Special Correspondent.)

Crystal Lake Mining Company.—This company has installed a new electric plant which furnishes light for the mine and buildings. A shipment of bullion has been made.

Nevada County.

(From Our Special Correspondent.)

Black Bear.—The new mill at this mine at Randolph Flat has started up on good ore. There is a 4-ft. vein of high-grade ore. Torpie, Schroeder & Marwick are owners.

Diamond.—This mine southeast of Grass Valley, owned by H. G. Leeman, has been bonded to Charles M. Robertson and W. G. Coffin. There are 3 ledges on the property, said to be high grade. There is a pumping and hoisting plant, which can be put in order in a few days.

Kirkman.—A rich strike is reported at this mine 2 miles northwest from Nevada City. The ledge is small, but rich in gold.

Lecompton.—A fine body of sulphurets has been developed on this property in Willow Valley, on the 200-ft. level. The ledge is only 12 in. wide, but assays high. Twenty men are employed.

Shasta County.

(From Our Special Correspondent.)

Bonanza.—The tunnel is being extended by Connor & Son, across the creek from the Corinne claim. They are now in about 75 ft. on a parallel vein to that of the Corinne, and are running for a shoot about 60 ft. ahead. The property is 4 miles west from Redding.

Shafter.—On this property about 5 miles west from French Gulch a new ore body has been found.

Trinity Copper Company.—This company has recently purchased the following mining claims: Pine Flat, Wash Boulder, Motion Creek and

United Placer. It is reported that the smelter to be erected will be located on these claims.

Uncle Sam.—The new company, composed of Eastern and local men, is said to be making arrangements to erect a cyanide plant on this property, 7 miles west from Kennet, and to increase the milling capacity to 35 stamps. The average of the large body of ore blocked out is said to be low.

Sierra County.

(From Our Special Correspondent.)

Sierra.—The shaft is now down 110 ft., with a station at the 100 ft. from which levels have been run. A level from cross-cut No. 1 to cross-cut No. 2 when completed will permit sinking the pump 45 ft. giving a pressure of about 465 ft., enabling them to sink at least 200 ft. deeper. Eight men are employed.

Siskiyou County.

(From Our Special Correspondent.)

Commodore.—This mill is running steadily on good ore, which is being taken out by the lessees, Chase & Company.

Trinity County.

(From Our Special Correspondent.)

Coffee Creek District.—There has been a heavy fall of snow, 3 ft. being reported at the Nash Mine. At the Union Consolidated new timber sheds and bunkhouses have been completed and work has been resumed on the lower tunnel to tap the ledge. Two men are at work at the Yellow Rose of Texas, but no shipments of ore will be made before spring.

Sweepstake Mine.—This extensive gravel property 4 miles west from Weaverville is an ancient channel some 4 miles long. Previous to constructing a large hydraulic plant the Sweepstake Company explored the ground for some time. Different experienced experts agree that the pay gravel is from 300 ft. to 500 ft. in depth and will fully average 25c. per cu. yd. The gold is coarse. Near bedrock the gold is stained black. Frank H. Hall is general manager, with offices in San Francisco.

Tuolumne County.

(From Our Special Correspondent.)

Dreisam.—On the 400-ft. level of this mine at Arrastraville a blind shoot of very rich ore has been struck in the west cross-cut.

Golden West.—At 300 ft. in the tunnel of the Black Oak Mine a raise has started to the surface. This shaft will be 6 by 8 ft. and will be used for the cable and pump. The present ore body in the tunnel is from 3 to 10 ft. in width, showing free gold. The machinery for the new mill is on the ground.

Golswin.—The main shaft at this mine near Jamestown is down 300 ft. and is continued with 8-hour shifts. Grading has begun for a 10-stamp mill and the machinery will be in place within 60 days. The ore is fair grade.

Grapevine Mining Company.—This company has made the final payment on the Lost Fox Group, 3 miles from Buchanan. The south tunnel is in 260 ft., showing a 4-ft. vein of good ore. The north tunnel is in 120 ft., exposing a strong vein of $30 rock. A large force of men is to be put on development at once.

Laurel.—In the east cross-cut at the 200-ft. level near Arrastraville a strong body of ore has been uncovered, which is said to mill $30 per ton besides carrying a high percentage of high-grade sulphurets.

Mack.—This mine at Big Oak Flat has closed down temporarily, as the machinery is inadequate to sink deeper. A more powerful hoist will be installed; also a new 20-stamp mill and a 50-H.-P. air compressor to run the drills and pump. The entire electric plant will be furnished by the General Electric Company, of San Francisco.

Mount Jefferson.—Twenty stamps are now dropping at this mine. The vein in lower levels is 14 ft. wide. Concentrates yield $40 per ton, with an average of 70%. The manager, James M. Meighan, intends to add a chlorination plant.

Oleson.—This copper property at Golden City, which has been idle for years, is now being examined to decide whether it will pay to reopen. The old workings to 114 ft. yielded good gold and silver returns. Then copper ore was encountered and the gold and silver values run so low that work stopped.

Riverside.—At this mine, 4 miles from Carters, the tunnel is in 400 ft., leaving 100 ft. to be run before the ore shoot is struck. At this point there will be 700 ft. of backs. R. B. Lane is owner.

COLORADO.

Northern Coal Company.—Nearly 1,000 men employed in this company's mines have struck. Some of the demands made seem unreasonable, as they include an advance of $1 per day for machine men and 10c. more per day for pick mining. The company is paying already $3.50 per day to good machine men.

Boulder County.

The first shipment of copper ore from the new strike at the south fork of the St. Vrain, near Lyons, was made recently. The ore was in sacks and filled one Burlington & Missouri car.

Gilpin County.

(From Our Special Correspondent.)

Deeds and Transfers.—C. L. Harker et al. to Harper Morahood, the Aduddell, Good Luck and Poor Luck lodes for $75,000; Columbus-Gilpin Mining Company to Rebecca C. Barker, the Columbus Lode; George W. Sparks to J. C. Fagen, the Camp Grove Lode; B. D. Spencer, Sr., to Ben D. Spencer, Jr., ½ interest in Backsheesh Lode for $5,000; M. Stedman to H. C. and F. Balsinger, ½ interest Select Queen, Silent King and North Star lodes; R. M. Round et al. to Gold Coin Placer and Mining Company, placer ground containing 35.75 acres in Enterprise District; Lydia A. Anderson to John Galt, the Little Josie Lode; A. Morton to W. T. Scott, the Topsy Lode; C. M. Pishon to A. Krummert, the Sultan and Calcutta lodes; R. S. Baker to L. B. Suydam, the Legal Tender Lode; S. Munk to C. B. Chapman, ½ interest in Mogul Lode; Benjamin Shurtleff to Lucy J. Meyer, ¼ interest in Plymouth Lode and easterly 833 ft. of Carr Lode for consideration of $5,000; Randolph Mill Company to Carr Mine and Colorado Company, Limited, the Wheeler mill site, Randolph Mill, etc.

Black Hawk Ore Shipments.—During December the shipments of smelting and crude ores, concentrates and tailings from the Black Hawk depot to Denver smelters and other points of tratment were 292 cars, or 5,402 tons, making a gain of 848 tons over the corresponding month of 1899.

Buell.—Arrangements are completed with a view of starting up this well-known property, and a big production may be looked for.

Carr Mine and Colorado Company, Limited.—This syndicate has purchased the Randolph Mill, of 50 slow-drop stamps, on North Clear Creek, paying $23,000. The company is figuring on putting in a bucket tramway. Steve Hoskin, Central City, is manager.

Foot & Simmons.—Missouri owners are starting up this property, in Gregory District, after an idleness of 15 years. New machinery and new buildings will be erected. T. C. Mellor, Central City, is manager.

Lake County.

(From Our Special Correspondent.)

Leadville Ore Tonnage.—The gold output in 1900 was $2,851,146, against $2,190,222 in 1899; the silver output $4,650,318, against $4,132,128; lead, $2,704,576, against $2,213,258; bismuth, $240,900, against $10,000, and similar increases in manganese and copper The total production of 800,000 tons is divided as follows: 102,000 carbonate, 230,000 iron, 297,000 sulphide, 60,000 zinc, 79,000 siliceous and 47,000 manganese. The indications are that this tonnage will be largely increased during 1901.

Arnold Mining and Leasing Company.—At 600 ft. the new Rose-Emmet shaft is passing through flint. No trouble is experienced with water.

Bohn Mining Company.—Prospecting work below the 500-ft. level gave such splendid results that the company is completing arrangements to sink the shaft another lift. One very rich vein of copper ore has been followed in the old workings which shows splendid results.

B. W.—This is a new shaft just started on Poverty Flat Section by the Carletons. At 40 ft. a drill hole is to be sent down to find, if possible, the iron shoot of the Seeley.

Ella Beeler.—This group includes the Ella Beeler, Clear Grit and other territory and is to be leased to parties who have agreed to extend the 200-ft. tunnel and conduct other development.

Fortuna.—Lessees of this Iowa Gulch property have let a contract to extend this tunnel 1,000 ft.; rich silver ore was discovered some time ago in the tunnel workings.

Home Mining Company.—Stock is worth $8 to $9 a share. The Penrose, Starr and Bon Air shafts are producing almost 500 tons per day, mostly iron ore. A number of the stockholders are asking that the capitalization be increased from 50,000 shares at $1 a share, to 1,000,000 shares. There is some opposition to this plan.

Nubian Mining Company.—Besides opening a fine ore body in the Midland and P. O. S. shafts this company has decided to sink a new shaft on the St. Mary's claim, a short distance from Weldon No. 1 shaft. The old shaft, 450 ft. deep on the St. Mary's, has not been worked for twelve years.

Olga.—The Mussleman shaft on this claim is to resume work. This shaft is 200 ft. deep. The new lessees are putting machinery in place and will sink 150 ft. The shaft is on the south end of Yankee Hill.

Orinoco Company.—This is the new corporation formed to work the new A. V. Shaft at the foot of Harrison Avenue, and is largely owned by Messrs. Sheedy & Kountz of Denver. The shaft is down 145 ft.

Rex.—It is rumored that there is a deal to start up this old property and that Pennsylvania people are at the head of the new company. The mine created great excitement a few years ago by a find of rich gold ore, but water caused a cessation of work.

White Cap.—Arrangements are completed for sinking 200 ft. more to get under the ore bodies, followed in the A. Y. and Minnie workings to the White Cap lines.

Yak Mining, Milling and Tunnel Company.—Good headway is being made at this shaft, which taps the gold belt at 1,500 ft. Present shipments are over 150 tons daily.

Mineral County.

Creede Shipments.—Shipments of ore for the week ending December 31st were 69 cars, or 1,030 tons.

Teller County—Cripple Creek.

(From Our Special Correspondent.)

Most of the mines in the district laid off on Christmas day, making a slight difference in the output for December.

Mine Taxation.—It has been recently decided in the District Court that the county has a right to tax buildings and other improvements on mining property as well as 1/5 the net output of the mine. There is quite an increase in the assessed valuation of mining property and some of the smaller property-holders are trying to unite forces and prevent the collection of excessive taxes.

Treatment Rates.—There has been a recent reduction in treatment rate by the smelters, probably as an outcome of the mills treating a large amount of smelting grade ore; the new rate is $7 to $11 for parties who will contract their regular business, and $8 to $12 for those not contracting. The American Smelting and Refining Company and the Philadelphia Smelting and Refining Company have formed a consolidation.

Acacia Gold Mining Company.—The shaft house on the main workings of the Burns Mine was destroyed by fire recently. A new building will probably be ready within a few days.

Doctor-Jack Pot Consolidated.—It is reported that a strike of very rich ore has been made in the 12th level of the Doctor, where a drift has been driven 80 ft. to connect with the Jack Pot workings.

Enola Gold Mining Company.—This company has just declared a stock dividend of 150,000 shares of Bull Hill Consolidated stock, which were received as the purchase price of the Silver Tip Claim, and will be distributed at the rate of 3 shares of Bull Hill for every 20 of Enola.

Gold Coin.—The regular monthly dividend of 2c. per share has been paid. The reported strike in the 850-ft. level appears to hold good.

Gold Knob Mining and Townsite Company.—At the annual meeting in Colorado Springs on December 26th the old directors were re-elected as follows: James F. Burns, president; F. M. Woods, vice-president and general manager; J. W. Bonbright, secretary and treasurer; Irving Howbert, J. R. McKinney, E. A. Colburn, F. J. Peck and Syl. T. Smith. The Gold Knob was organized less than a year ago by prominent business men of Colorado Springs, and owns a large amount of territory, including practically the whole townsite of Goldfield.

Gold Sovereign Mining and Tunnel Company.—A good strike is reported in the Whisper workings. The company owns the Gold Sovereign lode and tunnel site and the J. G. Blaine lode on Bull Hill. The tunnel has been driven about 700 ft. under Bull Hill, and besides this there are over 2,000 ft. of workings, including the Whisper shaft, which is down about 400 ft. There are 3 other shafts.

Good Will Tunnel.—Connection is made between this tunnel and the Anchoria-Leland shaft by a cross-cut. The tunnel is in a little over 3,000 ft. and represents a considerable investment.

Isabella Gold Mining Company.—Mr. Nelson B. Williams, president of this company, has sent to the stockholders a circular offering to allow the 12th level to be examined by a competent engineer, chosen by the minority stockholders, for the purpose of satisfying them that no crooked work has been carried on by the management.

John A. Logan.—Two miners lost their lives on January 1st. The men entered the 1,200-ft. level to bring up a drill to the third level and were asphyxiated by bad air. The mine management was exonerated from blame, as the men had been warned.

Mary McKinney Mining Company.—The directors recently declared a 3c. dividend. Though the shallowest of the big producers, the mine is in splendid condition and bids fair to keep up its good reputation. The lowest level has been under water since last spring, but ore will soon be shipped.

Morning Glory Mining and Leasing Company.—Machine drills are to be used in the Rose Maud, into which a level is being run at 535 ft. from the Morning Glory shaft.

New Zealand Mining Company.—The directors have declared a 10c. dividend to be paid Janu-

ary 10th. The dividend is from the sale of the New Zealand Claim on Bull Hill. The company still owns the Deadwood and Pauper claims, the control of the Magnolia, nearly 200,000 shares of Pinnacle stock and about half of the stock of the Compromise Mining Company.

Pinto.—The workings have closed down temporarily to repair machinery.

Portland.—There is a rumor to the effect that the Portland will lay off a number of its men until the completion of the new mill at Colorado City.

Stratton's Independence.—The main shaft in this mine, which is now down 900 ft. will be sunk to the 1,500 ft. point, and much lateral work done. Work in the shaft started December 27th.

IDAHO.

Blaine County.

Croesus.—This gold mine, near Hailey, is closed down with the exception of the pumps. W. P. Page, manager, is in Boise. It is proposed to raise to the surface from the adit level, 230 ft., and add 20 stamps to the 10-stamp mill. The vein averages about 9 ft. wide, and the ore principally free milling.

Liberal.—F. R. Reed has taken a bond on this group of gold claims 20 miles northeast of Hailey from William Sweet and others. The purchase is for a New York syndicate. But little development has been done on the property. There are 3 veins out-cropping 8 to 12 ft. wide. The ore material is pyrite and chalcopyrite carrying gold.

Boise County.

War Eagle Company.—The North Star ore is hauled by wagon to the new mill. It is dumped into a Gates crusher and thence conveyed to storage tanks, whence it is fed to two 5-stamp batteries, one of the Fraser & Chalmers pattern and the other the Union Iron Works. The stamps crush the ore to 40 to 50 mesh. From the amalgam plates the tailings go to a hydraulic classifier and thence to 3 Wilfley tables. The capacity of the mill at present is about 3 tons per stamp, or 30 tons every 24 hours. The stamps drop 98 to 100 times per minute, each stamp weighing 900 lbs. The machinery was installed under the supervision of R. P. Akins, of the Colorado Iron Works Company, of Denver, while the plant is in charge of G. W. Dake, superintendent. The one engine and boiler furnish sufficient power for the entire plant, including electric light dynamo, having a capacity of over 100 H. P.

Lemhi County.

Copper King.—W. W. McDowell, one of the experts of the Anaconda Copper Company, of Butte, recently examined this mine, at Beaver Creek, near Salmon City. The Copper King is owned by the Galbraith Brothers, of Hunt. It comprises a large group of claims that carry a vein of copper ore, producing large blocks of specimen ore near the surface. The formation is the same as the Blackbird District.

Nez Perces County.

Imogene.—This mine, owned by Lewiston parties, was bonded recently to Frank Graves, of Spokane. It is one of the rich Newsome Creek propositions. The ore is strictly free milling. There is a 30-ft. shaft and about 30 ft. of drifting besides considerable tunneling.

Owyhee County.

De La Mar Mining Company.—The report for November of Manager D. B. Huntley states that the total amount of ore treated during the month was 3,795 tons. It assayed $8.37 in gold and $1.19 in silver, while the tailings assayed $1.68 gold and 64c. silver. The product was 1,273 oz. gold and 4,190 oz. silver. The total estimated income was $31,833 and the expenses $31,825, leaving a profit of $8.

Major Fred R. Reed, for Eastern parties, has acquired a controlling interest in the Du Bois, Reward, Perseverance, Yang-tsee and Shower claims, on Cow Creek. This group has considerable development, including a 436-ft. tunnel, which has tapped 2 ledges of gold ore. This is the section where for years exceptionally rich float has been discovered, but hitherto no veins. The property has been under the control of James A. Pack, of Boyer. Major Reed has let a contract for 200 ft. of work on the ledge, which has an average width of 3 ft.

Shoshone County.

The daily output of ore from the Canyon Creek mines, in round figures is said to be about as follows: Morning, 800 tons; Frisco, 800; Standard, 500; Crown Point, 200; You Like, 280 tons. All these ores are shipped to various smelters. To work these properties involves some big payrolls, including about 1,250 men all told, divided about as follows: Morning, 350 men; Frisco, 325; Standard, 300; Crown Point, 125; You Like, 150 men. The deepest mine is the Frisco, which is down 2,200 ft.

French Creek Mining and Developing Company.—This company and the Golden Gate Mining Company, both operating on French Creek, in the Pierce City district, were consolidated recently. The controlling stock is held in Cleveland, O.

MICHIGAN.

Copper—Houghton County.

(From Our Special Correspondent.)

Baltic.—The steel for the mill is arriving.

Calumet & Hecla.—J. C. Van Truen arrived from the East last week with 11 cars containing segments of the drum of the "Osage" engine. Large shipments of structural iron are coming in; about 30 cars containing mostly steel for the new stamp mill at Lake Linden. The pipe and pattern house was destroyed by fire this week, burning valuable patterns of machinery; also piping and machine tools.

Elm River.—The only active shaft is No. 5, 16 by 7 ft., which is 230 ft. deep. No drifting has been done. Two drills are used in sinking. The diamond drill is at work about 2 miles from the railroad station.

Quincy.—The third and last head at the new mill will go into commission soon.

Tamarack.—The steel framework for the rock house at No. 5 shaft is being erected. The rock from the Calumet & Hecla conglomerate looks rich.

Trimountain.—The Copper Range extension to this company's stamp mill will be completed by May 1st.

Winona.—The shafts are down as follows: No. 1, 450 ft.; No. 2, 425 ft.; No. 3, 70 ft., and No. 4, 50 ft. Work for the present is confined to No. 2. This is a double-compartment shaft, 19 by 7 ft., and 3 drills are used. Fifty-four men are employed.

Copper—Ontonagon County.

(From Our Special Correspondent.)

Adventure Consolidated.—While cross-cutting from No. 1 to No. 2 shaft the Merchant vein was recently cut. The North Butler lode, which is 12 ft. wide, has been traced 1,500 ft.

Mass Consolidated.—This mine has shipped 61,463 lbs. of mass and barrel copper to the Quincy smelter. Aggregate shipments under the present management are about 271,000 lbs. of copper.

Michigan.—The diamond drill will tap the old Minnesota workings shortly. A large pump now being put in will unwater the mine. Sinking in B shaft will progress as fast as the water is lowered.

Iron—Menominee Range.

James.—At this property near Iron River an ore body over 80 ft. wide has been shown. The ore runs about 59% iron, but is high in phosphorus.

MINNESOTA.

(From Our Special Correspondent.)

Smallpox prevails in the mining towns and there is fear that there may be trouble at such places as Mountain Iron, Sparta and Buhl, where sanitary arrangements are of the most primitive character. In the lumber woods surrounding the mining villages quarantines are beginning to be established.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Work has started on the extension of the Duluth, Missabe & Northern extension from near Virginia to Mesaba Station, near which place the road has ore-hauling contracts. Winston Brothers of Minneapolis have the contracts for grading, etc.

Duluth.—This mine will sink a second shaft this winter and be a larger producer. All its ore now comes from a milling pit. The shaft house and buildings destroyed in the fall are replaced and mining goes on steadily.

Itasca Mining Company.—This company has opened in a deposit of non-Bessemer ore of considerable size near the new Sharon Mine, and will probably make some move toward development. The ore is under 25c. royalty.

Oliver Iron Mining Company.—The company has given up opening the Stevens Mine this season, and will concentrate its efforts on opened mines, General Manager Hulst considering it better to keep opened mines up to the highest output rather than have many open ones. It is not likely, therefore, that the company will open many more mines in Minnesota so long as it has ample supplies from mines now in commission.

Oliver Iron Mining Company.—This company is taking in machinery to its explorations at Mesaba Station, where it will push work all winter. The company has closed down at the Oliver Group and has removed its machines to Mountain Iron for overhauling. It is expected its operations on the Mesabi Range the present year will be considerably in excess of 1,500,000 tons.

Iron—Vermilion Range.

(From Our Special Correspondent.)

Chandler Iron Company.—This company has stopped its exploration in T. 63 R. 13, west of Ely, and has removed its drills.

Minnesota Iron Company.—The company is now sinking a shaft on the north side of Soudan Hill, and will go down 250 ft., and then run a drift 2,000 ft. to Montana Shaft, now out of commission. The drift will cut several lenses of ore found by the drill, and the ore will be taken out by Montana Shaft. Drifts have also been run at a depth of 950 ft. to open ore found by drill some time ago. The deepest mining now carried on is at the 850-ft. levels. The company has drill holes a good deal below the ore found at 950 ft. and found several excellent lenses at various points. Late mining operations have failed to discover any of the native copper that was occasionally met with nearer the surface. Some 100 lbs. of native copper have been taken from the mine, chiefly out of Montana shaft at about 300 ft. The Oliver Company was about to take an option, but minor details could not be arranged.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—There was a strong demand for zinc ore last week and the sales show a decided increase. Buyers refused to advance the price in open market, but on some large purchases of high-grade ore at $28 per ton they pledged the seller to secrecy in regard to the price. The best price quoted was $27 per ton. The Oronogo, Belleville and a large part of the Joplin ore sold at this figure, but 2 big sales were made in Joplin at $28 per ton. There was no change in lead, which has sold since September 1st at $23 per 1,000 lbs.

The heavy producers of the best-grade ores have steadily refused to accept the price offered since the market went below $30, and it is reported on excellent authority that the ore is being held to fill a big foreign contract which has been secured. Following is the turn-in by camps of the Joplin District for the week ending January 5th:

	Zinc lbs.	Lead lbs.	Value.
Joplin	2,227,640	411,590	$37,312
Galena-Empire	1,608,030	203,580	23,978
Carterville	1,046,440	175,370	16,591
Oronogo	613,700	8,630	8,240
Webb City	546,820	23,910	7,112
Belleville	377,020	.....	4,901
Central City	149,770	9,060	2,006
South Jackson	164,370	8,580	2,005
Peacock Valley	166,410	14,460	2,413
Neck City	317,220	11,060	4,315
Carl Junction	179,630	.....	2,335
Aurora	521,720	30,130	6,895
Ash Grove	.....	20,000	440
Cave Springs	80,580	8,850	1,211
Spring City	77,920	21,110	1,382
Beef Branch	.....	50,400	1,159
Granby	399,000	7,000	4,400
Spurgeon	23,330	13,430	611
Total	8,509,600	997,160	$126,866

During the corresponding week last year the best grades of zinc ore sold at $36.50 per ton and lead at $28 per 1,000 lbs. The zinc sales were less by 888,680 lbs., the lead sales greater by 15,560 lbs., and the value greater by $29,352. As compared with the previous week the lead sales were less by 190,250 lbs., the zinc sales greater by 1,454,110 lbs., and the value greater by $11,083.

Accidents.—Four men were seriously if not fatally injured in the mines near Joplin last week and one man was killed. In every case except one the injuries were caused by going back on missed shots.

Cole-Ingersoll Lease.—The new 150-ton mill, at Neck City, which was completed a short time since by G. L. Cole, made its first turn-in last week, and in 6 single shifts cleaned up and sold 39 tons of jack and 11,060 lbs. of lead.

Triad Lease.—The R. A. K. Mine, on this lease, at Joplin, was sold last week to J. C. Humphries, representing Hudson (N. Y.) parties, for $10,000. The mine is a new one and has been clearing $1,000 per month with hand jigs. A mill will be built by the new owners. The sale was made by Douglass E. McDowell, of Joplin.

Stotts City.—The sludge mill, near Spring River, burned down last week; loss, about $7,000. The owners were preparing to move to a new location, but will build a new mill. There was no insurance.

MONTANA.

The Northern Pacific Railway company last spring gave the Amalgamated Copper Company an option on all of its timber lands in Montana. The option is for 3 years, and is at the rate of 50c. a 1,000 ft. It is estimated that when the sale is completed the railway company will receive $6,000,000 from the Amalgamated. About 40 "timber cruisers" are now employed in Montana by the company, scaling the timber, under the direction of J. C. Huht, of Missoula, the chief timber inspector of the eastern division of the railroad. The Amalgamated consumes probably 100,000,000 ft. of timber a year in its mines.

Cascade County.

Commonwealth.—Papers were executed recently for the lease and bond of this group of claims at Neihart for $90,000. The papers call for an 18 months' bond and lease.

Henry Tegtmeirer, of Neihart, is now superin-

tending work for W. G. Conrad, of Great Falls, and C. E. Conrad, of Kalispell, on a copper property in the Sweet Grass hills. The Conrads own a group of claims as follows: The Maloina, M. & M., Mountain Chief, the Helena, Treadwell, Treadwell No. 1, and the Brown Eyed Queen and Helena No. 1.

Flathead County.

(From an Occasional Correspondent.)

American Kootenai Mining and Milling Company.—This company has completed a 10-stamp mill and made a few trial runs. Manager W. J. Beager thinks that more stamps will be added. A rich shoot of ore was encountered in the Gold Bug tunnel which caused some excitement among stockholders. A fine aerial tramway is on the company's property with an intermediate loading station 60 ft. high where the ore from the Gold King Mine is loaded. The cost of handling the ore from the mines to the mill is said to be about 5c. per ton. The tram is an 8-bucket continuous rope tram operated by gravity.

Black Tail Mining Company.—This company has just let a contract to freight in its machinery which is to be erected in the spring.

Fisher Creek Mining Company.—This company has a 10-stamp mill in operation and is preparing to add 30 more stamps.

Mother Lode.—This group of mines is being developed by 2 tunnels. The property has one of the finest surface showings in West Fisher camp.

West Fisher Mining District.—This district in northwestern Montana about 40 miles south of Libby takes its name from West Fisher Creek. It has an abundance of timber and plenty of water. The ores are generally free milling quartz in a slate formation cut by porphyry dikes.

When the Great Northern builds the proposed cut-off from Kalispell to Libby it will cross this district.

Madison County.

Broadway.—About 25 men are employed at this Broadway mine at Silver Star. J. W. Martin is foreman.

