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Since the publication of the article on possible exports of American iron ore to Germany in the Engineering and Mining Journal for September 26th last, we have received a number of inquiries, from both sides of the ocean, with regard to the markets and their requirements in Germany, and also as to prices and possible supplies here. These show a considerable interest in the subject, and indicate the possibility of future action in the matter. Just at present the heavy grain movement and consequent high rates of ocean freight are not favorable to shipments of ores; but these conditions are only temporary, and, as we have before said, the establishment of a trade of sufficient volume to warrant the charter of a steamer or steamers for it would enable shippers to reduce the ocean freight rates to actual cost. We have no doubt that the development of a trade is possible, and are willing to aid it in any way.

The recent discovery of new phosphate deposits in Maury County, Tennessee, which appear, so far as development has gone, to be of excellent quality and of considerable extent, has excited much attention and is a matter of considerable importance. Already arrangements have been made to work these deposits on a large scale and several companies are shipping rock, while the output will be largely increased before the close of the year. Should further work result in confirming the present indications, the production will become important, and will aid in limiting the demand for the Florida phosphates. The Tennessee deposits are not far from transportation facilities and can be put on the market at a reasonable expense. They are in a central position and are well located to supply the demand from the Southwest, which is a large and a growing one. With reasonable costs of mining, it is probable that these phosphates from Tennessee can be delivered at the Atlanta fertilizer factories, for instance, at a lower price than those from the coast. The unfortunate Florida miners are likely to see the domestic demand for their product decreased by new supplies from this source, as the foreign demand has been cut down by the introduction of phosphates from Algeria and Tunis and the use of basic slags by the manufacturers of fertilizers in Europe.

We are in receipt of a letter from a mining friend who has been struggling with rock determinations. He writes: "I am getting so that I can identify rocks 'right smart.' That is, have made several slides. My difficulty is that persons who make rock are not always careful to have them correspond with the descriptions in the books, so that when a petrographer of experience comes along (like Blank) he is apt to give a different name to the thing—or invent a new rock species." Well, there is no use in becoming discouraged. The rock sharps themselves have a hard time of it. You can seldom get one of them to give a definite name offhand to a hand specimen of any of the eruptives. Then, after a slide of it has been ground and examined under the microscope, there is likely to remain some uncertainty. Fortunately, it does not matter much for practical purposes in mining. We do not mean to disparage the value of the scientific investigations of the petrographers—which will, we trust, in time result in generalizations intelligible to the laity—but for the miner the good old term "porphyry" covers a multitude of species, and yet is usually definite enough to make it plain about what is meant. Of course there are some exceptional cases, as in contact veins with two nearly alike eruptive country rocks, but they are not many. Our correspondent, by the way, has hit upon a solution of his difficulty. He continues: "My trick is to (1) identify the component minerals, (2) note which preponderates, (3) regard the structure, (4) a lot of minor considerations—then toss up for a name."

So far this year the fluctuations of the copper market have been within comparatively narrow limits. The lowest prices recorded were in January, when the full force of the reaction from the high figures of 1895 was felt, but in February the price climbed again, the average quotation of Lake copper in New York being 10.64 cents per pound. Since that time the changes have been within 1 cent, and at the present time the quotations are almost the same as in February. This comparative steadiness has been in face of a large increase in production, the returns collected by Mr. John Stanton for the producers showing an increase in the output of the metal in this country of no less than 27,675 tons, or 22.3 per cent., for the nine months of the year now past. The consumption of copper in the United States has shown this year an actual decrease, due to the general depression of business and reluctance to enter into new enterprises. The absorption of the largely increased supply and the consequent maintenance of prices have been entirely due to the demand from Europe, which has this year reached extraordinary dimensions, and has in fact taken an unprecedented quantity of the metal. This, we believe, is partly due to the rapid extension of electrical work; partly to the activity of the government arsenals, and private manufacturers of war material, and partly to the quantity of new ship-building work. The demand has come at a time when it was very serviceable to our copper producers. Should business revive they may

have some temporary difficulty in meeting the demand, if that from Europe should also continue; and there seems no present probability of its cessation.

As a general statement it is probably true that the anthracite coal companies have been for some months past getting better prices for their coal than they did last year or the year before. Nominally the prices of coal for tidewater delivery have been raised \$1 per ton since the companies came to the present understanding—which is not a combination, nor even an agreement; practically the amount of the increase has been variable and rather uncertain. Notwithstanding the supposed cordial and thorough nature of the understanding, there has been fully the usual amount of deliveries under old circular and other devices familiar to the trade. It is entirely safe to say that with the exception of a small quantity of certain kinds for which there is always a special demand and a high price, no coal has been sold yet at the September circular prices, though October is now finished.

It may be said that the anthracite companies have a right to regulate their prices, and should not refuse to acknowledge competition. It is not the price asked or obtained which is objected to, but the pretense that uniform rates are maintained, when in fact they are not. In this case the supposed prices are simply a means of deceiving the public, and an assistance to the middleman in increasing his profits, without in the least benefiting the operator, who has also to incur the public reprobation for maintaining alleged exorbitant prices. If a full statement of the actual rates obtained for coal in September and October could be had, it would show some curious figures.

In this country material progress has been mostly along mechanical lines, though in this last quarter century the achievements of our electricians have been most prominent in the public eye. It would not be surprising, however, notwithstanding the almost boundless possibilities of electricity, if there is not, just at present, and in view of the advanced stage reached in other directions of progress, a more promising field in industrial chemistry than in anything else. The newspapers and the public are always alive to what is going on in the electrical world, and always watching for startling electrical discoveries and inventions, but the chemical work goes quietly on, attracting little attention outside of those in the profession or directly interested.

In this connection it may be well to quote the pregnant comment with which Mr. W. H. Blauvelt introduces his admirable paper on "By-Product Coke Ovens," which appears in Vol. IV. of *The Mineral Industry*. It is as follows: "The American people have attained a pre-eminent place among the nations of the world in the mechanical arts, but have not shown the same ability to lead in the chemical industries. The undeveloped condition and wonderful natural resources of our country are perhaps partly responsible for this, as the needs for mechanical invention and development have been great and the rewards large. But the results obtained in continental Europe and the changing conditions here have at last forced upon our attention possible economics and profits from the solution of chemical problems that can no longer be neglected."

There is food for thought in this. If the same amount of energy had been put into chemical discovery, chemical synthesis and chemical manufactures and utilizations in general as into even a limited branch of mechanical engineering, or into electricity for example, during the last few years, who can say what results might not have been obtained? But a new era is opening with the close of the century.

The Western Coal Trade.

The Western bituminous coal trade continues in an extremely unsatisfactory condition. The acceptance of a reduced mining rate by the Pittsburg miners made a lower scale necessary all through the competing districts of Ohio and Indiana. In Ohio the men voted against accepting a reduction, but this action has not been followed by any general strike, since there seems to be a division of opinion, and in the Hocking Valley, the most important district, they have remained at work, in spite of the lower scale. In Indiana and Illinois there has been no general movement, but the trade is disturbed by several local disputes. The Illinois mines have especially suffered from competition, and very low prices have been accepted for coal for several months past. It looks very much as if there was an effort to promote a general strike and stoppage of work; but the probability is that it will not succeed at the present time. The conditions are not favorable, and any general stoppage of mining north of the Ohio would simply give the West Virginia and Kentucky operators one of the opportunities to extend their trade of which they are always ready to take advantage, a fact which the more cautious of the miners seem to realize.

The higher prices of anthracite this season and the general inclination to curtail expenses have increased the demand for soft coal for household use throughout the West, where anthracite is rather a luxury

than a necessity. This increase in the domestic consumption, however, has been much more than offset by the diminished requirements for manufacturing uses, and sales have not been large as a rule. The markets have been over-stocked and consumers have had the choice and almost their own price. The consequence has been that the inferior coals have either found no market at all, or have been sold at rates which would not pay for mining. The case has been a hard one, for competition is always very sharp, and has been intensified by the reduction in demand.

The Lake trade, which is an important item for the Pittsburg and the Ohio operators has been a disappointment, and some prospect which existed of an improvement toward the close of the season has been cut off again by the sharp rise in Lake freights—an unusual matter at this time of year, but now caused by the demand for grain tonnage. A rise in coal freights by rail from Chicago westward has also hurt the trade through favoring Iowa coal and helping its local sales. Many causes have indeed combined to make the coal operators' life this year a troubled one.

A Question of Gauges.

In a recent article in this *Journal* (September 12th, 1896) attention was called to the perplexities besetting users of wire cloth, owing to the multiplicity of existing standard gauges. The same troubles attend the use of sheet iron and many others of the multifarious forms in which iron and steel find their way to the machine shop, the mill and the factory. To know what the actual thickness and the approximate weight of sheet iron or steel may be, for instance, one must learn first the system of gauges which the makers have used, and then ascertain just what the marks and numbers mean—we say ascertain, for no one can carry them all in his memory.

The discussion of this topic is not by any means a new one. It was first taken up by the American Institute of Mining Engineers 20 years ago, and a committee report on the subject was submitted in 1877. The American Society of Mechanical Engineers has also discussed the subject a number of times and passed various resolutions, but without much real result. The most practical step in the matter was taken by the Railway Master Mechanics' Association, in 1894, when it was resolved definitely to drop all other systems and to adopt what is known as the decimal system, that is, in which all thicknesses and other sizes are expressed in decimals of an inch. Effect was at once given to this by the adoption of a standard form of gauge, a large number being ordered for the association. This action has had a most marked effect in promoting the adoption of this system to the exclusion of all others, because it has resulted in the adoption of the decimal gauge by nearly all the railroads in the country. These large buyers now give their orders for sheet-iron and steel, wire, etc., by the decimal gauge, and manufacturers who have necessarily to conform to it have now an active interest in inducing their other customers to use it also.

Recognizing this, the American Steel Manufacturers' Association—which we may say is a purely technical association—at its last meeting endorsed the decimal system and recommended its general adoption. This gives it the support of all the large steel manufacturers, who will use it themselves wherever possible.

The decimal system, if it comes generally into use, as now seems altogether probable, abandons all the old confusing numbers and measures everything in decimals of an inch. The very convenient form of gauge adopted by the Master Mechanics' Association starts at .002—two-thousandths of an inch—which is the lowest gradation. It is intended for general shop work, and is quite sufficient for ordinary purposes, though for special work, where the greatest accuracy is desirable, the micrometer caliper can be used.

These are details, however, the main point being that a substantial advance has been made toward the abandonment of the old so-called systems, and the general use of one so rational and easy that we wonder that it has taken so long to establish it. The main point to be regretted is that the reform is not accompanied by the introduction of the metric system for these—and for all other—measurements. We believe, however, that this further reform will come in time; and are always ready to assist in hastening that time. We may add that many foreign orders, for South America and elsewhere, are given on the decimal system, the buyers refusing to recognize the so-called gauges.

The great advantage of the decimal system of gauging to the engineer is that he knows just what he is ordering or buying. The rolling-mill man also has his exact sizes, and is not troubled by orders for "No. 1 heavy," or the like. The old system, by the way, was reduced to its most absurd point by an order which we once heard given by the superintendent of a shop for sheets "No. 16, a leetle stout"; and doubtless many could recall cases quite as bad.

Doubtless the superintendent referred to—if he is still alive—and some other conservatives can give reasons for the old systems; but most men who have to use them will pay but little attention to these, and will be quite willing to go by the definite sizes of the decimal gauges.

NEW PUBLICATIONS.

THE MINING MANUAL FOR 1896. By Walter R. Skinner. London, England; published by the author. Price (in New York), \$6 25.

This, the eighth yearly issue of *Skinner's Mining Manual*, is half as large again as any previous volume, a fact which is evidence of the extraordinary boom in mining company promotion in London during the year 1895 and the early part of 1896. This year the manual has been divided into three sections, dealing respectively with Australasian, African and miscellaneous mining, but as the headings of the pages do not indicate the section, the search for a particular mining company is rendered confusing. We are of opinion also that more judgment should be shown in the extraction of statements from prospectuses. Much valuable space is occupied with lengthy extracts of this kind, and as it is notorious that prospectuses are not particularly reliable, the wholesale quotation from them can do very little good. Another suggestion we have to make is that the directory of names at the end should include the secretaries and engineers as well as the directors.

It goes without saying that *Skinner's Mining Manual* is as indispensable as ever to those who desire full information about the constitution of mining companies controlled from London.

PROUDHON AND HIS BANK OF THE PEOPLE. By Charles A. Dana. New York; Benjamin R. Tucker. Pamphlet; pages 68.

This is a very peculiar pamphlet. It is a reproduction of a series of articles written and published as long ago as 1849 by Mr. Charles A. Dana, now the well-known editor of the *New York Sun*. The articles appeared at that time in the *New York Tribune* and in a periodical called *The Spirit of the Age*, which long ago disappeared. Not many people now remember that Mr. Dana at one time was inclined to be a socialist and a transcendentalist, and the publisher's motive in reproducing these early articles is apparently to imply that they must express the writer's real convictions, and that the opinions he now advocates have been simply adopted through interested motives.

We do not attempt to defend Mr. Dana; he is fully able to take care of himself. Nor do we intend at this late day to criticise Proudhon; with all his fallacies and extravagances he was a great thinker and so had glimpses of some great truths which most of his socialist followers have seen fit to ignore or pervert. The point is that every man of intelligence must from time to time see good reason to modify his beliefs and opinions; and to quote against any man of mature years and experience what he said or wrote in his younger days is a most unfair proceeding which can really influence only those people who do no thinking for themselves. The man who can live 47 years in this world—especially one who has lived through such various experiences and taken such an active part as Mr. Dana has—without changing his youthful opinions, is simply an exceedingly stupid person.

THE DISTRIBUTION OF WEALTH. By John R. Commons. New York and London; Macmillan & Co. Pages 258. Price \$1.75.

Professor Commons announces in his preface the praiseworthy intention "to cut a straight line through a tangled jungle," and the timid reader is thus encouraged to hope that he may venture into that jungle without becoming lost. Pretty soon, however, in the chapter on "Value, Price and Cost," he brings up against the following enunciation (in italics) of the law of prices:

"The price of a commodity is determined by the expenses of production of the most expensive part of the customary supply. This supply is determined by the relative power possessed by the different co-operating productive factors of limiting their share of the total product relatively to the wants and resources of society. Cost of production coincides with, and partly determines, expenses in the case of the marginal savings of the marginal monopoly laborers, and all freely competing laborers."

It is to be hoped that the young men of the Indiana University, at which institution the author is professor of economics and social science, may find in this "straight line" promised; but we fear that there may be a few, a very few, who are not so fortunate. Most of us would prefer to walk around that "tangled jungle," rather than attempt to follow the professor's compass and axemen.

It must not be supposed that the quotation given is a fair sample of the whole book. We have found a number of entire sentences and some short paragraphs which we think we understand and doubtless in course of time could discover more. Life is too short for such explorations, however, even if the result promised to pay for the labor.

ALTERNATING CURRENTS AND ALTERNATING-CURRENT MACHINERY. By Dugald C. Jackson and John Price Jackson. New York and London; The Macmillan Company. Pages, 729; illustrated. Price, \$3 50.

This publication forms Volume II. of the author's textbook on *Electro Magnetism and the Construction of Dynamos*. As we have often noted, the rapid advance in the development of electric science and in its applications has made the textbooks of a few years, or even months ago, valueless to-day, and as a result in many colleges and scientific schools not directly in touch with these constant developments, superficial methods have been employed in the courses on electricity and results only presented to the student with little reference to reasons. The work in hand seeks to remedy this and place in the reach of all students a course of study on the subject as complete and thorough as can be obtained in any other branch of engineering. The subject matter consists essentially of a course of lectures which Prof. D. C. Jackson recently delivered at the University of Wisconsin, carefully revised by Prof. J. P. Jackson, of the Pennsylvania State College. One feature of this book, which is usually lacking in college textbooks, much to the disadvantage of the student using them, is its attention to the practical side of what it teaches and explains. This alone would give the book a distinct and almost unique value. The subject of alternating currents stands as that in which the greatest commercial development has recently taken place and the fact that this book contains discussions on these latest developments is another strong point in its favor. The book is carefully indexed and the authors

have so arranged it that, where time will not permit its complete study, certain designated chapters may be omitted without destroying the continuity of the study of the main subject. Illustrations and diagrams are used as necessary, but cuts of commercial apparatus are not allowed to take the place of more important matter.

BOOKS RECEIVED.

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

Tasmania: Report of the Secretary for Mines for 1895-96. Hobart, Tasmania; Government Printer. Pages, 76; illustrated.

A Quarter of a Century of Prices. By Ellsworth Daggett. Salt Lake City, Utah; Printed for the author. Pamphlet, pages 60, with diagrams.

Mount Lyell Mines, Tasmania. Compiled and edited by Macnamara Russell. London, Eng.; Effingham Wilson. Pages, 174; with map, plans, illustrations, etc.

Map of Province of Ontario, Thunder Bay District (Lake Shebandowan Sheet). Compiled and drawn by William McInnes. Ottawa; Canadian Geological Survey.

Fuel and Refractory Materials. By A. Humboldt Saxton. London, Glasgow and Dublin; B'ackie & Son, Limited. Pages, 352; illustrated. Price, in New York, \$1.75.

Special Consular Reports: Money and Prices in Foreign Countries: Volume XIII, Part I. Washington, D. C.; Government Printing Office, 1896. Pages, 274; with diagrams.

Japan: Report of the Director of the Imperial Mint for the year ending the 31st of the 3d month of the 29th year of Meiji (March 31st, 1896). Tokyo, Japan; Printed by the Inse:tsu Kyoku. Pages, 36.

Transactions of the Mining Association and Institute of Cornwall; Vol. IV., Part 2. Edited by the Secretary, William Thomas. Pages 322. Price, in New York, 90 cents.

Treasury Department; Circular No. 123—Information Respecting United States Bonds, Paper Currency, Coin, Production of Precious Metals, Etc., July, 1896. Washington, D. C., Government Printing Office. Pamphlet, pages 58.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested. Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

The Minas Prietas Sale.

Sir: With regard to the letter published in your *Journal* for September 5th on the Minas Prietas, the writer, Mr. Joseph de Lusignan, is in error. The heirs of Chamberlain & Price are perhaps indebted to the party mentioned, but that party has no legal hold on the property, the titles being perfectly clear. The question, if any, is simply a matter of indebtedness between the heirs and Mrs. Johnson.

HERMOSILLO, SONORA, Mex., Oct. 19, 1896. MILES, KOENIG & SHARPE.

The Iowa and Silver Lake Mines, Colorado.

Sir: Referring to the statement of Manager Robin, of the Iowa Gold Mining and Milling Company, of Silverton, Colo. (quoted in your review of the company's report on page 341 of your *Journal* for October 10th), to the effect that it is the experience of the Silver Lake mine, on the Iowa vein, that the ore bodies on same increase in width with depth, permit me to emphatically deny this, since the contrary is the case; not only is this our experience as to width of vein, but as to values as well, as far as we have gone. Moreover, a dozen examples of similar results could be cited amongst our extensively developed mines in the San Juan region, proving a decrease in intrinsic values with depth gained.

SILVERTON, COLO., Oct. 18, 1896.

EDWARD G. STOIBER.

Pilgrims' Rest, Lydenburg, Transvaal.

Sir: Few things in the history of gold mining in the Transvaal are worthier of notice than the way in which this district has advanced in public favor. Once the seat and center of all there was worthy of notice in the way of gold mining in the Transvaal and the very mother of the great gold industry of the country, but failing for a time to realize the hopes aroused by the startling finds during the early digger days, Pilgrim's Rest lost hold of the popular imagination, and by degrees came to be regarded as played out.

The early joint stock operations which followed in the wake of the digger—foredoomed to failure through ignorance and recklessness—only served to deepen the gloom which long hung over the fortunes of the Old Camp. So stubborn was the feeling of local discouragement and public apathy that for years after the splendid reef discoveries at this place and the superior milling value of those deposits, now the basis of the mining of the Lydenburg Gold Mining Estate Company, there still remained a want of confidence. It was the habit to regard the gold as confined to certain patches of formation about Pilgrim's, or, at any rate, as not extending beyond a radius of a mile or two from that place. Recent discoveries have changed all this. The radius of the recognized gold-producing area has extended and is extending further and further and Pilgrim's is the object of flattering attentions.

Noticeable among the recent finds along the outcropping range southward are those of Glynn's Lydenburg mine, where a fine reef has lately been made the object of a well-directed exploration. This mine is about 15 miles from the old center at Pilgrim's. Some miles still further in the same direction is Elandsdrift, where rich strikes have also been made, and are now followed by mine works on a generous scale.

Among the discoveries in the opposite direction those most worthy of notice are Frankfort and Black Hills. These mines, together with the re-

ported finds still further in the same direction, carry the line northward some 30 miles from Pilgrim's Rest.

The Black Hills mine, the latest exploitation, occupying nearly $3\frac{1}{2}$ miles of the range on the strike and with corresponding command on the dip, is the property of the Central Lydenburg Gold Fields Company, which also owns the ground, covering a mile of the range known as the Peach Tree claims; these form the first dip on the Pilgrim's mine reefs. Prospecting at Black Hills has revealed two good reefs in the dolomites, openings on which give promise of an early supply of ore for milling. These reefs correspond with the Theta of Frankfort and the so-called Portuguese Reef, on the adjoining farm of Ledovine, of which they are extensions. The Black Hills ground is also traversed from end to end by the outcrop of this contact reef worked at the Cloer, the Jubilee, and the Pilgrim's mines proper. Explorations at this level show identity of section with that of the Pilgrim's mines and the developments are pursued here with the expectation of encountering an ore channel.

The foregoing refers to outcrop reefs. Considerable attention is being given to deeper lying deposits on which discoveries have recently been made in the district.

The suspension of milling and of cyaniding, though not of mining, by the Lydenburg Company, would seem to deal a severe blow to the prospects of the district. It is, however, only temporary. It is only *reculer pour mieux sauter*, and is expected to result in enhancing the speculative value of property in the vicinity. Even the rinderpest, which now paralyzes the transport service, will prove a blessing in disguise if, as may be confidently expected, it should eventuate in bringing the authorities to see the necessity of extending the railway to this gold-field. The 60 to 70 miles separating Pilgrim's from the railway at Nelspruit presents no special difficulty to the engineer.

LYDENBURG, Transvaal, Aug. 20, 1896.

ESUTOR.

Dr. Emmens' Transmutation of Silver into Gold.

Sir: If the letter from Prof. E. M. Endlich, which appears in your issue of October 3d, is to be taken seriously (which I think many of your readers will doubt), I suppose it may be deemed advisable that I should make some reply to the statements it contains. I propose, therefore, with your permission, to show that in this case Homer has nodded, and that your correspondent, in spite of his well-known ability, has involved himself in the meshes of misunderstanding.

1. Professor Endlich says: "It is clear, therefore, that Dr. Emmens claims to dissociate the molecular constitution of silver solely by physical power." The context shows that the phrase "physical power" is here used as not including chemical agency; and, as a little later on, "chemical agents" are spoken of as being entities "among which electricity must be counted in part." My critic's statement amounts to a positive assertion that I disclaim the use of electricity and all other forms of chemical agency. Yet the very article from which he professes to quote says: "What we use is mainly energy in some of its various forms, such as heat, electricity, magnetism, gravity, cohesion, chemical affinity, X-rays and the like."

2. My critic says, "Having obtained this raw material he claims that it can be aggregated into molecules having a density superior to that of silver, and he thinks it may equal that of gold. He carefully abstains, however, from furnishing specific data upon these points, although their determination should present no difficulties after having obtained 4 oz. of gold by its transmutation. A flat statement of the exact density of this latter would be more valuable than all the other tests put together." Here there is evident a confusion of thought which none would expect to find in the utterances of a first-rate chemist. No distinction is made between molecular density and the density of aggregations of molecules. Yet, in the statement criticised by Professor Endlich, this distinction is plainly apparent. My words were as follows: "Working upon the necessarily microscopical scale of our experimental researches, we found that the substance called by us argentaurum can be aggregated into molecules having a density considerably superior to that of silver molecules [not 'of silver,' as incorrectly quoted by Professor Endlich] and, we think, identical with that of ordinary gold molecules. . . . This metal made from pure silver . . . has every quality required by the gold of commerce, having the same color, weight and strength." Here is a flat enough statement as to the density of the manufactured gold, even though no exact figures are given. First rate chemists are aware that the density of pure gold in bulk varies through a considerable range of figures. When, therefore, my critic asks for "a flat statement of the exact density" and says that this "would be more valuable than all the other tests [my words were "every test to which the United States Government Assay Office subjects the gold offered there for sale"] put together," he must surely be nodding.

3. My critic says, "During the process of conversion about 25% of the silver is lost . . . the loss of 25% of the actual silver under treatment is more mysterious. Is this loss mechanical? Is it due to inherent qualities of the metal? Or is a sort of seigniorage offered as a tribute to its more precious cousin? If chemical agents were used it might well be that some compound were formed which refused to take kindly to transmutation, but as their use is explicitly denied, and as no mechanical loss is indicated, this apparent annihilation of matter is a puzzling feature." Here, again, are some misrepresentations. I have nowhere explicitly denied the use of chemical agents. In the article referred to by Professor Endlich I said, "We do not consume any chemicals and other costly materials in our process." Has my critic never heard of catalysis, or of any technical process in which chemicals are used without being consumed? The article also said, "We also estimate that the waste of argentaurum will not exceed the equivalent of 25% of the silver treated." Has my critic never heard of "waste products" in chemical processes? Does he really consider them to be an "apparent annihilation of matter"?

4. Prof. Endlich says, referring to my letter in your issue of September 12th, "Perhaps when he is in a position to utilize his invention, the 'force engine' wherewith he can produce 'a pressure of over 500 tons per square inch,' he may vouchsafe some additional explanations. However, as he most naively states that while he has invented this engine, yet he remains 'fully conscious of the fact that there is no material at present known to man capable of forming an apparatus able to resist such a strain'; therefore, after all, if the transmutation-factory should be com-

pelled to await the successful operation of this machine, we may have reason to hope that the commercial relations of the world will be allowed to remain undisturbed for a while longer." Here Professor Endlich seems to admit that he requires something more than the broadest of hints. When, in writing to your *Journal*, I mentioned an engine for producing a pressure of 500 tons per square inch, it was obvious to me that the first impulse of any reader would be to consider the construction of such an apparatus impossible, owing to the lack of any sufficiently strong material. Hence I took the precaution of indicating that this was a difficulty which had been duly considered and had not been found to be insuperable. In other words, I deliberately called attention to the paradox involved in the construction of a 500-ton-per-square-inch apparatus from, say, 150-ton-per-square-inch material. And yet Professor Endlich charges me with admitting myself to be cornered. Does he know that by means of a burning glass it is possible to produce at its focus a degree of heat which if localized in the glass itself would destroy the apparatus?

5. My critic says: "However, he makes apparent delicate distinction between 'scientists of the first-class,' 'second-rate scientists,' 'second-raters' and 'scientific minds.' To one or the other classes his statements may appeal, but it would be truly refreshing to know among which category he classes those who may have the temerity not to find his elucidations entirely acceptable." In reply to this request for information, I have to say that I do not think any first-rate man of science or business would expect me to give him an "entirely acceptable elucidation" of a financially valuable discovery which could not be efficiently protected by patents.

I think I have now dealt sufficiently with Professor Endlich's letter. Your readers will judge for themselves as to whether I have or have not answered it.

NEW YORK, Oct. 5, 1896.

STEPHEN H. EMMENS.

New Russian Iron Works.—Late advices report that M. Bayard, a French mining engineer, who lately discovered large deposits of iron ore in the vicinity of Kertch in the Crimea, has just contracted with the municipality of that town for 19,600 dessiatines of land on a lease of 30 years. Independent of this the municipality has made M. Bayard a free grant of 300 dessiatines of land, for the purpose of establishing large iron and engineering works. A newly-formed French syndicate is said to have under contemplation the establishment of a large concern in Russia for the construction of railway rolling stock. Plant for the new locomotive works at Nijni Novgorod are already beginning to arrive from America. A shipment of 200 tons of machinery, consisting of two steam hammers, a hydraulic crane and a hydraulic flanging press, have come to hand from the works of the Morgan Engineering Company, of Alliance, Ohio.

Distribution of Deformations in Metals Subjected to Strain.—In 1894 Commander Hartmann made a communication to the Paris Academy of Science, in which he set forth the results of experiments that led him to a series of conclusions as to the distribution of deformations in metals subjected to various strains. Among other results, he states that the metals behave like homogeneous bodies, and that the constituents indicated by microscopical examinations do not intervene in the distribution of the deformation. While endeavoring to repeat these experiments, M. George Charpy noticed facts which appeared to show that this conclusion must not be taken too generally. He subjected to tension and compression tests mild steel, gun metal, annealed brass, aluminum bronze, etc., in which a heterogeneous texture was revealed by microscopic examination after attack by acid. With these metals, and more especially with the steel, it was possible to reproduce the phenomena mentioned by Commander Hartmann by deforming the metal previously covered with a scale of oxide by annealing at a blue temperature, but not under other circumstances. The test pieces were carefully polished by hand, so as to avoid any surface hammer-hardening; and their surfaces, when subjected to a slight permanent deformation, showed no change to the naked eye, although the modifications exist, and may be observed by the microscope under certain conditions. M. Charpy's experiments appear to him to warrant the following conclusions: (1) The deformations that may be observed on the surface of a test piece subjected to permanent deformation are localized according to the nature and the distribution of the constituents, as revealed by micrographical examination. (2) Chemical attack of the metals acts, both before and after the deformation, by bringing prominently forward the constituents which are unequally attackable and are also unequally deformable.

Minerals in Roumania.—A British consular report says that three are other minerals existing in Roumania besides petroleum and salt. Coals are found at Zanoga, Strunga, Piscu-Cu Brazu, in the district of Dâmbovitza, and at Muntele Stefan, in the district of Vâlcea. An anthracite mine at Schela, in the district of Gorj, is worked by an English company, Slade, Stanley & Company, and is said to be capable of producing sufficient anthracite coal to supply all the requirements of Roumania for the future. Its seams are very deep, varying from 2 to 5 m. in thickness; the galleries of the mine extend to over 600 m. in length, but a branch line of some 16 miles in length is required to enable the coal to be transported to the nearest railway station of Tirgu-Jiu, the cost of transport being a serious question.

Copper and other metals are said to exist in the Dobrudja, in the district of Mehedinti at Baia d'Arama and at Valea Negulet, in the district of Muscel, also sulphur in the districts of Vâlcea and Gorj. Lead and silver are found at Râmnicule, between Buzeu and Rimnic-Sarat, and iron at Nedeiul, in the district of Vâlcea. Gypsies are also in the habit of washing for gold in the rivers of Buzeu and Oltu. There are also stone quarries, the principal being in the district of Prahova, in the neighborhood of Sinaia, but it is stated that more than 6,250,000 fr. (\$1,250,000) are expended annually by Roumania for building and paving stones, common marbles, etc.

The clay for the making of porcelain, pottery, bricks, etc., is said to cost the country annually 18,000,000 fr., and Roumania is dependent on other countries for nearly 14,000,000 fr. for matters which are in many cases existent in its mines, if the requisite labor and capital were expended in searching for them. In 1894, 200,000 fr. were granted for mining industries, but hardly 40,000 fr. were expended. It has been suggested that mining schools be established.

THE APPLICATION OF SHEET ZINC FOR ROOFING AND OTHER PURPOSES.

Written for the Engineering and Mining Journal by W. H. Seamon.

(Continued from Page 390.)

3. *Corrugated Sheets.*—The advantages of the corrugations lie in their ability to take up the lateral expansion and contraction in the sheets. No battens are employed, and the sheets may, or may not, be laid on sheathing, and on roofs framed of timber or iron. When used on sheathing, number 13 zinc is sufficiently heavy; but when no sheathing is employed a heavier gauge up to 18 should be used (Fig. 8). Another style of corru-

4. *Tiles.*—These are laid on sheathing and are well adapted for roofs on all slopes above 10°. The sizes as well as the shapes of the tiles are varied, and frequently are stamped with figures intended for ornamentation (Figs. 12, 13 and 14) and are very easily laid, and give, perhaps, the best results obtainable by the employment of zinc.

