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While the United Alkali Company in Great Britain has been making very meager returns to its stockholders for several years past, its great competitor, Brunner, Mond & Company, continues extremely prosperous. The preliminary return for the fiscal year just closed shows that after paying all charges and 30 per cent. on the ordinary stock, the company is able to carry \$90,000 to the reserve fund. The showing is an excellent one, and indicates the possibilities to be found in the extension of the chemical industry.

We learn that the recent purchase of copper property in Butte, which was made in the name of D. G. Bricker, was really on account of Marcus Daly, but not, as was supposed at the time, for the Anaconda Company. It now transpires that the purchase was for the Washoe Copper Company. This company now owns the Gold Hill, Washoe, Poulin, Estella, Moonlight and Blue Jay fractions, in all some 60,000 acres of land. These properties are all well developed and equipped with hoisting plants, and could produce daily several thousand tons of high-grade copper ore per day. At this time, however, no ore is being taken out except on some claims leased to the Anaconda Company. The company is distinct from the Anaconda Copper Company. It is owned by Messrs. Haggin, Daly and Bricker.

We have heretofore noted the somewhat disappointing results obtained from the mine of the Geldenhuis Deep Level Company, the first of the deep level mines in the Witwatersrand District to become an actual producer. The mill has now been at work for over eight months, and in June and July showed a slight improvement, but is still below expectations. For the six months ending with June the total quantity of ore worked, with 100 stamps, was 60,972 tons, and the average return obtained was 0.36 ounce per ton, or in value about \$3 per ton. In July there were 11,680 tons of ore crushed, 3,090 ounces of gold being obtained in the mill; in addition, 8,100 tons of tailings were treated by cyanide, giving 2,090 ounces of gold. The total yield was therefore 5,180 ounces, and the average per ton crushed was 0.44 ounce, or about \$7.50 in value. We have no statements of working costs at the mine, but unless they are very much lower than those of most of the Witwatersrand mines, there is no profit in ore of this grade. Some of the newer deep mines are reported to be making more satisfactory showings than this.

The present low price of silver affords a favorable opportunity for investment in Mexico and other countries on a silver basis. A large amount of property, real estate, rough or improved, can now be bought at a price to yield a large interest so long as the investor lives in the country. Of course there is the possibility of an advance in the price of silver, in which case a foreign investor would receive a very large return for his investment either in capital or in interest by reason of the enhanced value of the currency.

This matter of investment in Mexico, Central or South America, has a special interest and application at the present time for many of our readers, as the development of gold mining in Mexico is making rapid strides, and properties which carry more gold than silver in value are still to be purchased, at reasonable prices, by those who have a thorough knowledge of the country. As exemplifying the development of gold production in Mexico, it is only a few years ago that the returns were merely nominal; for instance, in 1891 the production was estimated by the Director of the U. S. Mint at \$1,000,000, which, however, was below the actual output.

Last year, as is recorded in THE MINERAL INDUSTRY, Vol. IV., the production, as ascertained by us, was \$5,600,000, and is rapidly increasing; so much so, that, according to some well versed in ore returns and statistical work in Mexico, the production of the present year may reach \$9,000,000.

The persistence of English mining investors and also the elastic nature of English mining corporations are shown by the fact that the stockholders of the Jay Hawk & Lone Pine Consolidated Company have just voted, not only to abandon silver mining for gold, but also to transfer their operations across the Pacific Ocean—that is, from Beaverhead County in Montana, to the Hauraki District in New Zealand. Moreover, the company's 25-stamp mill is actually to be carried across the ocean, the managers estimating that it can be taken down, shipped and set up again at the new mine for less money than it would cost to buy a new mill. The changes proposed seem to have been accepted as a matter of course, and the stockholders passed the necessary votes with but little debate on the statement of facts presented at the London meeting. In selecting New Zealand as the scene of its future operations, the company has followed the present prevailing fashion or tendency among English investors; and fashion has as much to do with mining investments as with a great many other matters.

The closing of the Montana mines does not indicate that silver mining in

that State has necessarily become unprofitable—but simply that to make it pay there is required ore of a higher grade than it appears probable that the Jay Hawk & Lone Pine can supply, or else a reduction of working costs greater than seems possible with the present rates for supplies and wages in Montana. At any rate the English company is not disposed to let its capital lie idle or to work at a loss, and so simply transfers it to a point where there is a fair prospect of profit. There have been several previous instances of this kind, the latest being the case of the Harquahala Company, of Arizona, which now owns and is working a mine in Western Australia.

#### Rare Earth Metals.

A correspondent, who is interested in the scientific study and investigation of the earths and rare earth metals, desires information as to their occurrence in all parts of the world. He particularly wishes brief descriptions of the general geological features of the localities where the minerals containing the rare earth metals are found, of the mode of occurrence, methods of obtaining, extent of industry if any, and samples, if same can be forwarded. Although the object is purely scientific, the gentleman is in contact and correspondence with the largest dealers and manufacturers in Europe and in return for information supplied will gladly aid producers in disposing of rare earth minerals. Communications may be addressed to the editor of the *Engineering and Mining Journal*.

#### Carbide of Calcium.

It is of interest to many to know that a new process has been developed in Paris for the manufacture of carbide of calcium by M. Patin, a well-known French engineer. The cost of the production of this substance has hitherto been about prohibitory; but by M. Patin's process, which is in actual practical operation in Paris, it is claimed, the cost has been reduced to \$40, and in districts where there is command of water power it can, it is said, be manufactured for \$30 to \$35. This is a very important matter, as bearing on the future of acetylene gas. Such gas, as is well known, gives a very brilliant light, but, owing in part to the high cost of its production, it has not hitherto made the progress that would otherwise have been expected. With carbide at \$35 or \$40, acetylene gas may have a future.

In another column we have mentioned the organization in New York of a company with a capital of \$1,200,000 to supply light, heat and power, and machinery for furnishing the same. The corporation is known as the Calcium Carbide Company, and intends to work on a large scale. Its directors include some prominent men, among them the well-known chemist, Dr. Francis Wyatt, who has recently conducted a number of experiments with calcium carbide and acetylene, the results of which, it is understood, have been very satisfactory.

#### The Dumoulin Copper Depositing Process.

A process of some possible potential importance is being experimented with in England for the purpose of depositing copper electrolytically, in the form of sheets and tubes, direct from the matte or precipitate. It will be remembered that the Elmore and other similar processes have proved failures owing to the sheets and tubes thus made lacking strength and homogeneity.

The present process is the invention of M. Emilien Dumoulin, of Paris or at least he is the patentee, the actual inventor being a metallurgist and chemist in his employ. The essence of the invention is the special method for rendering the arrangement of the deposited molecules perfectly homogeneous, and thus obtaining uniform strength in the tube as it is formed on the revolving mandrel. In the Elmore process it was endeavored to attain this end by continually pressing on the deposit with an agate edge; but the results did not fulfill expectations, for the agate edge not only did not render the deposit homogeneous, but also did not make the succeeding layers adhere to one another. In the Dumoulin process a body impregnated with greasy matter is placed in contact with the mandrel, so that if any irregularities occur in the deposition of the metal the projecting portions press into the body and squeeze out and become covered with grease. As the grease is a non-conductor further deposition cannot take place on the prominences, but is confined to the hollows. When the metallic surface becomes level again the grease is automatically rubbed off or taken up again by the body. In this way irregularities of deposit are prevented, and so little pressure is put on the surface that lamination does not occur.

The patent for this process has been acquired by an English company, organized by Mr. R. M. Moir, who was once connected with the Rio Tinto Company. Mr. Moir has interested the Rio Tinto people, and Messrs. Matheson & Company, and they and Mr. McKechnie, a Widnes smelter, have conducted severe tests of the process. The tests for strength made

by Kirkaldy show a breaking stress varying from 45,000 lbs. to 52,000 lbs per square inch with an elongation from 10 to 21 per cent., very high figures. The specific gravity of the copper is 8.94, and the electric resistance is 1,580 to 1,590.

#### The Percentage of Zinc in Slags.

The recent discussion concerning the treatment of zinc-lead sulphide ores in our columns touches upon an interesting metallurgical problem, i. e., the percentage of zinc that can be worked off in slags. Not that there is any chance that the problem involved in the treatment of such sulphides as those of Broken Hill may be solved in this manner, but because many ores containing a less percentage of zinc, which but a few years ago were classed as refractory, are now being smelted successfully. Pure silicate of zinc is infusible, and the fusibility of a slag of which it forms one of the constituent parts is decreased according to the proportion of it that is present. Silicate of iron being one of the most liquid of silicates in the molten state, a slag consisting largely of it will carry more zinc silicate than other less fusible compounds, the presence of iron, moreover, increasing the dissolving power of a slag for zinc oxide. It follows, then, that with a large amount of zinc in a charge the resource lies in the direction of a highly ferruginous slag. According to lead smelters, a good slag should not contain more than 7 per cent. ZnO, and though slags higher in zinc are made even by them, it is not contended to be good practice. A typical lead slag adapted to zincy ores consists of 34 per cent. SiO<sub>2</sub>, 34 per cent. FeO, 17 per cent. CaO and 7 per cent. ZnO, but it is quite possible successfully to attain a good result with 35SiO<sub>2</sub>, 38FeO, 13CaO and 12ZnO. An example may be cited in that made at the Herzog Julius and Frau Sophien works, in the Lower Harz, which is made to contain 16.90 per cent. SiO<sub>2</sub>, 35.05 FeO, 19.64 ZnO, 10.24 BaSO<sub>4</sub>, 6.31 Al<sub>2</sub>O<sub>3</sub> and 6.05 CaO, the 6 per cent. remaining consisting of magnesia, lead, copper and sulphur. The slag runs from the furnace hot and smoking and on cooling in the pots bursts into numerous little flaming craters, which soon become incrustated with white zinc oxide, probably resulting from the oxidation of zinc sulphide dissolved in the slag. The slag, which is decidedly a sub-silicate, is nevertheless noteworthy for the amount of zinc it contains, especially in view of the comparatively high percentages of barium and aluminum.

Copper smelters are not as a rule troubled by large percentages of zinc in their ores, but in the concentration of the precious metals by matte-smelting, the variety of ores treated may be as great as fancy pleases, and the slagging of large quantities of zinc blende is often a matter of high importance. Unfortunately, but little data concerning work in this direction has yet been published. The only noteworthy analysis to be found in Mr. Lang's excellent monograph recently brought out is the reverberatory slag of Argo, Colo., in 1892, consisting of SiO<sub>2</sub> 41 per cent., FeO 28 per cent., MnO 7 per cent., CaO 7 per cent., MgO 0.7 per cent., PbO 0.5 per cent., Cu 0.39 per cent., Al<sub>2</sub>O<sub>3</sub> 3.00 per cent., and ZnO 9 per cent. The limitations of the reverberatory furnace are, however, quite different from those of the blast furnace. With respect to the practice in the latter Mr. Lang says that experience has shown that the slag may have as much as 22 per cent. zinc, but he gives no analysis showing the composition of such a high zinc slag. We have known slags to be made successfully in matting blast-furnaces run on the partial pyritic principle composed of 31 per cent. SiO<sub>2</sub>, 42 per cent. FeO, 8.5 per cent. CaO, and 14.5 per cent. ZnO—a singulo-silicate—and 40 per cent. SiO<sub>2</sub>, 38 per cent. FeO, 10.5 per cent. CaO, and 8.0 per cent. ZnO—practically a sesqui-silicate. The former was the easier running slag, though both were comparatively clean with respect to valuable contents. It is well known that a wide range of slags is at the disposal of the matte smelter, but a limitation seems to be put upon the zinc tenor, wholly aside from dangers of loss of silver by volatilization and scaffolding of the furnace so as to shorten the campaign, by the comparatively high specific gravity of the necessary mixture of zinc and iron silicates. When it is considered that the average matte may not be more than specific gravity 5 and a good slag is seldom lower than 3.5, it will be appreciated how small the margin is for complete separation. The specific gravity of a slag may be reduced by increasing its acidity, or its basicity, the latter by lime, but the former is inconsistent with a high percentage of zinc, while it is generally held by lead smelters that high lime and high zinc are incompatible. Thus Professor Hotman says that if 9 to 12 per cent. zinc is present in the charge it is inadvisable to go beyond 16 per cent. lime, while with 28 per cent. CaO, the zinc will refuse to enter the slag at all. Yet there seems to be some doubt as to this point since H. A. Keller, after running a matte-smelting furnace at Leadville, Colo., declared (*Transactions American Institute of Mining Engineers*, Vol. XXI., 1892-3) that "contrary to former custom, slags with a greater percentage of lime are now preferred where large quantities of zinc are present. Of the approved slag types the well-known 1:1 slag with 26 per cent. CaO is often run when economical." We shall be glad to learn the experience of our readers on this point.

NEW PUBLICATIONS.

GEOLOGICAL SURVEY OF ALABAMA; IRON MAKING IN ALABAMA. By William Battle Phillips. Montgomery, Ala., State printers. Pages, 104.

A good many papers have been written upon the coal and iron of Alabama, but they are generally in scattered form and not easily accessible, so that this addition to the literature would be acceptable, simply because it brings together a great many facts in a compact and readable form. Dr. Phillips has had a long acquaintance with the Alabama iron region and plenty of experience in connection with its workers, so that he is thoroughly familiar with his subject. He has treated it from the practical side, having little to say of the geology of the iron-ore deposits, and that only so far as it concerns the conditions of mining. On the other hand he has not said much of furnace practice, which would have probably led to a greater enlargement of the volume than was permissible. The object has been to present the conditions of the iron industry as they exist in Alabama to-day, with especial reference to the supply of raw materials.

After a brief historical introduction, Dr. Phillips takes up the iron ores of the State, describing their general character and treating in turn of the different kinds which are mined and used—the hematite ores, including the soft red and the hard red or limy, the limonite or brown ores. After the ores the fluxes used are described, and finally the coal and coke of the State. The concluding chapter of the main part of the book is on furnace burdens, with some account of the usual practice and of the cost of the raw materials which go to the making of a ton of iron.

The very low cost at which their ore was delivered to them has reconciled the Alabama furnace-men to the use of some inferior material, and to rather loose methods of mining and buying ores. There is, however, a constant improvement in this respect and an increasing disposition to buy ores and fluxes on analysis; to which Dr. Phillips himself has contributed materially both by his writings and his practical work as a chemist.

Additions to the book include a list of all the blast furnaces and other iron works in the State; tables of production of ore, coal, coke and pig iron; several papers by different authors on the grading of pig iron; and a chapter on the markets for Southern iron and how they can be enlarged. The publication by the Survey is timely and the book will be useful.

A PRACTICAL HANDBOOK ON THE CARE AND MANAGEMENT OF GAS ENGINES. By G. Lieckfeld; authorized translation, by G. Richmond. New York and London; Spon & Chamberlain. Pages, 104; illustrated. Price, \$1.

Books on the steam engine are almost past counting, but those on the gas engine are still few in number, and what has so far been written on this subject has been chiefly on the theory and comparative efficiency of the engine, or upon the different methods of construction. But little has yet been published in English on the practical side of the subject, though there are several works of this kind in French and German. The present volume is a translation of the *Handbuch* of Herr Lieckfeld, which has been for some time well known in Germany, with the necessary changes to bring it up to the latest date, and with the addition of a chapter on oil engines.

The book is altogether practical in its character, dealing with theory only so far as is necessary to make the subject clear. Its contents are divided into six parts, the first relating to the reasons for choosing a gas engine, the merits of the different types and the best way of placing and erecting the motor. The second describes the methods of testing engines and ascertaining their performance and economy. The third treats of the running and care of the engine when at work. The fourth is devoted to the defects common to these engines, the difficulties likely to be met with in running them, and the best way of overcoming each. The fifth speaks of the special dangers attending the gas engine—which, like all other heat motors, has its own particular defects—and of the ways in which they can be avoided. The final chapter is on oil engines, showing wherein they differ from gas engines, where their use is to be recommended and how they are to be run.

We have frequently taken occasion to recommend the use of the gas engine and note with satisfaction that its use is extending in this country so rapidly that it promises to become as common here as it already is in many parts of Europe. While we do not believe that it is going to supersede the steam engine, there is little doubt that in a few years it will be of quite equal importance and will be found in use quite as often as its rival.

The present *Handbook* seems to be altogether practical in its directions; they are generally clear and easily understood, and will be of much service to those who own and to those who have the care and running of the motors.

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.

*Memoire sur l'Exploration de l'Or en Siberie Orientale.* By E. D. Lev t. Paris; Edouard Rouveyre. Pages 202; illustrated.

*Journal of the Iron and Steel Institute, London; Vol. XLIX.* Edited by Bennett H. Brough, Secretary. London and New York; E. & F. N. Spon. Pages, 600; with diagrams and illustrations.

*Fourteenth Annual Report of the State Bureau of Labor Statistics: Coal in Illinois, 1895. Containing the 12th Annual Reports of the State Inspectors of Mines.* George A. Schilling, Secretary. Springfield, Ill; State Printer.

*The Chicago Main Drainage Channel. A Description of the Machinery Used and Methods of Work Adopted in Excavating the 28-Mile Drainage Canal from Chicago to Lockport, Ill.* By Charles Shattuck Hill, C. E. New York; 1896; The Engineering News Publishing Company. Pages, 129; with diagrams and illustrations.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested. Letters should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.