Hungry Hollow.—This mine has been deeded to J. N. Kirk, Walter Forbes and James Emslie, of Butte.

Kearsarge.—C. E. Damours, who is operating this mine at Summit, above Virginia City, has made another shipment of 14 tons of high-grade gold ore and is making arrangements to erect a 5-stamp mill.

Missoula County.

House.—The bond of this group of mines near Neihart to J. A. Porter has been filed with the county clerk. The transaction covers $224,000 for the group, as follows: The Aladdin Mining Company, $60,000; G. W. Morse and others, owners of the Empire claim, $40,000; William Q. Ranft and others, owners in the Boston, Moose, Bullion, New Queen, one-half of the Empire, Union, Eagle and Sleeping Child claims, $14,000; L. F. Keim and others, the Sovereign claim, $10,000; Frank H. Woody and others, Cape Nome, interest in the Boston, Bullion, New Queen, Empire and the Sleeping Child claims, $100,000. It is given out that the property is bonded to Porter to be assigned to a New York concern of which Dr. J. M. Fox, of Red Lodge, has been a principal factor. Machinery is being placed on the claims.

Silver Bow County.

Combination Mining and Milling Company.—The report of the referee, Peter Breen, in the case of William Thompson, Henry Williams, J. H. Harper et al., vs. this company et al., which has been pending several years, says that the evidence fails to show wherein the defendants or officers and trustees of the Combination Mining and Milling Company have been guilty of any malfeasance in office, and that on the contrary, upon the removal of the home office from Butte to St. Louis the defendants advised fully with a number of the present complainants and other stockholders and were guided by the advice received.

The referee finds further that the plaintiffs were entitled to ask for the restraining order of September 14th, 1898, and the writ of injunction and that the action should be dismissed.

Gagnon.—Work on the tunnel to this mine is progressing rapidly and the company is employing as many men as can conveniently work together. It is expected that the tunnel and the branch line will be completed and in operation by February 1st.

NEVADA.

Washoe County.

Wadsworth Mill Company.—This company, at its annual meeting, elected George H. Fraser president; W. H. McInnis, vice-president; Luigi Della Piazzi, treasurer; W. H. Jackson, secretary. Within a few weeks work will begin upon the company's new mill in Olinghouse Canyon, near Wadsworth.

White Pine County.

(From Our Special Correspondent.)

Chainman Mining and Electric Company.—The new company, composed of Elmira, N. Y., and Warren, Pa., men, has taken possession at Ely, and milling started December 22d. A trial run is being made with the 10-stamp mill with cyanide treatment of the tailings. Intermediate filling of the tanks is practiced. The ore will plate about $3 per ton, the balance being caught in the cyanide tanks. The capacity of the present plant is 25 tons. L. F. Shepherd, formerly with the Old Spanish Mines at Redding, Cal., is general superintendent and F. D. Smith, of Montana, is mill superintendent.

Ely Mining and Milling Company.—This company, owning the Robust Mine at Ely, has a 50-ton cyanide plant nearly completed. The ore will be crushed dry and cyanided directly with no subsequent treatment. Preliminary tests show an extraction of 87%. The ore assays about $20 in gold, none of which is free. A new strike was made this week at the foot of the new shaft where the mill tunnel connects. The body is 4 ft. wide and lies under a cave.

Phoenix Mining Company.—This company is developing its mine at Ely. At the 100-ft. level the vein measures 9 ft. wide and assays $10 per ton in gold. The company is composed of Messrs. McOmie, Lyons, Simpson and McDonald, all of Ely.

NEW MEXICO.

Santa Fe County.

Blue Bandanna.—The 425-ft. shaft of this mine at Elizabethtown and the 800-ft. drift which were filled with water through the disabling of the pump, are unwatered. The new pump is working well.

NORTH CAROLINA.

Cabarrus County.

(From Our Special Correspondent.)

McMacken.—This mine is worked by the Whitney Reduction Company. Col. E. B. C. Hambley is president and general manager. This company has a complete 10-stamp mill and concentrator, together with a chlorination plant built by the Mecklenburg Iron Works and is treating some 25 tons daily. The ore is composed of bands of quartz and slate carrying auriferous iron pyrite with occasional seams of zinc blend and galena. Small quantities of copper sulphuret are also found. The gold is found in combination with the sulphurets and in a free state on the laminae of the schists. The manager informed me he was down in his deepest work about 350 ft. and that 178,000 tons are blocked out. The idea is to erect a large plant for the treatment of 1,000 tons per day, as the ore has widened to over 100 ft. The mine adjoins the Union Copper Mine and Gold Hill.

OREGON.

Baker County.

Badger.—The first shipment of heavy mining machinery over the new extension of the Sumpter Valley Railway occurred when a consignment to this mine in the Greenhorn range, 20 miles due west of Bonanza Mine, was transported over the divide to within 2 miles of the new town of Whitney. From there the machinery was hauled in by the Sumpter Transportation Company. The mine is opened by 2,000 ft. of tunnels, the lowest depth being 170 ft. The ledge varies from 4 to 46 ft. and carries lead carbonate, galena and free gold.

Eureka & Excelsior.—It is stated that E. P. Cowan has secured control of the interests held by St. Louis parties in these mining properties and is at present conferring with Jonathan Bourne, of Portland, to secure the remaining interests. The mines are 7 miles from Sumpter in the Cracker Creek district. It is understood that Mr. Cowan is acting in the interests of Massachusetts men. The mines are now idle.

PENNSYLVANIA.

Anthracite Coal.

Williams.—Day and night forces are busily engaged timbering and repairing this colliery near Pottsville Fishback. Over 400 men and boys will get work. It is expected that the colliery will be in condition to start about February 1st.

Central Railroad of New Jersey.—Following closely the recent purchase of a controlling interest in the Pennsylvania Coal Company by J. P. Morgan & Company comes the announcement that the Philadelphia & Reading Railroad, controlled by Morgan interests, has arranged to take over the control of Central Railroad of New Jersey, thus virtually bringing 63% of the anthracite under the control of one house.

The authorized stock issue of the Jersey Central is said to be $30,000,000, of which $27,113,600 is outstanding. The funded debt outstanding is $43,924,000. The road runs from Jersey City to Wilkes-Barre and Scranton, Pa., and southerly to seashore resorts along the New Jersey coast. The total number of miles operated is 677.72. The road was chartered in 1849. From 1883 to 1887 it was leased to the Philadelphia & Reading. In 1887 both roads went into the hands of receivers. In 1892 the Jersey Central was again leased by the Reading for 999 years, but the lease was declared illegal in the same year. Since its reorganization the road has paid dividends ranging from 7% from 1892 to 1894 to 4% in 1898 and 1899. It was restored to a 5% basis last year. The coal properties controlled by the Jersey Central are operated by the Lehigh & Wilkes-Barre Coal Company, which owns 28,909 acres of anthracite coal lands and holds 2,847 additional acres under lease. It operates 13 colleries, the more important being near Wilkes-Barre, and leases about 4,000 acres of coal land to various operators. Payment for the Jersey Central stock purchase, it is said, will be made by the Reading Company by means of 4 or 4½% collateral trust bonds, the purchase stock to be the basis upon which such bonds will be issued by the Reading Company. There are reports that the Jersey Central stock was taken at about 160.

Bituminous Coal.

Mr. T. J. Mitchell, general manager of the W. J. Rainey coke interests in the Connellsville, Pa., district, was given a handsome gold watch, chain and charm recently by employees of the company.

The Pennsylvania Railroad Company reports the total coal tonnage originating on its lines east of Pittsburg and Erie as below, only the closing week of the year lacking. The figures are in short tons:

	1899.	1900.	Changes.	P.c.
Anthracite coal...	3,650,425	3,806,773	I. 156,348	4.3
Bituminous coal.	16,251,459	19,726,547	I. 3,475,088	21.4
Total coal	19,901,884	23,533,320	I. 3,631,436	18.2
Coke	7,512,593	7,048,580	D. 464,013	6.2
Totals	27,414,477	30,581,900	I. 3,167,423	11.6

(From Our Special Correspondent.)

Eureka Fuel Company.—All of the 400 ovens of this company are in blast at Lacrone, and 160 ovens at Footdale. The 2 works are shipping about 40 cars a day.

American Coke Company.—At Edenborn, 50 of the 500 ovens of this company are producing. The balance will go into blast soon. One hundred ovens of the 500 at the Lambert plant are completed and will shortly go into blast.

Buffalo, Rochester & Pittsburg Coal and Iron Company.—A recent purchase includes about 4,400 acres in White and Center townships, and involves not less than $100,000. The company, which already owns a large coal field along Crooked Creek, in Rayne, Washington and White townships, will now take up the Dickey lease, south and southwest of Indiana, in White and Center townships. The greatest number of the farms included in the purchase in White Township, and the remaining in Center Township.

Hall & Speer.—These coal mines in Pine Township, Mercer County, were recently abandoned by their owners, as all the coal has been worked out. About 50 miners were employed.

Marine Coal Company.—This company has begun opening its second mine on the Monongahela River, just below Lock No. 5. The company is also opening a mine at Fayette City, and is building one steamboat and a number of barges. The coal property that is being opened near Lock No. 5 is included in the acreage purchased some time ago.

Midland and Hickory Ridge Coal Company.—This company purposes to enter the Pittsburg coal markets and has arranged to open 2 mines near McConnells Mills that will give employment to about 1,500 men. It is expected the mines will have a capacity of about 5,000 tons a day. Two new mining hamlets are to be located each week, about 200 houses. An extension of 5 miles is to be made to the Western Washington Railroad to reach the mines and about $500,000 will be expended before April 1st in improvements.

Riverview Coal and Coke Company.—A tract of coal land in Nicholson Township has been purchased by this company of Pittsburg. The tract, which consists of 119 acres, is in the Sixth Pool, the coal being the regular 6-ft. vein. The price paid was $38,000.

Sharon Coal and Limestone Company.—This company is putting down a shaft on its coal property near Volant and another will be sunk. When the mines are put into operation about 300 men will be employed. The limestone quarries will be opened as soon as new machinery is installed and will employ over 100 men.

By an arrangement with the Sharon Steel Company the Pennsylvania Company will construct a branch line to the new coal-fields in the eastern part of Mercer County. The branch line will leave the tracks of the Western New York & Pennsylvania division at Volant, and will be 17 miles in length. The coal will be shipped to Sharon via New Castle.

Thomas Lemon, of Latrobe, recently completed the optioning of 5,000 acres of coal, lying along Loyalhanna Creek between New Alexandria and Latrobe, at $50 per acre. The tract will, it is said, be taken by a syndicate of Boston capi-

talists and work upon its development will start early in the spring.

White.—The Pittsburg Coal Company has closed the recently purchased White coal mine, near Washington, Pa. The mine is one of the oldest in the district, and has, with one exception, been worked steadily for a long period.

Slate.

American Slate Company.—This company controls and operates the American Bangor, Star-Bangor, Bangor Standard, Bangor Southern, Old Delabole-Bangor, Chrome-North Bangor, Aetna-Pen Argyle and the Gem slate quarries at Danielsville. The output in 1900 was given by Treasurer Catchings at 100,000 squares of roofing slate, having an average value of $2.70 per square. The annual payroll amounts to $170,000, or $550 per day for 300 working days. At the company's two mills there are produced about 1,500 tons of manufactured slate valued at $20,000, while the pay-roll amounted to $9,000 for 300 working days. The gross value of the slate production in 1900 was about $290,000 and the expenses $179,000, leaving an apparent balance of $111,000 for the year.

SOUTH DAKOTA.

Lawrence County.

(From Our Special Correspondent.)

New Cyanide Plant.—Will McLaughlin, of Spearfish, and associates, have housed several cyanide tanks on Whitewood Creek, and plan to treat Homestake tailings in the spring. The course of the creek is being changed. The tailings that come down the creek will be practically worthless when the Homestake company gets its new cyanide plant in operation.

American Company.—The cross-cut tunnel is 400 ft. in from the bottom of the shaft, in Spearfish Canyon.

Denver-Deadwood Mining Company.—S. R. Thompson, of Boulder, Colo., has organized this company to reopen the Cora gold mine, in Bear Butte District. The Davie stamp mill is being repaired and ore will be broken by January 15th. The mill will be fitted with concentrating table and have 75 tons daily capacity.

Golden Reward Company.—The diamond drill hole at the bottom of the Tornado Shaft is down 75 ft., still in quartzite.

Horseshoe Company.—This company is sinking a shaft on Iron Creek to lower quartzite. The company has patented 3,000 acres of ground.

Imperial Mining Company.—A new steam hoist has arrived for the shaft in Blacktail Gulch being sunk to quartzite by the Imperial Company.

Red Cloud.—C. H. Crabtree of Des Moines has purchased this group of claims on Dead Dog Hill, northeast of Portland. A company will be organized to develop the property.

Uncle Sam.—The Clover Leaf Mining Company of Minneapolis will start up this mine. The stamp mill is repaired and a complete hoisting plant has been installed.

UTAH.

(From Our Special Correspondent.)

The Portland Cement Company of Utah reports an output for 1900 of 70,000 bbls., an increase of 20,000 over 1899. The business is reported in good condition, and has justified an increase of capital to the extent of $40,000 the past year. A third rotary kiln will be in commission by February next, making the output one-third greater.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—For the week closing January 5th there were sent forward from the 3 Tintic railroad points 50 cars of ore and 10 cars of concentrates, made up as follows: Continental-Eureka, 20 cars; Mammoth, 6 cars; Grand Central, 4 cars; Carissa, 5 cars; Swansea, 7 cars; Tesora, 7 cars, and Shoebridge Bonanza, 1 car; concentrates, Eureka-Hill, 5 cars; Mammoth, 5 cars.

El Rey and Sunbeam.—These mines have been consolidated and the shareholders will ratify the arrangement at a meeting the first week in February. The new company will continue the El Rey shaft to the 1,000-ft. level and put in a large pump. The Sunbeam was the first location made in Tintic District and has been a producer from grass roots to water level. Below water level the ore is lower grade.

Salt Lake County.

(From Our Special Correspondent.)

Bingham Copper and Gold Company.—On January 15th the trial run of the smelter will start, at which time it is expected that President Coram and Secretary Weller from Boston will be present. Sufficient ore is now in the bins for a 30-day run.

Utah Consolidated.—Shipments for week ending December 31st were 3 cars copper bullion weighing 180,252 lbs.

Summit County.

(From Our Special Correspondent.)

Daly-West.—The directors have declared a dividend of $45,000, or 30c. per share, payable on January 15th. This represents an increase of $7,500 per month.

Park City Shipments.—In the week of January 5th the smelting products marketed through the Mackintosh sampler made a total of 1,606,200 lbs., which represents the output of the camp. The several contributors were: Silver King, crude, 356,110 lbs.; concentrates, 571,650 lbs.; Daly-West, crude, 26,220 lbs.; Anchor, concentrates, 252,220 lbs.

Silver King.—The annual meeting of the shareholders occurs on January 19th. It is said that the mine has produced $2,000,000 the past year, over half of which has gone for dividends.

Tooele County.

(From Our Special Correspondent.)

Consolidated Mercur.—Some little flurry was felt in this stock at the Sale Lake City Exchange on January 4th. The 2 reasons for present fluctuations are the prospect of its being listed on the Boston Exchange; second, the report of an alleged piece of money soon to be distributed. Neither reason amounts to much.

Sunshine.—The shareholders of this mine and mill, situated in Camp Floyd District, have official news that a sale is consummated. The purchasers are led by Davis D. Hoag, of Kansas City, and the price is $312,500. Geo. C. Moore, late of the Kansas City Smelting and Refining Company, will assume the management for the new owners.

Washington County.

(From Our Special Correspondent.)

Dixie.—The smelter blew out shortly after midnight on December 31st, and the clean-up shows 7 car-loads of copper bullion aggregating 350,000 lbs., and one large car of matte, not less than 50,000 lbs. A good record.

VERMONT.

Orange County.

Ely-Copperfield.—The final payment in completion of the purchase of these copper mines at Copperfield was made recently to Robert F. Straine, of Boston, and his associates by George Westinghouse, of Pittsburg, Pa., and associates, and the mines pass into the absolute possession of the Westinghouse Electric Company. The property was sold by Mr. Straine to Mr. Westinghouse a year ago, the purchase being made so that the company might be independent as a producer of all its copper supplies.

WASHINGTON.

Ferry County—Republic.

(From Our Special Correspondent.)

Ajax Gold Mining Company.—This company has been reorganized on an assessable basis, and work is resumed on the mine. The shaft, down 40 ft., will be sunk deeper and the vein prospected by drifting.

Butte & Boston.—The upraise from the cross-cut on the 260-ft. level is up 125 ft., with 150 more needed to connect with the old workings. The upraise, 6 ft. wide, now shows 2 ft. of quartz.

California Mining Company.—The shaft is down 35 ft. below the 100-ft. level carrying 38 in. ore said to net $150 at the smelters. On the 100-ft. level the east drift is in 54 ft., with rich ore at the face. The cross-cut from the north drift has cut 42 ft. of the vein without finding the hanging wall.

Chico.—The north drift on the 300-ft. level is in 34 ft., with 6 ft. of ore at the breast. The assays hold up well.

Flag Hill.—A drift has been run from the main tunnel on the vein, developing an average of 4½ ft. of milling quartz for 45 ft. About 110 tons are dumped outside the tunnel ready for shipment to the custom mill.

Golden Lion.—The tunnel is in 127 ft., but has not struck the vein.

Gold Ledge.—This claim has opened by shaft and drift a strong vein of quartz of good milling value. A tunnel has been started to tap the vein from 335 to 450 ft. deep.

Hercules.—Work in the shaft is suspended to drive on the vein, at a depth of 80 ft. The vein quartz, from 2 to 6 ft. wide, assays from $3 to $14 per ton.

Morning Glory.—A recent shipment of 15 tons of selected ore from an 8-in. vein is said to have realized about $405 per ton. Another north drift, 50 ft. deeper, is in 20 ft. Another shipment will be ready in 2 to 3 weeks. The second class, said to run about $20 per ton, is dumped at the mine to await shipment to a custom mill. Twelve men are employed, working 2 shifts.

Mountain Lion.—Work is confined to sinking the main shaft from 125 to 250 ft. below the adit level. This will give a total depth of 566 ft. Two faults have been discovered. The east vein on the adit level has proved to be the west vein. The main shaft is going down about 2 ft. per day. The waste rock is hoisted to the adit level by an air engine at the tunnel station.

Princess Maud.—The shaft is down 308 ft. Drifts started on the 300-ft. level are in about 10 ft. The quartz at this depth averages 4 ft. wide. The values show good milling ore. A Leyner drill is used, with 2 men on one shift. The company is of Spokane, Wash., but the control is held by Butte, Mont., men, and the mine is in charge of Matt Hodge, once of the Parrot Mine, of Butte.

Quilp.—A new 120-ton ore bin is constructed. Shipments are made to the Granby Smelter, at Grand Forks, B. C., as regularly as teams can be had. The company aims to ship 150 tons per month. Only 1 shift of 6 underground men is employed. The upraise from the 3d to the 2d level is stopped to stope on the 3d level. A drift is being run on the No. 2 level to develop a vein discovered with the diamond drill.

San Poil.—Drifting continues on the No. 2 level. The face of the south drift shows 3 ft. of milling quartz.

Six-Nineteen.—Work is resumed with 12 men.

WEST VIRGINIA.

Fayette County.

(From Our Special Correspondent.)

The Sun shaft is rectangular 11 by 27 ft. and 150 ft. to the coal seam. This was the first shaft of the region and is now in use.

Large coal works are opening up at Slater on the line of the Chesapeake & Ohio.

White Oak Fuel Company.—This company's shaft at Scabro struck the Loup Creek seam at a depth of 395 ft. The coal shows up 6½ ft. thick. This shaft is the second one in the region, and is circular in section, 20 ft. diameter. Mr. Samuel Dixon is manager.

Wright Coal Company.—This company on Piney Fork is ready to ship coal.

FOREIGN MINING NEWS.

AUSTRALASIA.

New Zealand.

(From Our Special Correspondent.)

Two new producers have started—the Barrier Reefs and the Union-Waihi. The return of the former is encouraging, but as only 57% of the value of the ore was obtained, there is room for improvement. The first return of the Union-Waihi is very poor, but it is understood that blocks of much better ore are available.

Waihi.—This company is now crushing with 240 stamps instead of 190, hence the large tonnage treated and the record return. Another 50 head of stamps should be at work very shortly, so that monthly returns of considerably over £30,000 may be looked for. In the mine another large reef of satisfactory assay value is opened, and shares now stand at £12 10s.

CANADA.

British Columbia—West Kootenay District.

Le Roi Mining Company, Limited.—At the annual meeting in London on December 28th the secretary, Mr. Mitchell, stated since Mr. McDonald had taken charge of the mine a year ago it had been equipped with heavier machinery and was now in a position to take out 1,000 tons of ore daily. The company had acquired the remaining ¼ interest in the Northport Smelter for $300,000 and was now ready to treat 1,000 tons per day. At present there are 40,000 to 50,000 tons of ore on the dumps awaiting treatment. The company, the chairman continued, is at present earning 33 1/3%. The cost of smelting the ore at present is about $4 per ton, and the average value of the ore is between $13 and $14. As the vein went from the west it got a little richer. The average of the ore shipped from Le Roi No. 2 was $26; but the directors did not propose any amalgamation with any other corporation, and there never had been any such intention. The company had obtained a reduction of the railway freight from 75c. to 50c., and many other economies had been effected. Enough was thus saved during the last 3 months to pay a 5% dividend.

ONTARIO.

Algoma District.

(From Our Special Correspondent.)

Kitto's explorations, on Pine Island, Lake Vermilion, are said to be showing up ore.

Zenith Zinc Mining Company.—This company is now getting out ore rapidly and has some 2,000 tons ready for shipment sacked at the Canadian Pacific road. The winter's output will be large. The ore runs about 50% as it comes from the mine, after being freed from syenite and quartz masses, by cobbing. The company shipped no Bessemer ore last year, sending out a high-grade non-Bessemer, close to the limit and very desirable, all of which is crushed; the crushing costing about 6½c. a ton on the entire product, but permits all stocked ore to be loaded by steam shovel, and does away with the sledging of large blocks by hand, besides making the ore more desirable to furnacemen. D. H. Bacon introduced the experiment of crushing these hard ores. Large jaw crushers are used, with chilled-steel breaking plates. The company is still sinking drill holes in the property of the North Star Iron Company, near Ely, where it has already put down 9 or 10 deep holes without finding ore.

Ontario—Rainy River District.
(From Our Special Correspondent.)

Prendible Island.—This property in Eagle Lake is being developed by N. Higbee of Rat Portage. A shaft has been sunk 50 ft. and a drift run 40 ft. Work is still in progress. The vein, which is in the eruptive gray granite of the district, is 4 ft. wide, while the quartz proper is 3 ft. wide and pans well. This property was located last summer.

EUROPE.

Great Britain.

A serious fire broke out at the Foxdale Lead Mines, in the Isle of Man, on December 30th. The timber was well alight and it was impossible to put it out by any ordinary means, so the pumps were stopped and the mine allowed to fill with water. The amount of damage has not been ascertained, but it is expected that falls will have occurred in many places. The men had not resumed work after the Christmas holidays, so fortunately no one was in the mine at the time. Coming so soon after the Snaefell disaster, the accident is the more to be regretted, especially from the point of view of the mining population.

MEXICO.

Durango.

San Andres de la Sierra.—The powder at this mine, situated between Topia and Durango, blew up recently, doing considerable damage to property and killing over 100 men.

Oaxaca.

This famous gold mine, situated near Oactlan, is reported sold to New York City parties for $3,500,000. J. Sloat Fassett is said to be one of the purchasers. The mine is called very rich.

COAL TRADE REVIEW

New York. Jan. 11.

Anthracite.

Within six months the anthracite trade has seen the only sucessful large strike of the mine employees and a great concentration of mining interests. The control of the New Jersey Central and its subordinate mining company, the Lehigh & Wilkes-Barre, by the Reading had been long foreshadowed. Its announcement gave rise to the usual amount of unintelligent comment in the daily press, but excited little surprise among those who have been aware of the steady progress toward consolidation and the elimination of conflicting interests that have been the chief features of the history of the trade since early in 1898. The house of J. P. Morgan & Company showed what it intended to do when it took up its option on the Packer stock of the Lehigh Valley and came to an understanding with Vanderbilt interests regarding shipments from the Wyoming region. Now the tonnage controlled by the Delaware, Lackawanna & Western, Delaware & Hudson, Pennsylvania & New York, Ontario & Western amounts to but 37% of the total as compared with the 63% of the Morgan roads. The present control of the anthracite trade indicates regulation of output to market needs, the end of cut-throat competition and quite possibly slightly higher average prices for coal.

At present anthracite continues in excellent demand. There have been no interruptions to rail shipments and the movement from the mines has been very heavy, over 5,000,000 tons in December; yet prices continue very firm and spot lots of certain sizes frequently sell at a premium. It can hardly be expected that another month of mild weather would not affect demand, but the outlook favors firm prices until spring.

At the head of the lakes trade shows nothing new. Buying is active enough to keep dealers busy. In Chicago territory, while trade is not particularly active, coal is selling at full circular prices. At the lower lake ports there has been much retail buying and dealers have had trouble in filling orders. Chestnut size is in very short supply. In the East demand has been good, particularly at inland points and beyond Cape Cod. Sales agents at New York report no let up in the movement, and the demand still exceeds the supply available for prompt delivery. So far the winter has seen greater activity for a longer time than any winter in nearly 30 years.

The stories of an advance in prices, which have appeared may be set down as baseless. The powers now in control aim at maintaining prices rather than at advancing quotations, and then selling at a discount. We continue to quote for free-burning white ash, f. o. b. New York Harbor: Broken, $4; egg, $4.25; stove and nut, $4.50; pea, $3; buckwheat, $2.50.

Bituminous.

The seaboard bituminous trade is in fair shape. The higher-grade coals are in very good demand; the poorest grades only are not much wanted and sell slowly. All producers are shipping on old contracts, there being a sufficient demand on account of these to keep things moving. Car supply remains still the chief check on production. The main line roads are telling producers who complain of an insufficient number of cars that car supply is dependent on movement—not a luminous explanation nor one calculated to give satisfaction.

One of the chief topics of conversation at present among producers is the probability of labor troubles at the mines next April. Already there are signs that some of the labor delegates to the approaching interstate convention of miners and operators will present radical demands—demands that the operators cannot afford to grant—for instance, a 6-hour day. It is equally certain that the market for soft coal is not as strong as a year ago, though the movement may be larger, and prices are weaker. Hence the operators will have good reason to insist on lower mining rates. A general April strike is therefore by no means improbable.

Trade beyond Cape Cod is quiet. There are some cargoes there on consignment that are still unsold. Demand is easy, and is mostly on regular contracts. These are filled to some extent by other coals when contractors are unable to supply their own. Along Long Island Sound trade is easy, except for the best grades. New York Harbor shows a regular movement. All-rail trade is taking considerable coal, but demand shows signs of being easier on all grades than for some time.

Transportation from mines to tidewater is slow and irregular; car supply is poor, from 50% to 75% of the demand. In the coastwise vessel market large vessels are in fair supply and small vessels are scarce. Coastwise freight rates, however, are unusually low for the middle of January. We quote as follows from Phlidelphia: Providence, New Bedford and the Sound, 65c.; Boston, Salem, Portland and Portsmouth, 75@80c.; Wareham, 85c.; Lynn, 90c.; Newburyport, 90c. Rates from the further lower ports are 10c. higher. Rates from New York Harbor are attractive enough to check the movement of vessels to the lower shipping ports.

Birmingham, Ala Jan. 7.
(From Our Special Correspondent.)

