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A cable despatch from our London office, given in another column, announces that the High Court of the Transvaal has finally given its long-expected decision in the cyanide cases and that it has pronounced the MacArthur Forrest patents invalid. This is further corroborated by a despatch direct from Johannesburg. This decision is given by the court of last resort; it admits of no further appeal and is final so far as the Transvaal is concerned. Its importance to the mining companies there will be realized when it is stated that for a considerable time past about 30 per cent. of the gold returned has been obtained by working the tailings with cyanide.

While the decision is not, of course, binding outside of the South African Republic, the fact that the courts there have finally passed upon the question will have a marked effect elsewhere.

Reports from the East show that a change is gradually going on which is of some importance to our producers. American petroleum only a few years ago constituted the entire supply in the markets of India, China and Japan. It has been to a very considerable extent replaced in those countries by Russian oil, and the trade is now being further divided by the active competition of new fields. Langkat oil now holds almost as great a share of the Chinese trade as the Russian product, and the other newly opened fields of Borneo, Sumatra and Java are making rapid progress. Although the Japanese oil wells have not done as well as was expected, they furnish a considerable part of the home supply. It looks very much as if the far East would, in a few years, cease to be a customer for American oil, and would take its supplies entirely from the new fields which are now in course of development.

Paragraphs have been going the rounds of the Southern papers in relation to the promising future of steel-making in Alabama, based upon the alleged success of the so-called Hawkins process. This process has been for some time carried on in Birmingham, but only on a small scale and with very doubtful success, as we are informed on good authority. No large quantity of metal has yet been made, and the specimens so far produced have been very far from meeting the usual tests of merchantable steel. It is to be regretted that currency has been given to statements which do not seem to be supported by the facts, since they will only serve to do harm in the end. As our readers know, we have always believed in the possibilities of steel-making in the South, and have urged upon the Alabama iron-men the advantages of putting at least a part of their product on the market in finished form. The fact that they have succeeded in turning out basic pig iron of excellent quality indicates that there is a field for the introduction of the basic steel process which promises far better results than can be expected from the expenditure of time and money on empirical processes of doubtful utility.

In concluding an interesting paper on the "Present Status of the Distribution and Transmission of Electrical Energy," Dr. Louis Duncan forms (among others) the following conclusions: "Commercial transmissions are in successful operation for distances of 35 miles and for voltages as high as 15,000 volts. . . . The best system for the long distance transmission of energy for general purposes is the three-phase alternating system." He further concludes that experience with existing plants shows that the transmission to 50 miles with a pressure of 20,000 volts is practicable, but beyond these limits the transmission would be more or less experimental. A partial list of the principal transmission plants in operation shows 28 installations in which the transmission distances vary from 2 miles to 35 miles (there is one purely experimental plant where the distance is 100 miles) and the power transmitted varies from 150 to 15,000, the average being over 5,000 horse power. A majority of these plants are using the three-phase alternating current system, and it is a significant fact that all are successful and many of them are already being enlarged.

It is entirely within the probabilities that in a few years a list of the principal transmission plants will show totals very largely increased and will include a number ranging above those now given as the possible maximum.

The importance of Russia as a gold producer has never been fully appreciated, partly because of the remoteness of the chief gold fields, and partly because the output is carefully kept at home, and very little of it enters into the world's general stock. Very few people realize that, taking the production of 1895 as a basis, the Russian mines furnish about one-sixth of the total output of the yellow metal, and that the probability is that this proportion will increase rather than diminish. So far as the Siberian gold fields, which furnish the greater part of the production, are concerned, it may be said that he work already done is entirely superficial. Only the placers have been worked and those generally in a rather primitive way, while explorations have been in the main limited to the haphazard work of prospectors. A few Russian engineers have from time to time undertaken some more scientific work, but

this has been limited to a few districts. Deep mining is almost unknown, and the search for gold-bearing veins has hardly been begun anywhere outside of the Oural region. It seems probable that a few years will see an important change. Already foreign capital is becoming interested, and preparations are being made for the exploitation on a large scale and with modern appliances of the rich placers of the Trans-Baikal and the upper valley of the Amour. The work already done in those districts gives assurance of success in the future.

The production of pig iron in Great Britain this year has followed a course exactly the reverse of our own, and a statement just issued by the British Iron Trade Association shows that for the six months ending June 30th, the output of the blast furnaces was the largest on record, the total exceeding that of 1882, which had heretofore shown the maximum production. The total reported for the half-year was 4,328,444 long tons, and the average number of furnaces in blast was 359. The production compares with that of 1894 and 1895 as below:

	First half.	Second half.	Total.
1894.....	3,708,270	3,719,072	7,427,342
1895.....	3,721,870	3,981,589	7,703,459
1896.....	4,328,444	.....	.....

The gain over the first half of 1895 was, therefore, 606,574 tons, or 16.3 per cent. In spite of this large increase there was not a heavy change in stocks on hand; they amounted on June 30th to 1,216,757 tons, the increase over January 1st being 122,145 tons, or about one-fifth of the increase in production; since June also they have decreased considerably, showing that the demand has gained about as fast as the output. The increase was generally distributed, all the districts showing gains.

Of the production for the half-year 2,054,552 tons, or 47.5 per cent., were classed as forge and foundry iron; 2,127,184 tons, or 49.1 per cent., as Bessemer and basic pig; and the remaining 146,708 tons, or 3.4 per cent., were made up of spiegeleisen, ferro-manganese, chrome and silicon iron. Thus over half the iron made, 52.5 per cent., was intended for conversion into steel.

#### Transvaal Gold Mining Stocks.

We have several times referred heretofore to the shrinkage in nominal value of the South African gold mining stocks, which have for three years past occupied so much of the attention of speculators and investors in Europe. Last year these stocks were carried up to points far beyond their real values, and the reaction which followed the boom of 1895 has not yet ended. This is shown in a very striking way by a table which we find in a recent number of the *London Statist*, in which are given the selling prices or nominal values of all the mines whose stocks are dealt in in London on October 1st, 1895, contrasted with the value of the same stocks on October 15th last. There are 96 companies in the list, including all the dividend payers and a number whose values are pretty well ascertained, as well as those which are still in the speculative stage. We find that, at the then current quotations, the stocks of these 96 companies could be sold a year ago for \$698,317,205, reducing the values to our money, while at the present time they would bring only \$393,532,400; showing a loss in nominal value of no less than \$304,784,805, or about 43 per cent. There have been losses quite as great in proportion, or even greater, in single mines or in groups of mines; but a fall of so enormous an amount is wholly unprecedented in the history of mining speculation. It is the more remarkable as a large proportion of the companies are regular dividend-payers, and very few of them have dropped out of the list during the year, while some of them have entered the paying stage during that time. The list includes only companies actually engaged in mining, and the amount of loss would be very largely increased if it comprised also the many trust, land, finance and other companies based upon Transvaal mining enterprises. As a rule the stocks of such companies have lost much more than those of the mining companies.

Of course it cannot be said that all this amount has actually been lost. To the investor—and there are many such—who bought his shares to hold, expecting to be repaid from their dividends and not by a turn in the market, they are worth as much as ever; his prospects of income are the same as they were a year ago. He cannot sell them to as good advantage, but he can hold them and the returns are what must fix the value to him. The loss falls upon him only if he is compelled to sell. It is for this reason that aggregates of speculative losses are always greater in appearance than in reality. Making this allowance to the fullest extent, however, the loss has been an enormous one, and its effects must be very seriously felt.

Of course the loss has been greatest in the mines which are new and have not reached the paying stage, but we find, for instance, a fall of about 25 per cent. in the stock of so large and representative a dividend payer as the Robinson, with equal or greater reductions in such stocks as Langlaagte Estate and New Primrose; and instances might be multiplied by going through the list.

The extent of last year's inflation may be seen from the fact that even

after the reduction many of the present prices are high. Such stocks as Geldenhuis Deep at \$23.75 for the \$5 shares, for instance, seem to be at a level even now where cautious investors would hesitate. In fact it seems as if the great fall had been chiefly the result of over-inflation and overcapitalization. The solid values of the Witwatersrand remain, but very possibly even more of the inflation must be lost before an equilibrium is reached between those values and the prices which represent them.

#### The Chemical Industry and Technical Teaching.

Among the four nations which are the chief competitors for the world's trade—the United States, Great Britain, Germany and France—it is beyond question Germany which has in recent years made the greatest progress. The growth of her industries has enabled her not only to meet home demands, which formerly drew their supplies from foreign sources, but also to compete abroad with Great Britain to an extent which seriously interferes with the manufacturers of that country in many markets which they had held so long that they had come to look upon them as their own property. The extent of this competition is now so great as to excite general alarm in Great Britain, and so noted a man as Lord Rosebery recently took occasion in a public address to refer at length to these commercial changes and their causes. This growth has been especially marked in the chemical industry, in which, for so many years, the British makers held an almost unquestioned supremacy, partly because they were the first in the field, and partly because they had at their command abundant and cheap supplies of raw material. In spite of these advantages, and the further one of long experience, the British leadership is now seriously threatened and may in a short time be actually lost.

This competition is especially interesting to us because the field is equally open to our people. We have a great and growing demand at home, which at present requires large imports to meet it; and there is no reason why we cannot in time obtain a large share of foreign trade. Beyond any other nation we have the requisites of abundant supplies of the raw materials for the chemical industry, facilities for transportation and ability to obtain power cheaply. In many parts of the country there are still great water-powers unutilized, and elsewhere fuel can be obtained at lower prices and in greater quantities than any other nation can show.

We have often pointed out the fact that the chemical industry is the right hand of the great mineral industry. It puts into marketable form many of the products of our mines; it utilizes and makes valuable the by-products which would otherwise be wasted; it gives a marketable value to many matters which may otherwise become nuisances to be disposed of at some expense. In many cases it has materially diminished in this way the costs of production, and instances are not wanting in which its assistance has changed unprofitable into profitable operations, and thus made possible work which must otherwise have been abandoned.

In industrial contests as well as in actual warfare it is well to study your opponent's tactics, and in this case they are entirely plain. The chemical industry shows more than any other the effects of the practical application of scientific knowledge, and it is precisely in this direction that the Germans have secured success. They have advanced faster than their rivals because they have recognized the value of scientific knowledge and have applied it in their processes, while their opponents have relied very largely upon experience and upon the old empirical methods. What the Germans have gained and how they have gained it will be readily understood by those who have read Dr. George Lunge's valuable paper on the "German Chemical Industry" in *The Mineral Industry*, Vol. IV., and the articles, by the same author, which have from time to time appeared in the *Engineering and Mining Journal*.

Now there is no good reason why we cannot follow the German example and perhaps in time improve upon it. We need a greater number of trained men, the men who have scientific knowledge as a basis, and are ready to learn how to apply it in practice, and we believe that this force can be secured very readily by a wider development of the technical school. At present what we call a technical school is usually devoted to the higher branches of professional teaching, to the college rather than the school course, while most of those which we now have are given up chiefly to instruction in the different branches of engineering—civil, mechanical, mining, and, of late, electrical. Chemistry, and especially industrial chemistry, has had comparatively few students, and in a number of institutions these have found few facilities for their work.

We are apt to pride ourselves upon our practical ability, but it must be confessed that this does not appear prominently in our educational systems. Almost every town and village in the country has its high school, but the teachings of those institutions are not usually of a practical character, useful as they may be in some respects. Now every high school ought to be more or less a technical school; that is, it ought to furnish its scholars a certain ground-work of knowledge which they could use to advantage in the practical work which they must undertake when

they leave school. Attempts have been made here and there in this direction, sometimes with success, though usually they have been too much specialized, and occasionally they have failed because they tried to teach boys trades which could be learned only in practice.

No more useful or practical study could be taken up in our high schools than industrial chemistry, and certainly none which would be of greater benefit to the scholars themselves and the country at large. Of course the schools would not and could not turn out finished chemists; for that we must go to the university. They could, however, give a thorough knowledge of the rudiments and general principles of the science which would enable young men to learn readily in the higher school of practical experience. As Professor Riedler, a distinguished German teacher, says: "The technical schools have to teach for the average student only the fundamental principles, the amount that is absolutely necessary, but to demand complete mastery of that. The special learning of engineering begins in practice." This applies most forcibly to industrial chemistry.

In this way we could begin the training of a body of young men whose services would be of inestimable value carrying on and developing the chemical industry. The subject can be only very briefly and imperfectly treated in the space now at our disposal; but we hope to recur to it hereafter, and we hope that others may realize its importance and be brought to aid in the work of improving our high schools and directing energies now wasted into useful and practical work.

#### NEW PUBLICATIONS.

**ELECTRICITY AND WATER-POWER, AND THEIR INTER-RELATIONS.** By Mark A. Replogle. New York; The *Electrical Review* Publishing Company. Pages, 161; illustrated. Price, \$1.

This little book, which the author describes as a "popular treatise," is mainly a reprint of a series of articles which recently appeared in the *Electrical Review*. In it the attempt is made to assist the reader to form clear conceptions in regard to electric phenomena, "without the meaningless formulas of mathematics," and with this end in view the author departs radically from the usual definitions and descriptions employed. For instance, electricity itself while stated to be a condition of matter probably, is considered throughout the book as being "a highly elastic material, not affected by gravity or centrifugal force, and having no inertia or momentum."

The latter part of the book, which is pocket size, is devoted to water-power and water-wheels, together with descriptions of many of the more prominent water-power transmission plants in this and other countries.

**COAL.** A chapter in *THE MINERAL INDUSTRY*, Vol. IV. New York; The Scientific Publishing Company. Pages, 899. (Coal section, pages 123-243.) Price, \$5.

Appropriately to the importance of the subject we find the largest section of *The Mineral Industry* devoted to coal, the most important of the mineral products of this or any other country. The time may come when steam will be supplanted by the natural forces, but so far as we can see ahead to-day, steam generated by coal is the dominant mechanical factor, and at present it is the controlling factor, explaining why Great Britain and the United States are leading the world in civilization.

From the reliable tables given in *The Mineral Industry* we find that the United States produced 58,362,985 short tons of anthracite, worth at mine \$89,948,699; bituminous coal, 137,398,347 short tons, worth at mine \$125,344,248. That is to say, the average price of bituminous coal at mine in the country was only 91c. per ton of 2,000 lbs., and the average for our higher-priced anthracite was only \$1.54, or lumping the soft coal and the anthracite, the total average for the year was only \$1.10 per short ton. If this figure is compared with the English, the Belgian, or the Pas de Calais, in France, figures, it will be seen that the American spot prices run about 75% of the foreign. So far, we export little coal, in fact, we import a little from Nova Scotia in the East, and our Pacific Coast supply comes largely from British Columbia and New South Wales. The time is coming, however, when Washington on the Pacific Coast, and Pennsylvania (with its special grades of clean anthracite) will be exporting.

The chapter on coal in *The Mineral Industry* is condensed, but it gives a good bird's-eye view of the industry at large. In order to obtain the fullest details, one has to read over the three previous volumes, each of which contains, in addition to the general summary, special articles on local coal mining, coke making, etc.

In this latest volume of *The Mineral Industry* is to be found a very business-like review of the anthracite coal market in 1895, which will be appreciated by all coal haulers as a guide for current trade. This gives a concise summary of all the principal local markets.

One of the best memoirs ever published is a carefully written history of the anthracite industry of Pennsylvania. The inside story of this wonderful industry has never been told before, and has never been told so ably. The electric light thrown upon the business may startle some people. Here is a great trade, capitalized in the hundreds of millions, employing many thousand workmen, supporting many great railroad lines—and all run at a loss! In a comparatively short time the anthracite of Pennsylvania will be exhausted, and after it is all mined out we shall have a record that has helped mechanical progress wonderfully, being the mainstay of our Eastern factories, machine shops and factories, and yet has not in itself been profitable.

Following the more general sections on coal, *The Mineral Industry* has a special chapter on "Coal Mining in Illinois," by Mr. J. J. Rutledge, which describes the special methods there in vogue. Mr. H. Foster Bain also contributes a timely paper on machine coal mining in Iowa, which will be very serviceable to the engineers who are now considering the question of introducing coal-mining machines.

If space permitted we should like to quote from the special technical articles which accompany the coal chapter in *The Mineral Industry*. At present we can refer to them only by title. Mr. Richard Cremer has a short but practical essay on "Spontaneous Combustion of Coal." Another valuable paper is contributed by Mr. R. Zorner, on the "Fire Damp and Coal Dust Question in Germany." Considering the many explosions of doubtful origin in this country, Herr Zorner's conservative account of the German experiments and conclusions ought to be helpful.

But probably the most useful section in the series of coal articles in *The Mineral Industry* is Mr. W. H. Blauvelt's paper on "By-Product Coke Ovens." When one considers the millions of dollars that go to waste in our obsolete bee-hives and the senseless partiality for "bright" coke, we begin to remember then, in spite of all our boasted intelligence, we are just about a half-century behind the times. This paper shows very clearly what can be saved and what is to be gained by the use of the by-product saving coke oven, and its tables give plainly all the elements in the case, showing what is the increased first cost and how the larger investment is to be a profitable one. It also goes into the subject historically, relating the origin of the by-product oven; and descriptively, giving full drawings and accounts of the leading types of coke-ovens which have been tested by experience. The time has passed—if it ever really existed—when we could afford to disregard economy in production. Conservatism and a reluctance to spend money have delayed the introduction of the by-product oven; but it is a significant fact that the man whose influence at one time did so much to prolong the existence of the old bee-hive is now a strong advocate of its opponent. Mr. Blauvelt's paper is a timely and most excellent one. W. A.

**A HANDBOOK OF ROCKS, FOR USE WITHOUT THE MICROSCOPE. WITH A GLOSSARY OF THE NAMES OF ROCKS AND OF OTHER LITHOLOGICAL TERMS.** By Prof. James Furman Kemp. New York; published by the author. Pages 176, including index.

The contents of this book (except the very useful appended glossary) appeared in 1895 and 1896 in the *Columbia School of Mines Quarterly*. This issue of them in a compendious volume is an event of real importance to mining engineers, and especially to those who, trained, perhaps, in the nomenclature of the last generation, and too busy in the field to follow the investigations and discussions of later years, are perplexed by the new names and definitions which have invaded the field of petrography. The most annoying feature of this perplexity is the consciousness that the new names really mean something; that they have a bearing upon all theories of rock-formation, and upon the problems of economic geology. This is particularly true in relation to the rocks once conveniently lumped as "metamorphic," but it applies in still higher degree to the rocks which used to be summarily characterized as "igneous," or "eruptive," or "greenstone," or "trap," without further classification.

Chemical analysis and microscopic examination have unquestionably furnished the basis of the modern science of petrography; and it is equally unquestionable that the revelations they have made cannot be ignored by the field-observer. But the question still remains, whether he must, in all cases, wait until samples have been analyzed, and microscopic slides have been prepared and examined by specialists, before he can venture even a provisional opinion upon the rocks he encounters.

The science of petrography is passing through a period of transition, like that which characterized biology, prior to Darwin—a period in which observation is more important than generalization; in which recorded species and varieties are multiplied; in which differences, rather than similarities, and specific variations rather than genetic relations, are emphasized. But this period is the indispensable preliminary to the inductive establishment of co-ordinating and illuminating general laws; and, while it lasts, nothing is more important than intelligence and accuracy on the part of the innumerable individual observers who are furnishing the materials for scientific induction. Vague, ignorant or careless descriptions of observed facts are so many obstacles to the desired scientific interpretation of facts. This consideration vitiates many of the "practical" reports of experts; but it is equally applicable to the work of many professional investigators. As Prof. Kemp says in his preface:

"One only needs to compile a glossary, to appreciate what numbers of unnecessary and ill-advised names for rocks burden this unfortunate branch of science, and to convince one that the philological petrographer comes near to being the enemy of his kind."

A peculiar and amusing feature of this subject is presented in the eager adoption, by miners and "mining experts," of new names, picked up from geological reports, and supposed to have significance in economic geology. This ignorant use of precise names is even worse, for scientific purposes, than the old use of general names.

In the dilemma thus presented to the field-observer, a guide, at once comprehensive and critical, like that which Professor Kemp has prepared, is of inestimable value. And it will be not less useful in the field for which it was primarily prepared, namely, the instruction of students.

Such books, indeed, are almost always produced by professional instructors, partly because they only, as a rule, are thoroughly and continuously in touch with technical literature; partly, no doubt, because the prolonged practice of the class-room and the lecture-room enables them gradually to sift and classify their superabundant material; and partly, perhaps, because a textbook thus prepared finds a special appreciative public in successive classes of students, both in the institution where the author is a teacher, and in similar institutions elsewhere. The great question is, whether the instructor who thus arranges his materials into a book is as familiar with practice as with literature; whether he keeps abreast of progress and furnishes in his book a summary "up to date"; in short, whether his manual is discriminating as well as historical.

In this respect, Professor Kemp's book deserves high praise, because it describes preferably American types of rocks, and employs simple and practical terms in the description of them. This merit was to have been expected, after the proof given by the same author, in his work on "Ore Deposits."

In the science of petrography, the igneous rocks present undoubtedly

the greatest difficulties; and next to these in complexity come the so-called metamorphic rocks. Professor Kemp properly devotes to these two classes nine of the twelve chapters of his manual; two chapters being given to the sedimentaries (aqueous and eolian), and one to the general introduction. His method of treatment is excellently adapted to the needs of practitioners as well as students. The classification of the igneous rocks, exhibited in the table on page 18, is admirably clear and logical, and, taken together with the diagrams on page 55, graphically illustrating the mineralogical composition of these rocks, presents a compendium of the entire subject. The rocks are arranged in parallel series, proceeding from the most highly silicious or acidic to the ultra-basic in composition. Each series is divided according to texture (glassy, felsitic, porphyritic, fragmental or granitoid) and subdivided according to its characteristic feldspar (orthoclase or plagioclase) or other mineral (nepheline, leucite, or olivine). The accessory minerals finally determine the species. It may startle some readers to find that the ultra-basic igneous rocks comprise not only basic segregations in normal magmas, and meteorites, but also water and ice. Yet this is plainly a proper classification.

In summing up the subject, Professor Kemp wisely remarks, that "while books are of great assistance, really the only way to become properly familiar with rocks is to use the books in connection with correctly labeled and sufficiently complete study-collections."

The metamorphic rocks are divided into those produced by contact-metamorphism, by regional metamorphism, and by atmospheric weathering.

The glossary is a treasure, or rather a bunch of keys unlocking many treasures. Without such an aid even the educated reader is liable to continual perplexity in reading modern books and articles on geological subjects. With it he will be enabled not only to understand the finer distinctions now current in that science, but also to appreciate their value. The source of much of the complaint against new names is ignorance of their precise meaning. When they are explained to us, we often find, to our surprise, that they fill a want, long felt or unfelt, as the case may be, but real, in either event.

R. W. RAYMOND.

#### 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.

*Report Book for Mining Engineers.* By A. G. Charleton. London, Eng.; Whitehead, Morris & Co. Pages, 163.

*Notes on Qualitative Analysis.* By W. P. Mason. Third edition. Easton, Pa.; Chemical Publishing Company. Pages, 56. Price, 80c.

*Twenty-seventh Annual Report of the State Board of Health of Massachusetts.* Boston; State Printers. Pages, 807; with illustrations.

*Ontario, Canada: Fifth Report of the Bureau of Mines, 1895.* Toronto; H. M. Printers. Pages, 297; with maps of parts of the Rainy River District.

*The Production of Iron Ores in the United States in 1895.* By John Birkinbine. Washington, D. C.; Government Printing Office. Pages, 12; with maps.

*The Goulburn Weir and its Dependent System of Works, 1893.* Compiled from Official Records by Stuart Murray. Victoria, Australia; Government Printers. Pages, 15; illustrated.

*The By-products of the Blast Furnace.* By A. Humboldt Sexton. Reprinted from the *Proceedings of the Philosophical Society of Glasgow, 1895-96.* Pamphlet, pages 14; with diagrams.

*California State Mining Bureau: Bulletin No. 10—A Bibliography Relating to the Geology and Paleontology of California.* By Anthony W. Vodges. Sacramento; State Printer. Pages, 121.

*Jahrbuch der Kaiserlich-Königlichen Geologischen Reichsanstalt, Band XLV., Heft 4, 1895; und Band XLVI., Heft 1, 1896.* Wien, Austria; R. Lechner. Pages, 176 and 234, respectively; with maps and illustrations.

*Modern Theories of Fermentation, With Notes on the Morphology and Culture of Yeasts* By Dr. Francis Wyatt. Reprinted from the *Journal of the Franklin Institute.* Philadelphia, Pa.; published by the Institute.

#### 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.

#### Scaffolding in the Blast Furnace.

Sir: Mr. Bernard's article on "Scaffolding in the Blast Furnace" is upon an interesting subject, hitherto not thoroughly understood, and his suggestions are worthy of consideration. An experience of eight years with blast furnaces led the writer to the conclusion that in a case of scaffolding the first thing to try, as soon as pressure becomes excessive, is to throw off the blast, repeating until the furnace is free or you are satisfied this will not correct the trouble. Then the next best thing is to throw off the blast and let the furnace stand idle a shorter or longer time as the case seems to be more or less serious. A stoppage of 15 minutes will often be sufficient, and on starting again the pressure will be found normal. At other times a considerably longer stop may be necessary. A result of stopping is the reduction of temperature and pressure in the upper part of the furnace, which would be the remedy required for the conditions suggested by Mr. Bernard. The method is expensive in loss of time, but not attended with damage to men or bad effects on the furnace. The more customary practice of maintaining the volume of blast at all hazards does not seem to be justified by either theory or practice and sometimes results in disaster. Is this not a question of brute force versus tact?