The first care of the zinc worker is to observe the carpenter work and have any defects corrected which would interfere with the proper laying of the roof. The sheathing, when employed, should fit snugly along the lines of union, and the upper surface should be made smooth. Particular care should be taken to remove all projecting sharp edges which might cut through the zinc. All nail-heads must be countersunk. If no

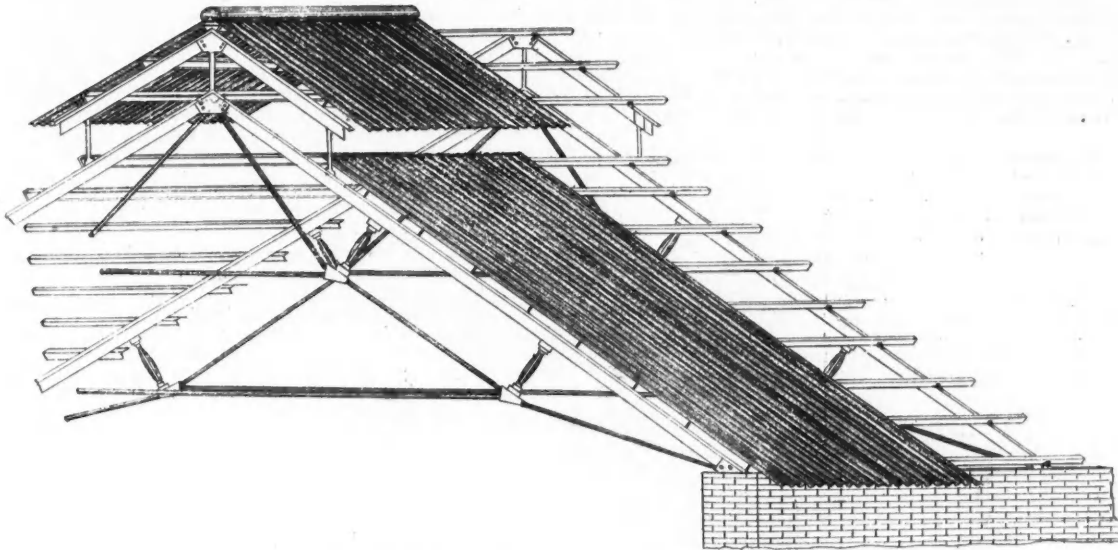


FIG. 8.—APPLICATIONS OF SHEET ZINC FOR ROOFING.

gation, called the patent corrugated (Fig. 9), is claimed to possess all the advantages of the corrugations and the same weight of zinc will cover a larger area, the width being 3 in. greater. When ordinary corrugated is laid on iron framing, 6 or 12 clips, No. 26, are employed; if laid on wood framing 6 to 12 of No. 27, and as many of No. 29, are used. The clips are attached to the sheets by soldering, but for

sheathing is employed and the sheets are laid on strips, these should be placed at regular intervals, parallel to the ridge pole. Defects in the carpenter's work having been corrected, the next step is the laying of the gutters and the valleys.

Formation of Gutters.—The roof projections and the arrangements for the cornice control the construction of the gutters.

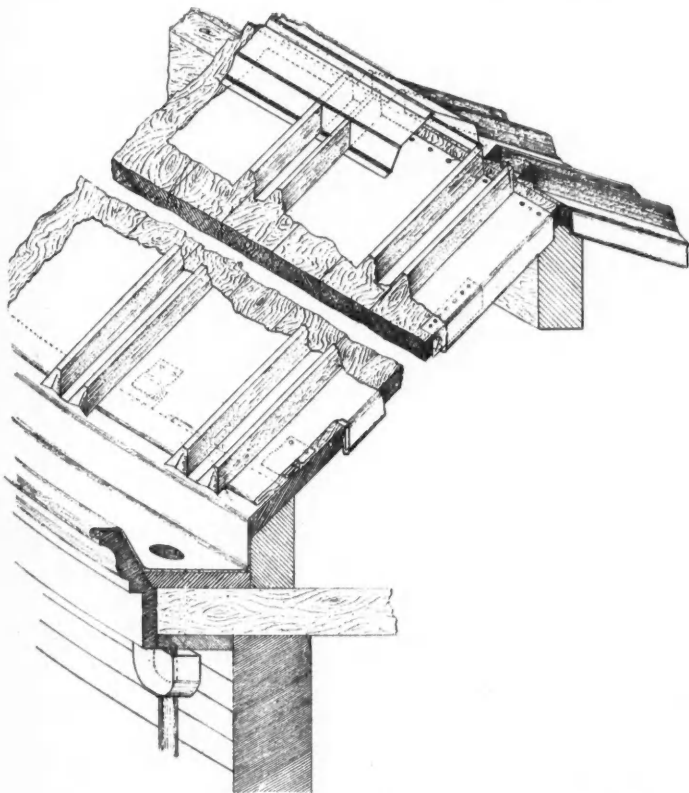


FIG. 11.

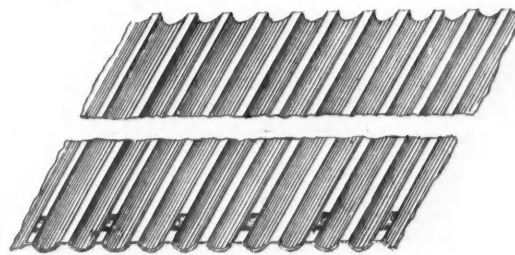


FIG. 9.

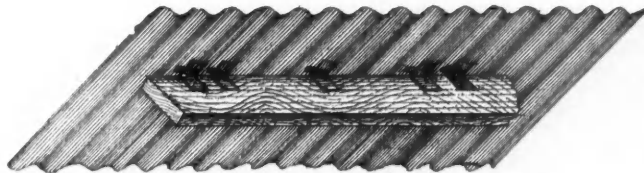


FIG. 10.

APPLICATIONS OF SHEET ZINC FOR ROOFING.

the "patent corrugated," 8 iron clips, No. 41, are used for wood framing, and an equal number of No. 39 for iron framing (Fig. 10). When these are laid on sheathing, which seldom occurs, clips made of zinc similar to those employed upon the flat sheets are used. The patent double-ribbed system is only another form of corrugation much used for dwellings, on which it may be applied with or without sheathing. It is held in position with nails and clips, as illustrated in Fig. 11.

Eaves Projecting Over the Cornice.—This is the simplest mode of construction. The gutter is formed, in the shop, of proper shape and dimensions in sections, each about 7 ft. in length, attached to each other by double laps and carefully soldered. Shoulders at least 2 in. long are provided at the openings for the downfalls. The gutter is supported on brackets, attached to the walls at intervals of 6 ft., and straps should pass over it at each bracket to hold it in position. The gutter should not be firmly attached to more than one bracket, usually the central one, in

order to allow it to expand and contract. The downfalls may be connected with the shoulders by angle joints, which are not soldered at either connection, or the shoulders may extend vertically into an enlargement of the upper part of the downfall, as shown in Fig. 11. If the first method is followed the gutter can freely expand and contract without endangering any of the fastenings of the downfalls.

Downfalls are made in lengths of 6 ft.; their vertical edges only are soldered. Strips of zinc are soldered to the upper ends of each section, and these nailed to the wall. No 18 zinc should always be used for downfalls and gutters, since they are subject to greater corrosion and have no additional supports.

Trough of a Wooden Cornice Forming the Gutter.—Fig. 16 shows the arrangement when the roof slopes into the trough, forming its inner wall. The gutter sheet must extend up the slope so that the lapped edge A will be at least 1 in. higher than the upper edge of the cornice mold, to prevent the water, when the gutter is full, from getting between the sheathing and the zinc. The lap should amount to at least 1 in. The clips B are 4 in. wide and 4 in. long, and are disposed at intervals of about 20 in. between centers. This plan must always be followed when the roof is to be covered with tiles. The outer edge of the gutter may be held down after several methods. In all instances, strips of heavy zinc, No. 18, are attached to the upper edge of the cornice mold, by nails of zinc or iron; these strips are 10 in. long, and should be placed at intervals of 20 in. between centers. Their width varies with the plan of attachment of the gutter-sheet. Fig. 17 shows a common method, in which the strips extend over the edge of the cornice for about $\frac{1}{2}$ in., then downward for nearly the same distance, and are finally attached to the outer face of the cornice mold by nails. The outer edge of the gutter-sheet is rolled over the strips in such a way as to allow a play, for expansion and contraction, of about $\frac{1}{8}$ in.

Fig. 18 shows the disposition when the upper edge of the eave is below the upper edge of the cornice mold, the roof slope not forming part of

Figs. 24 and 25. A space of about 4 in. is left between the gutter-sheets strips, A and B, are soldered to the upper and lower sides of the adjacent ends, so as to form a groove, into which is inserted a sheet of caoutchouc, C, which is riveted in place, and which expands and contracts inversely with the gutter-sheets. To protect the caoutchouc from the heat of the sun a cover sheet, D, is provided, which is a strip of zinc, D, placed over the joint and held in place by clips, E, which are soldered to the ends of the gutter-sheets. This cover strip may be easily removed, allowing examination of the caoutchouc and its replacement when worn out. This plan is not equal to the former and is also more costly.

In all cases the sheets are soldered at the shop and carried to the building in suitable lengths for handling. It is important that the shoulder leading to the downfall should not tightly fit in the opening in the cornice, but should allow room for the expansion of the gutter.

Whenever possible the eaves should be above the upper edge of the cornice, projecting for 1 in. over the inner wall of the cornice. If this be done the roof-sheets may be easily and firmly attached.

Construction of Valleys.—In the formation of valleys, the width of the sheet required will depend upon the amount of roof area drained by the valley. Several sheets may be soldered together, always with lap joints, so as to make sections from 12 to 15 ft. in length. If the slope of the valley be greater than 6 in. to the foot, the several sections may be united by single joints, as in Fig. 27. If the slope be less than 6 in. to the foot, the sections must be united by double lap joints, as shown in Fig. 28. The upper end of the valley sheet may be nailed to the sheathing, to hold it in place, while the lower end should likewise be as firmly attached as the construction will admit. The sides of the valley sheets are held in position by clips, placed at intervals of 20 in. between centers. The roof-sheets may be attached by a single lap joint, as shown in Fig. 27; or by a double lap joint, as shown in Fig. 29. A common method of forming the double lap joints is shown in Fig. 29, and another method is illustrated by Fig. 26; in the latter no solder is required. The reason for using

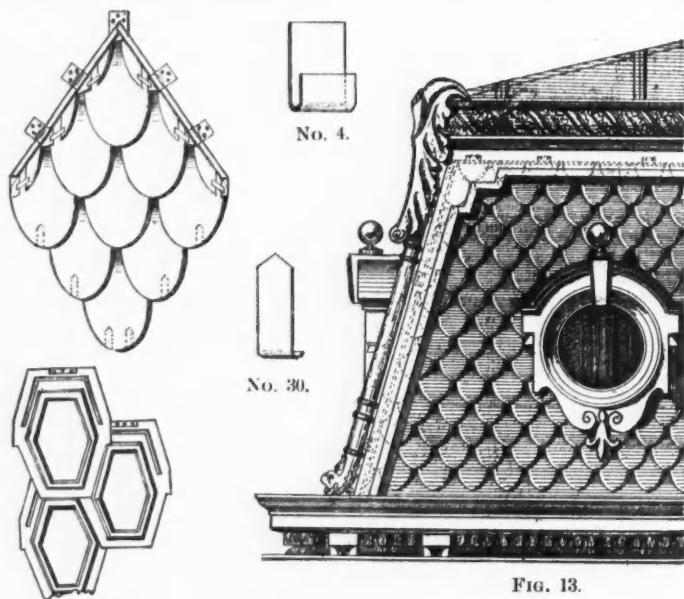


FIG. 14.

FIG. 13.

APPLICATIONS OF SHEET ZINC FOR ROOFING.

the trough. The gutter-sheet must extend up the roof-slope until the lapped edge, A, is above the outer upper edge of the cornice mold. The figure also shows another plan for holding down the outer edge of the gutter-sheet, in which the clips C, extend for 1 in. beyond the edge of the cornice mold, over which the gutter-sheet is rolled. This plan is common, but it is not so good as the former.

Figs. 19 and 23 show the arrangements when the eave is above the upper edge of the cornice. The inner edge of the gutter-sheet is bent over, forming a projection of about $\frac{1}{4}$ in., sloping downward, over which the roof-sheets are bent. The inner edge is held to the roof by clips, C. This arrangement allows wind to get beneath the roof-sheets and blow them loose. When the sheathing extends about 1 in. beyond the inner vertical wall of the gutter a firm attachment may be secured. The roof-sheets are bent over the sheathing so as to engage with the gutter-sheet, and the lower face of the sheathing; a few nails may then be driven on the lower face of the sheathing to hold the sheets in place.

Figs. 20 and 21 show another and more secure form of holding down the outer edges of the gutter-sheets. The clips, C, are bent down at right angles, leaving space for the gutter-sheet to pass between them and the cornice mold. A small play is left for expansion and contraction.

Fig. 22 shows the disposition when no sheathing is employed. The gutter-sheets are connected with each other by lap joints, well soldered. The ends are closed by a piece of zinc. The gutters should not be firmly fastened to the cornice trough, thus allowing some play for expansion. If there are reasons for fastening the gutter to the trough, expansion joints must be employed. Fig. 23 shows the arrangement when there is no objection to placing downfalls wherever they may be required; this divides the gutter into sections with one downfall for each section. A space of about 3 in. is left between the ends of the two gutter-sheets. To the end of each sheet, vertical strips, C, are soldered, or the ends of the gutter-sheets may be bent upward, but this is not recommended. The vertical sections rise to a point a trifle higher than the outer edge of the cornice, when their upper edges are bent over, as shown in the figure, and over these a clip B, is fitted.

It is frequently impossible to have so many downfalls as this method requires; it then becomes necessary to employ the method shown in

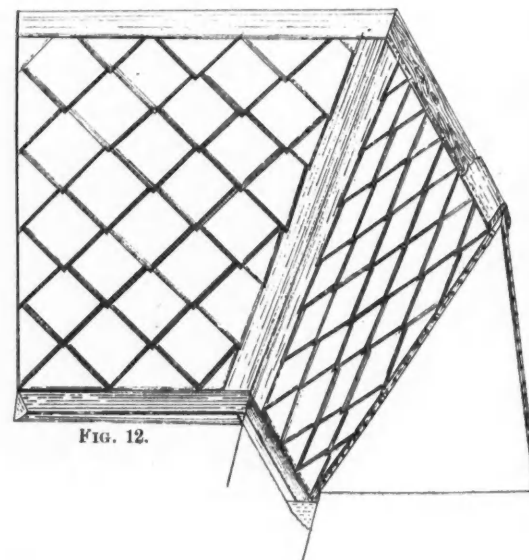


FIG. 12.

double joints in valleys and on roof slopes is that no water can then infiltrate by capillary attraction.

When no sheathing is employed in the formation of the roof care is taken to break joints only at the rafters. When iron trusses are used a sheet of iron is laid in the valley and rivetted to the iron work; over this is laid the zinc for the valley, its lateral edges being folded over the edges of the iron sheet.

(To be continued.)

By-Product Coke Ovens in Belgium.—The Société des Charbonnages de Bois de Luc et de Havré has just completed and put in operation a new battery of 30 Semet-Solvay coke ovens with by-product recovery plant.

Estimation of Sulphides and Cyanates in Commercial Cyanide.—At a recent meeting of the Chemical and Metallurgical Society of South Africa, Mr. W. R. Feldtmann read some notes by himself and Mr. A. Bettel on this point. They said at the outset that with the rapid increase in the demand in connection with gold extraction for cyanogen compounds, chiefly potassic cyanide of greater or less purity, and the keen competition existing among the vendors of commercial cyanide a desire had sprung up among the consumers to know whether they were obtaining the best article for their money. Where a few years ago a determination of cyanogen contents, expressed in terms of potassic cyanide, was considered a sufficient criterion of the value of commercial cyanide, both buyers and dealers wish nowadays to obtain a little more information about the article they are using or dealing in, and it frequently falls to the analyst to be called upon to make a complete analysis of commercial cyanide. The methods to be adopted for such complete analysis would be reserved for a future paper. The article dealt with what are ordinarily two of the most troublesome estimations in the analysis of cyanide, but which had been simplified considerably to the estimation of sulphide in cyanide. In these notes a rapid and accurate method for the estimation of sulphides was described.

HANDLING IRON ORE AT THE SPANISH MINES.

The extension of the iron ore mines in the Bilbao district in Spain, to the north and west of the older workings, has in several instances rendered it necessary to adopt special means for shipping the produce, according to the *London Engineer*; as the mines are out of reach of the railways and piers on the Nervion river, provision has to be made for rapid loading at piers on the open sea without shelter in anything like heavy weather. One of the earliest of these piers is that at Salta Cabello, in the province of Santander, belonging to the Setares Mining Company, whose mines are situated in the high ground west of Sommorostro, at a distance of 2.1 miles from the coast, and 853 ft. above the sea level.

The ore is rather siliceous, and makes a considerable proportion of small stuff which is concentrated by washing, a daily average of 297 tons of clean ore being obtained from the the treatment of 600 tons of clay,

tubs containing 33 cwt., which are lowered singly to the depot in connection with the land end of the pier, 182 ft. below.

The pier is an unequal armed steel cantilever truss, with diagonal and transverse bracings 203 ft. long over all, and overhanging the masonry abutment 95 ft. at the sea end, which is 36 ft. above high-water level. The platform, 164 ft. wide, is laid with three lines of rail of 2-ft. gauge, converging into two at the end over the spout. The loaded tubs received from the drop, and others filled from the five loading hutches of the depot, run on these lines and are emptied into the hold of the steamer moored off the pierhead. By these arrangements as much as 2,158 tons have been loaded in 7 hours, and 3,000 tons can be handled in 12 hours. During the year 1895, 250,463 tons were shipped at this pier, and the total since January, 1888, when operations commenced, has been 1,412,786 tons. The works were carried out under the direction of Don Juan M. Alende, of Bilbao; the superstructure of the pier, weighing 174 tons, having been designed and constructed by Auguste Lecocq, of Hal, Belgium.

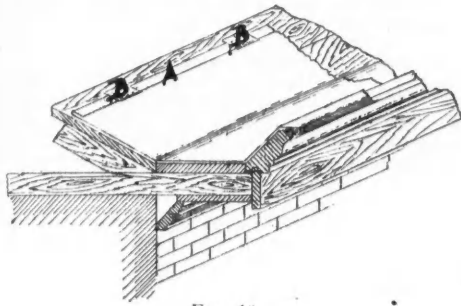


FIG. 16.

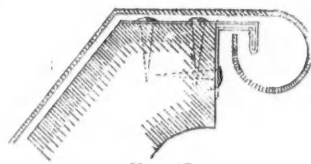


FIG. 17.

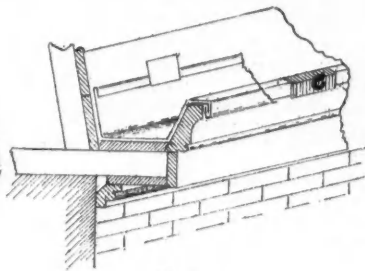


FIG. 20.

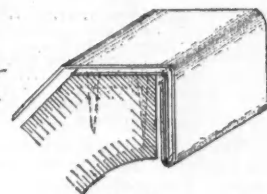


FIG. 21.

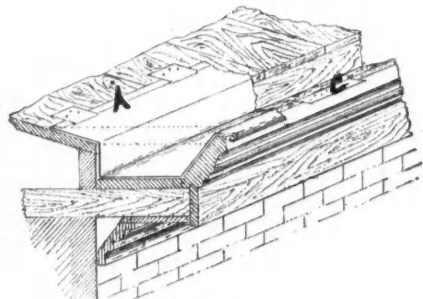


FIG. 18.

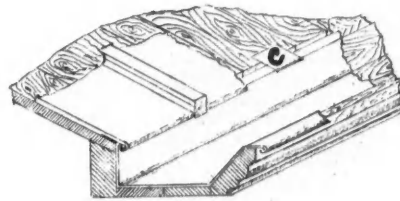


FIG. 19.

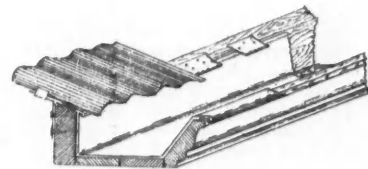


FIG. 22.

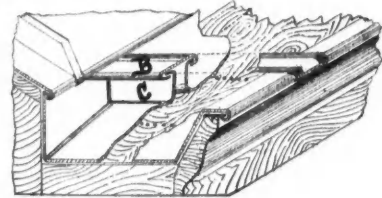


FIG. 23.

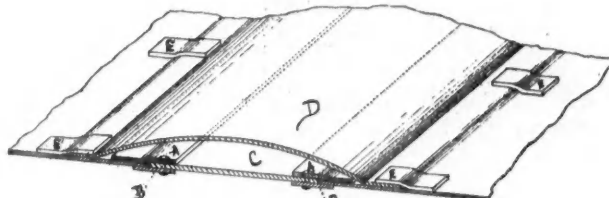


FIG. 24.



FIG. 27.



FIG. 28.

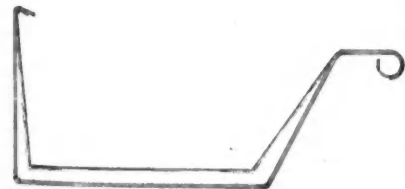


FIG. 25.

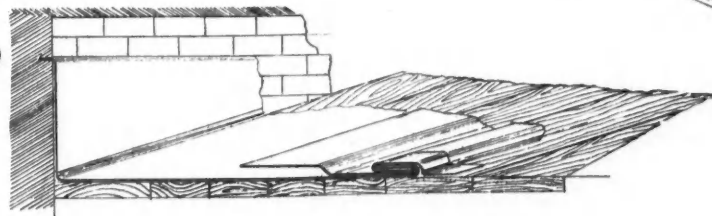


FIG. 26.

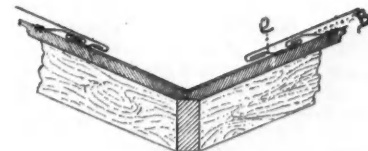


FIG. 29.

APPLICATIONS OF SHEET ZINC FOR ROOFING.

apart from about 120 tons of fine stuff, which is at present lost in the discharge water from the washers. The dressing-floors at Onton are 225 ft. below the mine, and are connected with it by a self-acting incline 1,803 ft. long, on a gradient of 1 in 2.2. Five tubs containing 11 1/4 tons of wash-dirt are sent down at a time; the return trains consist alternately of empty tubs and 10-ton loads of washed ore. The descent to the sea being over very rough ground, is effected in three stages, comprising a railway and inclined plane to the brow of the cliff, and a cage drop down the face of the latter to the depot at the inner end of the pier. The railway and incline, both of 30-in. gauge, are laid with steel rails weighing 30 lbs. to the yard, the former being 1 1/2 miles long, with a gradient of 1 in 100—82 ft. fall—and the latter 2,199 ft. at 1 in 5, giving a total fall of 407 ft. Locomotive haulage is used on the upper railway; the ore wagons containing 2 1/2 tons each are drawn in trains of 44 to the head of the incline, where they are passed down in sets of four and discharged into the cage

Piers generally similar in form and size to that of Setares have since been erected at Castro Urdiales and Castro Alen. At Dicio a much larger one, weighing 300 tons, and projecting 148 ft. seaward, replacing an iron screw pile pier which was destroyed by the gale of December 30th, 1894, was completed and began work in March last. This has two platforms, and it ships ore at the rate of 200 tons per hour; the supply being brought down from the mines in 10 cwt. tubs by an endless chain road, 9,840 ft. long, with a total fall of 1,148 ft. The largest example is, however, that at Onton, which is now being built. The truss—weighing 400 tons, 323 ft. long and projecting 213 ft. from the abutment—is being constructed and erected by the Sociedad Vasco-Belga, of Miravelles, Bilbao, which also built the pier at Castro Urdiales.

The construction of storage piers like those used at the ore-shipping ports on Lake Superior, was impossible at these Spanish mines, owing to the absence of harbors.

WORK IN THE TRANSVAAL GOLD MINES.

The report on the mines of the South African Republic for the second (April-June) quarter of the year, issued by the State Mining Engineer, has been published. From it the following particulars as to the work in the various districts are drawn. The total number of men employed on the mines and alluvial diggings, is:

	White.	Colored.	Total.
Witwatersrand.....	7,941	55,875	63,816
Heidelberg.....	378	2,569	2,946
Klerksdorp.....	412	2,935	3,347
De Kaap.....	301	2,774	3,075
Zoutpansberg.....	18	184	202
Pilgrim's Rest.....	160	1,911	2,071
Various.....	10	77	87
Totals.....	9,220	66,324	75,544

These figures show that 85% of the men are employed on the Rand, and that, on the average, there are about seven colored "boys" employed for one white man. As regards the Witwatersrand, the following are the main figures of interest, compared with the returns for the whole country:

	Rand.	Whole country.
Meters driven.....	31,097	43,745
" sunk.....	11,357	14,833
Tons mined.....	1,096,530	1,190,692
" crushed.....	1,095,478	1,088,766
" dry-crush'd.....	5,488	18,120
Duty of stamps per day, tons.....	4,353	4,196
Tailings, tonnage.....	729,244	773,732
Assay value, oz.....	0.238	0.252
Concentrates treated, tons.....	7,824	7,824
Assay value, oz.....	3.112	3.112

The gold production is classed under the two heads of reef and alluvial; of the latter, for the Witwatersrand district, there is, of course, no return. The gold production of the Rand and of the whole country is classified as follows:

	Rand.	Whole country.
Dry process: Output, oz. bullion.....	2,338	7,651
" per ton, oz.....	0.43	0.42
Amalgamation: Output, oz.....	372,409	413,023
" per ton, oz.....	0.37	0.39
Tailings: Output, oz.....	154,116	173,504
" per ton, oz.....	0.21	0.23
Concentrates: Output, oz.....	25,276	25,511
" per ton, oz.....	3.23	3.26

The total gold reported is 554,159 crude ounces for the Witwatersrand; 622,090 crude ounces for the whole of the Transvaal. The total amount of alluvial gold included in the above total was 43 oz. for De Kaap and 358 oz. for Pilgrim's Rest. The return for the treatment of concentrates concerns the Rand only; the returns being classed for cyanide and for chlorination. The two processes give the following figures for the district: By cyanide 4,433 tons were treated, the output being 8,697 oz., or 1.96 oz. per ton; by chlorination, 3,391 tons yielded 14,725 oz., or 4.34 oz. per ton. From the outside districts the only return of concentrates is 188 tons, assaying 9 oz. per ton, from the De Kaap District.

The returns for the Siemens-Halske process, for the treatment of tailings, are also confined to the Rand district. The figures which concern this process are given as follows: Tons treated, 75,451; assay, 0.22 oz.; output, 11,648 oz., or 0.15 oz. per ton. In this division there are also, under the sub-heading of slag, concentrates, etc., two items of output, of 1,854 oz. for the Rand, and of 235 oz. for Klerksdorp, while it is also mentioned that 324 oz. were won from concentrates sent to England for treatment.

ABSTRACTS OF OFFICIAL REPORTS.

Montana Mining Company, Limited, Montana.

The latest report of this company covers the half-year ending June 30th, 1896. The capital stock remains unchanged, the face value being \$660,000, on which the amount paid up is \$624,272.

The income account, as stated from the London office in the report is as follows: Underestimate on produce of previous half-year, £302; sales of produce as shown below, £67,579; rents, etc., £295; total, £68,476. The charges were for mine expenses, £54,663; permanent improvements, £266; London expenses, exchange, etc., £2,069; total, £56,998, leaving a profit of £11,478. To this is to be added £14,876 balance from previous year, making a total of £26,354. The dividends paid were £16,428, leaving a balance forward of £9,926.

The total quantity of ore raised and worked was 37,180 tons. The bullion obtained was 13,693 oz. gold and 79,084 oz. silver, and the amount of money realized \$328,533, of which \$276,598 was for gold and \$51,935 for silver. This amount was equal to \$8.84 per ton, of which \$7.44 was gold and \$1.40 silver. The gold therefore furnished 84.2% and the silver 15.8% of the realized value. Of the total amount of produce reported \$280,910 was from sale of bullion bars and \$47,623 from concentrates.

The returns and costs for the half-year have been as follows on the 37,180 tons of ore treated:

	Amount.	Per ton
Total returns.....	\$328,533	\$8.84
Expenses:		
Working.....	190,018	5.11
Prospecting.....	68,489	1.84
Taxes, legal expenses, etc.....	6,063	0.16
Total.....	\$264,570	\$7.11
Profit.....	\$63,963	\$1.73

In addition to the expenses above, the sum of \$1,285 was charged to permanent improvements.

The report of Manager E. T. Bayliss says that the reduction plant has rendered efficient service during the past half-year, and has been maintained in perfect order. A small experimental plant has recently been constructed for the purpose of ascertaining if it is possible to re-work, in a commercially profitable manner, the large quantity of tailings now stored in the company's dams. These experiments are being conducted or the company by Mr. Charles W. Merrill, of San Francisco.

After the trial of the specific performance suit, relating to the compromise ground, in June, 1895, the defendants appealed from the decision then rendered in the Montana Mining Company's favor, and at the same time filed a motion for a new trial. On the motion of the Montana Mining Company's attorneys, the Supreme Court of the State dismissed the appeal in July this year for want of prosecution, and upon argument in the trial court, during last month, an order was made denying defendants' motion for a new trial. These defendants have now petitioned the Supreme Court to have their appeal reinstated, and have also appealed from the order of the lower court denying a new trial, and the further review of these proceedings will be had in the Supreme Court at the earliest possible date.

During the half-year the development of the mine has been pursued with energy, the total lineal progress in shafts, winzes and levels being 4,818 ft., and the expenditure thereon amounting to \$68,489, being equal to \$1.84 per ton of ore extracted and treated in the mills during that period. The results obtained from this expenditure have been disappointing, and the discoveries of ore bodies have been comparatively small, both as to size and value. In consequence, the extraction of ore from the mine has largely exceeded the tonnage in new sources of supply, and the reserves have been depleted to a serious extent. Furthermore, the reserves estimated to exist in the large south ore bodies in the 700-ft., 800-ft. and 900-ft. levels have not fulfilled the expectations based upon their appearance and assay value in the exploratory drifts by which they were undercut, either as to tonnage or grade; and it is due to this failure in the anticipated available supply and to the absence of any new discoveries that it has been difficult to extract a sufficient supply of ore to keep the 110 stamps in the mill profitably employed.

In the North Star Lode the developments have furnished the larger part of the ore discovered during the half-year, but the prospects are now less encouraging. The development of the Empire Lode has not been productive, and the work done on the New Castletown Lode has been limited. In the Drumlummon Lode the development work has been disappointing; much of the vein filling in the south drift, though favorable looking, is unproductive of the precious metals. It is remarkable, and may be a significant fact, that the vein in the 1,600-ft. level is more uniform and regular, both as to strike and dip, and presents evidence of being more persistent and deep-seated than at any other point so far developed below the surface. That the development of the vein in this level has been pursued with activity is shown by the fact that no less than 3,217 lin. ft. of exploratory work has been performed therein to date. Mr. Bayliss urges that this development be further carried on, particularly in a southerly direction. He says, in conclusion: "At the commencement of the year the general appearance of the underground workings indicated better prospects for the then immediate future than had prevailed during the greater and latter portion of 1895; but these evidences of improvement were not maintained. That the present difficulties with which we are confronted can be overcome, I have not any doubt, but having in mind the difficulty now experienced in extracting ore in sufficient quantity and of suitable grade for the profitable operation of the mills, it is, in my opinion, imperative that the mine should at an early date, and for a short period at least, be relieved from the daily demands now made upon it for this purpose; and I feel no reason to fear that the supremacy of the mine over the mills can be speedily established, and the operation of the entire plant renewed after a comparatively short interval, with results equally profitable to those obtained in the past."

A NEW PAVING MATERIAL.

Written for the Engineering and Mining Journal by Our Special Correspondent.

It is not generally known that the silicious limestones make an exceedingly durable road metal. This silicious limestone, or novaculite, as it is more generally called, is found in large quantities in Alexandria County, in the extreme southern portion of Illinois. The material is exposed over an area of 500 acres, and extends to a depth of 500 ft. It has been used in East St. Louis on streets where the travel did not necessitate granite paving, superseding the old Telford paving. Novaculite packs very hard, much resembling a cement in its action, and is sometimes found as a natural concrete.

Pavements of this material do not become as muddy as those of streets paved with bricks or macadam; they are much more lasting and not so dusty as the last named roadways, and can be put down at a lower cost than brick paving. The cost for a pavement 1 ft. in depth, on prepared ground, is about 30c. per square yard.

When broken to the proper sizes novaculite has been used in the manufacture of concrete and as a substitute for granite chippings in making granitoid pavements. Ground very fine, it has been used as a binder in fire-brick, resisting successfully very high temperatures. Apparently it is unaffected by extremes of heat and cold and by the ordinary action of the elements. The St. Louis Board of Public Improvements is experimenting with a novaculite with a view to using it on those streets of that city where the traffic is not heavy enough to require granite block roadways.