Several coal mines recently opened are getting into shape and increasing production. New mines are still being opened and the prospects are very bright for the greatest development yet seen in the coal industry in this State. The completion of the Ensley Southern Railway from Ensley to Parrish, Ala., entering a rich and undeveloped coal-field, will mean several new mines at least. This road is to be completed within 2 months at the longest. The Stout Mountain branch of the Louisville & Nashville Railroad, extending to the new coal mines of the Stout Mountain Coal and Coke Company, is completed and the shipments begin. It is intended to increase the production at once to 1,000 tons a day.

State Mine Inspector J. deB. Hooper states that the present year will see a larger number of new mines than any previous year.

The railroads are still buying coal from other States for use in Alabama, the Louisville & Nashville Railroad, for instance, being compelled recently to increase its orders for coal from Kentucky.

The report of the receivers of the Corona Coal and Coke Company, made recently, showed that there is money in coal mining.

Cleveland, O. Jan. 9.
(From Our Special Correspondent.)

The coal shippers have noticed with evident satisfaction that the size of the winter fleets along the south shore of Lake Erie is greatly to their advantage. This is particularly true in Cleveland. The harbor now holds upward of 120 boats, with a carrying capacity of nearly 600,000 tons of coal if loaded to their limit. As many of the boats are of the very largest type, which are never loaded to the full limit of their carrying capacity with coal, and as some of them are now storing grain, the possibilities must be cut down somewhat. The fleet is easily capable, however, of carrying away from this port in the spring 500,000 tons of coal if it could be furnished them. This is virtually an impossibility, seeing how many demands are made upon the railroads for cars; hence there will be more boats than cargoes when the season of navigation opens. This is assurance to the shippers that the rates at the opening will be lower even this year than they were last. They are making big calculations upon this and are already trying to make next year's contracts upon the same basis.

The movement of domestic coal is now very heavy. The railroads have been able to obtain better dispatch upon their equipment, with the result that the shortage of coal cars on some lines has all but disappeared. The result is gratifying both to the shippers and the consumers, who are both getting their coal shipped and having their orders filled promptly.

Pittsburg. Jan. 9.
(From Our Special Correspondent.)

Coal.—There is but little change in the coal situation. All the mines are in full operation and will continue to run steadily until the end of the scale year, March 31st. There will not be any interruption then if a satisfactory mining rate for another year can be agreed upon at the annual wage scale conference which will be held at Indianapolis the latter part of this month. There is certain to be trouble over the mining rate if an attempt is made by the United Mine Workers of America to enforce the terms decided upon by the miners of the Hocking Valley District of Ohio, which is the basing point for the four competitive States, Pennsylvania, Ohio, Indiana and Illinois. The operators in these States are parties to the Inter-State agreement. A reduction in the differential between pick and machine mining is to be urged. In 1899 the differential was 22c. and for the year ending March 31st it is 27c. The Hocking Valley miners ask for a fixed differential of 10c. a ton. This would advance the price of machine mining 17c. a ton if the present pick mining rate is allowed to remain at 80c. a ton, and more if the pick mining rate is increased. The general sentiment seems to be for a stiff advance in the price of pick mining. Reports received at the Pittsburg headquarters of the United Mine Workers are to the effect that the organization has more than doubled in membership during the year and that there are now fully 225,000 members and that more than 300,000 miners can be depended upon to assist in a movement for a higher mining rate.

Connellsville Coke.—There was a gain in the production of Connellsville coke last week. Prices are lower at the opening of the year, but this is due evidently to the decline in the prices of pig iron. Furnace coke is quoted this week at $1.75 and foundry at $2@$2.25. With an improvement in the pig iron market there prices will likely be advanced. The production last week was 185,720 tons, a gain of 6,595 tons over the previous week. Of the 20,954 ovens in the region, 16,746 are active and 4,208 are idle. The shipments for the week aggregated 8,494 cars, distributed as follows: To Pittsburg and river tipples, 2,970 cars; to points west of Pittsburg, 3,754 cars; to poins east of Connellsville, 1,770 cars. This was a decrease of 643 cars.

Shanghai, China. Nov. 28.
(Special Report of Wheelock & Co.)

Coal.—Japan coal is inactive. Welsh Cardiff shows many sales, while Sydney Wollongong is unchanged.

Arrivals for the fortnight were 17,954 tons. We quote per ton: Welsh Cardiff, 27@28 taels ($17.98 @$18.65); Australian Wollongong, cargo, ex-godown, 12 taels ($8.04); 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.—Although deliveries have been fairly large the market is somewhat weaker, first hands offering to part at slightly lower prices at 1.77 taels per case for American. Little doing in Russian oil. Stocks are: Devoe's 608,-750 cases; Batum, 359,950 cases, and Langkat, nil; total, 968,700 cases. Quotations per case are as follows: American Devoe's 1.75 taels ($1.17); Russian Batum, Anchor Chop, 1.76 taels ($1.18); and bulk oil 1.65 taels ($1.11) in two tins.

Foreign Coal Markets.

Inquiries for export coal are less frequent, though some business is being done, chiefly for South America and for Mediterranean ports. The uncertain condition of the European coal markets is having an effect on the trade.

Charters from the United States are few, as exporters anticipate lower freight rates. We note this week that the Italian steamer "Pasquale," 1,808 tons, has been chartered for three trips from Atlantic ports to the Mediterranean, not east of the west coast of Italy and excluding Spain, at 10s. 9d. ($2.68), option of Trieste or Venice, and sailing this month. The rate from Atlantic ports to Trieste or Venice in December was 18@20s. ($4.50@$5) on prompt or early sailings, showing that since the first of the year foreign vessels can be chartered on wholesale business at reduced rates. It may be noted that the rate of 10s. 9d. is only a little more than is paid by the exporters from Cardiff, Wales, to the West Indian ports. We also note that a steamer has been chartered from Baltimore to Buenos Ayres at 15s. 6d. ($3.87). This is over $1 higher than the rate from Cardiff to the same port.

The French coal trade shows some falling off in demand, though the prices insisted on are still high, especially for fuel for domestic use.

The German coal syndicates are endeavoring to maintain prices, but are said to be alarmed at the falling off in orders for steam coal and metallurgical coke. It is generally believed that concessions will be made.

Messrs. Hull, Blyth & Co., of London and Cardiff, write under date of December 29th that the coal market opened strong after the Christmas holidays, and with a reduced output prices advanced still further. Quotations are: Best Welsh steam, $4.80@$5.04; seconds, $4.56; thirds, $4.44; dry coals, $4.20@$4.44; best Monmouthshire semi-bituminous, $4.32@$4.56; seconds, $4.20; best small steam coal, $2.64@$2.88; seconds, $2.28@$2.40; other sorts, $2.16.

These prices for Cardiff coals are all f. o. b. Cardiff, Penarth and 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.

Owing to the scarcity of coal, inquiry for tonnage has been limited, and freights are nominal. Some rates quoted from Cardiff are: Marseilles, $1.85; Genoa, $1.98; Naples, $2.04; Singapore, $4.20; Buenos Ayres, $2.64; Rio Janeiro, $3.12.

SLATE TRADE REVIEW.

New York. Jan. 11.

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'nville.	Bangor.	Bangor Ribbon.	Alb'n, or Jackson Bangor.	Chap'n Keys'ne	Peach Bottom.	Sea Gr'n.	Unfad'g Green.	Red.
	$	$	$	$	$	$	$	$	$
24 x 14	6.50	3.50	3.00	3.00	.	5.10	2.90	..	.....
24 x 12	6.60	3.50	3.00	3.00	3.80	5.25	2.90	3.75	.....
22 x 12	6.60	3.50	3.25	3.00	....	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	.	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	4.00	10.50
18 x 9	7.00	4.50	3.50	3.25	4.00	5.35	2.90	4 25	10.50
16 x 12	6.80	3.75	..	3.00	.....	....	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 roo

The new year opened with decreased stocks of rough slate at the quarries; a promising feature for better prices in the near future. Mild weather has favored prolonged operations at many of the quarries. Consumption will likely show an increase this year, as exporters anticipate a heavier movement, owing to the strike at the Welsh quarries. Freight rates on contract business hold around 13s. 9d. (about 94c. per square roofing slate) to London, while the open market is quoted 15s. ($1.03 per square).

The exports of slate from all United States ports in the 11 months ending November 30th, 1900, amounted to $768,775, against $1,144,764 in the same period in 1899, showing a decrease of $375,989, or 33%, in 1900. The movement of roofing slate aggregated 117,436 squares, as compared with 231.122 squares in the 11 months of 1899; showing a falling off of 113,686 squares in 1900, owing to the smaller shipments to the United Kingdom. Mill stock exported in the same 11 months in 1900 was valued at $128,631, against $119,005 in 1899; an increase of $9,626, owing to larger shipments to the far East.

IRON MARKET REVIEW.

NEW YORK. Jan. 11, 1901

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending Jan. 12, 1900.		Week ending Jan. 11, 1901.		From Jan., '00.	From Jan., '01.
	F'ces.	Tons.	F'ces	Tons.	Tons.	Tons.
An' racite & Coke.	254	288,325	201	244,150	494,270	383,666
Charcoal.	30	7.925	32	7,225	13,585	1 ,353
Totals..	284	296,250	233	251,375	507,855	395,01

The year opens with some increase of activity among the blast furnaces, and production is on a higher level than for several months past. More furnaces are being prepared to go into blast soon. As stocks decreased during December there seems to be some foundation for this renewal of activity.

There is little change in prices, but sellers are generally firm in their views and do not care to make concessions.

In current business the demand for plates and structural steel continues very good. Building and bridge work promises to be active, while locomotive and car builders are buying a good deal of material.

The proposed new pipe and tube plant of the Carnegie Steel Company is exciting a great deal of talk and comment in the trade.

A report comes from Philadelphia that James J. Hill has had two extensive deposits of Bessemer ore definitely located on the line of his great Northern Railroad on the Cascade Range and that part of his visit to New York is to arrange for the establishment of mills and furnaces. The parties who are making this rumor have no details as to fuel supplies for furnaces and mills, and it does not seem very probable.

Birmingham, Ala. Jan. 7.

(From Our Special Correspondent.)

The new year opens well in the iron and steel trades and all indications point to a profitable season. Coal miners, on account of pig iron prices, have been advanced 2½c. per ton already, and it is stated that the prospects are bright for a further advance.

Surplus stocks of iron in this State are being reduced steadily.

Iron men say the market is firm and steady. The Jenifer furnace at Jenifer, Ala., the Talladega furnace at Talladega and two of the Woodstock furnaces at Anniston are being made ready for operation. The Tutweiler Iron and Coal Company is removing its recently purchased furnace from Decatur to Vanderbilt, a suburb of Birmingham. The Tennessee Coal, Iron and Railroad Company has been working 2 of their furnaces light lately, but it is stated that all of its furnaces in this State will be put in blast as quickly as possible. The Sloss-Sheffield Steel and Iron Company, the Republic Iron and Steel Company, Alabama Consolidated Coal and Iron, Woodward Iron Company and others are manufacturing their usual quota of pig iron.

The various foundries and machine shops have more or less work to do. The Means-Fulton Iron Company, whose foundries and machine shops are located at North Birmingham, is bidding on Cuban work; the East Birmingham Machine Company is working on South American business; the Blakeslee Company, manufacturers of gas and gasoline engines, has filled an order for a large-sized engine for Johannesburg, South Africa, and recently shipped 6 car-loads of engines to Illinois and 3 to Texas.

The steel plants at Ensley, including the steel mill, the steel wire, rod and nail mill and the plow factory, are all working on pretty near full time. The steel plant has 7 of the 10 open-hearth furnaces in operation. The plow factory will be enlarged.

The following quotations are given for pig iron in this State: No. 1 foundry, $11.50@$12.50; No. 2, foundry, $10.50@$11.50; No. 3, foundry, $10 @$10.50; No. 4, foundry, $9.75@$10; gray forge, $9.75; No. 1, soft, $11.50@$12.50; No. 2, soft, $10.50 @$11.50.

The troubles of the Jones Valley Iron Company have not yet been settled and the furnaces known as the Williamson furnace, located in Birmingham, and the Trussville furnace, located at Trussville, are still idle.

Buffalo. Jan. 9.

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

There has been no business worth mentioning in this district during the past week and none was expected. We simply note, therefore, a continuation of previous conditions as to price movement. Only two of the four local coke furnaces are in blast, but these from daily make and accumulated stock are able to supply the current requirements. Consumers as a rule have been running their stocks to a low ebb for the convenience of inventory and not many have covered their requirements for the first half of the year. It is therefore quite probable that we shall soon be able to record a buying movement, most of the foundries being well supplied with work: We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $15.50; No. 2, $15; Southern Soft, No. 1, $16; No. 2, $15.50; Lake Superior charcoal, $19.50; coke malleable, $14.75.

Cleveland, O. Jan 9.

(From Our Special Correspondent.)

Iron Ore.—The chief interest in the iron ore market now is centered in the movement away from the lake docks to the stock piles of the furnaces. Car supply is better now than it has been for months and as a consequence the movement is heavy. No effort has been made to establish the prices at which next year's ores are to be sold and the delay is causing some concern, as it is preventing any business in either pig iron or some grades of finished material. It is expected, however, that this question will be cleared up soon.

Pig Iron.—The market is still a waiting one, although active business promises to be resumed before another week is over. The invoice season is about past and the furnace men have inquiries which would lead to the belief that active buying will be resumed in a very short time. The prices on the few sales made this week have not changed. Foundry No. 1 is selling at $14 and No. 2 at $13.50, Valley furnace. Basic is quoted at $13.50 and off basic at $12.50. No quotations are made on Bessemer, owing to an absolute lack of sales.

Finished Material.—The dullness noticeable in the other lines of the iron trade does not seem to pervade the finished material market. The capacity of most of the mills is sold up for six months ahead. The buyers are spending their time now in trying to coax deliveries out of the mill men and the latter are responding as rapidly as the conditions at their plants will permit. The only sales in plates now are for ships to be built on the lakes, mostly by the American Shipbuilding Company, while a few bridge concerns are buying plates for girders. The transactions here are not heavy. The greatest activity seems to be in structural shapes. This week has seen one order for 1,400 tons closed and others are pending for five business blocks in the city of Cleveland. This week has also seen some good-sized orders for steel rails for electric lines. One sale has amounted to 3,000 tons and the market has heard of another order for 10,000 tons that is to be placed in the near future. A number of Cleveland concerns are bidding on the rivets for the two battleships to be built at Philadelphia for the Government. This week the report has gained general circulation that a new steel plant of large proportions is to be erected at Norwalk for which large tracts of land have been purchased. Another story is also out that the Carnegies are to put up a plant at Conneaut that will cover 5,000 acres of land and have a shore line on the lake of one mile. The sales of bars are light, with a slight difference in the prices quoted. The larger mills are asking 1.35 Cleveland, while some are asking 1.25. Not much business is being done.

Old Iron.—The market has been very quiet this week, practically no sales having been made. The buyers appear to have their needs pretty well covered by recent purchases and are not anxious for the immediate future. No adequate quotation of the market is possible under existing conditions.

Philadelphia. Jan. 10.

(From Our Special Correspondent.)

Several very important things have developed in the iron trade during the past few days, but they do not affect present market conditions and can therefore be set aside.

Pig Iron.—If Southern freight rates can be readjusted on a certain projected basis a strong effort will be made to market a larger percentage of Alabama iron in Northern markets, should the export trade not prove equal to expectations. There is talk of blowing out two or three furnaces in eastern Pennsylvania which are not making any money. Regarding the financial conditions of some Virginia and Kentucky furnace plants there will soon be some developments. The market has a somewhat stronger tone this week, owing to the presentation of more inquiries than was looked for by both foundry men and mill men. Prices quoted are as low as it is possible [illegible] prices, but the buyers are waiting a f[illegible]arge sales will undoubtedly be

Billets.—Much the same condition prevails with reference to billets. There is a stronger disposition to buy, but it is tempered with the anxiety to know all about the price of ore and some other important det[illegible]al consumption of billet stock i[illegible] usual signs point to higher pri[illegible]ery conservative spirit controls t

Merchant Bars.—Several bar mill men seen today say that trade conditions are decidedly good. The year has opened satisfactorily and they strongly incline to believe that there will be no weakening tendency veloped for some months. Steel bars are h[illegible]ing a good call and 1.40 is a good price.

Sheets.—The strength of the market is due to the fact that prospective requirements are known to be heavy and that there is no accumulation of stock. The mills are busy, excepting in an occasional instance.

Pipes and Tubes.—This branch of the trade is very strong, but buyers are not led to believe prices will advance. The policy of mill managers is to create confidence in steady prices as fas as possible. A great deal of new work calling both for pipes and tubes is known to be coming.

Merchant Steel.—The mills are reported to us as having enough work secured to keep prices firm. If raw material should advance it means dearer merchant steel, but our agents say their customers for merchant steel and those who buy crucible stele are not at all concerned. Demand at present is off and next to nothing is doing.

Plates.—It is impossible this week to tell the truth about plates. There is something not yet fixed by the managers. The mills, however, are all busy. Prices are firm and a good deal of new work is hanging fire. Manufacturers from interior points who visited here within a few days said everything was favorable to the holding of bottom prices where they are. The inquiries of two or three large consumers for plates for summer delivery lent force to the theory that the mills were as well off for orders as manufacturers have been claiming. Boiler, engine, car, locomotive and tank work is plenty.

Structural Material.—Quite a number of inquiries for small lots are in this week. Building are calling for considerable material, including several apartment houses, a sky-scraper or two, some more bridge work, besides some export orders. The structural material people are quite satisfied and all capacity is engaged.

Steel Rails.—Interested parties are expecting developments as to prices.

Old Rails.—More inquiry is coming in for rails and small lots are changing hands.

Scrap.—A large local dealer bought $26,000 worth of cannon balls and truck at Fortress Monroe. They have also purchased large lots of old ammunition, guns and artillery belongings that have been rusting in Southern forts for a generation.

Pittsburg Jan. 9.

(From Our Special Correspondent.)

The first week of the new year was, if anything, better than was expected by the iron and steel interests of this district. All lines of finished product are firm and prices are more likely to advance than decline. There are no artificial values, as existed during the boom year of 1899 and the early part of last year. The only product that is in an unsatisfactory condition, but as to prices only, is pig iron. Over 10,000 tons of Bessemer pig iron were sold during the week, but at a lower price than ruled in December. Outside of the furnacemen the iron and steel interests are making a fair profit and all the mills in this district are crowded with orders. There is enough business in sight to keep them all in operation for probably the first half of the year. The demand for sheets is unusually heavy. One of the leading independent concerns is out of the market, having sold up for at least four months. It was forced to turn down an order yesterday although the price offered was higher than the rate at which sales had been made, because it could not guarantee delivery within three months. While all the sheet mills are busy the price on the orders now being filled is not above 3c. A much higher price could be obtained, however, for early delivery. The Bessemer steel billet market has improved and a number of sales were made this week for immediate delivery. At the meetings of the leading steel interests in New York last week no change was made in the prices of plates or Bessemer steel billets. An advance was expected and one may be ordered at the next meeting. Several meetings of the furnacemen of the Shenango Valley have been held lately to discuss plans for reducing the cost of production. It is likely that the iron carriers will be put on a day instead of a tonnage basis, the same as in the Mahoning Valley. If this is done the wages of this class of workmen will be considerably reduced. The Bessemer Furnace Association met in Cleveland this week but did not arrive at any decision as to prices for the first quarter. No sales of importance ng made beyond March 1st, which is an indication that furnacemen anticipate a higher price. The blast furnace of the National Steel Company at Niles, O., which has been idle for eight months, resumed operations yesterday after improvements costing over $50,000 have been made. The structural iron workers in this district went out on a strike last week for an increase in wages from 27 to 33 1/3c. an hour and a reduction in working hours from 10 to 9 hours. Over 1,000 men were affected and some important contracts were tied up. The strike was won and all the men were back at work on Monday morning. The McClintic-Marshall Construction Company, of this city, has received the contract for the erection of the steel superstructure of the new store building for Marshall Field & Company at Chicago. The building will require 8,000 tons of structural steel.

Pig Iron.—There was an unusually heavy tonnage during the week in Bessemer pig iron for delivery this and next month. From 10,000 to 12,000 tons were sold at $13.25@$13.50, Pittsburg. About 2,000 tons of gray forge were sold at $13, which was 25c. below the lowest price in December. There were no sales of any consequence of foundry No. 2, and the price remains unchanged at $14@$14.50, Pittsburg.

Steel.—The Bessemer steel billet market shows signs of improvement. Sales of a number of 100 and 200-ton lots aggregating about 2,500 tons for immediate delivery, were made during the week at the pool price of $19.75, Pittsburg. The price of steel bars remains at 1.25c. and most of the mills are sold up for several months. No change was made in the price of plates at the meeting in New York last week, and it remains at 1.40c. There is a good demand for plates.

Sheets.—All the sheet mills in this district are crowded with orders and the demand seems to be increasing. One mill is out of the market. Prices, however, are not any higher and No. 28 is still quoted at 2.95@3c., but a premium could be obtained for quick delivery. There is no change in No. 27, or galvanized sheets.

Ferro-manganese.—There is not much improvement in the demand and $62.50 is still quoted for 80% domestic.

New York. Jan. 11.

The local iron market is quiet. This is stock-taking time and the regular buying season does not begin for a month yet.

Pig Iron.—Iron is changing hands right along. Prices are generally unchanged. We quote for Northern iron, tidewater delivery: No. 1 X foundry, $16.50@$17.50; No. 2 X, $15.50@$16; No. 2 plain, $14.75@$15.25; gray forge, $14.50@$14.75. For Southern irons on dock, New York No. 1 foundry, $15.25@$15.75; No. 2, $14.50@$15; No. 3, $14.25@$14.50; No. 4, $13.50@$14; No. 1 soft, $15.50@$15.75; No. 2, $14.25@$14.50.

Bar Iron and Steel.—Demand is pretty steady. We continue to quote common bars at 1.35c. for large lots on dock: Refined bars, 1.45c.; soft steel bars. 1.40c.

Plates.—The market is quiet, with prices unchanged. We quote for large lots at tidewater: Tank, ¼-in. and heavier, 1.65c.; flange, 1.75c.; marine, 1.85c.; firebox, 1.85c.; universal, 1.60c.

Structural Materials.—Buying just now is confined most wholly to small lots. We continue to quote at tidewater: Beams, 1.65c.; channels, 1.65c.; angles, 1.30c.; tees, 1.70c.; zees, 1.65c.

Nails.—Cut nails and wire nails continue in fair demand, with quotations unchanged at $2.15 for cut nails and $2.50 for wire nails on dock.

METAL MARKET.

New York. Jan. 11.

Gold and Silver.

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

Metal.	November. 1899.	November. 1900.	Year. 1899.	Year. 1900.
GOLD.				
Exports	$264,310	$677,207	$33,521,900	$53,705,524
Imports	2,904,043	10,581,516	45,714,718	56,499,635
Excess	I. $2,639,733	I. $9,904,309	I. $12,192,818	E. $2,794,111
SILVER.				
Exports	4,339,166	5,258,080	47,760,823	58,863,325
Imports	2,771,920	3,607,232	27,817,710	36,745,936
Excess	E. $1,567,246	E. $1,650,848	E. $19,943,113	E. $22,117,389

Gold and Silver Exports and Imports, New York

For the week ending January 10th, 1901, and for years from January 1st, 1901, 1900, 1899 and 1898.

Period.	Gold. Exports.	Gold. Imports.	Silver. Exports.	Silver. Imports.	Total Excess, Exp. or Imp.
We'k	$22,940	$195,719	$807.777	$196,134	E. $438,864
1901..	22,940	195,719	807.777	196.134	E. 438,864
1900..	745,150	106,444	1,224,578	96,296	E. 1,766,988
1899..	108,886	15,915	848,950	93,'90	E. 848,231
1898..	25,000	804,795	850,493	141,220	I. 70,529

Exports of gold were to the West Indies; imports were in small lots from various ports. Exports of silver were chiefly to London; imports were from Mexico and the West Indies.

The United States Assay Office in New York reports the total receipts of silver at 21,000 oz. for the week.

Average Prices of Silver per oz. Troy.

Month.	1900. Lond'n Pence.	1900. N. Y. Cents.	1899. Lond'n Pence.	1899. N. Y. Cents.	1898. Lond'n Pence.	1898. 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	29.66	64.04	27 02	58.67	27.93	60.60
December.	29.68	64.14	27.21	58.99	27.45	59.42
Year....	28.17	61.41	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. 1900.	COPPER. 1899.	TIN. 1900.	TIN. 1899	LEAD. 1900.	LEAD. 1899.	SPELTER. 1900.	SPELTER. 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	4.64	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	5.68
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.....	16.40	16.49	28.25	28.51	4.350	4.575	4.29	4.64
Dec	16.31	15.85	26.94	25.88	4.350	4.64	4.25	4.60
Year.....	16.19	16.67	29.90	25.12	4.73	4.47	4.59	5 75

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, 16.58c.; for September, 16.62c.; for October, 16.64c.; for November, 16.80c.; for December, 16.88c.; for the year 1900, 16.52c.

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars	$ .50	$ .51½
Peruvian soles and Chilean pesos	.46	.47½
Victoria sovereigns	4.85	4.88
Twenty francs	3.84	3.88
Twenty marks	4.73	4.78
Spanish 25 pesetas	4.78	4.82

Imports and Exports of Metals.

Port.	Jan. 1-9. Expts.	Jan. 1-9. Impts.	Year 1901. Expts.	Year 1901. Impts.
New York. (N. Y. Metal Exchange.)				
Aluminum.....long tons	.....	.....	.....	.....
Antimony ore... " "	.....	.....	.....	.....
" regulus.. " "	.....	.....	.....	.....
Chrome ore..... " "	.....	.....	.....	.....
Copper, fine..... " "	2,795	435	2,795	435
" matte.. " "	152	22	152	22
" ore..... " "	.....	2,850	.....	2,850
" ash..... " "	.....	.....	.....	.....
Iron ore ..... " "	.....	.....	.....	.....
" pig, bar, rod " "	740	.....	740	.....
" pipe..... " "	380	.....	380	.....
" plates, sheets " "	66	.....	66	.....
Lead..... " "	2,177	2,425	2,177	2,425
" ore.. ..... " "	.....	.....	.....	.....
" dross..... " "	.....	.....	.....	.....
Manganese, ore. " "	.....	.....	.....	.....
Metals, old, scrap " "	29	.....	29	.....
Composition... " "	955	.....	955	.....
Nails..... " "	257	.....	257	.....
Nickel .. .. " "	82	.....	82	.....
" ore, matte " "	.....	.....	.....	.....
Railr'd material. " "	1,583	.....	1,583	.....
Rails, old..... " "	.....	.....	.....	.....
Steel bars, plates " "	1,993	.....	1,993	.....
" rails..... " "	2,696	.....	2,696	.....
" wire..... " "	698	.....	698	.....
Tin ..... " "	.....	10	.....	10
" and black plates " "	.....	1,162	.....	1,162
" dross..... " "	.....	.....	.....	.....
Zinc..... " "	.....	.....	.....	.....
" dross..... " "	58	.....	58	.....
" ashes, skim " "	.....	.....	.....	.....
" ore..... " "	.....	.....	.....	.....
Baltimore. (Special Correspondence).				
Antimony.....long tons	.....	.....	.....	.....
Chrome ore..... " "	.....	.....	.....	.....
Copper, fine..... " "	165	.....	165	.....
Ferro-manganese " "	.....	.....	.....	.....
Iron pig, bar. etc. " "	.....	25	.....	25
" ore..... " "	.....	8,957	.....	8,957
" pyrites..... " "	.....	3,575	.....	3,575
Manganese ore.. " "	.....	350	.....	350
Metals, old & Rails " "	.....	.....	.....	.....
Nails..... " "	52	.....	52	.....
Pipe, iron & steel " "	.....	.....	.....	.....
Silicon ..... " "	.....	.....	.....	.....
Spiegeleisen..... " "	.....	.....	.....	.....
Steel, bars, etc.. " "	1,292	.....	1,292	.....
" wire ..... " "	461	.....	461	.....
" rails..... " "	3,447	.....	3,447	.....
Tin..... " "	.....	.....	.....	.....
" and blackplates " "	.....	50	.....	50
Zinc..... " "	.....	.....	.....	.....
Philadelphia. (Week ending Jan. 5).				
Antimony ....long tons	.....	.....	.....	.....
Chrome ore..... " "	.....	.....	.....	.....
Copper, fine..... " "	.....	.....	.....	.....
" ore..... " "	.....	.....	.....	.....
" pyrites.. " "	.....	.....	.....	.....
Iron, pig..... " "	.....	337	.....	337
" ore..... " "	.....	.....	.....	.....
" pyrites..... " "	.....	.....	.....	.....
Manganese ore.. " "	.....	.....	.....	.....
Spiegeleisen..... " "	.....	.....	.....	.....
Tin..... " "	.....	.....	.....	.....
" andblack plates " "	.....	.....	.....	.....
Zinc..... " "	.....	.....	.....	.....
" ore..... " "	.....	.....	.....	.....