ALA.

VULCAN, Mich., Oct. 28, 1896.

#### Silver Mining in Colorado.

Sir: Your issue of October 17th has just reached me. The remarks of "N. A. Y." regarding the "collapse" of silver and the temporary "paralysis" of silver mining in 1893 call for a reply in order to clear myself from the charge of carelessness. The statement (made incidentally in the course of a paper on the recent development of Colorado) that the silver industry was for a time "paralyzed" in the summer of 1893 was made advisedly. That the output of silver for 1893 equaled that of 1892 was due to two facts, the great activity in silver mining during the first half of 1893, and the consumption of smelter stocks after the panic. That the silver market "collapsed" in June, 1893, needs no discussion at this late day.

I take it a little unkindly of "N. A. Y." that he should bracket me with newspaper writers who speak recklessly and irresponsibly regarding the alleged metamorphosis of silver into gold camps. I have more than once endeavored to correct wild assertions of this kind, though taking pleasure in emphasizing the fact that since the decline in the price of silver Colorado has paid increased attention to her gold resources. Although I have no statistics at hand here, my memory of them permits me to state that since 1893 Colorado's gold production has doubled, from \$7,400,000 in 1893 to \$13,700,000 in 1895, while her silver output has halved, declining from about \$22,500,000 to \$11,700,000.

T. A. RICKARD.

COHNUCOPIA, Ore. Oct. 27, 1896.

**Pig Iron Production in Belgium.**—There were in September 34 furnaces in blast in Belgium, and the output for the month was 91,800 metric tons of pig iron. For the nine months ending September 30th the total production was 707,696 tons, showing an increase of 85,926 tons, or 13.8%, over the corresponding period last year. Of the output this year 59,145 tons were classed as foundry iron, 264,763 tons as forge iron and 383,789 tons as Bessemer and Thomas pig.

**The Niagara Electric Power.**—The agitation to annul the grant by the State of New York to the Cataract General Electric Company, to equip the canals of the State with electricity, is making Buffalo business men uneasy, as they fear such a step might raise the cost of power in Buffalo. A new scheme for utilizing part of Niagara's power is that of a Buffalo man who will employ a rotary screw and endless chain. His claim is that his apparatus involves very small outlays, \$250, for instance, being the cost quoted for a 2,000-H. P. machine.

**Iron in India.**—The iron industry in India progresses very slowly, says the *London Engineer*, the product last year being only 46,000 tons. The furnaces are almost wholly confined to Bengal, and to those places where coal is abundant in the immediate neighborhood of the ore, and where smelting can be carried on by European methods. In the central provinces ore exists in abundance, but the smelting is primitive, and there are no authentic statistics. In Madras there is abundance of ore, but no fuel, while in Bombay there are both ore and fuel, but enterprise has not yet been systematically directed to smelting.

**The New Mint Building.**—The drawings of the new Mint Building, at Philadelphia, have been nearly completed and will soon be made public. It is proposed to erect a substantial structure of granite three stories high above the basement and dimensions of about 300 x 170 ft. The entrance will be on Spring Garden street, the widest street in Philadelphia, and will be of an attractive and imposing design. Plans will be made for setting the heavy machinery in the basement, but the lighter machinery and the clerical offices will be in the upper stories. The building will be in the form of a hollow rectangle, with a spacious court in the center. There will also be ample parking on all the four sides fronting Spring Garden, Sixteenth, Buttonwood and Seventeenth streets. Supervising Architect Aiken will not be able to let any of the contracts until the plans are approved by the Secretary of the Treasury and no calculation has yet been made when the building will be completed.

**Borneo Coal.**—The coal mines of Borneo are beginning to be felt in the Eastern markets. The imports of coal from that island at Singapore have increased in four years from 5,531 tons to 17,843 tons. As these imports compete chiefly with coal from India, the Indian Mining Association recently had assays made of three samples of Borneo coal, from the Sadong, Labuan and Muara mines, the results being given as follows:

	Sadong.	Labuan.	Muara.
Volatile matters.....	42.04	42.34	47.51
Fixed carbon.....	56.27	54.97	50.79
Ash.....	1.69	2.69	1.67
Total.....	100.00	100.00	100.00

These analyses, according to *Indian Engineering*, are quite equal to any of the best Bengal coal. The same authority says that Borneo coal is delivered at Singapore at \$6.50 to \$7, ex-ship, which is quite as low as Indian coal operators can do.

**New Electric Power Plants in California.**—An electric plant is being erected by the General Electric Company for Dr. W. H. Garlick, at Hart, in Shasta County, Cal., to supply the Texas Consolidated mine and mill with power and light. The company is preparing to supply other mines and mills in the neighborhood. The arrangements are to supply the Texas Consolidated with a 50-H. P. motor for operating the mill, a 20-H. P. motor for the hoist and a 10-H. P. motor for the rock breaker.

The Mariposa (Cal.) Electrical Company has been incorporated with a capital stock of \$1,000,000 in 100,000 shares at \$10. The company proposes to erect an electric light and power plant opposite the old Benton mills on the Merced River in Mariposa County, to which the water necessary will be conducted from the old Broadhead dam. It is stated that the plant will cost \$300,000. The object of the company will be to supply power and light to the mines in the neighborhood.

The Nevada Electric Power Company of Grass Valley is enlarging its dam on the South Yuba and increasing the capacity of the flume. Connections have been made with the new plant to run the Gold Hill mine, which is about ready to start up.

THE APPLICATION OF SHEET ZINC FOR ROOFING AND OTHER PURPOSES.

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

(Continued from Page 414.)

**Flashings.**—The flashings about chimneys and openings in the roof should not be formed until the roof approaches them, thus enabling the roofer to connect, to the best advantage, the flashings with the roof.

In forming the flashings about a chimney, the mortar is removed from the first course above the roof on the lower side of the chimney, from a depth of 1 in. to 1½ in. Into this groove a sheet of zinc of sufficient width and length is fitted; wooden plugs are driven to hold it temporarily in position. The sheet is extended down the face of the chimney, and it is made to conform to the angle of intersection of the chimney with the roof, by beating down with wooden blocks. If sheet zinc is used for covering the roof, the roofer will endeavor to have the last full sheet terminate within 2 ft. of the chimney, and not nearer than 6 in. The lower edge of the sheet *A* is made to engage with the roof sheets, with a lap joint like that used for connecting the roof sheets. At a distance of 1½ in. from the corners of the chimney the sheet *A* is cut vertically to the roof. A piece is also cut out of the corners, so as to allow the edge *B* of sheet *A* to be folded over, for the purpose of forming a lap joint with the following pieces of zinc. The free vertical portions of *A* are bent around the corners of the chimney, as shown in Fig. 31.

On the sides of the chimney, sheets, *C*, are taken of proper length and width; the edges, *D*, are bent down for 1 in., forming an engagement for the step flashings; the edges, *E*, are lapped under and engaged with the sheet, *A*. On the upper corners of the chimney, the sheet *C* is bent around

over the upper faces, down the sides, and then out on the sheathing, where they are connected with the roof-sheets by the methods just described.

In the case of a tile roof the openings, be they made by a chimney, scuttle or skylight, are surrounded with a sheet of zinc, made up of four sections united by solder; their outer edges, which should be within 6 in. of the opening, are turned over for 1 in., forming an engagement for the clips, *C*, which hold it to the sheathing. Immediately within these edges a 1-in. strip, *B*, of heavy zinc is soldered, extending all around the opening, on which the tiles are engaged; this is shown in Fig. 32. Particular attention is called to the manner of cutting and placing the tiles, for which the true method is shown in Fig. 32.

The gutters and the valleys having been laid, work on the roof is begun. If either of the cap systems are employed, battens must be used, laid at right angles to the ridge. If the roof is to be terminated by a ridge cap, this cap must be put in place. Similar arrangements must be employed for the hips, which are always finished after the plan adopted for the ridge. The placing of the battens depends on the width of the sheets. Usually the battens are made of well-seasoned pine 1½ in. thick, of the same width at the top, and 1 in. wide at the base. In Fig. 33 the batten is shown with a flat surface, and in Fig. 7 with a bevelled top surface. The top may also be rounded.

The roofer must carefully study the best arrangement for the battens, and see that they are uniformly and properly laid, for they control all future operations in the several cap systems. If no ridge pole is used the battens must exactly meet each other at the ridges of the several slopes, and be neatly joined. If a ridge piece is used, the battens are joined to it. No battens should be allowed to extend into the gutters or valleys.

In all cases the roofer begins laying the sheets at the lower end and



FIG. 30.

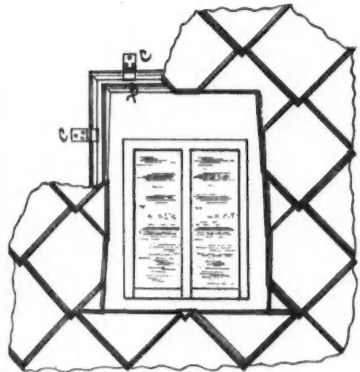


FIG. 32.

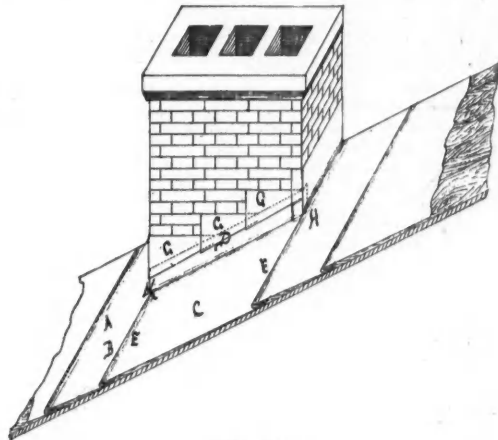


FIG. 31.

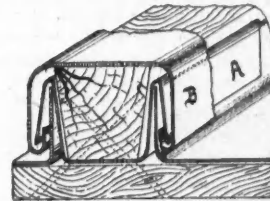


FIG. 33.



FIG. 36.

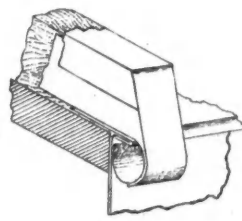


FIG. 35.

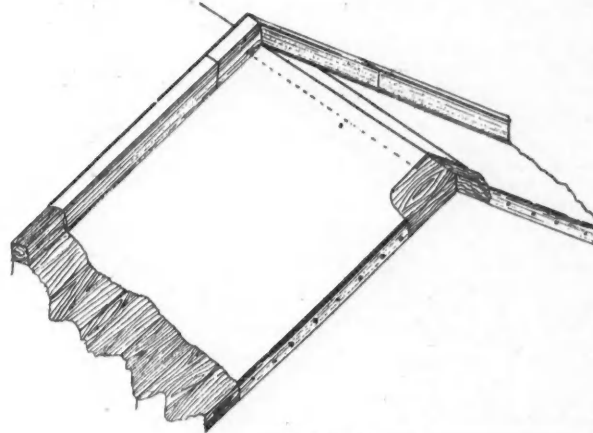


FIG. 34.

APPLICATIONS OF SHEET ZINC FOR ROOFING.\*

to the upper face, for a distance of 1 in. to 1½ in., as the sheet, *A*, is bent around the lower corners. The edges, *F*, are bent over, to form engagements with the succeeding sheet, *H*. Step-flashings, *G*, are cut of proper shape and size, fitted into the grooves formed by removing the mortar from between courses of brick and engaged with the edge *D*, of the sheet *C*. The mortar is next removed from between the second and third, or third and fourth, courses of brick, on the upper side of the chimney, into which the edge of a sheet, *H*, is fitted of proper dimensions. This sheet is made to conform to the roof slope, and at a distance of 1 or 2 in., from the vertical corners of the chimney, it is cut, so that it may extend around the corners for a short distance; it is also connected by a lap joint with the edge, *F*, of the sheet *C*. The sheet, *H*, is connected with the other sheets of the roof, by the usual methods. The joints in the mortar are filled in with good cement.

When either of the "roll-cap" systems is employed, the battens must be stopped at a distance of 6 in. to 12 in. from the chimney. The exposed ends of the caps must be covered with zinc and soldered. It may be necessary to use a little solder about the angles of the chimney, but the workman should not be allowed to slur his work, with the intention of using solder to cover up his deficiencies.

When corrugated sheets are employed the general rules given above are applied, combined with those given later for laying corrugated sheets. More solder is required if the connections are to be water-tight. The same applies to the patent ribbed sheets.

If a scuttle or skylight interrupts the continuity of the roof the sheets are nailed to the inner edges of the woodwork around the opening, bent

outside edge of any slope. The arrangements made for the gutter control the methods of fastening the lower edges of the roof, and they have already been fully described. The outer edges of the sheets are engaged with clips, *B2*, Fig. 11, made of No. 18 zinc in the manner shown. These clips are 12 in. in length with 1 in. projection, and width additional to allow for their firm attachment to the sheathing by nails. The other edge of the sheet is bent up for a height of 1 in. pulled up to the batten, and held securely in position by clips, No. 2, as shown in Fig. 3, of which there are three to the side of each sheet. These clips are best made of No. 16 zinc, and must be slipped under the battens at proper intervals, when the carpenter is laying the battens. They are 3 in. wide and long enough to pass under the batten, up their sides to the height of 1½ in., when they are bent downwards, for a distance of about half an inch, in all usually, about 4½ in. long. To the bottom of each sheet, at its upper end, there is soldered, near the center, a clip, No. 3, Fig. 3, made of No. 16 zinc, 3 in. wide and 5 in. long; one end is nailed to the sheathing and serves to hold the sheet at its original height on the slope. Two clips, No. 1, Fig. 3, are also used to hold down the upper edge, folding over the lap in the sheet, their free ends being nailed with three nails to the sheathing. These clips are made of No. 16 zinc, are 5 in. long and 3 in. wide. In a similar way the next sheet is placed in position, and the process repeated until the ridge is reached.

If a ridge piece is used, clips like No. 2, only longer, on account of the greater width of the ridge battens must be placed, before the battens are nailed to the sheathing. The ends of the sheets run up to the ridge piece and may be nailed to it, or held down with the clips. If no ridge piece is employed, the sheets extend over on each slope for a distance of 2 in., and are united by careful soldering. This disposition is shown in Fig. 34. It will be observed that the top and bottom sheets are always firmly

\* Figs. 1-7, inclusive, will be found in the Journal for October 24th, pages 389-390. Figs. 8-29, inclusive, in the number for October 31st, pages 413-415.

fastened, while at the intervening joints there is always play enough for the changes due to contraction and expansion. The hips are finished precisely in the same way as the ridges, and the connections with valleys are made as with gutter sheets.

After the roof sheets are laid, the caps or rolls must be laid. These are strips of zinc, of sufficient width, intended to cover the battens, and close up the intervals between the sheets, so as to prevent the infiltration of water. The form of the cap may be varied. Fig. 33, shows one common form, and Fig. 4 shows one used in Germany. These strips are formed in lengths of 6 ft. They are laid, beginning at the bottom of the slopes, by engaging their inner upturned edges, with the clips that hold down the sides of the sheets. The succeeding strip overlaps the preceding for a distance of 2 in. or 3 in. They may be united by lap joints, or better a nail may be driven into the upper end of each strip, which is covered by the lower end of the sheet following.

Fig. 7 shows another form of engagement, which properly belongs to the "patent roll cap" system. The clips, A, made of No. 18 zinc, are 6 in. long, and about 3 in. wide; instead of being slipped under the battens, they are nailed to their upper faces, at intervals of about 20 in. between centers. It will be observed, that, with this system, the edges of the sheets must be turned up against the sides of the battens, till they reached the clips, and then bent downward as shown in the figure. The cap engages with the edges of the sheets, as shown, consequently it must be made of No. 18 zinc to give the necessary strength to hold the sheets together. These caps fit over each other and are connected with double joints as shown in Fig. 6.

If no ridge piece is employed the caps run up to the ridge and are there soldered together, or a saddle, with 6-in. legs, is fitted over the caps.

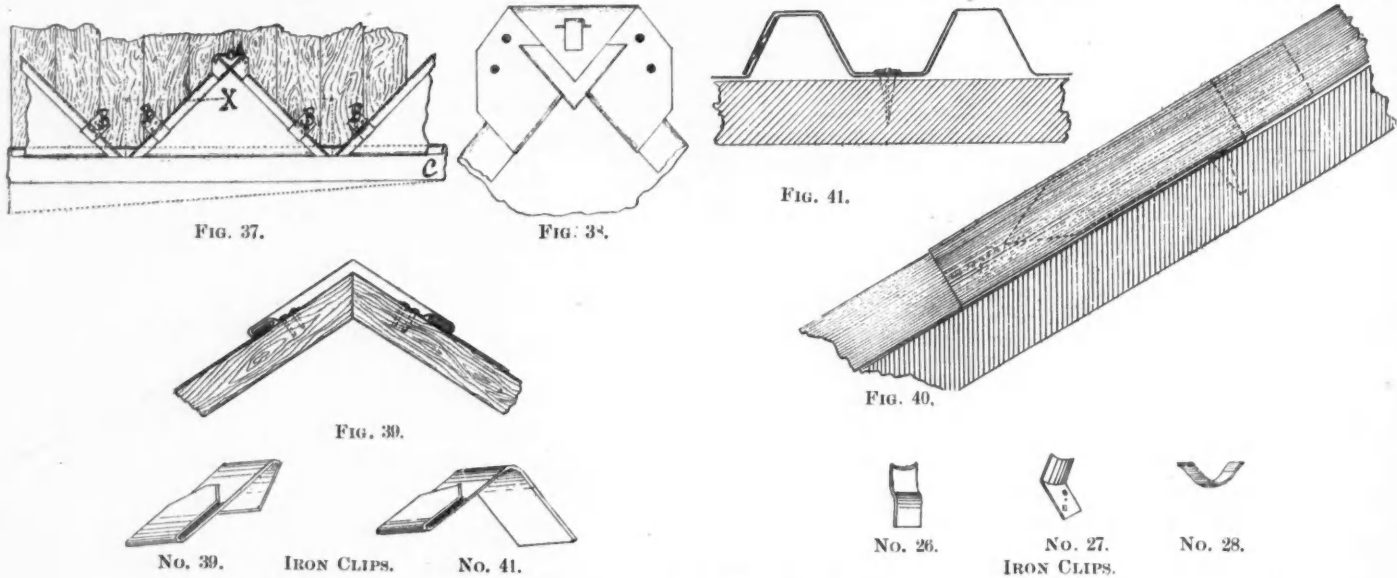
If a ridge piece is employed, it must be covered with a cap, formed after the same pattern as the caps covering the battens, although it may frequently be enlarged into some striking effect of an ornamental character. Fig. 4 shows a form in which the ridge cap is given a circular cross section, about 6 in. or more, in diameter. The caps covering the battens are always extended up to the ridge pole. The ridge piece is

seem to be an improvement to nail the upper edge of each sheet directly to the purlins.

Figs. 8 and 36 show the method of attachment when iron purlins are employed. Four iron clips are soldered to the bottoms of each sheet, which engage with the purlins as shown. These methods of fastening are said to be satisfactory, even in localities where high winds are common. The sheets may be easily removed without injury and carried to other buildings. Fig. 36 shows the manner of forming the ridge, as well as the engagement of the retaining clips with the purlins. A strip of heavy zinc is soldered at intervals of 10 in. to the ends of the sheets. Over this strip is turned, in sections of 6 ft., a ridge piece of heavy zinc. The several sections overlap for several inches, forming a sufficient protection.

**Tiles**—These may be square, hexagonal or diamond shaped and stamped with ribs, scales or any other ornamental figures. When used on dwelling-houses they are made usually 10½ in., 13½ in. and 17 in. square and of No. 13 zinc; when used on large roofs they are made 23½ in. and 29 in. square, and are then made of No. 15 zinc. Tiles may be laid on any roof having a slope of at least 45°. They are particularly valuable when used on Mansard roofs. Fig. 13 shows some of the possibilities for ornamentation. Tiles are very easily laid by any metal worker, and are always laid on sheathing, which need not be perfectly smoothed.

The attention of the roofer must first be directed to the work in the gutters, valleys, flashings about chimneys, and other openings. If the gutter sheet extends up on the roof slope, care must be taken to have the lapped edge made precisely parallel to the ridge pole, the upper edge of the strip being lapped over to form engagements for the tiles, and held down by clips. Its width need not be over 3 in., but it must sometimes be made wider at points, when the eaves are not parallel to the ridge. The cornice generally conceals such irregularities which would be very marked near the ridge, if not corrected. If the eaves are above the gutter and are parallel to the ridge, the strip of sheet zinc may be dispensed with, and the lower edges of the tiles bent over the sheathing and nailed to it. The first tiles laid must be half tiles, cut so that the distance,



APPLICATIONS OF SHEET ZINC FOR ROOFING.

made in sections of about 6 ft., united by lap joints with each other, while the lateral edges are held down by clips, similar to those used in holding down the lateral edges of the batten caps. At the points where the latter intersect the ridge piece, openings are cut, and over them is soldered a piece of zinc, conforming to the form of the batten caps and extending beyond the ridge piece for about 6 in. The hips are finished off after the method for completing the ridge piece. The ends of the ridge pieces are closed by soldering on some ornamental finial, or by simply fitting a piece of zinc to the opening and soldering it to the ridge piece.

The preceding description applies principally to the ordinary roll cap. The "patent roll cap" is laid in a similar way, except in the manner of joining the sheets. With the ordinary roll cap, when laid on slopes of low pitch, water may infiltrate, by capillary attraction, through the joints. To avoid this a double lap is formed, as shown in Fig. 6. In Fig. 26, another method of forming a double joint, without the employment of solder, is shown. It is not, however, generally employed, although there can be no doubt of its superiority. Any form of cap, or ridge piece, may be employed for this style. It is well to increase the height of the battens, when this system is used on long slopes, of low pitch, to diminish the danger of water rising above the level of the edges of the sheets. With this system roofs of 4° slope may be covered.

The lower ends of the batten caps are covered with pieces of zinc, united with solder. In Fig. 35 is shown a popular method.

**Corrugated Sheets.**—Several styles of corrugations are shown in Figs. 8 and 9. The sheets are laid on sheathing, but generally their use is limited to covering sheds, warehouses, etc., in the construction of which no sheathing is employed.

Fig. 10 shows the method of fastening when used on wooden purlins. The lateral edges of the sheets overlap for one corrugation; along the outer edges, on the lower surfaces of the sheets, clips, No. 27, made of heavy zinc or iron, are soldered; through these, clips, No. 29, also of zinc or iron, are slipped and nailed to the upper slopes of the purlins. There should be three purlins to each sheet, and as each sheet is held by two clips to each purlin; no other fastenings are required. It would

X, Fig. 37, will be equal to the width of the whole tile. They are held in position by turning under their lower edges and engaging them with the strip, C, Fig. 37, and by using clips, B, and A (shown enlarged, Fig. 38), which latter are formed for the purpose of preventing rain and snow from beating in at the joints. These clips are firmly nailed to the sheathing. Lines are now drawn on the roof to serve as guides to the roofer. The succeeding tiles are engaged, by means of their under-folded lower edges, with the upper-folded edges of the previous sheets, the clips are attached and nailed. The roofer stops his work at some convenient point within about 12 in. of the ridge, so that he may finish with half tiles. The ridge piece is formed of sheet zinc, as shown in Fig. 39, the under turned edges engaging with the upper turned edges of the tiles.

Generally, the form of tiles directs the workman in his operations. Figs. 14 and 40 show some forms and the appropriate clips for each.

Of the various forms of corrugated zinc, only one, technically known as the "double-ribbed" system, is laid upon sheathing. By reference to Fig. 11 it will be seen that this system is characterized by a system of double ribs, the ribs being about 1 in. in height and 1 in. apart. The distance between the pairs is about 6 in. The sheets are usually made about 3 ft. square, so that the ribs on each side will come within about 1 in. of the edges. Sheathing need not necessarily be employed, the sheets being laid upon strips, which must be placed at the junctions of the sheets. The position of the strips is regulated by the length of the sheets and the overlap that is to be given, which varies from 2 in. on steep slopes to 6 in. on moderate slopes. The corrugations take up all of the lateral expansion and contraction. Patents still protect the manufacturers.

The method of laying this roof is shown in Fig. 11. At the eaves the sheets may be bent over the sheathing and fastened at the lower face of it, or the plan shown in the figure may be followed. Either plan gives satisfactory results. The sheets resting along the end cornices are turned over and nailed, or engaged with clips, as shown. The upper ends of each sheet are firmly nailed to the sheathing, and the following sheet covers the nail heads. The lower end of the following sheet has soldered, on two of the lower faces of the ribs, spurs of stiff zinc, about 3 in. long, which slip under the ribs of the preceding sheet, holding it down (Fig.