Oil Fuel in Russia.—The shipping industry on the Caspian Sea has of recent years assumed very large proportions in consequence of the increasing demand for tonnage for the transport of the mineral oil products which now find a sale in Russian markets throughout the empire, especially in the manufacturing centers on the banks of the Volga, where crude oil is extensively used for fuel. The consumption of oil for purposes of fuel on certain Russian railways and by all the steamship companies on the Volga continues to augment, and the requirements to meet the traffic with Central Asia and Persia are also rapidly growing. There are at present over 200 vessels of different descriptions plying on the Caspian Sea, but there is a great scarcity of tonnage, and several orders have recently been put in the hands of shipbuilders for new steamers with a carrying capacity of from 900 to 1,200 tons. All of these will use oil fuel. That most usually burned is the *astatki*, or residuum from the refineries.

THE LITTLE GIANT MINE, AT WARREN, IDAHO.

Written for the Engineering and Mining Journal by Walter Hovey Hill.

The Little Giant mine, which is in the Warren Mining District, Idaho County, Idaho, has for years been a steady gold producer. The camp of Warren occupies an irregular-shaped basin formed by Warren Creek, the principal drainage outlet. It was discovered in 1862 by James Warren and others, and since that time has produced a very large amount of gold. Much of the gold in the placers had its origin in the quartz veins of the immediate basin. The general topography of the country would indicate that the Little Giant vein was one of the heaviest feeders of these placer deposits. The mine lies about one mile south of the town of Warren and at an altitude of 800 ft. above it.

The Little Giant vein has been faulted many times and in various ways, and has been a very expensive vein to mine. It is only owing to the richness of the ore that mine development was carried on until it has reached a stage where these faults are easy to overcome. The course of the veins is north 72°, each having an average dip of 87° south. The vein can be traced by surface workings for over 2,000 ft. in length. The country rock and that enclosing the lode is a hard blue granite. The mine has been under continuous development since the year 1883, and although but 1,670 tons of ore have been crushed during the entire 14 years, the output has been over \$195,000. The total depth reached on the vein is but 187 ft.

The vein is small, on an average being not more than 8 in. in width. Often the vein has been found split, and a streak of mineral-bearing quartz fol-

THE TURQUOISE MINES OF PERSIA.

The British Vice-Consul at Meshed, Persia, describes in his last report a visit which he paid to the famous turquoise mines of Nishapur, in Northern Persia, which are believed to be the only turquoise mines in the world which have been worked extensively, or which have produced the turquoise of perfect shape and color. On approaching the mines from Nishapur, after entering low hills and gradually ascending, one arrives first at the villages inhabited by the miners, which are on undulating ground about 5,000 ft. above sea level. After another gradual ascent for about a mile by a very good road, the foot of a hill about 1,000 ft. in height is reached. All the mines are on the south face of this hill, and from the first to the last the distance is not more than half a mile. The Reish mine, which is the only one worked on a large scale or with vigor, produces the greater part of the turquoises at present sent to market. It is near the top of one of the highest ridges, at an altitude of about 6,000 ft. above sea level. The entrance is a hollowed-out cave, about 36 ft. across, with a vertical shaft some 15 ft. in diameter. Two men were reclining at the mouth of this shaft with their backs against the wall of the cave, and turning with their bare feet a rickety wooden wheel, which brought up the debris from below in a small sheepskin bag holding no more than a peck perhaps. This was received by a third man who unhooked, emptied and reattached it. The other two men removed their feet and the bag went down with a run some 40 ft., where three other men were similarly engaged on a ledge in the shaft. The mine itself is 80 ft. or 90 ft. from the surface. The miners first descend by means of a narrow diagonal tunnel, and then scramble down the rough sides of the shaft. At the mouth of the cave, which is



THE LITTLE GIANT MINE, WARREN, IDAHO.

lowing each wall. The hanging-wall streak is a dark sulphuret ore, and carries the larger values. The principal minerals found in this vein are gold and silver. Other minerals common in telluride ores have also been found. The gold from this lode runs from .580 to .640 fine. It is estimated that more than 2,000 tons of second-class ore is scattered through the various dumps on this property, the crushing of which would yield a good profit.

The property is equipped with a small five-stamp battery, steam hoist, good assay office, mine buildings, etc., etc. A system of water ditches covers the entire claim, affording power for milling purposes. The property is so situated that it could be worked on a much larger scale than heretofore by the installation of an electric plant and it would pay according as it was worked. Good wagon roads lead to a timber preserve above the claim and connect every part of the property with the State wagon road at Warren.

Owing to its exceedingly rich ore, and the fact that it is the only mine in the section that, up to the present writing has been a steady producer for the past 14 years, it has gained quite a local reputation and it should have more of an outside reputation; its production has been more than \$1,000 per foot in depth on a developed ore body of not exceeding 600 ft. in total length.

English Crown Minerals.—From the annual report of the commissioner in charge of the land revenues of the Crown in England it appears that the revenue from mines and minerals has increased from £12,848 in 1875 and £17,574 in 1889 to £23,053 at the present time, the increase being principally due to the opening of new, or the more extended working of old mines under parts of the foreshore and bed of the sea chiefly off the coast of Northumberland and Durham. This revenue is distinct from that derived from mines under the care of the Commissioner for Woods and Forests.

on the precipitous hillside, half a dozen men were seated close together on a ledge breaking, with small hammers, the fragments of rock as they were brought up from below. When a turquoise was discovered it was placed on one side in its rough state, encased in rock, and sent to Meshed. Unfortunately, though the mine is very productive, and the turquoises of good shape, their color soon goes. Since the Abdur Rezai mine, the best in the district, fell in it may be said that the stones of perfect shape and color are now very rarely found. But, though really good turquoises are rare, there is abundance of imperfect and bad stones, which are eagerly bought, for all Orientals prize them, and the very poorest like to possess even a green and spotted one set in a ring. It is more than likely, however, that the hill contains an abundance of good stones. Some of those now found look excellent at first, but the color in most cases soon fades, or a green tinge is developed, or spots appear on them. Some of these white spots can only be detected at first with a glass, and then as a mere speck, but in time they may expand and spread right across the stone. The color of most faded turquoises can be temporarily revived by dampness. In Meshed no one would dream of buying a turquoise of good color without possessing it first for some days, for it is the most treacherous of all precious stones. The turquoises, as soon as they are cut in Meshed, are nearly all sold at once for export. Some years ago one could obtain in Meshed good turquoises of perfect shape, fine color, fair size and without a flaw for a very small price. Turquoises are at present far cheaper at Tiflis and Constantinople than at Meshed, and at those towns one might, perhaps, find some of good color which have been in stock for many years.

Testing Coral Island Geology.—An interesting set of borings are to be made by a company formed under the auspices of the government of New South Wales in one of the coral islands of the Pacific. There will thus be an opportunity of bringing to the test the rival theories as to the formation of these atolls. Diamond drills will be used.

THE NEW PHOSPHATE DISCOVERIES IN TENNESSEE.

Much interest has been created recently in middle Tennessee by the discovery of a new source of available phosphate rock in large quantities. This new source, says State Geologist James M. Safford, in the *American Geologist*, is one wholly different from that yielding the now well-known rock of Swan Creek, in Lewis and Hickman counties, Tennessee. They are of very different geological horizons. The rock of Swan Creek is Devonian; the one to be described is Trenton. That is a true rock itself; this is a residuum after the leaching of a rock. The rock is found in workable bodies over a wide area, including, it may be, 15 or 20 square miles of surface. In small quantities, in isolated pieces or blocks, washed out of the soil, it is found in all the counties of middle Tennessee, showing outcrops of the geological horizon to which it belongs, as, for example, in Davidson County and within the very corporate limits of Nashville.

The center of the present workings and interest is in the town of Mount Pleasant, in the southern part of Maury County. Here the phosphate is found, after stripping off the soil, in banks from 3 to 8 ft. in vertical thickness. Half-a-dozen companies are busily engaged in getting it out. From 200 to 300 hands are at work, and where a few weeks ago everything was quiet, now all is bustle and excitement.

The rock is light yellowish or grayish, of an open, spongy structure, and occurs in layers or plates of various thickness from 1 in. to 6 in., or more. The layers are found regularly or irregularly piled together in great stratified masses like walls of masonry, here intact and there more or less broken down. Sometimes earthy matter is interlaminated. The material is easily quarried, picked out in blocks without blasting. All the stripping required is the removal of the soil. The rock has much the appearance of chert, such as is often liberated from cherty limestones by the leaching away of the calcareous part. This resemblance to chert has led to its being passed over without receiving attention. In some places, indeed, it is associated with chert, the two usually being confounded.

An analysis, made in Atlanta, by Mr. J. M. McCandless, gave: Calcium phosphate, 77.54; iron and alumina, 1.50; calcium carbonate, 6.83. Other analyses show calcium phosphate ranging from 60% to 81%, the proportion of iron and alumina being usually within the limits required for a commercial product.

The layers are evidently a residuum left after a natural leaching of certain highly-phosphatic limestones from the long-continued action of atmospheric waters. There are four divisions in Tennessee of the limestones of the Trenton age, which were probably those yielding the phosphates. These are the Orthist bed, the lowest; the Capitol limestone, next above it; then the Dove limestone, and finally the Ward limestone.

All of these are more or less phosphatic, but it is the Capitol division or horizon which is the great source of the phosphate. Parts of this limestone show upon analysis from 15% to 25% of phosphate, the dark lines marking the lamination of the rock being especially rich. Throughout middle Tennessee, wherever the limestone has been subjected to the proper leaching conditions, residual fragments of phosphate may be found, the pieces often looking like sandstone, or like porous chert. About Mt. Pleasant the original limestone appears to have been especially rich in phosphate, though other localities may be discovered as good. The Orthist bed lies under the masses of the leached-out phosphate, and its outcrops, rich in Orthist shells, are a guide to them. The Ward division also yields locally noteworthy quantities of phosphate, as does also the upper part of the Orthist bed.

As to origin of the phosphate in the original limestone no theory presents itself that is satisfactory. A few specimens of Lingula and a few forms of shells allied to Cyclora have been observed to which may be added forms referable to conodonts. What a microscopical examination will reveal remains to be seen. The presence, accumulation and sorting of the phosphate would appear to have something to do with the currents that existed in the ocean when the matter of the rocks was undergoing deposition. The dark lines marking the lamination of the rock and due to the currents are especially rich in phosphate. These lines or seams, sometimes $\frac{1}{2}$ -in. thick, are seen on a dressed or weathered surface of the rock and are usually very rich in phosphate, often to the extent of 50% and more. These masses of phosphate, like other residua, such as chert, etc., show the great effects of the long-continued leaching of the rocks, by atmospheric and aqueous agencies, in this southern non-glaciated region.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specialty Reported for the Engineering and Mining Journal.

A SIDETRACK PART OF MINE.—A sidetrack, which is in fact an appurtenance of a mine, will pass to the lessee, as a necessary part of the leased premises, under a lease of the mine, although not specifically mentioned in the lease.—*Consolidated Coal Company vs. Savitz* (57 Illinois Appellate Court Reporter); Appellate Court of Illinois.

APPROPRIATION AND ABANDONMENT OF WATER RIGHTS.—Abandonment by the appropriator of a water course or ditch, where the non-user has existed less than five years, occurs under the California statute only when there is a concurrence of act and intent. Yielding up of possession and non-user are evidence of abandonment, but such evidence may be rebutted by showing that there was no intention to abandon.—*Integral Quicksilver Mining Company vs. Altoona Quicksilver Mining Company*. (75 Federal Reporter, 378); United States Court of Appeals, Ninth Circuit.

Railroads in China.—Late advices from China say that an American syndicate will advance 30,000,000 taels for the construction of the Hankow-Pekin Railroad. The line will be 700 miles long, and will cross 27 rivers, including the Hoang-Ho, all of which will have to be bridged. The entire works will be transferred to the syndicate, but the shares of the company will ostensibly be held by Chinese residents.

Coal Mining Accidents in Pennsylvania.—The annual report of the mine inspectors of the bituminous coal region of Pennsylvania for 1895 just issued, shows that during 1895 the number of employes was 84,904; in 1894, 86,117; in 1893, 81,800; in 1892, 78,789; in 1891, 73,923. Among the 84,904 employes in 1895 there were 155 fatal accidents and 419 non-fatal. An analysis of the accidents in 1895 shows that of the 155 fatal accidents 16 were caused by the falling of coal; 87 by the falling of roof, rock, slate, etc.; 3 by premature explosions of blast, 2 by explosions of powder, dynamite, etc.; 5 by explosions of gas; 1 by falling down shaft; 30 by being run over by cars, etc., and 13 by miscellaneous causes. The ratio of fatal and non-fatal accidents to the number of employes during the year was as follows: Fatal, 1 to 544 employes; non-fatal, 1 to 202 employes. The ratio of fatal and non-fatal accidents to the number of tons mined was as follows: Fatal, 1 to 322,135 tons; non-fatal, 1 to 123,659 tons.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

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

WEEK ENDING OCTOBER 20TH, 1896.

- 569,641. **APPARATUS FOR CASTING TUBULAR INGOTS OR METAL TUBES.** William Heckert, Findlay, O.—The combination with the mold having a cylindrical shell or casing, of a detachable cap-plate or cover provided with a funnel at one side having its aperture adjacent to the inside of the shell or casing, and adapted to receive and conduct the molten metal down the side of the mold.
- 569,681. **CONVEYOR.** Maximilian M. Suppes, Lorain, O.—The combination of a horizontal frame movable upon a truck, a horizontal conveyor upon the frame, a pocket carried by the frame at a distance below the horizontal conveyor, a vertical conveyor passing through the horizontal conveyor, their axes being at right angles to each other, the vertical conveyor being adapted to remove the material from the pocket and deliver it to the horizontal conveyor.
- 569,689. **ARTIFICIAL FUEL.** John Van Opstal, New York, and Emil M. Forst, Woodside, N. Y.—The process consists in treating coal-tar pitch with soda to purify the same, removing the soda and the impurities, mixing the pitch, so purified, with coaldust, and molding the mixture.
- 569,710. **GOLD-AMALGAMATING APPARATUS.** Conrad Graff, Gunnison, Colo.—Assignor of one-half to James S. Phillips, same place. The combination with the frame, the hopper at the upper end, the adjustable rollers located therein, the regulating screws, and the trough at the lower end, of the hopper, of the two-part scouring-box, provided with a hopper at the upper end and an exit-opening at the side, the perforated curved plate located in the upper half of the box with a space between and provided with semi-circular heads.
- 569,719. **STONE-DRESSING MACHINE.** Charles Lohr, Milwaukee, Wis.—The combination of vertical supporting and guide columns, a vertically-arranged power-shaft having a longitudinal groove therein, and a vertically-movable pinion splined thereto, a counterbalanced sliding head movable in the guide-columns, a transverse horizontal shaft geared to the pinion on the vertical shaft and supported on the sliding head, and carrying revolving tappet-arms, a carriage supported by and horizontally movable on the sliding head and transverse shaft, a chisel-board supported by the carriage, and having chisels adjustably arranged therein, a series of hammers pivotally attached to the carriage in line with the chisels.
- 569,758. **MINING MACHINE.** Francis M. Lechner, Columbus, O.—The combination with a sliding frame, an endless chain mounted and traveling on the frame and cutting-tools projecting from a portion of the links of the chain, the cutting-tools being arranged in pairs, of a holding-bar supported from and extending on the outer side of the traveling frame, the holding-bar passing between the tools of the pairs.
- 569,793. **METAL-BREAKING MACHINE.** Charles L. Miller and Jerome R. George, Chicago, Ill.—The combination of a supporting portion for the metal piece or bar, and a rotating shaft provided with breaking-lever arms arranged to strike the metal bar and break it into smaller pieces.
- 569,821. **METHOD OF REDUCING METALLIC SAND OR PULVERIZED ORES.** Archibald A. Dickson, Toronto, Canada.—The method consists in first drying the raw or natural peat; second, breaking, or separating it into fragments; third, mixing such peat with the metallic sand, or pulverized ores while both materials are cold; fourth, causing such combined materials to fall by gravitation into a forming tube, or mold, in which the formative pressure upon all of the successively-formed blocks shall be the same irrespective of varying density of such charges, so that evenly hard and separate blocks are produced; fifth, eliminating the volatile elements by charring or carbonizing such blocks in a retort; and sixth, subjecting such carbonized blocks to the action of fire in a reducing-furnace for the recovery of the metals.
- 569,833. **SLAG CEMENT.** Sophus Jorgensen, Copenhagen, Denmark.—The process consists in forming a mixture of ground slag, slaked lime and water, and allowing it to set or harden, then roasting such set or hardened mixture and reducing the same to a powder, and then mixing the powder in the proper proportions with ground slag and slaked lime.
- 569,837. **DREDGE-BUCKET FOR PLACER-MINING.** William J. Moore, New Westminster, Canada. Patented in Canada February 13th, 1896, No. 51,319. The combination of a frame secured by bracers to the arm, the bucket with the rest-plate and back rests having axle pins, the bail chain and shackle with pin and latch rest, and latch working on the centers or trunnions, stop-plate with the plate secured to the bottom of the bucket, of springs, and forked springs.
- 569,894. **ORE WASHER AND COLLECTOR.** James W. Thompson, St. Louis, Mo.—The combination of an inclined trough, cleats extending diagonally across the bottom of the trough, there being apertures in the bottom board adjacent to one edge and immediately in front of the lower end of the cleats, auxiliary bottoms in the troughs, the forward ends of which lie upon the cleats, and the rear ends of which abut against the next cleat up the trough, there being apertures in the auxiliary bottoms, an inclined pipe under the trough, tubes connecting the pipe with the trough, traps depending from the pipe and mercury in the traps.
- 569,901. **ROASTING FURNACE.** James L. Wells, Leadville, Colo.—The combination of a shaft, an inclined hearth into which the shaft discharges, a settling chamber connected with the upper end of the shaft and having an inclined bottom, and the valved passages leading from the settling chamber into the shaft.
- 569,929. **HYDRAULIC AIR-COMPRESSOR.** John Lining, Philadelphia, Pa.—The combination of a tank having water-inlet and air-outlet, a valved water-outlet, a primary float-lever operated by the rise and fall of the water in the tank, and a secondary lever adapted to operate the water-outlet valve and having a depending arm with float thereon, the lever being so hung that the float normally occupies a position on one side of a vertical line drawn through the fulcrum of the lever, the primary lever being adapted to act upon the secondary lever so as to carry the float of the latter to the opposite side of the vertical line.
- 569,952. **MINE TRAP-DOOR.** George Bonenberger, Evansville, Ind.—Assignor to the Automatic Mine Door Company, Terre Haute, Ind.—The combination of two pivoted trips connected by a moving bar lying close to one of the rails and moved away when either trip is operated; and connections between the trips and the door for opening the same.
- 569,975. **DITCHING OR EXCAVATING MACHINE.** Michal C. Mackey, St. Louis, Mo.—The combination of a series of buckets forming a conveyor carried by the brace, means for pivotally securing one end of the brace whereby the opposite or free end will gravitate or drop into contact with the ground, a traveling shaft for temporarily retaining the free end above the ground, and suitable rails for the shaft.

PERSONAL.

MR. W. F. HOGAN, of Rico, is now in Denver, Colo.

MR. O. W. ALBEK, of Chester, Pa., is now in the employ of the Benjamin, Atha & Illingsworth Company at Newark, N. J.

MR. WAYNE DARLINGTON, connected with the Montezuma Concentrating Company, Bisbee, Ariz., has gone to Philadelphia, Pa.

MR. R. H. TERHUNE was recently re-elected chief engineer and general superintendent of the Hanauer Smelting Works at Salt Lake City, Utah.

MR. VON DE BELLESAGE, a prominent mining engineer and metallurgist of Paris, France, has been inspecting the mines of the Cripple Creek District, Colo.

MR. HARRINGTON BLAUVELT, mining engineer and metallurgist of Prescott, Ariz., has gone to Crowned King, Yavapai County, in the same State.

MR. FRANKLIN HALL, formerly general manager of the Etowah Iron Company of Cartersville, Ga., is now with the Ames-Bonner Company at Toledo, O.

MR. E. J. SCHMITZ, mining engineer and geologist of New York, is now in Mexico on professional business. He will remain in that country for at least another month.

COL. H. G. HEFFRON, of the Niagara Mine, in Bingham, Utah, has gone to Gunnison, Colo., to inspect a cyanide proposition with the view of acquiring title to the property.

MR. JOSEPH R. RYAN, of the Andes mine, Comstock Lode, Nevada, has been appointed superintendent of the Scorpion mine, to fill the vacancy caused by the death of R. P. Keating.

MR. ALFRED J. DUNSTAN, formerly with the Wentworth Gold Fields Prospecting Company, of Lucknow, is now with the Pinnacles gold mine at Forbes, New South Wales, Australia.

MR. ROBERT E. BOORAEM, mining engineer, who sailed for Europe last April, expects to return to this country early next month. While in London his address is care Brown, Shipley & Company.

MR. F. A. RICH, mining engineer, who during the past five years has been established at Telluride, Colo., has left for San Francisco with his family on his way to New Zealand, to reside there indefinitely.

MESSRS. MILES, KOENIG & SHARPE have opened an office at Hermosillo, in the State of Sonora, Mex., and propose to undertake mining, mechanical and electrical engineering work, as well as contracting.

MR. THOMAS BURKE, superintendent of the famous Minas Prietas, in Sonora, Mex., who had his right arm broken and one eye put out by an explosion at the mine, is in a San Francisco hospital for treatment.

MR. FRANK NICHOLSON, who has been spending some time in professional work in the West, returned to New York recently, but sails for Europe on October 31st. He will spend a month or six weeks in England.

MR. DUNCAN MCVICHELIE, manager of the iron mines owned by the Standard Oil Company, at Iron Belt, Wis., has been examining some mines near Clifton, Utah, and it is reported has purchased a number of claims for the company.

MR. C. D. JAMESON, formerly professor of engineering at the State University of Iowa, is now engaged in surveying the line for a new railroad in the province of Shan-tsi, China. He has been in Tientsin for some time, but at latest accounts was on the road. The line is to be about 200 miles long.

MR. ERNEST CRAIG, mining expert and engineer of the Belle Champion property in Saw Pit Gulch, Ouray County, Colo., has returned from a three months' visit to England. While abroad he assisted in organizing a syndicate of capitalists to take up Colorado mining propositions. The most prominent of the men connected with it is W. E. Hipkins, the managing director of J. and E. Wright's rope manufacturing.

MR. ALBERT THOFFERHNS recently passed through New York after an extended examination of the steel industry in the extreme East in the interest of one of the largest English steel works. On his journey he visited and spent some time in India, Japan and China, and expresses great satisfaction at the increased demand for American and European steel. From China and Japan alone he secured a sufficient amount of orders to keep his company's works in active operation for fully six months. The East promises much for the foreign steel industry in the near future.

OBITUARY.

JAMES HALL, foreman at the cyanide works in Deadwood, So. Dak., died recently of pneumonia, which had been greatly aggravated by the dust in-

haled by him while at work at the cyanide plant. Deceased was born in Pennsylvania, and was 45 years of age.

JAMES H. GREATHEAD, the well-known engineer, who died in England on October 22d, was born in that country about fifty years ago, and began his professional career as a draftsman in the office of Sir Marc Isambard Brunel, the engineer who was best known for the building of the Thames tunnel, the Great Eastern steamship, and the first broad-gauge railroad, the London & Great Western. While working on the Thames tunnel young Greathead realized the difficulties and cost of tunnel construction, and determined to devote himself to this branch of engineering. He suggested the water shovel, which consisted in the use of water under pressure to disintegrate rock of soft formation, and a pump to carry off the displaced material, operated within an advancing shield. This method has since been used almost invariably in subaqueous tunneling, and resulted in great economy. Mr. Greathead was compelled by his health, later, to leave England, and he labored in India and Australia as consulting engineer in railroad and bridge building. When he returned to England he devoted himself especially to the construction of tunnels and patented several processes employed by him. He obtained from the Corporation of London a concession to construct the underground railway from London bridge to Southwalk, and this railway tunnel made Mr. Greathead famous. Mr. Greathead acted with Sir Benjamin Baker as consulting engineer in the Hudson River plan.

SOCIETIES AND TECHNICAL SCHOOLS.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—A meeting of this society was held at 112 Mansfield street, Montreal, on October 22d, at which Mr. J. A. L. Waddell, bridge engineer of Kansas City, Mo., delivered a lecture descriptive of bridges designed and built by himself.

PENNSYLVANIA STATE COLLEGE.—This institution renews its offer of previous years to deliver a series of free lectures to mine employees at their customary places of assembly, the topics of the lectures to be as follows: (1) Mine Gases; (2) The Care of Explosives; (3) The Danger of Safety Lamps; (4) the Growth of Coal; (5) the Cause of Mine Explosions; (6) Propping and Back Walls; (7) the Geological Making of Pennsylvania. Further information can be obtained by addressing the President of the college.

THE LEHIGH UNIVERSITY.—The university authorities have issued a pamphlet devoted entirely to the courses in mining engineering and metallurgy. These can be pursued jointly and then extend over a period of five years, or the shorter course in mining can be taken, which requires four years to complete. The student completing the four years' course receives the degree of Bachelor of Science (B. S.) in Mining or Metallurgy, as the case may be. At the end of the fifth year's work the degree of Engineer of Mines (E. M.) is given.

Applicants for admission to these and all other courses of study must be 16 years of age and pass a thorough examination in (1) English grammar, rhetoric and composition; (2) geography, general and political; (3) history of the United States, including the Constitution; (4) algebra; (5) geometry; (6) elementary physics.

The course in metallurgy is under the direction of Prof. Benjamin W. Frazier, and the mining course is in charge of Prof. Edward H. Williams, Jr.

ENGINEERS' CLUB OF ST. LOUIS.—The 441st meeting of this club was held on October 21st, 1896, at 1600 Lucas Place. Mr. William H. Bryan read a paper on "Boiler Efficiency, Capacity and Smokelessness with Low-grade Fuel." The discussion now going on among the mechanical engineers of this country regarding the best method of expressing the economic performance of boilers was explained and the revision of the generally accepted code for making boiler trials shown to be necessary. The author strongly advocated the statement of boiler efficiency in the percentage realized of the calorific value of the fuel, taking care that the coal used be carefully sampled and its calorific power determined by the most accurate means possible. The writer presented a table giving the results of a large number of trials he had made to determine the efficiency and smokelessness of various types of boilers, with and without improved settings. The table gave the maximum, minimum and average results secured. The paper was accompanied also by a table of fuel analyses and calorific determinations covering all the common Southern Illinois coals coming to this market.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—At the meeting held on September 30th, 1896, at Pittsburg, Mr. Gustave Kaufman read a paper on "Hydraulic Power Transmission." After a brief history of the art of distributing hydraulic power from central stations to many consumers in cities in England, a short description of the plant of the London Hydraulic Power Company was given, together with formulas showing the method of calculating the amount of power in any given quantity of high-pressure water.

The purpose of the paper was stated to be, to show the application of a hydraulic system to the uses of Pittsburg, claiming that with this system a relief from the smoke nuisance could be obtained. A description of a plant suitable for the present require-

ments of Pittsburg was then given in detail. The estimated cost of the pumping station is \$100,000; distributing system, \$102,600; engineering and contingencies, \$27,400; total, \$230,000. The annual cost of operating including interest on cost of plant was \$42,000. The machinery to which the hydraulic power could be successfully applied was stated to be, 1st, hydraulic elevators; 2d, cranes; 3d, hydraulic intensifiers; 4th, fire hydrants; 5th, hydraulic engines. The principal use is for running hydraulic elevators.

SOCIETY OF CHEMICAL INDUSTRY, NEW YORK SECTION.—A meeting was held at the College of Pharmacy, New York, on October 23d. An important paper read at this meeting was that by Mr. J. A. Bradburn, on the "Manufacture of Alkali by the Ammonia Process, and the Alkali Trade of the United States." Reference was made to the history of the ammonia process as described by Mr. Ludwig Mond and Mr. Scheurer-Kestner in the *Journal of the Chemical Industry*.

While no Solvay patents now exist which are in any way necessary for the successful and profitable carrying on of the manufacture of alkali by the ammonia process, the speaker considered that the Solvay concerns are amply protected by experience and familiarity in dealing with the delicate process involved. To the lack of this experience he attributed the partial failure of many works erected during the last few years here and abroad.

The speaker then gave a summary of the imports of chemicals for a series of years, which contrasted with the production of soda ash made at Syracuse. About four-fifths of this soda ash is transformed into caustic soda, while the remainder of the total product is made into bi-carbonate.

The location for an ammonia soda works requires careful consideration. The proximity of salt and limestone, and also a suitable place to receive the lime waste and an abundant supply of water of low temperature, are absolutely essential. It is also desirable to be near cities using coal gas, so that ammonia can be obtained at cheap rates. Among the locations regarded as presenting especial advantages are Cleveland, O., and Detroit, Mich. Reference was made to the brine obtained at the Syracuse works, described at some length in our issue of October 17th, 1896. Referring to the brine suitable for use in the ammonia-soda process the speaker said it should contain about 300 g. per liter of NaCl, and as little as possible of lime and magnesia.

Mr. G. W. Thompson read his paper on "The Determination of Sulphate of Lime in Paints." This was in some measure supplemental to his paper on the same subject read at the May meeting of the society. Dr. H. Endemann followed with his paper on "Formaldehyde as a Reagent." After this the meeting adjourned.

INDUSTRIAL NOTES.

The Otis Steel Company, of Cleveland, O. is making large expenditures in improvements which will give the plant a larger output.

The Petersburg (Va.) Iron Works have secured the contract for supplying the United States government with a large quantity of projectiles.

The Hanauer Smelting Works, of Salt Lake City, Utah, is now undergoing improvements which will enable it to successfully compete with any plant in the valley.

The Taunton Wire Nail Company, of Taunton, Mass., reports that it is now turning out 300 kegs of wire nails a day, and is running a double turn of 22 hours daily.

The Cambria Iron Works, at Johnstown, Pa., resumed full operation on October 27th, giving employment to 1,500 men, who have been making less than half time for quite a long period.

The E. & G. Brook Iron Company, of Birdsboro, Pa., started up one of their largest blast furnaces on October 27th. It has a capacity of 800 tons a week. About 80 men were given employment.

The Edgar Thomson Steel Works, at Braddock, Pa., resumed operations October 29th in all departments, giving employment to more than 2,000 men. The works have been practically closed for a month.

The Stassfurt Chemical Works (formerly Vorster & Gruenberg) are said to be erecting a plant at Stassfurt, Germany, for the preparation of nitrate of sodium, and that they intend to manufacture rhodium salts.

The Wayne Iron and Steel Works, of Brown & Co., incorporated, at Pittsburg, Pa., recently started in all departments double turn, with all furnaces on. This is the first time so many men have been employed in this mill for some time.

At the Central Iron Works' universal mill, at Harrisburg, Pa., which has made one of the best records for production of any in the country, preparations are being made to roll some plates 20 in. wide, 55 ft. long and weighing about 6,000 lbs.

The Indiana Steel Casting Company, of Montpelier, has passed into the hands of Receivers T. C. Neal, of Montpelier, and Oscar L. Baker, of Cleveland. A mechanics' lien of \$13,500 held by a Cleveland firm that furnished the machinery for the plant caused the failure.

Pittsburg and McKeesport capitalists have secured

a plot of ground at Glassport, Pa., near McKeesport, on which a large manufacturing plant will be established. The company formed will have a capital stock of between \$350,000 and \$500,000, and it is understood, will manufacture seamless drawn tubing.

The Pennsylvania Tube Works, of Pittsburg, Pa., has purchased additional ground adjoining its present plant, on which a large building will be erected, the foundations of which are nearly completed. A number of lap-weld furnaces will be erected, which, together with other improvements, will make the plant very complete.

The Harbison & Walker Company, of Pittsburg, Pa., manufacturers of strictly high-grade fire brick and silica brick, has received a contract to furnish all the high-grade material to be used in the construction of the new open-hearth plant of the Nicol-Mariopol Mining and Metallurgical Company, of Russia, amounting to about 75 carloads. Up to a few years ago, all the silica brick used in the United States was imported from Wales, but the above-named company has built up a large trade, and is now in position to export to other countries.

TRADE CATALOGUES.

Mr. Horace F. Brown, Chicago, Ill., inventor of a system of automatic milling and mechanically stirred roasting furnaces, illustrates the principles and construction of the various styles in a newly issued pamphlet. These furnaces are in use at a number of places in the West, roasting sulphide ores and matte, and are giving thorough satisfaction. A number are now being erected, not only in the United States, but in foreign countries—Russia and Australia.

Stein & Boericke, Limited, engineers and chemists, Philadelphia, Pa., are sole representatives of the Richard Schwartzhoff system of coal-dust firing, which is described in Circular No. 1, a copy of which is at hand. The coal must be ground to a fine powder, if it is not already in this state, by special pulverizing machinery provided for the purpose. The system is not only for boiler firing, but also for all kinds of melting, heating and welding furnaces, and also for pottery kilns. The apparatus works without creating any smoke, and the waste gases contain very nearly the entire theoretical amount of carbonic acid due to perfect combustion of the fuel.