Total United States.

Articles.	Nov. 1900. Expts.	Nov. 1900. Impts.	Year, 1900. Expts.	Year, 1900. Impts.
Antimony..long tons	...	391	11	1,721
" ore.... " "	.....	163	.....	2,295
Copper, in all forms.... " "	9,508	10,205	148,341	72,160
Iron, pig & bar.. " "	32,70	3,800	267 624	66,312
" ore.... " "	4,537	65,654	51,383	838,262
Iron& steel plates " "	6,3	295	46,363	5,021
Iron & steel rails " "	15,496	289	346 235	1,280
" wire " "	5,582	261	71 186	1,740
Lead, in all forms " "	8,323	9,146	81,951	90,917
Manganese ore and oxide..... " "	.....	603	3	250,047
Nickel "&matte " "	153	.....	2,414	.....
Nails, cut..... " "	968	.....	10,117	.....
" wire .... " "	1,436	.....	25,663	.....
Quicksilver.... " "	19	.....	318	.....
Steel, billets, rods, etc..... " "	37,298	2,321	173,258	31,267
Tin..... " "	31	1,589	472	28,005
" &black plates " "	59	2,087	601	55,886
Zinc ..... " "	1,249	8	19,719	922
" ore ..... " "	3,197	.....	34,799	.....

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, ¾c. a lb. Lead, 1½c. a lb. on lead in ores; 2½c. per lb. on pigs, bars, etc.; 2½c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb. Quicksilver, 7c. per lb. Spelter or zinc, 1½c. per lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

Financial Notes of the Week.

The opening week of the new year shows generally active business, while the speculative markets are very strong and active. There has been some talk of gold exports, the result of high interest rates and sales of our securities abroad, but none have been made yet.

India continues a buyer of silver in the London market, but the spot price has been affected adversely by dear money. Futures are in good demand at better figures than spot delivery.

The statement of the New York banks—including the 66 banks represented in the Clearing House for the week ending January 5th, gives the following totals, comparison being made with the corresponding week in 1900 and 1899:

	1899.	1900.	1901.
Loans and discounts.	$713,803,800	$677,797,000	$803,989,600
Deposits	826,861,700	748,953,100	870,950,100
Circulation	18,858,200	16,341,000	30,982,500
Reserve:			
Specie	173,442,100	144,001,700	164,827,800
Legal tenders	56,808,700	54,994,300	67,059,800
Total reserve	$230,250,800	$198,996,000	$231,887,600
Legal requirements	206,720,425	187,238,275	217,737,525
Balance, surplus	$23,530,375	$11,757,725	$14,150,075

Changes for the week, this year, were increases of $7,532,400 in loans and discounts, $1,676,090 in deposits, $3,108,100 in specie, $3,706,300 in legal tenders and $2,624,175 in surplus reserve; a decrease of $58,300 in circulation.

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

	1900.		1901.	
Banks.	Gold.	Silver.	Gold.	Silver.
N.Y. Ass'd.	$144,001,700	.....	$161,827,800	.....
England	160,629,880	.....	143,336,500	.....
France	373,061,290	$249,413,335	466,571,065	$219,611,980
Germany	120,575,000	62,115,000	120,420,000	62,035,000
Spain	68,000,000	72,495,000	70,005,000	81,705,000
Neth'l'ds	18,830,000	29,930,000	24,335,000	28,120,000
Belgium	14,430,000	7,215,000	14,215,000	7,110,000
Italy	77,315,000	7,505,000	77,510,000	8,850,000
Russia	434,545,000	26,995,000	368,695,000	31,980,000

The returns of the Associated Banks of New York are of date of January 5th, and the others are of date January 4th, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports gold only.

Shipments of silver from London to the East for the year up to December 27th, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
India	£5,180,525	£7,573,239	I. £2,392,714
China	1,423,840	2,255,036	I. 831,196
The Straits	277,705	806,016	I. 528,311
Totals	£6,882,070	£10,634,291	I. £3,752,221

Arrivals for the week, this year, were £320,000 in bar silver from New York and £3,000 from Australia; total, £323,000. Shipments were £156,000 in bar silver to Bombay and $17,500 to Calcutta; total,, $173,500.

Indian exchange has been very strong under the pressure of a heavy demand for money and higher rates of interest in India. Council bills sold in London at 16.06d. per rupee.

The Treasury Department's estimate of the money in the United States on January 1st, 1901 is given below:

	Total Stock.	In Treasury.	In Circulation.
Gold coin (inc. bullion in Treas)	$1,108,541,829	$246,561,322	$629,192,578
Gold Certificates.	.....	.....	232,787,929
Silver Dollars	504,690,508	6,108,779	76,182,326
Silver Certifi.	.....	.....	422,399,403
Subsid. Sil	87,569,473	4,446,010	83,123,463
Treas. Nts of 1890.	61,397,000	196,841	61,230,159
U. S. Notes	346,681,016	10,533,521	334,587,495
Currency Certifi.	.....	.....	1,560,000
Nat. Bank Notes.	340,141,175	7,952,649	332,188,526
Totals	$2,449,021,001	$275,769,122	$2,173,251,879

The population of the United States January 1st, 1901, estimated at 77,080,000; circulation per capita, $28.19. For redemption of outstanding certificates an exact equivalent in amount of the appropriate kinds of money is held in the Treasury, and is not included in the account of money held as assets of the Government. This statement of money held in the Treasury as assets of the Government does not include deposits of public money in National Bank depositaries to the credit of the Treasurer of the United States, and amounting to $89,909,745. The amount of circulation shows an increase of $14,490,512 over December 1st, 1900; and of $192,853,709 over January 1st, 1900.

Other Metals.

Daily Prices of Metals in New York.

Dec.-Jan.	Sterling Exchange.	Silver. Fine oz. Cts.	Silver. London. Pence.	Copper. Lake. cts. ℔ lb.	Copper. Elcetrolytic ℔ lb.	Copper. London £ ℔ ton.	Tin. cts. ℔ lb.	Lead cts. ℔ lb.	Spelter. N.Y. cts. ℔ lb.	Spelter. St. L. cts. ℔ lb.
29	4.85	63⅞	29 5/16	16⅞	16¼ @16⅜	....	27	4.32½ @4.37½	4.17½	3.97½
31	4.85½	63⅞	29 5/16	16⅞	16¼ @16⅜	72⅛	27	4.32½ @4.37½	4.17½	3.97½
1	.....	....	....	....	.....	.....	.....	.....	.....	.....
2	4.85¾	64	29 5/16	16⅞	16¼	72⅛	27	4.32½ @4.37½	4.15	3.95
3	4.86⅛	63¾	29 7/16	16⅞	16¼	72½	26½	4.32½ @4.37½	4.15	3.95
4	4.86⅛	63⅝	29 5/16	16⅞	16¼	72⅜	26½	4.32½ @4.37½	4.15	3.95
5	4.86⅛	63½	29 5/16	16⅞	16¼	....	26½	4.32½ @4.37½	4.17½	3.97½
7	4.86¾	63⅝	29⅜	16¾ @16⅞	16¼	72⅜	26¾	4.32½ @4.37½	4.17½	3.97½
8	4.86¾	63⅞	29 7/16	16¾ @16⅞	16¼	72½	26½	4.32½ @4.37½	4.15	3.95
9	4.86⅞	63⅞	29 7/16	16¾	16¼	72½	26½	4.32½ @4.37½	4.15	3.95
10	4.86⅞	63¾	29⅜	16¾	16¼	72 1/16	23¼	4.32½ @4.37½	4.15	3.95
11	4.87	63½	29¼	16¾	16¼	71¾	26¼	4.32½ @4.37½	4.15	3.95

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

Copper.—The market is quiet and without special feature. On the one hand, consumers are not buying much; on the other, producers are not pressing upon the market. Consumption in this country is very good; in Europe it appears to have fallen off somewhat. In some quarters it is believed that buyers, generally, will soon have worked up their stocks and that a more active market can then be looked for. We quote Lake copper at 16¾; electrolytic in cakes, wirebars and ingots at 16¼; in cathodes at 16; casting copper at 16⅛c.

The market for standard copper, which closed last week at £72 7s. 6d. for spot, £73 for three months, opened at these figures, but on Tuesday advanced 2s. 6d. On Thursday it declined to £72 1s. 3d. for spot, £72 15s. for three months, and the closing quotations are cabled as £71 15s. for spot, £72 10s. for three months.

Refined and manufactured sorts we quote: English tough. £75@£75 10s.; best selected, £78 10s.@£79; strong sheets, £85@£85 10s.; India sheets, £82 10s.@£83; yellow metal, 7d.

Tin.—The market has been very dull and weakish and prices have changed but little. At the close we quote January tin at 26¼c., February the same.

The market, which closed last week at £117 15s. for spot, £117 10s. for three months, opened £3 higher, £1 of this advance being lost on Wednesday. On Thursday the market was quoted at £118 7s. 6d. for spot and the same for three months, and the closing quotations are £116 10s. for both spot and three months.

Exports of tin from the Straits for the 10 months ending October 31st were, in long tons:

	1899.	1900.	Changes.
United States	20,146	12,546	D. 7,600
Europe	18,315	25,115	I. 6,800
China and India	1,063	1,486	I. 423
Totals	39,524	39,147	D. 377

The decrease in direct shipments to the United States was due to the peculiar condition of the ocean freight market. Shipments to this country in 1900 were made largely through London.

Imports of tin into the United States for the 11 months ending November 30th were: East Indies, 30,406,539 lbs.; other Asia and Oceanica, 515,386 lbs.; London and Holland, 31,442,173 lbs.; other countries, 365,999 lbs.; total, 62,730,097 lbs. In 1899 the total was 68,215,999 lbs., showing a decrease of 5,485,902 lbs., or 8.3%, last year.

Lead.—The market remains without change. A fair business is reported at last prices, viz., 4.17½ @4.32½c. St. Louis, and 4.32½@4.37½c. New York.

The foreign market is quoted at £16 6s. 3. for Spanish lead, 2s. 16d. more for English lead.

Imports of lead into the United States in all forms and re-exports of foreign lead refined here in bond for the 11 months ending November 30th were, in short tons:

	1899.	1900.
Lead in ores and base bullion	87,030	101,623
Metallic lead	234	205
Total imports	87,264	101,828
Re-exports	69,449	91,493
Balance retained	17,815	10,335

The increase in imports was 14,564 tons, or 16.7%. Of the lead imported in ores and base bullion in 1900 a total of 81,423 tons (79.8%) came from Mexico; 17,013 tons (16.7%) from Canada; the remaining 3.5% being from other countries. There was an increase of 22,044 tons, or 31.9%, in re-exports.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is dull at 4.20c. for Missouri and 4.32½c. for argentiferous. Buyers do not feel disposed to anticipate their wants beyond current requirements, feeling reasonably well satisfied that there will be no advance in the near future.

Spelter.—A fair business has been done at somewhat lower prices. Consumption throughout the country is good. We quote St. Louis at 3.95c., New York at 4.15c.

Our cables report the foreign market somewhat better, with good ordinaries quoted at £19, specials 5s. higher.

Exports of spelter, or metallic zinc, from the United States for the 11 months ending November 30th were 22,063 short tons, against 6,511 tons in 1899; an increase of 15,552 tons. Exports of zinc ore were 34,799 tons, against 21,918 tons in 1899; an increase of 12,881 tons.

Antimony.—We quote Cookson's at 10c.; Hallett's, 9⅛c.; U. S., 9¼c.

Imports of antimony metal or regulus into the United States for the 11 months ending November 30th, and of antimony ore were, in pounds:

	1899.	1900.
Antimony, metal	3,024,281	3,344,743
Antimony, ore	3,982,133	5,672,907

The increase in metal was 320,462 lbs., or 10.6%; while there was an increase of 1,690,774 lbs., or 42.5%, in ore imported.

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

Exports of nickel and nickel oxide from the United States for the 11 months ending November 30th were 5,408,542 lbs., against 4,517,397 lbs. in 1899; showing an increase of 891,543 lbs., or 16.3%, last year.

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

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

Imports of platinum into the United States for the 11 months ending November 30th were 6,919 lbs., against 5,742 lbs. in 1899; showing an increase of 1,177 lbs., or 20.5%, in 1900.

Quicksilver.—The New York quotation continues unchanged at $51 per flask for large lots, with $52.50@$54 asked for small quantities. San Francisco prices are $48@$48.50 on local deliveries, and $43.50@$44 on export orders. The London price is £9 2s. 6d. per flask, with the same price named from second hands.

Exports of quicksilver from all United States ports for the 11 months ending November 30th were 713,881 lbs., which compares with 1,224,607 lbs. in 1899; showing a decrease of 510,726 lbs., or 41.7%, in 1900.

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

Aluminum.	Per lb.		Per lb
No. 1, 99% ingots	.33@37c.	Ferro Titanium (20%)	$1.00
No. 2, 90% ingots	31@34c.	Ferro-Tungsten (37%)	.32c.
Rolled sheets	.42c. up	Magnesium	$2.75@$3
Alum.-bronze	20@23c.	Manganese (over 99%)	$1.05
Nickel-alum	.33@39c.	Mangan'e Cop. (20% Mn)	32c.
Bismuth	$2.25	Mangan'e Cop. (30% Mn)	38c.
Chromium (over 99%)	1.00	Molybdenum (Best)	$1.45
Copper, red oxide	.50c.	Phosphorus	.50c
Ferro-Molyb'um (50%)	$1.00	American	70c
Ferro-Titanium (10%)	90c.	Tungsten (Best)	.86c.

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

LATE NEWS.

A dispatch from London, January 10th, says: "The negotiations toward the formation of another American iron and steel combination which have been carried on recently in London reached a point this evening where their culmination became practically assured. The companies intending to amalgamate are the Canadian Steel Company, the Lake Superior Power Company, the American Sheet Steel Company, the Otis Steel Company, the Pittsburg Steel Company and the Wellman-Seaver Company, of Cleveland. Combined with these, if the deal is completed, will be several English firms who will take part in the enterprise, financially and commercially. At this evening's conference there were present Mr. Seaver, president of the Wellman-Seaver Company; Mr. Pew, president of the Canadian Steel Company; Mr. Douglas, of Philadelphia, president of the Lake Superior Power Company; Mr. Wicks, president of the American Sheet Steel Company; Mr. Head, managing director of the Otis Steel Company, and Mr. Huber, of the Pittsburg Steel Company.

"The moving spirit in the undertaking appears to be Mr. Pew. It is the intention to make this an American-Canadian combination."

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 74.)

New York. Jan. 11.

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

Articles.	November.		Year, 1900.	
	Imports.	Exports.	Imports.	Exports.
Bleaching Powder, lbs.	10,914,152	....	120,486,471	148,116
Caustic Soda, lbs.	1,060,104	113,324	7,915,741	994,174
Sal Soda, lbs	598,722	.. ..	4,768,308	960
Soda Ash, lbs.	4,140,837	.....	61,705,113	42,766
Chlorate of Potash, lbs.	87,798	30,211	1,154,632	368,771
Copper Sulphate, lbs.	.....	500,943	.....	42,371,705
Nitrate of Soda, tons.	24,962	168	165,340	3,003
Muriate of Potash, lbs.	23,632,251	.....	99,786,463	273,062
Phosphate Rock, tons.	17,026	48,180	122,605	575,356
Pyrites, "	22,599	.....	306,972	.....
Brimstone "	21,404	18	151,807	428
Saltpeter, lbs.	411,718	.....	10,317,467	25 297

As compared with the previous month imports showed increases, especially in muriate of potash and soda ash, and in exports the leading articles were chlorate of potash and copper sulphate.

The new year opened with improved inquiry in most lines and firm prices. Stocks in makers' hands are not large, and with the promised revival in industrial centers, consumption of chemicals this year will doubtless show an increase.

Heavy Chemicals.—More demand for the soda products. Further sales of high-test domestic alkali for 1902 delivery are noted at 80@82½ per 100 lbs. Sal soda has slumped in price, owing to excessive competition. Concentrated sal soda, however, is unchanged. Bleaching powder is firm, after selling at $1.80@$1.85 per 100 lbs. for prompt shipment. New bleach contracts are larger than last year, and the price has stiffened, as a cable dispatch from Great Britain states that the laborers in the lime quarries are on strike. Our imports of bleaching powder from Great Britain in the 11 months ending November 30th, 1900, amounted to 40,601 long tons, while our receipts from European countries aggregated 13,384 tons, making a total of 53,985 long tons, which compares with 49,571 tons in the same time in 1899; showing an increase of 4,414 tons in 1900. The Solvay Process Company, with works in New York, Detroit, Mich., and in Alabama, recently increased its capital stock from $4,000,000 to $5,000,000. There has been paid in $4,000,000 and the debts and liabilities amount to $2,757,000. The Harshaw, Fuller & Goodwin Company, of Cleveland, O., has called a meeting for January 31st to increase its capital stock from $150,000 to $250,000.

We quote per 100 lbs. as follows: Domestic soda ash in bulk is worth 2¼c. per 100 lbs. less than quotations below.

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York.	In New York.
Alkali, 58%.	80@82½	.....	85@87½
" 48%.	82½@85	.....	.....
Caustic Soda, high test.	$1.80@$1.85	.....	1.85@1.87½
powd., 60%.	.....	2.75	.....
70@74%.	.....	2.85	.....
98%.	.....	3 25	3.75@4.00
Sal Soda	50	60	65
" conc.	1.12½@1.75	.....	1.75
Bicarb. Soda.	1.06¼@1.12½	.....	1.37½@1.75
" " extra	3.25@3.50	.....	.....
Bleach Pdr., Eng. prime.	.....	.....	2.00@2.10
other brands.	.....	.....	1.90@1.95
Chl. Pot cryst	.....	8.50@8.75	9.75@10.00
" powd.	.....	8.75@9.00	9.75@10.00

Acids.—Contracts were booked for acetic acid at quotations below. Sulphuric acid shipments have increased. Tartaric is weak, owing to keen competition, and is selling at 29c. per lb. for crystals and 30c. for powdered. Blue vitriol is in better request for export, and sales are reported as low as $4.75 per 100 lbs., though makers continue to quote as below:

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

Acetic, No 8	$1.62½	Nitric, 36°	$3.87½
Blue Vitriol.	5.00@5.25	Nitric, 38°	4.12½
Aqua Fortis, 36°	3 62½	Nitric, 40°	4.37
Aqua Fortis, 38°	3 87½	Nitric, 42°	4.75
Aqua Fortis, 40°	4.12½	Oxalic	5.75@6.00
Aqua Fortis, 42°	4.50	Sulphuric, 66°	1.20
Muriatic, 15°.	1.20	Sulphuric, 60°	1.05
Muriatic, 20°.	1.35	" bulk 50° ton	14.00
Muriatic 22°.	1.50		

Brimstone.—New York imports so far this year amount to 800 tons. Trade is quiet. Best unmixed seconds on spot brought $22.50@$23 per ton, while shipments are held at $21.25@$21.75. Best thirds are worth $2 per ton less. We are advised by Emil Fog & Sons that the exports of brimstone from Sicilian ports in November amounted to 36,360 long tons, against 30,114 tons in the same month of 1899, showing an increase of 6,246 tons in 1900. Of this amount the United States received 13,416 tons best unmixed seconds and 4,500 tons best thirds; total, 17,916 tons, against 8,400 tons in 1899; an increase of 9,516 tons. Stocks in Sicily on November 30th were 228,428 tons, showing a falling off of 51,729 tons, as compared with the same time in 1899.

Pyrites.—Demand is good. The Virginia producers have advanced prices. New York imports from Spain so far this year amount to 2,853 metric tons copper pyrites. We also note a charter of 1,494 tons from Huelva, Spain, to Savannah, Charleston or Wilmington at 9s., January sailing. We quote as follows: Mineral City, Va., lump ore (basis 45%), $4.90 per long ton and fines $4.50. 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@51½% of sulphur; American from 42@44%.

Fertilizing Chemicals.—Southern buying is best. The large new Armour fertilizer works at Locust Point, Md., has started up, producing about 1,000 tons weekly, and employing about 150 men. The phosphate rock will come from Florida and Tennessee, the acids will be bought in Baltimore, and the animal ammoniates will come from the Armour plants at Chicago and Kansas City. Swift & Co., in their report for the fiscal year ending September 30th, 1900, give their production of animal ammoniates at 119,146,766 lbs., showing a prosperous year. The Fisheries Company (the menhaden trust) has declared a semi-annual dividend of 3½% on its preferred stock. Quotations are: Sulphate of ammonia, gas liquor, $2.72½@$2.75 per 100 lbs.; blood, $2.15 per unit, f. o. b. Chicago, and $2.30 for New York soft; tankage, $1.95@$2 and 10c. per unit, f. o. b. Chicago; Calcutta bone-meal, $22 for best grades and $19 for ordinary grades; domestic steamed ground bone, $19@$19.50 per ton.

Potash salts are quoted as follows: Muriate of potash, 80%, $1.83@$1.86 per 100 lbs.; double manure salt, 90@93%, $1.05@$1.06 per 100 lbs.; manure salt, 90@93%, $2.05½@$2.08½ per 100 lbs.; manure salt, 20%, 64@66c.; Kainit, bulk, $9.05@$9.30 per short ton, and Keiseret, $7.25@$7.50 per ton.

Nitrate of Soda.—The steamer "Coya" arrived with 15,573 bags. The market is quiet, consumers apparently anticipating lower prices, although importers continue to quote $1.85 per 100 lbs. for all positions. On the coast nitrate of soda has advanced to 6s. 5d. per qtl. ($1.54), and sales are reported at this figure. Refined nitrate is very scarce in the primary market. Shipments to Europe in December are estimated at 178,000 long tons. The visible supply on January 1st was about 800,000 tons, which is the largest in a long time, and is 86,000 tons greater than January 1st, 1900. The Lautaro Nitrate Company, Limited, paid a dividend of 1s. 6d. (36c.) per share, tax free, on January 1st, 1901.

Messrs. Mortimer & Wisner, of New York, in their monthly statement of nitrate of soda, dated January 2d, 1901, give the following statistics:

	1900.	1899.	1898.
	Bags	Bags.	Bags
Imp. into Atlantic ports from West Coast S. A., from Jan. 1, 1900, to date	1,178,448	927,772	955,377
Imp. from Jan. 1 from Europe	2,063	.....	55,171
	1,180,511	927.772	1,010,548
Stock in store and afloat Dec. 31, 1900, in New York	13,416	9,586	54,406
Boston..	.....	.....	.....
Philadelphia	.....	.....	.....
Baltimore	.....	1,000	4,000
Norfolk, Va	.....	.....	.....
Charleston	.....	.....	.....
To arrive, due Apr. 15, 1901.	419,000	235,000	206,000
Vis. supply to Apr 15, 1901.	432,446	245,586	264,406
Stock on hand Jan. 1, 1900..	9,586	58,406	15,383
Deliveries past month	103,007	49,609	39,900
Total yearly deliveries	1,176,651	976,592	967,525
Prices current, Dec. 31, 1900	$1.85@ $1.87½	$1.85@ $1.87½	$1.60@ $1.62½

Phosphate.—Florida rock miners look for higher prices, but as yet the European superphosphate makers are not inclined to place large orders even at present quotations. Completed statistics give the shipments of high-grade Florida rock from Savannah in 1900 at 121,724 long tons, showing a substantial increase over the previous year. The movement of pebble phosphates from Punta Gorda, Fla., in 1900 was 33,079 tons to domestic consumers and 21,427 tons for exports; a total of 54,506 tons, showing a falling off of 18,263 tons, as compared with 1899, chiefly in domestic consumption. An importation of 1,350 tons from Connetable Island is noted at New York, consigned to the International Phosphate Company.

Abroad holders of American and Algerian phosphates are asking higher prices, owing to the firm freight market and unwillingness of miners to book ahead at present f. o. b. prices.

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	8½@8⅝d	$12.68@13.07
*Fla. land pebble (68@73%)	4 35	7@7¼d	9 00@10.15
*Fla. Peace River. (58@63%)	3.00@3.50	6½@7¼d	7.80@8.70
†Tenn. rock 78%, export.	2.85@2.90	7¼@7½d	11.31@11.70
†Tenn.....78% domestic.	2.70@2 85	.....	.....
†Tenn.....75% "	2.50@2.75	.....	.....
†Tenn.....72% "	2.25@2.50	.....	.....
‡So. Car. rock, crude....	3.75@4.00	.....	.....
§So. Car. rock, dried.....	4.50	6½d	7.80
Algerian, rock...(63@70%	.....	7¼@7¾d	9.72@10.39
Algerian, rock...(58@63%)	.....	7@7½d	8.00@9.00

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

Liverpool. Dec. 19.

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

Soda ash is firmly held, and while prices vary according to market, the usual range for tierces is about as follows: Leblanc ash, 48%, £5 12s. 6d. @£5 17s. 6d.; 58%, £6 2s. 6d.@£6 7s. 6d. per ton, net cash. Ammonia ash, 48%, £4 10s.@£5 15s.; 58%, £4 15s.@£5 per ton, net cash. Bags, 5s. per ton under price for tierces. Soda crystals are in moderate request at £3 7s. 6d.@£3 10s. per ton, less 5% for barrels, or 7% less for bags, with special quotations for a few favored markets. Caustic soda is not brisk, but quotations are fully maintained, 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 quiet, but steady at £6 15s.@£7 per ton, net cash for hardwood packages.

Chlorate of potash is quoted at 3¾d. per pound, net cash, without much business passing.

Bicarb. soda is unchanged and selling to a moderate extent at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages; also special terms for a few favored markets.

Sulphate of ammonia is rather firmer at £11 2s. 6d.@£11 5s. 5d. per ton, less 2½% for good gray 24@25% in double bags, f. o. b. here, and 2s. 6d.@5s. per ton more money is asked for January delivery.

Nitrate of soda is in limited request on spot at £8 10s.@£8 15s. per ton, less 2½% for double bags, f. o. b. here, as to quantity and quality.

MINING STOCKS.

Complete quotations will be found on pages 70 and 71 of mining stocks listed and dealt in at:

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

New York. Jan. 11.

Wall Street has been in a flurry; transactions on the New York Stock Exchange have been on a record-breaking scale, and prices have risen notably. Speculation is chiefly in the railroad and coal stocks.