40). The sides of the sheets engage with each other by side clips, alternately soldered to the upper and lower faces of the outside ribs, as shown in Fig. 41. These clips are always attached at the factories where this form of roofing is prepared.

Where the roofer is called upon to finish his work against brick partition walls, the details are in general similar to those followed in the formation of flashings.

When the sheet systems are employed, the sheets next to the partition wall are bent up for a height of 2 in. to 3 in. against the wall, and are held down to the sheathing by clips, which are made long enough to catch the upturned edges. After the roof is completed, step-flashings are constructed of sheets of zinc 3 ft. in length. They overlap at their joints for 3 in and their free edges are made to extend over the roof-sheets for a distance of 2 in. and are held down by soldering at the end corners and in the center, making a water-tight joint. Fig. 26 illustrates another method of forming the flashings without the use of solder. Where brick walls abut at the upper or lower end, the methods used are similar to the flashing described above.

Gutter-sheets must always be soldered at their intersections, and expansion joints must be made at intervals of 25 ft., after either of the methods shown in Figs. 23 and 24, according to the nature of the arrangements of the downfalls. These directions will apply to all forms of sheets used. If the roof is covered with tiles, sheet zinc must be used to make the flashings, their lower edges terminating in a double joint, to which the tiles are attached, as described under tile roofs.

Through the kindness of the Vieille Montagne Zinc Company, we are able to give the average surfaces, which an experienced zinc worker, with a helper, can easily lay in one day of 10 hours:

	Sq. ft.		Sq. ft.
Ordinary Roll Cap System:		Square shaped—11×11 in.....	130
Sheets 1' 8 1/2 m. in length.....	170	13 3/4×13 3/4 in.....	150
Sheets 1 m. in length.....	190	"  "  17×17 in.....	180
Patent Roll Cap System:		"  "  23 3/4×23 3/4 in.....	190
Sheets 0' 8 1/2 m. in length.....	170	Double ribbed system.....	190
Sheets 1 m. in length.....	190	Fish scale.....	100
Corrugated.....	210	Flat roof—sheets divided from each	
Patent Corrugated.....	190	other by sunken gutters.....	170
Zinc Tiles:		Wall facing, imitation of bricks.....	140
Diamond shaped.....	110	"  stones.....	170

The above represents average work on medium-sized surfaces, with the average number of chimneys, and other interruptions of the roof's continuity. On large roofs, the average can be easily increased to nearly double the above; while on roofs with more than the average number of interruptions the above average will be decreased.

(To be concluded.)

FUTURE GOLD FIELDS—GUIANA.

Written for the Engineering and Mining Journal by Charles E. Clarke.

Since the appearance of my article on "Quartz Mines in British Guiana" in the *Engineering and Mining Journal* of July 11th, I have received various foreign as well as domestic letters of inquiry as to one point or another of the article in question. As all Americans interested in mining are aware, statements editorially commended or endorsed by the *Journal* command the critical attention of all European technical papers.

Until lately, the hazardous uncertainty of the outcome of the Venezuela dispute has suspended public interest in the local conditions attached to these distant gold-fields; but with the amicable settlement of the dispute now at hand, general interest is redoubled and facts concerning local conditions may prove interesting to the average reader. Look first at the geographical environment. The main range of mountains, while incidentally deflecting for limited distances east and west, and occasionally splitting up and reuniting, runs for nearly 400 miles fairly north and south, and constitutes the natural Western boundary of British Guiana. The flow of the countless streams, ultimately forming the great rivers emptying into the Atlantic, is from these mountains, and therefore within legitimate English boundary. But if the territory on the other side of these mountains belongs to anyone, it would naturally be the property of Venezuela; simply because the general watershed of that territory trends toward the Orinoco and within recognized Venezuelan limits. I was struck with this fact on both of my journeys to the "Schomburgk Line" as delineated on an Old Royal Geographical Society map in my possession. I have sought to do with any politics involved; but having been frequently asked orally, or through correspondence, by Americans for a few facts on this subject from a thoroughgoing American who has been over much of the ground, I will briefly say in passing, that taking natural physical conditions as the only substantial criteria in a barely explored and quite uninhabited country, the English have no geographical claim to the territory lying west of that natural division of country observed and respected by Schomburgk. Because it was unoccupied by Venezuela was no valid reason why it should be claimed as colonial territory by Great Britain; the Venezuelan Government merely gave a Roland for an Oliver in claiming ownership clean through Northern British Guiana to the Atlantic.

So far as the boundaries which nature made are concerned (which are literally all there are to go by), the extreme British and Venezuelan claims are equally untenable. Readers will find it worth their trouble to take any good modern atlas and follow my outlining of the original Schomburgk line; and with that we will dismiss the subject. Schomburgk, the naturalist, while making professional searches in the interior of what might be called "Anybody's country," about 1835, long before any gold was found there and when the entire territory was supposed to be a worthless swamp, was given a commission by the Royal Geographical Society, which in such affairs represents the British Government, to ascertain and lay down the natural and equitable boundary between Venezuela and British Guiana. How fairly he performed that task will easily be seen. Starting at the mouth of the Amicura River, which is on an elbow of the Atlantic and beyond the eastern edge of the delta of the Orinoco, and where the Dutch had originally maintained a trading station, he ran his line south to the head of the Amicura and from thence southerly across the Cuyuni River until he struck the big range whose valleys, running almost due south, he skirted,

and ran his line thence to the Piamah Falls on the head waters of the Mazzaruni River. Thence again follows the natural run of the slope southerly to the head waters of the Cotinga River and continued on that river line directly south to the intersection of the Cotinga and Takutu rivers and along the Takutu River to its sources in the range which establishes the western boundary between British Guiana and Brazil. It is refreshing to see how thoroughly this honest naturalist respected nature's lines in establishing a north and south boundary, taking for British Guiana only that territory which was naturally tributary to the Atlantic and had its only safe ingress from the Atlantic.

We will, therefore, only consider that territory lying east of the Schomburgk line as outlined, which includes, as I believe, the great auriferous fields of the future. Not that rich quartz lodes will not be found on the Venezuelan side of the boundary, but a country which charges \$5 gold duty per barrel on flour, and equally prohibitory duties on the other necessities of life, can never expect any general development of its mineral resources. We have then a main range nearly 400 miles long mineralized from one end to the other. I have seen as excellent "float" brought from the foot of the range near the Ireng River in the Southwest as I personally found in the Northwest. To show reliably that this great mother lode runs continually south; while spending a steamer stop-over of a few days in Paramaribo, Dutch Guiana, an intelligent Dutch Creole prospector, freely endorsed to me by the government bank there, brought me some quartz which he had found beyond the head waters of the great Surinam River, and at the base of the Continental north and south range. I instantly recognized the specimens as identical in character and texture with the blue-white quartz which I had picked up in the Arrawarabato Creek in Northern British Guiana. That settled the problem of a mother lode with me. Now, aside from the larger Continental range, there are many large ranges of mountains and hills in British Guiana running at every conceivable angle.

As I stated in the former article, the general geological condition south of the Isthmus of Panama is entirely different from that north of the Isthmus. Experienced travelers can readily imagine what a marvelous network of rivers such a combination of mountain and tropical moisture produces. These rivers, so soon as man makes them passable (as he already has on the easier Barima River) will become the keys of possession and access to these different ranges which, as already found in very crude prospecting by natives in the Potaro, Omari, Mazzaruni, Puruni and Cuyuni districts, are exceedingly rich. Here is a country containing a wealth of gold in well nigh every range of mountain and hill. For rich outcrops and eccentric uprisings of streaks of bonanza quartz, with frequently neither foot nor hanging walls, I have never seen its equal. On the other hand, the streams at present navigable only in single stretches requiring frequent long portages around the falls and rapids and the rafts of fallen trees, occasional swamps, the dense forest, the tropical heat and the country fever, which more or less affects the majority of people, form obstacles which seem appalling; but who ever heard of an American prospector appalled by obstacles?

Profit conquers all climates. The Colonial Government, deprived by the lingering decline of the sugar industry, has, until lately, made but few of the many imperatively needed improvements of roads and rivers. Since the existence of gold in the ranges away south of the pioneer Barima district has been proven, new roads have been commenced and old roads extended. I had previously stated, speaking generally, that there were no public roads. The enterprise of the present year has materially changed this. Already steamer navigation on the upper waters of the mighty Essequibo has been made a success. Here is the great opening for American prospectors who can bring with them trained experience, good habits and not less than \$2,500 cash. Each of these three conditions is vitally requisite. Properties in the Barima district, the one now most easily and quickly reached, from the sea, are held very high on account of established and satisfactory mill output. What the general interests of British Guiana need is the opening of new districts by experienced, intelligent prospectors in the central, the central-western and the southern portions. Colonial mining laws, taxation and fees are (save the 90c. per ounce tax on gold dust and bullion) so moderate that innumerable prizes await the individual prospector. As for the dangers and hardships, it makes, after all, but little difference whether one fries on the Equator or freezes at the Pole. All the miner asks is whether the gold is there. People take up gold-mining for a profit, not for comfort. To show that the climate in the worst fever district known is not half as bad as its reputation, a party of men working on the Ophir Vale Placer, in the Potaro District, lately dug a canal 20 ft. wide, 7 ft. deep and 1,500 ft. long, with little sickness and with no tools save common hand shovels. In this way they turned the course of a big creek, the bed of which had been found by testing to be rich in coarse gold, and at last accounts were obtaining phenomenal returns.

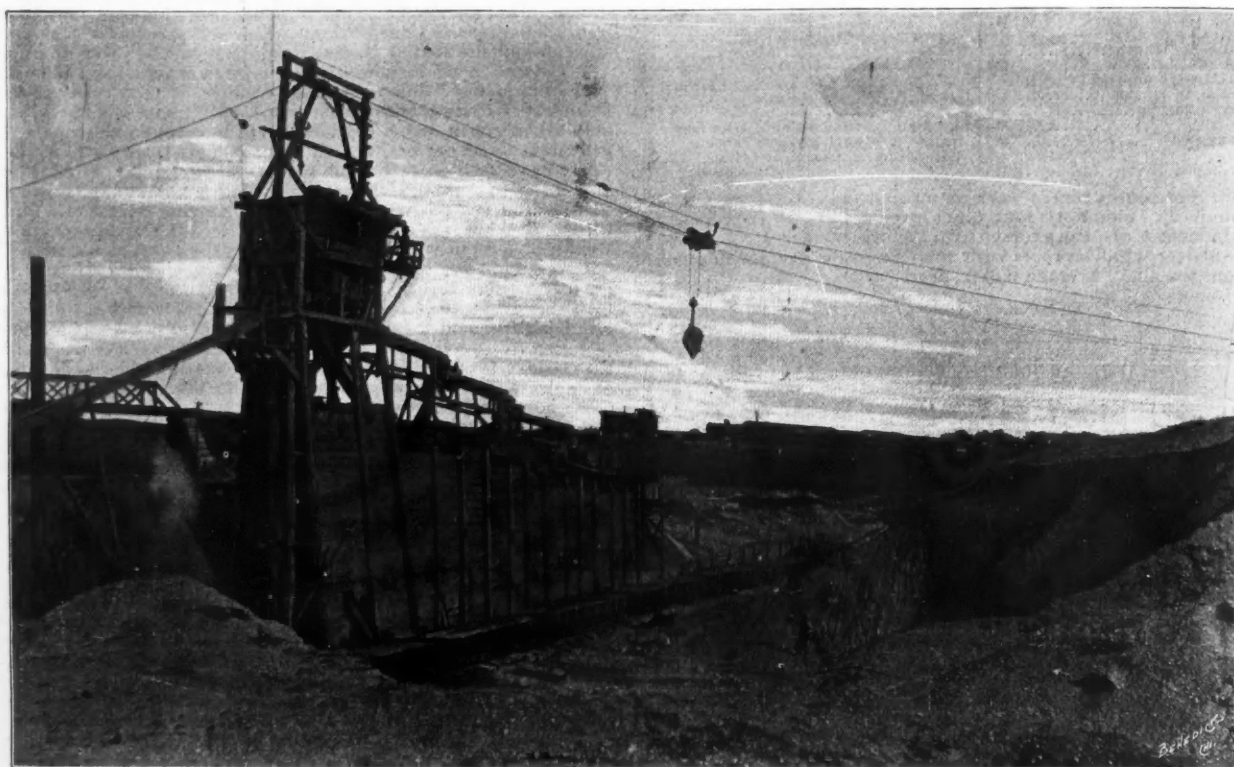
I have long since observed that nature never intended to let one or two generations of men get all the gold in the world. She hides it as jealously as the wild bird does her eggs, and men spend their lives hunting for it from century to century. I am variously asked "whether the Colonial government gives mining rights and privileges to native and alien alike?" "Are the very small number of whites as compared to the entire population able to live safely in the interior?" as well as other questions which can only be answered by the personal experience of the enquirers. Concerning the first question: The British Guiana government, as representing the colonial policy of Great Britain the world over, gives absolutely equal property rights to native and alien miners, and equal protection to the life, health and person of every inhabitant within its borders. In sickness and destitution, the public hospitals and established channels of assistance are gratuitously open to all without distinction of nationality or color. To my mind, here is the explanation of the success which the British government, above all others, achieves in making its colonies generally prosperous and their inhabitants loyal. John Bull makes no attempt to turn a native or an alien into a Britisher. He secures their loyalty or support in quite another way by respecting local laws, habits, customs, wherever he finds them, giving to the humblest toiler and the richest magnate equal rights, and impartially inflicting prompt punishment upon all wrong-doers. On the face of it this is ideal philanthropy; as a matter of fact it is true policy. Great Britain places her main reliance on the possession of land. What is land good

for without workers? By what means can those workers be made loyal and earn the most money for the Treasury? Take British Columbia, which at the present rate of American settlement seems soon to become Yankee Columbia. Has John Bull been caught in any trap, or is his territory in danger? Not in the slightest degree. That astute old gentleman quietly smiles as he sees Americans "piling in" there with money and machinery to develop his mines, hew his forests, build his railroads and cultivate his fields. In one sense, the property becomes theirs; yes, but under his laws and his government. All he seeks in return is official revenue and the fair conduct and support of the inhabitants.

Taking a lesson from 1776 John Bull has made his colonies the staunchest in existence. Concerning safety of life and property in the interior, one needs to have a knowledge of the city inhabitants, as they control the country. The abstract theorist on racial relations and results, finds himself "up a tree" in that part of the world lying between 20° north and south of the Equator; and, as in British Guiana thrifty loyal citizens of mixed blood upset the wisest reasonings of the aforesaid theorist, I will merely say that for nearly 200 years there has been such a steady mixture and inter-mixture back and forward of the white and black races, that in the process of time there has been evolved a distinct class of educated, ambitious and very loyal citizens distinguishing themselves as Creoles. Many of the ablest lawyers, physicians, artists, merchants, bankers, in all South America, are, and for years past, have been included in their ranks. Their homes are frequently characterized by those refinements which only wealth, education and travel can create, and they are

vestment the contemplated great irrigating canal of the Rio Verde (that subsequent splendid piece of engineering by Donald Campbell) in torrid Southern Arizona. It was necessary for me to find the reliable future sources of profit of the company, and I quickly found that the culture of alfalfa would produce more profit in the raising of fat cattle than the original reliance on fruit culture. Since then, Arizona cattle with a final top-feeding of corn produce the finest beeves now laid down daily on the London stalls. I saw as good alfalfa land in British Guiana. With the incoming of a permanent population who will gladly pay any price for fresh fruits, vegetables and meats, experienced farmers and stock raisers will come in to supply the wants and make the profits.

I may add in closing that there are, in all probability, as good quartz properties in Dutch as in British Guiana, but my brief observations in Paramaribo, the capital and chief seaport, convinced me that a government so supine as not to quarantine its lepers (who constitute a considerable proportion of the population of the city) is not one to foster new industry or lend assistance in opening communications to the interior. The same Continental range continues southerly through French Guiana, where the richest placers in South America have been found; but the Colonial government makes no internal improvements nor gives the slightest civil or military protection to life, person or property. There lie, side by side, the three colonies of England, Holland and France. Counting that of the latter as handicapped by the penal settlement of Cayenne, I will substitute Algeria, the largest colony of France, with its fine Mediterranean climate, natural farming and vine-lands and widely varied mineral wealth. The patent condition and future prosperity of these several colonies give the



THE CALHOUN EXCAVATOR.

as charming people socially as one can meet. Now, these Creoles, intensely loyal to England, and strict upholders of Colonial law, morally control the laboring population, altogether constituting nine-tenths of the entire population of the Colony. The young male Creoles, since the decadence of the sugar industry, have joined the ranks of the laboring population as pioneers in discovering new gold fields. As the Colonial government maintains, even in the remote districts, local officers of justice and an active and intelligent constabulary, constantly traversing the country, complete safety to life and property is maintained.

I spent weeks in the far interior on my first journey; my guides and men carrying a large lot of camp paraphernalia and supplies, and though rarely camping two nights in the same locality I noticed at the end of the trip that nothing had been stolen. More loyal, honest, peaceable people I never had with me.

Reviewing the entire situation, I conclude that despite the evident drawbacks at present to be encountered, British Guiana offers solidly superior attractions to the experienced quartz prospector. He should take with him letters or indorsements from well-known mining men, merchants or bankers in this country, to show that he is what he claims to be. With these, if he locates valuable quartz claims he can usually find merchants in Georgetown who will assist him as he needs in developing, and who will be found as reliable and enterprising agents or partners as exist anywhere. The ore found thus far is invariably free-milling, and I believe that an average of 1 oz. of gold per ton can be usually obtained.

I am likewise asked of the possibilities of raising fruits and vegetables, and also cattle for those who have to permanently remain in the interior. There are no obstacles of climate or soil; all the tropical fruits grow quickly. Excellent sweet corn, onions, squashes, cucumbers, lentils, tomatoes and all the varieties of sweet potato are already found in the gardens of the more enterprising camps; as to beef cattle, the field is fallow for enterprise. Some years since I was investigating for foreign in-

reader a clear idea of the relative colonizing ability and success of these three famous maritime nations.

**Burning Out Incrustations in Water Pipes.**—A method of removing incrustations from water pipes recently tried in France is described by *Le Genie Civil*. These pipes had been reduced in diameter from 1½ to 2¼ in. by incrustation, and immersion in a bath of diluted hydrochloric acid had failed. Finally two lengths of pipe were placed on the ground parallel to each other, and 6½ ft. apart, and on these layers of 15 pipes were placed, each layer at right angles to the one below it, until there were 7 or 8 layers. Combustible material was filled in between the pipes and fired; and when the pipes were cooled they were easily scraped out and cleaned. Out of 137 pipes only 6 developed defects causing their rejection after the firing process, and the cost was about 3c. per lineal foot of pipe.

**Salt in Roumania.**—There are four principal salt mines in Roumania, says a recent British consular report; they are at Slanic, at Doftana, at Figu-Ocna and at Ocule-Mare. They are worked by the government, and are well equipped with machinery and appliances. Convicts are employed in the mines, but there are also many free laborers. The mines are worked by the government, and the salt trade is a monopoly. The production in 1895 was about 88,500 tons, of which 55,500 tons were sold in the country, while 33,000 tons were exported. When this salt is sold for internal use the purchaser is obliged to accept 75% of blocks and 25% of refuse. This refuse is placed in sacks, which are given to the purchaser. The refuse of this very finest rock-salt is unfortunately, in spite of the measures on the part of the government, wasted in a great degree, whereas, it has been suggested, it might be employed in the manufacture of soda, the importation of which into Roumania is considerable. An additional inducement in favor of the refuse salt being so employed is its superior quality, which would require little or no calcining.



## THE CALHOUN EXCAVATOR.

There are, as many of our readers know, a number of excavating and conveying devices in use, and their employment for stripping and removing overburden, handling ores in suitable localities and other similar purposes is rapidly increasing. The accompanying illustrations show a plant which seems to combine many good features, and which is now in use successfully at various points. The system has also been applied to handling, unloading and delivering coal and ores.

The device consists of a shovel or scraper, so constructed that it will fill as easily as a common drag-scraper of less capacity, and dump automatically when and where desired, and a carriage from which the shovel is suspended; the latter runs upon a single track of wire cable, at any incline and at any height. A novel and effective catch retains the carriage over the shovel while filling, which can be placed at any point on the line of the track under which the work is done; the tripping lever is so arranged as always to remain in proper position under the track, and works perfectly whether the cable be loose or taut. To meet the strain and wear on implements adapted for excavating purposes, the best material is used in construction. The side plates of the carriage are steel. In No. 2 the ordinary size is  $\frac{3}{4}$  in. thick and it measures over 4 ft. in length by 28 in. wide. Steel and Norway iron are used solely; those parts having the greatest wear are reinforced by tool steel. The grooves of the sheaves and wheels are turned smooth and made to fit the track. The result, it is claimed, is a well-made, simple, compact and durable machine. The sides and bottom of the shovel are of steel, riveted firmly to single-iron shaped to the desired form, and well braced with iron strips on the

at shovel, \$1.50; fuel, oil and miscellaneous, \$1.50; total, \$7 per day, or about 14c. per cubic yard.

In this case fully 30% of the material excavated consists of boulders and dirt which are separated from the washed marketable gravel and sand. The capacity of the present shovel is about 23 cu. ft. and has been in use two seasons. It replaced a  $\frac{1}{2}$ -yard shovel, the present one being used in connection with balance of the  $\frac{1}{2}$ -yard outfit, which has now been in use four seasons.

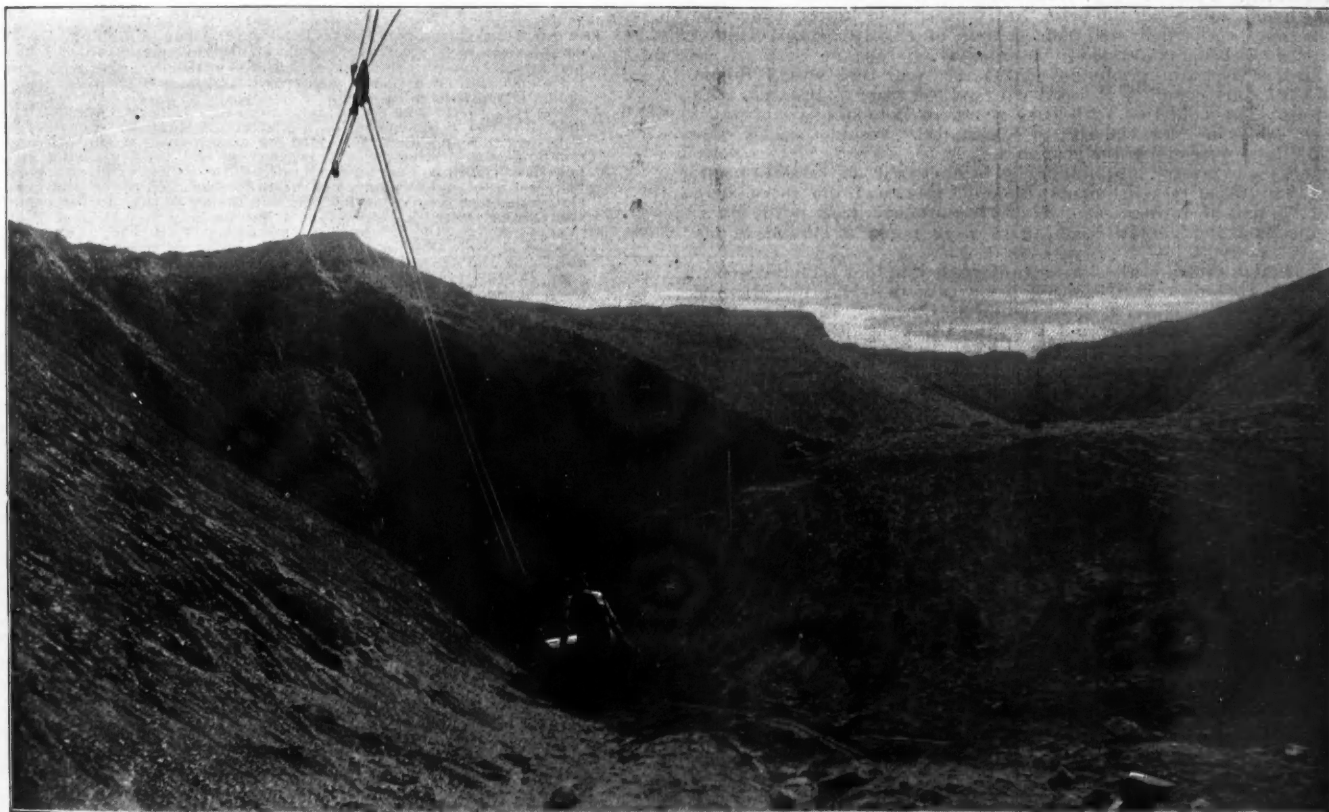
The output of this plant is from 12 to 15 cars daily of screened and washed material. The cost of excavating in different materials does not vary much from the figures given above. The feed of the shovel can be varied and so arranged that one man in most cases can easily fill it.