The Dry Concentration of Manganese Ores.

Sir: In the *Engineering and Mining Journal* for August 8th, I note an inquiry by F. H. S. relative to dry concentrators for manganese ores. I should suppose, from the limited description given, that dry crushing of the ores to 8 or 10 mesh (or even coarser) and careful screening would put a very large percentage of the manganese into sizes of 40-mesh, or finer, and thus greatly decrease the gross amount passing to the concentrators. I have, in several cases, got excellent results from the Paddock dry concentrator made, I believe, at Ticonderoga, N. Y. It is certainly capable of handling such ores with success. C. W. KEMPTON. ORO BLANCO, ARIZ., August 17th.

Sir: I notice in your issue of August 8th a request for information regarding a dry concentration method for separating manganese ores. The Wetherill Concentrating Company, of Bethlehem, Pa., manufacture a machine for magnetically separating a large number of substances, which have hitherto been considered incapable of magnetic concentration, without previous roasting, to render them magnetic, among them red and brown hematite, siderte, chromite, menacconite, rutile, franklinite, pyrolusite, psilomelane, garnet, and, in fact, almost all of the minerals containing iron or manganese, or both, as well as most of the chemically-pure salts of these metals. Machines of any capacity can be constructed. A plant capable of handling 900 tons per day is now in process of construction for the Sterling Iron and Zinc Company, at Franklin Furnace, Sussex County, N. J.

It is possible to work for quality or quantity, as may be deemed advantageous, depending upon the cost of the original ore or the uses to which the product is to be put. The following is a concentration of a manganese ore:

	Yield in per cent. by weight.	SiO <sub>2</sub> .	Mn.
Original ore.....	.....	43.01	28.78
Concentrates.....	57%	27.85	40.95
Tailings.....	48%	67.20	15.54

MURPHY, N. C., Aug. 15th, 1896.

A. E. HEIGHWAY.

Analyses of Precious Metal Products.

Sir: I am forming a collection of analyses bearing on the metallurgy of silver and should be much obliged to any of your correspondents' works, chemists or others, who could furnish me through your columns hitherto unpublished analyses (complete or partial) of any of the following:

1. Lixiviation sulphides, either "base" or "regular."
2. Argentiferous slimes from electrolytic copper refining works.
3. Retort bullion from amalgamation processes.
4. " " " cupellation.
5. Argentiferous lead or copper matte.
6. Flue dust from lead or silver smelters.
7. Argentiferous speiss "slurry," "sows" and other products of furnaces treating silver or lead ores.
8. Zinc crusts, drosses, hard lead and other refining products.

H. F. C.

The Story of a Buried Mexican Treasure.

Sir: It is a well-known fact that throughout the large Republic of Mexico, there has been deposited from times remote, in caves, wells, pits and under floors of old houses, a vast amount of treasure.

Principally, this treasure is supposed to be the proceeds of the immense and daring robberies committed by the organized bands of brigands and outlaws that infested Mexico during the numerous revolutions that were formerly of frequent occurrence on the West Coast. So recently as seven years ago, only, was the last of these large organized bands of robbers scattered and most were shot on sight; for so determined were the authorities to effectually crush and exterminate these pests of the country that any person not giving a clear and satisfactory account of himself was immediately put to death, without any appeal to judge or jury. Evidences to-day exist showing this arbitrary administration of justice (?) in those troublesome times in the numerous piles of stones, surmounted by rude crosses of wood, which one sees many times in a single day's travel. The chief of this last band, Bernardo by name, had been hiding in the mountain fastness and he was betrayed; it is said by some, for the sake of the large reward offered by the Government, by a woman, but others say he died a natural death and that then his body, riddled with bullets, was taken to the authorities by his friends, who claimed and received the reward. He was a man who had a wonderful power over the people, always aiding and assisting the poor, who in return aided him—hence his remarkable and sensational success for many years.

The writer has visited his cave in the mountains where he ended his career, and did so with great interest, as a mine the writer owned was visited by him and he took all the bullion and money on hand, giving, as was his peculiar and grimly humorous practice, a receipt for the amount taken. Another time he took a mule train of silver bars from this same mine amounting to \$75,000. This notorious brigand must have stolen many millions in silver bars, and the greater part of this is lying buried.

But going back to 80 years ago, there was in existence a still more desperate and far larger band of outlaws commanded by three brothers called Laurianos. These men, during the Hidalgo revolution, when all the Spaniards were compelled to leave the country, but with permission to take their enormous acquisitions of gold and silver with them, rebelled against what they considered or found it convenient to consider the injustice of the Government in allowing so much wealth to be taken out of the country by men they looked upon as tyrants and usurpers; anyhow they raised men in every direction and formed several large bands of

brigands who robbed and plundered the wretched and unfortunate Spaniards on every possible occasion and practically without any opposition.

In one section of the West Coast the amount thus taken is said to be no less than \$60,000,000. Mexican. It is of this fabulous amount of treasure that the writer now proposes to tell.

The story is given in the words of the narrator, and as one of the men who found a part of this treasure is alive, there is no reason to disbelieve it, especially as many people have been enriched by discovering hidden treasure, and as the writer and many others of good standing and repute know that within the last few years the Bernardo band stole and buried millions of dollars. This being so, what must have been the amount plundered from the Spaniards who extracted hundreds of millions from the mines. The old archives which have been found prove this, as Spain was so enriched that she was one of the foremost powers of the world, from merely one-tenth exacted as royalty.

Seven years ago a gang of men were employed laying water-pipes near the town of Matanzas, and among them was an old Indian nicknamed "El Maestro"—the master—perhaps because he was so old and because he was known to have been a member of some of the above-mentioned bands of outlaws.

One evening, after the day's work was over and some of them were sitting round the fire, one of them said: "How I wish I could find a buried treasure, so that I need not work so hard any more." "Ah," replied the Indian El Maestro. "to me a buried treasure would mean death." "Why?" returned the men, with a laugh.

"Do you not know," he answered, "that he who seeks purposely for treasure, and digs and finds it, is sure to die soon?"

"Show us treasure, Maestro; we are not afraid to die."

"Well! Senores, first I will tell you of a small one."

"Four miles from here is a small rancho called Capuchin, with an arroyo (creek) running close to it. Cross that, and the first tecomate (fruit tree) you come to will have a large branch coming straight over the road; in the under part of the middle of this branch is a copper nail, run in with the head downward; fix to this nail a piece of string with a weight on it. At the point where the weight touches the ground, dig 2 ft. deep and you will find 300 silver dollars."

"No! No! Maestro," they cried; "that is too little to die for." "Then I will tell you of one larger," he replied.

"Go to the Hacienda del Monte, eight miles off, and enquire for the old well of the Hacienda, there dig three varas deep, and you will find seven pack-saddles, another vara deeper, a sack of charcoal, two varas deeper, two rocks in the form of a human leg from the knee downward; these rocks are painted in two colors; one vara still deeper, and you will find the grinding stone of a *metate*, placed on the top of seven *cargas* (about \$15,000 to \$25,000) of silver."

For some time after this El Maestro sat silently looking at the fire, not regarding the laughs and jeers around him, but at length he spoke: "You do not believe the old Indian, Senores, but he speaks the truth. Do you remember the robber brothers called Laurianos? It is of them I am about to tell you. When Laurianos took from the Spaniards the gold and silver they were about to steal from the country, there was no place large enough to hold it, so they looked well and at last discovered a safe hiding place in the neighborhood of Cachire, 80 miles from here, in this State. At the foot of a small mountain, known as the Cerro de la Pala, you will see from a distance a white stone monument which will show you which is the mountain, and this monument is placed in front of what was formerly the mouth of a cave. When we buried the treasure we walled up the cave and covered it with earth so that no one would suspect its existence. But you can find it by the monument in front of it. When you have done so, break down the barrier, walk two steps into the cave and you will find a deep pit; the inside is bricked with silver bars and the center filled with money and small bars of gold to the amount of \$60,000,000, Mexican. This I know is here, for I helped to bury it."

Needless to say, no one believed him, and the next day the work being finished, they all dispersed to their homes and no one thought more of the buried treasures.

One day, however, one of these men, the one who is referred to above (a government employee), whose occupation carried him to the Rancho Capuchin, had the curiosity to go down the creek and see if there was such a tree as the one described by the Indian. After a little trouble, he found it, dug as directed, and to his surprise and delight discovered the three hundred dollars, which, after the improvident fashion of Mexicans, he promptly proceeded to spend. He bought a fine horse, saddle, etc., and clothes, went to all the *fiestas* around, and at one of these places he was accosted by one of his former comrades.

"Who have you been robbing," called out the fellow, "to be decked out so bravely?" "No one," said the man, "don't you remember the treasure the Indian told us of? Well, I went to the tecomate tree, dug, and found the \$300. Now I am going to the Hacienda del Monte, to see what I can find there. Will you join me, friend?" "Certainly amigo mio!" returned the man called Serapio, "and there are here, at the feast, Francisco Nunez, Pedro Galvan and Raphael Saratys; but we have no money?"

"Oh," replied the first man, called Manuel Rocha, "I have enough left for all; here is \$20, divide it between you. Meet me to-morrow night when the moon is at the full, outside the Meson de la Cruz and we will at once start for Hacienda del Monte." The next night, having provided themselves with the necessary tools and food, they accordingly set off. To be brief, they implicitly carried out the directions of the Indian, dug and found everything exactly as he had told them, but when they came to the grinding stone and raised it up, to their great disappointment a thick stream of water burst through the side of the well and partially filled it, and though they worked hard; but, having no pump, nothing but an old bucket, and no money to purchase anything to assist their operations, they could make no headway against the water, and at length, in despair, were obliged to give it up and return to their homes.

Being very poor, they did not like to tell anyone of their discovery, lest it should be altogether taken from them by some rich man who might join them; besides they hoped to get money from the other treasure that they had not yet looked for.

They finally decided, having some provisions left, to start off for Cachire, but when they got there could find no one who would tell them where the Cerro de la Pala was. Superstition was too strong to be over-

come, either by entreaty or hope of reward, and money was wanting with which to pay, cash down, for the information so urgently needed and without which no hope of success could be entertained. Here, almost without touch of millions, the small party, after as long a search as their limited stock of provisions allowed, had reluctantly once again to defer their hopes, and weary and dispirited, one by one, they went their way, to still work hard for their living and with their unique and almost crushing knowledge of such untold wealth, their life seemed harder than ever.

The question often arose as to how they could benefit by their knowledge, and at last Manuel Rocha decided to risk all and confide in his *compadre*. Who else could he trust? Besides had not his *compadre* also found buried treasure, and by this means had become on friendly terms with the three foreigners who had perhaps the means and the will to join in the hunt for all these millions. So be it! the *compadre* was confided in; he could and did rely on the good faith of the blind foreigner, who had often proved a good friend, and so at last a meeting was held and the three foreigners have agreed, after the rainy season is over, next September or October, to club their available resources, perhaps \$200 or \$300, and, to the extent of their means, try and obtain some, at least, of the buried treasure.

There are Indians who know where the mountain is and for a cash consideration will divulge the same.

The means to unwater the old well can be easily obtained and applied.

The old Indian's story has so far proved to be quite correct in every detail; 1st, the finding of the \$300 or treasure No. 1; 2d, finding the well with contents as stated by him until the water stopped further exploration.

Is it not reasonable to place some reliance on the facts already proved, that such a treasure really exists? It may be that instead of \$60,000,000 there are only \$6,000,000, although the amount, large as it is, is not at all beyond what was probably captured by these old robber bands.

M. PARRY GOSSET.

[The writer of this interesting letter, Mr. M. Parry Gosset, is a respectable mining engineer of much experience in Mexico. As Mr. Gosset had on a previous occasion learned from the same native Mexican the location of one of the hidden historic gold mines of Mexico, and had actually found the old workings as described and is now opening them and reports having found ore of unusual richness he attaches no little importance to this story of the hidden treasure and expects by the expenditure of but a few thousand dollars to prove or disprove it. He thinks "the gamble" a better one than in most undeveloped mines, and if successful the returns will be prompt and large. As the amount he accepts from each "gambler" is small he thinks "it never will be missed" if they are not successful, and since no one is trying to make money out of this "gamble" except by the discovery of the hidden treasure, no harm can come of it. If it should be successful, however, we fear for the credulous who hereafter will be inundated with less innocent schemes.—Ed. E. & M. J.]

**Belgian Coal Exports.**—The exports of coal from Belgium in the first half of 1896 were 1,968,706 tons, as compared with 2,199,732 tons in the corresponding period of 1895. In these totals the exports to France figured for 1,477,149 tons and 1,713,802 tons respectively. It will be seen that the decline in this year's exports is almost entirely attributable to diminished deliveries to France.

**Lignite Production in Bohemia.**—The directors of the Aussig-Teplitz Railway publish the statistics of brown coal production in Bohemia. The total production in the two districts, Elbogen-Falkenau and Teplitz-Brüx-Komotau was 14,700,000 metric tons. The value of the coal varied between 1.88 kreuzer (75c.) and 1.36 kreuzer (62c.) per ton. The total production was 740,000 tons greater than in 1894.

**Electric Iron Smelting in Sweden.**—It is again announced that Dr. G. de Laval and Engineer Robsahm, of Stockholm, have obtained from the Swedish Government a concession for the establishment of a company for the smelting of ores in electric furnaces on a large scale. The capital is to be 15,000,000 kroner (\$4,020,000). Water power at Trollhättan is to be utilized, and all the de Laval patents for electric smelting are to be acquired.

**A Large Wheel.**—One of the largest wheels ever cast in one piece has just been turned out of the works of Thomas Firth & Sons (Limited), Sheffield Eng. It is of cast steel, and is intended for the rail mill of the Ebbw Vale Steel and Iron Company. It is 12 ft. 6½ in. in diameter, 9-in. pitch, 32 in. wide, and weighs 18½ tons. It has a set of double helical teeth. The whole mass was cast without a hitch. The wheel is the heaviest ever cast in one piece at the Norfolk Works, and ranks among the largest ever cast in the kingdom. Messrs. Firth & Sons are now at work on a wheel of much larger diameter, but not of such great weight, and they are also casting an immense hammer block, which, when completed, will weigh 25 tons.

**Burmese Coal.**—The Burma Coal Company recently sent two samples of coal to the Imperial Institute in London to be reported on. The first sample gave the following analysis: Fixed carbon, 33.57%; volatiles, 57.93%; sulphur, 0.33%; ash, 8.50%. This coal does not coke. This should be a good gas coal, and compares very favorably with any of the coal from the Raneeunge series. The second sample sent by the same company can hardly be called coal. The amount of ash the coal contains and the small amount of fixed carbon show it to be practically useless for fuel. In appearance it is not unlike some of the denser forms of lignite and of boghead cannel, but it is of very much higher specific gravity and contains no less than 68% of mineral matter (ash), consisting entirely of alumina. The fuel value of the material is very small indeed. It is even doubtful whether it could be used in its own locality with advantage for the production of Siemens gas, and its percentage in bituminous matter precludes its application to the purposes for which the boghead mineral is utilized.

## WALTER CRAFTS.

In the death of Walter Crafts, which occurred suddenly from heart disease, at the Monongahela House, Pittsburg, Pa., on August 2d, the engineering profession has lost one of its most eminent representatives, and the country a citizen whose every word and act brought honor to it and added to the esteem in which Americans as engineers and business men are held throughout the world. Mr. Crafts was born at West Newton, Mass., January 21st, 1839. After his preliminary studies at the schools of that place he entered, in 1856, the Rensselaer Polytechnic Institute, at Troy, N. Y., and graduated there as a civil engineer in 1859; though he was obliged to suspend for one year his studies there, owing to the accidental death of his father, a contractor, while building a stone bridge over the Charles River in Massachusetts.

After leaving Troy Mr. Crafts went to the mining academy at Freiberg, Saxony, from 1860 to 1862, and on his return to America was engaged in copper-mining work in Michigan for a few years. From 1866 to 1870 he was in charge of iron-ore mines at West Stockbridge, Mass., and then went to Alabama, where he was superintendent of the Shelby Iron Works (mines and furnaces) until 1876, and by his excellent management brought this company up from an involved condition to a state of great prosperity. Mr. Crafts went, in 1877, to Columbus, O., and was until 1883 treasurer and manager of the Crafts Iron Company, of Greendale, O., when he became vice-president and treasurer of the Hocking Coal & Iron Company. He subsequently spent a few years in charge of iron works at Anniston, Ala., then up to the time of his death he was president of the Commercial National Bank, of Columbus, O.

Mr. Crafts was a man of absolute integrity, of self-sacrificing benevolence and of practical sympathy with those who deserved it. He was a clear-headed, successful business man, and a warm and loyal friend in whom no trust was ever misplaced. This is the testimony of his schoolmate and friend for forty years. Alas, how few are thus faithful unto the end! Mr. Crafts leaves a wife and three children to mourn, with countless friends, his untimely death.

## THE SEA-MILLS OF CEPHALONIA.

Written for the Engineering and Mining Journal.