In the mining list trading was not as active, and what are known as "curb" copper shares showed very little business. On 'Change Amalgamated Copper was in better request on Wednesday and sold fractionally higher. Anaconda showed small dealings at lower prices. British Columbia was firm on curb, selling up to $23, and a sale of Tennessee is reported at $18.75. Union of North Carolina reappeared on curb with sales at $4.75.

A sale of Homestake of South Dakota was made at $75, which is the first transaction in several weeks. Horn Silver, of Utah, was in moderate request at easier prices. Moulton, of Montana, made a sale at 30c., and Brunswick, of California, at 28c.

In the Colorado list a better business is noted, but prices are little changed. Portland, which has just declared a 6c. quarterly dividend, sold at $3.35. Isabella gained 3 points at 73c., and Anaconda sold at 45c.

Comstock shares showed little business. Consolidated California was stronger, selling up from $2.35 to $2.80, Ophir at 88c. and Mexican at 60c.

Recent auction sales include $5,000 5% income bonds Ohio Mining and Manufacturing Company at 5%; $6,000 first mortgage 6% bonds Indiana Natural and Illuminating Gas Company, at 55%; 40 shares Central Mining Company of Michigan at $2.50 per share; 417 shares Ohio & Indiana Consolidated Natural and Illuminating Gas Company at $23@$24; 100 shares Interstate Oil Company at $4.25 per share; and $10,000 5% bonds Ohio Mining and Manufacturing Company at 6%.

Boston. Jan. 9.

(From Our Special Correspondent.)

A reaction, due to general profit-taking, and followed by several dull days marked the Exchange this week. The brokers passed their

time in speculating when the rise would come, rather than in actual business.

The exception was in Boston & Montana stock, sales of which were apparently pressed. In the rest of this group Amalgamated and Anaconda both sold better. The public is rather wary of these shares, however, suspecting some little game of the insiders.

The Lake coppers were generally quiet, with little trading. Tamarack continues strong, selling up to $330. There was no demand for the smaller coppers.

The gold stocks were quite neglected, except Cochiti, which sold well at $10@$10½.

In the general list Dominion Coal was rather heavy, closing at $38; while New England Gas and Coke was quiet at $13. The volume of business in mining stocks was small.

Salt Lake City. Jan. 5

(From Our Special Correspondent.)

Business closed on the Mining Exchange today with the sales for the five business days of this week—New Year's day excepted—amounting to 83,730 shares, representing a selling value of $67,831. The principal stocks traded in were Consolidated Mercur, Daly-West, Lower Mammoth, May Day, Sunshine, Grand Central and Star Consolidated.

San Francisco. Jan. 5,

(From Our Special Correspondent.)

The year opened with quite a show of activity and rising prices. Consolidated California & Virginia sold up to $2.30 and several other stocks showed gains. A reaction followed and prices fell, but were still high as compared with the closing week of last year. It was a very well managed little inside operation.

The sales on regular call at the San Francisco Stock Exchange for the year to date compare as follows:

	1899.	1900.
January, shares	121,955	164,400
February	350,860	112,000
March	272,625	252,732
April	209,215	121,500
May	164,580	171,015
June	201,375	129,505
July	147,340	84,110
August	153,305	163,985
September	136,865	113,350
October	168,770	229,790
November	167,775	136,210
December	138,535	125,585
Total	2,233,180	1,704,180

In January, May, August and October of 1900 there was an increase in business as compared with the corresponding months of 1899. The total sales for the year showed a decrease of 529,000 shares, or 23.7%, from those of 1899.

The Oil Exchange was again very active, sales being large and prices again higher. Some new stocks have made their appearance and are actively dealt in.

Some quotations noted are: Oil City, $36.25; San Joaquin, $13.50; Kern Oil, $10.25; Home, $4.20; West Shore, $3.75; Twenty-eight, $2.45; Stirling, $3.10; Four Oil, 60c.; Caribou, 58c.; California Standard, 36c.; Petroleum Center, 24c.; Lion, 20c.

Oil City and San Joaquin were favorites among the producing stocks; Standard and Petroleum Center had the call among the prospects.

London. Dec. 21.

(From Our Special Correspondent.)

During the past week there has been considerable activity in the way of promtion of new mining companies, but it must not be supposed that there has been any boom on that the public have subscribed for the shares offered. The fact is that the new company law comes into force with the beginning of 1901, and as the new regulation requires the publication of much more information with regard to the constitution of the companies and the profits of the vendors it is only natural that certain promoters should choose to make their issues now, although the season is otherwise an extremely inconvenient one. Among these new companies there are two rather large ones to handle West African and Ashanti propositions; the Collie Coal Company promoted by Mr. Frank Gardner to acquire a coal field in the Wellington District of West Australia; the Berry Glengower Gold Mining Company to acquire a property near Loddon Valley, Victoria, and the Ida H. Gold Mining Company, promoted by the Stonehams, to acquire a property at Mount Margaret in West Australia.

There have also been three new Bottomley companies issued this week and the circumstances of their flotation are of considerable interest. The companies are the Loddon Deep Leads, Limited, to work gold mines in Loddon Valley, Victoria; Great Lucknow Consols, Limited, to acquire certain gold claims in the Lucknow District, New South Wales; and the Mount Diamond Copper Mines, Limited, to acquire mines in South Australia. These are practically the first new companies promoted by Mr. Bottomley since his collapse a year or more ago. His directors are not people of any importance in either the financial or social world. His method of introducing the companies was ingenious. It happens that he owns the "Sun," a London evening newspaper, which he bought some months ago from Mr. Harry Marks and Mr. Hooley. Three or four weeks ago he announced that he was going to try an experiment similar to Mr. Sheldon's at Topeka and have Rev. Dr. Parker edit the paper for one week just before Christmas. He desired to show that a paper could be made brighter and more attractive than Mr. Sheldon's, though edited on strictly Christian principles. He also announced that both editorial matter and advertisements should be under the sole control of Dr. Parker. It was amusing therefore to the City man to see in the telegram space usually occupied by latest betting and sporting results a paragraph denouncing the evils of gambling, and in the columns adjacent, flaring displayed advertisements of Mr. Bottomley's new mining companies. I have no doubt that quite a number of believers in Dr. Parker were induced by this scheme to subscribe for shares. If Dr. Parker had taken expert advice, I do not think he would have inserted these advertisements, at any rate not next to the anti-gambling sermon.

Another new company floated this week is the Bischof White Lead Corporation, Limited, a company, by the way, which is of a very different character from those mentioned above. It has been formed to manufacture white lead by Dr. Gustav Bischof's new process, and it is supported by the Peases, Brunner, Mond & Co., while the product is vouched for by Sir Frederick Bramwell. The white lead produced is real white lead and not a substitute and the invention consists in an improvement in the process of manufacture. I hope shortly to be able to discuss the process in another column. There is every probability that the shares offered to the public will be subscribed for, perhaps not by the public themselves, but they will be placed suitably by the underwriters.

The mining stock market this week has been depressed by the announcement that Whitaker Wright's London & Globe Financial Corporation is not in a position to pay a dividend for the year recently ended, and there has been quite a bear raid on all the shares of this group in consequence. During the past year there have been many flotations made by this corporation involving the payment of large sums of cash as purchase price, and people ask where the money goes to. No information is given in reports and at the meetings the speeches are confined to compliments and generalities. It is probable that nobody but Mr. Whitaker Wright fully grasps all the ramifications of this complicated business. I believe that the explanation given by the directors fairly represents the state of things, that all the available cash is required for the construction of the Baker Street & Waterloo deep-level electric railway which the corporation is financing. A few months ago the corporation floated the railway as a separate concern, but the public did not respond readily, so the corporation had to find the necessary funds to keep the work going. This work is the most substantial and permanent of all the corporation's speculations, so the use of the corporation's money in this way must not be grudged. It must also be remembered that many of the other recent flotations of the corporation did not go off well, and that the sale of shares in the subsidiary companies has not been brisk. Besides, to this some expense must have been involved in the combating of the numerous bear cliques who have been harassing the group lately.

Paris. Dec. 29.

(From Our Special Correspondent.)

The near approach of the end of the year and its settlements exercises its influence in quieting the stock market still further. The continued depression of the Transvaal stocks is discouraging, and the great probability that they will pass another year without dividends is having a most depressing effect upon holders. The selling, to which I recently referred, has almost ceased for the moment, but it may begin again at any time.

The zinc and lead stocks show a slight reaction, the result of falls in the prices of those metals. The copper stocks are also weaker, though the price of the metal has not fallen. Many look for a sharp decrease soon, though I cannot see upon what their faith is based. It has its effect, for manufacturers hesitate to lay in stocks and buy only for their immediate needs.

The foreign merchandise trade of France for the 11 months ending November 30th is reported by the Ministry of Commerce as below:

	1899.	1900.
Imports	Fr.4,107,612,000	Fr.4,005,485,000
Exports	3,748,633,000	3,728,946,000
Excess, imports	Fr.358,979,000	Fr.276,539,000

There was a decrease of 102,127,000 fr., or 4.5%, in imports, and also a decrease of 19,687,000 fr., or 0.5%, in the exports, leaving a decrease of 82,440,000 fr., or 23.1%, in the excess of imports over exports.

The movement of gold and silver in France for the 10 months ending October 31st is reported by the Ministry of Commerce as below:

Gold:	Imports.	Exports.	Excess.
1900	Fr.375,812,031	Fr.83,171,867	Imp. Fr.292,640,164
1899	278,960,266	109,480,102	Imp. 169,480,164
Silver:			
1900	121,680,170	172,066,063	Exp. 50,385,893
1899	160,873,752	198,100,370	Exp. 37,226,624

Imports of copper and nickel coins, stated at their face or coinage value, were 52,200 fr. in 1900 and 64,800 fr. in 1899. Exports were 266,400 fr. in 1900 and 508,500 fr. in 1899.

An official estimate of the results of the Exposition shows total receipts of 114,456,213 fr., while the expenditures were 116,500,000 fr., leaving a deficit of a little over 2,000,000 fr. The expenses of the Exposition of 1899 were only 41,500,000 fr.

Azote.

DIVIDENDS.

Name of Company.	Latest Dividend. Date.	Per share.	Total.	Total to date.
†Amalgamated Copper	Jan. 28	$1.50	$1,125,000	$9,000,600
Amalgamated, extra	Jan. 28	.50	375,000	.....
Am. Bridge, pf	Jan. 24	2.62½	918,750	.....
§American Cement	Jan. 15	.30	60,000	220,000
American Cement, ex	Jan. 15	.10	20,000	.....
†Am. Sheet Steel, pf.	Jan. 15	1.75	.....	.....
†Am. Steel Hoop, pf.	Jan. 31	1.75	245,000	1,470,000
†Am. Tin Plate, pf.	Jan. 31	1.75	320,688	.....
†Bost'n & Colo. Sm Co.	Jan. 2	.75	11,250	326,250
*Bunker Hill & Sull.	Jan. 4	.07	21,000	1,074,000
*Daly West Utah.	Jan. 15	.30	45,000	.....
Diamond State Steel.	Jan. 2	4.00	60,000	160,000
†Federal Steel, pf.	Jan. 21	1.50	798,914	7,486,568
Ingham, Colo.	Jan. 15	.00½	6,798	6,798
†Mary McKinney, Col.	Jan. 10	.03	30,000	210,000
Monong. R. C. & C	Jan. 15	1.75	350,000	700,000
†Mont. Ore Purch. Mon	Jan. 21	1.00	80,000	1,840,000
Mont. Ore Purch., ex.	Jan. 21	2.00	160,000	.....
†New Haven I. & S.	Jan. 21	.07½	7,500	102,500
New Zealand, Colo.	Jan. 10	.10	60,000	60,000
Nugget, Colo	Jan. 15	.01	9,910	9,910
*N. Y. & Hond. Rosario	Jan. 14	.10	15,000	1,430,000
†Parrot, Mont	Jan. 28	1.50	344,775	4,738,600
Penna. Steel, pf.	Jan. 15	1.75	26,250	157,500
Shawmut Oil	Feb. 1	.50	6,250	6,250
Silver Shield, Utah	Jan. 10	.00½	1,500	3,000
*Swansea, Utah	Jan. 10	.05	5,000	281,500
†Tenn. C. I. & R.R., pf	Feb. 1	2.00	4,960	248,000
†Texas & Pacific Coal	Jan. 23	1.50	30,000	1,830,000
†Va.-Ca. Chem., pf.	Jan. 15	2.00	200,000	1,400,000
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....

*Monthly. †Quarterly. §Semi-Annual.

ASSESSMENTS.

Name of Company.	Location	No	Delinq.	Sale.	Amt.
Belcher	Nev.	67	Feb. 6	Feb. 27	.10
Ben Butler	Utah	7	Jan. 14	Feb. 5	.0½
Brunswick Con	Cal.	15	Dec. 26	Jan. 28	.03
Canton Placer	Cal.	1	Feb. 5	Feb. 25	.05
Centennial	Mich	...	Apr. 12	...	2.00
Central Mammoth	Utah	1	Jan. 14	Feb. 5	.00½
Christmas	Utah	7	Dec. 13	Jan. 15	.00¼
Confidence	Nev.	36	Jan. 30	Feb 21	.20
Con. Imperial	Nev.	46	Dec. 28	Jan. 23	.01
Ella Eldon	S. D.	..	Feb. 1	.....	.03½
Eureka Con. Drift	Cal.	28	Jan 15	Feb. 5	.00½
Fall Creek	Cal.	...	Jan. 24	.....	.10
Gould & Curry	Nev.	93	Jan. 7	Jan. 28	.10
Hanford-Fresno-Kern River Oil	Cal.	...	Jan. 5	.....	.03
Justice	Nev.	70	Jan. 10	Jan. 31	.05
Little Chief	Utah	5	Dec. 26	Jan. 14	.01
Lombard	Utah	...	Jan. 15	Feb. 1	.00½
Louise S.	Utah	..	Jan. 6	Feb. 5	.01
May Day	Cal	5	Jan. 8	Feb. 19	.05
Meteor	Utah	.	Jan. 31	Mar. 7	.00½
Minna	S. D.	1	Dec. 27	Jan. 17	.001
New Erie	Utah	4	Jan. 11	Jan. 28	.00¼
Occidental Con	Nev.	36	Jan. 31	Feb. 21	.05
Orleans	Cal.	10	Jan 19	Feb. 16	.03
R. G. W	Utah	...	Jan. 28	Feb. 16	.00½
Reward	Cal.	...	Jan. 12	.....	.02½
Ruby Hill	Nev.	...	Jan. 28	.....	.01
Sharp	Utah	2	Jan. 3	Jan. 23	.00¼
Silver Bow	Utah	...	Jan. 10	Jan. 30	.00¼
Skagit Cumberl'd Coal	Wa'h	8	Jan. 7	Feb. 8	.0½
Snow Flake	Utah	18	Jan. 7	Jan. 28	.01
Trent	S. D.	5	Jan. 10	Jan 31	.00½
Utah Con	Nev.	35	Feb. 1	Feb. 21	.05
West Argent	Utah	1	Jan. 23	Feb. 9	.02

ANNUAL MEETINGS.

Name of Co.	Locat'n.	Date.	Place of Meeting.
Am. Steel & W.	U. S.	Feb. 21	71 Broadway, N. Y.
*Buffalo Hump.	Idaho.	Jan. 14	47 Cedar St., N. Y.
Cripple Cr'k Gold	Colo.	Jan. 15	Denver, Colo.
Dalton	Utah	Jan. 2	Salt Lake City, Utah.
*El Rey	Utah	Feb. 4	Salt Lake City, Utah.
*Empire State	Idaho.	Jan. 11	47 Cedar St., N. Y.
Horshoe Bar.	Cal.	Jan. 17	San Francisco, Cal.
Isabella	Colo	Jan. 16	Colorado Springs, Col
Lower Mammoth	Utah	Jan. 14	Salt Lake City, Utah.
Martha Wash't'n	Utah	Jan. 21	Salt Lake City, Utah.
Omaha & Grant.	Colo	Jan. 29	Denver, Colo.
Santa Fé	N. Mex.	Jan. 22	Jersey City, N. J.
Silver King	Utah	Jan. 19	Park City, Utah.
*Sterl'g W. Lead.	Pa.	Jan. 15	Pittsburg, Pa.
*Sunbeam Con.	Utah	Feb. 1	Salt Lake City, Utah.
.....	.....	.....	.....

*Special Meeting.

STOCK QUOTATIONS.

NEW YORK.

NAME OF COMPANY.	Location.	Par val.	Jan. 4. H.	Jan. 4. L.	Jan. 5. H.	Jan. 5. L.	Jan. 7. H.	Jan. 7. L.	Jan. 8. H.	Jan. 8. L.	Jan. 9. H.	Jan. 9. L.	Jan. 10. H.	Jan. 10. L.	Sales
Alamo	Colo.	1													
Alice	Mont.	25													
Amalgamated c.	Mont.	100	92.50	90.50	92.25	91.50	92.50	91.00	92.25	91.00	93.38	91.75	91.88		66,760
Anaconda, c.	Mont.	25	47.25	47.00	47.00	46.75	48.75	47.38	47.00		48.13	47.25	46.25		7,000
Anaconda Gold.	Colo.	5					.45								500
Argentum-Jun.	Colo.	2													
Belcher	Nev.	3													
British Col. Cop.	B. C.	5	22.50	22.25	22.63	22.38	22.38	22.63	22.88	22.75	22.75	22.50	22.25	22.00	2,500
Brunswick Cons.	Cal.	1	.23	.22	.24						.28				1,600
Calalpa	Colo.	10	.14												200
Chollar	Nev.	3													
Chrysolite	Colo.	50					.10								
Comstock T.	Nev.	100													
" bonds	Nev.	100													
Con. Cal. & Va.	Nev.	2½	1.85		2.20		2.35		2.80						900
Creede & C. C.	Colo.	1													
Cripple Cr. Con.	Colo.	1	.13				.13				.13				1,500
Crown Point	Nev.	2									.17				100
Deadwood	Colo.	25													
Dunkin	Colo.	25	.15						.14						600
Elkton	Colo.	1	1.85												200
Father de Smet.	S. Dak	10													
Garfield Con.	Colo.	1													
Gold Dollar	Colo.	1			.26	.25					.26				2,500
Golden Fleece	Colo.	1									.25				500
Gould & Curry	Nev.	3													
Hale & Norcross	Nev.	3													
Homestake	S. Dak	100			73.00				75.00						128
Horn Silver	Utah.	20					1.20		1.15						400
Iron Silver	Colo.	20			1.15										100
Isabella	Colo.	1					.70		.78						800
Jack Pot	Colo.	1													
Justice	Nev.	1							.10		.12				400
Leadville	Colo.	10					.07		.07⅞						600
Little Chief	Colo.	1							.17						900
Mexican	Nev.	3							.60						800
Mollie Gibson	Colo.	5	.23								.23				900
Moulton	Mont.	25							.30						100
Mt. Rosa	Colo.	1													
Ontario	Utah.	100							7.00						100
Ophir	Nev.	3			.84		.83								400
Pharmacist	Colo.	1	.10		.10				.09						10,500
Phoenix	Ariz.	1													
Plymouth	Cal.	10													
Portland	Colo.	1					3.35								100
Potosi	Nev.	3							.26						100
Quicksilver pf.	Cal.	100													
Savage	Nev.	2½							.30						200
Sierra Nevada	Nev.	3					.40								500
Small Hopes	Colo.	20			.65										800
Standard Con.	Cal.	10			3.90										20
Syndicate	Cal.	1													
Tenn. Copper	Tenn.	25	17.50	16.50	17.50	16.50	19.00	13.75	19.00	17.50	19.00	18.00	18.50	18.00	2,000
Union Copper	N. C.	10	5	4¾	5	4¾	5	4¾	5	4¾	5	4¾	4¾	4⅝	500
Work	Colo.	1	.20												500
Yellow Jacket	Nev.	3			.18										100

COAL AND INDUSTRIAL STOCKS.

Am. Sm. & Ref.		$100	53⅞	54⅛	56	55⅜	56¼	55¼	58	56	58	57⅛	57		46,075
" " pf		100	96⅝	95¾	96¾	95	96	95¼	96¾	95¾	97	95¼	95⅝		5,860
Am. S. & W. Con		100	45	42⅛	45½	43⅞	44¼	42⅝	43	42⅛	44⅜	42⅞	43		53,110
" " pf'rn		100	88	87	89½	88	88	87¾	87¾	87	87¾	87	87⅛		3,955
Col. Fuel & I.	Colo.	100	54¾	53¼	55¾	53¼	54¾	53	53⅞	52	54⅛	52¾	54⅜		26,660
Col. & H. C. & I.	"	100	16¾	15⅞	16½		16¼		16⅞	16¼	16⅛	15⅝			2,500
Federal Steel		100	56½	53⅝	57	54⅛	55¾	54⅛	55⅛	54	56⅞	55	55¼		93,984
" " pf.		100	76⅞	76¼	77	76½	76¼	76	76	75¾	76	75⅞	76		7,975
Fleming'n C. & C	W. Va.	100	23	21	23	21	22	19	23	21	22	19			
National Lead		100	19⅝	19					19⅛	19	18¾	18⅜	18		2,300
" " pf.		100			92		92	91	90½		90				700
National Salt		100			42		41	40	40⅜		42	41	42¾		1,200
" " pf.		100			73				74¼	74	75		75		710
National Tube		100	67¼	64	68¾	66¼	67½	66½	69¼	68⅛	68	59½	60½		53,205
" " pf.		100	105	104½	106	105	105	104½	104½	104	103	98	100		11,250
Republic I. & S.		100	16⅞	16¼	17	15⅜	16⅛		16¼	15⅞	16⅛	15⅜	15⅜		6,565
" " pf.		100	64	63	64	63⅝	64		63⅞	63⅛	63¾	63½	63		2,025
Sloss-Shef.		100											22		200
" " pf.		100			65				69	68	68½				760
Stan. Oil		100	803	795	795	790	800	799	806	802	806	802			150
Tenn C., I. & R.R.		100	64¼	62	63⅝	58¾	59¾	53	55	52	56¾	54¼	57½		102460
Va. Coal & C.	Va.	100	7	5	7	5	7	5	7	5	5	4			

Total sales, 536,032.

SAN FRANCISCO, CAL.

NAME OF COMPANY.	Location.	Par value.	Jan. 3	Jan. 4.	Jan. 5.	Jan. 7.	Jan. 8.	Jan. 9.
Belcher	Nev.	$3.00	.11	.11	.11	.15	.13	.12
Best & Belcher	"	3.00	.27	.32	.33	.37	.42	.33
Caledonia	"	3.00	.52	.65	.78	.98	.96	.90
Challenge Con	"	3.00	.17	.18	.20	.23	.20	.18
Chollar	"	3.00	.16	.20	.21	.24	.22	.19
Confidence	"	3.00	.64	.62	.60	.56	.58	.60
Con. California & Virginia	"	2.50	1.95	2.35	2.45	2.70	2.80	2.45
Crown Point	"	3.00	.11	.12	.12	.16	.14	.12
Gould & Curry	"	3.00	.31	.52	.56	.70	.74	.60
Hale & Norcross	"	3.00	.20	.20	.24	.26	.27	.22
Justice	"	2.00	.02	.02	.02	.08	.10	.03
Mexican	"	3.00	.35	.42	.44	.54	.56	.43
Occidental Con	"	3.00	.04	.05	.07	.07	.09	.05
Ophir	"	3.00	.71	.82	.92	1.05	1.15	.94
Potosi	"	3.00	.17	.19	.19	.23	.22	.19
Savage	"	2.50	.17	.19	.22	.24	.23	.19
Sierra Nevada	"	3.00	.25	.33	.37	.40	.41	.33
Standard Con	Cal.	10.00	3.60	3.60	3.60	3.60	3.95	4.10
Union Con	Nev.	2.50	.24	.32	.35	.35	.37	.29
Utah Con	"	1.00	.05	.05	.09	.13	.09	.70
Yellow Jacket	"	3.00	.17	.17	.20	.20	.21	.20

CALIFORNIA OIL STOCKS.*

Name of Company.	No. of shares.	Par Val.	Dec. 26. B.	Dec. 26. L.	Dec. 27. H.	Dec. 27. L.	Dec. 28. H.	Dec. 28. L.	Dec. 29. H.	Dec. 29. L.	Dec. 31. H.	Dec. 31. L.	Jan. 2. H.	Jan. 2. L.	Sales
Blue Goose	5,000	$100													
Buckhorn	20,000	10.00	3.90		4.00	3.90	4.00	3.90			4.00				
Cal. Standard	500,000	1.00	.38	.35	.37	.35	.33	.35			.37	.36	.37	.36	5,900
Caribou	100,000	1.00	.65	.62	.64	.60	.62	.55			.55	.45	.60	.58	3,400
El Dorado	100,000	1.00	2.25	1.50	2.00	1.65	1.95	1.60							
Four	300,000	1.00	.50	.48	.52	.50	.56	.52			.59	.57	.60	.57	4,345
Hanford	2,000	10.00	120	119	125	115	125	120			123	121	125		1,029
Hanf'd F. & K.			.45		.50	.45					.40		.40	.25	800
Home	100,000	1.00	4.10	3.95	4.05	4.00	4.05	3.90			4.45	4.15	4.30	4.20	975
Homestake	10,000	10.00													
Independence	600,000	1.00	.21		.23	.22	.22	.20			.21	.20	.22	.21	2,834
Kern	100,000	1.00	9.88	9.50	9.88	9.75					10.50	9.50	9.75		
Kern River	20,000	5.00	16.50	16.00	16.25	16.00	16.50	16.25			17.00	16.50	17.00	16.50	15
McKittrick	60,000	1.00	.35		.43		.35				.36		.36	.33	1,000
Mo'arch of Ari	500,000	1.00	.44		.44		.50	.44			.66	.61	.80	.75	4,600
Monte Cristo	500,000	1.00	2.20	2.05	2.30	2.15	2.40	2.30			2.35	2.30	2.40		7,316
Oil City Petrol	5,000	100.	35.00	32.50	35.50	32.50	37.50	35.00			36.00		36.50	36.00	120
Petrol. Center	500,000	1.00	.24	.23	.24	.22	.24	.22			.24	.23	.26	.24	10,409
Rex	100,000	5.00											.45		
San Joaquin	100,000	1.00	10.50	10.13	10.25	10.00	10.50	10.25			11.25	10.88	15.75	12.50	1,600
Sterling	250,000	1.00	2.68	2.65	2.80	2.70	2.90	2.65			2.75		3.10	2.90	1,155
Sunset (Orig.)	100,000	5.00	.45		.45		.45	.44			.40		.40		1,500
Twenty-eight	60,000	10.00	2.45	2.33	2.43	2.35	2.50	2.40			2.48	2.45	2.43	2.45	600
Yukon	100,000	2.50	.55	.45	.55	.45	.53	.51					.50		50

* Producers' Oil Exchange, San Francisco. Total sales, 48,139 shares.