## THE COKE WORKS AND BRIQUETTING OF MINERAL COAL IN AUSTRIA.

Written for the Engineering and Mining Journal by B. Helmhaecker.

The great demand for mineral fuel for the blast furnaces, not only in the countries where the coke is burned, as in Bohemia, Moravia and Silesia, but also at quite remote districts in the Alpine region, as in Styria, Carinthia and Carniola, where coke is also needed, makes coke-burning in Austria a successful operation. In all places where coking coal occurs and is made into coke for supplying blast furnaces with fuel, coal-washing works are also established, to decrease the amount of ash in the coke.

In Bohemia there are but few coking coals, their occurrence being mostly limited to those places where the coal seams yield much marsh gas, or fire-damp, which is especially the case in Moravia and Silesia.



THE CALHOUN EXCAVATOR—SHOVEL FILLING.

bottom to insure durability. The bale and arms are forged from Norway iron.

The machine is very well adapted for excavating ditches, as the material taken out by the scraper can be carried back over the constructed part and dumped, thereby obviating the expense of piling the excavated earth high upon the embankments and then removing it by other means. The shovel requires no more room in descending into an excavation between the braces than a common bucket; not as much room as is necessary to throw the earth out by hand. The shovel will fill in any soil where a drag scraper will fill; in fact, with sufficient power, the nature of soil is immaterial. In stone quarries, where it is desirable to elevate and transport the stone a distance from the pit to load on cars, wagons, etc., the carriage only (dispensing with the shovel) can be used to very good advantage; it can thus be made a permanent part of the quarry plant, after doing the work of stripping.

A number of these excavator plants are at work, some under circumstances calculated to try them very fully. One of the latest improved machines is operating in a bank near Joliet, Ill., where the work is especially difficult, as the bank is of cemented gravel with a strong binding property which makes it valuable for road material. This plant is owned by Dolese & Shepard, of Joliet. The accompanying illustrations show a plant belonging to S. S. Start & Company, of Elgin, Ill., the first being a general view, and the second showing the shovel at work. As to actual working capacity, the trips of the car have often been timed on a haul of about 300 ft., and four trips are easily made in five minutes, making 48 an hour. As the capacity of the shovel in this case is 1 cu. yd., this would give a total of 480 cu. yds. per day of 10 hours. To operate this plant the cost is: Engineer, \$2 per day; man to control drums, \$2; man

The escaping of volatile hydro-carbons from coal seams in the Bohemian coal measures is comparatively rare; this explains the scarcity of coking coal in that country.

Coking coal occurs at Mireschov, a small isolated coal basin in Western Bohemia, near Rokycan; at Litic and Mantov, in the larger Pilsen coal basin in Western Bohemia, while a grade between coking coal and bituminous coal is known at Rapic, in the Kladno coal measure, north of Prague. But in this latter place the coal loses its coking quality on exposure to the air current in the drifts of the mines, and, therefore, coking operations ceased in that place a short time ago. Another deposit of coking coals is in the northeastern part of Bohemia, at Shvadovic, in a long tongue of coal measures, forming an extension of the great coal basin in Prussian Lower Silesia. At Mireschov and Litic 52,564 tons of coking coal were burned to 31,677 tons of coke, in 1894, an increase of 890 tons compared with the year 1893. The number of hands employed in coking is 96 men, 8 women and 2 boys, the output of coke being 57 $\frac{1}{2}$ %, at an average price of 18.76 florins per ton, the value taken at the mine, where the labor ceases to act on it.

At Mantov 15,531 tons coal were converted into 8,007 tons of coke at 9.80 florins per ton with 32 hands engaged, the output being 51.6%. In Shvadovic 22,451 tons of coal were burned to 14,409 tons coke at 6.50 florins per ton; the output being equal to 63.7%. There were also 699 tons of coal dust converted into briquettes at 5.50 florins per ton. In both operations, coking as well as briquetting, 81 hands were engaged. In Bohemia 90,545 tons of coal were made into 54,092 tons coke, of which 2,735 tons were exported.

In Moravia there are two separate coal deposits, one near Brunn at Rosic, Zbejshov and Aslavan, the other on the Silesian boundary,

where a small projection from the southern part of the extensive Upper Silesian coal basin covers a very small district in Northeastern Moravia. In the Rosic-Aslavan coal basin 37,950 tons of coal were burned to 26,663 tons of coke at 7 florins per ton, the coal giving 70.3% coke. In the Moravian part of the southern limit of the great Upper Silesian coal basin, one establishment at Moravian-Astrava (Märish-Astrav) produced 277,423 tons coke from 417,877 tons coal. The price of the coke per ton is 7.40 florins, the coal giving 66.4% coke. In this first-class coking establishment there were produced chemical by-products as shown by the following exhibit: 292 tons of ammoniacal water, value 27,460 florins; 1,063 tons sulphate of ammonia, value 170,108 florins; 3,637 tons tar, value 45,464 florins; 96 tons hard pitch, value 1,056 florins; 0.4 ton tar oil, value 31 florins; 188 tons asphalt matter, value 2,630 florins; 6.8 tons asphaltum paint for iron (black japan), value 680 florins.

For the Austrian part of Silesia 375,727 tons of coal were converted into 292,191 tons of coke, in six establishments, the output being equal to 77.4%, the price per ton 7.75 florins. One establishment distilled also chemical by-products as follows: 1,885 tons sulphate of ammonia, value 256,484 florins; 5,215 tons tar, value 77,630 florins, and 1,077 tons pitch, value 15,924 florins.

Silesia is the leading coke-making country, with the adjacent small region of Moravia, and a large part of the coke produced has been consumed for fuel at the blast furnaces in Bohemia and Styria and also abroad. The entire coke production of Silesia and the small section of Moravia mentioned, into which the southern limit of the Upper Silesian coal deposits extend, should be combined under one name and tabulated.

The other countries in Austria, outside of Bohemia, Moravia and Silesia, have no coke production for want of a suitable raw material. In Austria, in the year 1894, a total of 1,178,747 tons of coking coal were converted into 733,905 tons of coke, corresponding to an average output of 62.4%, the average price per ton being 7.65 florins. The mines connected with the coke works delivered 156,955 tons of coke for transportation abroad, the rest being consumed in the country.

The rank of the States producing coke, in the year 1894, was: 1. Silesia with 375,727 tons coke; 2. Moravia with 304,085 tons; 3. Bohemia with 54,993 tons. The collieries with coke works in Bohemia have operated 220 coke ovens; in Moravia, 419; in Silesia, 660. Beside this, 200 coke ovens in Silesia were idle in the year 1894.

Bohemia made pressed bituminous coal briquettes in one establishment; Moravia had three establishments; in one of them at Rosic there were made 31,870 tons of briquettes out of 29,779 tons coal dust; in the Moravian collieries in the Silesian basin there were made 21,140 tons of briquettes.

The Bohemian crown coal mines manufactured, in four establishments, from brown coal dust 59,324 tons of briquettes; in Styria the output of one establishment was 7,786 tons; while at Carpano, in Istria, 7,380 tons briquettes were manufactured from the black lignite of the deposit in two establishments.

#### RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

**TRUSTEE FOR ACQUIRING MINING CLAIM.**—Under the law permitting the locator of a mining claim to file an amended certificate of location, which may include additional territory, an amended certificate is based on the original, and relates to the first location; hence a tenant in common with others, to whom his co-tenants have conveyed their interests in trust for the purpose of having him procure the whole patent, files an amended certificate, and thus acquires additional territory, holds it in trust for all. To permit him to retain in his own right and for his individual use such additional territory would be to allow him to reap an advantage from the trust property, and from his relation to it as trustee, which cannot be permitted; for a trustee will not be allowed to reap any profit or gain any advantage, directly or indirectly, from a trust estate, or his relation to it. The rule has its foundation in the soundest principles; is approved by all the authorities, and is necessary for the protection of trust estates.—Hallack vs. Traber (46 Pacific Reporter, 110); Supreme Court of California.

**Copper in Japan.**—According to a recent British consular report the production of copper in Japan is steadily increasing. The total exports in 1895 were 6,500 long tons, against 7,100 tons in 1894, and 7,000 tons in 1893. The decrease in exports in 1895 was partly due to the smaller shipments to China, and partly to the large demand at home, chiefly for use in manufacturing war material.

**The Largest Lens.**—The lens for the great telescope of the observatory at Lake Geneva, Wis., the finest and largest telescope lens in the world, has been completed, after 2½ years' labor, and now lies at the workshop of Prof. Alvan Clark in Cambridge, Mass., awaiting the orders of the Chicago University authorities. Its focal distance is 61 ft.; the extreme diameter of the clear aperture is 41½ in. The crown is about 3 in. thick at the middle and 1½ in. thick at the outer edges, and weighs 205 lbs. The flint weighs 310 lbs. The lens and its iron ring and cell weigh about 1,000 lbs. The cost of the glass plates in Paris was \$40,000, and the entire cost of the lens is estimated to have been \$100,000. For its journey West it will be wrapped in flannel and bedded in curled hair, in a box mounted on springs, and packed with excelsior in a large box. It will ride in the center of a parlor car, and will be accompanied by four men.

**The Government Metallurgical Works in New South Wales.**—The metallurgical works of the New South Wales government were to have been in active operation before the end of September, according to the Australian Mining Standard. They are situated on the Duck River, not far from Parramatta. By some inexplicable oversight cyanide and chlorination works were omitted from the original plan, but these are now to be added. The crushing and amalgamating machinery is nearly complete. The regulations and scale of charges have been prepared, and will be issued by the department in the course of a few days. They provide that bulk samples of gold ores up to 10 tons in weight from any one mine,

or distinctive section of a mine, will be received with a view of determining the value of the ore, and the best and most economical method to be adopted for its treatment. Cases of prospectors who are not in position to pay for testing their ores have been taken into consideration, and the Minister has approved of parcels being treated for them at the works free of charge. The only conditions to be attached to such a concession are that the applicants will get the ore, bag it, and place it on trucks at the nearest railway station, the department defraying the cost of railway carriage and treatment. Should the stone, however, yield any metal of value it will go toward the cost of the treatment. A report will be furnished to the owner in each case, showing the process to which the ore has been subjected, and offering suggestions as to the best and most economical methods of dealing with it, so that the loss of metal may be reduced to a minimum. The charges for crushing, sampling, assaying, amalgamating and concentrating gold ores will be as follows: For 1 ton, 45s.; 2 tons, 30s. per ton; 3 tons, 25s. per ton; 4 tons, 22s. per ton; 5 tons, 21s. per ton; 6 tons, 20s. per ton; 7 tons, 19s. per ton; 8 tons, 19s. per ton; 9 tons, 18s. per ton; 10 tons, 18s. per ton. Less than one ton will be charged as one ton.

#### 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 27TH, 1896.

- 569,987. **TIPPING METALLURGICAL VESSELS.** Henry Aiken, Pittsburg, Pa. The combination with a tipping vessel, of upright, single-acting cylinders arranged on opposite sides of the center of rotation of the vessel, means for connecting the cylinders and vessel, and means for simultaneously applying pressure in the cylinders on opposite sides of the vessel.
- 569,939. **AUTOMATIC CAR-HOLDER FOR HOISTING CAGES.** Julius R. Campbell, Litchfield, Ill. The combination of a platform, a suitable casing provided with longitudinal slots and adapted for attachment to the platform, a dog possessing a pivot and a recess near one end, the dog having an upper edge declining in both directions from the recess and from a point near the other end, the length of the dog exceeding that of the greater slot in the case, a coiled spring, means attached to the case for engaging and guiding the pivot and for supporting the spring.
- 570,014. **METALLIC ALLOY OR COMPOUND AND PROCESS OF PRODUCING SAME.** Charles M. Hall, Oberlin, O. A metallic alloy or compound of copper and boron and a metal of the iron group. The process consists in mixing copper with a proper quantity of boracic acid, charcoal and an oxide of metal of the iron group, and making the whole into an intimate mixture (to which mixture borax may be added) and heating to a high temperature.
- 570,104. **HOT-BLAST STOVE.** Frank C. Roberts, Philadelphia, Pa. Combination of a flue structure composed of bricks provided with an offset or projection in each of their two ends extending across the breadth of the bricks and which offsets in their vertical direction are equal to less than one-half the depth of the bricks and which offsets in their horizontal direction are equal to one-half or less than one-half the breadth of the bricks and which offsets have neither their upper nor lower surfaces in the same plane as respectively the upper and lower surfaces of the main body of the bricks.
- 570,125. **APPARATUS FOR PRODUCING WIREBARS BY ELECTRODEPOSITION.** James B. Forsyth and Charles R. Fletcher, Boston, Mass. An apparatus composed of a cylinder, with a surface of conducting material and a strip of non-conducting material laid in a spiral groove cut or formed in the surface of the cylinder and extending out beyond the surface of the cylinder.
- 570,129. **DEVICE FOR PREVENTING OBSTRUCTION OF BLAST IN BLAST-FURNACES.** John M. Hartman, Philadelphia, Pa. The combination, with the furnace-wall of a jacket constructed in vertical sections; a series of internally projecting flanges mounted upon the jacket above the tuyere breast; a series of open, horizontal water-troughs arranged upon the exterior of the jacket; and guard-pieces at each end of the troughs extending above the level of the remainder of the rim portion thereof.
- 570,133. **APPARATUS FOR ELECTROLYTIC DEPOSITION.** William De Courcy May, Niagara Falls, N.Y. An apparatus for electrolytic deposition, the combination with a suitable source of electricity of a series of receptacles arranged vertically above one another, the bottom of each receptacle extending down into the immediately subjacent one, each of the receptacles being adapted to discharge its overflow into the next of the series; a supply-pipe leading into the first of the receptacles and means whereby the overflow from the last receptacle of the series may be returned to the supply-pipe.
- 570,232. **COAL WASHER.** William L. Scaife, Allegheny, Pa. The combination with a suitable frame, of a trough mounted on the frame and hinged along one side, the trough being adapted to swing down transversely of its length whereby the contents are dumped along the entire length of the trough and free access may be had to the trough, and mechanism for holding the trough in its normal position.
- 570,243. **ORE CONCENTRATOR.** Frank J. Woods, Chicago, Ill. An organized machine in which there are combined an inclined riffle-box having an inclined riffle-channel formed of a lower riffle-screen with transverse riffle-bars, adjustable sideboards, a removable cover and a flap valve, a bellows secured to the riffle-box directly under the riffle-screen for the purpose of furnishing a current of air to such riffle-screen and separate materials, flat spring mechanism for flexibly supporting the riffle-box and secured parts on the framework and permit longitudinal vibrations, but prevent lateral movement of the riffle-box, means for actuating the bellows, means for imparting a jiggling or vibratory motion to the riffle-box, a disintegrating feeding mechanism consisting of at least two rotatable shafts arranged in a horizontal plane and provided with angular beaters or disintegrators for crushing and feeding the material forward in uniform condition and quantities into the riffle-box and means for operating the mechanism.
- 570,330. **MINING-MACHINE.** Edward Patterson, Oakland, Cal., and William Patterson, Scranton, Pa. The combination with the main frame, having vertical guideways, and a supplemental frame mounted on the guideways to move vertically, of a cutter-frame mounted on the supplemental frame and guides interposed between the cutter-frame and supplemental frame for guiding the cutter-frame longitudinally of the supplemental frame in a direct line and an endless cutter carried by the cutter-frame.
- 570,382. **APPARATUS FOR MANUFACTURING FUEL-GAS.** Carl Dellwik, Rogers Park, Ill. The combination with the fuel and decomposing chamber, of the distilling and coking retort chamber, filled with brick checker-work, surrounding the retort, a closed partition around the lower end of the retort and between two chambers, the flue connecting the base of one chamber with the bottom of the other above the partition, a pipe admitting air to burn the waste gases and an air supply-pipe connecting with the top of chamber below the partition.
- 570,383. **GAS-GENERATING APPARATUS.** Carl Dellwik, Rogers Park, Ill. The combination with a fuel and generating chamber, having at its base the air-supply pipe of a coking-chamber opening freely into the top and having a solid inclined floor, one or more flues, connecting at their upper ends with the coking-chamber and extending below the inclined floor thereof and connecting at their lower ends with an escape-flue, and an air-supply pipe connecting with the upper ends of a flue.

## PERSONAL.

MR. J. S. HARTZELL, formerly of Florence, is now in Butte, Mont.

MR. E. U. BOUCHE, mining operator, of Rossland, B. C., recently paid an extended visit to the Salmon River country.

MR. J. L. PARKER, mining engineer, of Rossland, B. C., has been visiting Salmon River and Boundary Creek districts reporting on mining properties.

MR. J. POWELL, manager and engineer of the London Gold Mining and Development Company, is visiting the mines in Rossland, B. C., district.

MR. GEORGE GOODERHAM and MR. T. G. BLACKSTOCK, of Toronto Ont., who are interested in the Crown Point mine, on the South Belt of Trail Creek, B. C., are again visiting Rossland.

MR. HENRY F. LEFEVRE, mining engineer, has gone to Honduras, C. A., where he will be connected with the New York & Rosario Mining Company.

DR. HENRY RIES, of New York City, a member of the United States Geological Survey, and one of the experts on clays in the United States, is in South Dakota to examine deposits of clays and fullers' earth.

MR. W. S. WARD, of Denver, Colo., has been appointed as a member of the local advisory board of the Gold and Silver Extraction Company of America, the proprietors of the McArthur-Forrest method of treating ores by the cyanide process.

MR. ALBERT LATCHA WATERS, mining engineer, who has been assisting Superintendent Hill, of the Black Warrior Copper Company, in designing a reduction works, has accepted the position of mining engineer for the United Globe mines, also at Globe, Ariz.

MR. THOMAS J. BURKE, a well-known mining man of Salt Lake City, has returned from British Columbia, where he has been inquiring into its camps. Mr. Burke is much pleased with his observations in the North, and has associated himself with several projects.

MR. SPENCER MILLER, engineer of the Cableway Department of the Lidgerwood Manufacturing Company, New York, is again at his desk after an absence of nearly four months. Mr. Miller was taken with appendicitis early in the summer and has but recently recovered from the severe operation necessary. He is now prepared to take up the work of his department in his usual energetic way.

## OBITUARY.

JOSEPH T. TORRENCE died recently in Chicago. He controlled many iron and steel enterprises, and engaged in the construction of several railways. He organized the Chicago Elevated Terminal Railway Company in 1891. General Torrence was born in Mercer County, Pa., in 1843.

## SOCIETIES AND TECHNICAL SCHOOLS.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—A meeting was held at 112 Mansfield street, Montreal, on November 5th, 1896. The discussion on Mr. Fortier's paper on "The Storage of Water in Earthen Reservoirs" was continued.

CIVIL ENGINEERS' CLUB OF CLEVELAND, OHIO.—A semi-monthly meeting was held October 27th, 1896, at the rooms in Case Library Building. Mr. Cecil L. Saunders read a paper entitled "Gas Producers and the Mechanical Handling of Fuel." The subject was presented under the following heads: A discussion of various types, the necessity for attention to detail of construction, the relation of character of coal to type to be used, a possible field for future economy: coal handling from hoppers, unloading coal by mechanical devices.

ENGINEERS' CLUB OF PHILADELPHIA.—A meeting will be held at No. 1122 Girard street on Saturday, November 7th. A paper on "The Queen Lane Division of the Philadelphia Water Supply System—The Distributing System," illustrated by lantern slides, will be read by Allen J. Fuller. Also one on "Rapid Methods in Instrumental Drawing," by L. F. Rondinella.

PHILADELPHIA FOUNDRYMEN'S ASSOCIATION.—The fifth annual meeting of this association was held on November 4th. The annual election resulted in the choice of the following: President, P. D. Wanner, Reading; vice-president, Thomas Devlin; treasurer, Josiah Thompson, and secretary, Howard Evans, Philadelphia. Executive committee, Walter Wood, chairman; Thomas Glover, E. E. Brown, Stanley G. Flagg, William F. Sauter, all of Philadelphia. James A. Beckett, of Hoosick Falls, N. Y., had prepared a paper on "The Philadelphia Convention and Foundry Development," which was read by Mr. Sterling, of Wilmington.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.—The trustee of the Lowell Institute has established, in the Institute of Technology, free courses of instruction in literary, scientific and technical subjects, of which the following are some of those on the 1896-97 programme: (1) Graphic Statics, with Applica-

tions to Roof Trusses and Arches; (2) Structural Geology or the Architecture of the Earth; (3) Elements of Petrography; (4) General Chemistry of the Non Metallic Elements; (5) Metallurgy of the Minor Metals—Aluminum, Nickel and Cobalt, Zinc and Cadmium; (6) General Chemistry of the Metallic Elements; (7) Geodetic Surveying; (8) The Progress of Chemistry During the Past Decade; (9) The Chemistry of Daily Life.

For registration cards and tickets apply with stamped envelope, properly addressed, to H. W. Tyler, secretary, 491 Boylston street, Boston, Mass.

## INDUSTRIAL NOTES.

The Whiteley Malleable Castings Works, at Muncie, Ind., has resumed full force, after being partially idle for over four weeks.

The Burnham Works of the Logan Iron and Steel Company, at Burnham, near Lewistown, Pa., are being run only in the puddle mill, the blast furnace being still idle.

The Baldwin Locomotive Works at Philadelphia, Pa., the lowest bidders, have been awarded the contract for constructing eight locomotives for the Imperial railways of China.

The Illinois Steel Company will, it is said, discontinue the manufacture of sheet iron and galvanized iron at the Hammond, Ind., plant, which it has under lease from the Corning Steel Company.

The Bethlehem Iron Company has shipped three 10-in. turret port plates for the Russian war vessel *Rostislav* to the chief of port at Sebastopol. The plates weighed 109 tons. A shipment was also made of 13 10-in. sideplates for the same vessel, weighing 166½ tons.

The Newton Machine Tool Works, of Philadelphia, Pa., have an order from the Central Railroad Company of South America for heavy milling machine equipment, including the heaviest class of rod milling machines, heavy plain milling machines, vertical rotary planers, etc.

The Ironton Structural Company, West Duluth, Minn., is said to have abandoned, for the present, the manufacture of structural shapes under the York patents and that a large order of plates will be rolled. The plates will be riveted into pipe by the West Duluth Manufacturing Company.

The Berlin Iron Bridge Company, of East Berlin, Conn., has a contract for a car barn and shop building, for an electric road at Port au Prince, Hayti. These buildings will be of steel throughout, having a steel skeleton framework covered on the sides and roofs with corrugated iron. The shop is 33 ft. x 70 ft., and the car barn 40 ft. x 160 ft.

The Kentucky & Alabama Coal, Iron and Land Company, Louisville, Ky., has been reorganized, with W. P. Ijams, Terre Haute, Ind., president; John H. Weller, Louisville, vice-president, and S. P. Myer, Louisville, secretary and treasurer. It is stated that they may begin operations on property which they own near Birmingham, Ala.

The Cleveland (O.) Steel Company recently made a beginning in rolling copper sheets and plates, and initial orders have been taken for 50,000 or 60,000 lbs. of material, the expectation being that the demand in Cleveland and contiguous territory, which has been supplied by Detroit and Pittsburg and other points, can be taken care of in part at home.

The Vulcan Iron Works of San Francisco are engaged in filling the following orders: Vulcan ropeway for parties near Baker City, Oregon; 9 x 15 Giant rock breaker; Dodge gold amalgamator; No. 2 double circular saw mill for Central America; refrigerating and ice plant for Pacific mail steamer *San Blas* and other similar refrigerating and ice plants.

Andrews Brothers Company's blast furnace, at Haselton, O., which has been idle since last June, and in the meantime has undergone repairs, has been relighted. Almost \$100,000 has been expended on the furnace since its idleness. The new improvements consist of two blowing engines, of which those at the Thomas furnace, in Niles, are the only ones as large in the valley; a new brick engine house, a stand pipe 75 ft. high, etc.

The American Engine Company, of Bound Brook, N. J., has begun the shipment of its new engines, known to the trade as American-Ball engines. The first of these engines of 100-H. P. capacity has gone to the Detroit *Evening News*, and the second, a 50-H. P. engine, to the *Savannah News*. Since the addition of this new line of work the business of the company has increased so that they are now compelled to run double time, having installed a night force.

The Illinois Steel Company has in contemplation extensive improvements in its Milwaukee works, estimated to involve the expenditure of about \$600,000. The efficiency of the rolling plant is to be greatly increased and the capacity enlarged. At present no steel is produced at these works, the billets or other steel material being sent to Milwaukee from the company's other works. It is intended to erect a basic steel plant, however, in accordance with designs long entertained, thus making the Milwaukee works independent producers of material. The red fossiliferous ore from Iron Ridge, Wis., will constitute the leading raw

material for the basic steel process. The works already comprise two blast furnaces. It is probable that when these additions are made the manufacture of rolled iron may be abandoned.

## 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.

## TRADE CATALOGUES.

The Onondaga Coarse Salt Association of Syracuse, N. Y., manufacturers of solar (sun) made coarse salt, have published a very interesting pamphlet descriptive of their works and the process there employed. Space is also devoted to the use of salt for various purposes in the arts, and its effect upon the growth of crops.