Under this title Messrs. F. W. & W. O. Crosby publish, in the *Technological Quarterly* of March, 1896, an article of extraordinary interest. The facts on which it is based may be briefly stated as follows:

Near Argostoli, on the coast of the Greek island of Cephalonia (the Samos of the Odyssey) there are currents of water, coming from the sea, and disappearing in the land, without visible return, which are so strong and constant that they were long used for driving the undershot water wheels of flouring mills. This use has been discontinued in recent years, by reason of the erection in the region of large modern mills, which have rendered unprofitable not only the small and rude sea-mills, but also the once numerous windmills of the island. But the sea currents still continue to flow with unabated force and volume. The authors estimate the daily amount of water thus disappearing in the porous and fissured limestone at approximately 6,000,000 cu. ft.

Scientific accounts of this phenomenon are extremely rare, and no satisfactory explanation has been offered of the essential question, what becomes of this vast body of sea-water. It cannot be connected with tidal action, for this part of the Mediterranean is practically tideless, and, moreover, the currents under consideration are not at all periodical. Prof. D. T. Ansted, who published in 1863 a book on the Ionian islands, says the water must be evaporated in subterranean caverns; but this hypothesis lacks proof or probability. According to his estimate, the evaporation would yield annually more than 1,800 cu. yds. of salt; there are on the island no indications of such vast subterranean accumulations of salt; the notion of a rapid underground evaporation is not plausible; and the existence of caverns or fissures sufficient to receive this product for a century without choking is more than doubtful.

The idea that the water may drain away to some surface basin below sea level, where it can evaporate rapidly, is negated by the absence of any such known basin nearer than the Dead Sea, which is a thousand miles away.

The authors suggest as the explanation of this phenomenon the effect of subterranean heat in promoting a water circulation, and support this theory in a very clear and ingenious way. It seems to me that they have established for it a high degree of probability. According to their view, the water disappearing at the surface returns to the surface again through

fissures, in which it has been heated so as to render the ascending limb of the circulation specifically lighter than the other. In this particular instance, they think it probable that the water of the sea mills is returned through the sea bottom.

But the most interesting part of their discussion is not so much the explanation of the sea mills as the bearing of this explanation upon the general theory of underground circulation and its connection with the formation of ore-deposits. In this view the sea mills of Cephalonia become a striking illustration of the theory, expounded by Poëpny and powerfully support the "ascension" school. I recommend to mining geologists the careful study of this paper.

R. W. R.

## MINING IN THE MOJAVE DESERT IN CALIFORNIA.

Written for the Engineering and Mining Journal by F. M. Endlich.

Kern County, California, has only recently been known as a gold-producer. About three years ago a few venturesome prospectors essayed to examine the narrow mountain ranges which separate the individual valleys constituting the Mojave Desert.

Intense heat, endless sand-clouds and lack of water rendered their work anything but pleasant, yet they found reward in the gravel of waterless canyons and along sandy ridges. Little was said at first, and less believed of the rumors which credited them with finding a \$1,000 gold nugget, and numerous others worth more than \$100. And yet they were true.

Eventually the usual rush to the new placers started. An area of over 2,500 acres was found to be gold-bearing, but there was no water within reach. Under the circumstances, all work was done with dry washers, a most primitive method of saving gold. Nevertheless, in a little more than two years the Goler District had yielded more than \$500,000 in nuggets and dust.

After the value of the Goler camp had been demonstrated, further discoveries of placers were made to the southward, in the Last Chance and Red Rock districts. Here, too, the lack of water interfered greatly with the proper extraction of the gold. Under such adverse circumstances neither systematic nor regularly sustained work could be expected, and most of the men abandoned their claims after roughly working over the most favorably located spots. At the present time but a handful of men are to be found in these districts, although the ground has barely been scratched. The time for individual labor has practically passed by.

The occurrence of placer-gold naturally led to a search for veins from which it might have been derived. Quite recently the Randsburg District has been established, not far from Goler,

and present developments prove the existence of gold-bearing quartz veins. Still later some excitement was caused by the discovery of similar veins near Soledad Canyon, which belongs essentially to the same geologic system as the Randsburg mines.

Skirting both slopes of the narrow ranges northward of Mojave Station, the gold-bearing gravels are found at a distance of 30 to 50 miles from the Southern Pacific Railroad. A broad valley with alkaline soil and but a few springs along its edges, affords easy transportation to the placers. Eighty miles beyond them the Panamint District is beginning to be recognized as a gold camp.

On either side of the valley the ranges rise 1,500 ft. above it, sending narrow, bench-like ridges downward to meet the lower ground. In part these ridges are gold-bearing throughout, although of low value. The depressions between them, temporary water-courses, are better supplied with the metal. At Goler Camp a narrow, rocky canyon leads upward to the divide, and it was within this canyon that the richest gold-deposits were found. Apparently the canyon was formed by disruption, so that the gravel extends to a great depth. Near its mouth a shaft was sunk for over 300 ft. without striking bedrock. At other points, especially where the confining rock-walls closely approach each other, the gravel extends downward for but a short distance. In determining the chances of finding gold on the bedrock within a canyon, the method of genesis of the latter and the contour of its bed-rock surface are of prime importance. Ravines, draws and arroyos lead laterally into the main canyon and form depositories for gravel. A unique feature is, that near the highest points of the range, at the head of Goler Canyon, isolated deposits of gravel occur, small in extent, but of unusual richness. Apparently their position is anomalous, but can be explained under the assumption of certain data given below.



WALTER CRAFTS.

Certain interesting facts are found in connection with the Goler placers, some of which are partially reproduced at Red Rock. Metamorphic schists and slates form the country rock, heavily fissured and charged with iron oxides. The latter are evidently secondary products, although their origin is not quite clear. At some points in the range such oxides so thoroughly permeate the rock as to produce intense coloration. It is evident that the schists have been subjected to enormous strains due, probably, in part to eruptive action, in part to subsequent, seismic disturbances. Dikes and overflows of trachytic and doleritic lavas are rather numerous in the ranges, although they seem to bear no immediate relation to the mineralization of the rocks.

Near the Goler Divide vast masses of gravel, sand and some clay overlie the schists, effectually concealing the more ancient courses of erosion. The boulders and gravel here found are foreign to the locality. Their origin is probably glacial and they were transported for long distances from their original sources prior to a period of gigantic erosion. There is evidence that this material has furnished much of the fine gold found in the upper gravels of the district, the latter becoming gradually enriched by a process of successive concentration. The coarse gold, in structure and appearance, indicates an origin in the schists. In many cases the nuggets really resemble casts which had schistose material for their molds. As the genesis of nuggets, however, is unexplained, there is no reason why it should not be assumed that these nuggets are accretions formed within suitable cavities in the schists from fine gold primarily contained in the glacial drift or in the older gravel, as well as in the schists themselves. The latter are distinctly auriferous, but thus far no nuggets have been found attached thereto, except when cemented by some substance of secondary deposition.

As a matter of interest it may be stated that the channels bearing the older gravel do not coincide with the superficial ones, and that they are almost entirely hidden from sight by overlying gravel and debris.

In various localities the upper portions of the bedrock underlying gold-bearing gravel have become the repository for more or less gold, but in this respect Goler presents some extreme features. Certain sections of the most prolific ground really contain no gravel whatever. As a matter of fact the country rock has been crushed into small angular fragments to a depth of 8 to 16 ft. below the present surface. These fragments are loosely cemented together by a soft clay, irregularly distributed, and they are the result of several successive crushing strains exerted in different directions. The causes for their formation are purely physical, not chemical. Into the interstices, cracks and seams, which were not filled with clay, the gold has found its way in proportionately large quantities and in pieces of relatively large size. The rock, in this condition, has effectively taken the place of riffles. Within the zone of this broken rock narrow, shallow channels of gravel are found, exceptionally rich and different in character from the superficial channels. The conclusion is obvious; they belong to the older series of gravels which have, to some extent, been scored away, but of which large masses must still remain underneath the more recent deposits.

At Red Rock similar conditions obtain in certain localities. There can be no doubt that the working of these placers would disclose a number of instructive facts, pertaining more especially to the natural concentration of gold during transportation.

Randsburg district lies opposite Goler in a metamorphic range. The veins traverse granite, carry quartz as gangue and rather coarse, free gold as value. They are of good workable size, clean-cut and bear all the marks of persistency. It is somewhat difficult to predict how the ores will change below the reach of surface-action, but probably the gold will be associated with pyrite, although it would not be surprising to find it in the form of tellurides, in part at least. In value the ores hold out well, the first class, hand-sorted lots being worth several hundred dollars to the ton. Three small, light mills have been erected near springs, but water is not sufficiently abundant to run full time. The camp is in its infancy, but, thus far, has come up to expectations.

Panamint is somewhat more advanced than Randsburg in certain respects and bids fair to prove of considerable importance in despite of its distance from the railroad.

All of these camps, both placer and quartz, are but the modest beginning of a mine-development which will open an entirely new section of country. Even a cursory glance at the mountain ranges which form part of the Desert cannot fail to show that the rocks are highly mineralized, while their colors, sometimes intensely brilliant, are mainly due to compounds of iron, yet experience has shown that the formations here predominating rarely show such extensive mineral impregnation without carrying the precious metals in one form or another. Large quartz veins setting across the trend of the country rock are noticeable for long distances, and their utilization is only a question of time, although they are reported to be of low grade.

With the advent of water the prosperity of this section is assured unless all signs fail. While a supply could be obtained by boring in the valley, it is very alkaline, brackish, or strongly saline. A large quantity, however, amply sufficient for purposes of hydraulic mining, milling, concentrating and irrigation can be obtained from several points, 45 to 90 miles distant. That this will eventually be done hardly admits of question, because the profits will be enormous, as compared with the outlay and the demand for the water has been created. As a result we may see in time the dreaded Mojave Desert dotted with mining camps in flourishing operation, with cattle ranches and truck farms skirting the mountains.

**Coinage of the Mexican Mints.**—The coinage of the mints in Mexico for the three months ending March 31st was, in Mexican dollars: Gold, \$165,735; silver, \$5,724,500; copper, \$6,500; total, \$5,896,735. This is, as compared with the corresponding quarter of 1895, an increase of \$64,166 in gold, a decrease of \$1,04,817 in silver and a decrease of \$5,500 in copper; showing a decrease of \$946,151 in the total value.

**German Coal Trade.**—For the half-year ending June 30th, Germany exported 5,363,221 metric tons of coal, 6,840 tons of liquite (brown coal), 97,677 tons of briquettes and 1,040,923 tons of coke. The imports for the same period included 2,382,251 tons coal, 3,698,718 tons lignite, 37,604 tons of briquettes and 188,818 tons of coke. The coal imported comes chiefly from Great Britain, the lignite from Austria, the coke and briquettes from Belgium.

#### A SIMPLE HYDRAULIC ELEVATOR.

Written for the Engineering and Mining Journal by J. D. Reid.

If the efficiency and simplicity of the hydraulic elevator was more generally known there would be no question about the difficulty of working flat placers if sufficient water could be had. And if the value of the gravel was 25c. per cubic yard the margin above cost of working should satisfy any reasonable expectations.

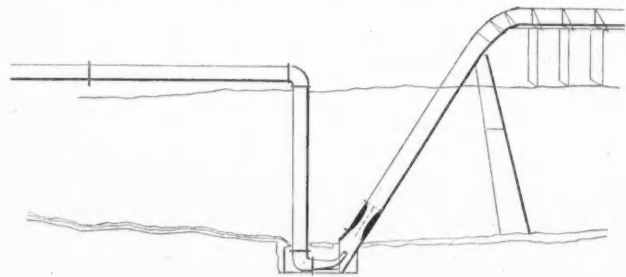
The elevator here illustrated is not patented, and in two days a carpenter could make one of hard-wood plank, lined with sheet iron or steel, that would be good for raising 10,000 cu. yds. before it was worn out. The throat and the upper side of the curve where there is the most wear can be made interchangeable and replaced with new parts in a few minutes when worn too much for effective work.

The extra cost of an elevator in a hydraulic plant would be so little that it would hardly be worth taking into consideration; a few feet of pipe, a curved nozzle, the elevator box lined with iron or steel, and a chilled cast-iron or steel throat, would be the extra outfit. It is light enough to be portable and can be moved forward as the work progresses and the gravel dumped back on the cleared ground.

It apparently requires twice as much water to operate an elevator as in ordinary hydraulic mining, but practically no more is needed, for the elevator will raise all the gravel that the water from the cutting and elevating nozzles can carry through the elevated sluice-boxes, and the force with which it ascends and the scouring it receives in its journey is equal to the effect of many feet of sluice-boxes.

All the attention the elevator requires is watching to prevent any rocks or boulders of larger diameter than the throat entering the mouth. If by accident it should become choked it is readily cleared by opening the door, lifting out one-half the throat-piece; the obstruction can then be removed.

The principle of the elevator would be the same in all mines, but the construction must vary with the varying conditions of mine. The diam-



A SIMPLE HYDRAULIC LIFT.

eter and length or height of lift must be in proportion to the diameter of the elevator nozzle, the diameter of throat, the quantity and head of water. The upper end should have the proper curve to produce the least friction of the gravel in its passage and the angle of elevation should be precisely the same as the angle of curve in the nozzle. If these proportions are not observed it may not do the work required.

If the contour of the ground will not permit of gravity-working, steam pumps can be used if fuel is convenient and water abundant, as the nozzles can be attached to the discharge pipe of the pump and pressure regulated to suit the elevator and the force of the cutting nozzles.

With steam it should not cost over 8c. per cubic yard to work the gravel, and by gravity one-half less, though the cost will be governed by the quantity of rock or boulders to be moved by hand. In a moderately small operation where water is naturally convenient and fuel plenty, a steam plant will be the cheapest, as it will save a large outlay for dam, ditches, fluming and piping, which may, perhaps, amount to many times the cost of a steam plant.

**Manganese Ore in the Caucasus.**—A meeting of manganese ore mine operators was held recently at Kutais, and arrangements were made to obtain certain privileges from the Government. The exports of manganese ore from Russia, it was stated, were 10,110,000 pounds (165,600 metric tons) in 1895, against 8,965,000 pounds (146,850 tons) in 1894.

**A Comparative Test of a Compound and a Single Expansion Locomotive.**—A test was made on two engines belonging to the Chicago & Northwestern Railway Company on through freight service between Milwaukee and Sheboygan. Six round trips of 104 miles each were made with each engine. The engines were ten-wheelers of Schenectady make, one a single expansion 19 x 24 in., the other a two-cylinder compound 20 in. and 30 x 24 in. All other dimensions were the same on both. The object of the test was to compare the efficiencies of the two engines doing as nearly as possible the same work under the same conditions. A special effort was made to make a comparison of the engines only, and care was taken to eliminate, both in the test and in the computations, all differences due to the boilers such as variations in quality and pressure of the steam. The average percentage of coal saved by the compound engine was 7.74%; water per I. H. P. hour, actual, 17.72%; water per I. H. P. per hour for dry steam at 160 lbs. gauge, 20.32%; water per ton mile, actual, 9.15%; water per ton mile for dry steam at 160 lbs. gauge, 11.94%, and water per mile per ton of train resistance for dry steam at 160 lbs. gauge, 14.27%. The last is considered to be the most nearly correct basis for comparison. The road was characterized by sudden and frequent changes of grade. In this distance—52.2 miles—there are 16 grades of 1% and over. This, with other unavoidable circumstances, was unfavorable to the compound engine; and we are therefore justified in the conclusion that the compound made the saving indicated above under conditions which, in so far as they were not the same, were more favorable to the single expansion engine.—*Wisconsin Engineer.*

## MISSOURI GRANITES.\*

By Charles E. Keyes.

Of the available stones suitable for building purposes in Missouri the granites are the most important. These rocks are confined to the southeastern part of the State, where they occur in irregular masses and isolated hills extending over an area of nearly 3,000 square miles. The series consists of granites and porphyries as the principal types, with several varieties of dark, trappean rocks, which are chiefly diabase and which occur in the form of dikes. All are very old, in fact the most ancient rocks exposed within the limits of the State. They are regarded as igneous in nature, and as pre-Cambrian in age. The nearest exposures of rocks of like antiquity occur in Northern Wisconsin and Min-

masses for many miles, with occasional outcrops as far as the boundary line of Butler County. To the southwest they extend into Shannon County and perhaps even beyond. They stretch out to the west almost unbrokenly to the east fork of Black River; while numerous scattered hills continue even beyond the middle fork of the same stream. Toward the northwest similar rocks occur at short intervals as far as Little Pilot Knob in Washington County.