BOSTON, MASS.†

NAME OF COMPANY.	Par Va.	Shares issued.	Jan. 3. H.	Jan. 3. L.	Jan. 4. H.	Jan. 4. L.	Jan. 5. H.	Jan. 5. L.	Jan. 7. H.	Jan. 7. L.	Jan. 8. H.	Jan. 8. L.	Jan. 9. H.	Jan. 9. L.	Sales.
Adventure Con.	$25	100,000	10.50		10.25	10.00	10.50		10.50	10.00	11.00	10.13	10.38	10.00	1,270
Aetna Con. g.	5	100,000													
Allouez	25	80,000	3.25		3.25		3.50		3.25		3.25	3.00			317
Amal. Copper	100	750,000	93.75	90.75	92.50	90.75	92.50	91.00	92.25	91.00	92.00	91.00	95.50	91.50	10,398
Am. Z. L. & Sm.	25	60,000													
Anaconda	25	1200,000	45.50												7
Arcadian, c	25	150,000	19.00	17.00	18.50		19.00	18.00	19.00	17.00	18.00	17.25	18.50	18.00	1,735
Arnold	25	60,000							5.00		4.75	4.50	4.75		520
Atlantic, c	25	40,000	29.00		28.50		29.00						24.50		375
Baltic, c	25	100,000	36.00	34.50	35.50	34.00	35.75	35.00	35.50		35.13	35.00	34.50	33.75	4,139
Bingham, c. g.	10	190,000	16.88	16.50	16.25	15.00	16.75	16.13	16.75	16.00	16.00		16.00	15.50	4,430
Bonanza Dev.	10	300,000			1.35				1.25		1.25		1.25		630
Boston	10	100,000	6.75		6.00				6.25		6.50				550
Boston & Mont.	25	150,000	325	320	322½	320	320	310	315	310	310	300	312	308	5,718
Breece	25	200,000													
British Columbia	5	200,000	23.25	22.00	23.00		23.13	22.50	22.50	22.25					663
Butte & Bost., c.	10	200,000	82.13	78.00	82.00	78.00	82.50	79.00	80.00	79.00	80.00	77.00	79.00	78.00	1,212
Cal. & Hecla, c.	25	100,000	832	830	830		830		830		831				76
Centennial, c.	25	90,000	25.00	23.75	25.13	23.00	25.50	24.00	24.50	23.75	23.50	23.25	24.75	23.00	6,200
Cent'l-Eureka	25	100,000	25.25	24.50	24.50		24.75	24.50	25.00	24.50			24.50		1,225
Cochiti, g.	10	175,000	13.13	11.50	12.13	11.25	12.13	11.50	12.00	11.00	11.00	10.13	10.75	10.00	8,935
Copper Range	25	100,000	38.00	36.00	37.00	36.00	37.00	36.50	37.00	35.50	35.00		35.00		3,248
Dominion Coal.	100	150,000	39.75	39.00			40.00	39.00	39.50	38.50	39.50	38.00	38.00	37.00	2,201
do. pref.	100	80,000					109½	109			110				12
Elm River	12	100,000	6.00	5.75	5.50		5.88	5.63	6.00	5.63	5.63		5.38		1,555
Franklin, c.	25	100,000	18.50	17.50	18.38	17.50	18.38	18.00	18.50	18.13	18.13	18.00	18.00	17.50	4,365
L. Royal Con., c.	25	100,000	39.00	38.25	37.50		38.00		37.50	37.00	36.75	35.00	37.00		1,417
Mass Con.	25	100,000	13.50		13.63		13.50		13.50		13.50				539
Mayflower	25	100,000	2.65	2.50	2.63		2.50		2.50		2.50		2.50	2.25	710
Merced	18	100,000							5.00						200
Michigan	25	100,000	7.00	6.50	6.25	6.00			6.50	6.25	6.50	6.25	6.00		1,720
Mohawk, c	25	100,000	28.00	27.00	27.00	26.25	27.25	26.50	27.00	26.25	26.50	25.00	25.50	23.75	3,014
Mont. C. & C.	25	200,000	7.00		7.00		7.00		7.00		6.88		6.50		440
National	25	100,000							.50						100
N. A. G. Dreg.	10	100,000	1.00				1.00				1.00				350
N.E. Gas & Coke	100	160,000	14.75	14.00	14.00	13.00	13.00		14.00	13.50	13.63	13.00			725
New Idria	5	100,000					10.00		9.00		9.00				110
Old Colony	25	100,000	3.50				3.50				3.50				130
Old Dominion, c	25	150,000	32.00	30.50	31.00	30.00	31.50	30.88	31.00	30.25	31.00	29.50	30.00	29.63	4,255
Osceola, c.	25	93,000	85.00	83.50	85.50	82.00	86.50	84.00	85.00	83.00	83.75	82.25	82.50	80.25	5,217
Parrot, s c.	10	229,350	50.75	49.50	49.50	49.00	50.00	49.50	50.00	49.00	50.00	49.25	49.50	48.50	1,828
Quincy, c.	25	100,000	175		174		175		178	176	179	175	177	176	632
Rhode Island	25	100,000	4.50	4.25			5.00	4.50	4.75	4.50	5.00	4.88	4.75		1,981
Santa Fe, g. c.	10	250,000	7.25	7.00	7.00	6.88	7.00								712
Santa Ysabel	5	130,000													
Tamarack, c.	25	60,000	333	325	327	320	344	325			330	325	330	325	1,059
Tecumseh	25	80,000	2.00						2.00	1.93	1.88	1.75			300
Tinountain	25	100,000	23.25	22.25	22.00	21.50	22.00	21.75	21.50	21.30	21.00	20.75	20.75	19.75	3,505
Union C. L.	25	80 000	8.50												40
UnitedStatesMg.	25	250,000	11.00		10.00						10.00				255
Utah Con., g. c.	5	900,000	34.00	33.50	34.00	33.00	33.88	32.00	33.00	32.00	33.25	32.75	34.25	32.00	5,873
Victoria	25	100,000	4.00		4.00	3.75	4.00	3.75	4.00	3.75	4.00	3.88	4.00	3.88	2,978
Wtashington	25	60,000													
Winona, c.	25	100,000	6.75	6.00	6.00	5.81	6.13	5.75	6.25	6.00	5.88	5.75	5.50		6 415
Wolverine, c.	25	60,000	49.50	49.00	49.50	49.00	50.00	49.50	49.50	49.00	49.00	48.50	49.00	47.50	1 717
Wyandot	25	100,000							2.00	.75	1.75		1.75		430

† Official quotations Boston Stock Exchange. Total sales, 106,721 shares.

PHILADELPHIA, PA.§

NAME OF COMPANY.	L'cation.	Par Val.	Jan. 3. H.	Jan. 3. L.	Jan. 4. H.	Jan. 4. L.	Jan. 5. H.	Jan. 5. L.	Jan. 7. H.	Jan. 7. L.	Jan. 8. H.	Jan. 8. L.	Jan. 9. H.	Jan. 9. L.	Sales
Am. Alkali		$50	2.13	2.00	2.13	2.00	2.25		2.13		2.13	2.00	2.38	2.00	21,587
Am. Cement		10	8.75	8.50	8.63	8.50							†8.00		1,575
Bethlehem Iron	Pa.	50	59.00						59.00				60.00		27
Bethlehem Steel	'	50	19.50		58.75				19.50				19.00		404
Cambria Iron	"	50	45.50		45.50				46.00		45.75		45.25		210
Cambria Steel	"	50	21.00	20.25	20.75	20.38	20.88	20.50	20.63	20.38	20.63	20.25	20.50	20.25	7,871
Susq. I. & S.	"	10	2.63	2.50	2.50		2.25		2.25				2.38		1,250
United Gas I.	"	50	127	124¾	126¾	125⅛	126¾	126	126	125¾	125¾	125	125	124	4 286

Total shares sold, 87,261. § Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia. †Ex-Dividend.

SALT LAKE CITY, UTAH. Jan. 5

STOCKS.	Shares.	Par val.	Bid.	Asked.	STOCKS.	Shares.	Par val.	Bid.	Asked.
Ajax	300,000	$10	$0.53½		Horn Silver	400,000	$25	$1.00	
Alice	400,000	25	.37½	$0.90	Joe Bowers	400,000	1	.02⅞	$.03⅛
Bullion-Beck & Ch.	100,000	10	3.00		Joe Bowers Ext'n.	700,000	½		
Centennial Eureka	200,000	25	23.50		Little Pittsburg	400,000	5		
Chloride Point	500,000	1	.03¾		Lower Mammoth	150,000	1	1.97	2.00
Cons. Mercur	100,000	5	3.37½	3.70	Mammoth	400,000	5	2.09¼	2.16
Daisy	500,000	3	.00⅝	.01	May Day	400,000	¾	.37½	.37⅝
Dalton	500,000	5		.09	Northern Light	400,000	5	.04¾	.05
Dalton & Lark	2,500,000	1		.05	Ontario	150,000	100	6.50	
Daly	150,000	20	1.50	1.80	Sacramento	1,000,000	5	.33½	39
Daly-West	150,000	20	27.75	28.00	Showers Cons.	400,000	5	.10¼	.15
Dexter	200,000	5			Silver King	150,000	20	65.00	
Eagle & Blue Bell.	250,000	1	.82	.83	Star Consolidated	500,000	1	.75¼	.76¼
Four Aces	250,000	1	.02⅜	.05	Sunbeam	250,000	1	.35	
Galena	100,000	10	.06	.09	Swansea	100,000	5	3.87	3.92
Geyser-Marion	300,000	5	.00¼	.02	South Swansea	150,000	1	.99	1.05
Golden Eagle	250,000	1	.00⅝		Utah	100,000	1	.60	.75
Grand Centra	250,000	1	6.26	6.44	Valeo	200,000	10	.25	
Homestake	400,000	1		.07	Yankee Consol'd	250,000	0.10	.09	.0

TORONTO, ONT.

NAME OF COMPANY.	Par val.	Dec. 27. B.	Dec. 27. A.	Dec. 28. B.	Dec. 28. A.	Dec. 29. B.	Dec. 29. A.	Dec. 31. B.	Dec. 31. A.	*Jan. 1. B.	*Jan. 1. A.	Jan 2. B.	Jan 2. A.	Sales
Ontario:														
Golden Star	1	.01¼	.01⅜	.01½	.01⅝	.01⅞						.01⅝		15,500
Ham Reef	1	.01⅝	.01¾	.01¾	.01⅞							.01⅝		14,715
Olive	1			.09½	.09⅝									2,100
British Col.:														
Cariboo M'k	1					.40	.60					.50	.65	
Crow's N. C.	25	55.00	59.00	55.25	57.50	55.50	58.50					55.00	58.00	
Deer Trail	1	.02¾	.02⅞			.02⅝	.03					.02¾	.02⅝	5,000
Eve Star	1			.06¼	.07	.06	.08					.05	.08	500
Fairview	1	.02⅝		.02	.02⅝							.02⅜		13,600
Iron Mask	1	.30	.32	.30		.30	.40					.31	.42	12,500
Jim Blaine	1													
Knob Hill	1	.45	.52			.40	.55					.40	.52	
Mont Cristo	1	.02												
Mont & Lon	0.24													1,000
Morrison	1	.02¾	.03¾	.02¾	.03¾	.02¾	.03½							
Mount. Lion	1											.02¾	.03¾	
North Star	1	.88	.93¾	.89¼	.91	.88	.91					.88½	.92	
Payne	1	.73	.75¾	.64	.64½	.63	.64					.52	.70	2,000
Princess M	1	.01	.03	.01	.03	.01	.03					.01	.03	
Rambler	1			.25¼		.25¼	.25½					.25	.28	4,500
Republic	1	.62	.64	.61	.64	.60½	.64							
Van Anda	1			.02½	.02¾	.02½	.02⅝					.02⅜		4,500
Victory Tri.	1			.01¾	.01¾									49,000
Virtue	1	.26	.29½	.28½	.29¾	.27	.30					.25	.31	1,500
War Eagle	1	1.00	1.04	1.00½	1.04½	1.00	1. 4					1.02	1.05	
Waterloo	0.10	.02	.03	.02	.03	.02	.03					.02	.02¾	
White Bear	1	.04¼		.04¼	.04⅝	.04¼	.04½					.04¼	.04⅜	48,500
Winnipeg	1	.02	.04	.02	.04	.02	.03					.02	.03	
Develop Co.:														
B.C.G. Field	1			.02½										500
Can. G. F. S.	0.10	.07¾	.08	.07¾	.08¼	.07¾	.08¼					.07¼	.08	4,200

Total shares sold, 179,615. *Holiday.

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.‡

Name of Company.	Par val.	Dec. 29. B.	Dec. 29. A.	Dec. 31. B.	Dec. 31. A.	*Jan. 1. B.	*Jan. 1. A.	Jan. 2. B.	Jan. 2. A.	Jan. 3. B.	Jan. 3. A.	Jan. 4. B.	Jan. 4. A.	Sales.
Acacia	$1	.23½	.23⅝					.23⅝	.23⅞	.23¼	.23⅝	.23¼	.23⅜	42,100
Alamo	1	.11	.12					.11	.11¾	.11	.12	.11	.11¾	49,000
Am. Con	1	.06¾	.07							.06¾	.06⅞	.06½	.07	5,000
Anaconda	1		.48					.47⅝	.48	.46	.47		.45	22,500
Anchor	1	.02⅝	.02⅝					.02½	.03	.02½	.02⅝	.02⅝		1,000
Anchoria L	1	.75						.75		.75		.75		
Antelope	1	.02¼						.02¼	.02⅜	.02¼	.02¼	.02¼	.02⅜	6,000
Aola	1	.04¾	.05					.04¾		.4¾		.05		1,000
Arcadian	1	.5						.04⅝	.04¾	.04⅝	.04⅞	.04½		4,000
Arg'ntum J	1	.26½	.28					.27	.28	.27	.29	.27		
Banner	1	.02⅞	.03½					.02⅞		.02⅞	.03¼	.02⅞	.03	10,000
Battle Mt.C	1	.20	.20¼					.20¾		.21½		.21¾	.22	16,000
Ben Hur	1	.07¼	.08					.07¼		.07¾	.08¼	.08	.08½	6,500
Black Bell	1	.11						.11⅝		.11½	.12	.11⅜	.12½	
Blue Bell	1	.14	.14¼					.14	.14¼	.14¼	.14½	.14¼	.14⅜	5,500
Bob Lee	1	.04½	.04¾					.04½	.04¾	.04½	.04¾	.04⅝	.04¾	6,000
Buckhorn	1	.04⅞	.05					.04¾	.05	.04⅝		.04⅞	.05½	
Cadillac	1	.02¼	.02½					.02	.02¼	.02½	.02½	.02⅜	.02½	9,000
Central C'n	1	.06½	.06					.06¼	.06⅜	.06½	.07	.07		48,300
Champion	1	.06	.06½					.06¼	.06⅜	.06⅜	.07	.06⅝	.07	8,000
Chicolo	1	.02¾	.02⅞					.02½	.02¾	.02⅝	.03	.02⅝	.02⅞	5,000
C. K. & N.	1	.02¼	.02½					.02½	.02⅝	.02½	.02⅝	.02⅜	.02¾	16,000
C. C.Col'bia	1	.10	.10½					.10⅜	.11½	.13	.13½	.11⅝	.11⅞	60,000
C. C. G. Ext	1	.14¼	.14¾					.14½	.14⅝	.14⅜	.14⅝	.14	.14⅜	8,000
C. C. & Man	1	.08¾	.09					.09⅛	.09	.08⅝		.09⅜	.10	33,000
Copper Mt.	1	.03⅝	.03½					.03⅜	.03½	.03¾		.04⅜	.04⅝	17,000
Creede& CC	1	.10						.10	.12½	.10	.12	.18		
C. C. Con	1	.12½	.13					.12¼	.12⅜	.12⅜	.12½	.12¼	.12½	6,000
Dante	1	.09	.09¼					.08½	.09½	.09	.09½	.09	.09¼	31,500
Des Moines	1	.05½	.06¼					.05		.05½	.07			
Eclipse	1	.08	.08¼					.08	.08¼	.03¼	.08¾	.08½	.08¾	5,000
Elkton Con	1	1.86	1.86¾					1.87	1.87½	1.88¾	1.89	1.28	1.89	24,710
E' Paso G	1	.44½						.47½		.50¼		.50¼	.51	22,500
Enterprise	1	.15						.15½		.15½		.15½	.16	
F.Rawlings	1								.20	.10	.20	.10	.20	
Findley	1	.12						.11⅝	.12	.12	.12¼	.12	.12½	15,000
Garf. Conn.	1	.07						.07		.07		.07		
Golden Fl	1	.22	.25					.23½	.25	.23½	.25	.23	.25	500
Gold Hill	1	.02¾	.03					.02¾	.02¾	.02¾	.03	.02¾	.02⅞	18,000
Gold Sov'n	1	.07⅜	.08					.03½	.03⅝	.C8	.08¼	.03½	.03¼	21,000
Hayden	1		.02						.02		.02	.01½	.02	2,000
Humboldt	1	.03¼	.03⅞					.03¼	.03⅜	.03½	.04	.03⅞	.04	5,000
Ida May	1	.23	.24					.23	.24	.23	.25	.23	.24	1,000
Ing. Con	½	.21								.21	.21¼	.21½	.21¾	11,000
Ironclad	1	.05	.05¼					.05	.05¼	.05½	.05¼	.05		8,000
Isabella	1	.63¼	.63⅞					.63½	.69	.63¾	.63¾	.69	.69¾	34,600
Jack Pot	1	.70	.70½					.71½	.72	.72	.73	.70	.72	13,100
Josephine	1		.02					.01¾	.02	.01¾	.02	.01¾	.02	6,000
Key West	1	.02⅝	.02⅞					.02¾	.03		.03	.02¾		7,000
Lexington	1	.11	.12					.11½	.12	.11¾	.11¾	.12	.12½	23,500
Magnet R.	1	.03¼	.03½					.03¾	.03⅞	.03¾	.03¾	.03¾		13,000
Margaret	1	.02¼	.02⅜						.02½	.02½	.02½	.02½		6,000
Margery	1	.02½	.03					.02¼	.03			.02¼		
Matoa	1		.20								.20		.20	
Midway	1	.04⅜						.04⅝	.05	.04⅝	.05	.04½	.04⅝	5,000
M. J. T	1	.03¼	.03½					.03½	.03½	.03⅜	.03⅝	.03⅜		8,000
Mobile	1	.03	.03¼					.02½	.03⅛	.03⅛	.03¼	.03⅛	.03¼	7,000
Moll.Dwyer	1	.05⅜	.05¾					.05⅞	.06⅛	.06⅜	.06⅝	.06⅜	.06¾	153,000
Mollie Gib.	1	.18	.22					.20	.22	.20	.22	.20	.22	2,000
Monarch	1	.09⅛	.10					.09⅜	.10	.09½	.10	.09⅝	.09⅞	
Montreal	1	.04	.05					.04¼		.04⅜	.05	.04		8,000
Moon-A'c'r	1	.30	.30					.30	.30	.20	.25	.20	.30	1,200
Morning S	1	.03¼						.03		.03¾	.04	.03¾	.03⅞	39,000
Mtn.Beauty	1	.05¼						.05⅝	.05¾	.05⅞	.08	.06⅞		37,000
Mt. Rosa	1	.30						.38	.41	.35	.40	.30	.41	
National	1	.09⅜	.09⅝					.09⅝	.09¾	.10	.10¼	.10	.10¼	51,500
Nellie V	1	.07	.07⅛					.07	.07⅛	.06¾	.07	.07	.07½	4,000
New Haven	1	.07¾	.08					.06	.08¼	.08⅛		.08⅜	.08½	16,000
Olive B'nch	1	.04½	.04¾					.05	.05½	.04¾	.05	.04⅝	.05	5,000
Ophir	1	.31½						.30		.32		.32		
Oriole	1	.03⅞	.04					.03⅞	.04	.03¾	.04	.03¾	.04½	13,000
Orphan	1	.15¼						.15		.15		.15		2,000
Pelican	1	.02						.02		.02½	.02⅝	.02	.02⅜	2,000
Pharmacist	1	.08¾	.08⅞					.08¾	.09	.09	.09¼	.09	.09¼	29,500
Pilgrim	1	.02								.08¼		.08		1,000
Pinnacle	1	.16	.16¼							.17	.18	.17	.18	3,000
Portland	1	3.36	3.50					3.45	3.50	3.25	3.42	3.35		2,500
Prince Alb.	1	.05½	.05⅞					.05½	.05⅝	.06	.06¼	.06⅛	.06¼	50,000
Princess	1	.04⅞								.05½	.05¼	.05	.05⅜	1,000
Progress	1	.05⅜								.05½	.05⅞	.05	.05½	2,000
Pythias	1	.04⅝	.04⅞							.04¾	.04⅞	.04⅝	.05	14,000
Republic	1	.08	.08⅛					.08	.08⅛	.08	.08¼	.08⅛	.08¾	48,900
Rob't Burns	1	.04½	.04¾							.04⅝	.04⅞	.05	.05¼	3,000
Rose Maud	1	.03½	.03⅝							.08		.08	.03½	3,000
Rose Nicol	1	.10¼	.10⅜							.11	.11¾	.11¼	.11⅜	9,000
Silver Gold	1		.02							.01½	.02			4,000
Theresa	1		.06½					.06¼	.07	.06½	.07	.06⅜	.07	7,000
Trachyte	1	.04⅞	.05¼							.05		.06	.06¼	13,000
Uncle Sam	1	.04	.04¼							.04	.04¼	.04	.04¼	
Union	1		.12											
Va. M	1	.07						.07¼	.08	.07¾	.08¼	.07¾	.09	12,000
Vindicator	1		1.33					1.20	1.30	1.20	1.29		1.29	
Work	1	.21	.21⅛					.21	.22	.20¾	.21	.20¾	.21⅛	11,000
Zenobia	1	.10	.12					.10	.12	.19	.11	.10		4,000

Colorado Springs Mining Stock Exchange. Total sales, 1,229,210 shares. *Holiday.

MONTREAL, CANADA.*

Name of Company.	Par val.	Week, Jan. 2. H.	L.	Sales.	Name of Company.	Par val.	Week, Jan. 2. H.	L.	Sales.
Big Three	$1	.01½	.02	2,500	Montreal G. F	$1	.02	.03½	
California	1	.03½	.05		Montreal-London	0.24	.05	.06¾	700
Can. Gold Fields	0.10	.07	.03½		Okanogan				
Decca	1	.01	.05		Oregon	1	.15½	.17½	7,300
Deer Trail Con	1	.01½	.03		Payne	1	.64	.78	1,000
Evening Star	1	.03	.06		Rambler-Cariboo	1	.20	.52	
Golden Star	1	.01¼	.06		Republic Con	1	.38	.65	1,000
Gold Hills Dev	1	.02½	.03½		Slocan-Sovereign	1	.07½	.10	3,500
Knob Hill	1	.40	.53		Virtue	1	.25	.35	4,000
Monte Christo	1	.38			War Eagle	1	.95	1.04	

* Montreal Stock Exchange. Total sales, 20,000 shares.

MEXICO.

Dec. 28.

Name of Company.	No. of shares.	Last div'd.	Prices. Op'g.	Cl'g.	Name of Company.	No. of shares.	Last div'd	Prices. Op'g.	Cl'g.
Durango:					Hidalgo:				
Barradon y Cab	2,400		$20	$15	Real del Monte	2,554	10.00	550	500
Candelaria de Pan	1,200		20	20	San Francisco Hc.	6,000	1.00	115	120
Capuzaya Guan.	2,400		15	12	Soledad	960	5.00	270	250
Restauradora	10,000		10	20	Sorpresa	980	7.50	210	200
Guanajuato					Union Hacienda	2,000	5.00	240	250
Angustias	2,400	5.00	130	115	Mexico:				
Cinco Senores y An.	2,000	15.00	245	220	Coronas	500		75	75
Guadalupe Hacie'a.	10,000	3.00	200	210	Esperanza y An	3,000	10.00	900	950
Trinidad, aviadora	2,000		6	7	Michoacan:				
do. aviada	400		10	7	Luz de Borda ava.	4,000		20	28
Zona Minera de Poz	2,400		6	8	S. Luis Potosi:				
Hidalgo:					Concep. y An	2,400		230	210
Amistad y Concord.	9,600	1.41	27	29	Zacatecas:				
Arevalo	720		200	200	Asturiana y An	2,500	10.00	170	160
Bartolome de Med	2,000	2.00	70	60	Cabezon	2,400		15	10
Carmen	1,100	7.75	150	130	C'delar de Pinos	2,500		160	150
Luz Ca Maravillas	800		100	80	Palma de Somb	2,400		40	30
Pabellon	800	27.80	20	10					

DENVER, COLO.‡

Name of Company.	Par val.	Dec. 31 B.	Dec. 31 A.	*Jan. 1. B.	*Jan. 1. A.	Jan. 2. B.	Jan. 2. A.	Jan. 3. B.	Jan. 3. A.	Jan. 4. B.	Jan. 4. A.	Jan. 5. B.	Jan. 5. A.	Sales
Acacia	1							.23¼		.28		.23¼	.23½	7,000
Anaconda	5											.42½		1,000
Arg. J	1													
Dictator	1													
Elkton	1							1 87⅛	1.87¼	1.89¼ .02¼	1.90			4,000
Franklin	1													
Ironclad	1													
Key West	1							.02⅜	.03½					19,000
Magnet R'k	1													
National	1							.09½	.09⅞	.10	.10½	.09⅝	.10¼	3,000
New Haven	1							.08⅛	.08⅜	.08⅜	.08⅝			8,000
New Zeal'd.	1													
Pharmacist	1													
Pinnacle	1													
Republic	1											.08	.08¾	2,000

‡ Official Quotations Denver Stock Exchange. Total sales, 49,000 shares. *Holiday.

SPOKANE, WASH.

Week Jan. 3.

Name of Company.	Par val.	B.	A.	Sales.	Name of Company.	Par val.	B.	A.	Sales.
Crystal		.04	.05¾	1,000	Mountain Lion	$1	.20½	.27	5,000
Deer Trail Con	$1	.02¾	.03	2,000	Princess Maud	0.10	.01½	.02¼	
Evening Star	1	.05	.07½		Quilp	1	.20½	.25	
Gold Ledge		.01½	.02½	2,000	Rambler Cariboo	0.25	.25	.26½	
Jim Blaine					Reservation		.03¼	.05	
Lone Pine Surp. Con	1	.04	.10	2,500	Sullivan		.13	.14⅜	2,000
Morning Glory	0.10	.07½	.08	6,000	Tom Thumb		.10½	.14	

PARIS.

Dec. 20.

Name of Company.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Opening.	Prices. Closing
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs.	27,000,000	2,000	85.00	1,820.00	1,760.00
" " Firminy	"	" "	3,000,000	500	175.00	3,275.00	3,229.00
" " Fives-Lille	"	" "	12,000,000	500		478.00	480.00
" " Huta-Bank	Russia	Iron & steel		500		3,674.00	3,510.00
" " la Marine	France	Steel mfrs.	20,000,000	500	60.00	1,590.00	1,571.00
Anzin	"	Coal			360.00	6,080.00	6,020.00
Boleo	Lower Cal.	Copper		500	176.00	2,570.00	2,570.00
Briansk	Russia	Coal & iron		500		655.00	649.00
Champ d'Or	S. Africa	Gold	3,875,000	25	3.75	92.00	81.50
Courrieres	France	Coal	600,000	300	90.00	2,410.00	2,345.00
Dombrowa	Russia	"		500	12.50	985.00	1,000.00
Dynamite Centrale	France	Explosives		500	22.50	410.00	425.00
Escombrera-Bleyberg	Spain	Lead		500	70.00	1,090.00	1,050.00
Fraser River	Brit. Col'mb.	Gold	250,000	25		9.00	8.00
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	153.00	153.00
Laurium	Greece	Zinc & lead	16,300,000	500	30.00	515.00	515.00
Malfidano	Italy	Zinc	12,500,000	500	50.00	875.00	925.00
Metaux, Cie. Fran. de	France	Metal d'lers.	25,000,000	500	10.00	485.00	480.00
Mokta-el-Hadid	Algeria	Iron	13,312,500	500	15.00	995.00	980.00
Napthe Baku	Russia	Petroleum				725.50	757.50
Napthe Nobel	"	"				600.00	595.00
" " parts	"	"				11,975.00	11,800.00
Nickel	N. Caled'nia	Nickel	10,000,000	250	17.50	505.00	505.00
Penarroya	Spain	Coal, etc		500	100.00	2,400.00	2,480.00
Rebecca	Colo'do, U.S.	Gold	5,000,000	25		2.25	2.25
Salines de l'Est	France	Salt		500	5.00	210.00	210.00
Salines du Midi	"	"		500	25.00	880.00	870.00
Vielle Montagne	Belgium	Zinc	9,000,000	80	36.00	610.00	615.00

LONDON

Dec 27.