## GENERAL MINING NEWS.

## ALABAMA.

## ETOWAH COUNTY.

It is reported that the iron mines at Attalla are to be opened again and that something near 100 hands would be given employment.

## ALASKA.

JUALIN.—Superintendent C. N. Pearce, of this mine, at Berner Bay, reports that the 10 stamps are steadily dropping on high-grade rock with an abundant supply accumulating on the dump.

## ARIZONA.

## GILA COUNTY.

(From an Occasional Correspondent.)

MINERS' UNION.—As a final outcome of the troubles of last June between superintendent S. A. Parnall and his men, President Edward Boyce, of the Western Federation of Miners, has been in Globe and organized nearly all the workmen of the camp—miners, smelters and topmen—into Globe Miners' Union No. 60 of the Western Federation. He talks strongly against strikes and has made a very favorable impression among the business men of the camp.

OLD DOMINION COPPER COMPANY.—The big sectional rectangular water jacket furnace of this company, which was blown in October 16th with great satisfaction to the local officials, will handle 100 tons in 24 hours. A similar furnace is on the ground and will be put up at once. The mine is making considerable water, causing much trouble and greatly retarding development work, which will soon fall behind the work of the big furnaces. The force is being gradually increased, but the camp is still one from which miners lacking finances should keep away.

UNITED GLOBE MINES.—This group of copper properties, controlled by Phelps, Dodge & Company, is undergoing an immense amount of prospecting and development work, for which it is understood plans are laid for a long time ahead. The big oval 120-ton furnace is in place and is being rapidly fitted up, together with its blower and other machinery. It is not thought likely that smelting will be resumed before January 1st.

## GRAHAM COUNTY.

GOLDEN EAGLE GOLD AND SILVER MINING AND REDUCTION COMPANY.—This company has been formed in Bangor, Me., for the purpose of mining gold and silver and other ores, in the Greenlee Gold Mountain. The capital stock is \$300,000 and the par value of shares is \$1. The location of the corporation is Bangor, and the officers are: George R. Smith, president; Emore C. Smart, treasurer; George R. Smith, Emore C. Smart, Fred. B. Kingsbury, directors.

## LINCOLN COUNTY.

NOONDAY.—In the tunnel of this mine, in White Gold basin at Picacho, the ore has widened out from 2 ft. to 6 ft. with an average of over \$100 per ton. The balance of the 20 ft. of ore runs from \$10 to \$15 per ton in free gold.

SAMBRANO.—In this shaft the pay ore, which was 2 ft. wide, is filling the shaft 6½ ft. What is considered the best strike yet made was in the old tunnel. The whole shaft is in the richest ore ever found in Picacho.

## YAVAPAI COUNTY.

ZERO.—A vein of ore 10 in. wide is being worked in this mine.

## CALIFORNIA.

## AMADOR COUNTY.

PIONEER GOLD MINING COMPANY.—A report is current in Boston that a proposition will shortly be submitted to this company for the sale of its property to a foreign syndicate. This syndicate has recently had an expert at the mine, where he met three of the directors of the company. Several

properties in the vicinity of the Pioneer mine have been purchased recently by foreigners. At a meeting of the directors of the Pioneer Company held recently, Mr. Alden P. Jaques was re-elected president and Charles H. Howard secretary and treasurer. Mr. Charles W. Grose was elected vice-president to succeed Joseph M. Cox.

**UNION CONSOLIDATED MINING COMPANY.**—A rich strike of gold is reported to have been made in the mine of this company, seven miles southeast of Jackson. There is a mill of 30 stamps on the property, which is to be at once repaired and its capacity doubled.

**BUTTE COUNTY.**

(From Our Special Correspondent.)

**GOLDEN QUEEN.**—This mine, half a mile north of Forbestown, is now being worked by H. P. Stow. A very rich strike has been reported on the 300-ft. level. One hundred men are employed.

**CALAVERAS COUNTY.**

(From Our Special Correspondent.)

**CALIFORNIA EXPLORATION COMPANY.**—This company recently made payments on several of its bonds on mining properties and development work has been commenced. W. L. Honnold, superintendent of the Vair or Gobie Ranch mine, near Mokelumne Hill, has advertised for bids on contract for running and timbering 250 ft. of tunnel to drain the channel. Another tunnel is being run at the Gottschalk mine.

**MELONES DEVELOPMENT COMPANY.**—The Reserve mine, on the eastern side of Carson Hill, near the summit of the mountain, is being worked by this company. The superintendent is about to erect a hoist and sink a shaft on the property. Tailings from this mine which carried only \$1.37 in gold was worked at a profit a few years ago.

**MARIPOSA COUNTY.**

(From Our Special Correspondent.)

**HELEN.**—This mine, adjoining the Whitlock, about four miles from the town of Mariposa, has been started up with a force of 15 men to a shift. Work is being carried on night and day, and there is now a quantity of good ore on the dump. A 5-stamp mill has been erected on the ground.

**HUNTERS' VALLEY.**—In this mining district there is unusual activity. New mines are being opened up and work on some of the old ones is being resumed.

**MONO COUNTY.**

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

**BODIE CONSOLIDATED MINING COMPANY.**—200-ft. level.—The north drift from the top of the Gildea raise was advanced 23 ft. and the south drift 24 ft. The vein is small and hard in the face. The east crosscut from this drift was extended 14 ft., and a crosscut to the east also 14 ft., passing through a small stringer of low-grade quartz. On the Standard Consolidated 528-ft. level the south drift on the Vulcan vein was advanced 18 ft. through good working ground from the Standard side, and with an 8-in. vein of low-grade ore in the face.

**BULWER CONSOLIDATED MINING COMPANY.**—100-ft. level.—Raise No. 1 from the main drift was advanced 10 ft. and is still in old ground. 200-ft. level.—Are stopping rather low-grade ore from the raise over No. 2 crosscut south. The ore seams are small and irregular. On the tunnel level are stopping good ore from No. 1 raise and above the south drift from crosscut No. 2. The north intermediate drift from crosscut No. 3 was advanced 4 ft. on two small seams of high-grade ore. On the 400-ft. level have cleaned out and retimbered 18 ft. of the west crosscut from the Standard side. Extracted during the week from various places a total of 11.5 tons of ore, assaying from \$13 to \$150 per ton; true average, \$64.50 per ton.

**PLACER COUNTY.**

(From Our Special Correspondent.)

**OPHIS DISTRICT.**—Work in this district is being pushed. At the Eclipse the new machinery is now in position and work has been resumed with a large force of men. The Bolton is taking out good rock. The Green mine is almost free of water and the mill will start up soon.

**SACRAMENTO.**—Owing to the death of Mr. Borland, one of the owners, this gravel mine, on the Forest Hill Divide, will be sold. The claim comprises 144 acres, with plenty of timber and water the year round. The tunnel has been run 1,500 ft.

**PLUMAS COUNTY.**

**FOUR HILLS MINING COMPANY.**—This company is busy erecting a 10-stamp mill.

(From Our Special Correspondent.)

**HARRISON.**—This mine, at Granite Hill, employs 10 men and has kept the 10-stamp mill running steadily all the season with good results.

**SAN DIEGO COUNTY.**

**GOLDEN DREAM MINING COMPANY.**—This company has secured the Alcyon, Yellow Gold and Golden Dream mines in the Picacho District, 15 in all, for \$30,000, and five mines of the Little Frank group for \$10,000. The new prospecting mill ordered by this company will have a capacity of 26 to 30 tons.

**SHASTA COUNTY.**

(From Our Special Correspondent.)

**THREE SISTERS.**—This mine, in French Gulch, has

been bonded to Geo. W. Grayson, Jr., by the Ellery Bros.

**SONORA COUNTY.**

(From Our Special Correspondent.)

**GREAT EASTERN.**—At this quicksilver mine, four miles north of Guerneville, 35 men are employed. One hundred and fifty flasks of quicksilver has been the average monthly output for the year.

**TRINITY COUNTY.**

(From Our Special Correspondent.)

**ALTOONA.**—One hundred and twenty-five men are employed at this quicksilver mine, located on the headwaters of the East Fork of the Trinity River. The shaft is down 370 ft. and work is carried on night and day.

**SIERRA PACIFIC RAILROAD.**—This standard gauge railroad, 43 miles long, owned and controlled by the Sierra Pacific Railroad Company, with its western terminus at Stockton, Cal., is now in course of construction. It will tap the great mineral region in Calaveras County. The termination of the road in that county will be an elevation of about 1,500 ft. and from that point truck lines will be established to distribute machinery and supplies all along the "Mother Lode" to Mokelumne Hill on the north and Altaville on the south. The rails, ties and other materials are on the ground, track-laying has commenced and the engines and cars are ready for delivery.

This road is much needed in that section, and when completed will open up a rich mining field which has long been at a disadvantage, owing to want of cheap transportation from the coast. The new road will make connections at Stockton, with the San Francisco & San Joaquin Valley and the Southern Pacific Railways and the river steamboats.

It was mainly through the instrumentality of the California Exploration Company that the building of this road was projected, and its successful operation will benefit this company very largely.

**TUOLUMNE COUNTY.**

**JUMPER.**—The clean-up at this mine is increasing each month in value. The amount of bullion being produced monthly now is from \$150,000 to \$200,000.

**YUBA COUNTY.**

**GOOD TITLE MINING COMPANY.**—This company has purchased of A. D. Allan, of Nevada City, a steam hoisting and pumping plant, which has been shipped to the company's mine, near Brown's Valley. J. E. Poingdestre, W. F. Hancock and others at Marysville, are owners in the above mine.

**COLORADO.**

**CLEAR CREEK COUNTY.**

**BANTY.**—At this mine, on Spring Gulch, a fine streak of copper opened up in the drift at a depth of 150 ft., and a run through one of the sampling works is said to have returned \$154 a ton. The location is on the opposite side of the hill from the Stanley mine.

**EL PASO COUNTY—CRIPPLE CREEK DISTRICT.**

(From Our Special Correspondent.)

**ANACONDA.**—The output from this group of mines has not been so great since May, 1892, as at present, and the reserves of milling ore are simply inexhaustible. The majority of the lessees are doing well.

**ARCADIA.**—At this mine, in Poverty Gulch, sinking will commence in a few days. The new pump is at the mine and the station is being cut at the 200-ft. level, the depth of the shaft being 220 ft. The levels at the 200 ft. are looking well. Some of the shareholders in the old company—the Arcadia—have filed suit against the directors in that they sold their property to the Arcadia Consolidated Company without consulting the stockholders, that they acted as sellers for the old company, and buyers for the new company; that they gave to one of the directors of the new company stock for which an adequate service or payment was not given.

**CLARA D.**—This mine, owned by the Lexington Company, and situated on the south slope of Gold Hill, and worked under lease, is a steady shipper of a small amount of about 2 oz. ore. The ore is treated at the Brodie Cyanide Mill.

**COLUMBINE TUNNEL.**—This tunnel, penetrating Squaw Mountain from the north, has been driven 950 ft. in hard granite rock. The electric drill worked here for several months was not regarded as satisfactory, the cost of hand-labor being very much cheaper. The company anticipates the pleasure of intersecting four rich veins in the next 300 ft., namely, the M. K. & T., the Columbine, the Santa Rita and the Mima S. Only five men are employed, and the progress being made is good.

**DEAD PINE.**—At this mine, on Battle Mountain, there is a two-car shipment in the bins which is to be sent to the smelters. The lessees here had expended \$10,000 and it looks now as if they will be richly rewarded. It has long been an opinion in Cripple Creek that all the ore chutes come to surface, whereas over a score of ore chutes could be enumerated whose apexes were found at a depth of 100 or more feet. The Dead Pine in 1892 produced less than \$5,000 of ore from a small ore chute 20 ft. deep and no other chute was met with until 400 ft. was reached.

**E. PORTER GOLD KING.**—This mine, on Gold Hill, is being actively developed, the shaft has been sunk 400 ft. vertically and the vein has a slight dip. A crosscut is being driven from the shaft to intersect the vein estimated 50 ft. from the shaft. At this

depth it is hoped the vein will be of much higher grade than the upper levels from which shipments are being made.

**FAVORITE.**—This mine, on Bull Hill, is shipping ore at the rate of about \$3,000 per month, principally from development, the ore assaying from 1 to 3 oz. per ton. The lessees on this claim have erected a steam hoist and are shipping a higher grade ore than the company, some of it sampling \$200 per ton. The claim may be said to have a bright future.

**GARFIELD GROUSE.**—This mine, on Bull Hill, is being actively worked on lease. A recent shipment of 100 tons of ore realized \$12,000, a part of which sampled 30 oz. to the ton. The company has just paid its first dividend of \$12,000 and still has a surplus of \$9,000 in the treasury, the result of royalties paid by the lessees. The lease expires on May 1st. At present some 70 men are employed. The vein, which is small, is an alteration of the country rock.

**GOLD DOLLAR.**—This mine, on Beacon Hill, is expected to make communication with the shaft in the course of a few days; the raise from the tunnel is up a distance of 140 ft. When the communication is effected considerable stoping ground will be opened up.

**GOLDEN CYCLE MINING COMPANY.**—The Legal Tender, owned by this company, and situated on the south slope of Bull Hill, is shipping at the rate of 27 tons a day. The new machinery will soon be in working order, when the returns will be again increased.

**GOLD KING MINING COMPANY.**—The El Paso mine, owned by this company, has commenced a shipment of 2,000 tons of low-grade ore to the Colorado City chlorination plant, which will be at work in a few days. The El Paso has large reserves of ore.

**LITTLE MAY.**—This mine, on Beacon Hill, is a steady shipper and gives employment to 16 men. The lessee was offered \$75,000 for his bond and lease, \$10,000 cash and the balance in 30 days, but refused the same. The shaft is 110 ft. deep.

**MOON-ANCHOR.**—This mine, on Gold Hill, materially increased its shipments in October over the preceding month. Development is being actively pushed at the 400-ft. level, and the ore is being rapidly hoisted; although not high grade it nets from \$40 to \$50 per ton, and large quantities are being treated at the Brodie mill.

**MOUNTAIN MONARCH.**—This mine, on the north slope of Raven Hill, one of the Gold Standard claims, recently made a shipment of 800 lbs., which sampled at the rate of over \$3,000 to the ton. The property is worked on lease.

**NELLIE.**—This mine, on Squaw Mountain, has just let a contract for an additional 200 ft. of sinking; this will give the shaft a depth of 500 ft. The lessees on the North end of the claim have sunk a shaft 50 ft. deep, the ore from the 12-in. pay streak having paid for all the expenses incurred in sinking, the ore being free gold.

**PHARMACIST.**—This mine shipped last week 40 tons of ore, which netted \$60 per ton, the output at present being at the rate of \$10,000. The output for September was less than \$5,000. Only four men are employed in breaking ore, for until the new shaft has communicated with the stope the method of hoisting is expensive. The sinking of the shaft is slow.

**PRINCE ALBERT.**—This mine, on Beacon Hill, is being actively worked by lessees, the Babbit lease being the principal shipper, and at the rate of 100 tons a week of a good grade ore from 3 to 5 oz.

**SQUAW MOUNTAIN TUNNEL.**—The lessee has let a contract to drive an additional 200 ft.

**VINDICATOR.**—These workings, on Bull Hill, have intersected the ore chute at a depth of 250 ft. and some rich assays, in fact, the richest assays ever obtained in the mine, were found at that depth. The output of the mine averages from \$3,000 to \$4,000 per month.

**GILPIN COUNTY.**

(From Our Special Correspondent.)

**AMERICAN FLAG.**—An arrangement has been completed with the Gold Coin Company by which the latter pumps the water from the shaft, which water is much less acid than that of the California and other Quartz Hill mines, for use in the Kansas mill. The American Flag mine has a large and masterly vein, which has always hitherto been found too poor to pay expenses.

**CONCRETE.**—This mine is producing large quantities of mill dirt, and is now one of the largest shippers in the camp. No reliable information is at present forthcoming as to the grade of the ore.

**KENT COUNTY.**—This mine, on Quartz Hill, has just been closed down. The mine is deep—over 1,000 ft.—and for the last two or three years has been very poor.

**LOTUS.**—A new 75-H. P. hoist has been placed on this property, and sinking will shortly be commenced.

**VENDOME.**—The new rapid-drop stamp-mill at Nevadaville is now complete, and has commenced running on low-grade dirt from the stulls of the American Flag mine.

**GUNNISON COUNTY.**

**CAL & COMPANY.**—The tunnel belonging to Cal & Co., at Bowman's, is now in 400 ft. A 3-ft. vein of mineral is exposed. The quartz that forms the wall is decomposed and thoroughly mineralized.

LAKE COUNTY.

(From Our Special Correspondent.)

**LEADVILLE STRIKE.**—There has been practically no change in the mining situation during the past week. The working of the properties recorded in last week's issue of the *Journal* is being pushed ahead on all sides and shipments are increasing. While a large number of the prominent mines which are certain to start up in the very near future will employ outside non-union men if necessary, there are a few which will not make any attempt to resume until conditions here very materially change.

Manager R. B. Estey, of the Coronado and Union Leasing and Mining companies, says that it is very unlikely that his companies will resume operations at the present time. They do not feel justified in the going to the heavy expense involved in the construction of a fence about their property. They feel that if they cannot mine without barricades and armed protection, they would rather wait until conditions change.

Much depends on the result of the State election, as it is positively known that Bailey, the Populist candidate for governor, has agreed to withdraw the militia in case of his election, and thus strengthen the Miners' Union. In case of the election of Adams for governor, and of the election of the Republican-Democratic ticket in this county, things will be greatly changed here, as it will take the power entirely out of the hands of the Miners' Union. There is no doubt but that these people are counting largely upon electing their Populist County and State ticket, the former being composed, with one exception, of Miners' Union men.

**HERMAN.**—There is considerable activity on the gold belt, South Evans Gulch being the scene of some important new work. Manager Johnson has placed a fine plant of new machinery over his new shaft on the Herman, and he is already down to a depth of 325 ft.

**LEADVILLE BASIN MINING COMPANY.**—The preparatory work for starting up the Northern, which was under a lease to this company, has been dropped for the present. Some time ago the lower station was repaired, so that the mine will be in condition for a start when the management thinks the proper time has arrived.

OURAY COUNTY.

**SILVER CHORD.**—The management is shipping several cars of second-grade ore to the Sky Rocket mill in order to have a test made as regards its qualities as a concentrating one. If the test proves a success they will erect a mill in California Gulch for treating this class of ore. This mine has a large amount of low-grade ore which, with proper treatment, would bring in good returns.

PARK COUNTY.

**ZURI.**—A new strike was made recently in this claim, on Loveland, up Buckskin Gulch, in Alma district, and a mill run shows 40% iron, over \$20 in gold and small silver values per ton. The vein is well defined and the ore more than 7 ft. in width. The Zuri is one of the Sultana group of eight claims, and is the property of J. H. Macdonald. It is under lease and bond to Hon. James Moynahan, of Alma, and J. V. Dexter, of Denver.

PITKIN COUNTY.

**LEADVILLE.**—This mine in Woody District, a few miles from Aspen, in which a small vein was recently uncovered, has stopped shipping. There is a great deal of lead in the ores from this mine, and Manager Ryan states that at present prices it does not pay to ship either the silver or lead ores and he purposes holding off for a while. He has kept a shift of men at developing the property, but instead of sending the ore to the smelters he is letting it stand.

SAN MIGUEL COUNTY.

**COLUMBIA-MENONA.**—This crosscut tunnel is being driven ahead at the rate of 5 ft. a day with air drills. The tunnel is now 900 ft. with about 400 ft. more to drive to cut the Columbia-Menona lead at a depth of 800 ft. below the surface. When the intersection is made an upraise will be driven from the breast of the tunnel to the second or lower level, a calculated distance of 450 ft. and new levels driven each way from it. On the completion of this development work practically the whole of the four properties comprising the group will be worked through the crosscut tunnel, the mouth of which is within 150 ft. of the mill. A contract has been given for laying a pipe line from Green Lake in Bridal Veil Basin to the Columbia mill, which will amply supply the company's property with water for all purposes.

**GOLD KING.**—This mine, in the Silverton district, is sending 10 tons of concentrating ore to the mill daily, which is concentrated three into one. The concentrates yield \$70 to the ton, while \$25 per ton is saved on the plates from the crude ore.

IDAHO.

BLAINE COUNTY.

**RED CLOUD MINING COMPANY.**—This company, of Bailey, has passed into the hands of a receiver. Congressman Edgar Wilson has been appointed receiver in a suit instituted by John Robinson and Samuel Robinson, of Pittsburg, administrators of the estate of David Robinson, deceased, against the defendant company. The bill recites that the company has an indebtedness aggregating about \$70,000; that its officers refuse to further prospect the Red Cloud group of mines, and has leased them to

Littleton Price. A part of the indebtedness is owed in Utah, and all is guaranteed or held by leading stockholders. The complainants are stockholders. Suit is brought to pay off the indebtedness, if not from the proceeds of the mine, by apportioning it among the stockholders.

CUSTER COUNTY.

**LUCKY BOY.**—C. T. Stevenson has had charge of the mill at this Custer City mine, and is now treating about 35 tons of ore a day that carries values of from \$20 to \$55 in gold to the ton, and a high saving of values is being made. George B. Norman, who for a number of years had charge of the Alliance mine at Park City, is superintendent. On the 500-ft. level a large amount of fine-milling ore has been blocked out.

OWYHEE COUNTY.

**DE LAMAR.**—The State Ore Sampling Works, of Denver, Colo., recently gave its check for \$50,428.95, for a car of concentrates from this mine.

SHOSHONE COUNTY.

**BANNER.**—Harry Glidden and Frank Culberson are inspecting the work on this mine, owned by Mr. Culberson and S. S. Glidden. Development work on the claim consists of 350 ft. of crosscut tunnel, 100 ft. on the vein, and the upraise to the surface, on which the men are now working. The ore is free milling, and it is the intention to build a 10-stamp mill in the spring.

**CRESCENT.**—The 2-stamp mill on this mine is being worked, and the company has driven levels 100 ft. each way, at a depth of 160 ft., and will continue to sink the shaft to a greater depth and run levels again.

**FRISCO GROUP.**—A 5-stamp mill with a capacity of 15 tons daily has arrived, and will be operated on this group of claims. Willis, Sweet & Company are the promoters of the enterprise. The claim has been developed, a tunnel and shaft driven, and a large body of high-grade ore is on the dump ready for milling. The ledge is thought to be an extension of that of the Crescent mine, and work will be pushed immediately to develop it.

**GALENA.**—The lessees on this mine will commence work at once. There is now a 630-ft. tunnel on the property, but they will make no use of it, their intention being to sink near the mouth of the tunnel and drift into the hill from the bottom of the shaft.

**MORNING MILL.**—Larsen & Greenough are going to enlarge this mill. The Morning and You Like mines are now showing up so much ore that there is no trouble keeping the mill supplied with the present facilities, and when the new engine arrives for the narrow-gauge railroad between the mines and the mill they will be able to transport more ore than the mill can handle. At present about 100 cars of concentrates per month are being shipped.

**POORMAN & TIGER CONSOLIDATED MINING COMPANY.**—This company is constantly lowering the water in the shaft. Considerable trouble was experienced shortly after the new hoist was put in, and for a while the water rose in the shaft. There is now about 600 ft. to take out.

**STANDARD MINING COMPANY.**—The upper workings of the Standard mine are nearly stripped, and between two and three cars of ore per day are shipped from the lower tunnel. The amount of ore taken from the Campbell tunnel keeps one shift busy at the mill.

**TOPEKA.**—Considerable ore is said to have been struck near the surface in this mine, near the head of Nine-Mile. The ore shows chloride of silver, bromide of silver, galena, gold and traces of copper. The mine lies near the line dividing the gold from the silver belt.

**YOSEMITE.**—This mine is again running full time, the mill having only been running a day shift for several weeks until recently. They have been unable to get ore enough to keep the mill busy, but the vein has widened out until there is no probability of a shortage of rock for some time to come.

ILLINOIS.

(From Our Special Correspondent.)

**LARGE COAL CARS.**—The Chicago & Alton Railroad, which does a very large coal business, has adopted as a standard a car having a capacity of 30 tons of coal, and is preparing to equip its line with such cars. Those now in use carry 20 tons. The change will cause a little confusion at first, but will be beneficial in the end.

CHRISTIAN COUNTY.

(From Our Special Correspondent.)

**TAYLORVILLE COAL SHAFT.**—This shaft, which was destroyed by fire last June, has been entirely repaired. Some very difficult work had to be performed in the work of reconstruction, it being necessary to retimber the whole shaft. This mine is one of the best developed machine mines in the State. It is now hoisting 1,000 tons per day, which can be increased, if necessary.

MICHIGAN.

COPPER.

**CENTRAL.**—In blasting recently at this mine a mass of copper weighing nearly 40 tons was disclosed, besides a number of smaller pieces, in all about 50 tons.

**FRANKLIN MINING COMPANY.**—This company reports its production for October at 154 tons of

copper, which compares with 151½ tons in September, and 164 tons in October of last year.

CALHOUN COUNTY.