A special examination of the granitic rocks was undertaken recently according to the most advanced petrographical methods; and a very thorough study made of them in thin slices under the microscope. Previous to this investigation the character of the Missouri crystallines was known only in the most general way. But in their microscopical study a mine of information has been opened; the mineralogical constitution and the relations of the various minerals to one another has been deter-

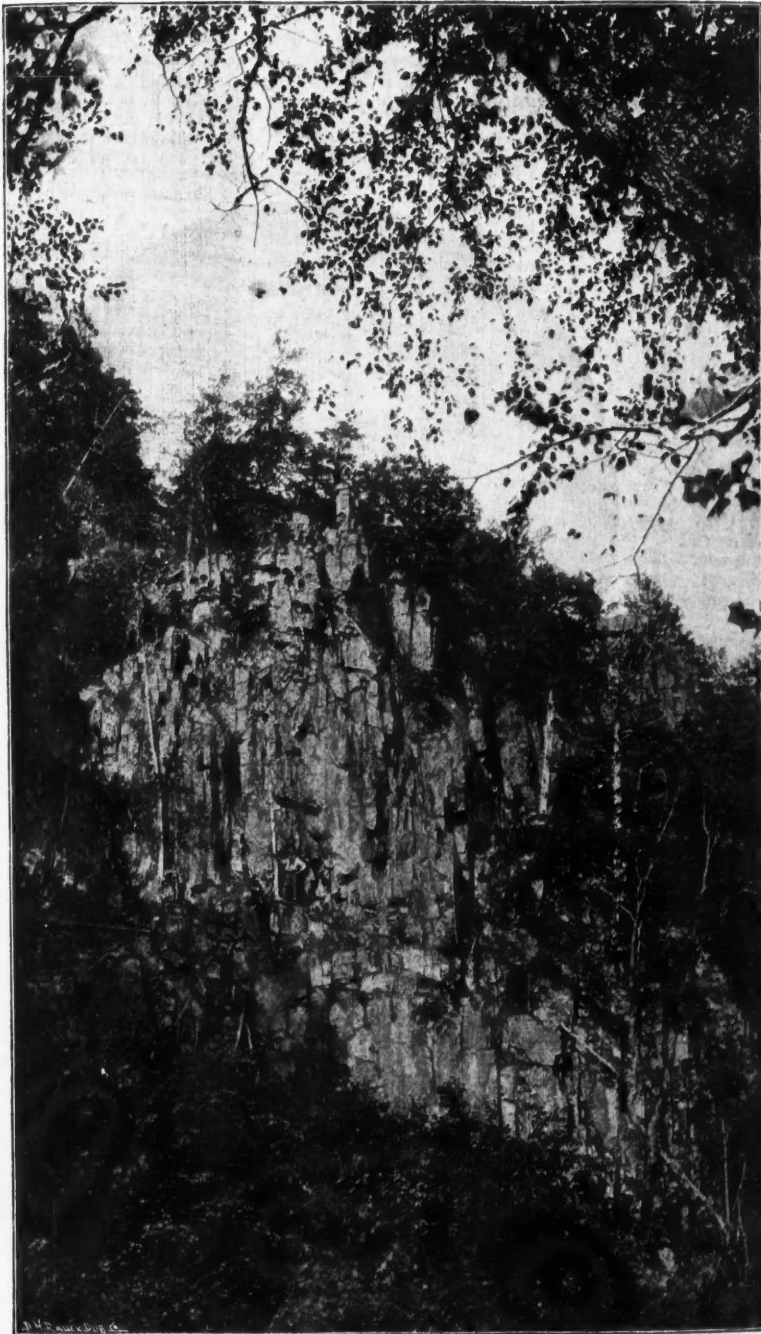


FIG. 1.—PORPHYRY COLUMNS AT FRENCH MILLS, ON MARBLE CREEK, MO.

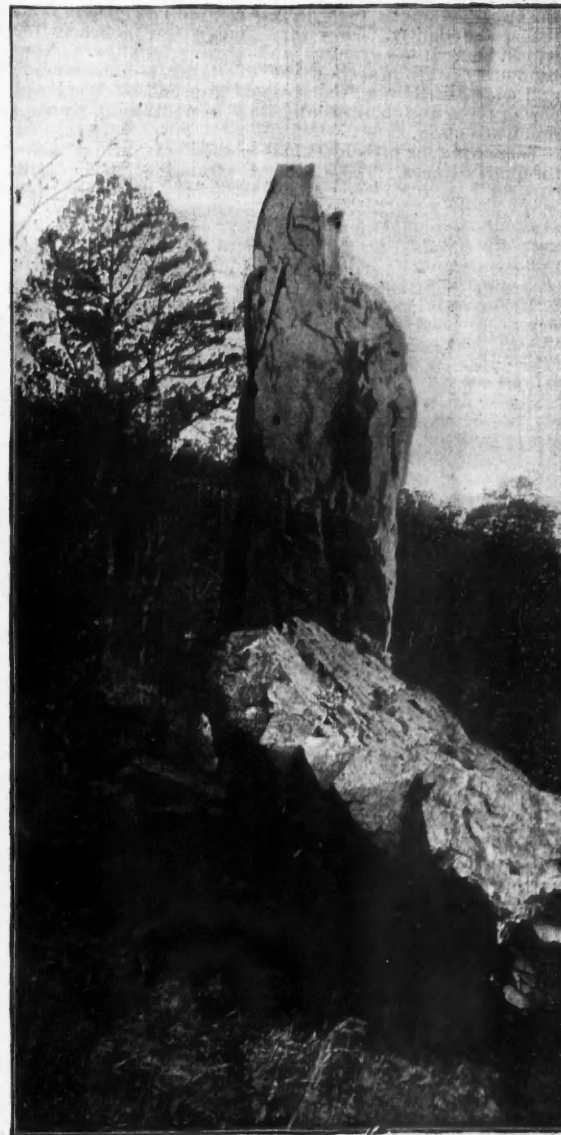


FIG. 4.—FELSITE PILLARS, SHOWING CHARACTER OF THE ROCK IN WEATHERING.

nesota. Outcrops of other crystalline masses are found in Central Arkansas, but all of these are much younger, probably Cretaceous, and consequently are in no way related to those of Missouri.

The approximate center of the crystalline district is Pilot Knob. For a distance of perhaps a dozen miles in all directions from this point the massive crystallines form the greater portion of the surface rock, while in an easterly direction they are practically continuous for more than twice as far. Beyond the large central field the exposures gradually become less and less frequent. To the north they do not reach much beyond Bismark. Northeastward they are found in Ste. Genevieve County, 30 miles from Pilot Knob. On the east, hills of similar rock are abundant as far as Castor Creek. To the south they stretch away in large

mined in great detail. The first results of the general investigation have been published as a part of Vol. VIII. of the reports of the Missouri Geological Survey. It is a strictly petrographical study with little direct reference to its economic bearing, but it forms the foundation upon which is now being reared a structure of great popular interest and value. The title of the work is the "Crystalline Rocks of Missouri" and is the outcome of researches conducted by Dr. Erasmus Haworth, formerly assistant geologist.

All tests and examinations go to show that for all kinds of building, constructional and ornamental work the granites of Missouri are unsurpassed. Already the stone has been used in leading structures in Dallas, Kansas City, Omaha, St. Louis, Des Moines, Minneapolis, New Orleans, Chicago, Indianapolis, Cincinnati, Cleveland, Baltimore and many other large cities. It has been transported 1,000 miles for buildings.

\*Abstract of article in *Stone*.

Geologically speaking, the district contains the oldest rocks of the Mississippi basin. The porphyry appears to be the surface facies of the coarse-grained granite and seems to graduate downward into the latter. The graduation is shown in all the areas where the granite has been deeply eroded, leaving high, steep hills, the summits of which are often capped by porphyry.

This being the case, the general relation of the granite to the porphyry is that the latter rests as a broad sheet upon the former. Where the flinty crust, as it were, is not broken through by erosive agencies the porphyry still remains as the surface portion of the general crystalline mass.

The continuity of the massive rocks is interrupted by numerous lines of fracture. Most of them are merely joint planes; many are slight fault lines; while still others have the walls spread apart, the space being filled with basic material which often forms dikes, sometimes of considerable breadth. Fig. 1 shows porphyry columns on Marble Creek, illustrating jointing characters.

Faulting is commonly quite unimportant, the throw being usually not more than a few feet. Some notable exceptions, however, are known. The position and extent of the dislocations are more clearly defined in the stratified rocks than in the crystallines. Dikes of basic rock occur rather abundantly. They vary from a few inches to 150 ft. or more in width, and cut the granites and porphyries alike. Nowhere have they been observed to penetrate the overlying sedimentaries. Their number and wide distribution, the great weight and black color of the rock composing them and their peculiarities in weathering cause them to attract much attention.

There are four principal kinds of rock that are suitable and available for quarry stones. These are: 1. Granite (biotite granite, or granitite).



FIG. 2.—THIN SECTION OF GRANITE  
(Magnified 30 diameters.)

occasionally a small amount of feldspar. Sometimes the segregations are so large as to cause considerable annoyance in the quarrying.

Hornblende has been observed in a few instances, and then only very sparingly. Of all the thin sections of the rock examined less than half a dozen have contained this mineral and then only as occasional crystals. Much of the dark-colored component which is commonly called hornblende is not such, but black mica. Both potash and soda feldspars are represented, the former constituting much the greater part of the rock. It is the reddish orthoclase and microcline that imparts to the granite its characteristic color. The triclinic feldspars are albite and oligoclase.

The minute characters are of particular interest and have an important bearing upon the value of the rock as a building stone. In thin slices under the microscope the granite is found to be an allotriomorphic or hypidiomorphic granular aggregate of quartz and feldspar, with some mica and the accessory constituents in minute crystals. Its general appearance is shown in the accompanying photomicrograph, Fig. 2, which is magnified 30 diameters. The fundamental differences in the appearance of the granite and the porphyry is easily made out.

Structurally, two varieties of the granitic rocks are represented. First, there is the perfectly granular, in which the component grains are all more or less uniform in size and in which the different periods of crystallization are not distinguishable. This is the typical granite. Second, there is the variety in which a great part or less disparity in the dimensions of the essential constituents is observable, and in which at least



FIG. 3.—THIN SECTION OF TYPICAL DIABASE OR BLACK GRANITE.

2. Syenite (granite-syenite). 3. Porphyry (felsite). 4. Black granite (diabase, "greenstone").

**Granite.**—Typical granite composes about one-fifth part of all of the crystallines in the district under consideration. In color the stone is a warm red to pink, in places merging into gray. Though usually a coarse-grained rock, fine-grained varieties are of frequent occurrence. The arrangement of the constituent minerals give very beautiful effects of contrast. All the granites take a very high polish, are very strong and are very durable. Extended examinations in thin slices under the microscope clearly indicate that the rock is in a remarkable degree free from objectionable constituents. Both chemical and field investigations corroborate these observations. The rocks consist almost wholly of a granular aggregate of quartz and feldspar. White mica (muscovite) is entirely absent. The black mica (biotite) present, which is usually one of three essential constituents and a mineral which is the first of the principal components in most granites to break down under meteoric influences, is reduced to a minimum, and in many cases it is almost entirely absent. The feldspar is for the most part orthoclase, the most durable of the feldspathic minerals. Accessory components liable to decomposition are wanting.

As a rule the texture approaches the porphyritic and the rock passes into a true granite-porphyry. The rock frequently becomes fine-grained, graduating into typical porphyry.

Analyses show that the typical granites of the district do not differ materially from typical granitic masses in other parts of the world. The degree of acidity often varies between rather wide limits. The great preponderance of the more indestructible constituents is also indicated by the results of chemical examination. The granite is a mixture of quartz and feldspar as the principal components, with some biotite also as an essential ingredient. As accessory constituents there are apatite, zircon and magnetite. In order of crystallization the three minerals last mentioned are the first to form. They occur in minute crystals, commonly with more or less well-defined crystallographic faces. They appear as inclusions in all of the later-formed minerals.

Next in order of formation are the ferro-magnesian silicates—biotite and hornblende. Both of these minerals are comparatively rare. The first mentioned is an important constituent only in a few cases. It is unevenly distributed, so that at some points the rock containing it is quite mottled, though only a short distance away the mica is entirely absent. Further, in a locality where black mica occurs it often forms segregation masses from a few inches to a foot in size. Although apparently made up of this mineral a close examination shows the presence of quartz and

two generations of crystals may be readily made out. In its best development it is the porphyritic granite. The feldspars show little indications of decomposition, which is a very favorable point in determining the value of the rock for building purposes.

As a quarry rock the granite has a number of features recommending it. It is jointed in such a way as to make quarrying both easy and economical. The proximity of the fractures varies at different points. In some places they are close enough together to permit paving blocks being taken out with the greatest facility, in other places monoliths of any size may be obtained, perfectly free from seams and defects. The stones are readily split in quarrying and easily dressed in preparing these for the purposes for which they are designed. Furthermore, very little stripping is required in obtaining access to the stone.

**Syenite.**—The rock to which the name is given is usually applied in the region to a blue granite, in contradistinction to the gray or red granite. It is properly a syenite-granite. In texture and other physical properties it is nearly the same as the red granite. Mineralogically, however, it differs from the ordinary granite in containing hornblende and much more black mica. It contains the least quartz of any granite rock in the region. The blue color is imparted chiefly by the biotite and hornblende, though the feldspar also has a peculiar bluish tint.

There are several square miles of this variety of granite lying southwest of Syenite and Knob Lick, all of which is easily accessible. The stone takes a brilliant polish, but it is necessary to exercise some care in selecting the rock for dimension work, as often small seams are present which render fracturing easy. This would, however, doubtless be largely overcome by the adoption of better methods of quarrying.

**Porphyry.**—The felsite, as the porphyry is commonly called locally, is abundantly and widely distributed. The felsite pillars in Fig. 4 illustrate the character of the rock. It is a very close-grained, often almost glassy, rock having a variety of colors, pink, red, purple, green, brown and black in many shades. It takes a brilliant polish. The rock is extremely hard and flinty, rather brittle and breaks with a somewhat conchoidal fracture. On account of the difficulty in working and dressing the porphyry is not very well suited for dimension work.

In texture there is considerable variation. The ground mass is dense and very fine-grained. The fine-grained, compact character of the rock enables it to resist degradational influences in a remarkable way, as is shown by the fragments loosened in jointing, which preserve sharply all their irregularities long after the hardest granite boulders have become perfectly rounded or entirely decayed. The rugged topographic forms presented also clearly indicate the same properties of withstanding



weathering influences. The fracture of the porphyry is splintery or sub-vitreous.

Chemically the porphyries are essentially the same as the granites. In those varieties which have been examined carefully there is not much variation in acidity, rarely more than 4%, the range being from 68.60 to 72.4%.

What has already been said regarding the mineralogical composition of the granite applies also to the porphyry. The chief constituents are the feldspar and quartz, but the difference in structure of the rock gives them very different relationships. The accessories, zircon, magnetite and apatite are found scattered through the ground mass. The ferromagnesian ingredients are not as a usual thing well developed. The feldspars are the same as those of the granites and comprise the four varieties: orthoclase, microcline, albite and oligoclase. They range from grains of microscopic dimensions in the ground mass to large phenocrysts an inch or two in length. The porphyritic crystals of quartz are frequently rounded with the characteristic embayments due to partial remelting before the original solidification of the mass.

**Black Granite.**—The black granites are greenstones or diabases. They occur in dikes and small circular areas cutting the granite and porphyry. In color they are very dark green or gray and present a marked contrast to the rocks associated with them. They are heavy, very tough and when struck with the hammer emit a metallic ring. The diabases admit of a fine polish. Owing to peculiarities of mineralogical composition these rocks do not make durable building materials and should not enter into expensive constructions. Even if they were durable little good dimension stone could be obtained on account of the numerous seams present. For paving blocks the diabase rocks are unsurpassed, and should be used to the greatest extent possible in those districts of the cities in which the heaviest traffic is carried on. While doubtless good for half to three-quarters of a century the atmospheric decay of the blocks is just rapid enough to prevent them from becoming slippery, which feature is so objectionable in granite and quartzite blocks.

The basic rocks contrast sharply with the granites through which they have been intruded. In texture they vary from perfectly holocrystalline to glassy. Where the conditions have been favorable for slow cooling the rock is as coarse-grained as the granite, but at the sides of dikes where the molten material has come into direct contact with the cold country rock an amorphous glass has been formed.

Great variety is presented in the minute structure. The holocrystalline rock, as shown in its typical development in thin sections under the microscope, is represented in the annexed Fig. 3, which is magnified 60 diameters. In the more glassy phases the augite crystals often retain their crystallographic faces.

**Growth of the Granite Quarry Industry.**—East of the St. Francois River the opening up of the inexhaustible beds of rock suitable for building purposes forms one of the most important industries, and within this district the quarry industry is destined to become greatly expanded. There are almost innumerable quarries of various sizes putting out all kinds and various grades of building material. The principal field of operation is in the vicinity of Knob Lick and Syenite, and in a district extending five or six miles in a southwesterly direction from these places. There are besides a great many isolated quarries, some of which are of considerable extent. About 1880 two large quarries were opened at Syenite, and soon afterward extensive quarrying was commenced at Skrainka.

The importance and growth of the industry is shown by the output. The total product shipped from Knob Lick alone for the last 15 years amounts to 1,000 cars annually. This includes dimension stone, paving blocks, grout and spalls. There are now three principal quarries furnishing dimension stone. Two of these are equipped with steam power and polishing apparatus. Four or five of the works have switches or tramways extending from the quarries to the Belmont branch of the St. Louis, Iron Mountain & Southern Railroad. Other short switches have been built from time to time.