MACHINERY AND SUPPLIES WANTED.

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

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

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

GENEAL MINING NEWS.

ALASKA.

ALASKA MEXICAN GOLD MINING COMPANY.—This company reports the clean up for the month of September as follows: Period since last return, 30 days; bullion shipment, \$21 258; ore milled, 12,906 tons; sulphurets treated, 129 tons; of bullion there came from sulphurets, \$5,374 tons; working expenses for period, \$17,017. The average yield was \$1.64 per ton of ore milled, and the average cost \$1.31 per ton. The profit realized on the bullion shipment for the month was \$4,241.

RUBY SAND PLACERS.—Mr. W. M. Brook, the managing owner in the principal placers at Lituya Bay, says the Alaska *Mining Record*, reached his claims on April 29th last and built 2,000 ft. of flume 12 in. wide by 8 in. deep, and began shoveling in his first string of boxes 20 days later. As rapidly as they could be constructed four more strings of boxes were added, and into these Mr. Brook had an average of 14 men shoveling day and night throughout the season, the yield per man per day varying from \$10 to \$15, with a grand total from the claim of about \$12,000. From the adjacent Wheelock claim, in which Mr. Brook is also an owner, about \$5,000 has been taken this season, while the Spurgeon claim has probably yielded a similar sum.

ARIZONA.

COCHISE COUNTY.

SIX MILE HILL.—This property is again being worked, and thus far a 28-ft ledge has been laid bare by a crosscut on the surface.

YUMA COUNTY.

HARQUAHALA GOLD MINING COMPANY.—The following is from the report of Assistant Manager Thomas D. Murphy for the month of August, 1896: The cyanide department was in operation 27½ days. The amount of pulp treated was 4,197 tons; average assay of pulp, \$3.69 per ton; average assay of tailings, \$1.10 per ton; percentage extracted, according to assays, 70%; bullion estimated to yield \$8,750.

In the milling department 10 stamps were run 12 hours per day for 31 days. Amount of ore crushed, 296 tons; average assay of ore, \$20.37 per ton; aver-

age assay of tailings, \$3.75 per ton; percentage extracted, according to assays, 80%; bullion realized, \$6,050. The total revenue was \$11,817, and the total expense \$6,554, leaving a profit of \$5,263.

ARKANSAS.

GARLAND COUNTY.

Within the past few weeks a number of miners from abroad have arrived at Hot Springs and are busy prospecting for gold in the mountains adjacent to the city. Rich finds are reported six miles northeast, and the mining fever is becoming intense. The woods are full of prospectors.

CALIFORNIA.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

OLD PETTICOAT.—This property, at Railroad Flat, 16 miles east of Mokelumne Hill, is about to be reopened by the Anglo-Pacific Syndicate under the superintendency of William H. Cleary. This mine was shut down 30 years ago on account of the expense attached to mining at that time, the books showing as high as \$14 per ton for mining and milling the ore. The old workings, which are now full of water, consist of a shaft 500 ft. in depth, and three levels which average about 900 ft. each in rock which averaged \$8 per ton. The veins are from 4 ft. to 12 ft. wide and some of the ore milled as high as \$100 per ton. It is a singular coincidence that Adam Poe, the present engineer of the hoisting works, was employed in the same capacity 30 years ago. The Anglo-Pacific Syndicate intends, as soon as the mine is freed from water, to develop the property on modern principles.

FRESNO COUNTY.

(From Our Special Correspondent.)

HEISKELL.—This old copper mine in the hills, eight miles south of the San Joaquin River, is being reopened by Barton Heiskell & Baird. There is a large body of good ore in sight.

MONO COUNTY.

The following are extracts from the latest weekly reports of the mine superintendents:

BODIE CONSOLIDATED MINING COMPANY.—200-ft. level—The west crosscut was advanced 14 ft. into harder ground. The north drift from the top of the Gildea raise was begun and advanced 23 ft.; 131 ft. of old drift on the Vulcan vein from the Standard has been cleaned out and 3 ft. advance made in new ground. Only a carload or so of ore was extracted.

BULWER CONSOLIDATED MINING COMPANY.—100-ft. level—Raised 25 ft. through old workings from main drift at a point 25 ft. north of the shaft. 20-ft. level—Stopping as heretofore from raise No. 2 south. The ore seams are small and rather low grade. Tunnel level—The north drift from crosscut No. 3 was advanced 7 ft. with two small seams of very good ore in the face. Commenced stoping from the raise over intermediate drift. The ore in the face is of good grade. The quantity of ore extracted from various places during the week was 11.3 tons, assaying from \$21 to \$140.50 per ton; true average, \$47.50 per ton.

MONO MINING COMPANY.—Bodie 400 ft. level—South drift advanced 9 ft., showing 6 in. of low-grade quartz in the face.

STANDARD MILL STATEMENT.—Ore crushed for the week, 231 tons for Standard mine. Average assay vanner tailings, \$5.22; concentrates produced, 2 tons; assay value, \$37.51; plate amalgam produced, 481½ oz. Tailings plant No. 1 treated 402.8 tons of tailings. Plant No. 2 treated 486.8 tons of tailings.

NEVADA COUNTY.

(From Our Special Correspondent.)

METROPOLITAN.—At this mine, at Orleans Flat, a Merrill's quartz mill has just been placed in position, which works smoothly and satisfactorily. It has a crushing capacity equal to a 15-stamp mill. A Pelton water wheel drives the machinery. The mine was formerly owned by Geo. Abraham, who sold to San Francisco parties. There is a large quantity of ore on the dump, also plenty in sight in the mine.

PLACER COUNTY.

MONTE RIO.—This mine, which consists of about 3,000 ft. of the channel on Bear River, immediately above the South Yuba dam, about three miles from Colfax, is reported to have been sold to E. W. Chapman.

(From Our Special Correspondent.)

BIG GUN.—This mine, at Michigan Bluff, is now owned by Powell Bros. & Co., who are erecting dams for the purpose of impounding tailings and bringing in new water supplies which will lengthen the season for piping.

GRAY EAGLE.—This mine, near Butcher's Ranch, is now being worked through a tunnel instead of the shaft. The old hoisting works building, which has been used for sleeping quarters, was destroyed by fire on the 19th inst. The building and machinery is a total loss.

HERMAN.—This mine, near Westville, is being worked by four tunnels. The mill is running day and night, with 27 men on the pay roll. The company has located a water right in Secret Canyon.

SACRAMENTO.—This gravel mine, on the Forest Hill Divide, comprises 144 acres of patented land. The tunnel is in 1,500 ft. Water and timber are abundant.

SAN DIEGO COUNTY.

GOLDEN CROSS.—Gold bullion to the amount of \$33,500 is reported to have been shipped recently from these mines, at Ogilby, on the desert. This bullion goes to San Francisco. The Golden Cross mines comprise a group of 13 under the management of W. W. Stewart, of San Diego. He was appointed receiver six months ago at the solicitation of the creditors of the company holding claims aggregating \$250,000.

(From Our Special Correspondent.)

OLD PICACHO DISTRICT.—Col. D. K. Allen has sold to George Ireland, consideration \$60,000, the Golden Dream group of five mines, the Alceon group of five mines, the Old Blanco group of five mines, the Noon Day group of five mines and four mill sites, all situated in the White Gold Basin, on the Colorado River. These claims are little more than prospects, but the veins are of immense size and are so located that the ore will probably hold out as to quality and quantity as they sink. This is a low-grade proposition, the ore running about \$8 per ton, but as there is cheap water and fuel it can be worked cheap.

In the same district S. W. Dorsey and associate, from Colorado, have invested over \$500,000 and have a large force of men pushing development work and building mills.

SANTA BARBARA COUNTY.

(From Our Special Correspondent.)

ALCATRAZ ASPHALT COMPANY.—The three great asphalt deposits owned by this company and known as Las Conchas, La Patera and the Sisqueve Grant have been sold for \$2,000,000 to an English syndicate represented by Percy Tarbutt and Edmund Davis. The Las Conchas deposit, located at Carpentaria, is probably the most pure in the world, producing a liquid asphaltum containing 95% bitumen. This deposit covers about 75 acres and is estimated to be 25 ft. thick. The works, which have a capacity of 75 tons per 24 hours, employ 30 men in the mines and 30 men in the refinery. The La Patera mine, located on the Don Ranch on the coast, 10 miles west of Santa Barbara, is worked by four shafts and a tunnel. Steam hoisting works and pumps are used and 23 men are employed. The deposit is from 2 ft. to 12 ft. in thickness. The Sisqueve Ranch, 8 miles north of Los Alamos, contains 35 485 acres. Upon it are two deposits of asphalt, the largest known in the world. That known as the Brea is 10,500 ft. in length with an average width of 500 ft., and depth of 300 ft. What is known as the Mesa deposit lies on a plateau 300 ft. above the valleys which surround it on three sides, and at an elevation of 1,900 ft. It is about 5,000 ft. in length, with an average width of 600 ft. and depth of 100 ft. On account of the elevation it can all be handled at small expense. Refining works with a monthly capacity of 3,000 tons are in course of erection.

SIERRA COUNTY.

(From Our Special Correspondent.)

BALD MOUNTAIN CONSOLIDATED.—At this mine, 2½ miles east of Forest City, the tunnel is in 2,350 ft. within 50 ft. of the channel which is known to be very rich.

NORTH FORK.—At this mine, at Forest City, the tunnel is in 2,600 ft. and the deep channel will soon be struck.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

ARBONA.—This mine, near Tuttle town, has 10 men at work. The crosscut tunnel has cut the ledge, and in drifting on the vein a rich chute of ore has been struck.

BELLEVIEW MINING AND AGRICULTURAL COMPANY.—The Belleview mine, 6 miles northeast of Sonora, is owned by this company, one-half of the stock being held by the Thomas Bell estate, one-quarter by the Jno. W. Coleman estate, and one-quarter by A. P. Hotaling and associates. Although the company for the past year has paid about \$30,000 in dividends, an assessment of 25c. per share has been levied to carry on proposed improvements consisting of a new mill, boiler and pump. This was owing to the fact that the above estates are both in the Probate Court, and their share of the moneys, derived from the operation of the mine must all be paid into court and no reserve fund could be created for improvements, etc.

COLORADO.

ARAPAHOE COUNTY.

VALVERDE CAMP.—A mining camp has sprung up within a few weeks at the Valverde, on the Plate River. In the clay and gravel strata above bedrock, diamonds, rubies, garnets, moonstones and topazes are found. The diamonds are not of much value, but the other stones are all of fair quality, and most of them marketable. The gem mines were first located by J. W. Reid, an old-time California "diggins" miner, about three months ago.

BOULDER COUNTY.

CARPENTER GULCH.—A copper lead has been discovered in Carpenter Gulch, near Magnolia, by Dr. King, of Boulder, an assay from which gives 38% in copper, parts of the vein showing quantities of native copper. Two lots have been tested, the first yielding \$126, and the second \$32 per ton in copper and silver. The vein is 2½ ft. wide and the entire width is pay mineral. The owners of the claim are making arrangements to ship a carload of the ore for a thorough test.

CHINGHIS KHAN.—This group of eight mines, about four miles from Boulder, together with four houses on the property, have been sold at sheriff sale to-day to J. H. Gestering, of St. Louis, for \$4,100. The property is said to be worth \$50,000, but trouble arose in the company and the sheriff sale was the result.

CLEAR CREEK COUNTY.

(From Our Special Correspondent.)

COLORADO CENTRAL.—The various levels in this Georgetown mine are being driven west in the hope of cutting an ore body. The mineral is carrying values in gold.

CROWN POINT-VIRGINIA.—The New York stockholders have recently had an expert examination made of this mine, at Idaho Springs. It is understood that the report is exceptionally good, other than a criticism of the owners in not raising enough money to develop the property. They have insisted upon the mine paying its own way, and any development must be paid for from future ore shipments. As a result the company has been rather slack in paying the running expenses, but the future outlook of the property demands some money for opening up the immense ore bodies which underlie the claim. The manager has done exceptionally well, considering the lack of financial assistance with which he should have been backed up.

GILT EDGE MINING AND MILLING COMPANY.—The Midland property, at Yankee, owned by this company, is advertised for sale by the sheriff to satisfy a judgment obtained by Henry I. Seemann.

MR. MCGREGOR.—Ore from this Empire property has recently been tested by the Bean process mill. The saving was \$81 per ton, while heretofore by the older processes the return was less than \$35 per ton.

STANLEY.—This mine, at Idaho Springs, is being developed on an extensive scale, and immense bodies of ore are blocked out. Work is being prosecuted in all directions and more than 8 miles of levels have been opened.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

BEN HUR MINING AND MILLING COMPANY.—The annual meeting of this company was held recently. The reports submitted to the stockholders showed that the company has \$1,300 in its treasury, and that five leases were in active operation on which a very considerable amount of money was being expended monthly. Three of the company's properties on Gold Hill are patented; receiver's receipts have been received for three more, while the remainder are about to receive receiver's receipts. The following Board of Directors was unanimously elected: J. R. McKinnie, George E. Lindley, F. F. Schreiber, F. H. Pettingell, W. O. Wirt, J. M. Roseberry and Theophilus Harrison, after which the Board of Directors met and elected the following officers: J. R. McKinnie, president; George E. Lindley, vice-president; F. H. Pettingell, secretary; F. F. Schreiber, treasurer.

REPUBLIC MINING COMPANY.—The directors of this company met at Colorado Springs, on October 20th, and elected a new board of directors, J. R. McKinnie was elected president of the board, Charles Merrick secretary, Sherwood Aldrich treasurer and William Banning vice-president. A bond for \$50,000 on the Janet W. was approved. Leases will be granted on all the rest of the property belonging to the company until other suitable arrangements can be made.

(From Our Special Correspondent.)

ANCHORIA-LELAND.—At this mine they are working the usual force of men, and the output is about the same as for the two past months. The shaft is making about 200 gals. of water per hour. There is a No. 7 Cameron sinking pump on the mine, and a Snow station pump has been ordered. Sinking will be carried on.

ARCADIA.—This mine, in Poverty Gulch, was obliged to close down on account of the inadequacy of the pump to handle the water. The summen were taken from the shaft and were directed to drive the drifts from the 200 ft. level. The vein in both drifts is looking well.

BANKERS' MINING AND MILLING COMPANY.—The Grouse, one of the properties of this company, has now an output of 50 tons of ore per month. The first-grade ore samples from \$240 to \$260, while the second grade is about 3 oz. The new shaft-house and orehouse is about completed.

CHAMPION CONSOLIDATED MINING COMPANY.—The Iron Duke, in Requa Gulch, owned by this company, has driven a tunnel and drifts 600 ft. The rock is now changing.

CHRISTMAS.—This mine, on Bull Hill, has sunk its shaft 232 ft. and at that point a level has been driven north 40 ft. and from the appearance of the drift it looks as if the ore chute is close at hand. All the work, save the driving of the bottom drift north, is confined to the second or 170 ft. level, where the miners are stopping from 50 to 60 tons of ore a week, the grade of ore sampling from 2 oz. to 3½ oz. A recent shipment of 50 tons of fines to the Globe smelter sampled 3¼ oz. Fifteen men are employed. The manager feels very hopeful of the future, being between shippers on the north and south.

DEAD PINE.—Two cars of ore are ready for shipment. The shaft has been sunk 450 ft.

ELKTON.—The output for the month is estimated at \$40,000. The third level north is now a trifle over

400 ft. in the Walter ground; the pay streak averages 8 in. wide and has a value from \$20 to \$600 per ton. The Elkton second level is 415 ft. in the Walter ground or 49 ft. from the Elkton shaft and is also in pay ore. The number of men employed is now 85.

GARFIELD-GROUSE.—This fractional claim of nearly five acres, on Bull Hill, has just declared its initial dividend. The property has been worked under lease for two years, the present lease continuing until April 1st, 1897. The royalties paid are \$31. The lessees feel sanguine they can take out \$40,000 per month. Two cars recently settled for returned \$350 to the ton. Fifty men are employed on the lease.

GOLD HILL TUNNEL COMPANY.—Through its local representatives, the McCart-Burbridge Investment Company, a contract was let recently to drive a tunnel through Gold Hill 2,000 ft. from its present face, which is now in 300 ft. The compressor plant and the drills are on the ground and will soon be in place. It is stated that Baltimore capitalists are furnishing the money.

GOLD KING MINING COMPANY.—The El Paso, owned by this company, steadily increases its force, and now gives employment to 70 men. A compressor, small and temporary, has been started and will be in use for about four weeks, when it is expected that a 10-drill compressor will be at work. The two new 100-H. P. boilers give every satisfaction. Sinking has been suspended in the shaft until such time as the new machinery is ready to start work. The present water in the shaft varies from 10 to 12 buckets an hour.

IRISH MOLLIE.—This mine, on Gold Hill, now the property of St. Louis people, is being actively worked. The shaft on the north end of the claim is being worked by the company, with a horse whim, the shaft being 155 ft. deep. The south part of the claim has recently been leased to a local party for one year. On this shaft sunk 200 ft. there is a steam hoist.

KEYSTONE.—At this claim, on Gold Hill, under lease to Messrs. Fogleman & Smith they are now crosscutting the phonolite in hopes of finding the vein. In their former lease the lessees took out about \$7,000 worth of ore in the dike close to the shaft.

LITTLE MAY.—This property, on Beacon Hill, under lease to Judge Barris, is making a strike almost every week. Recently, after giving directions to drill a shot in the mica schist, which proved to be 2 ft. wide, a vein, or part of the vein, of \$600 ore was exposed for 3 ft. Since then eight tons were brought to one of the Cripple Creek samplers. Already the lessee has been offered \$75,000 for his lease and bond, \$10,000 cash and the balance in 10 days, but refused, as he has a big block of reserves laid out. The shaft is not quite 110 ft. deep.

MAYBELLE.—This mine, at Lawrence town site, is not shipping the several carloads a day that was promised. As far as can be known, the top of the ore chute was struck in the tunnel and it will require some time to prove its extent. A shaft is being sunk from the surface to communicate with the tunnel 100 ft. below.

MIDLAND SAMPLER AND ORE COMPANY.—This sampler is built at the corner of Fifth and Meyers avenue, Cripple Creek, and has a capacity of 200 tons in 24 hours. The boiler is 80 H.-P. The crusher is stated to be the largest ever manufactured in the State, and the rolls are said to be the largest ever cast in the State—18 x 36, geared and supplied by F. M. Davis Iron Works. Everything about the mill is automatic save the sampling. Six 30-ton bins are now being built. The boring of an artesian well 250 ft. deep is now being carried on in order to supply water for the boiler and the laboratory. An electric-light plant to supply 40 lights is being added, as agreements have been signed for large contracts at the commencement of the year. The ore sampled last month averaged between 10 oz. and 11 oz. for gold and barring one lot of 26 tons, which assayed 71 oz. silver, the average of silver was less than 1 oz. The officers are: H. J. von Hemert, president and treasurer; W. G. Moore, secretary, J. P. Murray, vice-president and general manager. The assayer is M. Herbert Strickland.

NIGHTINGALE.—This is the name of an 1891 claim, located on the west slope of Bull Hill, on which considerable work has been done both by lessees and by the owners, but without much shipment. Recently a vein was discovered which bids fair to shortly reimburse the owners for their outlay. The vein is fully 3 ft. wide, and is all a low-grade shipping ore, \$30 per ton. Colonel C. H. Brown, of Denver, is to be congratulated on his ultimate success, as he was one of the first of Denver capitalists to speculate here.

OPHELIA.—The Moffat tunnel has pierced the hill 2,300 ft., but without finding many veins of value. The rock in the breast of the tunnel is very soft and letting out torrents of water.

FREMONT COUNTY.

(From Our Special Correspondent.)

GALVESTON MINING AND DEVELOPMENT COMPANY.—The shaft at the Warren, owned by this company, has reached a depth of 75 ft. A large body of low-grade ore has been encountered.

GALVESTON TUNNEL COMPANY.—This working is now in Big Bald Mountain 315 ft. There is an 84-ft. vein of decomposed porphyry, returning \$6 30 per ton by cyanide treatment. The ore, through

pressure, lies in a hard, compact mass, breaking in large blocks when mined, but crumbles to dust by exposure to weather.

HARLOW.—This mine, in Espanosa Gulch, is owned by the Drum Tramway Company. On October 15th a small streak of sylvanite was encountered and machinery is being put in place.

JUNIOR ORDER.—This property has given better returns than any other in the district, a small streak assaying \$14,999. Machinery is being put in place and shaft-house erected.

MAYFLOWER.—At 100 ft. this mine encountered a 4-ft. vein of quartz, showing average values of \$40.

HINSDALE COUNTY.

UTE & ULAY.—Major S. D. Nicholson and Mr. J. T. Newell, of Leadville, have agreed to take a lease and bond on these properties at Lake City for five years, possession to be given in 30 days, if approved by the owners. They will work with 250 men as soon as the property is in full operation and will erect a mill next season. It will take at least two months to pump out the water; then development work will commence.

LAKE COUNTY.

(From Our Special Correspondent.)

THE LEADVILLE SITUATION.—It is really wonderful to see a handful of mining men—less than 20 in number—fighting a local organization known as the Miners' Union, which has a membership of nearly 3,000, as well as the Western Federation of Labor, which has a membership of many thousands. But the mining men are coming out on top. Such mine managers as the Campions, S. W. Mudd, T. S. Wood, R. B. Estey and others are starting up their properties against the odds mentioned above, and are successfully conducting operations. I have it from very good authority that before the last of November all of the mines of this camp will be in operation, and this, no doubt, will be with the strike of the Miners' Union still in existence. The starting up of the mines which still remain closed is only a question of a short time. The Ixex properties, the Small Hopes properties, the Bison, the Chip, the Resurrection and several other big producers have already resumed shipments, while the downtown properties will resume next. The managers of the downtown mines held an important meeting on the night of October 26th, and the question of resumption was thoroughly discussed, and it is understood that a satisfactory agreement was about reached. The most important manager present was Eben Smith, who is ready to resume, it is understood, on the Penrose, Bon Air and Star properties just as soon as the various questions relating to pumping, etc., are adjusted. As mentioned in special telegram of October 16th, contracts looking to an adjustment of this pumping proposition have already been drawn up, in which are specific agreements for the division of the expenses entailed by this work among the properties of the Leadville Basin. From a very reliable source I find that the Ixex Mining Company's properties, John Campion manager, are increasing their shipments every day, and that more than 200 tons daily are now being hoisted. The Bison, under the management of George Campion, has just concluded a contract with the Globe and Philadelphia smelters for 15,000 tons of ore, and on October 26th this property began shipping 100 tons a day on this contract. At the Chip there are three shifts at work, and shipments are being increased daily. The Small Hopes Consolidation, under the management of Mr. S. W. Mudd, is again successfully operating the Emmett and Marian shafts, and 185 tons per day of a good grade ore is being hoisted. At the Resurrection operations will be resumed before November 1st. Large boarding and lodging houses are in course of construction, preparatory to a general resumption of work there. A force of 50 men will be put to work on this property this week to do the preparatory cleaning-up work. All of the properties mentioned above are working with non-union men, the Missourians who have been imported during the past few weeks. The Miners' Union people have been holding out on a proposition that this outside labor would be very unsatisfactory, but from the shipments being made, as well as from the recommendation given the men by the mine managers, I understand that the work of the new men is satisfactory, and even better than that of the old employees.

ILLINOIS.

MONTGOMERY COUNTY.

(From Our Special Correspondent.)

PAISLEY COAL MINE.—A new shaft has been sunk at Paisley, eight miles from Hillsboro, and the mine is being opened out. This is an excellent seam of coal, and the venture should prove successful.

SANGAMON COUNTY.

(From Our Special Correspondent.)

COAL MINERS' STRIKE.—Upon October 19th about 2,000 miners in the Springfield District came out on a strike. They demanded a price of 37½ cents per ton gross for mining coal, in place of 30 and 32½c., which they had been receiving. The operators granted a price of 35 cents per ton gross, and all mines are now at work except a co-operative shaft, where there is a demand for an abolishment of the stock renting system.

IOWA.

WAPELLO COUNTY.

NUMBER NINE.—This mine, near Eddyville, is nearly ready to ship coal. The railroad to the place

is completed and underground work is being pushed rapidly ahead.

MARYLAND.

GARRETT COUNTY.

BORDEN MINING COMPANY.—It is reported that this company has discovered an 8-ft. vein of good coal, near the Allegany County line, above Frostburg.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The output of ore throughout the district last week was lighter than the week before on account of the rainy weather. Six carloads of Joplin zinc ore sold at \$21.50 per ton, and half of the balance brought \$21 per ton, with an average of about \$19.50 per ton throughout the district. The production of zinc ore was very light all over the district, and the ore buyers are making inroads upon the surplus ore at some of the mines; otherwise the sales reported about the average would fall very low, especially at Webb City and Cartersville. There is seldom any surplus ore about the Joplin mines. Just now there is none, and the Joplin sales the past week show a falling off, since the first week of the month, of 479,410 lbs. The district sales were six carloads of zinc ore and one car of lead ore less than the week before. Lead ore was selling at \$14 per 1,000 lbs. until Saturday, when it advanced to \$14.50 delivered. The price paid for silicate was \$11 per ton. The following was turned in from the different camps for the week ending October 24th, 1896: Joplin zinc, 1,154,880 lbs.; lead, 199,130 lbs.; value, \$14,674. Webb City zinc, 395,400 lbs.; lead, 30,240 lbs.; value, \$4,182. Cartersville zinc, 1,068,140 lbs.; lead, 194,580 lbs.; value, \$12,890. Galena, Kan., zinc, 2,710,000 lbs.; lead, 365,000 lbs.; value, \$29,332. Aurora zinc, 130,000 lbs.; silicate, 410,000 lbs.; lead, 40,000 lbs.; value, \$3,565. Alba zinc, 146,000 lbs.; value, \$1,533. Stott City zinc, 52,490 lbs.; value, \$551. Totals for the district—zinc, 5,656,410 lbs.; silicate, 410,000 lbs.; lead, 803,950 lbs.; value, \$66,750.

ARNOLD & COMPANY.—They are working the old McConey mine on the Empire land at Blendsville and are producing 10 tons of high-grade zinc ore each week.

AURORA MINING COMPANY.—This company, on the Circle lease near Oronogo, is drifting at 104 ft. on a good face of zinc ore which is improving as the drifts advance.

COL. T. J. STEERS.—The Phoenix and Orchard mines have been cut together, and Colonel Steers, who has the Phoenix rented and owns the Orchard, will put cages in the latter shaft and hoist all the ore through it and clean it on his steam concentrating plant. The dirt in these mines is very rich, and they have produced 50,000 lbs. of lead and 60 tons of zinc ore each week. West of the Orchard, Colonel Steers has another lot on which a 10-ft. face of zinc ore has been developed in hard ground from 158 ft. to 163 ft. He has another lot east of the Orchard, where he will start a drill to sinking to prospect the lot.

DERMOTT & GUNNING.—The lessees of the Circle lease have a splendid zinc-ore producing mine and are drifting on a 21-ft. face of it. They are down to a depth of 140 ft. and went through 40 ft. of good ore in sinking. They are using air drills to break the dirt, which are proving a success. They will turn in a carload of zinc ore this week.

ELEVENTH HOUR COMPANY.—The work on this lease has fallen off on account of additional water encountered recently in sinking the pump shaft deeper, but will receive a new start when the big pumps contracted for are completed and put in operation. They will drain the ground to 250 ft. and the miners can work the lower run of zinc ore at 225 ft., which is very rich.

FREE COINAGE LEASE.—Two big strikes have recently been made on this lease. Lilly, Sands & Company at 105 ft. struck rich jack dirt, and Ashcraft, Earl & Company made a good strike of zinc ore at 115 ft. in open ground.

GEORGE STEWART.—Last week Mr. Stewart bought the McCorkle Hill Mining Company's lease of 80 acres of the Ayler land inside of the city limits of Webb City, together with the pumping plant and large steam concentrating plant, for the sum of \$30,000. Much money has been spent by the McCorkle Hill Mining Company since it leased this tract of land, and some excellent developments were made. A large face of ore was opened up and worked, but the heavy water of last spring's flood caused them to suspend operations in August. Mr. Stewart is a very successful miner and has operated in the mines here for more than 15 years.

JOPLIN CITY COMPANY.—The company has the water down below the second run of ore, and is working at that level on a good face of ore. The first out-put of ore was made last week.

LA TOSCA COMPANY.—This company's mine was shut down for a couple of weeks to make some necessary repairs. The pump has been started and has taken out the water. The plant has again been started.

SADTLER MINING COMPANY.—This company has commenced the erection of a complete concentrating plant on its land near Duenweg. The plant will be one of the largest in the district, with a capacity of 75 tons of crush ore per 10-hour shifts. It is to be completed and ready to start by December 1st, at which time the ground will be in shape to commence operations.

STARKS & COMPANY.—They have leased a number of acres of the Mohaska land at Blendsville and will put in a pump and thoroughly drain the land, which has been a producer in the past, but the water drove the last company out.

TOP RUN COMPANY.—At the Top Run mine the company has struck a lower run of zinc ore that is very rich. It is not thoroughly opened up yet, but will soon make lots of ore. Supt. Jos. Peel has changed the engines and machinery and has everything fixed for a successful run, expecting to make from 25 to 30 tons of zinc ore each week.

TROUP COMPANY.—The company has started pumping and the land has been drained to 225 ft. A drift is being cut out at 215 ft. to the ore body and is producing a good quantity of zinc ore and some lead. Sufficient dirt is being hoisted to keep the steam pig plant running steadily.

VELNON COMPANY.—After a steady run for 18 months the company shut down the steam pig plant last week until after election. In the meantime they will thoroughly overhaul the plant and make some necessary repairs. They have a 50-ft. face of fine ore at 185 ft. in shooting ground.

MONTANA.

GRANITE COUNTY.

INTER ALTA MINING COMPANY.—In the new tunnel which was started recently by this company a rich body of ore has been struck.

MADISON COUNTY.

BERTHA.—It is reported that Mr. C. L. Hathaway, a well-known mining man, has broken ground for a mill to treat the ore of this mine near Virginia City, which has been acquired by a company of Massachusetts capitalists. The same company recently acquired 720 acres of placer ground on the Warm Springs Creek and quarters are now being constructed for the force of men to be employed early in the spring.

MAYFLOWER.—A new tunnel has been started at this mine to tap the main ore body. Regular shipments are being made from the upper tunnel, the cars running from \$4,000 to \$10,000 in smelter returns. The vein goes down between two well-defined walls and is of about uniform richness.

PARK COUNTY.

LIVINGSTON COAL AND COKE COMPANY.—The superintendent of this company, at Cokedale, has received word to pull the pumps and tracks from the mines and ship all machinery out of the camp. This means the complete abandonment of the property. The company has invested nearly \$1,000,000 in its plant at that point, and has given steady employment to about 400 men.

SILVER BOW COUNTY.

IDUNA.—A strike of rich copper ore at this mine, in Ground Squirrel District, is reported. The property was sub-leased some weeks ago by Messrs. Cobban & Maloney, who began crosscutting north on the 200-ft. level and at a distance of 150 ft. struck a ledge, 5 ft. of which, it is said, assays 20% copper.

(From Our Special Correspondent.)

ALTOONA.—This claim, located a mile east of the present recognized productive area and operated by local parties, shows a wide vein on the 200-ft. level of ore assaying high in copper, the copper being in its native state. They are now sinking to the 400-ft. level, as they have great confidence in the permanency of their ore body. Being the first shaft to attain any depth in the vicinity, the drainage is very heavy, which makes the sinking slow and expensive.

ANACONDA COPPER MINING COMPANY.—This company has one of the two largest engines in the district almost ready for duty at the Never Sweat shaft, about 1,000 ft. west of the Anaconda shaft. The plant consists of a pair of vertical compound direct-acting Corliss engines, high-pressure cylinders, 26 in.; low-pressure, 46 in., both 72 in. stroke; H. P., 2,200. The motion is transmitted through beams to the disc cranks on the shaft operating the reels. The latter are controlled by band friction-clutches, and are 16 ft. 6 in. in maximum diameter, the rope $\frac{1}{2}$ in. by 8 in., beginning to wind at 7 ft. diameter. The engine will be operated as non-condensing at present, but it is built so that condensers may be connected whenever it is deemed advisable. The engines are designed to hoist four-decked cages, with one car on each deck, from a maximum depth of 3,500 ft.; the present depth is 1,200 ft. The builders are the Union Iron Works, of San Francisco, Cal. At the Mountain Consolidated mine, owned by the same company, an engine of the same dimensions as the above is partly in place. These are by far the largest engines in this district. The largest engine at present in operation in the county is in the Green Mountain mine, owned by the same company. It was built by the Webster, Camp & Lane Company, of Akron, O.