Name of Company.	Country.	Author-ized capital.	Par value.	Last dividend. Amt.	Last dividend. Date.	Quotations. Buyers	Quotations. Sellers.
			£ s. d.	s.d.		£ s. d.	£ s. d.
American:							
Alaska Mexican, g	Alaska	£200,000	1 0 0	0 4.8	Nov. 1900	17 6	1 0 0
Alaska-Treadwell, g	"	1,000,000	5 0 0	1 6	" "	5 2 6	5 5 0
Anaconda, c., s	Montana	4,000,000	5 0 0	8 2	Oct., "	10 2 6	10 5 0
De Lamar, g., s	Idaho	400,000	1 0 0	0 6	May, 1900	3 6	4 0
El Oro	Mexico	1,000,000	1 0 0	1 0	Aug., 1900	1 6 3	1 7 6
Grand Central, g., s	Mexico	300,000	1 0 0	2 0	Jan., 1900	8 9	11 3
Hall Mg. & Sm., c., s	British Col	250,000	1 0 0			4 0	5 0
Le Roi, g	" "	1,000,000	5 0 0	5 0	Nov., 1899	6 0 0	6 5 0
Le Roi No. 2, g	" "	120,000	5 0 0			26 0 0	23 10 0
Lillie, g	Colorado	250,000	1 0 0	2½	Apr., 1900	7 6	12 6
Montana, g., s	Montana	660,000	1 0 0	6	Apr., 1899	3 0	3 6
Mountain Copper	California	1,250,000	5 0 0	9 0	Oct., 1900	5 0 0	5 5 0
Newfoundland, c	Newfoundland	250,000	1 0 0			1 3	2 6
Stratton's Independence	Colorado	1,100,000	1 0 0	2 0	Oct., 1900	1 5 0	1 7 6
Copiapo, c	Chile	200,000	2 0 0	3 4	Dec., 1900	3 5 0	3 10 0
Frontino & Bolivia, g	Colombia	140,000	1 0 0	1 6	Oct., 1899	1 17 6	2 0 0
*St. John del Rey, g	Brazil	600,000	1 0 0	rts.	July, 1900	1 5 0	1 6 0
Utah Con.,g.(Highland Boy)	Utah	300,000	1 0 0	rts.	Mar., 1898	6 15 0	7 0 0
Velvet, g	British Col'mbia	100,000	1 0 0			18 9	1 1 6
Ymir, g	"	200,000	1 0 0	1 0	Nov., 1899	1 7 6	1 12 6
Rossland Great West, g	"	100,000	5 0 0			7 17 6	8 2 6
British Am. Corp	"	1,500,000	1 0 0	2 0	Mar., 1900	12 0	13 6
European:							
Linares, l	Spain	45,000	3 0 0	14 0	Oct., 1900	8 10 0	9 10 0
Mason & Barry, c., sul	Portugal	420,000	2 0 0	£1	" "	3 0 0	3 15 0
Rio Tinto, c	Spain	1,625,000	5 0 0	£2	" "	37 12 6	37 17 6
" " pref	"	1,625,000	5 0 0	2 6	" "	6 0 0	6 5 0
Tharsis, c	"	1,250,000	2 0 0	15 0	Apr., 1900	8 7 6	8 12 6
Australian:							
Assoc. Gold Mines	W. Australia	500,000	1 0 0	1 6	Jan., 1900	3 2 6	3 5 0
Broken Hill Prop., s	N. S. Wales	384,000	8 0 0	1 6	Nov., 1900	2 8 6	2 9 6
Great Boulder Prop	W. Australia	175,000	2 0 0	6	" "	1 5 9	1 6 3
Hannan's Brownhill, g	"	140,000	1 0 0	7 6	Oct., 1900	4 8 9	4 6 3
Ivanhoe Gold Corp	"	1,000,000	5 0 0	5 0	Nov., 1900	9 0 0	9 2 6
Kalgurlie, g	"	120,000	1 0 0	rts.	Oct., 1899	4 5 0	4 7 6
Lake View Consols, g	"	250,000	1 0 0	5 0	Aug., 1900	12 18 9	13 1 3
Mt. Lyell M. & R., l., c	Tasmania	900,000	8 0 0	2 0	Jan., 1900	6 0 0	6 5 0
*Mt. Morgan, g	Queensland	1,000,000	1 0 0	7	Jan., 1901	5 0 0	5 2 6
*Waihi g	New Zealand	320,000	1 0 0	2 6	Dec., 1900	11 2 6	11 5 0
Indian:							
Champion Reef, g	Colar Fields	220,000	10 0	5 0	Jan., 1901	6 0 0	6 2 6
*Mysore Gold, g	"	250,000	10 0	4 0	Nov., 1900	5 8 9	5 11 3
Nundyroog, g	"	242,000	1 0 0	2 0	" "	3 2 6	3 5 0
*Ooregum, g	"	145,000	1 0 0	2 6	Dec., 1900	3 13 9	3 16 3
* " pref. g	"	120,000	1 0 0	2 6	" "	4 17 6	5 0 0
African:							
British S. Africa, chartered	So. Africa	5,000,000	1 0 0	rts.	May, 1899	3 6 3	3 8 9
Cape Copper, c	"	600,000	1 0 0	5 0	Jan., 1901	5 10 0	5 12 6
" " pref	"	150,000	2 0 0	5 0	" "	5 2 6	5 7 6
City & Suburban (New), g	Transvaal	1,360,000	4 0 0	8 0	Aug., 1899	5 0 0	5 2 6
Con. Deep Level, g	"	200,000	1 0 0	x all	June, 1898	1 0 0	1 5 0
Crown Reef, g	"	120,000	1 0 0	18 0	Nov., 1899	14 10 0	15 0 0
De Beers Con., d	Cape Colony	3,950,000	5 0 0	£1	Jan., 1901	28 16 3	28 18 9
Ferreira, g	Transvaal	90,000	1 0 0	30 0	Aug., 1899	19 10 0	20 10 0
Geldenhuis Deep, g	"	350,000	1 0 0	8 0	" "	8 17 6	9 2 6
Geldenhuis Est., g	"	240,000	1 0 0	10 0	" "	5 17 6	6 0 0
Henry Nourse, g	"	125,000	1 0 0	10 0	Apr., 1900	3 5 0	3 10 0
Jagersfontein, d	Orange Fr. St.	1,000,000	5 0 0	6 0	Sept., 1900	16 6 6	16 12 6
Johannesburg Con. Invet.	So. Africa	2,750,000	1 0 0	2 0	Aug., 1899	1 17 6	1 18 9
Jubilee, g	Transvaal	50,000	1 0 0	5 0	Sept., 1899	5 10 0	5 15 0
Langlaagte Estate, g	"	470,000	1 0 0	3 0	Aug., 1899	3 3 9	3 6 3
May Con., g	"	290,000	1 0 0	6 0	July, 1899	3 15 3	3 18 9
Meyer & Charlton, g	"	100,000	1 0 0	8 0	June, 1899	4 17 6	5 2 6
Namaqua, c	Cape Colony	200,000	2 0 0	4 0	Dec., 1900	5 2 6	5 7 6
Primrose (New), g	Transvaal	300,000	1 0 0	6 0	Aug., 1899	3 13 9	3 16 3
Rand Mines, g	So. Africa	490,000	1 0 0	15 0	" "	38 13 9	38 16 3
Robinson, g	Transvaal	2,750,000	5 0 0	8 0		8 2 6	8 7 6
Sheba, g	"	1,100,000	1 0 0	0 6	July, 1898	18 9	1 0 0
Sim. & Jack Prop., g	"	5,000,000	5 0 0	4 0	July, 1899	5 15 0	5 17 6
Welhuter, g	"	890,000	4 0 0	2 0	Feb., 1899	3 15 0	4 0 0

*Ex-Dividend. *Ex-Right.

DIVIDENDS.

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

Number.	Name and Location of Company.		Authorized Capital Stock.	Shares Issu'd No.	Par Val	Dividends. Paid, 1900.	Total to Date.	Latest. Date.	Amt.
1	Acacia, g.	Colo.	$1,500,000	1,500,000	$1	$45,000	$45,000	Dec.. 1900	.01
2	Adams, s.l.c.	Colo.	1,500,000	150,000	10	7,500	701,000	Nov.. 1900	.05
3	Ætna Con., q.	Cal..	500,000	100,000	5	30,000	225,000	April. 1900	.15
4	Alaska-Mexican, g.	Alask	1,000,000	180,000	5	72,000	501,031	Oct.. 1900	.10
5	Alaska-Treadwell, g.	Alask	5,000,000	200,000	25	300,000	4,520,000	Oct.. 1900	.37½
6	Amalgamated, c.	Mont.	75,000,000	750,000	100	6,000,000	7,500,000	Oct.. 1900	2.00
7	Amanda, g.	Colo..	1,000,000	1,000,000	1	10,000	10,000	June. 1900	.01
8	Amazon, g.	Colo..	600,000	600,000	1	102,000	121,882	May.. 1900	.10
9	Amer. Sm & Ref., pref.	U. S..	32,500,000	325,000	100	2,113,803	2,682,553	Oct.. 1900	1.75
10	Am. Zinc, Lead & Sm.	Mo...	2,500,000	60,000	25	60,000	180,000	Jan.. 1900	1.00
11	Anaconda, c.	Mont.	30,000,000	1,200,000	25	4,800,000	16,950,000	Oct.. 1900	2.00
12	Apollo Con., g.	Alask	1,000,000	100,000	10	70,000	210,000	Jan.. 1900	.07
13	Argonaut, g.	Cal..	2,000,000	200,000	10	70,000	490,000	May.. 1900	.05
14	Arizona, c.	Ariz..	3,190,550	.....	....	576,429	1,464,848	Sept.. 1900	.84
15	Atlantic, c.	Mich.	1,000,000	40,000	25	80,000	860,000	Feb.. 1900	2.00
16	Bald Butte, g. s.	Mont.	250,000	250,000	1	82,500	852,148	Sept.. 1900	.06
17	Boston-Aurora, pref.	Mo...	800,000	32,000	25	37,120	66,160	May.. 1900	.50
18	Boston & Colo. Smelting	Colo..	750,000	15,000	50	45,000	315,000	Oct.. 1900	.75
19	Boston Duenweg, z.	Mo...	1,000,000	40,000	10	24,000	56,000	June.. 1900	.10
20	Boston Get There, z.	Mo...	250,000	22,500	10	9,000	20,250	April. 1900	.10
21	Boston Gold-Copper Sm.	Colo..	1,000,000	1,000,000	1	50,000	50,000	Nov.. 1900	.02½
22	Boston-Little Circle, z.	Mo-K.	1,000,000	100,000	10	12,500	87,500	Mar.. 1900	.12½
23	Boston & Mont. Con., c. s. g	Mont.	3,750,000	150,000	25	6,450,000	20,975,000	Nov.. 1900	15.00
24	Boston Phila., z. l.	Kas..	200,000	20,000	10	2,000	2,000	May.. 1900	.10
25	Boston Providence, z., pf	Mo...	150,000	15,000	10	6,000	17,242	Aug.. 1900	.05
26	Boston, q.	Cal...	1,000,000	100,000	10	10,000	20,000	Jan.. 1900	.10
27	Boston Springfield, z.	Mo...	500,000	20,000	25	15,000	15,000	June. 1900	.25
28	Breece.	Colo..	5,000,000	200,000	25	30,000	100,000	Dec.. 1900	.05
29	Buffalo Hump, g. s. l.	Idaho	3,000,000	250,000	10	275,000	275,000	Dec.. 1900	.10
30	Bullion-Beck & Champ.	Utah.	1,000,000	100,000	10	60,000	2,498,400	June. 1900	.10
31	Bunker Hill & Sullivan.	Idaho	3,000,000	300,000	10	231,000	1,032,000	Nov.. 1900	.07
32	Butte & Boston Con., c.	Mont.	2,000,000	200,000	10	1,000,000	1,000,000	Dec.. 1900	5.00
33	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25	7,000,000	73,850,000	Dec.. 1900	20.00
34	Cariboo-McKinney, g.	B. Col	1,250,000	1,250,000	1	86,500	478,087	Oct.. 1900	.01½
35	Centen'l-Eureka, g.s.l.c.	Utah.	5,000,000	100,000	25	267,700	2,417,700	Oct.. 1900	.50
36	Center Creek, l. z.	Mo...	1,000,000	100,000	10	30,000	40,000	Dec.. 1900	.20
37	Central Lead, l.	Mo...	1,000,000	10,000	100	60,000	197,000	Nov.. 1900	.50
38	Cloverdale, z.	Mo...	1,000,000	100,000	10	60,000	80,000	July.. 1900	.20
39	Columbia, l.	Mo...	500,000	48,500	10	16,975	16,975	Nov.. 1900	.05
40	Commonwealth, z., pref.	Mo...	500,000	100,000	5	30,000	50,000	June. 1900	.05
41	Consolidated Gold Mines	Colo..	1,000,000	1,000,000	1	100,000	110,000	Nov.. 1900	.01
42	Con. Mercer Gold Mines.	Utah.	5,000,000	1,000,000	5	225,000	1,591,000	Nov.. 1900	.11
43	Consolidated, z. l., pf.	Mo...	400,000	400,000	1	8,000	8,000	Jan.. 1900	.20
44	Cordell, z. l.	Mo...	300,000	60,000	5	27,000	30,000	Sept.. 1900	.05
45	Cripple Creek Con., g.	Colo..	2,000,000	2,000,000	1	160,000	160,000	Mar.. 1900	.08
46	Cræsus, g.	Cal...	1,000,000	200,000	5	91,800	139,300	Dec.. 1900	.06
47	Daly West, g.	Utah.	3,000,000	150,000	20	450,000	570,000	Nov.. 1900	.25
48	De Lamar, g. s.	Idaho	2,000,000	400,000	5	48,000	2,394,000	May.. 1900	.12
49	Dixie, g.	Utah.	125,000	125,000	1	10,000	10,000	April. 1900	.02
50	Doe Run, l.	Mo...	1,500,000	10,000	100	50,000	402,073	Oct.. 1900	.50
51	Ducktown, c. i. sul. (ord)	Tenn.	374,000	7,480	50	.....	95,744	Dec.. 1899	9.60
52	Ducktown (founder).	Tenn.	1,000	200	5	.....	41,160	Dec.. 1899	162.00
53	Elkton Con., g.	Colo..	3,000,000	2,500,000	1	258,750	979,461	Dec.. 1900	.03
54	Empire State-Idaho.	Idaho	1,000,000	98,514	10	354,649	672,687	Dec.. 1900	.30
55	Favorite, g.	Colo..	1,200,000	1,200,000	1	48,000	48,000	April. 1900	.04
56	Florence, s.	Mont.	2,500,000	440,000	5	22,000	252,000	April. 1900	.05
57	Frisco Con., l. s.	Idaho	2,500,000	500,000	5	.....	920,000	Nov.. 1899	.25
58	Garfield Con., g.	Colo..	1,200,000	1,200,000	1	.....	34,000	May.. 1899	.01
59	Gemini	Utah.	500,000	5,000	100	50,000	700,000	Aug.. 1900	10.00
60	Gold Belt, g.	Colo..	1,250,000	1,250,000	1	112,500	112,500	Aug.. 1900	.09
61	Gold Coin of Victor, g.	Colo..	1,000,000	1,000,000	1	220,000	580,000	Nov.. 1900	.02
62	Gold Deposit, g.	Colo..	500,000	500,000	1	10,000	10,000	Mar.. 1900	.02
63	Gold King, g.	Colo..	1,000,000	936,850	1	112,421	178,001	Oct.. 1900	.03
64	Golden Cycle, g.	Colo..	1,000,000	200,000	5	110,000	368,500	Nov.. 1900	.05
65	Golden Eagle, g.	Colo..	500,000	500,000	1	5,000	25,000	June. 1900	.01
66	Grand Central, g.	Utah.	250,000	250,000	1	25,000	691,250	Nov.. 1900	.10
67	Grand Gulch.	Ariz..	250,000	240,000	1	9,600	9,600	April. 1900	.01
68	Grass Valley Expl.	Cal...	100,000	30,000	2	37,500	67,500	May.. 1900	.25
69	Greater Gold Belt, g.	Colo..	5,000,000	3,800,000	1	76,000	76,000	June. 1900	.02
70	Gwin, g.	Cal..	1,000,000	100,000	10	45,000	126,500	Nov.. 1900	.15
71	Hall Mg. & Sm.	B. Col	1,250,000	250,000	5	.....	120,000	May.. 1899	.24
72	Hecla, l. s.	Idaho	250,000	1,000,000	¼	80,000	80,000	Oct.. 1900	.02
73	Hecla Con., s. l.	Mont.	1,500,000	30,000	50	15,000	2,205,000	Oct.. 1900	.05
74	Hidden Treasure, g.	Cal...	360,000	36,000	10	28,800	457,452	Sept.. 1900	.10
75	Holy Terror, g.	S. D..	500,000	500,000	1	5,000	172,000	Jan.. 1900	.01
76	Home, g.	Colo..	50,000	50,000	1	100,000	100,000	July.. 1900	.50
77	Homestake, g.	S. D..	21,000,000	210,000	100	1,155,000	9,298,750	Nov.. 1900	.50
78	Horn-Silver, g. s. c.z. l.	Utah.	10,000,000	400,000	25	20,000	5,270,000	June. 1900	.05
79	Idaho, g.	Idaho	1,000,000	1,000,000	1	8,188	8,188	April. 1900	.01
80	Idaho, s. l.	B.Col	500,000	500,000	1	.....	292,000	Jan.. 1899	.05½
81	Independence Con.	Colo..	2,500,000	2,500,000	1	100,000	100,000	Aug.. 1900	.04
82	International, z.	Mo...	1,000,000	1,000,000	1	26,427	26,427	July.. 1900	.01
83	Iowa, g. s. l.	Colo..	1,666,667	1,666,667	1	39,334	136,834	June. 1900	.00½
84	Iron Silver.	Colo.	10,000,000	500,000	20	50,000	2,550,000	Dec.. 1900	.10
85	Isabella, g.	Colo..	2,250,000	2,250,000	1	157,500	697,500	Sept.. 1900	.01
86	Jack Pot, g.	Colo..	$1,250,000	1,250,000	$1	.....	$175,000	Dec.. 1899	.06
87	Jamison, g.	Cal..	3,900,000	390,000	10	.....	50,700	April. 1899	.10
88	Klondike Bonanza, Ltd.	Klond	750,000	52,750	5	.....	12,000	Aug.. 1899	.24
89	La Fortuna, g.	Ariz..	250,000	250,000	1	$252,500	895,000	Oct.. 1900	.05
90	Lake City, g.	Colo..	50,000	50,000	1	3,875	3,875	May.. 1900	.01
91	Last Chance, s. l.	B.Col	500,000	500,000	1	.....	45,000	Apr.. 1899	.05
92	Last Dollar, g.	Colo..	1,500,000	1,500,000	1	90,000	120,000	Nov.. 1900	.02
93	Le Roi, g.	B.Col	5,000,000	200,000	5	.....	1,305,000	Nov.. 1899	1.20
94	Lightner, g.	Cal...	125,000	105,000	1	5,250	5,250	Oct... 1900	.05
95	Lillie, g.	Colo..	1,250,000	250,000	5	45,117	349,183	April. 1900	.05
96	Little Tiger, g.	Cal...	500,000	500,000	1	15,000	47,500	Feb.. 1900	.01½
97	Madison, g.	Colo..	1,250,000	1,050,000	1	35,000	35,000	June. 1900	.03½
98	Magnolia, g.	Colo..	1,250,000	1,100,000	1	187,000	187,000	July.. 1900	.17
99	Mammoth, g. s. c.	Utah.	10,000,000	400,000	25	200,000	1,810,000	Nov.. 1900	.05
100	Marion Con., g.	Colo..	5,000,000	500,000	10	.....	300,000	May.. 1899	.01
101	Mary McKinney, g.	Colo..	1,000,000	1,000,000	1	150,000	180,000	Oct... 1900	.03
102	Midget, g.	Colo..	1,000,000	1,000,000	1	15,000	15,000	May.. 1900	.15
103	Modoc, g. s.	Colo..	500,000	500,000	1	55,000	200,000	Nov.. 1900	.01
104	Monarch, g.	Colo..	1,000,000	1,000,000	1	120,000	120,000	April. 1900	.12
105	Montana, Ltd., g. s.	Mont.	3,300,000	657,128	5	.....	453,700	April. 1899	.12
106	Montana Ore Purchas'g.	Mont.	2,500,000	80,000	25	240,000	1,600,000	Sept.. 1900	1.00
107	Morning Star Drift, g.	Cal...	240,000	2,400	100	7,200	854,490	Sept.. 1900	3.00
108	Morse, g.	Colo..	1,250,000	1,250,000	1	.....	215,650	May.. 1899	.12
109	Mountain, c.	Cal...	6,250,000	250,000	25	1,200,000	2,373,750	Oct... 1900	2.16
110	Mt. Diablo, s.	Nev..	5,000,000	50,000	100	5,271	260,271	Jan.. 1900	.10
111	Mt. Rosa, g.	Colo..	1,000,000	1,000,000	1	.....	75,000	Dec.. 1899	.04
112	Mt. Shasta, g.	Cal...	100,000	20,000	5	.....	6,000	May.. 1899	.30
113	Moulton, g.	Mont.	2,000,000	400,000	5	.....	500,000	Oct... 1893	.05
114	Napa Con., q.	Cal...	700,000	100,000	7	60,000	1,200,000	Oct... 1900	.10
115	National Lead, com.	U. S..	15,000,000	149,054	100	149,054	1,341,486	Mar.. 1900	1.00
116	National Lead, pf.	U. S.	15,000,000	149,040	100	1,043,280	10,579,280	Dec.. 1900	1.75
117	New Idria, q.	Cal...	500,000	100,000	5	80,000	250,000	Oct... 1900	.20
118	N. J. & Mo., z.	Mo...	250,000	2,500	100	11,000	11,000	June.. 1900	2.00
119	New York, z.	Kas..	700,000	28,000	25	.....	6,500	Oct... 1899	.25
120	N.Y.& Hon Rosario, s.g.	C. A..	1,500,000	150,000	10	255,000	1,415,000	Dec.. 1900	.40
121	North Star Mines.	Cal..	5,000,000	250,000	10	.....	584,850	Nov.. 1899	.20
122	Old Colony Zinc & Sm.	Mo...	1,100,000	69,909	10	68,276	68,276	Oct... 1900	.25
123	Omega, g.	Colo..	1,500,000	1,212,550	1	18,188	18,188	June.. 1900	.01½
124	Ontario, s. l.	Utah.	15,000,000	150,000	100	90,000	13,662,500	April. 1900	.30
125	Orphan Belle, g.	Colo..	1,000,000	1,000,000	1	.....	197,899	Dec.. 1899	.09
126	Original Empire, g.	Cal...	5,000,000	50,000	100	.....	530,000	Oct... 1899	1.00
127	Osceola, c.	Mich.	2,500,000	93,000	25	558,000	3,638,500	Dec.. 1900	3.00
128	Parrot, c.	Mont.	2,300,000	229,850	10	1,379,100	4,393,825	Oct... 1900	1.50
129	Pennsylvania Con., g.	Cal...	5,150,000	51,500	100	25,750	161,325	May.. 1900	.10
130	Petro, g.	Utah.	1,000,000	200,000	5	.....	32,000	Oct... 1899	.02½
131	Pioneer, g.	Cal...	1,000,000	100,000	10	.....	62,500	Mar.. 1899	.12½
132	Plumas Eureka, g.	Cal..	1,406,250	140,625	10	84,375	2,797,544	April. 1900	.60
133	Portland, g.	Colo..	3,000,000	3,000,000	1	750,000	3,307,080	Oct... 1900	.06
134	Queen Bess Propr., s. l.	B.Col	500,000	100,000	5	.....	25,000	July.. 1899	.12½
135	Quicksilver, pref.	Cal...	4,300,000	43,000	100	21,500	1,866,911	July.. 1900	.50
136	Quincy, c.	Mich.	2,500,000	100,000	25	900,000	11,970,000	Aug.. 1900	4.00
137	Rambler—Cariboo, s. l.	B.Col	1,250,000	1,250,000	1	33,750	105,000	Mar.. 1900	.01
138	Republic Con., g.	Wash	3,500,000	3,500,000	1	105,000	382,500	Mar.. 1900	.01
139	Reward, g.	Cal..	1,000,000	100,000	10	.....	20,000	Aug.. 1899	.20
140	Rocco-Homestake-Nev.	Nev..	300,000	300,000	1	9,000	9,000	Dec.. 1900	.01½
141	Russell-Irwin, z.	Mo...	250,000	25,000	10	.....	15,000	Oct... 1899	.10
142	Sacramento, g.	Utah.	5,000,000	1,000,000	5	.....	138,000	Oct... 1899	.00½
143	St. Joseph, l.	Mo...	3,000,000	250,000	10	112,500	3,272,200	Sept.. 1900	.15
144	Santa Rita, g.	Colo..	1,000,000	1,000,000	1	4,000	4,000	July.. 1900	.02
145	Silver King, g. s. l.	Utah.	3,000,000	150,000	20	825,000	3,275,000	Nov.. 1900	.50
146	Silver Shield, g.	Utah.	300,000	300,000	1	1,500	1,500	Dec.. 1900	.00½
147	Small Hopes, s.	Colo..	5,000,000	250,000	20	.....	3,325,000	Feb.. 1899	.10
148	Smuggler, s. l. z.	Colo..	1,000,000	1,000,000	1	330,000	1,700,000	Nov.. 1900	.03
149	South Swansea, s. l.	Utah.	150,000	150,000	1	.....	165,000	Oct... 1899	.05
150	Southern Boy, g.	Colo..	1,250,000	875,000	1	17,500	17,500	May.. 1900	.02
151	Squaw Mountain, g.	Colo..	2,000,000	2,000,000	1	.....	10,000	Nov.. 1899	.00½
152	Standard Con., g. s.	Cal...	2,000,000	200,000	10	80,000	3,979,226	Nov.. 1900	.10
153	Standard, s. l.	Idaho	500,000	500,000	1	295,000	2,100,000	Oct... 1900	.08
154	Stratton's Independ'ce.	Colo..	5,500,000	1,000,007	5	1,789,337	2,765,352	Oct... 1900	.48
155	Swansea, s. l.	Utah.	500,000	100,000	5	65,000	261,500	Nov.. 1900	.05
156	Tamarack, c.	Mich.	1,500,000	60,000	25	1,020,000	7,290,000	Dec.. 1900	10.00
157	Tomboy, g.	Colo..	1,500,000	300,000	5	144,000	956,000	Dec.. 1900	.24
158	Touraine, g.	Colo..	1,250,000	1,250,000	1	87,500	87,500	April. 1900	.07
159	Union, g.	Colo..	1,250,000	1,250,000	1	312,500	395,244	Sept.. 1900	.25
160	Union, z. l.	Kas..	500,000	500,000	1	15,000	15,000	Aug.. 1900	.01
161	United, z. l., pref.	Mo...	6,000,000	14,938	25	27,598	30,263	Oct... 1900	.50
162	United Verde, c.	Ariz..	3,000,000	300,000	10	1,875,000	2,737,500	Nov.. 1900	.75
163	Utah, g.	Utah.	1,000,000	100,000	10	2,000	181,000	Oct... 1900	.02
164	Vindicator Con., g.	Colo..	1,500,000	1,500,000	1	188,500	493,500	Oct... 1900	.02
165	War Eagle Con., g. s. c.	B. C..	2,000,000	1,750,000	1	52,500	545,250	Feb.. 1900	.01½
166	What Cheer, z.	Mo...	225,000	22,500	10	9,000	11,250	May.. 1900	.20½
167	Wolverine, c.	Mich.	1,500,000	60,000	25	240,000	510,000	Oct.. 1900	2.00
168	Yellow Aster, g.	Cal...	1,000,000	100,000	10	140,000	449,416	Nov.. 1900	.10
169	Ymir, g.	B.Col	1,000,000	125,000	5	.....	30,000	Nov.. 1899	.24

COAL, IRON AND OTHER COMPANIES.