Up to about 1890 there was an immense production of paving blocks, but within the last five years the annual output has decreased probably one half. This decline was due to a number of circumstances. In the first place there was a great influx of quarrymen, and as a result the number of blocks was greatly increased, and in consequence the price was gradually lowered from \$80 per thousand to \$35. The use of vitrified bricks and other materials for street paving has tended to lessen somewhat the demand for the blocks. However, the loss in the amount of blocks has been to a great extent compensated by a great increase in the amount of spalls utilized; for during the past five years a wide and constantly increasing use of this material in "granitoid" sidewalks has more than made up for the deficiency in other directions. The first crusher was put in at Knob Lick four years ago, but it was subsequently transferred to St. Louis and the rough grout shipped to that point. Spalls are worth about 50c. a ton, and the value is likely to increase since the supply of loose rock at the old quarries is being exhausted; while the demand for the crushed rock is rapidly increasing. The value of the block shipment from Knob Lick approaches \$500,000; that of the spalls and grout perhaps \$25,000. The price of dimension stone is so variable that it is hard to estimate the average per car. The output of blocks from Skrainka and other quarries in the vicinity and westward and also along the railroad between Knob Lick and Fredericktown is estimated at 300,000, and a value of not less than \$20,000.

West of the St. Francois River the quarry industry is even more prosperous. The most important developments are in the vicinity of Graniteville, a few miles southwest of Iron Mountain, where two quarries have been operated since 1882 by the Syenite Granite Company. These quarries are admirably located on hill slopes, which location permits of their being drained by syphons. The rock is a red granite, exposed in extensive outcrops, generally with a thin cover, necessitating little stripping. It is very easily quarried, having a good bedding plane, and vertical joint planes, in sufficient quantities to assist the quarryman greatly in getting out stones, and yet not so abundant as to prevent the obtaining of very large blocks. The color of this stone is red or dark pink, mottled with gray or black, the red shades being due to feldspar, the others to a more or less smoky quartz. The rock takes a high, lustrous and handsome polish; but on account of excessive hardness it is very difficult to dress. The plant consists of a switch about three miles

long, which connects the quarries with the St. Louis, Iron Mountain & Southern Railway, a locomotive and two stationary engines, two steam travelers, a vertical and a lathe polisher, several derricks, steam drills, an office, a store, extensive sheds and work shops. The product from 1882 to 1890 was about 250,000 cu. ft. of dimension stone, about 5,000,000 paving blocks, and a large amount of rip-rap, which has been used for ballast by the Iron Mountain road and also extensively in the manufacture of granitoid pavements and sidewalk flags.

About the largest piece of dimension stone which has been quarried here is the Allen monument in Pittsfield, Mass., which is 42 ft. high and 4½ ft. square at the base, and weighs about 45 tons. About a quarter of a mile south of Graniteville is the Ozark Mountain quarry, which was opened in 1869, and which is the oldest granite quarry in Missouri. It is in the same outcrop as the Graniteville quarry and the stone answers to the same description. Stone from this quarry was used in the construction of the Eads bridge across the Mississippi, of the Illinois and the Iowa State houses, of the St. Louis and the Cincinnati custom houses, and of the Memphis and the Little Rock post-offices.

#### THE GOLD-ARSENIC WORKS AT BOVISA, ITALY.

Written for the Engineering and Mining Journal by F. Clerid.

The works at Bovisa (Milan, Italy) belonging to the Societa Anonima Ingegnere L. Vogel, are among the most complete of their kind in Europe. The principal object of the company is the production of mineral superphosphate. The phosphates, amounting to about 75,000 tons yearly, are mostly imported from South Carolina, and about the same quantity of sulphuric acid is produced on the premises for converting the phosphates into superphosphates, thus rendering the phosphoric acid soluble in water.

For the production of sulphuric acid about 25 tons per day of iron pyrites are burnt in *Etagen-Ofen*. Of these 25 tons 15 tons come from the mines of Agordo (Udine) containing from 2 to 3% of copper, which is saved after roasting by lixiviation. The remaining 10 tons come from the Cani mine, in the neighborhood of Mount Rosa; this mine is one of the group belonging to the Pestarena mining camp, and has been leased by the Societa Anonima L. Vogel. Worked for free gold since the time of the Romans, this mine constantly gave good returns up to the beginning of this century, when the ore having suddenly become very refractory the mine was shut down. It was re-opened about 25 years ago by the Pestarena Mining Company, and a large mill was erected for amalgamation with arrastras. But the ore carried too much iron pyrites and arsenic and no satisfactory results could be obtained.

In 1887 the mine was leased by the Societa Anonima L. Vogel, and I was sent as manager to see how the mine and the ore could be treated to best advantage. The problem was very complex, and I saw that the only way to make the concern pay was to utilize all that the ore contained—sulphur, arsenic and gold. The plan which I have adopted and which has been carried out ever since, is as follows:

The ore containing enough iron pyrites to burn by itself in the *Etagen-Ofen* is sorted out and sent to the works at Bovisa (distance, 5 miles by wagon and 65 miles by railroad); the poorer ore is to be treated at the mine with cyanide.

The ore going to Bovisa contains an average of 34% sulphur, 10 to 12% arsenic, 0.6 to 0.7 oz. of gold and 2.5 oz. of silver per ton. This ore is subjected to a first roasting in *Etagen-Ofen*, where it is freed from the sulphur and arsenic. Attached to the roasting furnace we have two series of large leaden canals (labyrinth) through which the sulphurous and arsenious acids are made to pass. The sulphurous acid after passing the labyrinth, goes to the lead chambers to be converted into sulphuric acid; the arsenious acid condenses in the labyrinth and deposits itself in the form of a reddish-white slime.

These slimes are taken from time to time from the above-mentioned labyrinth, dried, in order to be subsequently subjected to a last sublimation so as to obtain a white commercial product 99% pure. So far no difficulty was met with, but as soon as we began the sublimation in a kind of *Muffel-Ofen* our troubles began. The slimes coming from the labyrinth were found to contain some free sulphuric acid and some very fine particles of oxide of iron. Owing to the presence of these two substances we found it absolutely impossible to obtain by sublimation a pure product; the arsenious acid obtained had a faint reddish tint; its purity was never more than 90%; it was therefore not soluble. It was evident that, before trying the sublimation, it was absolutely necessary to get rid of the free sulphuric acid present. We devised a large agitator in which the slimes were placed and agitated with water, which was syphoned off after letting the slimes settle, and the operation was repeated three or four times. This treatment, although long, tedious and expensive, did not give the wished-for results, although a considerable improvement was shown in the sublimation of the slimes thus treated. After trying a few more schemes unsuccessfully, we at last devised a method which was the simplest of all, and which, as is always the case, should have occurred to us at first. We built a large rectangular vat of bricks with a false bottom, and a quartz filter on its top, covered with perforated sheets of lead. The slimes coming from the labyrinth are thrown into this vat, and spread evenly all over the filter; then water is allowed to percolate slowly through the mass; the free sulphuric acid present being thus carried out through the false bottom, and recovered by pumping it back to the lead chambers.

The slimes thus washed gave the most satisfactory results, and in one single sublimation we got a most beautifully white product containing 98 to 99% of pure arsenious acid. It is well known that in England and even at Freiberg two sublimations are necessary to arrive at a commercial product.

Before we began this industry—new for Italy—the arsenious acid used in that country was all shipped from England, but in a year's time we were able to completely cut out the English product from the market, supplying all demands in Italy, amounting to about 400 tons a year. The greater part of this product is used in glass manufactures and in tanning leather. Our product is sold in Italy at 38 fr. per 100 kg. (about 33c. per lb.). In this manner the sulphur and the arsenic of our ore is well disposed of.

Our study was then drawn to the recovery of the gold contained in the roasted pyrites. This product still contains 1.5 to 2% of sulphur and about 0.5% of arsenic; in order to eliminate these substances—injurious to the subsequent operation of chlorination—the roasted pyrites undergo a second thorough roasting in another *Etagen-Ofen* quite similar to the first one, but provided with a fireplace, where a lively fire is made in order to drive out the last traces of sulphur and arsenic. The pyrites thus dead roasted are cooled and then charged into large wooden rectangular vats, lined with lead, and holding 10 tons each. These tanks are provided with a false bottom, covered with a quartz filter, upon which the mass rests. A weak solution of chloride of lime, together with a weak solution of sulphuric acid, is allowed to percolate slowly through the mass, dissolving and carrying with it the gold, the clear solutions passing through the false bottom to the precipitating tanks. One vat of 10 tons is completely lixiviated and washed out in three days.

The extraction of the gold in bullion ranges between 85 and 87%. We do not attempt to save the silver, as it would hardly pay the expenses of extraction. In this manner a mine, which, owing to the very refractory nature of the ore, was almost worthless 10 years ago, is now giving a very good profit.

#### UTILIZATION OF CULM.\*

By N. W. Perry.

As illustrating the relative economies of gaseous and electrical transmissions, the late Mr. Denny Lane, an English gas engineer of prominence, once stated that, with ordinary 16-C. P. gas, 3,000 H. P. could be sent a distance of one mile for an expenditure of 1 H. P.—an economy of distribution far exceeding that possessed by any other system, being only 0.03% of the power conveyed.

With respect to the cost of mains, he says, taking the cost of conductors laid on the low-pressure culvert system at £5,500 per mile for the conveyance of 1,080 amperes, and assuming an electro-motive force of 110 volts, the power would be 158 H. P. It would, therefore, require, he says, two pairs of these conductors to convey 300 H. P., while a 6-inch main, with ordinary gas, would convey sufficient gas for that power at 4 in. pressure, and at 16 in. pressure would deliver as much as four pairs of such conductors. The 6-inch main, he says further, would cost £500 per mile, while two pairs of low-pressure conductors would cost £11,000, and four pairs would involve an expenditure of £22,000 per mile.

The lecturer has found, by calculation, that to transmit this power to the distance named, at 220 volts, the metal in the pipes would cost considerably less than the metal in the conductors. Contrast this with electrical transmission, in which 10% or 300 H. P., would be an allowable loss, and we see how the gas transmission has the advantage over the electrical.

I also find that a 6-in. pipe will deliver 6,000 cu. ft. of illuminating gas per hour at a distance of 10,500 ft. under 4 in. of water pressure. If this be 16 H. P. gas, and be used in a gas engine, allowing 25 cu. ft. per H. P. hour, this quantity represents 240 H. P.

Cast-iron pipe, 6 in. in diameter, having a thickness of  $\frac{1}{4}$  in., weighs 31.9 lbs. per foot. The total weight of this two miles (nearly) of pipe will, therefore, be 334,950 lbs. This would be equivalent in conductivity to about 41,869 lbs. of copper equally distributed over the same distance. But four miles of copper, weighing 41,869 lbs., would be equivalent to about four No. 000 B. & S. wires, which would have a resistance for the four miles of 0.325 ohm. If the charging current were transmitted at 220 volts, there would be required a current of 848 amperes; but a wire having a resistance of .325 ohm will only deliver under a pressure of 220 volts;  $220 \div .325 = 677$  amperes; there would, therefore, be required five No. 000 B. & S. wires to deliver this energy, and the weight of this would be 53,540 lbs.

If the distribution took place at 1,000 volts, the amperes required would be approximately 180. To deliver this at the same distance with a loss of 10% would require 6,264 lbs. of copper, and to deliver it at 1% loss would require 62,642 lbs., which would cost far more than the pipe, and still give less efficient transmission.

When the fuel is delivered in this form it is adaptable to all of the uses to which fuel is ever applied. It can be burned under boilers for the raising of steam for power or heating purposes, or it can be applied to domestic uses, or it may be used directly to advantage in gas engines. In no case need there be any stand-by losses, such as are inevitable with solid fuels; for when the fires are wanted it is only necessary to turn on the gas, and when they are no longer needed it may be turned off, and there are no ashes or coal to be handled.

For power purposes a somewhat extensive investigation of the question has satisfied me that, if we can procure cheap gaseous fuel, the gas engine is the proper thing to use, especially in situations such as are found in our electric lighting stations and elsewhere, where the load is variable between wide limits.

In such situations a portion of the boiler plant must lie idle during the hours of light load, and it has been estimated by very competent authorities that the consumption of coal of the idle boilers amounts to 10% of the total consumption of all the boilers.

With the gas generator the stand-by losses are so small as to be negligible in comparison, so that a direct gain in economy is here attained.

I believe that all of the English gas engine manufacturers will guarantee their engines, even in comparatively small sizes, to produce a brake-horse-power-hour, when using Dowson gas, on  $\frac{1}{4}$  lbs. of anthracite coal or less. It is seldom that our largest compound condensing steam engines are found to give equally good results.

In view of these facts, there are many who believe that the problem of utilizing the culm accumulations is to be solved by the conversion of this culm into a cheap fuel gas at the banks, and its transmission thence in pipes to the point of consumption, or to the centers of distribution by other more convenient means.

I believe, although I have not attacked this problem from the numerical side, that it would be economical to pipe this artificial gas to Philadelphia from the nearer coal fields. I know, however, that it would be

\* Abstracted from lecture delivered before the Franklin Institute.

more economical for your electric lighting and power companies to convert their fuel into gas on the water front, and distribute it thence in pipes to gas engines favorably located as to distribution, than to cart their coal to these centers, pay rent or interest on the investments required for boiler and coal storage room, and other attendant expenses.

#### A PROCESS FOR ELECTROLYTIC DESILVERING ARGENTIFEROUS LEAD.\*

By D. Tommasi.

The principle on which this procedure is founded consists in electrolyzing a lead solution, which not merely possesses an extremely weak electric resistance, but does not give rise to lead peroxide ( $PbO_2$ ), and, in taking the argentiferous alloy itself as anode and cathode, a metallic disk which cannot be attacked by the bath.

Under the action of the current the lead of the anodes enters into solution and is transferred, in the state of spongy crystals, upon the disc which serves as cathode, while all the silver contained in the lead, being insoluble in the bath, is deposited at the bottom of the vat in a perforated receiver destined for its collection.

The following is the course to be followed for the electrolytic extraction of silver from argentiferous lead:

We melt the lead, and then cast it in molds having the shape and the thickness which is intended for the anodes. This being done, we suspend each anode to one of the two metallic poles which are found placed about the upper part of electrolyzer.

Each metal pole is fitted with an endless screw and with nuts. At the ends of these poles are fixed plugs intended to connect the anodes electrically among themselves, and to secure the whole to the positive pole of the dynamo.

The object of this arrangement is not merely to keep the electrodes at a determined distance from each other, but to approximate them if this distance becomes too great in consequence of the progressive wear of the anodes.

The disc which serves as cathode is placed between the two anodes, and communicates with the negative pole of the dynamo by means of a metal brush rubbing upon its axle.

The electrolyzer being fitted up we pour in the bath (a solution of the double acetate of lead and sodium or of lead and potassium), close the circuit, and cause the disc to revolve at the rate of one or two rotations per minute.

When the current is established, the lead begins to deposit upon the disc in the form of small spongy crystals. When the deposit of lead has acquired a sufficient thickness, and it is thought suitable to remove it, the current is interrupted and the scrapers closed.

In consequence of their friction against the faces of the disc, the lead is detached and falls into sloping gutters, which bring it upon a sieve of metal cloth. The lead is drained, washed with distilled water, and then submitted to a strong pressure.

The liquid which flows off is added to the washing-waters, and the whole evaporated down to 30° Baumé. When cold, this liquid is introduced into the electrolyzers by means of a pump. The compressed lead is heated on a crucible with 2% or 3% of charcoal in powder, and when melted it is cast in ingots.

When the anodes are dissolved, we may either replace them with fresh anodes, or merely withdraw the silver deposited at the bottom of the vat. In this latter case we raise the disc by means of a windlass; then withdraw the perforated recipient placed at the bottom of the vat at the beginning of the operation; this contains all the silver left behind by the argentiferous lead of the anodes.

The silver, when collected, washed and dried, is melted in a crucible with sodium nitrate and a little borax, and is then cast in ingots.

**German Iron Exports.**—The exports of iron and steel from Germany for the half-year ending June 30th amounted to 785,212 metric tons, an increase of 62,117 tons, or 8.6% over the corresponding half of 1895. The chief items this year were 85,094 tons pig iron, 225,768 tons bar and shape iron and steel, 105,764 tons wire and wire ropes, 84,918 tons of rails, 74,770 tons of sheets and plates.

#### 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 AUGUST 18TH, 1896.

- 566,000 AND 566,001. FAN-CONCENTRATOR. William R. Marshall, East Saginaw Mich. A combination of a fan-case having a suction-inlet through its side wall, an outlet for air also in the side wall and a peripheral outlet for the concentrated and separated material, a fan-wheel mounted within the casing with its axis eccentric to the axis of the air outlet, and a tubular guard arranged in the surplus air outlet and of varying width, the wider portion of the tubular guard being in that portion of the fan-case adjacent to the peripheral discharge opening.
- 566,169. ORE-SAMPLER. Samuel I. Hallett, Aspen, Colo. An ore-sampler provided with a longitudinally-movable table, a hopper formed with a square discharge spout and located above the table, the hopper being provided with a vertically adjustable gate to regulate the depth of material spread on the surface of the table, a separating box into which the material is discharged from the table, and means for moving the table longitudinally, whereby the material carried by the table to one side of the spout is pushed off by the material on the table within the square spout on the return movement of the table and the material discharged from the table in a flat stream.
- 566,280. PROCESS OF OBTAINING IRON DERIVATIVES OF ALBUMEN. Oswald Schmieberg, Strassburg, Germany. Assignor to C. F. Oehring & Soehne, Waldhof, Germany. Patented in England, September 4th, 1893. No. 16,589; in France September 14th, 1893. No. 232,805; in Belgium September 18th, 1893. No. 106,401, and in Italy September 25th, 1893. XXVII, 34,375, and LXX, 432. The process of obtaining an iron derivative of albumen, which consists in adding water to internal animal organs and gradually heating the same to the boiling point, then separating the coagulum and then treating the extract so obtained with dilute acid.