BOSTON & MONTANA CONSOLIDATED MINING COMPANY.—This company is operating the Butte & Boston smelter and concentrator. They are running on ore mined at the Pennsylvania mine, owned by themselves, and on ore mined by lessees on the Butte & Boston properties. The miners at the Leonard and West Colusa shafts have been idle about three weeks, owing, it is stated by some, to a disagreement between the employers and employees at the concentrator at Great Falls; there are also other reasons given for the partial shut-down. The striking of a 4-ft. vein, while crosscutting from the At-

lantic shaft was a premature announcement. Had it been a fact, it would be a matter of some importance to the shareholders, as the shaft is about a half a mile east of their present productive mines, and the company owns all the ground between on the course of the vein. This shaft (the Atlantic) was sunk to prospect this part of the property. It is over 600 ft. deep, and although the surface rises gradually from Silver Bow Creek, half a mile west of the shaft, it attained over 400 ft. in depth before the solid formation was encountered.

BUTTE & BOSTON MINING COMPANY.—These mines furnish employment to over 100 men, lessees and employees, and sufficient revenue is derived from the lessees in royalty, etc., to keep the properties drained and in good repair, ready to start up at short notice. One lease operated by Jacobs & Jenkins, on the East Gray Rock, produces over 30 tons of copper-silver ore per day. Some of the ore is shipped to Deadwood, S. Dak. James Davey & Company lessees on the same claim, are hoisting over 1,000 tons per month of the same character of ore, some of which is also shipped to Deadwood, there being a demand for a certain amount of copper ore to serve as collecting agent in a furnace smelting gold ore. Nearly all the lessees on the Butte & Boston properties are taking out ore, and some are fairly prosperous.

PARROT COPPER MINING COMPANY.—This company recently started to work on the Oneida location, a copper property between the Glangary and Silver Bow; they worked two weeks and quit, the vein being too small to suit them. They have since started to sink on the Hesperus further west, with the intention, it is said, of going 400 ft. before crosscutting. This company has not completed the new smelter which is being built at Gaylord, about 25 miles southeast of Butte, where they have secured a plentiful supply of water, which could not be obtained at the present plant.

NEVADA.

LANDER COUNTY.

CLIFTON TUNNEL.—This tunnel successfully tapped the water in the old workings on Lander Hill some time ago. The tunnel is 5,645 ft. long, and was begun about five years ago. J. F. Mitchell is the present foreman, and under his direction the work was completed with good results.

STOREY COUNTY—COMSTOCK LODE.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—At the annual meeting of this company, on October 19th, the following directors were elected: Charles H. Fish, Nat T. Messer, Charles Hirschenfeld, H. Zadig and Thomas F. Fish. Charles H. Fish was elected president, A. W. Havens secretary, and L. B. Lyman superintendent. The company has an overdraft at bank of about \$1,500, but is producing considerable bullion, which will more than offset the indebtedness.

STOREY COUNTY—BRUNSWICK LODE.

The following are extracts from the latest weekly reports of the mine superintendents:

CHOLLAR.—Shaft No. 1 has been sunk 15 ft. on the incline, and is down 657 ft. The bottom shows the footwall, on which is a streak of quartz of no value. 200-ft. level—The joint Norcross-Savage-Chollar-Potosi vertical double compartment upraise is now up 79 ft., having been advanced 14 ft. for the week. The top is in hard rock. 300-ft. level—East crosscut No. 1, 88 ft. south of the north line, was advanced 29 ft. for the week; total depth, 58 ft. When in 32 ft. it cut a small stringer, and when in 54 ft. it encountered a width of 18 in. of good ore, assays going from \$40 to \$60 per ton, half gold. The face is now in porphyry. 400-ft. level—The joint Norcross-Chollar south drift on this level is now out 142 ft., having advanced 21 ft. for the week. This drift is in hard ground, composed of porphyry and low-grade quartz.

CONSOLIDATED CALIFORNIA & VIRGINIA, BEST & BELCAER AND GOULD & CURRY.—Shaft No. 2—This shaft was sunk 14 ft. on the incline; total depth, 463 ft.; bottom in porphyry. Tunnel—The main tunnel has been advanced 12 ft., passing through soft porphyry; total length, 997 ft. The joint west crosscut on the Best & Belcher south boundary has been advanced 13 ft.; total length, 39 ft.; face in porphyry.

HALE & NORCROSS.—Shaft No. 1 has been sunk 15 ft. on the incline; total depth, 657 ft. The bottom is in porphyry and quartz. 400-ft. level—Advanced joint Norcross-Chollar south drift, 20 ft.; total length, 143 ft.; face is in porphyry and quartz. Advanced joint Norcross-Savage north drift 38 ft. and timber the same; total length, 207 ft.; face is in soft porphyry. 200-ft. level—The joint (four companies) upraise in Chollar ground was carried up 14 ft.; total height, 79 ft.; top in porphyry.

OCCIDENTAL CONSOLIDATED.—550-ft. level—The upraise from north drift from east crosscut has been timbered and extended 25 ft.; total length, 93 ft.; top in quartz of low assay value. The main east crosscut on this level has been extended 35 ft. through hard porphyry; total length, 385 ft. 855-ft. level—The west crosscut from the bottom of the winze has been extended 15 ft.; total length, 29 ft. At a point in said crosscut 22 ft. in we cut a streak of ore 3 ft. wide of fair grade, and the face of the crosscut is now in porphyry with small seams of quartz.

STOREY COUNTY—COMSTOCK LODE.

The following are extracts from the latest weekly reports of the mine superintendents:

CONSOLIDATED CALIFORNIA & VIRGINIA.—1,000-

ft. level—From west crosscut No. 2, started at a point in the north drift 550 ft. north from Consolidated Virginia shaft station, or 85 ft. south from north boundary line of mine, at a point 436 ft. from its mouth, the double compartment upraise has been carried up 21 ft., passing through porphyry, clay and lines of quartz assaying \$2 and \$4 per ton; total height, 72 ft.; the top of the raise continues in a favorable looking formation, 1,750-ft. level—From the twelfth to the twenty-fourth floors above the sill floor of this level, at the north end of the slope in old ground of former workings, they have extracted during the week 152 tons of ore, the average assay value of which, per samples taken from cars in mine, was \$44.50 per ton. On the eighth floor from the end of north drift are upraisings through old slope on tenth and eleventh floors, and have extracted from these openings a few tons of ore assaying from \$30 to \$40 per ton. The total extraction of ore for the week amounted to 152 tons, the average assay value of which, per samples taken from the cars when raised to the surface, was \$44.68 per ton.

HALE & NORCROSS.—On the 900-ft. level, from No. 1 upraise, they worked south on the fourth, fifth and sixth floors. On the fourth floor the streak is small. On the fifth and sixth floors they have several streaks of low-grade, but promising ore. Started a west crosscut on the sixth floor and advanced the same 5 ft. Made necessary repairs on this level the past week. 1,100 level—Sunk the winze 7 ft. The bottom is in old fillings and porphyry. Extracted during the week from the 900-ft. level 10 carloads of ore assaying, per mine car samples, \$12 in gold and 20 oz. of silver per ton.

MEXICAN.—On the 1,000-ft. level, the north drift from west crosscut No. 1 is in 183 ft. and the face is in softer porphyry and clay showing bunches of quartz, the latter assaying \$2 per ton.

OPHIR.—On the 1,000-ft. level, west crosscut No. 2, 190 ft. north of the south boundary, is in 91 ft. The face is in porphyry, clay seams and lines of quartz. In the old Central tunnel workings some low-grade quartz continues to be cut.

UTAH CONSOLIDATED.—In the west tunnel workings some quartz assaying \$1 to \$2 per ton is being followed south along the footwall.

NEW MEXICO.

GRANT COUNTY.

AMERICAN.—Messrs. Paul, Bell & Young have taken a lease on this mine, and at the present writing are working on a large body of low grade ore. A new strike was made in Granite Gap a few days ago. The ledge is about 15 ft. wide and is said to run high in silver.

LINCOLN COUNTY.

OLD ABE.—A new shaft is being sunk in this mine and no work will be attempted in the levels where the cave was. Rich ore was being worked at the 700-ft. level when the cave occurred. The levels at 400 ft. and all above were wrecked, but had been worked out.

NEW YORK.

FULTON COUNTY.

JACKSON SUMMIT.—A shaft has been sunk at this gold mine to a depth of 76 ft., and a quantity of ore obtained which is said to assay well. Active work has now commenced at the mine.

OHIO.

ATHENS COUNTY.

MINERS' STRIKE.—All the coal miners in the Athens District have gone to work at the 45c. rate with the expectation that the rate will soon be restored to 61c.

MONROE COUNTY.

FISHER OIL COMPANY.—This company has drilled in its No. 2, on the Price farm, located 600 ft. northeast of their No. 1, and will have a good producer. The same company's well on the Chess farm does not show any inclination to start to flowing again, and will be put to pumping at once.

OREGON.

BAKER COUNTY.

MAXWELL GOLD MINING COMPANY.—A reorganization of this company took place recently, at which time the following officers were elected: President, Joseph Palmer; vice-president, J. K. Romig; secretary and treasurer, J. H. Robbins. The place of business is at La Grande, while the mines and mills are located on Elkhorn Mountain. There are now 36 men on the payroll of the company.

JOSEPHINE COUNTY.

OREGON BONANZA.—A \$2,800 gold brick was the result of crushing 27 tons of rock from this mine on Williams Creek.

UNION COUNTY.

KELLY MILL.—The new quartz mill recently completed by H. L. Kelly at Sparta has been started up, and is successfully reducing the ores of the camp. It will be used partly as a custom mill, and will be run treating 300 or 400 tons of ore at once.

PENNSYLVANIA.

ANTHRACITE COAL.

CRYSTAL RIDGE COLLIERY.—Miners have been driving a tunnel at this colliery for the past few months, and have struck the Buck Mountain seam, which is good coal, varying from 9 ft. to 14 ft. in thickness.

TWIN SHAFT.—Another serious squeeze at this

ill-fated mine at Pittston has caused the Delaware, Lackawanna & Western Railroad tracks adjacent to the mine to sag, and it also threatens to unsettle the foundations of the first pier of the railroad bridge crossing the Susquehanna River. The squeeze has made itself felt at the Clear Spring colliery across the river, causing a temporary cessation of operations.

RHODE ISLAND.

PROVIDENCE COUNTY.

NEW ENGLAND MANUFACTURING COMPANY.—This company has been for some time at work on its property in Cranston, adjoining the city of Providence, and has uncovered by stripping and open cut a well-defined vein of graphite of fine quality some 40 ft. wide. As at present opened this vein extends from the outcrop on the surface to the bottom of the cut, which is on the face of a bluff about 45 ft. high. The depth is not yet determined, of course, though a drill boring has shown graphite 60 ft. below the bottom of the cut. Some very fine specimens of graphite have been taken out, and much of the product shows 40% to 65% pure carbon. In stripping and opening, a considerable quantity of graphite, chiefly of the lower quality usually found in Rhode Island, has been taken out. The company has been shipping some of its graphite crude as mined, but is now arranging to put up works for cleaning and grinding the product, which will then be shipped in merchantable form.

TEXAS.

MILAM COUNTY.

TEXAS BRIQUETTE AND COAL COMPANY.—This company informs us that its briquetting plant at Rockdale, recently destroyed by fire, will be rebuilt at once in a very substantial manner. The new plant will have a capacity of 300 tons of briquettes per day of 10 hours. The buildings will be iron and brick, and the whole plant will be fireproof throughout. Messrs. Stein & Boericke, Limited, of Philadelphia, Pa., are the engineers in charge of the work.

UTAH.

BEAVER COUNTY.

CACTUS MINING COMPANY.—This company is building a concentrator of 200 tons daily capacity in Copper Gulch, and is now employing about 50 men in the erection of the plant and in the development of its mining properties.

BOX ELDER COUNTY.

HIDDEN TREASURE.—M. C. Smith has completed the assessment on this group of mines located 9 miles southeast of Brigham, in Paradise mining district. This property is owned by Mr. Smith and Thomas Champney & Company. It is a copper proposition, and the ledge carries a pay streak which is 6 to 7 ft. wide and carries values of 15% to 64% copper and from \$6 to \$40 in gold to the ton. A company is being formed for the operation of the property.

JUAB COUNTY.

ANTELOPE.—Superintendent Bugby, of the Eureka Hill mill, at Eureka, has just made a strike on this mine in Marysvale Canyon. On this property, on which he has a lease and bond, Mr. Bugby has uncovered a 4-ft. vein of ore that assays 22 oz. in gold and \$5 to the ton.

SALT LAKE COUNTY.

AVALANCHE AND MARY JANE.—J. Elliot Condict, of the Salt Lake and Ogden Gas and Electric Light Company, has leased the above claims in the Little Cottonwood District from James Phillips for a period of one year, with the privilege of purchasing either or both of the claims at or before the expiration of a year at \$10,000 each. The conditions of the lease require Mr. Condict to pay 25% of the net proceeds of the property to the lessor. Mr. Condict has also secured a bond and lease from John S. Johnson, John Strickley and Henry C. Wallace on the Zacatecas claim, for which he will pay one-sixth of the net proceeds of the ore extracted, with the privilege of purchasing the property for \$15,000.

HAMLIN.—This property, owned by Col. M. Shaughnessy, of Salt Lake City, located near Duncan's, in main Bingham, has been leased and bonded to Jack Scott. Probably 2,000 ft. of tunnel work has been done, and in the past considerable high-grade gold ore has been taken out and marketed. It is Mr. Scott's intention to drift from the main tunnel in a southwesterly direction. His bond calls for a payment of \$45,000 for the property, and runs for two years.

TOOELE COUNTY.

AJAX MINING COMPANY.—The annual meeting of the stockholders of this company, of Tintic, was held recently for the election of a board of directors and officers, and for the hearing of a report of the operations of the property for the past six months. The officers of the company now are: Frank Knox, president and treasurer; Henry M. Ryan, vice-president; W. G. Nebeker, secretary. The remaining directors are George A. Lowe, Judge W. H. King, George H. Robinson and Judge Lawrence P. Boyle. The report shows that in the six months covered over \$22,000 of debts have been retired, and the treasury now contains over \$9,000 in cash, exclusive of ores extracted and in transit to the market.

VIRGINIA.

PULASKI COUNTY.

BERTHA ZINC COMPANY.—This company, of Pulaski City, will, it is stated, construct smelting

works at its mines for the development of zinc ore (sphalerite) lately discovered on its property.

WASHINGTON.

STEVENS COUNTY.

BONANZA.—This mine, situated 16 miles north of Colville, was recently sold by the sheriff for nearly \$7,000, and the property bought in by the numerous lienholders. Now it transpires that the lessee of the property, who has been operating the Bonanza and other properties for the past year, has failed to pay his men, and the employees propose to enforce a new series of liens aggregating upwards of \$2,000.

JAY GOULD.—T. F. Hertz, owner of this group of mines, located three miles from Chewelah, says extensive development work has been done upon the claims. Two shifts are now working the property. There are over 300 tons of ore on the dump. The ledge is over 30 ft. wide at a depth of 50 ft.

JOSIE L.—Oliver Hall, John Lloyd and Mr. Hagan, all of Colfax, owners of this mine, three miles from Usk, recently opened up a 20-ft. ledge of gray copper.

RAINBOW GROUP.—The Anglo-American Mining and Milling Company, of Rosland, has taken a six-months bond on this group of mines, on Palmer Mountain. The consideration is said to be \$80,000. The group consists of the Rainbow, Coyote and one or two others. A mill will be built at once, and the development will go on all winter. The character of the ore is free-milling gold. It is owned by Messrs. Dore, Harris, Farrell, McLaughlin and Clark.

WEST VIRGINIA.

KANAWHA COUNTY.

QUINNEMONT COAL AND COKE COMPANY.—This company became embarrassed and asked for a receiver. General Manager D. C. Boyd was appointed. The company have coal mines and a plant of 99 ovens in the Kanawha region.

TUCKER COUNTY.

DAVIS COAL AND COKE COMPANY.—The mine of this company at Thomas has just been equipped with machines whereby mining by the old method will be done away with. Two men are required to operate each machine, which will cut 147 ft. or 1,150 tons of coal in one day. The company also intends placing an electric mining locomotive for underground service in hauling the coal from the mine.

WYOMING.

JOHNSON COUNTY.

(From Our Special Correspondent.)

D. A. Kingsberry has returned from a prospecting trip in the main range of the Big Horn Mountains. He found and has brought down samples of an 8-ft. lead of quartz and slate that runs \$30 to the ton in gold. The lead matter is very much like ore from the Homestake mine in Deadwood, S. Dak.

JOHNSON COUNTY PROSPECTING COMPANY.—This company has finished its cabins and shaft-house, and commenced to sink on the copper mine. They have made an 8-ft. crosscut, and think they have proved that they are at work on a true lead.

MONTE CARLO.—D. T. Conaway, the Omaha chemist, has let a contract for a 200-ft. shaft on this copper lead at the Bull Camp. Work has just commenced.

OMAHA GOLD MINING COMPANY.—Thomas G. Smith, manager of this company, says they will shortly close down work on their placer mine on account of the cold. They now have their ditches and flumes completed, and will make a clean-up in the spring. It is 9½ ft. to bed rock on their property, which carries \$6.05 per yard.

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

TRAIL CREEK DISTRICT.

(From Our Special Correspondent.)

ANNIE FRACTION.—Three men are employed on this property sinking a shaft which has reached a depth of about 25 ft. Water has made its appearance, but not yet in considerable quantities. The distance from the shaft of the Annie to the face of the Big Bear tunnel is about 1,500 ft. and it is on the same line. The purpose of the Annie management is evidently to strike the Le Roi vein.

EVENING STAR.—This mine is now shipping small quantities of ore to the Trail Creek smelter. Mr. Scrafford, the superintendent, says the work of developing the mine is progressing favorably, and that his company will probably continue to ship ore, which can be done in small quantities under present arrangements, but will probably be increased when a railroad switch to the mine is built.

GEORGIA.—In company with Mr. Newman, the superintendent, a visit was made to this mine, and the 260-ft. level entered, at the face of which two men were at work with a diamond drill. For a distance of 60 ft. toward the face of the tunnel there is a considerable body of shipping ore which averages from 5 ft. to 6 ft. in width. The management is now endeavoring to reach the main body of ore, which lies in the direction of the Evening Star mine. The Georgia is owned by Victoria parties.

STAKING CLAIMS.—In brief, the way to do this under the B. C. Act of 1893 is immediately to mark the line between the posts 1 and 2 so that it can be

distinctly seen, and where the locality is wooded the brush must be cut and the trees blazed, and where there is neither, legal posts must be placed. It is distinctly stipulated that the discovery post shall be on the ledge, in place, and it must be marked "discovery post." At the time the claim is surveyed for a crown grant, the surveyor is governed wholly by posts 1 and 2, and the notice on No. 1 post and the records of the claim. A legal post is a stake standing 4 ft. above the ground, faced on each of the four sides for a distance of at least 1 ft. from the top. Each facing must measure at least 4 in. across, and a stump or tree cut across will do for this purpose.

WHITE BEAR.—A portion of the machinery for this company is on the ground and a force of men under Superintendent Dawson is engaged in placing the boiler in position. The shaft is down 41 ft. It is about 800 ft. southeast of the Ann's shaft.

BRITISH GUIANA.

GOLD EXPORTS.—The gold exports for the nine months to September 30th are reported at 82,159 crude ounces, equal to 71,685 fine ounces, or \$1,461,065 in value. This shows a decrease of 1,320 fine ounces, or \$27,290 in value, as compared with last year.

**INDIA.
MYSORE.**

COLAR GOLD FIELD.—The total gold production in September was 27,439 crude ounces, an increase of 700 oz. over August, and of 5,937 oz. over September, 1895. The production for the nine months ending September 30th was 243,329 oz., which compares with 182,808 oz. for the corresponding period last year, 152,717 oz. in 1894 and 154,479 oz. in 1893. The production of the reporting mines for September was as follows: Mysore Reef, 128 oz.; Balaghat-Mysore, 182 oz.; Mysore West & Wynaad, 285 oz.; Coromandel, 810 oz.; Nundydroog, 4,080 oz.; Ooregum, 5,021 oz.; Champion Reef, 7,605 oz.; Mysore, 9,328 oz. The September output is the largest ever reported in a single month.

**MEXICO.
SONORA.**

(From an Occasional Correspondent.)

In the past few months there has been a marked activity in mining in the State of Sonora. An important event in this direction is the approaching completion of the Torres-Prietras Railroad. The track is now laid within two miles of La Colorado, and trains are running between Hermosillo and Torres.

**SOUTH AFRICA.
TRANSVAAL.**

WITWATERSRAND GOLD OUTPUT.—The total production of gold from the Witwatersrand mines in September, uniting the returns made by the Chamber of Mines and the new Association of Mines, was 202,561 crude ounces, showing a decrease of 10,857 oz. from that of August, but a gain of 7,797 oz. over that of September last year. A considerable part of the decrease from August may be explained by the fact that there was one working day less than in August. For the nine months to September 30 the output was 1,674,365 crude ounces gold, which compares with a total of 1,711,337 oz. for the corresponding period last year; 1,693,373 oz. in 1894; 1,056,794 oz. in 1893, and 874,157 oz. in 1892. The decrease from last year has been 36,972 oz., or 2.2%. The production this year was equivalent to 1,366,282 fine ounces gold. The largest mine yields for the month were: Robinson, 19,234 oz.; Ferreira, 13,829 oz.; Crown Reef, 11,468 oz.; New Primrose, 10,038 oz.; City and Suburban, 9,968 oz.; Langlaagte Estate, 9,697 oz.

WESTERN AUSTRALIA.

GOLD EXPORTS.—The exports of gold from the colony, which were rather disappointing earlier in the year, have shown an improvement during the third quarter. The returns are as follows, in crude ounces:

	1895.	1896.	Changes.
	Crude oz.	Crude oz.	D. 8,387
First quarter.....	53,814	45,427	I. 12,507
Second ".....	54,464	66,971	I. 18,969
Third ".....	62,107	81,076	I. 23,089
Total, nine months.....	170,385	193,474	I. 23,089

The increase for the nine months was 12.1%. The exports are not the entire output, but they come very near to it and give a good indication of the course of production.

LATE NEWS.

LEHIGH & WILKES-BARRE COAL COMPANY.—An explosion of gas occurred in No. 3 shaft of this company at Wilkes-Barre on the afternoon of October 29th. When the explosion occurred Wm. Lacy, a contractor, was at work in a rock tunnel about a mile from the foot of the shaft with 13 men. Of these four were killed, two were injured and the remainder escaped unhurt. Immediately after the explosion a rescuing gang was organized by Fire Boss Wm. R. Jones and Assistant Foreman John W. Josephs. The men went down the shaft, Jones and Josephs being far in advance. When about one mile from the foot of the shaft they stumbled over the bodies of four men, Lacy, Owens, Herring and Worth. At this point Jones and Josephs were overcome by after-damp and fell dead. The other rescuers were forced to beat a hasty retreat, bring-

ing the bodies of Jones and Josephs with them. A few hours later the air current was partly restored and the men were able to push their way into the tunnel, and recovered the bodies of the four miners. The cause of the explosion is not known, all the men having used safety lamps.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Oct. 30.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending October 24th, 1896, compared with the corresponding period last year:

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	97,340	2,943,132	3,043,168

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending October 21st, and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	47,054	2,292,750	2,523,562
Barclay, Pa.....	.....	135,547	.....
Beech Creek, Pa.....	168,464	2,384,903	2,297,301
Broad Top, Pa.....	7,323	305,613	224,036
Clearfield, Pa.....	80,936	3,611,429	4,368,698
Cumberland, Md.....	81,863	2,835,109	2,337,725
Kanawha, W. Va.....	.....	12,895,710	2,341,010
Phila. & Erie.....	989	63,108	39,897
Pocahontas, Flat Top.....	*17,192	2,653,904	1,938,468
Totals.....	334,171	17,107,603	16,126,727

* For year ending October 3d.
† For year ending October 7th.
‡ For year ending October 21st.

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	25,239	1,029,559	691,036
Pittsburg, Pa.....	31,557	1,534,020	1,314,487
Westmoreland, Pa.....	36,582	1,525,303	1,344,686
Totals.....	96,178	4,088,882	3,300,209

Grand totals..... 430,349 21,196,485 19,416,936
Production of coke on line of Pennsylvania Railroad for the week ending October 24th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 51,914 tons; year, 3,211,959; to corresponding date in 1895, 4,711,054 tons.

Anthracite.

Trade in anthracite continues undiminished in volume, and this, considering the attention given to politics, must be considered exceptionally good. All producers are reported to be mining their full amounts of coal, and some are going beyond their understood limit. This will result in a tonnage for the month in excess of the quantity determined upon. The tonnage for the year, however, is going to fall short of last year's figures, and also considerably below the figures that, at the beginning of the year, it was expected would be made in 1896. The demand for the middle sizes still continues much better than for the larger and smaller, though one company reports that it has reduced its stock of small sizes fully 15% during the month. The restriction of small sizes is necessary during the winter months, as their preparation for market is accomplished in many breakers with the use of water, resulting in their freezing and being then handled with much difficulty. Old orders are being filled to some extent though these are growing steadily less. New orders do not bring the full September prices, although it is said the rates paid are more nearly approaching them.

The September schedule of prices is as follows: \$4 for broken, \$4.25 for egg and chestnut and \$4.50 for stove.

NOTES OF THE WEEK.

The statement of the Philadelphia & Reading Coal and Iron Company for September and the ten months of the fiscal year from December 1st to September 30th is as follows:

	Sept.	Ten months.
Earnings.....	\$2,171,411	\$18,385,191
Expenses.....	2,065,789	18,653,901
Net or deficit.....	N. \$105,622	D. \$268,710
Fixed charges.....	95,000	950,000
Surplus or deficit.....	S. \$10,622	D. \$1,218,710

The earnings in September show a surplus over fixed charges for the first time in many months. Expenses for the year included \$703,717 for colliery improvements.

Bituminous.

The Atlantic seaboard soft coal market has a much better tone to it now than at any previous time this Fall. There are more orders in the hands of producers and of shippers than for some time past, and apparently the supply of them is to be better. The cause of this change is chiefly a discounting of the election by the users of soft coal, who are getting ready for an increased business. Orders are banking up to a slight extent in producers' hands from the difficulty of getting vessel tonnage for coastwise shipments. This is quite a novelty to the producers, and it helps them to judge ahead more correctly of the proper output of their mines.

The far East is calling for a little more than its usual proportion of coal, though the Sound ports seem to be increasing their demand slightly. The ocean freights from the lower ports to Sound ports have now reached the limit that makes the taking of coal from the New York harbor shipping ports for Sound shipments more advantageous than from the lower shipping ports, there being now a practi-

cal difference of 20c. a ton besides the discharges between the two shipping localities. New York harbor trade is feeling the increased demand somewhat and is calling for a slightly larger quantity of coal.

All-rail trade seems to be unchanged and keeps in about the regular volume. Trade local to the shipping ports is slightly better than it was.

Transportation from mines to tide is not as good as it was, thereby showing the increased shipments generally in the trade that are reaching the main line railroads to be taken care of. Car supply is excellent.

In the coastwise vessel market vessels are quite scarce for the demands upon them, and a better supply could be utilized at this time. We hear of some of the larger class of coasting vessels taking on grain for foreign points, thus taking them out of the market and reducing the available supply of vessels just so much. Freight rates are stronger and inclined to advance.

We quote current rates of freight from Philadelphia as follows: To Boston, Salem and Portland, 80c.; Providence, New Bedford and other Sound ports, 70@75c.; Wareham, 85c.; Lynn and Newburyport, 95c.@\$1; Portsmouth, 90c.; Dover, \$1.10@1.15, alongside and towage; Saco, \$1. alongside and towage; Bath, 85c.; Gardiner, 85@90c., and towage; Bangor, 95c.@\$1. Five and 10 cents above these rates are asked from Norfolk, Newport News and Baltimore.

The association prices remain as follows: F. o. b. Philadelphia, Norfolk and Newport News, \$2.35; Baltimore, \$2.28; New York Harbor shipping ports, \$2.80, alongside; New York Harbor, \$3. There is a 2c. differential in favor of Clearfield and Beech Creek coals.

NOTES OF THE WEEK.

The Davis Coal and Coke Company, whose 170 coke ovens at Coketon, W. Va., have been idle for some time, started up a large number of these during the past week.

Buffalo.

Oct. 29.

(From Our Special Correspondent.)

The anthracite coal trade has been quiet the past few days. The week opened with flurries of snow and cold weather here and heavy snowstorms on the upper lakes. Since then we have had four real summer days. The quotations of anthracite are unchanged, and dealers are not expecting any variation just now. Bituminous coal is dull and nominally unchanged in price. Demurrage charges are now frequent, as supply far exceeds the demand. Lake freights on coal are firm; shipments are large and would be larger if there was more coal here to go westward.

The shipments of coal westward by lake from Buffalo from October 18th to 24th, both days inclusive, were large, aggregating 108,515 net tons, distributed as follows: 54,350 tons to Chicago, 27,910 tons to Milwaukee, 9,100 tons to Duluth, 5,000 tons to Superior, 1,200 tons to Green Bay, 700 tons to Gladstone, 1,400 tons to Kenosha, 650 tons to Detroit, 1,000 tons to Fort William, 1,100 tons to Racine, and 6,105 tons to Toledo. The rates of freight were 30c. to Chicago, Milwaukee and Marine City; 40c. to Green Bay, Escanaba, Racine and Kenosha; 25c. to Fort William, Toledo and Detroit, and 20c. to Duluth, Superior, Gladstone and Ashland. Closing firm, with shipments limited, as supply of coal for the West on the dock is small.

Advertisements have been printed of the specifications and proposals for the extension of the breakwater and catch pier at Buffalo, accompanied by a map. The cost of the work will be in the neighborhood of \$2,200,000. The work will be commenced early next spring.

Some of the canal-boats of the Cleveland Steel Canal Boat Company will engage in the coal trade of Long Island Sound this coming winter.

Chicago.

Oct. 28.

(From Our Special Correspondent.)

Anthracite.—A warm week, one of regular Indian summer, with the thermometer as high on several days as 65°, has had the effect of almost stopping the demand that was started by the recent cold spell and the feeling that winter would soon be here. Out-of-town business has almost settled back again to its old state of dullness and dealers are accordingly suffering another attack of the blues. Stocks of anthracite coal in this city, and all over the West and Northwest, have never been lower and when buying really sets in an enormous quantity of coal will move. The shading of circular rates is becoming more in evidence with each week, that practically being the only inducement a dealer can offer to sell coal. On orders of fairly large amounts the cutting is quite marked. The Grand Jury has put off its investigation into the alleged coal trust until the November term of the Court. The use of soft coal appears to be becoming general in this city, for each day the atmosphere grows worse, showing conclusively that the high cost of hard coal has driven consumers to burning bituminous. The city

has been prosecuting offenders against the soft coal smoke ordinance for years, but conditions are seemingly now as bad as ever. Circular prices of hard coal are: Grate, \$5.60; egg, stove or chestnut, \$5.85, f. o. b. Chicago.

Bituminous Coal.—Coal continues in fair demand because of its greater use for heating purposes, etc. The amount of soft coal bought by manufacturing plants has not increased to any extent, though inquiry is active. The superior grades of soft coal are now in much better demand. The mines in Illinois, Indiana and Ohio are running full, and large quantities of coal are coming forward.

Pittsburg. Oct. 29.

Coal.—This month has been noted for plenty of water for coal shipments. Another rise, since our last, came to hand and was followed by a further shipment of 1,500,000 bu.; this cleans out the harbor and ports of loaded coal. Another deal of considerable magnitude has just leaked out involving an outlay of a million of dollars. Several local and New York capitalists are negotiating for the purchase of 50,000 acres of rich coal land in Virginia. Both sides want a change; coal operators and miners have enough of the low rate which keeps prices down. Most of the mines along the Monongahela are working, but it is for local trade, as prices and demand in Southern markets are not favorable at this time. The seaboard miners are also moderately busy, and shipments are keeping up fairly well. The 54c. rate now ruling in this district is enabling the operators to compete with Ohio and Western coal in the middle and Western States.

Connellsville Coke.—The trade since our last showed quite an improvement, an increase in shipments as well as production of fully 3,000 tons. A wealthy firm has made arrangements to build a mammoth coke plant with a large number of ovens, on an entirely new system of by-product manufacture introduced, by which the cost of production would be greatly lessened. No new ovens were fixed up, but the outlook this week makes the operators more hopeful, and they anticipate a continuation of the improvement. The better demand for iron is the cause of the cheerfulness on the part of the coke operators, and a largely increased trade would be soon realized.