**PINE CREEK GOLD MINING COMPANY.**—This company was incorporated recently with a capital stock of \$50,000. The directors are: Wm. Sundstrom, Edwin Freeman, Charles Shallman, Iron Mountain, and James Maguire and Andrew Shallman, Pembina, Wis. The company has optioned eight forties in the recently discovered Pine Creek gold region, and will commence mining operations at once. A shaft will be sunk 100 ft.

IRON—MENOMINEE RANGE.

**MANSFIELD.**—The find of Bessemer ore in the old channel of the Michigamme River, at this mine, promises to be the richest and most extensive that has been discovered in the upper peninsula in recent years. Investigation, it is said, proves that the deposit is over 1,000 ft. in length and is supposed to have a great width and depth. As soon as the lower dam is completed, which will prevent the water in the new channel of the river from backing up into the old, the find will be test-pitted. In many places the ore is so soft that it is thought it can be mined with a steam shovel loading directly into the cars. The cost of changing the channel of the river has not exceeded \$30,000, and the ore in sight is worth many times that sum.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

**JOPLIN ORE MARKET.**—The output of ore last week was about the same as the week before. There was a big demand for zinc ore during the past week, and the price advanced another half dollar in Joplin, half the product selling at \$22 per ton. At Webb City it jumped up from \$20, the price of the previous week, to \$21.75 for one lot last week, with a general advance of one dollar per ton. Galena, Kan., got no raise on the top grade of ore, but the lower grades advanced \$2@3 per ton. Aurora was advanced a half dollar, and the Alba, Oronogo and Mt. Vernon product sold at \$21.50 per ton on the cars. The sales were increased over the previous week by fourteen cars, and amounted to three cars more than the corresponding week of last year. Zinc ore sold then at \$26 per ton top price. Lead ore sold all week at \$14 per thousand pounds, with 50c. added for hauling. There was an increase of two cars over the preceding week, but a decrease of 17 cars compared with the corresponding week of last year, when lead ore brought \$18 per thousand pounds. There are over 2,000,000 pounds of lead ore and about 500 tons of zinc ore left in the bins. The following was turned in from the different camps for the week ending October 31st, 1896: Joplin zinc, 1,345,720 lbs.; lead, 189,380 lbs.; value, \$17,549; Webb City zinc, 472,600 lbs.; lead, 63,310 lbs.; value, \$5,656. Cartersville zinc, 1,064,020 lbs.; lead, 192,710 lbs.; value, \$13,439. Galena, Kan., zinc, 3,040,000 lbs.; lead, 387,000 lbs.; value, \$29,738. Aurora, zinc, 515,000 lbs.; lead, 39,000 lbs.; value, \$3,650. Alba zinc, 136,000 lbs.; value, \$1,462. Oronogo, zinc, 55,290 lbs.; lead, 18,800 lbs.; value, \$713. Mount Vernon, zinc, 38,900 lbs.; value, \$429. Zincite, zinc, 10,480 lbs.; lead, 3,880 lbs.; value, \$142. Totals for the district—zinc, 6,679,900 lbs.; lead, 863,640 lbs.; value, \$72,688.

**BIRTHDAY COMPANY.**—The plant is running steadily on rich dirt and last week they made and sold 30 tons of zinc ore and 15,000 lbs. of lead. They are drifting at 140 ft. on a 20 ft. by 50 ft. face of ore in shooting ground. They have good ore on each side of the drift and have enough ore in sight to run the plant a year.

**BLAIR & ROBINSON.**—These parties are running their plant day and night on rich dirt, and are making over 90 tons of zinc ore each week. They are drifting at 140 ft. on a 16 ft. by 16 face of zinc ore in soft timbering ground with enough water to run the plant.

**DUENWEG MINING COMPANY.**—The company started up its plant the first of last week on a rich run of zinc ore, and made and sold 35 tons of high grade zinc ore. They are drifting at 140 ft. on a large face of zinc ore in timbering ground with enough water to run the plant. This plant has been shut down for three months on account of the low price of zinc ore.

**GLADDEN & EVANS.**—They are running steadily on rich dirt, and are producing 35 tons of high-grade zinc ore and 18,000 lbs. of lead ore every week. They are drifting at 185 ft. on a large face of ore in hard ground, and until two weeks ago had not any lead ore in the face, but it is coming in very rich.

**GOLD STANDARD COMPANY.**—This company opened up a fine body of zinc at 140 ft. in open ground and is producing more than 20 tons of high-grade zinc ore every week. This makes the third run of ore that they have opened up at different levels, one at 100, 115 and 140 ft.

**HOWARD CARR & COMPANY.**—They have made a rich strike of zinc ore in their shaft on the Perry lease. They have the lot adjoining the Hocus-Pocus mine on the south, and Saturday noon sunk into a fine body of zinc ore at 70 ft. in open ground, and by night they had penetrated 2 ft. and were still in rich ore. The Hocus-Pocus mine is a large producer and has been turning in about 20 tons every week. Drifting is carried on at 75 ft. on a 50-ft. face ore in timbering ground. The Perry pumps keep the ground drained to 85 ft.

**SPOT CASH COMPANY.**—Last week this company

put in a crusher and rolls and now concentrates its ore on hand jigs. They produce from 20 tons to 25 tons of zinc ore each shift. Drifting is being done at 150 ft. on a large face of ore in flint ground. They have a run of lead at 110 ft., but are not working it on account of the low price of lead.

**WEST VIRGINIA MINING COMPANY.**—Last week this company started to hoist dirt from the lower level at 200 ft. in open flint ground and strong water, and made and sold over 45 tons of top price ore. They struck this body of ore in sinking for water.

**WISE & CONNER.**—These parties have completed a large steam concentrating plant and made their first run last week, which yielded more than 20 tons of high-grade zinc ore. They are drifting at 145 ft. on a 20-ft. face of zinc ore in flint ground and only enough water to run the plant. At 104 ft. they have a rich run of lead in soft limestone.

#### MONTANA.

##### DEER LODGE COUNTY.

**CHAMPION.**—This mine, near Elliston, owned by the Liepner-Merrill Company, is now a regular shipper. Alexander Swan, foreman at the mine, says that a rich strike has been made at the second level. The extent of the strike had not been ascertained. It was found only 8 ft. from the shaft. It is the intention of the company to continue work all winter. The shaft will be sunk another 100 ft. as soon as possible.

##### GRANITE COUNTY.

**GOLD COIN MINING COMPANY.**—A rich strike was made recently in the north drift of the south shaft at the 60-ft. level of this company's property.

**GOLDEN SCEPTRE GOLD MINING COMPANY.**—Superintendent George H. Babcock, of this company, at Quigley, says that work on the mammoth mine and mill has been renewed with increased vigor. At the mill the machinery is all in place and with the electric apparatus in operation will be put in motion about November 20th. There is enough ore mined and in sight to keep the mill in operation eight months. The mill is of 100 tons capacity. The plant as it stands represents an outlay of \$750,000.

##### JEFFERSON COUNTY.

**FOURTH OF JULY.**—A rich strike was made recently from this prospect, owned by M. G. White and others. It ran high in silver with a small percentage of copper. It came from a pocket in the lead, and the owners are endeavoring to find a pocket that will be of size bigger than a cabinet specimen. The lead is of decomposed quartz between good walls, but it is barren.

**NEW STAKE.**—John S. Miller recently bonded a third interest in this mine, at Clancy, to John Wols, who owned the other two-thirds. The terms of the lease and bond provide for the payment of \$3,500 for the third interest with 20% royalty to apply on the bond which is to run 18 months.

##### MADISON COUNTY.

**MOHEGAN.**—The shaft is down 80 ft. in this mine. Water in large volume was encountered at that depth, and now the company is putting in a powerful steam pump. When that is in working order the shaft will be lowered another 100 ft. The mine was sold by Henry Elling and Samuel Word last August to Boston capitalists. Will F. Word is the manager of the property.

##### MEAGHER COUNTY.

**MILLER MINING COMPANY.**—This company, of Barker, has a force of men driving a new 1,200 ft. tunnel in its mine.

##### SILVER BOW COUNTY.

**POULIN.**—The shaft-house which was destroyed by fire some time ago at this mine is being rapidly rebuilt. A new engine is being put in and other improvements made, which, when completed will make the Poulin one of the best-equipped mines in Butte.

#### NEVADA.

##### ELKO COUNTY.

**GOLD CREEK MINING COMPANY.**—This company recently let a contract for the construction of 6 or 7 miles of canal, and for a dam to make a large reservoir on the placer grounds 75 miles north of Elko. This contract amounted to about \$35,000. The contract is to be finished ready for operation early in the spring.

##### STOREY COUNTY—COMSTOCK LODGE.

**ALPHA CONSOLIDATED MILL AND MINING COMPANY.**—At the annual meeting of the stockholders of this company, on October 26th, the old directors were re-elected, with Charles Hirschfeld as president, Charles E. Elliot, secretary, and A. C. Hamilton, superintendent.

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

**CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.**—1,000-ft. level.—From west crosscut No. 2, started at a point in the north drift 550 ft. north from the Consolidated Virginia shaft station or 85 ft. south from the north boundary line of the mine, at a point 436 ft. from its mouth, the double compartment upraise has been carried up 14 ft., passing through porphyry, clay and little bunches of quartz, assaying from 50c. to \$3 per ton; total height, 86 ft. The top of the raise continues in a favorable looking formation. 1,750-ft. level.—From the 12th to the 25th floors above the sill floor of this level at the north end of the stope in old ground of former workings, we have extracted during the

week 131 tons of ore, the average assay value of which—per samples taken from the cars in the mine—was \$42.81 per ton. On the eighth floor from the end of the north drift the upraise has connected with our 12th and 13th floors. The ore fillings found here average from \$30 to \$40 per ton. The total extraction of ore for the week amounted to 131 tons, the average assay value, per samples taken from cars when raised to the surface, was \$40.92 per ton.

We have shipped to the Morgan mill during the week 514 tons and 200 lbs. of ore, assaying per railroad car samples, \$36.30 per ton. The average assay value, per battery samples, of all the ore worked during the week at that mill (515 tons) was \$53.11 per ton.

**HALE & NORCROSS.**—900-ft. level.—In No. 1 upraise we worked south on the fifth floor; also north and south on the sixth floor. The ore streaks continue about the same as in last report. Advanced the west crosscut from the sixth floor 22 ft.; total length, 27 ft. Face in quartz of low value. Made necessary repairs on this level the past week: 1,100-ft. level.—Sunk the winze 7 ft.; total depth, 14 ft. Bottom in old fillings. Extracted during the week from the 900-ft. level 12 carloads of ore, assaying per car sample \$13 in gold and 21 oz. of silver per ton.

**OPHIR.**—On the 1,000-ft. level, west crosscut No. 2 is in 115 ft. The face is in porphyry, showing clay seams and lines of quartz, the latter assaying 75c. per ton. In the old Central tunnel workings of the mine, in the old stope workings northwest of the Mexican shaft, some quartz assaying \$2 to \$3 per ton is being found.

**UTAH CONSOLIDATED.**—In the old west surface workings the south drift along the footwall from the tunnel openings is in 83 ft. The face is in porphyry, clay and lines of quartz, the latter assaying \$1 per ton.

##### WHITE PINE COUNTY.

**NORTH MOUNTAIN MINING COMPANY.**—This company's mill, at Egan, having undergone some necessary repairs, was started up recently and is treating 50 tons of ore a day.

#### NEW MEXICO.

##### GRANT COUNTY.

**GOLDEN GIANT.**—A contract has been let to stope 600 ft. in the 300-ft. level of this mine at Pinos Altos. Many miners have been employed for the Pinos Altos District within the past 10 days, most of them coming from Mogollon, where all the mills and most mines are closed down. About 300 miners have been thrown out of employment at Mogollon. Pinos Altos mines are now working about twice as many men as are at work in any other mineral camp in the territory.

**TURQUOISE MINES.**—Some very fine specimens of turquoise have been found near Hatchita, in the southern part of this county. Development has been going on there for about three years in a small way, but the stones found there were not equal in quality to those mined in the Burro Mountains, near Silver City, and development was not pushed until recently. The stones which were taken out of the Hatchita mine are said to be fully equal to the finest specimens from the Burro Mountain mines.

#### OREGON.

##### BAKER COUNTY.

**VIRTUE.**—A wonderfully rich discovery of ore is reported in this mine near Baker City. The mine is but a short distance from the Virginia Consolidated.

##### LANE COUNTY.

**RENSHAW CONSOLIDATED MINING COMPANY.**—This company was incorporated recently with H. R. Heese, T. J. Craig, Martha A. Craig, W. M. Renshaw and Elenora Renshaw incorporators. The capital is \$25,000, and the principal place of business is Eugene. The object of the company is to work several mining properties in the Blue River District.

#### PENNSYLVANIA.

##### LEHIGH COUNTY.

(From an Occasional Correspondent.)

**CORRELL MINES.**—These mines, which contain valuable deposits of zinc ore, located in the Saucon Valley, at Friedensville, and operated under various leases since 1858 by Samuel Wetherill, Franklin Osgood and others, have again come into the hands of the heirs of the original owner, the late Jacob Correll, of Bethlehem. The ore taken from these mines has always had the reputation of producing the purest metal in the world, and it has kept up its standard until the present time. Although the mines are now idle, it is hoped that the property will soon be leased, and that the old time life and activity of the now quiet village of Friedensville may again be started.

##### WASHINGTON COUNTY.

**BORCHERS, RUSH & COMPANY.**—In the Hopper fourth sand pool, at McDonald, this company has drilled in its No. 4, Jackson, and obtained a gusher for that territory. As soon as the well was drilled into the pay, it made a 30-bbl. flow and continued to flow at intervals that aggregated 20 bbls. an hour. It has been the history of the wells in the Hopper pool to make a spurt at the start, but they decline rapidly unless frequently agitated.

#### SOUTH DAKOTA.

##### CLARK COUNTY.

**HERMIT.**—Burns & Little, lessees of this group of claims, situated in Garden City camp, are now

drifting from the bottom of their 65-ft. shaft to intersect an ore chute exposed by surface workings. The drift is now in about 10 ft. and will be driven 50 ft. further to reach the point desired.

##### LAWRENCE COUNTY.

**DACEY.**—Night and day shifts are now at work sinking the development shaft on this group of claims, in Ragged Top camp, owned by Messrs. Dacey and Kilpatrick Bros. The shaft is 4½ ft. by 8 ft., and is being sunk in a very hard, close-grained rock, the 4-ft. vein of ore and its walls being of equal hardness. Steam drills are used in the work. The owners of the property recently established an assay office of their own at the mines, of which Professor Beals, late chemist at the Cambria coal mines, has charge.

**DEADWOOD TERRA.**—From 40 to 50 tons of silicious ore per week is the average output from the chute now being worked on this property. There are three openings, the face of each showing the chute to have an average thickness of 4 ft. The value varies from \$60 to \$180 gold per ton. The tunnel started some time ago from the big open cut on the property in Terraville followed the quartzite for about 100 ft. when a break or fault occurred. The quartzite gave out and sand rock took its place. The tunnel will be continued until it intersects the ore chute above mentioned.

**UNION HILL MINING COMPANY.**—This company has uncovered another vein of high-grade silver-lead ore in its Colletta group of claims in Galena Camp. The discovery was made in a crosscut from the main tunnel. The cut is into the vein 5 ft. and not yet across it. The Union shaft is now down over 300 ft., all in ore of good grade.

##### PENNINGTON COUNTY.

**HOLY TERROR MINING COMPANY.**—This company has contracted its work and discharged a great number of miners who were employed at the mine. The company has recently encountered a 4-ft. vein of ore in a drift from the 200-ft. level, and it is pronounced very rich.

**SUNNYSIDE.**—This mine has so far met all expectations and the owners are satisfied with the present outlook. With the drift on the 160-ft. level they have now opened up sufficient stoping ground that it has decided to place a 5-stamp mill at the mine. One has already been purchased. For power an 80-H. P. boiler has been ordered with which to run the mill and hoist and an air compressor, when one becomes necessary.

#### TENNESSEE.

##### MAURY COUNTY.

**BLUE GRASS PHOSPHATE COMPANY.**—This company has been organized at Mount Pleasant, with the following officers: G. M. Fogg, president; W. G. Sadler, vice-president; G. W. Killebrew, general manager; G. W. Davis, secretary and treasurer. This company owns 1,015 acres of phosphate land at Mount Pleasant, and analyses made the past few days show a high percentage of phosphate of lime, with a little iron and alumina. This company is now working a force of men and finding sale for the high-grade rock.

#### TEXAS.

**SOUTH TEXAS COAL AND OIL COMPANY.**—This company was incorporated recently with a capital stock of \$75,000. The business of this corporation is to be transacted in the counties of Nacogdoches, Shelby, Angelina, Bexar, Smith, Anderson, Cherokee, Harris, Galveston, Washington, Fort Bend, Wharton, Victoria, Sabine and Waller, with principal office at Houston. This corporation is formed for the purpose of transacting and prosecuting the business of mining for coal, lignite, gas, oil, iron, lead, silver, gold, fire clay, potter clay, sulphur and kindred and associate products of those here named, and for the purchase and sale of such goods, wares and merchandise as may be used in the prosecution of such business. The officers are: Colonel Seabrook W. Sydnor, president; George W. Norrell, vice-president; John P. Latreite, treasurer, and W. W. Dexter, secretary. The directors are S. W. Sydnor, George W. Norrell, John P. Latreite, W. H. Marshall, Frank Brown, Jr., George R. Welton, George F. Kennedy, B. Majorwitz and L. C. Luckel.

##### NACOGDOCHES COUNTY.

**SOUTH TEXAS COAL AND OIL COMPANY.**—A company was organized recently with a capital stock of \$75,000 to develop the coal-fields near Garrison. Work on the mines will begin at once.

#### UTAH.

##### BEAVER COUNTY.

**VULCAN.**—Twenty-six years ago this mine was located in Star mining district and at intervals during this time this property has been a producer of silver-lead ores, and occasionally it has furnished the smelters with iron ore for fluxing purposes, but it never was worked for gold. Some of the iron ore and other that had been thrown over the dump has been panned and was found to carry free gold in paying quantities, and an investigation of the old workings of the mine developed the fact that there were large deposits of decomposed iron quartz, talc and other that carried average values of from \$10 to \$15 in free gold to the ton. On the surface, below the ledge, is gravel, decomposed quartz and debris that pans well in gold, for the treatment of which a trial run is now being made at Millford with one of Mitchell's Flour gold amalgamators.

## IRON COUNTY.

**BIG SUNFLOWER.**—Report comes of the discovery of a 2-ft. ledge on this lode that carries rich values of silver and gold. The ore is free milling and easily handled. The Big Sunflower group of claims is located near the property owned by the Rice Brothers and is north of the Drake and Lambert mines, both of which are producing properties. The group is owned by residents of Cedar City.

**GOLDEN HAVEN.**—A rich strike is reported from this mine, an extension on the north of the Creole, in the State Line District. A shaft was sunk to a depth of 45 feet, and a crosscut run to the ledge which is  $4\frac{1}{2}$  feet of quartz carrying free gold.

## SALT LAKE COUNTY.

**W. J. BRYAN.**—A shipment of ore is to be made from this new producer in Big Cottonwood District. At the present time there is about 25 tons of good ore on the dump. The pay streak, although small, is very rich and assays 400 oz. in silver to the ton and \$12 to \$14 in gold.

**ZELNORA.**—This mine, at Bingham, is now showing up some good ore bodies, associated with which there is a streak of 4 in. of mineral that carries high values of silver. D. H. Bero is working this ground, and is making regular weekly shipments of good ore. Recently he put on another shift.

## SUMMIT COUNTY.

**ANCHOR.**—This mine closed down October 21st, throwing 35 men out of employment. Fifteen men will be employed for a short time putting the property in good condition.

**AUTUMNAL.**—This mine, located on Pioneer ridge at Park City, has joined the list of shippers, its first carload of ore having been sent to the sampler. The assays show the presence of silver, lead and gold. The ore was exposed in the tunnel.

**SUPERIOR MINING COMPANY.**—This company is the owner of valuable ground on the lower end of Bonanza flat, in Snake Creek District, but the development work, consisting of a 1,200-ft. tunnel gave no special results. Recently a 2-ft. body of ore was uncovered that is said to assay 32% lead, 21 oz. silver, and \$6.61 in gold to the ton, besides which the mineral carries 15% in iron.

(From Our Special Correspondent.)

**HAWKEYE.**—Ryan, Hickman and Paris, of Salt Lake, will open up this old producer which lies east of and adjoining the Ontario. The main shaft will be retimbered and sunk from the 300-ft. level, and the 200 and 300-ft. levels will be extended.

**LUCKY BILL.**—There is now no longer any question as to the permanency and value of the vein recently found on the surface of this property. The management sunk a vertical shaft to a depth of 1,000 ft. on another part of the property, and at a depth of 60 ft. the vein was encountered 3 ft. wide, and averages 40% lead and 315 oz. silver. A crosscut has been run from the bottom of the main shaft to intercept the new vein on its dip, which will furnish 1,000 ft. of stoping ground.

**VALLEJO.**—The vein of this property has been crosscut from wall to wall and is 54 feet thick, making it one of the largest veins opened in Park City. The values are strongest in gold and copper, something unusual in Summit County mines.

## TOOLEE COUNTY.

**SHOEBRIDGE.**—A new strike of ore is reported from this mine. The ore was encountered in a drift 65 ft. north of the new shaft that has been put down by the new company.

**SUNBEAM.**—Another new strike of high-grade ore is reported in this mine on the 250-ft. level, this ore being said to show 200 oz. silver, 20% copper and \$2 gold to the ton.

## WASHINGTON.

## KITITAS COUNTY.

(From Our Special Correspondent.)

**CLEELUM MINING DISTRICT—KEYSTONE.**—This Cinnabar property shows a ledge 110 ft. wide, and tests show 2% to 14% quicksilver. There are three shifts now working on this property sinking 5 ft. per day. This property is owned by A. Elsner and J. Somers.

**EMERALD.**—A deposit of quartz 400 ft. wide is the new find in this district. Several mill tests prove a value of \$4 to \$11 in gold. Work is being pushed, and a large amount of ore is on the dump.

**FACTUM CREEK SMELTING AND REFINING COMPANY.**—This company has shipped to this district a 40-ton water jacket smelter which will be put in immediate operation on its property, and some custom work will be done.

## LINCOLN COUNTY.

**DEER TRAIL No. 2.**—It is reported that a one half interest in this mine, in the Cedar Canyon District, about 40 miles from Davenport, has been sold to Chas. Thies and others, of Spokane, for \$30,000. The other owners are C. C. May and F. H. Luce, of Davenport.

## OKANOGAN COUNTY.

**NORTH STAR GROUP.**—This property is located  $2\frac{1}{2}$  miles from the forks of Gold Creek on the north, at an elevation of 1,000 ft. from the creek, on Chloride Mountain. The ore is chloride, silver being the principal product, although assays and sampling with mortar and pan show a good percentage of free gold. The ledge is developed to the depth of 60 ft. by an incline double-compartment shaft, besides surface work along the ledge for a distance of 500 or 600 ft., which shows a continuous

vein. At 60 ft. the ledge is  $2\frac{1}{2}$  to 3 ft. wide, with 20 in. of pay ore. There is now about 40 tons of ore on the dump ready for shipment. The trend of the vein is east and west, crosscutting the formation.

## SNOHOMISH COUNTY.

**MYSTERY & PRIDE OF THE MOUNTAINS.**—Ten cars of gold and silver concentrates from these mines went to the Everett smelter recently, the product of about 1,450 tons of ore, valued at \$43,000.

**T. & K. MINING COMPANY.**—This company was recently incorporated with a capital stock of \$1,000,000. The incorporators are H. L. Keyte and T. G. Thrasher, of Everett; Fred B. Bailey, of Tacoma, and J. W. Bailey, of Everett. The mines are in the Stillaguamish District, embracing the T. and K. mine, the Liberty Bell and the Rustler, located at the headwaters of the south fork of the Stillaguamish River, six miles east of Silverton. The company will proceed at once to the development of the property.

## STEVENS COUNTY.

**COPPER KING.**—This mine has a tunnel of 12 ft., with a shaft of about 40 ft. sunk at the end of the tunnel, which is in a fine body of ore, containing oxides and sulphates of copper and some gold.

**STANLY MINING COMPANY.**—About 12 miles southwest of Chewelah this company has been doing considerable work on a free milling property and it has shown up so well that the company has recently purchased a stamp mill, which it will have at work as soon as possible.

## WEST VIRGINIA.

## MARSHALL COUNTY.

**SOUTH PENN OIL COMPANY.**—A natural gas strike was made by this company, at Garrett's station, on the Baltimore & Ohio Railroad, five miles east of Cameron. A well was being drilled for oil when it broke loose with a tremendous flow of gas, which shortly became so violent that its roar could be heard for miles around.

## TUCKER COUNTY.

**DAVIS COAL AND COKE COMPANY.**—This company has opened a new mine at Coke Station, near Thomas, to be known as the Thomas Mine No. 2, which will employ a large number of men.

## WYOMING.

## CARBON COUNTY.

(From Our Special Correspondent.)