\* Abstracted from *Comptes Rendus*, No. 122, page 1476.

## PERSONAL.

PRESIDENT GATES, of the Illinois Steel Company, has returned from his European trip.

MR. J. X. FERGUSON is the new superintendent of the Bonneville mine, Baker City, Ore.

MR. MILLARD HUNSIKER, the armor-plate expert of the Carnegie Steel Company, has gone to Europe.

MR. JOHN FULTON, of Johnstown, Pa., has been in Harriman, Tenn., inspecting coal properties there.

MR. CLARENCE KING, geologist and mining engineer, has been examining mining property in Arizona recently.

SUPERINTENDENT BROWN, of the Poorman, Idaho, mine, has resigned to take a similar position in a New Zealand mine.

MR. A. D. GASSOWAY, formerly superintendent at the Mayflower mine, is now superintendent of the Magalia, Butte County, Cal., drift mine.

MR. D. B. HUNTLEY has resigned the superintendency of The Tom Boy Gold Mines Company, of Telluride, Colo., and has gone to Oakland, Cal.

MR. CHARLES JACOBS, formerly at the App mines now has charge of the underground work at the Rawhide mine in Tuolumne County, California.

MR. H. M. GORHAM has been appointed superintendent of the Savage mine, on the Comstock lode, Nevada, to fill the vacancy caused by the death of Mr. R. P. KEATING.

MR. H. C. FRICK was a passenger on the *Lucania*, which arrived from England on Friday of last week. Mr. C. R. DILWORTH, of the Carnegie Steel Works, returned at the same time.

MR. WILLIAM PRATT, recently division engineer of the Baltimore & Ohio on its line between Washington and Philadelphia, has been appointed to the professorship of mechanical and electrical engineering, at Delaware College.

MR. MARSHAL STEVENS, manager of the Manchester (England) ship canal, has come to the United States to convince shippers and steamship men of the advantages of sending goods to Manchester rather than to other English ports.

MR. FREDERICK HARRISON, general manager, and Mr. ROBERT TURNBULL, general superintendent of the London & Northwestern Railway, arrived in New York last week. The object of their visit is to study the management and operation of American railroads.

MR. DU MARAIS, of Paris, has been in Cripple Creek, Colo., for nearly three weeks, and has been underground in nearly all the mines of the camp. He has made a study of the veins and ore chutes from a scientific as well as from a commercial view, which ought to be of benefit to French investors and the mining public generally.

## OBITUARY.

A. C. HIPPEY, general superintendent of the Norfolk & Western Railroad, died in Roanoke, Va., August 10th, aged 49 years.

PROF. WILLIAM STRADER, head of the department of electrical engineering in the University of Missouri, at Columbia, Mo., died at that place on August 13th.

MAX J. BECKER died August 24th at the Island of Mackinac, where he had gone for rest. He was born in Germany 69 years ago, and began work on the Cologne & Minden railroad in that country. After the revolution of 1848 he came to this country and settled in Pittsburg. He worked his way up gradually to be chief engineer of the Pennsylvania company's lines west of Pittsburg, and held that position until about three years ago; when he retired from active work and was appointed consulting engineer. He was considered high authority on location and on bridge work. He was for a year president of the American Society of Civil Engineers.

## SOCIETIES AND TECHNICAL SCHOOLS.

UNIVERSITY OF ILLINOIS.—The chemical laboratory building of this university at Champaign was destroyed by fire recently. It is supposed to have been struck by lightning during a storm.

INSTITUTION OF CIVIL ENGINEERS OF GREAT BRITAIN.—The Council of this institution invites original communications on subjects included in a published list, or on other questions of professional interest. For approved papers the Council has the power to award premiums, arising out of special funds bequeathed for the purpose, which embrace the Telford Fund, the Manby Donation, the Miller Fund, the Howard Bequest, the Crampton Bequest and the balance of the Trevithick Memorial Fund. Among subjects suggested by the Council are the following: (1) The Most Economical Methods of Handling Large Masses of Excavation, as Exemplified in Modern Canal Construction. (2) The Application of Compressed Air, Steam and Hydraulic Power to Rock Drills. (3) The Use of Compressed Air in Subaqueous Tunneling. (4) The Modern

Methods of Pumping Compared as to Cost and Efficiency (5) The Utilization of Heat (a) Generated in the Compression of Air and other Gases; (b) Carried Away by Steam Engine Condenser—Water; and (c) Contained in Boiler Furnace Flue Gases. (6) The Influence of Coal Dust in Contributing to Colliery Explosions. (7) The Extraction of Metals from their Ores by Electrolytic Processes. (8) Argentiferous Lead Smelting in Water Jacketed Blast Furnaces. (9) The Metallurgy of Chromium, Molybdenum and other Rare Metals, and their Use in the Manufacture of Steel. The Secretary of the Council is Mr. James Forrest, and its address is "Great George street, Westminster, S. W., London, England."

## INDUSTRIAL NOTES.

The Burger Iron & Wire Works of Akron, O., have been incorporated with a capital of \$10,000.

The Bellaire (Ohio) Steel Company has commenced the erection of a new steel plant to cost \$100,000.

The Taylor Iron and Steel Company, Montreal, Can., has been incorporated, with a capital stock of \$30,000.

The Brown Hoisting and Conveying Company's locked-out men have voted to return to work, and the famous strike, productive of several battles and riots, is broken.

The Pedrara Onyx Company, of Brooklyn, N. Y., has been incorporated to manufacture onyx and other marbles. Capital, \$25,000, and directors: William McMurtrie, of New York City; Frederick P. Fisher and John G. Lyod, of Brooklyn.

The Dayton (O.) Globe Iron Works is shipping to the Boston and Montana Consolidated Copper and Silver Mining Company, Great Falls, Mont., a pair of horizontal turbines of the latest design, 57 in. in diameter, and under the average head they will develop 3,258 H. P.

The Penn Bridge Company, of Beaver Falls, Pa., was the lowest bidder for the iron roof trusses and roof for the gun carriage shops at the Washington Navy Yard. The bid was \$18,400 and the contract will be awarded the firm. Eleven firms competed for the work, the highest bid being \$24,700.

The Lackawanna Iron and Steel Company, of Scranton, Pa., at its annual meeting elected the following directors: Edwin F. H. Field, president; Samuel Sloan, Wm. E. Dodge, Harry A. C. Taylor, Moses Taylor Pyne, Stephen S. Palmer, Walter Scranton, DeWitt C. Blair and James Blair.

The Alcania Tin and Terne Plate Company's plant, Youngstown, O., is equipped with three sets, two lead and one tin. The lead pots are in operation, making the special brands Plumbum, Alcania, Cambria and Mahoning, all lead plates. An increase of the capital stock of the company has been made.

The Illinois Steel Company has converted a part of its North Chicago works into a cement plant, and is turning waste furnace slag into "Illinois steel Portland cement." The slag is granulated in water, then roasted, and mixed with lime and other ingredients. The product is ground to powder and put into bags for market.

The Feracute Machine Company, of Bridgeton, N. J., has received an order from the Chinese Government for an outfit of mint machinery for making Chinese coins. The outfit consists of five coining presses, with feed attachments and dies for cutting the blanks and a lot of extra dies and some other special machinery. The order amounts to about \$13,000.

The Cumberland, Md., Steel and Tin Plate Company will replace its two 20-in. hot mills with two 24 x 32-in. hot mills, built by the Leeburg Foundry and Machine Company, Pittsburg. This will give the Cumberland plant a train of four standard size hot mills. One of the old mills will be remodeled for a cold mill, increasing the cold rolling plant to five mills.

The United States cruiser *Brooklyn*, whose trial trip was made several days ago, is supplied with an entire outfit of Blake pumps, main and auxiliary feed pumps, fire pumps and air pumps for the main condensers. The latter pumps are of the Blake Vertical Twin type, which made a record for economy on all of the trial trips of the Cramp cruisers and battleships.

The Pennsylvania Steel Company will blow out its No. 2 blast furnace at Steelton, Pa., this week, unless there is an improvement in trade. No. 2 furnace is the largest at the works at Steelton and has been in very successful operation for almost 20 months. It is capable of producing 200 tons of iron per day, and during this period in blast has exceeded that figure. During its idleness the stack will be relined.

The Springfield (Mass.) Foundry Company's machine department, and the Valley Pump Company, of Easthampton, Mass., have consolidated, forming a new corporation, to be known as the Springfield Elevator and Pump Company, and will manufacture hydraulic, electric and power elevators, and the full line of steam and power pumping machinery formerly built by the Valley Pump Company, at Easthampton, Mass.

The Eureka Tempered Copper Company's property, at North East, Pa., has been attached by the sheriff on judgments aggregating over \$13,000. The plant is one of the most important and best equipped in the country. The process used in the manufacture of tempered copper is a secret in the possession of the company, and its products have received the highest awards ever given out. It is thought that the embarrassment is only temporary.

The Chicago Consolidated Iron and Steel Company, of Chicago, Ill., has made an assignment to the Chicago Title and Trust Company. Assets \$300,000, liabilities somewhat less. The plant was built some time ago at Harvey by the General Engineering Company, successor to A. J. Sweeney & Sons, of Wheeling, W. Va. The company failed after having been in operation a few months. John M. Sweeney was manager of the General Engineering Company, and is president of the Consolidated Iron and Steel Company.

The Seaman-Sleeth Company has been organized by the firm of Seaman, Sleeth & Black, proprietors of the Phoenix Roll Works, of Pittsburg, Pa., capital \$600,000. President, Joseph S. Seaman; vice-president, Robert Sleeth; treasurer, James L. Morrow; directors, Charles B. Seaman and William S. Woods. Joseph R. Seaman and Robert Sleeth of the old firm bought out the interest of Mr. Black, the latter retiring from business. Messrs. Seaman and Sleeth own the controlling interest in the plant. The old firm dissolved July 1st.

The Union Steel Company's plant, at Alexandria, Ind., went into the hands of a receiver August 24th. Thomas K. Akin, of Alexandria, gave the necessary bond with the Union Trust Company as surety, and is now in charge of the plant. The company is capitalized at \$1,500,000, and is said to have \$1,000,000 invested in stock, machinery and plant at Alexandria, which covers 30 acres, and is a complete rail and steel concern. They settled at Alexandria for a bonus of \$175,000, and employ 1,600 men when in full blast. It is stated that the plant was built chiefly upon borrowed money, among the creditors being the Missouri Steel Company for \$50,000.

## TRADE CATALOGUES.

JOHN A. MEAD & COMPANY, builders of improved machinery for handling coal, ore, phosphate and similar material, with works at Rutland, Vt., have issued a profusely illustrated catalogue of the various appliances made by them. These are Heath & Smith's system of automatic, cable and electric railways, the improved McCaslin conveyor, the Case marine elevator, Harrison conveyor machinery and Symons automatic reloader. They are also agents and manufacturers of automatic steam coal shovels under the Rawson, Ladd and Newell & Ladd patents. They furnish plans and estimates, erect buildings for power-houses, locomotive coaling stations, coal pockets, wharves, etc., equipped complete with the latest improved machinery for handling coal, ore, sand, brick, phosphate asphaltum or other materials of this class. The New York office is at No. 1 Broadway. The catalogue contains a good deal of information about conveying machinery, which will be interesting to engineers and manufacturers.

## 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.

## GENERAL MINING NEWS.

## ALASKA.

ALASKA-MEXIGAN GOLD MINING COMPANY.—This company reports the clean-up for the month of July as follows: Period since last return, 31 days; bullion shipment, \$15,981; ore milled, 6,670 tons; sulphurets treated, 126 tons; bullion from sulphurets, \$5,760; working expenses for period, \$11,344. The average yield was \$2.40 per ton of ore milled, and the average cost \$1.70 per ton. The profit realized in the bullion shipment for the month was \$4,637.

BALD EAGLE.—Within the last month the three concentrators at this mine, at Sum Dum, have been so overloaded with work that it has become necessary to reduce the drop of the stamps from 105 to 60 to the minute. In one day's run during the month of June 17 sacks of concentrates, averaging 185 lbs. to the sack, were turned out. They are said to run from \$350 to \$500 per ton. A fourth machine has been ordered, and as soon as it is in position the drop of the stamps will again be run up to 105.

## ARIZONA.

## GILA COUNTY.

(From An Occasional Correspondent.)  
BLACK COPPER GROUP.—This group, belonging to Haverly, Higdon & Beard, and which is bonded

to Messrs. Fleming & Ford, of Phoenix, is situated in Globe mining district, eight miles west of Globe City and four miles east of the Old Continental mine. A shaft 100 ft. deep has just been completed, and now drifting has commenced. The shaft has an incline of about 45° to 50°. The ore is all chrysocolite, and little or no change in the character is shown at the 100-ft. level. The group consists of 15 claims, and is perhaps the largest chrysocolite deposit on the American continent. It is reported that an electrolytic plant is to be erected on the group, with a capacity of a 100 ton per 24 hours. Mr. Hill, formerly of Jerome, is in charge of the works.

**BONITA.**—This mine, about six miles north of Globe City and adjoining the Rosalia group, belongs to Mr. M. Innis. Several men are now employed on the Bonita taking out ore and shipping same to the United Globe smelters. All ores shipped so far have averaged above 2% in copper. The mine is worked by open cuts and has been paying from the Grassroot. The outlook is promising.

**GERAD GROUP.**—A 10-stamp mill is also being erected on this property in Lost Gulch, near the Kasser Company's property.

**KASSER GOLD MINING COMPANY.**—A quartz mill of 10 stamps is now being erected in Lost Gulch, which is about 7 miles northwest of Globe City, on the group of mines owned by this company.

**ROSALIA.**—Work has commenced on this group of mines, and it shows very rich carbonates of copper and some cuprite ores. The Rosalia is situated six miles north of Globe City, in Globe District, and it belongs to Mrs. Alfred Kinney. The geological formation and general indications of this group are such that it can reasonably be anticipated that some rich copper deposits will be discovered. The work is sub-vented by Mr. James McCarty.

#### YAVAPAI COUNTY.

**CONGRESS GOLD MINING COMPANY.**—The shaft is down 1,800 ft. in this company's mine and 350 men are employed under ground. In addition to a cyanide plant, with a capacity of 100 tons, there is a 40-stamp mill, which runs day and night, and 40 more stamps are to be added. About four miles of tunnels, shafts and stopes have been run. Beside the 1,800-ft. shaft, two others have been sunk to depths of 700 and 1,100 ft., respectively. Crosscutting to the second vein has commenced. The present output of the mine is said to be \$80,000 per month.

**LITTLE JESSIE.**—A carload of bullion shipped from this mine recently was valued at \$3,500, and is the result of less than seven days' run of the mill. A new body of good ore has been opened up recently in the mine. A dividend of \$5,000 was declared last week.

**PLANET SATURN MINING COMPANY.**—The railroad companies have contracted for the transportation of 200,000 lbs. of machinery from Chicago to Congress Junction for this company, at Fool's Gulch.

### CALIFORNIA.

#### AMADOR COUNTY.

(From Our Special Correspondent.)

**AMADOR QUEEN No. 1.**—This mine is on the mother lode, near Jackson. The ledge has been struck in the east crosscut from the 300-ft. level, about 45 ft. in. The ore shows free gold.

**FOREST HOME MINING COMPANY.**—This company has been organized for the purpose of working 280 acres of placer ground on Arkansas Creek. The company has finished laying over 10,000 ft. of 18-in. pipe to convey water from the Blue Lake Water Company's ditch. Two giants have been put in and active work will commence soon.

#### CALAVERAS COUNTY.

(From Our Special Correspondent.)

**CALIFORNIA EXPLORATION COMPANY.**—The three experts, E. W. Jackson, Percy Tarbutt, Jr., and Richard A. Parker, who were selected by Edmund Davis and Percy Tarbutt, Sr., to examine the property of this company, have submitted a favorable report, and these gentlemen have agreed to take a half interest in the enterprise, stipulating that Mr. Richard A. Parker be appointed manager of the company. Mr. Parker has accepted the position and is now in the East arranging his private business affairs preparatory to taking charge on September 25th. An electric plant is to be erected immediately at Amador Blue Lakes, which will furnish power to outside mines as well as those of the company. At the last meeting of the directors of the company, Prince Poniatowski was elected president.

**ESPERANZA.**—This mine is located 2½ miles northeast of Mokelumne Hill, on Indian Creek. The new hoist has been completed and the milling plant increased to 30 stamps.