Coke movements in the region show 7,129 ovens in blast with 10,843 idle, about the same as last week. The production for the week is estimated at 60,844 tons, as against 58,344 tons the week previous. In the running order, 401 ovens made six days, 2,328 ovens five days, 4,378 ovens four days, an average of 4.36 days as against 4.01 days the week previous. The week's shipments from the region were as follows: To Pittsburg and way points, 1,630 cars; to points west of Pittsburg, 1,237 cars; to points East, 308 cars; total, 3,445 cars.

Shanghai, China. Sept. 25.

(Special Report of Wheelock & Co.)

Coal.—Japan coal remains in much the same state as it was when we wrote a fortnight ago, it being absolutely unobtainable except from one or two mines, and then only in small quantities. We hear that several new mines are to be opened shortly, but it will be some time before the output will reach large proportions. Small quantities of Mike (small) have changed hands, but at prices we are not able to quote. There is no stock of Cardiff coal; offers have been made for cargoes to arrive, but have not been accepted. Sydney Wollongong is not in much demand. The amount of such coal here at present is very large, and is difficult to handle. The only business done is sales of small lots to consumers at 6'80@7 taels per ton.

We quote: Cardiff, 11.25 taels per ton; American anthracite, 9 taels per ton; Sydney Wollongong, 7.25 taels per ton. Japan coal is at 5.75 taels for Takasima lump; 5 taels for Namazuta lump, and 3.50@4 taels per ton for other sorts.

Kerosene Oil.—There has been a very large business in this, especially in Devoe's, but all transactions have been entirely from second hands. The market fluctuated considerably, and sales have been made at 1.58@1.62 taels per case, the latter rate being the closing quotation. Russian has been placed at 1.56@1.57 taels, and there are offers at the latter price, but few sellers. The arrivals have been quite numerous. Stocks, including these arrivals, amount to 650,000 cases Devoe's, 475,000 cases Russian and 33,000 cases Langkat.

Quotations are as follows, per case: American Devoe's, 1.62 taels; Russian Batoum, 1.56 taels; Russian Batoum, bulk, 1.47@1.5 taels; Langkat, 1.52 taels.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Oct. 30, 1896.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From		From	
	Nov. 1, 1895.	Oct. 30, 1896.	Jan. '95.	Tons.	Jan. '96.	Tons.
Anthracite.	56	34,250	26	15,150	982,018	1,027,310
Coke....	150	172,450	81	94,650	6,340,694	6,238,104
Charcoal...	22	4,830	24	6,750	182,635	252,065
Totals....	228	211,530	131	116,550	7,505,347	7,577,479

The iron market is still waiting. An increased activity is reported in several quarters, but it does not yet amount to a revival of business; a good deal

more has to be done to make that. Large transactions are not found yet. The chief activity at present is in the Pittsburg district, where quite a number of sales of Bessemer pig are reported, and the furnaces are beginning to talk of starting up again. Most of the idle stacks around Pittsburg and in the Mahoning and Shenango valleys are ready to go into blast at very short notice. Contracts for next year deliveries are scarce, as yet, notwithstanding a good deal of talk.

As we have heretofore remarked, there is a general belief that, even if business does revive, no great increase in prices is to be expected. The first rush of orders may carry up quotations for a time, but the large idle mill and blast furnace capacity ready to start up on the first opportunity is a guarantee that they will not go to an unreasonable level, and that no considerable increases can be permanently held. Even in those sections of the trade which are covered by pools or combinations it is not believed that any marked advances can be made and kept effective.

NOTES OF THE WEEK.

Birmingham despatches report an additional sale of 10,000 tons of Alabama pig iron for export. The grade is not stated, but the price is said to be \$7.20 at shipping port.

The Pittsburg iron founders have formed an association on the same lines as those adopted by the founders in Philadelphia and Chicago. The name is the Pittsburg Foundrymen's Association, and the objects are stated to be "the advancement of the interests of foundry operators or all who are concerned in the casting of any kind of metal in sand, loam and other molds for any purpose. To promote the mechanical and industrial interests, to collect for the use of the association all proper information connected with the foundry business and to promote harmony and encourage uniform customs and actions among foundrymen." The association will not in any way attempt to control prices nor to regulate labor matters. The officers are Robert Taylor, president; Wm. Yagle, vice-president; J. S. Seaman, treasurer; Frank H. Zimmers, secretary.

New York. Oct. 30.

A little more business is showing in the local market, and the shops are evidently getting orders which require some material to fill them. While there are many expressions of confidence in the future, however, large contracts are still held back, and at least another week of waiting is to be expected. After that, there may be a rush; a good many are preparing for it in a quiet way. The contraction of loans by the banks continues, and naturally does not help trade.

Pig Iron.—There have been more sales to foundries than for a number of weeks past, and some inquiries for prices on 1897 delivery. The feeling is better upon the whole, and selling agents are inclined to keep firmly to their prices. Nearly all the large foundries in this district have only small stocks, and heavy buying must follow any increase in orders. No speculative transactions are noted here, and no charge in prices.

We quote for Northern iron: No. 1 foundry, \$12@12.75; No. 2, \$11.25@12; No. 2 plain, \$10.50@11; gray forge, \$10.25@10.75. For Southern iron prices are: No. 1 foundry, \$11.25@11.75; No. 2 foundry, \$10.75@11.25; No. 3 foundry, \$10.25@10.75; No. 1 soft, \$10.75@11.25; No. 2 soft, \$10.25@10.75; forge, \$10@10.50; basic pig, \$10.75@11.25. All prices are for tidewater delivery.

Cast-Iron Pipe.—Business has been limited to dickering over some small New England contracts. Next month inquiries for spring contracts will begin to come in.

Spiegelisen and Ferro-Manganese.—Prices are nominal in the absence of sales. Ferro-manganese is quoted at \$46.50@47 for imported 80%, New York.

Steel Billets and Rods.—The pool prices are \$21.75, New York, for Bessemer billets, and \$23.75, New York, for open-hearth billets. Very little new business is reported here. Rods are \$28@29, with few sales.

Merchant Iron and Steel.—The market is still quiet, but there are more small orders coming in. Prices shows no quotable change. For bars we quote: Common, 1'10@1'15c.; refined, 1'20@1'45c.; soft steel bars, 1'20@1'30c. The bar mills have agreed to allow a rebate of \$3 per ton on all orders for carload lots or over; this is to meet the competition of soft steel bars, which is cutting into the bar iron trade quite severely. Other quotations are: Steel hoops, 1'50@1'60c.; steel axles, 1'60@1'75c.; links and pins, 1'60@1'70c.; tire steel, 1'80@1'90c.; spring steel, 1'95@2'15c. All prices are for delivery on dock, New York.

Plates.—There are more small sales noted, and prices are more firmly held. We quote for universal mill plates, 1'30@1'40c. For steel plates we quote: Tank, 1'25@1'35c.; boiler shell, 1'45@1'55c.; good flange, 1'60@1'75c.; firebox, 1'90@2'40c. Charcoal iron plates are quoted 2'25c. for shell, 2'75c. for flange, and 3'25c. for firebox. Rivets are 2'15@2'25c. for steel and 3@3'25c. for iron.

Structural Iron and Steel.—A few small orders have been placed, and there is more work in the local shops, but large contracts are still held back. We quote for angles, 1'25@1'35c.; channels, 1'70@1'75c.; tees, 1'65@1'70c.; beams, 1'70@1'75c. for large orders, and 1'80@1'90c. for small lots.

Nails.—The pool price continues \$2.55 per keg f. o. b. Pittsburg for steel wire nails, and \$2.30 per keg f. o. b. Pittsburg for cut nails. Business is light, buyers taking only what they are obliged to have. At the monthly meeting of the association this week no change in prices was made. There is a general impression that a reduction will be made next month, but it is hard to say just what this is based on.

Wrought-Iron Pipe.—Small orders are somewhat more abundant. Discoun's are as follows for plain pipe, out of store: 1 1/2 in. and over, 67, 10, 10, 10 and 5%; 1 1/4 in. and under, 57, 10, 10, 10, 10 and 5%. Galvanized pipe, 1 1/2 in. and over, 55, 10, 10, 10, 10 and 5%; 1 1/4 in. and under, 52, 10, 10, 10, 10 and 5%. Boiler tubes, 1 in. to 2 1/2 in., 70, 10 and 5%; 2 1/2 in. up, 70 and 5%. Cold-drawn seamless steel tubes, 60%.

Steel Rails and Rail Fastenings.—The combination price is still \$28.75 per ton at tidewater or \$28 at mill, for heavy sections. Girder rails are \$29@31, tidewater. No business is reported here. Agents are talking of heavy orders for 1897, but no contracts have been made.

Little is doing in rail fastenings. Angle-bars are 1'15@1'25c. and spikes 1'60@1.65c., tidewater delivery. Bolts are 1'85@1'95c. for square nuts, and 1'95@2'05c. for hexagon nuts.

Old Rails.—Old iron rails are quoted \$12.50@13.50, New York. Old steel rails are quoted \$10@11.50, with small sales; \$12 is asked for good lots. Old steel rails fit to relay, standard sections, can be had at \$20@22, New York harbor, according to condition; no sales are noted this week.

Scrap Iron.—Cast scrap is a little more in demand and good lots are firmer. We quote for good machinery scrap \$10@11.50 per ton; ordinary cast scrap, \$8@9.50; stove-plate and mixed, \$6@7.50. A sale of a good-sized lot of old wrought-pipe and tubes for export is reported at \$7.50 per ton f. o. b. ship, New York.

Buffalo. Oct. 28.

(Special Report of Rogers, Brown & Co.)

Consumption of pig iron in this territory remains unchanged. Many plants are shut down, while others are running only half time. It is needless to say that ere long there will be a change; whether the plants now running will join the idle list, or those now idle start up, remains to be seen. The withdrawal from this market of the largest Southern producer has had a stimulating effect on the sales of Northern iron, and the furnaces in the North are now less inclined to contract for the future. Some brands of Northern iron have advanced, but the probabilities are the prices mentioned below are about the average. The quotations given below are on a cash basis f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$12.25; No. 2 strong foundry coke iron, Lake Superior ore, \$11.75; Ohio strong softener No. 1, \$12.25; Ohio strong softener No. 2, \$11.75; Jackson County silvery No. 1, \$15.25; Southern soft No. 1, \$11.40; Southern soft No. 2, \$11.40; Lake Superior charcoal, \$14@14.50.

Chicago. Oct. 28.

(From Our Special Correspondent.)

Pig Iron.—Pig iron has been in considerable demand during the past week, fully 10,000 tons having been placed in this market. There has been considerable buying here of late of what might be called speculative. Buying for the week has been in carload lots up to one of 2,500 tons. Prices are firm, and for delivery beyond the first of next year an advance of 25@50c. a ton is asked for and obtained. We quote: Lake Superior charcoal, \$13.50@14; local coke foundry No. 1, \$11.25@11.75; No. 2, \$10.75@11.25; No. 3, \$10.25@10.75; local Scotch foundry No. 1, \$11.25@11.75; No. 2, \$10.75@11.25; Southern coke No. 1, \$11.35@11.50; No. 2, \$10.90@11.10; Southern No. 1, soft, \$10.90@11.10; No. 2, soft, \$10.90@11.10; Southern silveries No. 1, \$11.25; No. 2, \$11; Jackson County silveries, \$14@16; Ohio strong softeners, \$14@14.25; Alabama car-wheel, \$16.25@16.75; malleable Bessemer, \$12.25@12.50.

Bar Iron.—There has been but little activity in bars, buying having been confined to sales of small quantities. Common iron is quoted 1'30c., and guaranteed, 1'35@1'40c.

Steel Rails.—There has been no increased activity in rails, buying still continuing for limited quantities. The railroads throughout the West are greatly in need of rails and with the proper inducement they will surely come into the market. Rails are quoted \$29, Chicago.

Billets and Rods.—Billets are still quiet with some good orders in sight. Rods are in small demand. Billets are quoted \$21.25 and rods \$27.50.

Structural Material.—A great deal of business is hung up pending election. Business now on is limited to lots for small bridge or building work. Quotations are as follows: Beams and channels, 1'70@1'75c.; angles, 1'30@1'35c.; plates 1'35@1'40c.; tees, 1'50@1'55c.

Old Rails and Wheels.—No sale of any importance in either line is observed. Old iron rails are quoted \$1.50, and old wheels \$12.

Cleveland. Oct. 28.

(From Our Special Correspondent.)

Iron Ore.—Scarcely anything has been done in the iron ore market during the past week so far as actual sales are concerned, but the developments

are said to be of a hopeful character as to the future of the market. Sellers are looking for a better demand, because the Presidential campaign is near an end and the outcome seems to be favorable to the business interests. The demand, however, is denied them at present. The nominal quotations are as follows: Standard hard speculars, Bessemer quality, \$4.50@5; standard hematites, Bessemer quality, \$4@4.25; standard hard hematites, non-Bessemer quality, \$3@3.50; standard soft hematites, non-Bessemer quality, \$2.40@3.

The ore movements are very light. The shipments from the upper to the lake ports continue as moderate as during the past three or four weeks. The freight rates remain the same, and the prospects are that they will be unchanged during the remainder of the season.

Pig Iron.—The total amount of pig iron sold during the past week is much larger than for many weeks past and the dealers are correspondingly encouraged. The sales have embraced nearly all the different kinds of iron, but more particularly Bessemer, foundry and charcoal irons. The following are the quotations, f.o.b. Cleveland: Lake Superior charcoal, \$13.50; Bessemer pig, \$11@12.25; No. 1 foundry iron, \$12.25; No. 2 foundry, \$11.75; No. 1 Ohio Scotch, \$12.25; No. 2, \$11.75; Mahoning & Shenango Valley neutral mill irons, \$10.75; Mahoning & Shenango Valley red short mills, \$10.75.

Philadelphia. Oct. 30.
(From Our Special Correspondent.)

Pig Iron.—A good many people are talking about an advance of 25@75c a ton having been made in pig iron, but all brokers and makers have made quotations at old published figures within 24 hours. Several large consumers want to have assurances that they can send in orders any time next month and have them booked at the prices privately made now. Some business has been done this week on this basis. The tone of the market is decidedly stronger, and there are six or seven brands, the production of which for a month or two ahead is now virtually sold. There are more buyers looking after forge iron than for a long time, but good irons are to be had at \$10.50@11; No. 2, 11.50@12; No. 1, \$12.50@13. Bessemer has begun to sell well. Low phosphorus is \$15.50@16, nominally.

Steel Billets.—The users of billets have not begun to make any stir yet, but those who want billets are only keeping an eye on the market.

Merchant Bars.—No business has been done at our bar mills worth speaking of. Prices have been crowded down to cost. Buyers are waiting for an advance. Prices, 1'20@1'30c.

Skelp.—Rumors are current of large orders going elsewhere. Buyers here will not move for the present. Mills need work badly, but manufacturers have withdrawn certain shaded prices made known three and four weeks ago, to get business to keep going.

Sheets.—There is some business in galvanized iron to finish up work on hand.

Pipes and Tubes.—Business was offered this week at prices named one month ago, but declined. The offer then was on the basis of a large order.

Merchant Steel.—Prices on several kinds of merchant steel were marked up; that is, certain demoralizing quotations were withdrawn in view of expected better markets after next week.

Plate and Tank.—A run of orders began on Monday and two or three mills that were running part time are now on full, with small orders. Ordinary plates are 1'20c.

Structural Material.—Brokers and manufacturers have nothing to say of the present but more of the future possibilities. There is certainly much work resolved upon and the possibilities are from our standpoint that by December builders and others will be ready to place orders. It transpires that some assurances have been given that prices will not be advanced on orders placed as early as December. Two new office buildings are projected, to be larger than anything yet built. One will be on the corner of Chestnut and Broad and the other farther down Broad street, in the same block.

Steel Rails.—No orders. Railroad managers are desirous of knowing the intentions of rail-makers for 1897.

Old Rails.—Rails are offered at \$13@13.50.

Scrap.—Yard men count on selling their piles down low during the next few weeks. Iron axes are held firmly at \$16. Railroad is to be had at \$13; heavy steel scrap at \$11@12 per ton.

Pittsburg. Oct. 29.
(From Our Special Correspondent.)

Raw Iron and Steel.—Business last week in this district showed up well in volume, with an advance in prices in most descriptions. There was an increased activity in Bessemer pig iron at improved prices, and throughout the iron and steel trades there is a decidedly more hopeful feeling concerning the business outlook for the future; but present demand for finished products continues moderate. Holders show increasing firmness. Many are of the opinion that there will be a material improvement soon. The speculative purchasers of pig iron hold the price steady, for there is a strong demand for Bessemer, while gray-iron is very firm and tending upward. In conversation with an Ohio Valley furnaceman, he remarked their price for Bessemer was \$12, being an advance of 75c. within a few days. This would make Pittsburg prices \$12.65. Par-

ties who studied the situation and made heavy purchases of Bessemer and mill iron within the past 10 days have done well, with a good prospect of doing still better. Great preparations have and are being made for the expected increase in most departments of the iron and steel trade; several of the leading plants are making improvements which will give them greatly increased capacity. Some of these are under way and others will be soon. Quite a number of open-hearth furnaces are now building, with many others under contract. In bar iron there has been a material decline without affecting wages. The Merchant Bar Association is to give a rebate of \$3 per ton on large orders; this will no doubt increase the demand and give the puddlers more work.

Latest.—The market is firm, prices well maintained and volume of transactions liberal. Certain Valley furnaces refuse to sell at present prices. Steel billets are held at pool prices, but demand is extremely light. Sheet bars are held firmly. Blooms, billets and bar ends sold at an advance. The general outlook is very promising. Gray forge and foundry irons are very firm.

COKE, SMELTED, LAKE AND NATIVE ORE.		Tons.	Cash.
1,000	Bessemer, Oct., Nov., Dec., Pitts.	12.25	
3,500	Bessemer, Dec., Jan., Feb., Pitts.	12.00	
2,500	Bessemer, Oct., Nov., Pitts.	12.00	
3,000	Bessemer, Dec., Jan., Pitts.	12.15	
2,000	Bessemer, Nov., Dec., Jan., Pitts.	12.00	
2,000	Bessemer, Oct., Nov., Pitts.	12.10	
2,000	Bessemer, Nov., Dec., Valley.	11.25	
2,000	Bessemer, Nov., Dec., Valley.	11.00	
2,000	Bessemer, Dec., Jan., Pitts.	12.10	
2,000	Bessemer, Nov., Dec., Valley.	11.10	
2,000	Bessemer, Nov., Dec., Valley.	11.00	
2,000	Bessemer, Nov., Dec., Valley.	11.30	
1,800	Bessemer, Nov., Dec., Valley.	12.10	
1,500	Bessemer, Nov., Dec., Valley.	12.00	
1,000	Bessemer, Nov., Dec., Valley.	11.00	
1,000	Bessemer, Dec., Jan., Mar., Valley.	11.40	
1,000	Bessemer, Jan., to June, Valley.	11.75	
700	Gray Forge, spot, Pitts.	10.10	
500	Gray Forge, spot, Pitts.	10.15	
500	Gray Forge, Nov. and Dec., Pitts.	10.00	
500	Bessemer, Nov., Dec., Valley.	11.25	
300	No. 1 Foundry, spot, Pitts.	12.00	
200	No. 2 Foundry, spot, Pitts.	11.60	
200	No. 2 Foundry, spot, Pitts.	11.65	
200	No. 1 Foundry, spot, Pitts.	12.50	
CHARCOAL.			
300	Cold Blast, Pitts.	\$23.00	
Tons. Cash.			
100	No. 3 and 4 Foundry, Pitts.	15.75	
75	No. 2 and 3 Foundry, Pitts.	15.80	
50	Cold Blast, extra, Pitts.	28.50	
STEEL WIRE RODS.			
4750	5-gauge, delivered, Pitts.	\$24.00	
SKELP IRON.			
1,500	Wide grooved, Pitts.	\$1.20 4 m.	
1,000	Narrow grooved, Pitts.	1.20 4 m.	
600	Sheared, Pitts.	1.32 1/2 4 m.	
SKELP STEEL.			
600	Wide grooved, Pitts.	\$1.10 4 m.	
500	Narrow grooved, Pitts.	1.10 4 m.	
350	Sheared, Pitts.	1.20 4 m.	
OLD RAILS AND SCRAP.			
150	Cast borings, net, Pitts.	\$6.00	
100	Wro't Turnings, net, Pitts.	6.75	
100	No. 1 cast, gross, Pitts.	9.25	
100	No. 1 Wro't, net, Pitts.	11.50	
BLOOMS, BILLETS AND SLABS AT MILL.			
1,500	Billets, Nov., Dec., at mill.	\$20.25	
1,900	Billets, Nov., Dec., at mill.	20.25	
500	Billets, prompt, at mill.	19.85	
500	Billets, spot, at mill.	19.80	
200	Billets, prompt, at mill.	20.25	
MUCK BAR.			
800	Neutral, delivered, Pitts.	\$20.25	
100	8% Imported, Pitts.	\$19.50	
50	8% delivered, Pitts.	49.25	
BLOOMS, BILLETS AND BAR ENDS.			
1,000	Bloom ends, Pitts.	\$13.00	
800	Billet ends, Pitts.	13.15	
SHEET BARS.			
1,000	Delivered, Pitts.	\$21.75	

METAL MARKET.

NEW YORK, Friday Evening, October 30, 1896.

Gold and Silver.

Prices of Silver per Ounce Troy.

October.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$1.	October.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$1.
24	4'84 1/4	30 1/8	65 1/2	.504	28	4'84 1/4	29 3/4	64 3/4	.501
26	4'84 1/4	30 1/8	65 1/2	.504	29	4'84 1/4	29 1/2	64 3/4	.501
27	4'84 1/4	29 1/8	64 3/4	.502	30	4'84	29 1/2	64 3/4	.502

Owing to cessation of purchases on India account silver receded to 29 3/4 d. and no buyers; but after an interval at this point an inquiry sprung up which on small offerings has carried the price up to 30d., with future entirely dependent on the political issues of next week.

The United States Assay Office in New York reports the total receipts of silver at 98,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, September, 1896, and years from January 1st, 1896 and 1895:

	Coin and bullion.		In ores.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
GOLD					
Sept.	\$61,050	\$34,159,130	\$32,505	\$183,698	I. \$34,249,183
1896.	55,570,421	64,888,856	114,201	1,356,019	I. 10,560,253
1895.	73,193,282	28,839,939	326,653	1,356,112	E. 43,370,884
SILV.					
Sept.	5,534,110	741,678	168,880	1,212,605	E. 3,748,707
1896.	46,441,041	8,454,637	64,842	13,216,568	E. 25,334,678
1895.	38,661,610	7,980,661	69,985	9,128,483	E. 21,655,448

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

Gold and Silver Exports and Imports, New York
For the week ending October 30th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

We'k	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
1896.	\$38,000	\$9,369,159	\$512,900	\$10,343	I. \$8,528,692
1895.	40,471,948	71,361,955	31,214,481	3,318,080	I. 2,393,616
1894.	58,752,257	27,351,473	32,511,902	1,455,620	E. 62,477,656
1893.	85,346,266	15,225,995	29,178,240	1,519,067	E. 97,779,444
1892.	70,159,547	58,574,395	26,669,133	3,063,371	E. 35,190,914
	50,161,503	7,712,368	18,098,170	2,691,333	E. 66,855,972

The gold exported for the week went to South America; the silver to London. The gold and silver imported came chiefly from Europe.

Average Monthly Prices of Silver

In New York and London, per ounce Troy, from January 1st, 1896, and for the years 1895 and 1894.

Month.	1896.		1895.		1894.	
	Lon-don Pence.	New York Cents.	Lon-don Pence.	New York Cents.	Lon-don Pence.	New York Cents.
January.	30 69	67 13	27 36	59 69	30 81	66 68
February.	31 01	67 67	27 47	59 90	29 18	63 43
March.	31 34	68 40	28 33	61 98	27 28	59 49
April.	31 10	67 92	30 39	66 61	28 95	62 92
May.	31 08	67 88	30 61	66 75	28 69	62 96
June.	31 46	68 69	30 47	66 61	28 68	62 39
July.	31 45	68 75	30 48	66 75	29 82	62 45
August.	30 93	67 34	30 40	66 61	28 29	61 83
September.	30 19	65 68	30 54	66 90	38 88	64 11
October.			30 89	67 64	28 69	63 06
November.			30 79	67 42	30 41	65 13
December.			30 40	66 47	27 78	60 43

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

FINANCIAL NOTES OF THE WEEK.

General business is practically in a state of suspense this week. The tension of feeling has increased as the election approaches, and there is really no new business doing. The banks have been quietly strengthening their position in view of possible disturbance, and have declined or postponed all new transactions as far as possible. The money market consequently continues very stringent, and business is limited for the time to what is actually necessary.

Gold imports continue on a very considerable scale, and have not been checked by the increase in discount rates by the European banks. The Bank of England's official rate is now 4%, and the Imperial Bank of Germany is expected to put its present 5% rate up to 6% shortly. In London the general market rate has not yet fully followed the Bank's increase and loans are freely made at 2 1/2@3%; but this is a marked advance over the terms which prevailed two months ago. The change has had very little effect in checking the movement of gold.

The greater part of the gold which has come in during the week has practically disappeared, and but little change is shown in the Treasury gold reserve or in the specie holdings of the New York banks. The inference is that it remains chiefly in private hands and that the quiet hoarding which has been going on for some time has increased as the crisis approaches. The full extent of this movement is a matter of conjecture almost entirely, but we believe that the general tendency has been to exaggerate its importance.

The price of wheat continues high, though there have been some fluctuations in the speculative values, which, as is always the case, have been worked up to a point in advance of that which the facts would really warrant. There seems to be no doubt, however, that the grain exports will be large, and this will be a factor of very considerable importance in business during the coming winter. The movement of currency to the interior continues on a very considerable scale, and this helps the local stringency in the money market.

Imports of specie at San Francisco by water for September and for the first nine months of the year were as follows:

	September.	Nine mos.
Australian.	\$2,068,263	\$2,068,263
Mexico.	203,410	1,917,159
British Columbia.	32,970	223,000
Central America.	7,185	68,318
Miscellaneous.	1,715	8,500
Total.	\$2,313,543	\$4,985,240
In 1895.	444,514	2,691,000
In 1894.	114,538	2,330,894

The imports for September embraced \$2,184,500 in

gold, chiefly from Australia, and \$129,034 in silver. The arrivals from Australia are the first noted for a long time. For the nine months this year the totals included \$2,802,068 gold, of which \$665,912 was bullion and \$2,136,156 coin; \$1,481,141 silver, of which \$269,775 was in coin, chiefly Mexican, and \$1,211,366 in bullion.

Exports of manufactures continue to increase. According to the returns of the Bureau of Statistics of the Treasury Department, these exports for the nine months ending September 30th were 28.4% of the total exports, against 26.7% last year.

The following table gives the manufacturing and the total exports for the first nine months of each calendar year for several years past:

Table with columns: Year, Manufactures, Total. Rows for 1890, 1891, 1892, 1893, 1894, 1895, 1896.

The growth in exports of manufactures appears from this table to have been much more uniform than in other classes of exports.

The statement of the United States Treasury on Thursday, October 29th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

Table with columns: Oct. 22, Oct. 29, Changes. Rows for Gold, Silver, Legal tenders, Treasury notes, etc., and Totals.

Treasury deposits with national banks amounted to \$16,339,767, showing a decrease of \$163,912 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$123,350,280. Against these are held in the Treasury 11,030,385 coined standard silver dollars, and silver bullion purchased at a cost of \$112,319,895, making a total of \$123,350,280.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending October 24th, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

Table with columns: 1894, 1895, 1896. Rows for Loans and discounts, Deposits, Circulation, Reserve, Specie, Legal tenders, Total reserve, Legal requirement, Surplus reserve.

Changes for the week this year were increases of \$1,095,900 in specie, \$650,800 in legal tender, and \$3,049,800 in surplus reserve; decreases were \$6,019,800 in loans and discounts, \$5,212,400 in deposits, and \$10,500 in circulation.

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

Table with columns: Gold, Silver, Total. Rows for Asso. Banks of New York, Bank of England, Bank of France, Imp. Bank of Germany, Austro-Hungarian Bank, Netherlands Bank, Belgian National Bank, Bank of Spain, Bank of Italy, Imp. Bank of Russia.

The return for the Associated Banks of New York is of date October 24th; all the others are of October 29th, except the Bank of Italy, September 30th, and the Bank of Russia, September 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The bank of England and the Bank of Russia report gold only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year up to October 15th are reported by Messrs. Pixley & Abell's circular as below:

Table with columns: 1895, 1896, Changes. Rows for India, China, The Straits, Totals.

Arrivals for the week this year were £141,000 in bar silver from New York, and £24,000 from the West Indies, a total of £165,000. Shipments for the week were £93,900 in bar silver to India, and £80,000 to China, a total of £173,900.

Indian exchange is still supported by the demand for railroad remittances and also by the probability of considerable shipments of material on government account, although naturally the news concerning the crops and the present light exports would have a tendency to depress the rate. The 40-lakhs of Council bills offered in London were all taken at an average of 14.26d per rupee, and there is a prospect that the rate may go still higher.

Domestic and Foreign Coins.

The following are the latest market quotations for the leading foreign coins:

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

Other Metals.

Copper.—After a week of activity, the market has again become rather lifeless, the trade in general finding it preferable to await the outcome of the elections. Lake copper, which at the beginning of the week showed as high as 10 1/4c., is again somewhat easier, early deliveries being offered at 10.75c. Electrolytic copper in cakes, wirebars or ingots must be quoted 10 1/4c. and cathodes 10 1/2c., while casting copper continues scarce, being nominally held for 10 1/2c.

The London market after advancing to £48 5s. at the beginning of the week, has since declined to £47 15s. @ £47 17s. 6d. for spot, and £48 5s. @ £48 7s. 6d. for three months prompt. There is, however, a fairly good demand for the finer grades, such as electrolytic, which commands full prices, especially for nearby deliveries which are becoming scarce, in consequence of the difficulty experienced on this side to secure freight room, thus reducing supplies on the other side to a minimum. We quote: English tough, £50 @ £50 10s.; best selected, £50 10s. @ £51; strong sheets, £57 10s.; India sheets, £53 @ £53 10s.; yellow metal, 4 1/2d.

Tin is dull and neglected, the demand, when compared with what it was until two weeks ago, leaving a great deal to be desired. We quote: spot 13c., and November-December 12.95c.

The fluctuations in the London market have moved within a narrow range, the highest having been £58 15s., and the lowest £57 17s. 6d. for spot, closing to-day at £58 7s. 6d. @ £58 10s. for spot, and £59 5s. @ £59 7s. 6d. for three months prompt. Not only does the statistical position of the article remain unfavorable, but the high rates asked for money help to check every improvement.

Lead.—The excitement of last week has somewhat subsided, and though offerings are not more plentiful than they were then, the demand has, on the other hand, perceptibly lessened. The price remains unchanged at about 2 1/2c., but there is very little business doing.

The London market has scored another advance, the price for Spanish having risen to £11 5s., and for English to £11 7s. 6d.

St Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is quiet, with very little business doing. Buyers prefer to wait until after the election before loading up on an extensive scale. The nominal value is 2.60c. for common lead, and 2.62 1/2 @ 2.65c. for agentiferous and corroding metal.

Spelter is very firm at about 3 1/2c. New York and 3.65c. at St. Louis. The supplies are very meagre, and the demand far better than that for other metals.

The London market too has experienced quite an improvement, the price for ordinaries having advanced to £17, and for specials £17 2s. 6d.

Antimony.—We quote Cookson's 6 1/2c.; Hallett's 1/2c., and U. S. Star, 6 1/2c.

Nickel.—Demand is quiet, and prices show no change. We quote 33 @ 36c. per lb. for ton lots and 37 @ 39c. for smaller orders. London prices are 14d. @ 15d. for large orders and 15d. @ 16 1/2d. for small lots. The New York price is on a parity with London following for the United States duty of 6c. per lb. on the metal.

Platinum.—Demand is steady and prices are firm at \$14.50 @ \$15.50 per oz., New York. London quotations are 57s. 6d. @ 59s. per oz.

For chemical wear, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams, for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes, 50c., 51c. and 52c. per gram. Wire and foil are 47c., 48c. and 49c. per gram. The current retail price for crucibles is 60c. per gram.

Quicksilver.—The price is unchanged at \$36.75 per flask, New York. The London quotation is £6 12s. 6d. per flask, with £6 11s. 3d. named from second hands.

The Minor Metals.—Quotations for these metals

are given in the table below, the prices being for New York delivery:

Table listing prices for Aluminum, Bismuth, Phosphorus, Platinum, Tungsten, Tungstic acid, Ferro-tungsten.

Variations in prices are chiefly on size of order.