Number.	Name and Location of Company.		Authorized Capital Stock.	Shares Issu'd No.	Par Val	Dividends. Paid, 1900.	Total to Date.	Latest. Date.	Amt.
1	Alabama Coal & Iron, pf	Ala...	$2,500,000	25,000	$100	$175,000	$218,750	Nov.. 1900	1.75
2	Am. Agricul. Chem., pf.	U. S..	20,000,000	170,000	100	1,020,000	1,530,000	Oct... 1900	3.00
3	American Cement.	Pa....	2,100,000	200,000	10	80,000	140,000	July.. 1900	.40
4	American Coal.	Md...	1,500,000	60,000	25	255,000	982,500	Sept.. 1900	1.00
5	Am. Fuel Oil.	Cal...	100,000	100,000	1	11,000	14,000	Nov.. 1900	.01
6	Am. Steel Hoop, pf.	U. S..	14,000,000	140,000	100	980,000	1,225,000	Oct... 1900	1.75
7	Am. Steel & Wire, com.	U. S..	50,000,000	500,000	100	2,625,000	2,625,000	Oct... 1900	1.75
8	Am. Steel & Wire, pf.	U. S..	40,000,000	400,000	100	2,800,000	5,600,000	Oct... 1900	1.75
9	Arizona Western Oil.	Cal...	100,000	100,000	1	1,000	1,000	Sept.. 1900	.01
10	Bethlehem Steel	Pa...	15,000,000	300,000	50	600,000	900,000	Dec.. 1900	.50
11	Buckhorn Oil.	Cal...	200,000	16,000	10	3,800	3,800	Mar.. 1900	.05
12	Burlington Oil.	Cal...	60,000	60,000	1	3,000	3,000	Oct... 1900	.01
13	Cambria Steel	Pa...	16,000,000	320,000	50	940,000	1,600,000	Nov.. 1900	.50
14	Colo. Fuel & Iron, pf.	Colo..	2,000,000	20,000	100	800,000	1,160,000	Dec.. 1900	8.00
15	Consolidation Coal.	Md...	10,250,000	102,500	100	205,000	5,113,000	Feb.. 1900	2.00
16	Diamond Star Oil.	Cal..	250,000	250,000	1	5,000	5,000	Nov.. 1900	.02
17	Empire Steel & Iron, pf.	U. S..	5,000,000	23,700	100	71,100	142,200	July.. 1900	1.50
18	Federal Steel, com.	U. S..	50,000,000	464,843	100	1,743,162	1,743,162	Mar.. 1900	2.50
19	Federal Steel, pf.	U. S..	50,000,000	532,609	100	5,059,794	6,657,654	Oct... 1900	1.75
20	General Chem., com.	U. S..	12,500,000	70,703	100	282,812	411,814	Dec.. 1900	1.00
21	General Chem., pf.	U. S..	12,500,000	81,264	100	365,688	519,959	Oct... 1900	1.50
22	Gray Eagle Oil.	Cal...	250,000	100,000	2½	50,000	120,000	Nov.. 1900	.50
23	Great Western Oil.	Cal...	100,000	10,000	10	10,000	10,000	Oct... 1900	.10
24	Home Oil.	Cal...	100,000	100,000	1	190,000	190,000	Nov.. 1900	.10
25	Homestake Oil.	Cal...	100,000	10,000	10	3,500	3,500	Nov.. 1900	.25
26	Jefferson & Clearf. C'l, cm	Pa...	1,500,000	15,000	100	30,000	30,000	Aug.. 1900	2.00
27	Jefferson & Clearf. C'l, pf.	Pa...	1,500,000	15,000	100	75,000	187,500	Aug.. 1900	2.50
28	Kern Oil.	Cal...	100,000	100,000	1	8,500	8,500	Nov.. 1900	.50
29	Lehigh Coal & Nav.	Pa...	14,346,650	286,933	50	789,066	18,516,990	Oct... 1900	1.50
30	Maryland Coal, pf.	Md...	$1,885,005	18,850	$100	$94,250	$640,869	Dec.. 1900	3.00
31	Monongahela R. Coal, pf	Pa....	10,000,000	200,000	50	350,000	350,000	July.. 1900	1.75
32	Montana Coal & Coke.	Mont.	5,000,000	200,000	25	120,000	120,000	Oct... 1900	.30
33	National Salt, com.	U. S..	7,000,000	70,000	100	245,000	245,000	Dec.. 1900	1.50
34	National Salt, pf.	U. S..	5,000,000	50,000	100	350,000	525,000	Nov.. 1900	1.75
35	National Steel, pf.	U. S..	27,000,000	270,000	100	1,890,000	3,307,500	Dec.. 1900	1.75
36	New Central Coal.	Md...	1,000,000	50,000	20	40,000	510,000	Nov.. 1900	.40
37	Oceanic Oil.	Cal...	100,000	100,000	1	1,000	1,000	Sept.. 1900	.01
38	Pacific Coast Borax.	Cal...	2,000,000	20,000	100	220,000	742,500	Nov.. 1900	1.00
39	Park Crude Oil.	Cal...	100,000	82,146	1	4,897	4,897	Sept.. 1900	.01
40	Pennsylvania Coal.	Pa...	5,000,000	100,000	50	800,000	19,700,000	Nov.. 1900	2.00
41	Pennsylvania Salt.	Pa....	2,500,000	50,000	50	300,000	12,550,000	Oct... 1900	3.00
42	Pennsylvania Steel, pf.	Pa...	1,500,000	15,000	100	105,000	131,250	Oct... 1900	1.75
43	Pittsburg Coal., pf.	Pa...	32,000,000	320,000	100	2,240,000	2,240,000	Oct... 1900	1.75
44	Producers' & Con. Oil.	Cal...	1,000,000	10,000	100	3,000	3,000	Oct... 1900	.30
45	Republic Iron & Steel, pf	U. S..	25,000,000	203,069	100	1,421,483	1,776,854	Oct... 1900	1.75
46	Rex Crude Oil.	Cal...	500,000	85,000	5	21,250	21,250	Oct... 1900	.02
47	Sloss-Sheffield Ir. & St., pf	U. S..	20,000,000	67,000	100	352,500	352,500	Oct... 1900	1.75
48	Standard Oil (of N. J.).	U. S..	100000,000	975,000	100	46,800,000	73,125,000	Sept.. 1900	8.00
49	Susquehanna Ir. & Steel	Pa..	1,500,000	300,000	5	112,500	292,500	Oct... 1900	.07½
50	Tenn. Coal, I. & R. R., com	Tenn.	23,000,000	225,536	100	902,144	1,553,216	Nov.. 1900	2.00
51	Tenn. Coal, Ir. & R. R., pf	Tenn.	248,000	2,480	100	143,840	243,040	Nov.. 1900	5.60
52	Texas & Pacific Coal.	Tex..	2,000,000	20,000	100	120,000	1,800,000	Oct... 1900	1.50
53	United States Oil.	W. Va	2,500,000	100,000	25	275,000	575,000	Oct... 1900	.50
54	Va.-Carolina Chem., com	U. S..	12,000,000	90,000	100	360,000	720,000	Dec.. 1900	1.00
55	Va.-Carolina Chem., pf.	U. S.	12,000,000	100,000	100	800,000	1,200,000	Oct... 1900	2.00
56	West Lake Oil.	Cal..	500,000	500,000	1	50,000	50,000	Sept.. 1900	.01
57	Westmoreland Coal.	Pa....	5,000,000	250,000	50	150,000	.....	Oct... 1900	1.50
58	Yukon Oil.	Cal...	2,500,000	100,000	2½	18,000	21,000	Oct... 1900	.02

This table is corrected up to December 8th. Correspondents are requested to forward changes or additions.

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

	Cust. Meas.	Price.
Abrasives—		
Carborundum, f.o.b. Niagara Falls, Powd., F. FF. FFF	lb.	$0.12
Minute No. 1	"	.15
No. 15	"	1.00
Corundum, N. C.	"	.07@.10
Chester, Mass.	"	.04½@.05
Crushed Steel, f. o. b. Pittsburg	"	.05½
Emery, Turkish flour, in kegs	"	.03
Grains, in kegs	"	.04½@.05
Naxos flour, in kegs	"	.03
Grains, in kegs	"	.05
Chester flour, in kegs	"	.03
Grains, in kegs	"	.04½@.05
Peekskill flour, in kegs	"	.01¾
Grains, in kegs	"	.02½
Crude, ex-ship, N. Y.: Kuluk (Turkey)	lg. ton	22.00@24.00
Abbott (Turkey)	"	26.50@30.00
Naxos (Greek) h. gr.	"	32.00
Pumice Stone, Am. powd.	lb.	.01½@.02
Italian, powdered	"	.01½
Lump, per quality	"	.04@.40
Rottenstone, ground	"	.02½@.03
Lump, per quality	"	.05@.14
Rouge, per quality	"	.10@.30
Steel Emery, f.o.b. Pittsburg	"	.07
Acids—Acetic, 30% pure	100 lbs.	3.50
30% ch. pure	"	6.00
80% pure	"	7.50
Benzoic, English	oz.	.12
German	lb.	.45
Boracic, cryst.	"	.10½@.11
Powdered	"	.11@.11½
Carbolic, crude, 60%	gal.	.27
Cryst. 37% drums	lb.	.23
Liquid, 95%	gal.	.45
Carbonic, liquid gas	lb.	.12½
Chromic, crude	"	.20
Chem. pure	"	.50
Hydrochloric, ch. pure	"	.07
Hydrofluoric, 36%	"	.03
48%	"	.05
Best	"	.25
Nitric, chem. pure	"	.09
Sulphuric, chem. pure	"	.07
Sulphurous, liquid anhy.	"	.08
Tartaric, cryst.	"	.29@.29½
Powder	"	.30@.30½
Alcohol—Grain	gal.	2.45
Refined wood, 95@97%	"	.75@.80
Purified	"	1.50
Alum—Lump	100 lbs.	1.75
Ground	"	1.85
Powdered	"	3.00
Chrome, com'l	"	2.75@3.00
Aluminum—Nitrate	lb.	1.50
Oxide, com'l, common	"	.06½
Best	"	.20
Pure	"	.80
Hydrated	100 lbs.	2.60
Sulphate, pure	"	1.50@1.75
Com'l	"	1.15@1.25
Ammonia—Aqua, 16°	lb.	.03
18°	"	.03¼
20°	"	.03¾
26°	"	.05½
Ammonium—		
Bromide, pure	"	.52@.53
Carbonate lump	"	.08½@.08¾
Powdered	"	.09½@.09¾
Muriate, gran.	"	.06
Lump	"	.09¼
Nitrate, white, pure (99%)	"	.10½
Phosphate, com'l	"	.12
Chem. pure	"	60
Antimony—		
Glass	"	.30@.40
Needle, lump	"	.05½@.06
Powdered, ordinary	"	.05¾
Best	"	.08½
Oxide, com'l white, 95%	"	.09½
Com'l white, 99%	"	.12
Com'l gray	"	.07
Sulphuret, com'l	"	.16
Arsenic—White	"	.04½@.04⅝
Red	"	.07¼@.07½
Asphaltum—		
Ventura, Cal.	sh. ton	32.00
Cuban	lb.	.01½@.03½
Egyptian, crude	"	.05½@.06
Trinidad, refined	lg. ton	35.00
San Valentino (Italian)	"	15.00
Seyssel (French) mastic	sh. ton	20.00
Gilsonite, Utah, ordinary	lb.	.03
Select	"	.03¾
Barium—Carbonate, Lump, 80@90%	sh. ton	25.00@27.50
92@98%	"	26.00@29.00
Powdered, 80@90%	lb.	.01¾@02
Chloride, com'l	"	.02@.02¼
Chem. pure cryst	"	.05
Nitrate, powdered	"	.06
Oxide, com'l, hyd. cryst	"	.18
Hydrated, pure cryst.	"	.25
Pure, powd.	"	.27
Sulphate	"	.01
Barytes—Am. Cr., No. 1	sh. ton	9.00
Crude, No. 2	"	8.00
Crude, No. 3	"	7.75
German, gray	"	14.50
Snow white	"	17.00
Bauxite—Ga. mines: 1st grade	lg. ton.	5.00
Second grade	"	4.25@4.50
Ala., f.o.b., 1st grade	"	5.00
Second grade	"	4.25@4.50
Bismuth—Subnitrate	lb	1.75
Subcarbonate	"	1.95
Bitumen, "B"	"	.03½
"A"	"	.05
"A" and "B"	"	.04½
Bone Ash	"	03¾@.03½
Borax	lb.	$.07¼@.07½
Calcined	"	.25
Bromine	"	.40
Cadmium—Metallic	"	1.40
Sulphate	100 lbs.	2.00@2.50
Calcium—Acetate, gray	"	1.55
brown	"	1.05
Carbide, ton lots, f. o. b. Niagara Falls, N.Y.	sh. ton	80.00
Carbonate, ppt.	lb.	.05
Chloride, com'l	100 lbs.	.75
Best	"	.80
Sulphite	lb.	.05
Cement—		
Portland, Am., 400 lbs.	bbl.	1.50@2.00
Belgium	"	1.95@2.20
English	"	2.45@2.55
German	"	2.30@2.70
"Rosendale," 300 lbs.	"	1.05
Sand cement, 400 lbs.	"	1.55@1.95
Slag cement, imported	"	1.65
Ceresine—		
Orange and Yellow	lb.	.12
White	"	.14
Chalk—Lump, bulk	sh. ton	2.60
Ppt. per quality	lb.	.03¾@.06
Chlorine—Liquid	"	.30
Water	"	.15
Chrome Ore—		
(50% ch.) ex ship, N. Y.	lg. ton	26.00
Sand, f.o.b. Baltimore	"	33.00
Bricks, f.o.b., Pittsburg	M	175.00
Clay, China—Am. com., ex-dock, N. Y.	lg ton	8.00
Am. best, ex-dock, N. Y.	"	9.00
English, common	"	12 00
Best grade	"	17 00
Fire Clay, ordinary	sh. ton	4.25
Best	"	6.00
Slip Clay	"	7.00
Coal Tar Pitch	gal.	.08
Cobalt—Carbonate	lb.	1.75
Nitrate	"	1.50
Oxide—Black	"	2.20@2.30
Gray	"	2.22@2.40
Smalt, blue ordinary	"	.14
Best	"	.19
Copperas	100 lbs.	.45
Copper—Carbonate	lb.	.18
Chloride	"	.25
Nitrate, crystals	"	.35
Oxide, com'l	"	.19
Cream of Tartar—Crys.	"	.21@.21½
Powdered	"	.21¼@21½
Cryolite	"	.06½
Explosives—		
Blasting powder, A. 25 lb. keg		2.50
Blasting powder, B.	"	1.25
"Rackarock," A.	lb.	.25
"Rackarock," B.	"	.18
Judson R.R. powder	"	.10
Dynamite (20% nitroglycerine)	"	.13
(30% nitro-glycerine)	"	.14
(40% nitro-glycerine)	"	.15
(50% nitro-glycerine)	"	.16½
(60% nitro-glycerine)	"	.18
(75% nitro-glycerine)	"	.21
Glycerine for nitro (32 2-10° Be.)	"	.13½@ 13¾
Feldspar—Ground	sh. ton	8.00@9.00
Fluorspar—In bulk.		
Am. lump, 1st grade	"	12.40
2d grade	"	11.90
Gravel & crushed, 1st g	"	11.40
2d grade	"	10.90
Ground, 1st grade	"	15.90
Foreign, lump	"	8.00@12.00
Ground	"	11.50@14.00
Fuller's Earth—Lump	100 lbs.	.75
Powdered	"	.85
Refined lump	"	1.25
Graphite—Am. f. o. b. Providence, R.I. lump	sh. ton	8.00
Pulverized	"	30.00
German, lump	lb.	.01¼
Pulverized	"	.01¼@.02
Ceylon, common	"	.03½
Pulverized	"	.04@.08
Italian, pulv	"	.01¼
Gypsum—Ground	sh. ton	8.00@8.50
Fertilizer	"	7.00
Rock	lg. ton	4.00
English and French	"	14.00@16.00
Infusorial Earth—Ground. American, best	"	20.00
French	"	37.50
German	"	40.00
Iodine—Crude	100 lbs.	2.45
Iron—Muriate	lb.	.05
Nitrate, com'l	"	.01¼
True	"	.03½
Oxide, pure copperas col	"	.05@.10
Purple-brown	"	.02
Venetian red	"	.01@.01½
Scale	"	.01@.03
Kaolin—(See Clay, China).		
Kryolith—(See Cryolite.)		
Lead—Acetate, white	lb.	.07
Com'l, broken	"	.06½
Brown	"	.05½
Nitrate, com'l	"	.06½
" gran.	"	.8¼
Lime—Com., ab. 250 lbs	bbl.	.70
Finishing	"	.80
Magnesite—Greece. Crude (95%)	lg. ton	6.50@7.00
Calcined	sh. ton	14.00@15.00
Bricks	M.	170.00
Am. Bricks, f.o.b. Pittsburg		175.00
Magnesium—		
Carbonate, light, fine pd	lb.	.03¾
Blocks	"	.06@.09
Chloride, com'l	"	.01¾
Fused	"	.20
Magnesium—		
Nitrate	lb.	$0.60
Sulphate	100 lbs.	.90
Manganese—Crude-pow'd 73@75% binoxide	lb.	.01¼@.01½
Crude, pow'd 75@85% binoxide	"	.01½@.02½
85@90% binoxide	"	.02½@.03¼
90@95% binoxide	"	.02¾@.05½
Carbonate	"	.16@.20
Chloride	"	.04
Ore, 50%, Foreign	unit	.26¾
Domestic	"	.30
Marble—Flour	sh. ton	6.00@7.00
Mercury—Bichloride	lb.	.77
Mica—N. Y. gr'nd. coarse	"	.03¼@.03¾
Fine	"	.04@.05
Sheets, N. C., 2x4 in.	"	.30
3x3 in.	"	.80
3x4 in.	"	1.50
4x4 in.	"	2.00
6x6 in.	"	3.00
Scrap, f.o.b., Dillsboro, N. C.	sh. ton.	25.00
Mineral Wool—		
Slag, ordinary	sh. ton	19.00
Selected	"	25.00
Rock, ordinary	"	32.00
Selected	"	40.00
Monazite—92%	"	140.00
Nickel—Oxide, No. 1	lb.	1.00
No. 2	"	.60
Sulphate	"	.20@.21
Oils—Black, reduced 29 gr.: 25@30 cold test	gal.	.09¼@.09¾
15. cold test	"	.10¼@.10¾
Zero	"	.11¼@.12¼
Summer	"	.08¾@.09¼
Cylinder, dark steam ref	"	.08¼@.10¼
Dark filtered	"	.11¼@.15¾
Light filtered	"	.14¼@.17¼
Extra cold test	"	.21¼@.26¼
Gasoline, 86°@90°	"	.16@.21
Naphtha, crude 68@72°	bbl.	9.60
"Stove"	gal.	.12
Linseed, domestic raw	"	.56
Boiled	"	.58
Calcutta, raw	"	.85
Graphite, lubricating, Am. dry	lb.	.10
In oil	"	.12
Axle grease	"	.08½@.10
Wood grease	"	.05@.06
Ozokerite.	"	.10@.12
Paints and Colors—		
Chrome green, common	"	.05
Pure	"	.16
Yellow, common	"	.10½
Best	"	.25
Silica Graphite, thick	"	.12
Thinned	gal.	1.15
Lampblack, com'l	lb.	.03
Refined	"	.07
Litharge, Am. powd.	"	.05½@.06
English flake	"	.08
Glassmakers	"	.07½
Metallic, brown	sh. ton	19.00
Red	"	16.00
Ocher, Am. common	"	9.25@10.00
Best	"	21.25@25.00
Dutch, washed	lb.	.04¾
French, washed	"	.01¼@.02½
Orange mineral, Am.	"	.07¾@.08
Foreign, as to make	"	.08⅛@.11½
Paris green, pure, bulk	"	.12½
Red lead, American	"	.06
Foreign	"	.07¾
Shellac, "D. C."	"	.30
Native	"	.15
Turpentine, spirits	gal.	.40½
Ultramarine, best	lb.	.25
Vermilion, Amer. lead	"	.10@.15
Quicksilver, bulk	"	.64
English, imported	"	.80
White lead, Am., dry	"	.05¾
English	"	.06½@.07¾
Whiting, common	100 lbs.	.42
Gilders	"	.54
Zinc white, Am., ex. dry	lb.	.04⅜@.04⅞
American, red seal	"	.06¼
Green seal	"	.07¼
Foreign, red seal, dry	"	.06½@.06⅝
Green seal, dry	"	.07¼@.09⅞
Potash—Caustic, ord.	"	.04½@.05
Elect. (90%)	"	.06½
Potassium—		
Bicarbonate cryst.	"	.08¼
Powdered or gran.	"	.14
Bichromate, Am.	"	.08⅜
Scotch	"	.08½
Carbonate, hydrated	"	.04½
Calcined	"	.04
Chromate	"	.35
Cyanide (98@99%)	"	.27½@.28
Iodide, bulk	"	2.30
Permanganate, pure cr.	"	.11¼@.11½
Prussiate, yellow	"	.14⅝@.15¼
Red	"	.37
Silicate	"	.06
Sulphide, com'l	"	.10
Quartz—(See Silica).		
Rosin—		
Com. strained (280 lbs.)	bbl.	1.55
Best strained	"	3.30
Medium	"	1.90
Salt—		
N Y com. fine	sh. ton	2.00
N. Y. agricultural	"	1.50
Saltpeter—		
Crude	100 lbs.	3.50
Refined	"	4.25
Silica—Best foreign	lg. ton	10 00@11.00
Ground quartz, ord.	sh. ton	6.00@8.00
Best	"	12.00@13.00
Lump quartz	"	2.50@4.00
Glass sand	"	2.75
Silicon—Carbide	lb.	.05
Silver—		
Chloride	oz.	$0.65
Nitrate	"	.40
Oxide	"	.85@1.10
Slate—Ground, black	sh. ton	7.50@8.75
Ground, red and olive	"	20.00
Sodium—Acetate, com'l	lb.	.04¼
Bichromate	"	.06¾
Chlorate, com'l	"	.09@.09¼
Hyposulphite, Am.	100 lbs.	1.80
German	"	2.00
Nitrite, 96@98%	lb.	.08
Peroxide	"	.45
Phosphate	"	.02½
Prussiate	"	.12½
Silicate, conc.	"	.05
com'l	"	.01
Sulphate, com'l	100 lbs.	.70
Gran., puri'd	lb.	.03
Sulphide	"	.01¾
Sulphite crystals	"	.02½
Tungstate, com'l	"	.35
Strontium—Nitrate	"	.08
Sulphur—Roll	100 lbs.	1.75
Flour	"	1.80
Flowers, sublimed	"	2.05
Talc—N. C., 1st grade	sh. ton	13.75
N. Y., Fibrous	"	8.00@9.00
French, best	100 lbs.	1.25
Italian, best	"	1.75
Tar—Regular	bbl.	2.00
Oil barrels	"	4.00
Tin—Bichloride	lb.	.09½@.10
Crystals	"	.22
Muriate, 36°	"	.09
52°	"	.15
Oxide, white, ch. pure	"	.40
Uranium—Oxide	"	2.25@3.00
Zinc—Metallic, ch. pure	"	.07¼@.09½
Carbonate	"	.15
Chloride	"	.05
Dust	"	.07¼@.07½
Sulphate	"	.02@.02¼

THE RARE ELEMENTS.

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

	Cust. Meas.	Price.
Barium—Amalgam	grm.	$1.19
Electrol	"	5.71
Beryllium—Powder	"	5.95
Crystals	"	9.04
Nitrate (N Y.)	oz.	1.50
Boron—Amorphous, pure	grm.	.19
Crystals, pure	"	1.43
Nitrate (N. Y.)	lb.	1.50
Cadmium—Sticks	kg.	1.55
Sheets	"	2.83
Granulated	"	2.38
Powder	"	1.90
Calcium—Elect.	grm.	4.28
Cerium—Fused	"	2.02
Nitrate (N. Y.)	oz.	1.25
Chromium—Fused, Elect.	kg.	5.95
Pure powder 95%	"	1.79
Chem. pure cryst	grm.	.20
Cobalt—(98@99%)	kg.	6.66@8.33
Pure	"	30.94
Didymium—Powd.	grm.	3.81
Fused, Elect.	"	5.47
Nitrate (N. Y.)	oz.	2.50
Erbium	grm.	3.09
Nitrate (N. Y.)	oz.	2.50
Germanium—Powder	grm.	33.32
Fused	"	35.70
Glucinum—Powder	"	5.95
Crystals	"	9.04
Nitrate (N. Y.)	oz.	2.75
Indium	grm.	3.57
Iridium—Fused	"	1.07
Powder	"	.95
Lanthanum—Powder	"	4.28
Electrol, in balls	"	9.04
Nitrate (N. Y.)	oz.	2.25
Lithium	grm.	2.38
Nitrate (N. Y.)	oz.	.60
Magnesium—Ingot	kg.	6.19
In wire or ribbon	"	9.99
Powdered	"	5.95@7.14
Sheet	"	9.04
Molybdenum—Fused	grm.	.15
Powder, 95%	kg.	2.62
Niobium	grm.	3.81
Osmium	"	.94
Palladium—Wire	"	.86
Sponge	"	62
Potassium—In balls	kg.	17.85
Rhodium	grm.	2.38
Rubidium—Pure	"	4.76
Ruthenium—Powder	"	2.38
Rutile—Crude	kg.	.43
Selenium—Com'l powder	"	26 28
Sublimed powder	"	35.70
Sticks	"	28.56
Silicium—Com'l	"	28.56
Chem. pure crystals	"	59.50
Amorphous	"	27.36
Sodium (N. Y.)	lb.	.65
Strontium—Electrol	grm.	6.19
Tantalium—Pure	"	3.57
Tellurium—Ch. p. sticks.	kg.	107.00
Chem. pure powder	"	83.30
Thallium	"	26.18
Thorium—Nitrate 49@50% (N. Y.)	lb.	5.00
Titanium	kg.	47.60
Uranium	"	190.40
Nitrate (N. Y.)	oz.	.25
Wolfram—Fused, elect.	kg.	238.00
Powder, 95@98%	"	1.43
Chem. pure powder	"	6.43
Yttrium	grm.	3.33
Nitrate (N. Y.)	oz.	2.75
Zirconium—Com'l	kg.	119.00
Nitrate (N. Y.)	oz.	.75

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. This table is revised up to Jan. 8. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Reviews.