**GOTTSCHALK.**—At this mine, near San Andreas, now under bond to the California Exploration Company, a large flow of water has been encountered which has risen so rapidly in the shaft that the contractors have been obliged to discontinue for the present.

#### KERN COUNTY.

**LOS ANGELES GOLD MINING COMPANY.**—The Mammoth, Little Mammoth and Tom Lane mines have been purchased by this company, which consists of H. M. Russell, N. F. Wilshire and O. Pooley, of Los Angeles. The new owners will put up a 10-stamp mill at once, which will be worked by water-power generated from the Kern

River. They will also put up a tramway to conduct the ore from the mine to the mill. The ore, which is free gold, will be worked by the cyanide process.

(From Our Special Correspondent.)

**RANDBURG DISTRICT.**—The mills at Garlock and Kane Springs are working day and night on ore from the Olympus and other mines in the vicinity of Randburg. The ore mills from \$25 to \$80 per ton.

#### KERN RIVER.

**POWER DEVELOPMENT COMPANY.**—The power of the Kern River, the third largest stream in California, is now about to be utilized, the work undertaken by this company being nearly completed. The contract for the electrical equipment has been awarded to the General Electric Company, whose three-phase apparatus will be used to transmit the power of the river to Bakersfield, a distance of 14 miles in a straight line. The point selected for the power-house is at the mouth of the canyon, on the north side of the Kern River, almost 16 miles northeast of Bakersville, by wagon road. Here the stream forms a number of cataracts and rapids previous to taking a placid course through the valley. The point of diversion of the necessary flow for the power is some 9,000 ft. up the canyon. To secure a bed for the flume a roadway was cut from the solid rock along the sides of the canyon. All the timber was hauled by a team a distance of 16 miles to the south side of the river. A bridge was thrown across and a tramway 325 ft. long with a grade of 30% laid up the steep hill to the point where the flume was to end. A steam sawmill was then set up at the foot of this tramway, the timber cut to proper dimensions, loaded on the cars and hauled up the grade. The flume was begun at the power-house end. This flume is 8 ft. wide and 6 ft. deep and is covered. A railroad track is laid upon the cover for the full length of 8,000 ft. There are no sharp angles, the changes in the course being made by curves and tangents. The grade is 5/8 to the mile and 475,000 ft. of redwood is used in the construction of the flume, which at one point is carried on an arch with a 60-ft. span over a bad place on the cliff. The flow is calculated at 280 cu. ft. per second. At its terminus at the mouth of the canyon, 8,575 ft. from the point where it leaves the river, it is 202 ft. above the power-house. Here the water enters a steel pipe 540 ft. long and 5 ft. 6 in. in diameter. The fall from the end of the flume to the power-house is 201.9 ft. and the capacity of the water is estimated at 7,500 H. P. The electrical equipment will consist at first of two 450 kilowatt General Electric three-phase generators, running at 257 revolutions per minute. The voltage at the dynamo terminals will be 550 volts. This will be raised in step-up transformers to 11,000 volts and will be carried on six No. 4 bare copper wires to the sub-station at Bakersfield, where it will be transformed down to 2,000 volts for distribution. The current will be utilized at first to operate an extensive system of electric railroads connecting Bakersfield with Kern and other districts. It will also be applied at once to street and house lighting, as well as to the operation of pumps for irrigation purposes. The mines in the mountains to the east will also probably take current for their mills, hoists, pumps, etc. The president of the company is Chas. Webb Howard, W. F. Goad is vice-president and C. N. Beal, secretary and treasurer. The work is being pushed to completion as rapidly as possible and it is expected that by November 1st the current will be turned into the transmission wires.

#### MARIPOSA COUNTY.

(From Our Special Correspondent.)

**TRIUMPH AND HAYSEED.**—These mines, in the Whitlock District, 6 miles north of Mariposa, have been sold to Angus MacIntosh for \$10,000. He will erect a complete hoisting and milling plant at once. This property has been worked for the past 12 years at a steady profit.

#### MONO COUNTY.

Following are extracts from the weekly reports of the mine superintendents:

**BODIE CONSOLIDATED MINING COMPANY.**—On the 200 ft. level the long east crosscut was advanced nine feet in rather heavier rock and stopped. The raise through the Gildea old slope is up 20 ft., showing 16 in. of solid ore in the top. On the 400 ft. level Fortuna vein raise in old fillings is up 20 ft. The material in the top is rather poor. On the 550 incline level north drift from Fortuna vein was advanced 6 ft., the ore becoming somewhat better again, but very narrow and hard. Are working under very great disadvantages here and have stopped for the present.

**BULWER CONSOLIDATED MINING COMPANY.**—On the 200-ft. level the stope above No. 2 south crosscut east has been opened to the old ground toward the south. Nos. 9 and 10 are now being driven, showing 5 or 6 in. of ore. On the tunnel level in raise No. 1 the quality of the ore is better, but the seam is small. No. 2 raise shows a small seam of high-grade ore. East crosscut from south drift was driven 5 ft., cutting a small seam of \$15 to \$20 rock. An intermediate drift from raise No. 1 was started from the old stope and advanced 6 ft., showing 6 in. of \$50 rock. Extracted during the week a total of 14.2 tons of ore, assaying from \$15 to \$82 per ton.

#### NEVADA COUNTY.

(From Our Special Correspondent.)

**OMAHA MINING COMPANY.**—This company has purchased the Homeward Bound and other claims adjoining the property of the company on the south,

and will work the new ground through the Omaha shaft.

#### PLACER COUNTY.

(From Our Special Correspondent.)

**MARGUERITE.**—At this mine, half a mile from Auburn, work has been progressing on the crosscut from the 300-ft. level toward the Salzac shaft for some months. A few days ago a ledge was struck, and they are now in 11 ft. without reaching the hanging wall. No assays have been made, but the ore shows cemented sulphurets and is considered good. The discovery of some rich pieces of ore in a chute near the surface some distance from the ledge has created quite a flurry among the stockholders in San Francisco, who hope their mine will develop into a bonanza.

#### TUOLUMNE COUNTY.

(From Our Special Correspondent.)

**RAWHIDE.**—At this mine, 2½ miles northwest of Jamestown, the building for the new 3-ton chlorination works has been completed; also the office building. Charles Jacobs, formerly at the App mine, has charge of the underground work.

### COLORADO.

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

(From Our Special Correspondent.)

**ACE OF DIAMONDS.**—This claim, in the same neighborhood as the Lincoln, is also equipped with a steam hoist on a shallow shaft; the formation is granite.

**ELKTON.**—This mine is shipping from 10 to 12 cars of ore a week. The mine employs more than 80 persons, 24 of whom are engaged in stoping, the rest on development. Three machines are constantly at work drifting. Levels have been driven from the raise north and south 115 and 120 ft. respectively.

**GILLET CHLORINATION PLANT.**—This plant is being worked to its full capacity of 50 tons. This mill draws its supply from only three mines. Last month the average of the ores treated was \$31.45 per ton and the bullion produced over \$45,000 of an average fineness of over 990. Charcol filters are used.

**GRANITE HILL COMPANY.**—This company owns a fractional claim in Poverty Gulch, almost within the city limits. Recently a sub-lease of 100 ft. square was obtained by Barbee, of Silver Reef fame, Utah, who opened up a good vein. At an 8 ft. depth an average for 2 ft. wide gave \$289 per ton. There seems to be general excitement about the new find, it being a new vein, distinct from the Ave. Lincoln and the Lone Star.

**LILLIE.**—This mine, adjoining the Vindicator on Bull Hill and worked on lease, has been shipping large quantities of ore lately. One shaft has been sunk 140 ft. on the north end of the ore chute and a second shaft 75 ft. on the south end of the chute, which is about 100 ft. in length. A drift to effect communication between the two shafts at the 75-ft. level in being extended struck a rich talc seam.

**LINCOLN.**—At this mine, north of Cripple Creek and near Gillett, a steam hoist and steam pump have recently been erected to handle the water from the shaft 180 ft. deep. The intention of the lessees and part owners is to sink the shaft 300 ft. and at that point to drive drifts on the vein to the boundaries. The nature of the vein is similar to that found at surface; water level has not affected the vein or the granite. The ore is richer with depth.

**LINCOLN-GIBBONS.**—This claim, adjoining the Lincoln, is also equipped with a powerful steam hoist, on a vertical shaft 80 ft. deep in the granite. The water amounts to 30 buckets a day; a steam pump is on the ground, ready for any emergency.

**LUCKY GUSS.**—This property, on Bull Hill, is still shipping, but not much of it. He had which formerly yielded 92.02 oz. gold and 1.22 silver. Most of the ore is now coming from the fifth and sixth levels. The new shaft has been sunk 55 ft. and at that point a station will be cut and a drift extended north, the ore chute having dipped in that direction. The old shaft has been sunk 450 ft., and a chute encountered in the sixth level, which to date is 18 ft. in length.

**PHARMACIST.**—The new shaft has been sunk 100 ft., a rate of sinking that cannot by any means be regarded as satisfactory with compressed air, or even hand labor. The mine is yielding its usual quantity of ore from the 250-ft. level. Two men are employed at the 10th or 650-ft. level; the rest of the miners at the 250-ft. level. The reported monthly output of the mine is from \$5,000 to \$6,000.

**PRINCE ALBERT.**—This property, on Beacon Hill, has been leased in blocks of 300 ft. square. The lessees are called on to pay royalties of from 15% to 50%. This property of late has paid well when worked by lessees, the average value of the ore being \$70. A small shipment of 170 lbs. of ore was sold which netted \$2,039.35; under a powerful magnifying glass the \$12 per pound ore looked like iron filings. The Doyle lease, on the Beacon claim, owned by the Prince Albert Company has a splendid showing of good telluride ore 3 ft. wide and close to the surface.

**STORM.**—This is a fractional claim on Beacon Hill under lease to Mr. Cook. At 90 ft. a small seam of telluride ore was found.

**SUMMIT MILL.**—After being idle for nearly two years this mill has resumed operations. The Gilpin County tables have been replaced by Hartzell concentrators, which are doing good work. The full

number of 30 stamps is at work on custom ores. Mr. McCreery, a part owner, is the lessee of the mill. There are about 3,000 tons of impounded tailings on the mill site left from former working, of a reported value of \$10 per ton, but of an actual value of \$3 per ton, to be treated later on.

**TRACHYTE.**—At this property, on Bull Hill, the shaft has been sunk 230 ft. In following the vein the shaft turned from east and west to north and south. A drift at the bottom has been extended north 12 ft.

## GILPIN COUNTY.

(From Our Special Correspondent.)

**BAXTER.**—A contract has just been let to sink the shaft 50 ft. below its present depth of 237 ft.

**GOLDEN TREASURE.**—Richard Mackey, of Central City has taken a lease and bond on this mine, at Nevadaville.

**HAZELTINE.**—The mine and mill, in Willis Gulch, have been shut down, and the wages of the men are in arrears. The mine is very well thought of here, but the company was operating it with insufficient capital and poor judgment, attaching more importance to a fanciful "new process" in the mill than to the essential preliminary of opening up pay ore to treat.

**PACKARD-MAMMOTH.**—The upper and lower tunnels are being extended, each on a heavily mineralized vein, showing 3 ft. of low-grade pyrites. A winze has been sunk 60 ft. below the tunnel, and drifts are being put out each way on the vein, yielding some good concentrating ore. The ore shipments average about 100 tons a week, mostly very low grade.

**SLEEPY HOLLOW.**—The stopes at this mine continue to yield an output of about 40 tons daily, enough to keep 25 quick-drop stamps running at the Eagle mill.

**WAINE.**—In the bottom of the shaft, at present 315 ft. deep, there is about 3 ft. of fair mill-dirt. They are now sinking the shaft, and are said to intend sinking to a depth of 500 or 600 ft. The new shaft-house is well arranged, and contains a good hoisting plant. They have also put in pumps, but are not much troubled with water as yet.

## GUNNISON COUNTY.

**LEAD KING.**—At this mine, near Marble, a large amount of ore is on the dump sacked and ready for shipment. The shaft is down only 20 ft., but has produced five carloads of shipping ore. Two carloads of ore were shipped from the property last week.

## MINERAL COUNTY.

**PARK REGENT MILL.**—This new mill, near Creede, built by the Colorado Iron Works of Denver, has been successfully put in operation and is now running to its full capacity, estimated to be 25 tons per day. Mr. Pool at present is having a trestle built, upon which will be placed the track to be used in conveying the ore from the dump to the mill which is built a short distance below the dump. Some 200 tons of ore is now on the dump, and so far the mill man in charge is more than pleased with the results.

## SAN MIGUEL COUNTY.

**JAPAN MINES COMPANY.**—George L. Fisher, manager for this company at Telluride, is having work pushed on the new concentrating plant located just below the mine. The mill will have a capacity of concentrating about 35 tons of ore per day. For several months past from 20 to 30 carloads of high-grade gold and silver ore have been shipped from the Japan per month, which are said to have netted the company \$700 to \$1,000 per car. The vein of the Japan is opened up for a distance of nearly 2,000 ft., and carries from 14 to 24 in. of mineral. A shaft is being sunk from the intersection of the crosscut vein, which is now down to a considerable depth, and will be sunk 300 ft.

**SUFFOLK MILL.**—The six new Triumph vanners for this mill have arrived, and the work of putting them in place has commenced. It is expected that the use of these vanners will make it possible to handle a lower grade of ore than in the past. At present 35 of the 40 stamps of the mill are working steadily on ore from the Gold Crown.

## GEORGIA.

## COBB COUNTY.

**KENNESAW MARBLE COMPANY.**—The annual meeting was held at Marietta last week. The net earnings for the present fiscal year were over \$8,000, making a net profit of over 11% on a capital stock of \$72,000. A dividend of 7% was declared and the remainder was added to the surplus fund. The total surplus now amounts to over \$16,000. The following officers were elected: President, R. W. Boone; vice-president, S. C. Tate; secretary and treasurer, George F. Newell; directors, S. C. Tate, O. F. Bone, A. S. Clay, R. N. Holland, George F. Newell, R. W. Boone, P. R. Cortelyou.

## IDAHO COUNTY.

**OZARK.**—From 5 to 10 tons of ore are being taken out of this mine daily. A tunnel has been driven on the 50-ft. lead for 100 ft., showing a vein 2 ft. wide. The dump is loaded with high-grade ore.

## SHOSHONE COUNTY.

(From Our Special Correspondent.)

**HELENA & FRISCO COMPANY.**—This company has its principal office in Helena, Mont., though the mine is in the Coeur d'Alene country in Idaho. The mine is under charge of Mr. Joseph McDonald. A

450-H. P. air compressor was put in by the company last year, and in addition to working the drills, compressed air is used to drive the hoist. In the near future, however, the hoist will be operated by steam, as all the air will be needed to drive the drills. The concentrator is driven by water power. Mr. McDonald reports the following result of operating the mine for July: Mined and milled 13,700 tons of ore, making 1,510 tons of concentrates, which is 9 tons of ore to one ton of concentrates. The concentrates average 61% lead and 64.5 oz. of silver. All the concentrates were shipped, and none were on hand August 1st. The pay roll amounted to \$13,500, the expenses to \$8,000. The cost of producing one ton of concentrates was \$11.24. The tailings averaged 1.4% lead and 3.7 oz. of silver. The mill was run 27½ days during the month. The company paid a dividend August 21 of 6c. a share, amounting to \$30,000 and on August 15th another dividend of 4c. a share, amounting to \$20,000. There are 500,000 shares, and the greater part of the stock is held in Helena.

## INDIANA.

## PARKE COUNTY.

**INDIANA WHITE SAND COMPANY.**—This company has been formed to open up the newly discovered glass sand deposits at Coxville. Machinery has been purchased and will soon be on the ground. Coxville is in the coal belt, where there is an abundance of fuel.

## VERMILION COUNTY.

**INDIANA BITUMINOUS MINING COMPANY.**—This company, at Clinton, has resumed operations after an idleness of three months.

## KANSAS.

## CHEROKEE COUNTY.

(From Our Special Correspondent.)

**BEN BUTLER COMPANY.**—G. F. Johnson, of Aurora, Mo.; J. M. Pollard, Oscar D. Graff, of Empire City; J. H. Huges, of Neosho, Mo., and F. W. Hutchinson, of Galena, Kan., compose the company. This mine is the best equipped of any on the DeGraff lease. The three jigs are on an elevated platform 12 ft. from the ground and there is a Freeman steam hoist. The shaft was sunk to 114 ft. and at 73 ft. it passed through a good body of lead. At 100 ft. they started a drift and cut up into the lead and now make a good output of ore every week.

**BLOOMINGTON LAND.**—G. W. Beasley, of Carterville, has a lease of 18 acres of this land, on which is a fine steam plant and three developed mines, with good zinc ore at 60 ft. Air shafts have been cut through, connecting the different mines. One 12-in. and one 8-in. pump drain the ground thoroughly and furnish water for the plant. The work began last June, and \$10,000 has been spent in building the plant and developing the ground. Last week Mr. Beasley leased the plant and three lots to Clem. Harlan, who will start up the plant and produce ore this week.