Average Monthly Prices of Metals

In New York since January 1st, 1896, and for the years 1895, 1894, 1893 and 1892; in cents per pound.

Large table with columns: Month, 1896, 1895, 1894, 1893, 1892. Rows for Copper (Lake), Tin, Lead, Spelter.

Imports and Exports of Metals.

Table with columns: New York, Week, Oct. 22, Year, 1896. Rows for Aluminum, Antimony ore, Brass, Copper, Iron ore, Lead ore, Magnolia metal, Nickel, Steel, Tin and black plates, Zinc.

* Metal Exchange Reports. † Week ending Oct. 20.

Table with columns: Philadelphia, Week, Oct. 21, Year, 1896. Rows for Antimony, Copper ore, Ferro-manganese, Ferro-silicon, Iron ore, Iron pyrites, Manganese ore, Spiegeleisen, Tin and black plates.

† From New York Metal Exchange Reports.

Baltimore.**	Week, Oct. 29.		Year, 1896.	
	Exp.	Imp.	Exp.	Imp.
Bismuth metal, cases.....				52
Chrome ore..... long tons				4,802
Copper, fine..... "			27,840	
" matte..... "			500	
" sulphate..... "			2,470	
Iron ore..... "				321,971
" pigs' bars..... "				
" ingots, blooms..... "		7,780	600	10,401
Iron oxide..... bags				300
" pyrites..... long tons			150	
Ferro-manga- nese..... "			437	1,508
Ferro-silicon..... "				76
Lead..... "			4,145	200
Limestone..... short				2,743
Manganese metal, long				9,669
Spiegeleisen..... "				410
Steel..... "	50		145	7,836
Steel wire, bundles.....				9,892
Tin, long tons.....		46	438	2,579
Tin and black plates, boxes				130,591
Zinc (spelter) long tons.....			715	

**From our special correspondent.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Oct. 30.
Heavy Chemicals.—The heavy chemical trade is featureless. The demand for alkali comes principally from glass factories that have resumed operations in anticipation of better times. The other chemicals present no improvement from our last report, and on the whole prices remain unchanged. They are: Caustic soda, 60%, \$2.22½@2.42½; 70, 74@76%, \$2.12½@2.37½ per 100 lbs. Alkali, 58%, 82½@90c. for 50-ton lots and over, and 90c.@\$1 for smaller quantities; 48%, \$1.20@1.40 for jobbing lots. Bleaching powder, prime brands, \$1.75@1.87½; Continental, \$1.65@1.75 per 100 lbs. Bicarb. soda, English, 100c.@2c. per lb.; American, bulk, \$1.50@1.50 per 100 lbs. Sal-soda, English, 70@72½c.; American, 65c. (in barrels), 80c. (in kegs) per 100 lbs. Hypo-sulphide of soda, prime white German, 165@185c. in casks; 175@2c. in kegs.

Acids.—Although the market for acids during the past week has been better than that for the previous week, the orders which have been received were merely of a jobbing nature to fill immediate wants. The major portion of the acid manufacturers continue to refuse to close contracts for 1897, saying that they are still uncertain as regards the future price of raw materials. The opinions gleaned from some of the largest of these companies tend to show that they are uncertain as to the ultimate outcome of that brimstone combination, the Societe Anglo-Siciliana. Should prices for sulphur advance further to any considerable degree there is a likelihood that this market will see a change in the opening of new sources of supply. We quote: Acetic acid in barrels, \$1.35@1.45; in carboys, \$1.40@1.60; muriatic acid, 18%, 75c.; 20%, 75@85c.; 22%, \$1.10@1.25, according to make and quantity. Nitric acid, 30%, \$3.25@4.36; 40%, \$4@4.50; 42%, \$4.50@5.50. Oxalic acid, \$7.25 ex-dock and \$7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 60%, 75@95c., 10@15c. higher for small quantities. Chamber acid, \$6@6.50 per ton at factory. Blue vitriol, \$3.75@4.00 according to grade and order.

Brimstone.—This market continues firm, and we are advised that the foreign trade is even stronger. The demand for sulphur is quite lively at the present time, owing to the lack of importations. Freight rates are exceedingly high, and it is said that the Sicilian brimstone producers find it difficult to secure the necessary transportation for their product. In consequence of this the price of sulphur has advanced this week to \$26 for unmixed seconds on spot, and \$21 for futures. The syndicate is said to be holding its ground rather firmly. There was an arrival this week of a quantity of brimstone, which will be distributed among those who have contracted for it prior to its arrival in this country.

Fertilizing Chemicals.—A somewhat steady demand still exists for the leading ammoniates, but business as a whole has been quiet. Sulphate of ammonia is a little higher in price this week. It appears as though the present demand for some of the leading ammoniates has had a tendency to advance the views of holders. A fair demand has been experienced in bone-meal, while sulphate of potash and double manure salts remain featureless with the values unchanged. We quote: Sulphate of ammonia, gas liquor, \$2.05 November shipment, and \$2.07½ December shipment; bone, \$2.05@2.10 per 100 lbs. Dried blood, high grade, Western, \$1.42½@1.45 per unit New York; f. o. b. Chicago, \$1.60@1.65 per unit; low grade, fine ground, Western, \$1.45 f. o. b. Chicago. Azotine, \$1.45@1.55 basis New York. Concentrated phosphate (30% available phosphoric acid), 57½c. per unit. Acid phosphate, 13% @15%, av. P₂O₅, 54@65c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P₂O₅, 85c. per unit. Acidulated fish scrap, \$8.50@9, and dried scrap \$16.50@17 f. o. b. fish factory. Tankage, high grade, \$14 per ton; concentrated, \$1.35c. per unit f. o. b. Chicago; New York, \$19; low grade, \$12. Bone tankage, \$19@20; ground bone, \$22@22.50. Bonemeal, \$19.50@21. Sulphate of Potash: 90-95%, New York and Boston, \$1.96½; Philadelphia, Baltimore and Norfolk \$1.98; Southern ports, \$2.

Double Manure Salts: 108@105½c., basis of 48%;

high grade, 190½@203c., in bulk, 24@36% per unit O. P., 36½@38c.

Muriate of Potash.—Prices are for 80%, 178@181½c. shipment, 180@185c. ex-ship. Kainit: Shipments per ton, \$8.80@9.25; ex-ship, in bulk, same quotation.

Nitrate of Soda.—This article has stiffened in price during the week: On October 28th spot goods were quoted at 180@182½c., and the supply reported as being well under contract. While not quoted higher nitrate for forward delivery was then held very firm. To-day spot is quoted at 182½@185c., and there is a probability that the price will advance, although we understand that sufficient nitrate is in stock to fill any moderate demand.

NOTES OF THE WEEK.

The exports of fertilizers from France for the eight months of 1896 amounted to 97,567 metric tons, against 414,042 tons imported. Exports of crude brimstone aggregated 9,106 metric tons, as compared with 85,186 tons imported. The sulphuric acid exported for this period was 2,399 metric tons, while the imports amounted to 2,523 tons.

Liverpool.

Oct. 21.

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

During the past week a better demand has been reported for some lines of heavy chemicals, but, at the same time, owing to ample stocks on hand, at some works the production has had to be curtailed.

Soda ash is steady, but without special feature, and an improved demand would be welcomed by manufacturers. The spot range for tierces varies according to export market, and may be called about as follows: Leblanc ash, 48%, £4@£4 5s.; 58%, £4 5s.@£4 10s.; ammonia ash, 48%, £3@£3 10s.; 58%, £3 5s.@£3 15s. per ton, net cash. Bags 5s. per ton under price for tierces.

Soda crystals are in only a moderate demand, and are quiet at £2 5s.@£2 7s. 6d. per ton, less 5% for barrels, and 7s. less for bags.

Caustic soda is in better request, and a fair business is reported for prompt delivery. For 1897 delivery some of the principal manufacturers are now declining to quote, and rumors are current of a possible combination arrangement being arrived at. On spot, nearest spot range as to market, may be called about: 60%, £6 2s. 6d.@£6 5s.; 70%, £7 2s. 6d.@£7 5s.; 74%, £8 2s. 6d.@£8 5s.; 76%, £8 15s.@£9 per ton, net cash.

Bleaching powder is dull, and hardwood is quoted at from £6 12s. 6d.@£6 17. 6d. per ton, net cash, as to destination.

Chlorate of potash. A fair business is reported to have taken place for near delivery, at 3¼d.@4d. per lb., and at the moment there is nothing offering at under the higher figure.

Bicarb. soda is still held at £8 15s. per ton, less 2½% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia continues on the downward grade, and £7 10s.@£7 12s. 6d. per ton, less 2½%, is about nominal range for good gray, 24%@25% in double bags f. o. b. here, as to quality.

Nitrate of soda is slow, at £8@£8 2s. 6d. per ton, less 2½% for double bags, f. o. b., here, as to quality.

Carb. ammonia, lump, 3d. per lb.; powdered, 3¼d. per lb., less 2½%.

MINING STOCKS.

Complete quotations will be found on pages 430 and 431 of mining stocks listed and dealt in at: New York, Colorado Springs, Paris, France. Boston, Duluth, Minn. Mexico. Philadelphia, Helena, Mont. Shanghai, China. Baltimore, Salt Lake, Utah. Valparaiso, Chile. Pittsburgh, San Francisco. London, England. Cleveland, page 480 Denver, Colo. British Columbia.

NEW YORK, Friday Evening, Oct. 30.

Trading in mining stocks this week has been about the same as last week. While there was a slight increase in the number of stocks sold, the total showed an advance of only 200 shares.

The Comstocks gave occasion for some bullish talk in anticipation of extended developments in the mines, but prices quoted on sales made were lower than last week.

The Colorado group of stocks, especially the Cripple Creeks, were in slightly better demand as regards speculation, while the others were dealt in sparingly. The largest sales were made of Creede & Cripple Creek, 4,500 shares at 7c., with Pharmacist second, 2,800 shares at 11@14c. Little Chief, a Leadville stock, was also dealt in and records sales of 1,000 shares at 18@19c.

The Victor Gold Mining Company, of Colorado, reports its receipts for the month of September, 1896, at \$85,209; disbursements, \$85,209, of which \$16,181 was for operating expenses. The ore statement for this period shows that there were 240 tons of smelt-ore produced and 1,184 tons of mill ore. The total yield of silver from the smelt-ore was 417 oz., together with 1,524 oz. of gold. The gold obtained from the mill ore amounted to 982 oz. The average assay per ton of silver from the smelter ore was 173 oz., and of gold 635 oz. The average assay per ton of gold from the mill ore was 084 oz. The average net value of smelter ore was \$115, and of the mill ore, \$7.

The number of California stocks dealt in this week has doubled, the following showing transactions: Brunswick, 1,500 shares at 23@24c.; Bodie,

600 shares at 64@65c.; Mono, 300 shares at 25c., and Syndicate, 500 shares at 4c.

The superintendent of the Brunswick Consolidated Gold Mining Company, of Grass Valley, Cal., in writing to the manager, Mr. J. J. Halpin, under date of October 22d, says: "The ore under the 800 level is widening out as we go down on it. The winze that we are sinking in the west end of the ore-body (really a part of the stope) is showing the ore at that point to be widening out toward the west. This stope is getting down so low now that it is difficult to get the ore out. It will average about 12 ft. in depth. It has all to be hoisted and shoveled out so that it takes three men to do one man's work if we attempt to run the mill entirely out of this stope under the level."

"Now all the water has to be pumped out by a compressed-air pump from the stope as it forms a regular well and all the water runs into it. So instead of confining myself to this ore under the 800 I am mining some from there and the balance from the ore-body over the 800 and under the 700. This is much lower grade than usual, but still good ore. Our last clean-up averaged \$125 per day for five stamps. There are two men in the shaft above the 400 timbering, and two in the drain tunnel also timbering. The stope under the 800 has gone toward the shaft a distance of 70 ft. and at that point is about 10 ft. deep at the bottom. When we cut the vein in the 900 we may get drowned out for a few days. We are working at the 900 station, and the beginning of the 900 level now."

At the meeting held by the Horn Silver Mining Company on October 4th the present Board of Directors and officers were re-elected.

Boston.

Oct. 29

(From Our Special Correspondent.)

The transactions in mining shares the past week, outside of Boston & Montana, have been very small, with prices generally lower. In Boston & Montana the dealings have amounted to about 10,000 shares. The highest price touched was on the 26th, \$86½; the lowest to-day at \$80½, closing firmer at \$81½. Old Dominion sold at \$16½ in the early dealing, but weakened to-day on the general decline to \$15, closing at \$15½.

Calumet & Hecla was an exception to the general rule, selling up to \$320 early in the week, but losing the advance later, and settling at \$315. Quincy advanced \$1 to 114 and held it, all the sales being at that figure. The scrip was slightly better, selling at \$84½. Tamarack declined \$2 to \$86, but recovered it in later sales. Osceola, after selling at \$27½, declined to \$25, closing at that price. Kearsarge advanced \$¼ to \$12½; losing it, however, and \$1 more, closing at \$11½. Atlantic was steady at \$18 on sales of 200 shares only. Franklin sold in a small way at \$9. Tamarack sold at \$11½ for 10 shares only. Wolverine advanced from \$7 to \$7½, closing at \$7½. Tecumseh sold at \$3½@3½ for 75 shares only. Butte & Boston declined from \$2½ to \$2½. Arnold sold at \$1¼ and declined to \$1. Alouez sold at 50c.

The gold stocks were quiet but strong. Pioneer sold at \$6½@6½, closing at \$6½; Gold Coins at \$2½@2½, closing \$2½. Merced sold early at \$7½, but declined to-day to \$6½.

The market was dull at the close with prices fairly steady.

Cleveland.

Oct. 28

(From Our Special Correspondent.)

The iron stock market has been at a standstill during the past week. The brokers of the city reported to-day that no business had been transacted during the last 10 days, and the indications were that there would be no investments made until after the election. Notwithstanding the weak condition of the market the quotations remain the same as last week, as follows:

Name of Company.	Par val.	Oct. 28.	
		Bid.	Ask.
Aurora.....	\$25	\$6.00	\$8.00
Biwabik.....	100	34.00	34.00
Champion Iron Company.....	100	10.00	30.00
Chandler.....	25	10.00	13.50
Cincinnati Iron.....	25	10.00	13.50
Cleveland-Cliffs Iron Company.....	25	70.00	75.00
Jackson Iron Company.....	25	25.00	25.00
Lake Superior Iron Company.....	100	21.00	21.00
Lake Superior Consolidated.....	100	44.00	44.00
Minnesota.....	25	75.00	75.00
Pittsburg & Lake Angeline.....	25	18.00	18.00
Republic Iron Company.....	25	18.00	18.00

Salt Lake City.

Oct. 24.

(Special Report of James A. Pollock.)

While there was no material change from the conditions which existed at the close of the previous week, the improved feeling was again noticeable in the mining stock market. Ajax continued to advance upon heavy buying and continued improvement at the properties. Anchor has ceased operations entirely, due to the low prices of the metals, and the stock showed a slight decline, although few sales were recorded. Bullion-Beck was slightly shaded after the payment of the October dividend. With comparatively little business being done in the stock, Centennial-Eureka quotations are well maintained. An adjournment of the assessment sale on Dalton for 30 days was ordered by the directors. Some work is being done at the mines,

but no new reports have been received. Daly remained unchanged. Daly West was strong as usual, the demand being heavier than during the previous week. East Golden Gate did a very heavy business in point of shares transferred, the quotations ruling close to 2c. Four Aces showed little life. Contrary to expectations, Geyser did not maintain itself after the decisions of the court in its favor had been given and the stock was offered quite freely at the close around the bidding figures of the previous week. Galena stock was about unchanged. Horn Silver was quiet. Lucky Bill was not very active, although little of the stock was offered. Little Pittsburg was slow. Mammoth has declared its dividend of 5c. per share and will pay on the 2d of November. The stock showed some weakness during the week, but recovered with the declaration of the dividend, and closed fairly strong. Mercur stock continued strong with only limited offerings. Ontario was only fairly active. Overland is pushing development work. Sunbeam of Tintic was quite active, but showed a decline at the close. Silver King was practically out of the market with quotations well up. Sunshine was slightly shaded, with a limited amount of stock out. Swansea did considerable business, but at unchanged quotations, while South Swansea was in better demand and made some advances. Utah was strong. Utah Consolidated has just bought in some new properties and will not declare an October dividend.

San Francisco, Oct. 24.

(From Our Special Correspondent.)

The market for the most part was quiet and dull this week, reports of finds on the Brunswick and of improvement in Consolidated California creating very little excitement. The usual mid-week rally put in its appearance on Wednesday, but in a rather perfunctory manner, and it soon subsided. There were no outsiders and most of the old operators were carried off by the superior attractions of the wheat market.

Notwithstanding light business the prices show but little change. Some closing quotations are: Chollar, \$2.25; Consolidated California & Virginia, \$1.85@1.90; Hale & Norcross, \$1.40@1.45; Ophir, \$1.30@1.35; Best & Belcher, \$1.05@1.10; Gould & Curry, 83@85c; Potosi, 66@67c; Savage, 60c; Crown Point, 50@51c.; Mexican, 48@49c.; Bodie Consolidated, 57c.; Bulwer, 42c.; Mono, 19c.

Business on the Gold Mining Exchange was very light for the week, being limited to a few transactions in Lockwood shares, which brought 26@27c.

At a special meeting of the stockholders of the Bulwer Consolidated Mining Company on Thursday, October 22d, the sale of that company's property to the Standard Consolidated Mining Company, on the terms already published, was formally ratified and approved. The Bodie, Mono and Bulwer have now complied with all the requirements of the law regarding the sale of their respective claims and other property to the Standard, and it only remains for the last named company to carry out its part of the agreement, which will be done when the stockholders meet on December 12th.

At the annual meeting of the Eureka Consolidated Mining Company, Monday, October 19th, about 40,000 of the 45,000 shares of outstanding stock were represented. Directors were elected as follows: P. N. Lillenthal, Percy T. Morgan, William Fries, D. Fredenreich and H. P. Bush. William Fries was elected president, P. N. Lillenthal vice-president, and H. P. Bush secretary. The work at the mine is confined to the long tunnel, which is running to intersect the Windsail shaft. This tunnel is in 405 ft.

The annual meetings of the Great Western and the Si-kiyon Consolidated Quicksilver Mining companies have been called for November 4th.

British Columbia.

(From Our Special Correspondent.)

ROSSLAND, B. C., Oct. 22.

In an extensive and constantly active mining camp such as this is one week is not by any means the fac-simile of another. The scenery is constantly shifting, and the camp is becoming more comfortable every week. Compared with a year ago the change is very great. In a few weeks the camp will be in touch with the railway system of the continent. Other changes are rumored, and there are many new comers.

London, Oct. 17.

(From Our Special Correspondent.)

The stock market has continued in a very shaky state all week. It has become evident to almost everybody that public purchases of mining shares have practically ceased and that brokers and jobbers are quite unable to dispose of their speculative holdings. In many quarters, both in London and Paris, speculative dealers are making desperate efforts to clear off their stock, and in consequence it is quite impossible to keep prices steady. In the South African market the falls have been very noticeable for Chartered, Consolidated Gold Fields and Rand Mines, but all the other stocks in that market have equally suffered, and the falls have been very substantial. There have been many efforts made to sustain the market, and just now and then these efforts have been temporarily successful; but bears have circulated all sorts of reports to counteract

these efforts. The only feature of an encouraging nature that has come before the market has been the announcement of the dividend of the Consolidated Gold Fields, for the year ended June 30th, last. The dividend for the year amounts to 125%, with £200,000 carried to reserve fund and £1,200,000 carried forward. It would be supposed that such a dividend would brighten up the market, but as a matter of fact, the bears have circulated reports that this dividend has not yet been earned, and that even if it was earned it was a mistake to declare so great a dividend.

Other sections of the mining market have been dull in sympathy with South Africans. In the West Australian section the bears have been active in spreading all kinds of adverse reports about the conditions of mining in that colony, and probably most of these reports are true. There is no great novelty about these reports, as they refer chiefly to such questions as lack of transport facilities, deficient water supply, etc. One of the chief promoters in London has considered it worth while to combat these reports by issuing a voluminous statement favorable to West Australian mining. This statement has been sent broadcast over England and the Continent, but the distrust of West Australian mining has gone too far for it to have any effect.

The New Zealand section has been dull, and the American section has been practically non-existent. The chances of revival in Americans or a start in British Columbians seems to be indefinitely postponed.

Paris, Oct. 18.

(From Our Special Correspondent.)

Aside from the Russian affair and from the anxiety over Spanish finances, the point of attention in the market has been the African gold stocks. The situation is causing uneasiness; the continued fall in prices and the evidently increasing disposition to sell out even at a loss may result at any time in a general panic among holders. For the larger operators—the real speculators—I have no sympathy, for they can generally take care of themselves; but this fall may be very hard for the multitude of small investors who hold these stocks, and who may be frightened into throwing them over at a loss which they can ill afford. At present it looks as if these good people would do better by holding on and waiting developments, but in times of general alarm who can reason with the crowd?

Outside of these stocks the market is generally strong, and there continue to be indications of a period of prosperity and active trade. If you succeed in preserving your equilibrium and matters improve with you, there will be nothing to prevent a remarkable advance in prosperity during the next few years. As it is, our works of construction are more prosperous than for five or six years past, and instead of competition for contracts we hear rather of contests for early deliveries, so great is the rush for orders.

It is not surprising, therefore, that both the metallurgical stocks and those of the iron, coal and metal companies are strong and continue to show high prices. Their opportunities for increased profits during three or four years to come, at least, are very good. These have doubtless been pretty well discounted by the speculators, but they have good reason, apparently, for this action.

The foreign commerce of France for the nine months ending September 30th is reported by the Ministry of Commerce as below:

	1895.	1896.
	Imports.	Exports.
Food.....	719,186,000	784,430,000
Raw materials.....	1,536,748,000	1,643,207,000
Manufactures.....	425,090,000	463,308,000
Total.....	2,681,024,000	2,890,945,000
	Imports.	Exports.
Food.....	405,884,000	448,136,000
Raw materials.....	645,431,000	610,487,000
Manufactures.....	1,271,247,000	1,311,082,000
Postal parcels.....	79,772,600	105,941,000
Total.....	2,402,334,600	2,505,646,000
Excess, imports.....	278,690,000	385,990,000

Here we have in imports an increase of 209,921,000 fr., or 7.8%; in exports a gain of 103,312,000 fr., or 4.3%; and, consequently, an increase of 166,609,000 fr., or 3.3%, in the excess of imports. The really encouraging points in the return are the gain of 69,835,000 fr. in the exports of manufactures, and of 26,169,000 fr. in postal parcels—which are chiefly small manufactured articles—necessary consequence, the increase of 106,459,000 fr. in imports of raw materials.

There are reports current here that your government has decided shortly to intervene in the Cuban affair. You, of course, can estimate their truth better than we can. Such a course would cause very little surprise here, and practically no opposition. Perhaps all European powers would rather see Cuba remain a colony than to have the great island pass into your possession; but none of them would care to interfere. Certainly the present state of affairs is most deplorable, and in your hands the country would at least be of some use to the world and to its people. The revolt in the Philippines, which is evidently a desperate outbreak against unbearable tyranny, has deepened the impression of Spain's incapacity to rule her colonies.

We have entertained the Czar and have his assurances of friendship. But how far can we count

on his support? That is the question which no one can fully answer; but upon it the future largely depends for us. AZOTE.

MEETINGS.

Left Hand Mining Company, at the office of the company, 1622 Arapahoe street, Denver, Colo., on Nov. 15th, at 4 p. m.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Divq.	Sale.	Int.
Alta Silver.....	Nev....	53	Oct. 12	Nov. 2	.10
*Atlas.....	S. D....	10	Nov. 10	Dec. 10	.001
Challenge Con.....	Nev....	22	" 17	" 8	.10
De Soto Gold.....	Cal....	1	Oct. 17	Nov. 16	.07
*Flint Creek.....	Mont....	"	" 5	Dec. 15	.002 1/2
Haskell Gold.....	Cal....	3	" 23	Nov. 16	.02
Justice.....	Nev....	61	Nov. 17	Dec. 8	.05
Meteor.....	Mont....	"	" 14	" 5	.001 1/2
Mexican Gold & Silver.....	Nev....	55	" 12	" 3	.20
North Banner Con. Tunnel.....	Cal....	40	Oct. 19	Nov. 9	.02
Potosi.....	Nev....	46	Nov. 4	Nov. 24	.05
Savage.....	"	90	" 4	" 24	.20
*Seg. Belcher & Mides Con.....	"	18	" 21	Dec. 11	.10
Star.....	Mont....	"	" 2	Nov. 23	.00 1/2
Utah Con.....	Nev....	23	Oct. 13	" 2	.05
Victory Silver.....	S. D....	6	Nov. 7	" 27	.001 1/2
Yellow Jacket Silver.....	Nev....	61	Oct. 15	" 20	.25

* New assessment.

DIVIDENDS.

NAME OF COMPANY	Current Dividends.		Paid since Jan. 1, 1896.	Total to date.
	Date.	Am't.		
*Atna Con.....	.....	.....	\$50,000	\$70,000
Alaska-Mexican.....	Oct. 28	\$18,000	70,200	173,031
Alaska-Treadwell.....	" 28	75,000	350,000	3,025,000
Anaconda.....	.....	.....	750,000	750,000
Anchorage-Leland.....	Oct. 15	6,000	6,000	18,000
Aurora Iron.....	.....	.....	50,000	700,000
Bangkok-Cora Bell.....	.....	.....	6,000	107,510
Big Six.....	.....	.....	2,500	2,500
Boston & Mont.....	Nov. 20	1450,000	1,500,000	4,925,000
*Bullion-Beck & Ch.....	Oct. 15	30,000	215,000	2,163,000
*Calumet & Hecla.....	.....	.....	2,000,000	46,350,000
*Cariboo.....	.....	.....	60,410	109,410
*Centennial-Eureka.....	Oct. 15	30,000	330,000	1,960,000
C. O. D.....	.....	.....	5,000	25,000
Dalton & Lark.....	.....	.....	87,500	87,500
Daly.....	.....	.....	37,500	2,887,500
Deadwood Terra.....	.....	.....	100,000	1,240,000
De Lamar.....	Oct. 31	100,000	200,000	2,194,000
Dominion Coal.....	.....	.....	600,000	.....
Kikton Con.....	Oct. 20	10,000	50,000	126,960
Florence.....	.....	.....	54,390	89,348
*Galena.....	Oct. 10	5,000	36,000	56,000
Garfield Grouse.....	Nov. 2	12,000	12,000	12,000
Gold Coin.....	" 2	20,000	85,000	100,000
*Golden Eagle.....	.....	.....	10,000	10,000
Golden Fleece.....	.....	.....	132,000	533,179
Gold & Globe Hill.....	.....	.....	19,500	28,875
Hecla Con.....	.....	.....	30,000	2,130,000
Helena & Frisco.....	.....	.....	50,000	475,000
Highland.....	Oct. 26	31,250	120,000	3,204,918
*Homestake.....	" 1	10,000	312,500	6,025,000
Hope.....	.....	.....	30,000	622,252
Horn Silver.....	.....	.....	50,000	5,130,000
*Iowa.....	.....	.....	50,000	50,000
*Iron Mountain.....	.....	.....	35,000	145,000
*Isabella.....	.....	.....	180,000	2,250,000
Jackson.....	.....	.....	7,500	475,000
Le Roi.....	Oct. 21	25,000	150,000	225,000
Mammoth.....	Nov. 2	20,000	60,000	1,150,000
*Mercur.....	" 20	25,000	175,000	525,000
Minnesota Iron.....	.....	.....	495,000	3,240,000
Mont. Ore Pur. Co.....	Oct. 15	40,000	320,000	480,000
Moon-Anchor.....	.....	.....	24,000	24,000
Moose.....	.....	.....	6,000	185,000
Mt. Rosa.....	Oct. 15	5,000	5,000	15,000
Napa Con.....	" 1	120,000	70,000	810,000
*New Kilkhorn.....	.....	.....	72,000	72,000
*Ontario.....	Oct. 31	15,000	150,000	13,325,000
Oscuela Con.....	.....	.....	125,000	2,072,500
Otaqueachy.....	.....	.....	1,000	1,000
Portland.....	Oct. 15	30,000	180,000	803,000
Quincy.....	.....	.....	760,000	8,370,000
*Silver King.....	.....	.....	337,500	787,500
Sacramento.....	.....	.....	2,000	2,000
*Slocan Star.....	.....	.....	200,000	250,000
Small Hopes.....	.....	.....	25,000	3,275,000
Smuggler-Union.....	.....	.....	100,000	100,000
*Swansea.....	Oct. 10	5,000	10,000	11,500
Tamarack.....	.....	.....	150,000	4,320,000
Union.....	.....	.....	23,500	73,000
*Utah.....	Oct. 10	2,000	20,000	173,000
*Utah Con.....	.....	.....	3,000	3,000
Victor.....	Oct. 5	20,000	200,000	665,000
Victor M. & L.....	.....	.....	12,000	42,000
War Eagle.....	Oct. 15	30,000	55,000	187,500
Wasp.....	.....	.....	40,000	40,000
Totals.....	.....	.....	\$1,054,250	\$11,365,100

* September dividend paid. † Extra dividend of 10c. per share included. ‡ Extra dividend of \$1 per share included.

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

STOCK QUOTATIONS.

BOSTON, MASS.*

Table of stock quotations for Boston, Mass. listing companies like Aloues, Arnold, Atlantic, Bost. & C. C., etc., with columns for location, par value, and prices for various dates from Oct. 23 to Oct. 29.

* Official quotations Boston Stock Exchange. † Ex-dividends. Total sales, 19,230.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table of stock quotations for Industrial Coal and Coal Railroad, listing companies like Balt. & Ohio, Ches. & Ohio, Col. & I. Dev., etc., with columns for par value and prices for various dates from Oct. 24 to Oct. 30.

* Official quotations N. Y. Stock Exchange. Total shares sold, 194,400.

NEW YORK.*

Table of stock quotations for New York, listing companies like Ajax, Alamo, Alice, Alliance, Amer. Flag, Anaconda, Argentum-Jun., etc., with columns for location, par value, and prices for various dates from Oct. 24 to Oct. 30.

* Official quotations N.Y. Stock and Con. Stock & Petroleum Exchanges. Total shares sold, 12,300.

COLORADO SPRINGS, COLO.†

Table of stock quotations for Colorado Springs, Colo., listing companies like Ajax, Alamo, Am'rican, Anaconda, Arg'ntum, Bankok, etc., with columns for par value and prices for various dates from Oct. 19 to Oct. 24.

† Official quotations and sales Colo. Springs Mg. Stock Assoc. * Board of Trade Exchange. † Ex-dividend.

SAN FRANCISCO, CAL.*

Table of stock quotations for San Francisco, Cal., listing companies like Alta, Belcher, Best & Belcher, Bodie Con., Chollar, etc., with columns for location, par value, and prices for various dates from Oct. 23 to Oct. 29.

* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.* Week ending Oct. 29.

Table of stock quotations for Baltimore, Md., listing companies like Balt. M. & S., Conrad Hill, G. Crk Coal, etc., with columns for location, par value, and prices for various dates from Oct. 23 to Oct. 29.

* Official quotations Baltimore Stock Exchange.

BRITISH COLUMBIA.* Week ending Oct. 24.

Table of stock quotations for British Columbia, listing companies like Hound's Creek, Old Iron Sides, C.P. McKinstry, etc., with columns for name, selling price, and other details.

Par val.: Hall Mines, Jumbo and Le Roi, \$5; Slocan Star, .50; other stocks, \$1.

LONDON.

Oct. 16.

Table of London stock market data including company names, countries, products, capital stock, par values, and last dividends.

* Dividend pending. † Reconstruction or increase of capital pending. ‡ Ex-dividend.

PARIS.

Week ending Oct. 15.

Table of Paris stock market data including company names, countries, products, capital stock, par values, and prices.

MEXICO.

Week ending Oct. 22.

Table of Mexico stock market data including company names, states, shares, last dividends, and prices.

NOTE.—In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

VALPARAISO, CHILE.

Aug. 27.

Table of Valparaiso, Chile stock market data including company names, capital, share values, and prices.

* Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

SHANGHAI, CHINA.

Oct. 18.

Table of Shanghai, China stock market data including company names, countries, shares, and prices.

* Special Report of J. P. Bissett & Co. The prices quoted are in Shanghai taels.

DENVER, COLO.

Table of Denver, Colorado stock market data including company names, locations, par values, and prices.

* Official quotations Colo. Mt. St'k Exch. Sales, listed, 4,488,000; unlisted, 535,700; total, 4,923,700

SALT LAKE CITY, UTAH.

Week ending Oct. 24.

Table of Salt Lake City, Utah stock market data including company names, par values, and prices.