**SYBILLE DISTRICT.**—Mr. E. M. Breitung, a capitalist of Laramie, proposes to do some work in this district, just north of the Herman district. The ore body there is so extensive that its working would be more like that of a quarry than a mine. So far as yet discovered, the ore on the whole is low grade. About six weeks or two months ago, Mr. H. G. Rothwell, engineer for Mr. Breitung, had some of the ore tested, and a short report made. On the strength of that report, it is said, Mr. Breitung has undertaken work there to the extent of about \$2,000, which will be continued with larger developments, if results are favorable.

## SWEETWATER COUNTY.

**OREGON BUTTES PLACERS.**—The sale of this tract of 3,000 acres of placer ground to E. A. Green has been finally consummated, and the first payment made. A ditch 22 miles long, and costing about \$150,000, will be built next season.

## FOREIGN MINING NEWS.

## BRAZIL.

**OURO PRETO GOLD MINING COMPANY.**—The return for September shows that the Raposos mine yielded 11 oz. gold from 50 tons of ore, an average of \$22 oz. per ton; from the Passagem mine 4,132 tons of ore were worked, producing 1,503 oz., an average of 0.36 oz. per ton. The total output for the month was 1,514 oz. gold.

## BRITISH COLUMBIA.

## EAST KOOTENAY DISTRICT.

(From Our Special Correspondent.)

**BULL RIVER.**—In this camp copper ores containing gold and silver are being opened up.

**DIBBLE.**—This group, on the same lead as the North Star, has just been sold to Mr. Redpath, of Spokane, by Cleaver & Smith.

**NORTH STAR.**—Considerable interest is commencing to be taken in the silver, gold and copper claims in the vicinity of Fort Steel. This is partly due to the assured advent of the Crow's Nest Pass Railroad and to the splendid outlook for the North Star mine. The principal owner of the North Star, Mr. Dan. Man, has just arranged for 3,000 tons to be taken out during the winter, in addition to 1,500 tons already on the dock. The ore is a high-grade silver-lead, its silver contents being higher in carbonates, which are becoming more plentiful.

**PERRY CREEK.**—The latest interest in the district is being evinced in the Perry Creek gold quartz. Mr. J. E. Hardman, of Halifax, recently acquired some claims there, it is believed, in the interest of Toronto parties.

**THUNDER HILL.**—No work is being done in this camp, near the source of the Columbia, but Mr. W. Hamilton Merritt, mining engineer, of Toronto, recently made an examination of the Jupiter group for an English syndicate.

**WILD HORSE CREEK.**—The placer gold claims of this creek have had a good clean-up this season. The English company operating there has been reorganized, it is believed, and the new company is doing well under the new management.

## TRAIL CREEK DISTRICT.

(From Our Special Correspondent.)

**IRON HORSE FRACTION.**—This property adjoins the Iron Horse. It is owned by Tacoma parties. There is a shaft sunk to the depth of 60 ft. on ore. Development work is going on.

**WANETA AND TRAIL CREEK GOLD MINING COMPANY.**—This company has just been organized by W. C. Archer, of Rossland, and its promoters are all residents of Rossland. The company owns a group of three claims, situated about three miles northwest of Fulton's landing. They comprise the Copper Glance, Copper Bell and one other mineral claim. A well-developed ledge carrying copper and silver on the surface is traceable on the ground, and runs through about six claims. Five men have been at work on the property. Mr. Crane, of Vancouver, has just bonded a group of claims in the immediate neighborhood. This property possesses additional interest because it is in the neighborhood of Trail Creek landing, which is fast coming to the front as a mineral district.

**WEST LE ROI-JOSIE.**—Three men are at work on a new tunnel on this property, which adjoins the Black Bear and Josie on the west. The limonite on the surface is a very noticeable feature. This property was formerly known as the Annie. A company of Rossland and Spokane parties are now the owners. The previous development work consists of a tunnel and a shaft in a few feet, and a blacksmith's shop. The new tunnel is some distance northwest. It has been begun with the ledge cropping out above it on the higher ground.

**ZILOR.**—This mineral claim, which is close to the Lily May, is to be further developed. William J. Harris, who is manager of the Lily May, has taken a contract to sink 50 ft. further in the Zilor. There are already two shafts on the Zilor vein. One is down 40 ft. and it is on ore; the other is in about 15 ft. The sinking will be on this latter shaft.

## ONTARIO.

## RAT PORTAGE DISTRICT.

(From Our Special Correspondent.)

**BULLION MINING COMPANY.**—In view of the success which has so far attended the ventures of this company, the directors have decided to raise the price of their shares from 40c. to 60c. per share.

**HOWARD COMPANY.**—This company, of Winnipeg, is hard at work on location 301, Manitou Lake. The operations are in charge of Mr. Wm. Caldwell, a pioneer of local mining and a man of great experience.

**MIKADO.**—Another lot of ore is being shipped into the local reduction works from this mine. In my last letter I stated that a former run had yielded 417 oz. of gold, but did not make it clear that this result was obtained from 114 tons of ore, the concentrates retaining about 30% of the bullion. A mill is to be installed on the property, which it is intended to erect from the proceeds of ores now being mined. Mr. Breidenbach, the manager of the works, informs me that the mine has paid all expenses in connection with its development up to date, and the shareholders will not likely be called upon to pay for the placing of the machinery necessary for its future operation.

**PRINCESS MINING COMPANY.**—Messrs. McKenzie, Shortiss and Flett are organizing this company in Toronto. The Princess property is located near the Scramble mine.

**QUEEN.**—Toronto people have secured this property, on Shoal Lake.

**SUITANA ISLAND.**—The Ottawa people represented by Mr. Burley Smith have secured the right to mine the lands under water near this island, and will commence work right away.

**SWEDEN.**—The shaft on this location is now down about 60 ft. The appearance of the ore improves as depth is reached.

**YUM YUM.**—This location, on Shoal Lake, has been purchased from Dr. Edmiston by an Eastern syndicate for the sum of \$30,000. Mr. Burley Smith negotiated the purchase.

## SUDBURY DISTRICT.

(From Our Special Correspondent.)

**CANADIAN COPPER COMPANY.**—The output of the three working mines of this company is over 400 tons a day this season, and the smelters are being run to their full capacity the whole time. Last summer this company opened up a fine new mine a little to the west of the Copper Cliff, and this week a roadway is being surveyed to it.

**GOLD.**—About twenty-five miles to the northeast of Sudbury, in what is called the Wahnapiet section, the nickel range is cut off by a very promising gold belt. A large number of claims have been taken up there within the past two years, and the rush of prospectors into this new field is very great just now. But very little actual development work has been done on any of the locations except at the Crystal mine, where some 500 ft. of ground has been broken in shafts and drifts, and perhaps 500 tons of very rich ore taken out. A sample ton of this ore that was sent to the School of Mines at Kingston last winter yielded a gold brick worth \$181, and it is said that all the ore on the dump will average

over \$200 to the ton. Two "prospects" have lately been bonded at \$10,000 each, and new discoveries are reported almost every day. The veins are small and scattered, but traceable in some places for miles and showing a great deal of free gold on the surface. It is a rather difficult field to explore, being in the green bush and covered with boulders and moss, with the additional drawback that the four townships in which the main gold belt lies have been taken out of the market by the Ontario government in order to protect the June timber from being burned up. But a petition has been sent in to the government to have these lands opened up for sale. The provincial governments in Canada have a peculiar faculty for obstructing mining operations by restrictions of all kinds.

NICKEL.—For some time past negotiations have been going on for the purchase of three of the largest nickel properties in this district, known as the Levac group, and the sale is now reported to have gone through. Mr. Robt. J. Tough, one of the owners, has left for Europe to sign the papers and close the deal. The consideration is \$350,000. The highest price offered for the same properties some years ago, when the nickel mines were in the flush of a premature boom, was \$220,000. It is said that a special part of the business of the new company will be to supply the British government with nickel for the navy-yards. Two other nickel properties, down the range, have also been bonded recently, the one at \$90,000 and the other at \$30,000. A mining broker here states that there are two reasons for the new interest in our nickel mines—first, the growing belief that nickel is bound to be used more extensively in the general industries before long, and, secondly, that English investors are giving more attention to mining enterprises all over Canada this year than at any time in the past. There are now only three first-class nickel properties in the district that have not been bought up.

TRAVERS.—Work has been resumed at this mine, in the township of Drury, and 50 to 60 hands are employed in connection with the mine and the cable road to the railway track at Worthington station. The line will be four miles long, and the novel experiment is going to be made of trying to run it with horses, like boats on a tow path. The result will be watched with considerable interest here. On one part of the line there is a pretty steep grade, and predictions are freely made that instead of the horses running the cable, the chances are that the cable will run the horses.

LATE NEWS.

OHIO COAL MINES.—Small strikes continue to disturb the Ohio coal trade, and on November 6th one is reported at the Salem Coal Company's mines, where the miners refused to accept a reduction to the 53c. rate, a drop of 16c. from the old price. The Hocking Valley miners continue at work.

JOHN H. INMAN, who died suddenly at his summer residence in Berkshire, Mass., November 5th, was well known from his long and active connection with the Tennessee Coal, Iron and Railway Company, the Richmond & Danville (now the Southern) Railroad and other enterprises. Through him the investment of a large amount of money in iron-making in Alabama was secured, and he also had heavy interests in iron properties in Tennessee.

AMERICAN SHIPS FOR JAPAN.—It is announced, November 6th, that negotiations have just been closed between the Japanese government, the Cramp & Sons Ship and Engine Company, of Philadelphia, and the Union Iron Works, of San Francisco, for two cruisers for the imperial navy. The new cruisers will cost in round figures \$1,250,000 each, and will be required to be finished in two years from the date of the contract. Each cruiser will be of about 5,700 tons displacement; length on water line, 335 ft., extreme breadth, 51 ft., and mean draught, 20 ft. The proposals call for a speed of 21 knots and a mean indicated H. P. of 17,000. The main battery will consist of four 8-in. and eight 5-in. rapid-fire guns, and there will be a secondary battery of 20 small guns.

BY CABLE.

(Special Despatch from our London Office.)

LONDON, November 5.—The High Court of the South African Republic has given its decision in the suits pending between the African Gold Recovery Company, and various mining companies, involving the force of the patents on the cyanide process of gold recovery. The Court holds that the MacArthur-Forrest patents are invalid and void. This decision is final, and there can be no further appeal.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Nov. 6. Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending October 31st, 1896, compared with the corresponding period last year:

Table with 3 columns: Location, 1896 Week, 1896 Year, 1895 Year. Includes Pennsylvania Railroad.

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending October 31st, and for years from January 1st, 1896 and 1895;

Table with 4 columns: Location, 1896 Week, 1896 Year, 1895 Year. Includes Shipped East and North, Allegheny, Pa., Barclay, Pa., etc.

\* For year ending October 3d. † For two weeks ending Oct. 21st. ‡ For year ending October 21st.

Table with 4 columns: Location, 1896 Week, 1896 Year, 1895 Year. Includes Shipped West, Monongahela, Pa., Pittsburg, Pa., Westmoreland, Pa., etc.

Grand totals 485,065 21,680,942 19,711,733

Production of coke on line of Pennsylvania Railroad for the week ending October 31st, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 59,637 tons; year, 3,270,696; to corresponding date in 1895, 4,853,572 tons.

Anthracite.

The anthracite coal trade people are filled with hope that manufacturing establishments which have done little or no work for many months past will now resume operations and revive the demand for all sizes of coal. While the middle sizes have been in fair demand for some time past, the small steam sizes have been very dull, owing mainly to the inactivity of mills and factories which use these sizes almost entirely. With these establishments again in the market the trade would not only be very much better, but the problem of what to do with the small sizes, which are necessarily produced at all times, will be solved. From one source it is reported that trade is already better, that more inquiries have been received and more coal sold within the last two or three days than for some time. During the past week trade has continued in volume about as shown by our previous report. Orders are promptly filled, with perhaps an exception in the case of egg coal, which is still reported to fall below the demand. Prices in general are firmer, and the rates of the last circular are being more generally realized on new business. 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 Schuylkill Coal Exchange gives notice that the Philadelphia & Reading Collieries drawn to return prices of coal sold in October, 1896, to determine the rate of wages to be paid, show an average price of \$2.63, and the rate of wages to be paid for the last half of October and first half of November, 1896, is 4% above \$2 50 basis.

Bituminous.

The soft coal trade is in fairly good condition; the improvement in demand seems to keep up, fairly large tonnages going forward, and out-of-town commission men are preparing to put in orders. Quite a number of them have visited the various coal headquarters this week asking producers to be prepared to ship them larger amounts or to hold to certain tonnages ready for their orders. The Sound business is increasing in its proportion of the demand and ocean freights from the lower ports have dropped off or weakened to an extent which permits the lower ports to be utilized for the Sound business. It seems as if vessel brokers and owners have recognized that the rate had advanced to the point of engaging the Sound trade to Sound barges from the New York shipping ports, and they are inclined to keep the rate at present at a figure that will hold the trade to the lower ports. Trade to the east of Cape Cod is holding its own. New York harbor business is fairly good and regular, the tonnage going forward being slightly increased over a couple of weeks ago. All-rail trade shows a slight increase, the smaller concerns that receive coal in this way having come into the market this week quite actively. Trade local to the shipping ports is better. Prices are unchanged, the demand not being up to the point of increase. The combination figures are mostly quoted, even by the outside smaller concerns who seem to have about all they can take care of. It is expected that some of the contracts that had not been placed will be likely now to come into the market. Transportation from mines to tide is not as good as it was two or three weeks ago; this is on account of the bigger volume of coal going forward at the present time, yet the time made is not much under that in ordinary shipping seasons. Transportation on all-rail business is reported slightly slower than on tide shipments. There is no falling off, so far as we can hear, in the car supply, all requisitions being filled by the railroads. The great shortage of cars complained of in years past is not likely now to take place when nearly every coal company owns its own cars, which are used only in its own trade, making the demands on the main line roads much lighter than they were. In the coastwise market vessels are in somewhat better supply, which permits some of the higher rates prevailing recently to be shaded. However, it is expected at this time of year that storms or cold weather will have a decided strengthening effect on the market.

rates prevailing recently to be shaded. However, it is expected at this time of year that storms or cold weather will have a decided strengthening effect on the market.

We quote current rates of freight from Philadelphia as follows: To Boston, Salem and Portland, 80c.; Providence, New Bedford and other Sound ports, 65@70c.; Wareham, 90c.; Lynn, 95c.@\$1.10; Newburyport, 95c.; Portsmouth, 85c.; Dover, \$1.10, alongside and towage; Saco, \$1, alongside and towage; Bath, 85c.; Gardiner, 85@90c., and towage; Bangor, 90c.@\$1. Baltimore, Norfolk and Newport News are offering 10@15c. above these rates, which has the effect of taking most of the vessels to these points in preference to Philadelphia, which will probably result in adding 5c. to Philadelphia rates.

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 20c. differential in favor of Clearfield and Beech Creek coals.

Buffalo.

Nov. 5.

(From Our Special Correspondent.)

The anthracite coal market continues quiet for the season, but this may be partly attributable to the warmth of the weather and partly to politics. Neither of these causes should be factors for the future, as the weather has changed to a much lower temperature and election is over. Prices were not changed November 1st, and dealers do not expect any variation for some time. Bituminous coal is in good supply, far in excess of the demand. Quotations are nominally unchanged. Lake freights on coal are steady with quite a good showing of shipments westward for the week. The shipments of coal westward by lake from Buffalo, from October 25th to 31st, both days inclusive, aggregated about 95,000 net tons, distributed as follows: 29,700 tons to Chicago, 13,160 tons to Milwaukee, 6,500 tons to Duluth, 1,800 tons to Toledo, 2,500 tons to Superior, 600 tons to Detroit, 1,000 tons to Ashland, 1,100 tons to Green Bay, 1,000 tons to Gladstone, 300 tons to St. Ignace, 675 tons to Racine, 3,000 tons to Manitowoc and 30,000 tons to ports not named. The rates of freight were 50c. to Kenosha and Racine, 40c. to Green Bay, St. Ignace and Marinette; 30c. to Chicago, Milwaukee and Manitowoc; 25c. to Toledo and Detroit, and 20c. to Duluth, Gladstone, Superior and Ashland. The car ferry from Conneaut, O., to Port Dover, Canada, will run all the winter, as very large contracts have been made lately, equivalent to 60 carloads of coal per day for the next eight months. There were very heavy northeasterly storms on the Upper Lakes for several days, with rain, snow and hail. Navigation was practically stopped, as vessels ran into the various ports of refuge and harbors. On Lake Michigan on October 31st there was a southwest storm of great force. Thus far no disasters of consequence have been reported. Only 250 tons of coal were saved from the burned steamer Australasian; she broke up a few days ago in Whitefish Bay. The shipment of coal westward from Buffalo for month of October aggregated 376,877 net tons; for season to October 31st, 1,953,058 net tons, as compared with 1,962,325 net tons in 1895 and 1,953,335 net tons in 1894.

Chicago.

Nov. 4.

(From Our Special Correspondent.)

Anthracite.—There has been as yet no increased buying in anthracite coal. The weather for the past two weeks has been decidedly against an increased demand, it having been more like early September than late October. Small lots of coal are being shipped to out-of-town points, but dealers as a rule have made no effort to stock up. The supply of hard coal in their bins was never lower, and it is hoped, now that the election is over, that business will be of better proportions. Cold weather now will greatly influence sales, and is being looked for anxiously. The advance in the rate to \$3 by the railroads carrying coal to Missouri River points has almost stopped business for those points. Circular prices on hard coal are: Grate, \$5.60; egg, stove and chestnut, \$5.85 f. o. b. cars Chicago. Circular retail price continues \$6.75@7. Both wholesale and retail prices are weak, cutting being done more openly than ever. Bituminous.—Soft coal is in good demand for the better grades. As yet the demand for coal for manufacturing and kindred purposes has not increased. Now that election is over it is believed that many industrial concerns now closed will start up and those that have been running short time will run full. Inquiry is already coming in. Prices are a little steadier.

Pittsburg.

Nov. 5.

(From Our Special Correspondent.)

Coal.—The market since our last has presented nothing special. The late rise brought up a large number of empties, sufficient to furnish mines for some time to come. Coal diggers are in demand in the Pittsburg mining district, and in several instances the miners' officials have been asked to procure men for the operators. Since the reduction of the wage-rate there has been an increased demand for coal by several large shipping firms at the Lake ports who held off in mid-summer. The 54-c. rate in this district has resulted in diverting some orders from West Virginia. A Pittsburg firm has put the West Penn Coal





Bessemer and gray forge; the advance in the former is 25c. to 50c. per ton, and the end is not yet.

A wonderful change is perceptible in the iron market; buyers are numerous and willing to invest—there seems to be new life in trade generally.

COKE, SMELTED, LAKE AND NATIVE ORE.

Table with columns for Tons, Cash, Bessemer, Jan., Feb., March, etc., and various iron products like blooms, billets, and scrap materials.

Philadelphia. Nov. 6. (From Our Special Correspondent.)

Pig Iron.—During the past 24 hours about a dozen large transactions in pig iron of all kinds have been closed, involving mill, foundry, non-phosphorus and basic iron.

Steel Billets.—No change has taken place yet. Brokers have had no further instruction from Western Pennsylvania.

Merchant Bar.—A number of hanging orders were sent to mills yesterday, word having come from the buyers to go ahead.

Skelp.—Manufacturers look for a few orders next week.

Sheet.—The latest reports are that mills will start on next Monday to turn out more iron in ad-

vance of any specific orders. Storekeepers have not felt any improved demand this week, but they say that it may come any day and that their stocks will be increased from mill stores.

Pipes and Tubes.—No change this week, but brokers report that a great deal of business will be passed upon in a few days.

Merchant Steel.—The report to-day is that tire and tool steel will be first to feel the improvement.

Plate and Tank.—The idea is getting abroad that there will be an early advance in plates, but it cannot be traced to any definite source.

Structural Material.—Nothing has been done in this market up to to-day. The representatives of mills say that it may be some little time before manufacturers will hear from large buyers.

Steel Rails.—When the billet question is settled, the rail question, if there is one, will come up.

Old Rails.—Fresh interest is manifested in old rails for 1897, but no sales have been arranged for.

Scrap.—All scrap dealers speak of good prospects for getting rid of accumulations, but so far as could be reached this week no important sales were made.

METAL MARKET.

New York, Friday Evening, November 6, 1896.

Gold and Silver. Prices of Silver per Ounce Troy.

Table showing prices of gold and silver in New York and London, with columns for Gold and Silver in various currencies.

Silver has remained comparatively steady since our last report. There was a disposition on the part of London to drop the price on the failure of the free-silver campaign.

The United States Assay Office in New York reports the total receipts of silver at 89,000 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:

Table with columns for Coin and bullion, In ores, and Total excess, Exp. or Imp. for Gold and Silver.

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 November 6th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

Table with columns for Gold, Silver, and Total Excess, Exp. or Imp. for New York exports and imports.

The gold exported for the week went to the West Indies; the silver went to London. The gold and silver imported came from Europe, and from Central and South America.

Average Monthly Prices of Silver in New York and London, per ounce Troy, from January 1st, 1896, and for the years 1895 and 1894.

Table showing average monthly prices of silver in New York and London for the years 1894, 1895, and 1896.

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.

The election is over, and there is a general feeling of relief that excitement and uncertainty are over.

As to general business there has not been time yet to realize the full effect. Only a few days have passed, and the recovery from excitement is not yet complete.

One effect has been to bring out some of the gold which has been quietly hoarded. A considerable amount was exchanged for legal tenders at the New York Sub-Treasury this week.

The rates on sterling exchange are somewhat higher this week and the imports of gold will probably be checked for the present.

The statement of the United States Treasury on Thursday, November 5th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

Table showing Treasury balances for Gold, Silver, Legal tenders, and Treasury notes on Oct. 29 and Nov. 5.

Treasury deposits with national banks amounted to \$16,461,163, showing an increase of \$121,306 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$122,973,280.

The following statement shows the total amount of money issued and in circulation in the United States on November 1st, according to the estimates of the Treasury Department:

Table showing Treasury money in circulation, including Gold coin, Stand. silver dollars, Subsidiary silver, Gold certificates, Silver certificates, Treasury notes, U. S. notes, Currency certificates, and National Bank notes.

The total amount in circulation was \$22,263 per capita. As compared with October 1st, there was a net increase of \$4,753,325 in the amount in circulation.

The gold exported for the week went to the West Indies; the silver went to London. The gold and silver imported came from Europe, and from Central and South America.

The statement of the New York banks—including the 68 banks represented in the Clearing House—for the week ending October 31st, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

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

Changes for the week this year were increases of \$2,545,800 in specie and \$2,502,325 in surplus reserve; decreases of \$3,899,100 in loans; \$2,036,090 in deposits; \$14,800 in circulation and \$552,700 in legal tenders.

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 for Gold, Silver, and Total. Rows list various banks including Amco. 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, and Imp. Bank of Russia.

The return for the Associated Banks of New York is of date October 31st; all the others are of November 5th, except the Bank of Italy, September 30th, and the Bank of Russia, October 1st-13th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin.

Shipments of silver from London to the East for the year up to October 22d are reported by Messrs. Pixerly & Abell's circular as below:

Table with columns for 1895, 1896, and Changes. Rows list India, China, and The Straits.

Arrivals for the week this year were £234,000 in bar silver from New York, and £35,000 from Chile; a total of £269,000. Shipments for the week were £132,500 in bar silver to Bombay.

Indian exchange has risen sharply under the effect of a heavy present and prospective demand for remittances for new railroad work and for probable extension of public works in the districts especially affected by crop failures and of the scarcity of money, which has brought the discount rates of the Indian banks from 5 up to 7 and 8%, and makes even 10% probable.

Domestic and Foreign Coins.

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

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

Other Metals.

Since our report of last week, the uneasiness, which for some time past has prevailed throughout the business world, has been happily removed. The people of the United States have expressed their wish by an overwhelming majority, and it is now to be hoped that the minority will accept the verdict, that past differences will be forgotten and that we all settle down and try to build up the prosperity of the country.

Copper.—Anticipating the result of the elections, copper had already hardened during the past fortnight, but sellers continue rather firm, and most consumers being well covered by the recent sale of the Calumet & Hecla Company, not much business has resulted. However, the time since the result was known has been too short to create a mar-

ket. For Lake copper 11c. has been paid, and the same price has been bid for further quantities, but owners are asking somewhat more. Other sorts are very irregular, and it is difficult to give the exact values. Electrolytic copper in cakes, wire bars or ingots must be quoted 10% @ 10 1/2% c., and cathodes 10 1/2% @ 10 3/4% c. Casting copper remains in good demand, but supplies are rather limited. The quotation is more or less nominal at 10 1/2% c. There is some demand for Arizona pig copper, but owners do not sell. Of late there has been a better demand for export, but first of all the continual scarcity in freights stands in the way, and then the bids received have not come up to the ideas of holders.

The statistics for the second half of October show an increase of 1,400 tons, but the reports on consumption abroad are very reassuring, and the position over there continues very favorable. The market for g. m. b's. opened somewhat higher on Monday last, £48 2s. 6d., but on the 4th, when the result of our elections became known, a strong upward movement was noticeable; £49 was paid for spot and £49 10s. @ £49 12s. 6d. for three months prompt. After this, a slight reaction set in, and the closing prices are £48 12s. 6d. @ £48 15s. for spot and £49 5s. @ £49 7s. 6d. for three months prompt. For refined and manufactured prices are somewhat irregular, but all throughout somewhat higher, in conjunction with the speculative sorts. We quote: English tough, £51 @ £51 10s.; best selected, £51 10s. @ £52; strong sheets, £57 10s. @ £58; India sheets, £54 10s. @ £55; yellow metal, 4 1/2 d.

Total exports of copper from New York, Baltimore and Newport News in October amounted to 9,800 tons copper and 1,868 tons matte. Estimating the matte at 55%, this was equivalent to 10,827 long tons of fine copper. Imports at New York for the month included 158 tons fine copper from Mexico, and 1,740 tons copper ore from Tilt Cove, Newfoundland.

The European statistics of copper on November 1st were as follows: Stocks in England and France, 31,340 tons; afloat from Chile and Australia, 4,100 tons; total stocks, 35,440 tons, being an increase of 1,360 tons over those reported October 15th.

Tin.—There has been a good business doing at rather varying prices. Early this week 13 1/2% c. was freely paid for both spot and futures. With the declining market in London, these figures are, however, no longer obtainable, and we have to quote at the close 12 1/2% @ 13c. for both spot and November-December-January delivery.

In London the market opened rather higher last Monday, £59 5s., but afterward a tendency to realize was noticeable, and prices quickly declined to £58 7s. 6d. @ £58 10s. for spot, and £59 5s. @ £59 7s. 6d. for three months prompt, which are the closing figures. The visible supplies for the month of October show a decrease of 2,300 tons, which is due rather to small shipments from the East.

The total stocks of tin on November 1st are reported as below, in tons of 2,240 lbs.:

Table with columns for In store, Afloat, and Total. Rows list London, Holland, Banks and Billiton, Straits, and United States.

The total stocks compare with 35,417 tons on October 1st and 27,675 tons on November 1st, 1895. Shipments from the Straits during October amounted to 3,385 tons.

Lead has been in good consumptive demand, and has scored quite an advance. A few days ago 2 1/2% c. was accepted for round lots; afterward business was done at 2 9/16 c., and now from 2 9/16 @ 2 9/16 c. is being asked. The demand in the West is even better than in the East, and prices out there have advanced comparatively more. St. Louis is now quoted 2 7/16 c. The foreign market remains firm, but quiet. The quotation for Spanish lead is again somewhat higher, £11 5s. @ £11 6s. 3d., and English lead 5s. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is strong and fairly active. Common metal is saleable at 2 65 @ 2 67 1/2% c.; corroding is held at 2 70 @ 2 72 1/2% c. The undercurrent seems to be healthy and we see no good reason why we should not have a gradual advance from now on.

Spelter has also advanced. Stocks in the West are again depleted, on account of the heavy exports, and there is a fair demand, especially for galvanizing purposes. We have to quote 3 85 @ 3 87 1/2% c., delivered New York.

The foreign market is also better, and good ordinary brands are now quoted £17 3s. 9d. and specials £17 7s. 6d.

Antimony remains dull and neglected, without any quotable change.

Nickel.—Demand is improving, but no change in prices can be noted. We quote 33 @ 36c. per lb. for ton lots and 37 @ 38c. 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, allowing for the United States duty of 6c. per lb. on the metal.

Platinum.—With no special change in demand prices continue firm at \$14.50 @ \$15.50 per oz., New York. London quotations are 57s. 6d. @ 59s. per oz.

For chemical ware, 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 price is £6 12s. 6d. per flask, with £6 11s. 3d. quoted 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, and 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 for Month, 1896, 1895, 1894, 1893, 1892. Rows include Copper (Lake), Tin, Lead, and Spelter.

Imports and Exports of Metals.

Table with columns for New York, Week, Oct. 29, and Year, 1896. Rows list various metals like Aluminum, Antimony, Brass, Copper, Iron, Lead, Magnolia, Nickel, Steel, Tin, and Zinc.

\* Metal Exchange Reports. † Week ending Nov. 5.



vanced from \$9 to \$10 1/2, and Tamarack, Jr., from \$11 1/2 to \$12 1/2. Atlantic touched \$20 in the excitement and reacted to \$19 later. Butte & Boston sold at \$1 1/2 @ \$2 1/4 for the stock, and \$2 1/2 @ \$3 for the Trust receipts. Wolverine advanced from \$7 1/2 to \$8, and held firm. Allouez sold at \$1.

Gold stocks were active and in good demand. Pioneer advanced from \$8 to \$9 1/2, but on realizing sales it dropped to \$7. Gold Coins sold at \$2 1/2 @ \$3, and Santa Ysabel advanced from \$9 to \$10. Merced advanced from \$6 1/2 to \$8 1/2 and closed there. Cripple Creek sold at 10 @ 15c.

Salt Lake City. Oct. 31.

(Special Report of James A. Pollock.)

Business for the week was comparatively narrow. The near approach of the election had a tendency to curtail speculation. Ajax did a heavy business and the quotations continued strong, although there was no material advance. The closing down of the Anchor has materially weakened that stock, and there will hardly be an improvement until operations are resumed. Bullion-Beck remained stationary, as is usually the case after the payment of the dividend. Centennial-Eureka did practically nothing, but there are few sellers in the market. Daly West was strong, with the demand greater than the supply. Daiton and Daiton Lark were inactive. East Golden Gate again did considerable business, some of the sales being at even lower figures than during the previous week. Work is said to have been resumed with the drill at the properties. Four Aces did some business at unchanged quotations. Lack of demand for Geysers at the advanced price caused a slight weakening in the stock at the opening, but with the close came a somewhat better feeling. Lucky Bill is pushing development work on the new strike, and the stock held its own. After the closing of the transfer books for the payment of the dividend, Mammoth weakened materially and sold down to the \$2 mark. Mercur was strong, with an advancing tendency. Ontario has declared this month's dividend of 10c per share, payable October 31st. The stock was in somewhat better demand. Swansea was shaded at the close, realization on the recent advance being the cause. South Swansea's upward move was also checked by sellers, although the decline was not heavy. Silver King was strongly held as usual, with buyers and sellers far apart. Sunbeam sold lower. Its advance was too rapid, and the reaction came when holders began to let go. Utah continued strong, with only limited dealings. Few sellers are in the field.

San Francisco. Oct. 31.

(From Our Special Correspondent.)

The market opened in a very unpromising way on Monday, with prices not over-strong and with very little interest shown. In spite of the stimulant administered in the shape of favorable reports from the Comstock, no activity could be developed. The usual weekly rush came this time on Tuesday afternoon, but it was a very feeble attempt. For a few minutes, just at the close of business, it really looked like a rise; but on Wednesday morning everything was flatter and duller than ever, and so continued. At the close prices were said to be a shade firmer, but there was so little business doing that it was really hard to tell.

Among the closing quotations we note: Chollar, \$2 @ \$2.05; Consolidated California & Virginia, \$1.80 @ \$1.85; Hale & Norcross, \$1.40 @ \$1.45; Confidence, \$1.20 @ \$1.25; Ophir, \$1.30; Bodie Consolidated, 58c.

On the Gold Mining Exchange business was flat and sales were few. The only prices noted are: Lockwood, 2 1/2 @ 27c.; Savannah, 45 @ 46c.

The shares of the Standard Consolidated Mining Company of Bodie, which were taken from the list of the San Francisco Stock and Exchange Board three years ago, have been relisted on that board, that company paying \$300 in back dues for the privilege. It is understood that the stock will not be called for the present.

The annual meeting of the Occidental Consolidated Mining Company has been called for November 16th.

The Silver King Mining Company has levied an assessment of 25c. per share.

The Monarch Consolidated Gold and Silver Mining Company, of Silver Lake district, Douglas County, Nev., has levied an assessment of 1/2c. per share, delinquent November 12th.

The Eagle Milling and Mining Company, at Grizzly Flat, El Dorado County, Cal., has levied an assessment of 5c. per share, delinquent November 24th.

The following assessments were recently levied by California gold quartz mining companies: Thorpe of Calaveras County, 5c., delinquent December 12th; Greenwood, of Eldorado County, 2c., delinquent November 23d; Gold Ridge Consolidated, of Nevada and Sierra counties, 2 1/2c., delinquent November 21st.

British Columbia.

(From Our Special Correspondent.)

ROSSLAND, B. C., Oct. 29.

The approach of winter does not seem to have any effect on the activity of the camp. A year ago this season was the signal for an exodus, almost amounting to a stampede. Mining matters have been quiet for some days, though there has been little or no diminution of development and other work. The extension of Rossland's market for the sale of mining stocks of the various properties which are offered to the public is now engaging the attention of the active brokers. Besides London, Paris and some other cities on the continent, New

York, Philadelphia, Baltimore, Chicago, St. Louis and San Francisco will be visited by men who will present the claims of the camp in a business-like manner. American capital, whether in the form of machinery or money, is still coming in this direction without any diminution; indeed, a perceptible increase can be reported.

London. Oct. 24.

(From Our Special Correspondent.)

The London mining stock market has been confined between very narrow limits during the past week, and has exhibited no feature different from what we have been accustomed to lately. In the South African market there have been many fluctuations, due to professional operations, but the amount of business has been small. The chief source of interest in this section has been the unofficial publication of details relating to the new issue of shares by the Chartered Company. The scheme is to issue 1,000,000 new shares of £1 each, bringing the total shares up to 3,500,000. Of the new shares 500,000 will be offered to shareholders at £2, in the proportion of one for each lot of five held, and of this number 300,000 will be underwritten, the underwriters being entitled to the option to take 150,000 shares at £2 1/2 a year hence. The remaining 500,000 will be held in reserve. It is expected that the issue of 500,000 shares will amply cover the extraordinary expenditure due to the war and the Transvaal difficulty. This issue will, no doubt, stir up a little speculation during the next few months, and supply some of the life that has been lacking recently.

In the West Australian market, the bears have been making themselves felt during the past few days; in fact, the market has been the object of a pretty severe raid. The water difficulty has been the chief source of adverse attacks, and the bears have had good cause, for several companies recently have given shortness of water supply as a reason for small returns. The bears have been generally successful, and quotations have fallen all round.

In other departments, such as Indians and New Zealand, the depression has been general, in sympathy with the depression in South Africa. Americans have not been heard of, and the expected boom in British Columbia still hangs fire.

Paris. Oct. 25.

(From Our Special Correspondent.)

The stock market this week has not been especially active in the direction of mining stocks, the attention of speculators being still largely absorbed by the fluctuations in Spanish, Italian and Turkish securities. The metallurgical shares continue very strong, and their position is again helped this week by the announcement that several of the great railroad companies are about to place heavy orders for material.

The copper shares continue also at a high point. It is argued that the large demand for copper still continues, and that recent fluctuations in the price have been due rather to general money market conditions than to any cause in the market itself. This is probably true, and there is little doubt that good prices will be realized for some time to come.

The African gold stocks are still in a very uncertain position, though there has been a concerted effort to support the market and to circulate encouraging news. This has not had very much effect in improving prices, but it has somewhat checked the selling movement, and investors are showing more disposition to hold on and wait further developments. The purely speculative interest has been reduced to small dimensions; what remains of it is mainly interested in operating for the fall.

There is a good deal of curiosity about Spanish finances just now. As it is pretty sure that the big loan proposed by the Spanish Finance Minister cannot be placed, it is not very clear how the floating indebtedness is going to be met. This includes 50,000,000 pesetas of short Treasury bills, a good part held in France, which will soon be due. Spain has sent some 200,000 men to Cuba, and more are needed in the Philippines at once. The question is, can she stand it much longer? At any rate, our people are not disposed to advance any more money, and indeed wish that they had less loaned there now.

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

Table with 3 columns: Imports, Exports, and Excess. Values are in Francs for September and Nine months.

The heavy outward movement in September was largely due to the shipments to the United States, which amounted to 68,640,000 fr. for that month. For the year, up to September 1st, they had been 9,510,000 fr. only.

A decree has been issued by the Ministry of Agriculture prohibiting the importation of cattle, sheep or goats, and of all animal products, such as hides and wool from any part of Africa into France or Algeria. This decree, it is stated, is in consequence of the prevalence of the rinderpest in South Africa. A similar regulation is to be extended to Madagascar.

It is announced that the German possessions in New Guinea, which have been under the control of a commercial company, are to be constituted an imperial colony.

One or two of our departmental councils in France have actually been trying the effect of economy in administration, cutting down expenses a few hundred francs here and there, stopping useless

outlays and dismissing officials who had little or nothing to do. Of course these good people are woefully behind the age and lacking in generous and liberal spirit—but they have succeeded, without any real injury to the public service, in reducing the local taxes, to the great satisfaction of the taxpayers. It is, of course, useless to recommend so small and mean a plan to our ministers and deputies. The modern publicist distinguishes himself by ingenious methods of raising new loans and increasing taxes, and he cannot descend to such a petty affair as economy; and so the taxpayer suffers. This unchecked tendency to public extravagance is a very serious matter, and has more to do with industrial discontent than most people suspect. It is not the difficulty of earning money so much as the cost of living which causes that discontent; and to that cost taxation contributes year by year a larger share, in Europe at least. AZOTE.

ASSESSMENTS.

Table with columns: Name of Co., Loc'n, No., Dlnq., Sale, Amt. Lists various mining companies and their assessment details.

\* New assessment.

DIVIDENDS.

Table with columns: NAME OF COMPANY, Current Dividends, Paid since Jan. 1, 1896, Total to date. Lists dividends for numerous companies.

\* October dividend paid. † Extra dividend of \$1 per share included.

STOCK QUOTATIONS.

BOSTON, MASS. Table with columns for Name of Company, Location, Par value, and dates from Oct. 30 to Nov. 5. Includes companies like Allouez, Arnold, Atlantic, etc.

NEW YORK. Table with columns for Name of Company, Location, Par value, and dates from Oct. 31 to Nov. 6. Includes companies like Ajax, Alamo, Alice, etc.

\*Official quotations Boston Stock Exchange. †Holiday. ‡Ex-dividend. Total sales, \$3,977.

\*Official quotations N.Y. Stock and Con. Stock & Petroleum exchanges. †Holiday. Total shares sold, 13,307.

INDUSTRIAL COAL AND COAL RAILROAD. Table with columns for Name of Company, Par value, and dates from Oct. 31 to Nov. 6. Includes companies like Balt. & Ohio, Ches. & Ohio, Col. C. & I. Dev, etc.

Table with columns for Name of Company, Location, Par value, and dates from Oct. 31 to Nov. 6. Includes companies like Ajax, Alamo, Alice, etc.

\*Official quotations N.Y. Stock Exchange. †Holiday. Total shares sold, 37,369.

\*Official quotations N.Y. Stock and Con. Stock & Petroleum exchanges. †Holiday. Total shares sold, 13,307.

COLORADO SPRINGS, COLO. Table with columns for Name of Company, Par value, and dates from Oct. 26 to Oct. 31. Includes companies like Ajax, Alamo, Am'rican, etc.

SAN FRANCISCO, CAL. Table with columns for Name of Company, Location, Par value, and dates from Oct. 31 to Nov. 5. Includes companies like Alta, Belcher, Best & Belcher, etc.

\* Official telegraphic quotations, San Francisco Stock Exchange. † Holiday.

BALTIMORE, MD. Table with columns for Name of Company, Location, Par value, Bid, Ask, and dates from Oct. 31 to Nov. 5. Includes companies like Balt. M. & S., Conrad Hill, etc.

BALTIMORE, MD. Table with columns for Name of Company, Location, Par value, Bid, Ask, and dates from Oct. 31 to Nov. 5. Includes companies like Howard C. & C., Lake Chrome, etc.

\* Official quotations Baltimore Stock Exchange.

BRITISH COLUMBIA. Table with columns for Name, Selling price, and Name. Includes companies like Mount's Creek, Trail Ck (con.), etc.

\* Official quotations and sales Colo. Springs M. Stock Assoc. \* Board of Trade Exchange. Par val.: Hall Mines and Le Roi, \$5; Slocan Star, 5; other stocks, \$1.

LONDON.

Oct. 23

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations. Lists various mining companies like Nth Americans, Alaska-Treadwell, etc.

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par val, Oct. 26, Oct. 27, Oct. 28, Oct. 29, Oct. 30, Oct. 31, Sales. Lists companies like L'd Mines, Anaconda, etc.

PARIS.

Week ending Oct. 22.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Div. year, Prices. Lists companies like Acieries de Crensoit, Agues Tenidas, etc.

MEXICO.

Week ending Oct. 29.

Table with columns: NAME OF COMPANY, State, No. of shares, Last dividend, Last assessment, Prices. Lists companies like Amistad y Concordia, Arevalo y Anexas, etc.

VALPARAISO, CHILE.

Sept. 3.

Table with columns: NAME OF COMPANY, Capital, Share value, Last Dividend, Prices. Lists companies like Arturo Prat, Caracoles, etc.

SHANGHAI, CHINA.

Oct. 18.

Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price. Lists companies like Jelebu Mfg. & Trad., etc.

SALT LAKE CITY, UTAH.

Week ending Oct. 31.

Table with columns: STOCKS, Par value, Bid, Asked, Actual selling price. Lists companies like Ajax, Alliance, etc.

PHILADELPHIA PA.

Table with columns: NAME OF COMPANY, Location, Par value, Oct. 29, Oct. 31, Nov. 2, Nov. 3, Nov. 4, Sales. Lists companies like Cambria Iron, etc.

HELENA, MONT.

Week ending Oct. 24.

Table with columns: NAME OF COMPANY, Location, Company's office, Par value, Bid, Asked, Shares sold, Price. Lists companies like Am. Dev. & M. Co., etc.

PITTSBURG, PA.

Week ending Oct. 31.

Table with columns: NAME OF COMPANY, Location, Par val, Bid, Ask, Selling price, etc. Lists companies like Allegheny, etc.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns: Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last), Dividends (Total Paid, Date and Amount of Last), and Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last).

G., Gold. S., Silver. L., Lead. C., Copper. 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 \$31,330,000 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.





POSITIONS VACANT. FREE ADVERTISING

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.

Applicants should inclose the necessary postage to insure the forwarding of their letters.

1486 WANTED.—A MAN TO TAKE ENTIRE 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.

1488 WANTED.—AN ENGINEER AND Assayer who has had experience in the mines of the Ouro Preto District, Brazil. Address with full particulars, F. F. F., ENGINEERING AND MINING JOURNAL.

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.

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.

1495 WANTED.—AN EXPERIENCED mining superintendent; also several miners; only sober, energetic, intelligent men need answer. Address BOLIVIA, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

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 SUPERINTENDENT 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 POSITION 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.

WANTED.—POSITION BY A THOROUGH Assayer, Bookkeeper, Mine Surveyor and Amalgamator; 12 years' experience; late superintendent. Address DENVER, ENGINEERING AND MINING JOURNAL. No. 17,850, Dec. 12.

FIRST-CLASS MECHANICAL DRAFTSMAN, with extensive experience in shop and office, wants position at once; moderate salary. Address P. O. BOX 217, Baltimore, Md. No. 17,852, Nov. 14.

YOUNG MAN NOW IN NEW YORK, thorough technical education, surveyor and draftsman, experienced in Colorado mining, desires position as assistant to mining engineer or manager. Address H. F., ENGINEERING AND MINING JOURNAL. No. 17,854, Nov. 21.

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.

EXPERIENCED CHEMIST, GRADUATED in Germany, 9 years in chemical works, in the fat industry and mines and smelting works in Europe and United States, wishes to change his position. Can do analytical, synthetic and technical chemical work of every kind. Best references. Address N. W. ENGINEERING AND MINING JOURNAL. No. 17,851, Nov. 28.

A MAN OF FAMILY, AGED 35, DESIRES to represent manufacturer or specialist in N. Y. City; honest, temperate, capable; having every qualification; extensive business experience; business, social and family connections the very highest. Room 156, Hotel Jefferson, N. Y. City. No. 17,855, Nov. 14.

SUPERINTENDENT, MANAGER, CHIEF Engineer.—Capable engineer, aged 40, at present and for years filling similar position with large company, desires, for satisfactory reasons, to change; has energy, executive ability, experience in management and direction of large forces of men and familiarity with business methods; has thorough experience in iron and steel works, construction and management steam, hydraulic engineering, boiler and structural work; is a graduate engineer, speaks three languages; has a large acquaintance in engineering circles; refers to present employers and prominent engineers. Address ENERGY AND EXPERIENCE, F. W. Skinner, 277 Pearl street, New York City. No. 17,858, Nov. 14.

OPEN TO ACCEPT ENGAGEMENT JANUARY 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 SUPERVISING ARCHITECT, Washington, D. C., November 9th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 22d day of December, 1896, and opened immediately thereafter, for all the labor and materials required for the low pressure, return circulation, steam heating and ventilating apparatus and power boiler for the U. S. Marine Hospital Building at Port Townsend, Wash., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Custodian at Port Townsend, Wash. Each bid must be accompanied by a certified check for a sum not less than 25% 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 will be returned to the bidders. 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.

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, 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 proposals for all material 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.

MACADAMIZING.—The Shore Road Commission, room No 1, City Hall, Brooklyn, N. Y.—Sealed proposals will be received by the Shore Road Commission at its office, until November 25th, when said proposals will be opened and announced, for work to be done under "The Shore Road Construction Plan, No. 1 from Bay Ridge avenue to Third avenue," including maintenance, watering and cleaning for a period of three years after the final acceptance of the work, in accordance with the plans and specifications on file at the office of the engineer in charge, Edwin C. Swezey, Third avenue and Thirty-ninth street, Brooklyn. Proposals must be in writing, on the blank form for proposals furnished by the engineer, and must be accompanied by a certified check for one thousand dollars (\$1,000) drawn payable to the order of the President of the Commission. The right to reject any and all proposals is reserved by the Commission. A bond will be required from the successful bidder for the faithful performance of his contract. Proposals to be directed to The Shore Road Commission, and endorsed "Proposals for Work to be done under Construction Plan No. 1." ELIJAH R. KENNEDY, President.

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Under order of the United States Circuit Court for the District of South Carolina.

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The following named Machinery is offered for sale: One 60-ton Howe Scales, 36-ft. platform. One 100-H. P. Burden Engine, 16 in. x 48 in. One 50-H. P. Boiler and 40-H. P. Engine "Phoenix." One 25-H. P. Locomotive Boiler and 15-H. P. Engine, Watertown Steam Engine Co. make. One Diamond Hand Prospecting Drill, two Hoists, Skips, Sheaves, Rails and other Mining Machinery.

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DIVIDENDS.

HOMESTAKE MINING COMPANY, MILLS BUILDING, 15 BROAD STREET, New York, Nov. 13, 1896. DIVIDEND NO. 220. The regular monthly dividend, TWENTY-FIVE (25) CENTS PER SHARE, has been declared for October, payable at the office of the company, San Francisco, or at the transfer agency in New York on the 25th inst. Transfer books close on the 20th inst. LOUNSBERRY & CO., Transfer Agents.

SABELLA GOLD MINING COMPANY, COLORADO SPRINGS, Colo., September 10th, 1896. DIVIDEND NO. 9. A dividend of ONE CENT PER SHARE (\$22,500) has been declared, payable September 25th, 1896, to stock holders of record September 15th, 1896. The stock transfer books will be closed September 18th, 1896, at 3 o'clock p. m., and will be re-opened on the morning of September 28th, 1896. PERCY HAGERMAN, Vice-President and Treasurer.

QUINCY MINING COMPANY, NOVEMBER 9TH, 1896. DIVIDEND NO. 58 X. An extra dividend of SIX DOLLARS (\$6) PER SHARE will be payable December 8th, next, to registered holders 18th inst. Stockholders residing in Massachusetts will be paid at the office of Mr. N. H. Daniels, Transfer Agent, 35 Congress street, Boston, W. M. R. TODD, Treasurer.

NOTICE OF ASSESSMENT.

(Civil Code of California.)

SILVER KING MINING COMPANY.—Location of principal place of business, San Francisco, Cal. Location of Works, Pioneer Mining District, Pinal County Arizona Territory.

Notice is hereby given that at a meeting of the Board of Directors, held on the 28th day of October, 1896, an assessment, No. 15, of 25 cents per share, was levied upon the capital stock of the corporation, payable immediately in United States gold coin to the Secretary, at the office of the company, No. 310 Pine Street, Room 15 and 17, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 7th day of December, 1896, shall be delinquent, and advertised for sale at public auction; and unless payment is made before will be sold on Tuesday the 5th day of January, 1897, to pay the delinquent assessment, together with the costs of advertising and expenses of sale.

By order of the Board of Directors, J. W. PEW, Secretary. Office, No. 310 Pine Street, Rooms 15 and 17, San Francisco, Cal.

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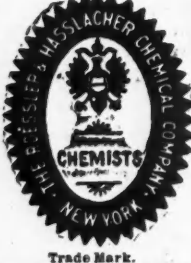
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