* Special Report of James A. Pollock. † All the companies are located in Utah.

PHILADELPHIA PA.

Table of Philadelphia, PA stock market data including company names, locations, par values, and prices.

* Official quotations Philadelphia Stock Exchange. Total sales, 8,300.

HELENA, MONT.

Week ending Oct. 24.

Table of Helena, Montana stock market data including company names, locations, par values, and prices.

* Special Report of Samuel K. Davis. Total shares sold, 6,070

PITTSBURG, PA.

Week ending Oct. 26.

Table of Pittsburgh, PA stock market data including company names, locations, par values, and prices.

* Official quotations Pittsburg Stock Exchange.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Name and Location of Company, Capital Stock, Shares, Assessments. Includes entries for Adams, Etna, Alaska-Mexican, etc.

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. + The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends and the Cons. Virginia \$42,300,000. † Dividends paid since consolidation. Note.—Corrections to this table are made monthly. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.

CLASSIFIED LIST OF ADVERTISERS

Compressors and Rock Drills.
 American Diamond Rock Drill Co.
 Clayton Air Compressor Works.
 Fraser & Chalmers.
 Ingersoll-Sergeant Drill Co.
 (See Diamond Drills.)

Air Hoists.
 Whiting Foundry Equipment Co.

Amalgamators.
 Bucyrus Steam Shovel & Dredge Co.
 Fraser & Chalmers.

Amalgam Plates.
 Western Plating and Mfg. Co.

Anti-Friction Metals.
 Besly, Chas. H. & Co.
 Chester Steel Cast Co.

Architects and Builders.
 Berlin Iron Bridge Co.
 Pittsburgh Bridge Co.
 Sykes, Wm. B. & Co.

Assayers and Chemists' Supplies.
 Besly, Chas. H. & Co.
 Baker & Adamson.
 Saker & Co.
 Becker, Christian.
 Bullock & Crenshaw.
 Denver Fire Clay Co.
 Eimer & Amend.
 Henry Bell Chem. Co.
 Neiden Judson Drug Co.

Attorneys, Corporation.
 Emig, C. E.
 McColl & Hamilton.

Automatic Boiler Feeds.
 Penberthy Injector Co.

Ball's Metal.
 Besly, Chas. H. & Co.

Bankers and Broker.
 Artell, E. & Co.
 Bartlett & Co.
 Bonbright, W. P. & Co.
 Breitung, E. N.
 Crook, R. F.
 Dorsy Investment Co.
 Grant, R.
 Hand & Barnan.
 Hendrickson, W. J.
 Heron Bros.
 Kinney, M.
 Lepidner, N.
 Mayer, Andrew.
 Miller, J. W. & Co.
 Morath Investment Co.
 Northwest Mfg. & Investment Co.

Belting.
 Hendrie & Bothoff Mfg. Co.
 Jeffrey Mfg. Co.
 New York Belting & Packing Co., Ltd.

Belt Lacing.
 Bristol Co.

Blasting Caps.
 Metallic Cap Mfg. Co.
 Renshaw Friction Ballon Explosive Co.
 Schroeder, Wt.

Blasting Batteries, Cases and Cases.
 Climax Fuse Co.
 Lan, J. H. & Co.
 Macbeth James & Co.

Blowers, Pressure.
 Connorsville Blower Co.

Boilers.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Philadelphia Eng. Wks., Ltd.
 (See Machinery.)

Brattice Cloth.
 Besly, Chas. H. & Co.

Brick Machinery.
 Freese, E. H. & Co.

Bridges.
 Berlin Iron Bridge Co. (Shiffler Bridge Co. (See Machinery.)

Car Wheels.
 Whiting Foundry Equipment Co.

Carbons.
 New York Diamond Drill Co.
 Lexow, Theodor.

Chain and Link Belting.
 (See Belting.)

Chemicals.
 Baker & Adamson.
 Bullock & Crenshaw.
 Eimer & Amend.
 Henry Bell Chem. Co.

Chemists.
 Simonds & Wainwright.
 Chilled Castings.
 Whiting Foundry Equipment Co.

Coal.
 Lewis White Coal Mfg. Co.
 Foster & Curran.
 Davis Coal & Coke Co.

Coal Cutters.
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Leyner, J. Geo.
 Link Belt Machinery Co.

Coal Washing Machinery.
 Cuthingame & Co.
 Jeffrey Mfg. Co.

Compressors.
 Clayton Air Compressor Works.
 Laidlaw-Dunn-Gordon Co.
 Norwalk Iron Works Co.
 Hand Drill Co.

Concentrators, Crushers, Pulverizers, Separators, Etc.
 Allis, Edw. P. & Co.
 Bradley Pulverizer Co.
 Colorado Iron Works.
 Denver Eng. Works Co.
 Fraser & Chalmers.
 The Vanner Concentrator.
 Hendrie & Bothoff Mfg. Co.
 Krupp, F.
 Link Belt Machinery Co.
 McCully, R.
 Steam Foundry & Mach. Co.
 Waburn-Swenson Co.
 (See Machinery.)

Centrifugal Pumps.
 (See Machinery.)

Conveying Belts.
 Robbins Conveying Belt Co.

Copper Dealers and Producers.
 American Metal Co.
 Arizona Copper Co.
 Atlantic Miners Co.
 Salsbach S. & Ref. Co.
 Baltimore Cop. Wks.
 Bath H. & Son.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Copper Queen Mfg. Co.
 Detroit Cop'r Works.
 Corrugated Iron.
 Berlin Iron Bridge Co.
 Cincinnati Corrugating Co.
 Sykes Steel Roofing Co.

Cranes.
 Whiting Foundry Equipment Co.
 Crane & Co.
 Baker & Co.
 Denver Fire Clay Co.
 Dixon, Jos., Cruc. Co.
 Gardner City Sand Co.
 Lyalide.
 Roessler & Hasslacher Chemical Co.
 Roessler & Hasslacher Chem. Co.
 Scherl Kopf, Hartford & MacLagan.
 Diamonds.
 Lexow, Theodor.
 New York Diamond Drill Co.
 Diamond Drills.
 Bullock Mfg. Co., M.C.
 Lexow, Theodor.
 New York Diamond Drill Co.
 Sullivan Machinery Co.
 (See Air Compressors and Rock Drills.)

Draughtsmen.
 Young, Wm. R.

Drawing Materials.
 Alloe, A. S. Co.
 Besly, Chas. H. & Co.
 Buff & Berger.
 Gurt, W. & L. E.
 Heer, Peter.
 Keuffel & Esser Co.
 (See Engineering Instruments.)

Dredges.
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.

Dryers.
 Brown, Horace F.
 Cummer, F. D. & Son Co.

Dump Cars.
 Denver Eng. Works Co.
 Hendrie & Bothoff Mfg. Co.

Educational Institutions.
 Arizona School of Mines.
 Columbia University.
 Chicago School of Assaying.
 International Correspondence School.
 Lehigh University.
 Mass. Inst. of Technology.
 Michigan Mining School.
 Pennsylvania State College.
 University of Arizona.

Electric Batteries.
 Maith, James, & Co.

Electrical Machinery and Supplies.
 American Electric Co.
 Besly, Chas. H. & Co.
 Card Electric Co.
 Denver Eng. Wks. Co.
 Erie Local Engineer.
 General Electric Co.
 Jeffrey Mfg. Co.
 Westinghouse Electric Co.

Elevators, Conveyors and Hoisting Machines.
 Brown Holst & Conv.
 March, C. W. & Co.
 Caldwell, H. W. & Co.
 California Wire Wks.
 Cooper, Hewitt & Co.
 Crook, W. A. & Bros. Co.
 Denver Eng. Wks. Co.
 Electrical Engineering Co.
 (See Wire Rope Tramway and Machinery.)

Emery Wheels.
 Besly, Chas. H. & Co.
 New York Belting & Packing Co., Ltd.

Engines and Boilers.
 See Directory Pages 4, 5 and 6.

Engineer's Instruments and Supplies.
 Alloe, A. S. Co.
 Buff & Berger.
 Heer, Peter.
 Keuffel & Esser Co.
 Lietz Co.
 Maith & Co.

Engine-Drivers.
 Risdon Iron Works.
 Stillwell-Bierce & Smith-Valle Co.
 Tod, William & Co.
 Union Iron Works.
 Denver Gas Engine Co.
 Webster, Camp & Lane Mach. Co.
 (See Machinery.)

Excavators.
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.
 Vulcan Iron Works.

Fire-Brick and Clay.
 Chur, A. T.
 Chur, Robert.
 Gardner City Sand Co.
 Standard Fire Brick Co.
 Hoskins, Wm.
 Moore, S. L. & Son Co.
 Pollock, Wm. B. & Co.
 (See Machinery.)

Fuses.
 Climax Fuse Co.
 Ingersoll-Sergeant Drill Co.
 Standard Fuse Co.

Gas Engines.
 Norman, J. J. & Co.
 Prouty Co.
 Union Gas Engine Co.

Gas Works.
 Pollock, Wm. B. & Co. | Wood, R. D. & Co.
 Gauges, Recording, Etc.
 Bristol Co.

Grains.
 Besly, Chas. H. & Co. | Denver Eng. Wks. Co.
 Chester Steel Cast Co. | Fraser & Chalmers.
 (See Machinery.)

Grease, Graphite, Etc.
 Besly, Chas. H. & Co. | Dixon, Jos., Cruc. Co.

Heavy Machinery.
 Denver Eng. Works Co.
 Fraser & Chalmers.

Hose, Rubber, Etc.
 New York Belting & Packing Co., Ltd.

Injectors.
 Jenkins Bros.
 Penberthy Injector Co.

Insulated Wires and Cables.
 Okonite Co., Ltd.

Insurance Companies.
 Hartford Steam Boiler Inspection and Ins. Co.

Mutual Life Insurance Co.

Joint Fittings.
 Tight Joint Co.

Lead Linings for Chlorination Tubs.
 Raymond Lead Co.

Locomotives.
 General Electric Co.
 Hunt, C. W. Co.
 Porter, H. E. & Co.

Lubricators.
 Asbestos Paraffine Co.
 Detroit Lubricator Co.

Machinery.
 Dealers in Milling, Milling and Other Machinery.

Allis, Edw. P. & Co.
 American Diamond Rock Drill Co.
 Bacon, S. C.
 Besly, Chas. H. & Co.
 Bisk, T. A.
 Bradley Pulverizer Co.
 Caldwell, H. W. & Co.
 Card Electric Co.
 Colorado Iron Works.
 Connersville Blower Co.
 Crook, W. A. & Bros. Co.
 Cuthingame & Co.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Hammond Mfg. Co.
 Hendrie & Bothoff Mfg. Co.
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Jessop, W. & Sons, Ltd.
 Leyner, J. Geo.
 Ligerwood Mfg. Co.
 Krupp, F.
 McCully, R.
 McKiernan Drill Co.
 Mcklenburg Ir. Wks.

Montgomery, J. H. Mach. Co.
 More, Sam. L. & Son.
 Nelsonville Foundry & Machine Co.
 New York Diamond Drill Co.
 Norwa & Iron Wks. Co.
 Parke & Lacy Co.
 Philadelphia Eng. Wks., Ltd.
 Pollock, Wm. B. & Co.
 Risdon Iron Works.
 Stearns Pdy. & M. Co.
 Snw Steam Pump Co.
 Stearns-Roger Mfg. Co.
 Sullivan Machinery Co.
 Tod, Wm., & Co.
 Trux Mfg. Co.
 Union Gas Engine Co.
 Vulcan Iron Works.
 Vulcan Iron Works.
 Waburn-Swenson's Co.
 Walker Co.
 Webster, Camp & Lane Mach. Co.
 Westinghouse Elec. Mfg. Co.

Metal Dealers.
 American Dev. & Mfg. Co.
 Alcon Zinc-Lead Co.
 Baker & Co.
 Bath Henry & Son.
 Besly, Chas. H. & Co.
 Bridgeport Copper Co.
 Cherkoe-Lanayon-Spitzer Co.
 Cookson & Co.
 Elliott's Metal Co., Ltd.
 Eureka Co.
 Foster, Blackett & Wilson.
 James & Shakespeare.

Metallurgical Works and Ore Processors.
 American Dev. & Mfg. Co.
 Alcon Zinc-Lead Co.
 Baker & Co.
 Salsbach S. & Ref. Co.
 Baltimore Copper Wks.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Con. Kas. City B. & R. Co.
 Cookson & Co.
 Denver Eng. Wks. Co.
 Elliott's Metal Co., Ltd.
 Electro Cyanide Co.
 Foster, Blackett & Wilson.

Mine Cars.
 Denver Eng. Wks. Co.
 Hendrie & Bothoff Mfg. Co.
 Hunt, C. W. Co.
 Nelsonville Foundry & Machine Co.
 Whiting Foundry Equipment Co.
 (See Machinery.)

Mine Mill and Smelters' Supplies.
 Cuthingame & Co.
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Park's & Wilkinson.
 Roessler & Hasslacher Chemical Co.
 (See Machinery.)

Mining and Land Companies.
 American Dev. & Mfg. Co.
 Atlantic Mfg. Co.
 Arizona Copper Co.
 Copper Queen Con. Mx. Co.

Nickel.
 Canadian Copper Co.

Ore Cars.
 Trux Mfg. Co.

Ore Roasters.
 Brown, Horace F.
 Cummer, F. D. & Sons Co.

Ore Testing Works.
 Hunt, F. F.
 Ledoux & Co.
 Montana Ore Purchasing Co.

Packing and Pipe Coverings.
 Asbestos Paraffine Co.
 Brandt, Randoiph.
 Jenkins Bros.
 Hine & Robertson.
 Ricketts & Banks.
 Robertson, W. F.
 Simonds & Wainwright.
 State Ore Sampling Co.

Perforated Metals.
 Aitchison, R., Perf. Metal Co.
 Fraser & Chalmers.
 Harrington & King Perforating Co.

Peroxide of Sodium.
 Roessler & Hasslacher Chemical Co.

Phosphor-Bronze.
 Phosphor-Bronze Smelting Co.

Pile Drivers.
 Bucyrus Steam Shovel & Dredge Co.
 Ingersoll-Sergeant Drill Co.

Pipes.
 Pollock, Wm. B. & Co. | Wyckoff, A., & Sons.
 Baker & Co.
 Johnson, Matthey & Co.

Powder.
 Atlantic Dynamic Co.
 Ingersoll-Sergeant Drill Co.

Pressure Blowers.
 Connersville Blower Co.

Publishers.
 American Fertilizer.
 Australian Standard.
 British Columbia.
 Mining Record.
 Denver Republican.
 El Minerio Mexicano.
 Indian Engineering.
 Ir'n & C. Trade Review.
 McNeill's Code.
 Mining Investor.
 Mining Journal.
 Scientific Pub. Co.
 So. African Mfg. Jour.
 Zeitschrift für Praktische Geologie.
 Wall Street Reporter.

Pumps.
 Blake, Geo. F. Mfg. Co.
 Cameron A. S., Steam Pump Works.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Jeanesville Iron Works.
 Snow Steam Pump Co.
 Stillwell-Bierce & Smith-Valle Co.
 Tod, Wm., & Co.
 Wortington, Henry R.

Quarrying Machines.
 Ingersoll-Sergeant Drill Co.
 Hand Drill Co.
 Sullivan Machinery Co.

Quicksilver.
 Eureka Co.

Railroads.
 Aitchison, Topoka & Santa Fe Ry.
 Chicago & N. West. R. R.
 C. R. & Quincy R. R.
 Denver & Rio Grande R. R.
 Denver, Leadville & Gunnison Ry.
 Florence & Trippe Creek R. R.
 Illinois Central R. R.
 Midland R. R. of Kentucky.
 Rio Grande Southern R. R.
 U. P., D. & G. R. R.

Railroad Supplies and Equipment.
 Hunt, C. W. Co. | Robinson & Orr.
 Porter, H. E. & Co. | (See Machinery.)

Regulators, Damper, Heat, Etc.
 Eddy Valve Co.
 Jenkins Bros.

Rock Drills.
 Berlin Iron Bridge Co. | Phelps, Dodge & Co.
 Cincinnati Corrugating Co. | Shiffler Bridge Co.
 Sykes Steel Roofing Co.

Rubber Goods.
 New York Belting & Packing Co., Ltd.

Screens.
 Aitchison, R., Perf. Metal Co.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Harrington & King Perforating Co.
 Link Belt Machinery Co.
 Luulow-Saylor Wire Co. (See Machinery)

Second Hand Machinery.
 Hine & Robertson.
 Robinson & Orr.

Shoes and Dies.
 Chester Steel Cast Co. | Denver Eng. Wks. Co.
 Cromie Steel Works. | Fraser & Chalmers.
 Crescent Steel Co.

Shovels (Steam).
 Bucyrus Steam Shovel & Dredge Co.
 Marion Steam Shovel Co.

Smelting and Refining Works.
 Salsbach S. & Ref. Co. | Orford Copper Co.
 Baltimore Cop'r Wks. | Penna. Salt Mfg. Co.
 Bridgeport Copper Co. | Penn. Smelting and Con. Kas. City S. & R. Co.
 E. I. du Pont de Nemours & Co. | (See Machinery)
 Elliott's Metal Co., Ltd. | Matheson Smelting Co.

Steel Rails, Castings, Rolls, Drill Steel.
 Bethlehem Iron Co. | Robinson & Orr.
 Chester Steel Cast Co. | Pollock, Wm. B. & Co.
 Cromie Steel Works. | Taylor Iron & Steel Co.
 Crescent Steel Co. | Jessop Wm. & Son Moore, B. L. & Sons Co.
 (See Metal Dealers)

Tanks.
 Denver Eng. Wks. Co. | Walker Co.
 Gates Iron Works. | Williams Mfg. Co.

Telegraph Wires and Cables.
 Okonite Co., Ltd.

Tools.
 Besly, Chas. H. & Co.
 Pratt & Whitney Co.

Tubes.
 Besly, Chas. H. & Co. | Pollock, Wm. B. & Co.
 Williams Bros.

Tubing-Rubber.
 New York Belting and Packing Co., Ltd.

Turbine Water-Wheels.
 Lefel, James, & Co.
 Pelton Water Wheel Co.
 Stillwell-Bierce & Smith-Valle Co.

Valves.
 Eddy Valve Co.
 Jenkins Bros.

Ventilators.
 Sullock M. C. Mfg. Co. | Tod, Wm., & Co.
 Fraser & Chalmers.

Voltmeters.
 Weston Electrical Instrument Co.

Vulcanite Emery Wheels.
 New York Belting and Packing Co., Ltd.

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Inquiries from employers in want of Superintendents, Engineers, Metallurgists, Chemists, Mine or Furnace Foremen, or other assistance of this character, will be inserted in this column WITHOUT CHARGE, whether subscribers or not.

The labor and expense involved in ascertaining what positions are open, in gratuitously advertising them and in attending to the correspondence of applicants, are incurred in the interest and for the exclusive benefit of subscribers to the ENGINEERING AND MINING JOURNAL.

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1486 WANTED.—A MAN TO TAKE EN- tire charge of a mining property in Mexico; must be a first-class man and thoroughly conversant with the management of Huntington Mills and chlorination; one who speaks Spanish preferred; permanent engagement, with good prospects given to first-class man. Address INDEPENDENCIA, ENGINEERING AND MINING JOURNAL.

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1489 WANTED.—A MAN ACQUAINTED with lead smelting, sweep smelting, cupellation and refining and desilverizing processes, to run a small blast furnace and refinery in South Africa. A technical graduate preferred, but practical experience absolutely necessary, as well as tact and ability to manage men. A man between 30 and 40 years of age preferred. A good salary will be paid to the right party, who will be expected to return it in a responsible position. Address TRANSVAAL, ENGINEERING AND MINING JOURNAL.

1492 WANTED.—A YOUNG MAN WHO is competent as an analytical chemist, with some experience as an engineer, can find a situation at a moderate salary with a mining company in Virginia, by furnishing satisfactory testimonials of his character, ability and experience. Address MINING COMPANY, ENGINEERING AND MINING JOURNAL.

1493 WANTED.—BY AN IRON COMPANY—A General Superintendent to take charge of a blast furnace plant, with coal mines and coke ovens. Applicant must be thoroughly qualified in modern blast furnace practice. Preference will be given to a man of technical education. Good position for a man of thorough experience and ability. Address IRON, ENGINEERING AND MINING JOURNAL.

1494 WANTED, AT ONCE.—A MAN WHO thoroughly understands the Metallurgy of Sulphur. Must be competent in every respect and be able to give details in the erection of a plant for treating sulphur. The mine is in Idaho and is only a recent discovery. The proper man will receive satisfactory remuneration. Address IDAHO, ENGINEERING AND MINING JOURNAL.

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

AN EXPERIENCED ORE BUYER AND assayer is open for engagement; speaks Spanish. Address SAMPLER, ENGINEERING AND MINING JOURNAL, No. 14,882, Nov. 7.

MINING AND MECHANICAL ENGINEER of executive ability and 20 years' experience is open for engagement with first-class company, as superintendent or resident manager; specialty, erection and treatment of low-grade ores; speaks German and Spanish; references the best. Address A. L., ENGINEERING AND MINING JOURNAL, No. 14,839, Nov. 7.

POSITION WANTED BY ASSAYER AND Chemist, graduate of technical school; experienced with smelter and mine work; out of work on account of Leadville strike; best of reference. Address BOX 672, Lake Geneva, Wis. No. 14,886, Nov. 7.

ASSAYER AND CHEMIST, GRADUATE of Northwestern University, '95, desires position; experience limited; best of references. Address N. W. U., ENGINEERING AND MINING JOURNAL, No. 17,842, Nov. 21.

CHEMIST, UNIVERSITY GRADUATE, experienced in all kinds of metal-work, wants position. Satisfactory references. Address ANALYST, ENGINEERING AND MINING JOURNAL, No. 17,847, Nov. 21.

WANTED.—POSITION AS SUPERINTEND- ent in mill. Thorough experience in amalgamation, concentration, assaying and analysis. Best of references and records. Southern States preferred. Address RECORD, ENGINEERING AND MINING JOURNAL, No. 17,845, Nov. 14.

CHEMIST AND ASSAYER WISHES POSI- tion with cyanide company; has had smelter experience. First-class references. Address CYANIDE, ENGINEERING AND MINING JOURNAL, No. 17,846, Nov. 28.

GRADUATE MINING ENGINEER WANTS position; five years' experience in assaying, surveying and general mining and engineering; speaks Spanish. Address S. E. M., ENGINEERING AND MINING JOURNAL, No. 17,848, Nov. 21.

YOUNG MAN NOW IN NEW YORK, thorough technical education, surveyor and draughtsman, experienced in Colorado mining, desires position as assistant to mining engineer or manager. Address H. F., ENGINEERING AND MINING JOURNAL, No. 17,844, Nov. 7.

METALLURGIST AND MINING ENGINEER would like a position with company intending to adopt the cyanide process, or with company using it with unsatisfactory results. References. Address CYANIDE, ENGINEERING AND MINING JOURNAL, No. 17,843, Dec. 5.

OPEN TO ACCEPT ENGAGEMENT JAN- uary 1st, 1897—a man having 16 years' practical experience in the planning and supervision of the development and equipment of gold and silver mining property, with plants of mining and reduction machinery, and the management of extensive mining and milling operations, and who is well abreast of modern up-to-date practice in the principal and incidental departments of precious-metal mining, including the handling of men in the vigorous and systematic prosecution of mining work. Reference as to moral character and ability given. Address A. Z., ENGINEERING AND MINING JOURNAL, No. 17,840, Nov. 21.

Contracts Open.

TREASURY DEPARTMENT, OFFICE SUPER- vising Architect, Washington, D. C., October 24th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 20th day of November, 1896, and opened immediately thereafter, for all the labor and materials required for the erection and completion (except heating apparatus) of the U. S. Post Office Building at Saginaw, Mich., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Saginaw, Mich. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid should it be deemed in the interest of the government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for the Erection and Completion of the U. S. Post Office at Saginaw, Mich.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

MINERAL OIL.—Jeffersonville, Ind.—Sealed proposals, in triplicate, will be received here until November 21st, 1896, for furnishing at Quarter-Master depot here 250,000 gallons mineral oil, 135 degrees flash test, in cases of two five-gallon cans each. United States reserves right to reject or accept any or all proposals or any part thereof. Information furnished on application. Envelopes containing proposals should be marked "Proposal for Mineral Oil," and addressed A. G. ROBINSON, Depot Quarter-Master.

PUMPING ENGINES.—Sealed proposals will be received by the city of Chicago until November 14th, 1896, for furnishing and erecting on the foundations to be constructed at the proposed pumping station at the southeast corner of Springfield avenue and Bloomingdale road (Pacific Junction), in the city of Chicago, three vertical condensing triple-expansion engines of a capacity of twenty (20) million gallons per twenty-four hours each, with a total lift of one hundred and fifty (150) feet, together with necessary boilers and all accessories and appurtenances, according to plans and specifications on file in the office of the Department of Public Works of said city. Proposals must be made out upon blanks furnished at said office.

PUMPING ENGINES.—Sealed proposals will be received by the city of Chicago until November 14th, 1896, for furnishing and erecting on the foundation to be constructed at the proposed pumping station, at the northeast corner of Central Park avenue and Fillmore street, in the city of Chicago, three vertical condensing triple-expansion engines of a capacity of twenty (20) million gallons per twenty-four hours each, with a total lift of one hundred and fifty (150) feet, together with necessary boilers and all accessories and appurtenances, according to plans and specifications on file in the office of the Department of Public Works of said city. Proposals must be made out upon blanks furnished at said office.

STEEL RAILS.—Supply of 150,000 tons of steel rails and other permanent way materials, to be manufactured in the Colony of New South Wales. Offers are hereby invited by the Government of New South Wales and will be received by the Secretary for Public Works in Sydney, and the Agent-General for New South Wales, in London, until December 30th, 1896, from persons willing to contract for the supply of 150,000 tons of steel rails and the necessary quantity of fish-plates, fish-bolts and spikes, manufactured in the Colony of New South Wales, out of iron ore and other necessary materials the natural product of, and with coal, coke or other fuel, smelted, gotten and raised within the said colony, upon the terms and conditions which can be seen at the offices of the Minister for Public Works, Sydney, or the Agent-General for New South Wales, London. J. H. YOUNG, Minister for Public Works.

WATER-WORKS.—Sealed bids will be re- ceived by the Village of Millford, Ill., until November 10th, 1896, for furnishing and constructing the system of mains, hydrants and valves for the water-works for said village. The approximate quantities are as follows, viz.: 280 tons 4-in. to 8-in. cast-iron pipe; 8,219 lbs. special castings; 29 4-in. to 8-in. valves and valve boxes; 34 two-nozzle hydrants; 20,910 ft. pipe-laying and setting valves and hydrants. Plans can be seen at the office of the Village Clerk, or JACOB A. HARMAN, Engineer, Peoria, Ill. For specifications, blank form of proposal and all information, address the Engineer.

PUMPING ENGINES—OFFICE OF THE DE- partment of Public Works.—Sealed proposals will be received by the city of Chicago until November 14th, 1896, for furnishing and erecting on the foundations to be constructed at the proposed pumping station at the southeast corner of Springfield avenue and Bloomingdale road (Pacific Junction), in the city of Chicago, three vertical condensing triple-expansion engines of a capacity of twenty (20) million gallons, per 24 hours each, with a total lift of one hundred and fifty (150) ft., together with necessary boilers and all accessories and appurtenances, arranged for a complete plant on file in the office of the Department of Public Works of said city.

Proposals must be made out upon blanks furnished at said office, and be addressed to said department, indorsed "Proposals for Pumping Engines, Pacific Junction Pumping Station," and be accompanied with \$25,000 in money or a certified check for the same amount on some responsible bank doing business in the city of Chicago, and made payable to the order of the commissioner of public works.

The commissioner of public works reserves the right to reject any or all bids; due consideration will be given to general merits of design, durability of construction, economy of operation and maintenance, facility of repair and proven performance, and record of similar works in actual service elsewhere.

No proposal will be considered unless the party offering it shall furnish evidence satisfactory to the commissioner of public works of his ability, and that he has the necessary facilities, together with sufficient pecuniary resources to fulfill the conditions of the contract and specifications, provided such contract should be awarded to him.

Companies or firms bidding will give the individual names as well as the name of the firm with their address. JOSEPH DOWNEY, Commissioner of Public Works.

WATER-WORKS.—Sealed proposals for all ma- terial and labor required in the construction of a system of water-works for the City of St. Augustine, Fla., will be received by the Secretary of the Board of Bond Trustees until the 19th day of November, 1896. Plans and specifications may be seen at the secretary's office, on and after November 2d, 1896.

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	15	1 1/4	4	9	24	42	57	70
	18	1 1/2	4	11	29	50	68	80
	21	1 3/4	4	12	33	58	78	90
	24	2	5	14	38	66	88	100
	27	2 1/4	5	16	42	72	98	110
	30	2 1/2	5	17	46	79	108	120
	33	2 3/4	7	19	50	86	117	130
	36	3	8	20	54	93	126	140
	39	3 1/4	8	21	58	99	135	150
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	48	4	10	25	69	118	159	180
	51	4 1/4	11	28	75	128	175	200
	54	4 1/2	11	28	81	141	190	220
	57	4 3/4	12	30	87	151	205	240
	60	5	13	32	93	161	219	260
	63	5 1/4	14	35	97	171	232	280
	66	5 1/2	15	37	105	181	243	300
	69	5 3/4	16	39	109	190	255	320
	72	6	17	41	119	200	271	340
	75	6 1/4	18	45	121	209	284	360
	78	6 1/2	19	47	126	219	298	380
	81	6 3/4	20	49	132	228	309	400
	84	7	21	51	137	236	320	420
	87	7 1/4	22	53	143	248	336	440
	90	7 1/2	22	55	149	258	349	460
	93	7 3/4	23	57	155	268	360	480
	96	8	24	59	161	278	374	500
	99	8 1/4	25	61	167	288	388	520
	102	8 1/2	25	63	173	298	400	540
	105	8 3/4	26	65	179	308	414	560
	108	9	27	67	185	318	428	580
	111	9 1/4	28	69	191	328	440	600
	114	9 1/2	28	71	197	338	454	620
	117	9 3/4	29	73	203	348	468	640
	120	10	30	75	209	358	480	660
	123	10 1/4	31	77	215	368	494	680
	126	10 1/2	32	79	221	378	508	700
	129	10 3/4	33	81	227	388	520	720
	132	11	34	83	233	398	534	740
	135	11 1/4	35	85	239	408	548	760
	138	11 1/2	36	87	245	418	560	780
	141	11 3/4	37	89	251	428	574	800
	144	12	38	91	257	438	588	820
	147	12 1/4	39	93	263	448	600	840
	150	12 1/2	40	95	269	458	614	860
	153	12 3/4	41	97	275	468	628	880
	156	13	42	99	281	478	640	900
	159	13 1/4	43	101	287	488	654	920
	162	13 1/2	44	103	293	498	668	940
	165	13 3/4	45	105	300	508	680	960
	168	14	46	107	306	518	694	980
	171	14 1/4	47	109	312	528	708	1000
	174	14 1/2	48	111	318	538	720	1020
	177	14 3/4	49	113	324	548	734	1040
	180	15	50	115	330	558	748	1060
	183	15 1/4	51	117	336	568	760	1080
	186	15 1/2	52	119	342	578	774	1100
	189	15 3/4	53	121	348	588	788	1120
	192	16	54	123	354	598	800	1140
	195	16 1/4	55	125	360	608	814	1160
	198	16 1/2	56	127	366	618	828	1180
	201	16 3/4	57	129	372	628	840	1200
	204	17	58	131	378	638	854	1220
	207	17 1/4	59	133	384	648	868	1240
	210	17 1/2	60	135	390	658	880	1260
	213	17 3/4	61	137	396	668	894	1280
	216	18	62	139	402	678	908	1300
	219	18 1/4	63	141	408	688	920	1320
	222	18 1/2	64	143	414	698	934	1340
	225	18 3/4	65	145	420	708	948	1360
	228	19	66	147	426	718	960	1380
	231	19 1/4	67	149	432	728	974	1400
	234	19 1/2	68	151	438	738	988	1420
	237	19 3/4	69	153	444	748	1000	1440
	240	20	70	155	450	758	1014	1460
	243	20 1/4	71	157	456	768	1028	1480
	246	20 1/2	72	159	462	778	1040	1500
	249	20 3/4	73	161	468	788	1054	1520
	252	21	74	163	474	798	1068	1540
	255	21 1/4	75	165	480	808	1080	1560
	258	21 1/2	76	167	486	818	1094	1580
	261	21 3/4	77	169	492	828	1108	1600
	264	22	78	171	498	838	1120	1620
	267	22 1/4	79	173	504			

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DIVIDEND NO. 9.
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The stock transfer books will be closed September
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