**BRINDLE STEER COMPANY.**—The shaft was started last November and struck ore in paying quantities in March. They are now drifting at 120 ft. and are on a large face of lead and jack in shooting ground, having only enough water to wash the ore. This mine is now and has been a large producer and nets its owners between \$500 and \$600 per week off of the lead alone, after paying all expenses, leaving the zinc ore as clear profit. They now have over 100 tons of zinc ore in their bin.

**CRIPPLE CREEK COMPANY.**—This company has bought the Joe Fahlenbock 10-acre lease, situated a mile southeast of Galena. A large pump has been put in that is thoroughly draining the lease and has removed the water from the drifts that were flooded by the late rains. They built a fine steam-jig plant, and while waiting for the water to be pumped out, have been mining hand-jigged tailing, obtaining three tons of high-grade zinc ore each shift.

There are seven producing shafts that are drifting at 80 ft. on a large face of zinc ore in open drift ground. In one shaft they are drifting at 60 ft. on a rich body of lead in soft ground.

**HAYES, YOUNG & COMPANY.**—This company's shaft is down 100 ft. in the east end of Miller Hollow in the Purcell lease. They have started a drift at 87 ft. and are developing a large face of peacock zinc ore in shooting ground, and will make their first shipment this week.

**KENTUCKY MINING COMPANY.**—This company is composed of G. W. Lundreth, of Joplin, Mo., and B. Miller and F. G. Jarrett, of Galena, Kan. Their shaft is 120 ft. deep, but they are drifting at 90 ft., on a larger face on zinc ore in open ground, and have enough water to wash the dirt. They are taking out about 20 tons of ore each week. They struck good pay dirt about a month ago.

**KITRELL, SON & COMPANY.**—Lot 3<sup>d</sup> on DeGraff Brothers & Company's lease is owned by Kitrell & Son and G. C. Reeves, of Bentonville, Ark. They are drifting at 110 ft. on a 13-ft. face of lead and jack in open ground. On three sides of the shaft in the drifts is a good face of ore.

**M CLEARY & COMPANY.**—This company has leased 40 acres about 1¼ miles northeast of Galena, and has developed a fine body of ore at 80 ft. They have put up a steam concentrating plant and are making over 25 tons of zinc ore each week. They are drifting at 80 ft. on an 18-ft. face of zinc ore in shooting ground, with only enough water to wash the ore. There are a large number of prospect shafts going down on the lease.

**RAINS & NATHAN.**—The output of ore on this lease is increasing every week. Five producing shafts last week yielded 35 tons of free zinc ore, 300 tons of crushed ore and 20,000 lbs. of lead.

**ST. CLAIR & COMPANY.**—I. W. Chapman and G. D. Purcell have sub-leased their lot on the Purcell lease to this company, which has struck good zinc ore in the drift at 45 ft. from the surface.

## MICHIGAN.

## SAGINAW COUNTY.

**SAGINAW COAL COMPANY.**—This company, of Saginaw, has struck coal in its new shaft, and mining will be commenced immediately.

## MINNESOTA.

(From Our Special Correspondent.)

Ore shipments have continued with little decrease, but train crews are being gradually laid off on the two Minnesota roads, and all traffic has been stopped on the Duluth & Winnipeg, which carries the product of the Mahoning mines. Rates have not changed and there is still no prospect for an increase of business, though the horizon is believed to be a little brighter. Up to date the record for the year has been 400,000 tons in excess of the same time in 1895, but for the remainder of the year ore traffic will be greatly curtailed.

## IRON—MESABI RANGE.

(From Our Special Correspondent.)

**BIWABIK BESSEMER COMPANY.**—This company has laid off one shovel in the ore and will continue the season with but one at work. It is now mining about 1,700 tons daily.

**CINCINNATI IRON COMPANY.**—This company has stopped operations for the season in hoisting and shipping ore.

**MAHONING ORE COMPANY.**—The mining of ore at this property has been suspended, presumably for the season, with a total of about 200,000 tons to date. The company states that the danger of free silver is the cause for the close-down, but it is continuing its stripping operations under the contract with Winston & Dear. Its original allotment for the season was about 350,000 tons.

## IRON—VERMILION RANGE.

(From Our Special Correspondent.)

**MINNESOTA IRON COMPANY.**—This company has cut the wages of its miners at Soudan 10%, and has reduced the number by about 100 men. The company claims that it has mined enough ore to fill all its contracts for the season, and that it is now at work only to keep its married men employed. Much of its ore already sold is not going forward.

**PIONEER IRON COMPANY.**—This company has reduced its forces to about 70 men, and stopped operations almost completely.

**ZENITH ORE COMPANY.**—This company has closed down and discharged its men. It will keep the pumps going, but will not mine any more this season.

## MISSOURI.

## JASPER COUNTY.

(From Our Special Correspondent.)

**JOPLIN ORE MARKET.**—The output of ore last week was larger than the week before, but this week will be smaller, as some of the mines that are producing large quantities of lead ore are shutting down until prices advance. The top price paid for zinc ore last week was \$20.50 per ton, with an average of a little more than \$18 per ton. There was about 1,000 tons of zinc ore left in the bins unsold, as the smelters are buying only enough to keep the furnaces running until after election and fill the orders on hand. The price of lead ore has been steadily dropping for the last month, and the price last week was \$13.50 per thousand lbs., with the usual 50c. for hauling. There is on hand over 2,600,000 lbs. of lead ore. The turn-in was as follows: Joplin zinc, 1,119,340 lbs.; lead, 165,350 lbs.; value, \$12,949. Webb City zinc, 255,400 lbs.; lead, 24,700 lbs.; value, \$2,503. Carterville zinc, 949,870 lbs.; lead, 151,900 lbs.; value, \$10,201. Galena, Kan., zinc, 2,580,000 lbs.; lead, 392,500 lbs.; value, \$25,533. Aurora zinc, 405,000 lbs.; lead, 50,000 lbs.; value, \$2,775. Wentworth zinc, 83,000 lbs.; value, \$760. Mt. Vernon zinc, 44,350 lbs.; value, \$422. Oronogo zinc, 42,420 lbs.; value, \$403. Totals for the district: Zinc, 5,479,280 lbs.; lead, 751,450 lbs.; value, \$55,546.

**ANDERSON & COMPANY.**—At this company's mine, on the Becky Sharp lease, a 40-H. P. boiler, a 25-H. P. engine, an 8-in. lift pump and belt hoister have been put in, and next week a steam rougher will be added. It is expected that 25 tons of pebble zinc ore, which always brings the highest price, can be produced. They are drifting at 150 ft. on a 20-ft. face of ore in soft timbering ground, with only enough water to wash their ore.

**BLUE GOOSE COMPANY.**—At this company's shaft, on the Indiana & Missouri Company's land, they have opened up two new drifts, at 135 ft., in soft timbering ground, with enough water to wash the ore. They are hoisting 175 tubs of dirt each shift, from which they obtain about three tons of zinc ore.

**BRANSTETTER & COMPANY.**—On the Kohinor lease this company is cutting an air drift to James Reeves' shaft, through a body of rich zinc ore in hard ground, and last week they hoisted 329 tubs of dirt which cleaned up 19 tons of zinc ore, for which they received the top price.

**FERRIG & COMPANY.**—On the Kohinor lease

this company is putting up a 40-H. P. boiler and engine and an 8-in. lift pump. They have a large face of ore on the 100 ft. level.

**LAWRENCE & COMPANY.**—This company is drifting in three drifts at 133 ft., on a good face of ore, in soft ground, and producing about 20 tons of zinc ore each week.

**LITTLE FLOSSIE COMPANY.**—This company's mine, on Nat Perry's Lone Elm lease, is owned by Hal-yard, Foster & Company. They struck lead at 7 ft., are in good lead dirt at 20 ft., and are still sinking.

**MANSON BROTHERS.**—A 40-H. P. boiler, a Hooker steam pump and a Feman steam hoist have been put in, and the plant is producing 20 to 25 tons of pebble-jack each week. They are drifting at 140 ft. on a 20-ft. face of rich jack dirt in soft timbering ground, with only enough water to wash the ore.

**MORGAN, SNYDER & COMPANY.**—This company owns the Big Eight mine on the Joplin Prospecting Company's lease, and the Madeline Pollard and Lone Star mines on the Granby land, where they are putting up a first-class steam concentrating plant, and will concentrate the ores from these mines. At the Big Eight they are drifting at 142 ft. on a large face of lead and jack in hard ground, and have been making over 20,000 lbs. of lead and 15 tons of zinc ore each week. At the Madeline Pollard they are drifting at 135 ft. on a large face of jack in hard ground, and are making 35 tons of zinc ore each week. At the Lone Star mine they are drifting at 144 ft. on a large face of jack and lead, and are producing 15 tons of zinc ore and 5,000 lbs. of lead a week. The Lone Star pump will furnish water for the plant.

**MOSBAUGH & COMPANY.**—On the Indiana & Missouri Company's land this company is drifting at 80 ft. on a good face of pebble ore, in timbering ground, and no water. About 15 tons of zinc ore are produced each week, working three men underground and two on top.

**PATTEN & COMPANY.**—Last Friday, this company started up its Grasshopper plant on the Eleventh Hour lease. They are hoisting rich zinc-ore dirt and are producing 8 tons of zinc ore each shift. They are drifting at 175 ft. on a large face of zinc ore in soft timbering ground and have enough water to run their plant.

**WIDOW COMPANY.**—On the Eleventh Hour lease, this plant is running steadily on rich dirt and is producing more than 8 tons of high grade zinc ore every 10 hours. They are drifting at 185 ft. on a 40-ft. face of zinc ore in hard ground and drain their ground with a 2-in. steam pump.

#### MONTANA.

##### GRANITE COUNTY.

(From Our Special Correspondent.)

**QUIGLEY.**—This mining camp, on Rock Creek, in the western part of the county, is prospering, and it may be said to have a boom. There has been an opinion among some mining men who had visited the properties of the Scepter Mining Company that the development did not show up ore bodies of sufficient size to justify the erection of the mill and the making of other improvements there, costing, it is said, about \$500,000; but the managers of the company evidently knew what they were about, and it is now conceded that it will make a permanent camp, and that, though the value of the ore is low, there is enough in sight to operate the mill several years.

##### JEFFERSON COUNTY.

**MERRILL-MILLER MINING COMPANY.**—At a recent meeting of the directors of this company it was definitely decided to make no attempt to resume work in the Liverpool and Washington mines in Lump gulch in the near future, and every preparation has been made for a long shut-down.

##### LEWIS & CLARKE COUNTY.

**St. LOUIS MILL.**—This mill, in Trinity Gulch, near Marysville, was started up recently under favorable conditions. It is a 10-stamp mill, built by Fraser & Chalmers, with hydraulic separators and Frue vanners. All the material is automatically handled and the plant is lighted by electricity.

##### MADISON COUNTY.

**MONITOR MINING COMPANY.**—A strike is reported in this company's Arctic mine. While making a raise from the second level, a body of ore 14 ft. wide was encountered, which assays \$40 per ton. The shipments at present are one to two carloads of ore per week to the East Helena smelter, which are said to net \$100 per ton. New machinery is being put in preparatory to sinking the vertical shaft, 100 ft. deeper.

(From Our Special Correspondent.)

**CLIPPER.**—The syndicate that paid \$8,000 for an option on this mine at Pony, did not take up the bond August 15th, as was expected. The mine has been continuously worked by Morris & Elling, employing about 30 men. A 10-stamp mill is being run and the high grade ore is shipped to Butte. A tunnel known as No. 5 has been run in at the foot of the hill, to tap the lead 800 or 900 ft. below the surface, and stoping will be done from there up. The mill works about 55 tons a day and the mine is making a splendid showing. James Rooney is the superintendent.

**REVENUE.**—At this mine, under the management of Lewis Dunham, the cyanide process is being worked very successfully. A big strike was made a few days ago. About 30 men are given employment in the Revenue.

#### MEAGHER COUNTY,

(From Our Special Correspondent.)

**CALIFORNIA.**—Samuel Ward, of Helena, is opening up this mine, on Castle Mountain, near Robinson, getting ready to ship ore when the railroad has been completed to Castle. The owners of other mines are doing the same. While there is plenty of ore in Castle Mountain, it is of so low grade that it will not much more than pay expenses at the present prices of lead and silver. But a great deal of ore will be shipped as soon as the railroad is ready to take it.

#### SILVER BOW COUNTY.

**ANACONDA COPPER MINING COMPANY.**—This company will soon begin sinking to a depth of 5,000 ft.

**RED EAGLE.**—A copper strike was made in this mine recently in the Yankee Doodle Gulch, north-east of Butte.

(From Our Special Correspondent.)

**ANACONDA.**—W. J. Jameson, administrator of George Austin Weaver, who was killed in the St. Lawrence mine October 1st, 1895, has commenced an action against the Anaconda Company for \$10,000 damages, alleging that Weaver lost his life through the negligence of the company. It is said that this is the first suit ever brought for damages by any one injured in the Anaconda Company's properties, the others having all been settled without suit.

#### NEVADA.

##### HUMBOLDT COUNTY.

**GOLDEN EAGLE.**—A carload of ore from this mine has been shipped to Salt Lake, Utah. It is reported that the ore sampled over 1½ oz. in gold, and, with the silver and lead added, gave a market value of over \$56 per ton. Mr. Wilbur, the manager of the mine, states that as yet all the ore taken out has been mined in the development work. About five tons of ore is being taken out each day.

##### LANDER COUNTY.

**AUSTIN MINING COMPANY.**—The tunnel in this company's mine is now in 5,000 ft. There are 1,000 ft. more to be pierced. About 100 men are employed, and it is expected the tunnel will be completed by January 1st, 1897.

**AUSTIN MINING COMPANY.**—The tunnel is now in 5,000 ft. There are 1,000 ft. more to be driven, and it is expected to be completed January 1st, 1897.

##### STOREY COUNTY—COMSTOCK LODGE.

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

**CHOLLAR.**—In this mine (old Comstock workings), in the stope above No. 2 crosscut, 450 level, they are driving south on the tenth floor. The east casing carries 3 ft. of good ore, but the fillings are of too low a grade to save. In the south stope, same level, they have worked up to the fifth floor on the east side and are also working south on the sixth floor. Have saved and shipped to the Nevada mill during the week 120 tons and 1,400 lbs. of ore. Average assay of the top car sample was \$32 per ton.

**CONSOLIDATED CALIFORNIA & VIRGINIA.**—The latest official weekly report of this company is as follows: West crosscut 2, started at a point in north drift 530 ft. north from Consolidated Virginia shaft station, or 85 ft. south from north boundary line of mine, has been extended 30 ft., passing through porphyry and clay with lines of quartz assaying \$1 per ton; total length, 570 ft. Face is dry and does not show any seepage of water. 1,650 level—On 9th floor, first floor above sill floor of this level, the south drift from east crosscut from drift run south from end of the stope has been extended 19 ft., passing through porphyry, clay and quartz assaying \$1 and \$2 per ton; total length 509 ft. 1,750 level—From 13th, 15th, 21st and 22d floors above sill floor of this level at north end of stope in old ground of former workings have extracted during the week 142 tons of ore, average assay value of which, per samples taken from cars in mine, was \$49.76 per ton. South drift from 24th floor from end of west drift has been extended 9 ft. through old stopes and fillings, assaying \$30 to \$30 per ton. Total length, 15 ft. From upraise carried up from northwest drift from main west drift from C. & C. shaft, 50 ft. above sill floor of this level, from end of east crosscut No. 2, a north drift has been advanced 28 ft. through porphyry and quartz, assaying \$3 and \$4 per ton. Total length, 56 ft. Total extraction of ore for week amounted to 142 tons, average assay value of which, per samples taken from cars when raised to surface, was \$45.65 per ton.

**HALE & NORCROSS.**—On the 900 level in No. 1 upraise have been working on the second floor on a small streak of ore. Have started No. 2 upraise a point 35 ft. north of upraise No. 1 on a narrow streak of ore. Extracted from this level during the week five cars of ore assaying \$51.60 in gold and 34 oz. of silver per ton. 1,100-ft. level—Resumed work on this level. Have been repairing north drift and have advanced the same 6 ft.; total length, 136 ft. Face in old fills of low grade. Extracted from all openings during the week seven cars of ore, assaying per mine car sample \$37.70 in gold and 28 oz. of silver per ton.

**OPHIR.**—In the old Central tunnel workings north-west of the old Mexican shaft some quartz assaying \$5 to \$7 per ton was cut during the past week.

**POTOSI.**—In this mine (old Comstock workings),

the west crosscut, from the north drift from the top of the raise, 450 level, is out 56 ft. The face is in low grade quartz. From the south lateral drift, 80 ft. from the top of the raise, same level, have started a crosscut west, which is out 12 ft. The face is in low-grade quartz. They have shipped to the Nevada mill during the week six tons of ore. The average assay of the top car sample was \$25.50 per ton.

#### STOREY COUNTY—BRUNSWICK LODGE.

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

**CHOLLAR.**—Shaft No. 1 has been sunk 15 ft. on the incline, and is now down 566 ft., 200-ft. level—The south drift on this level has been advanced 17 ft., and is now out 246 ft. south from the north boundary line. The face is partly in the footwall, a small streak of quartz and soft porphyry being exposed on the east side 300-ft. level—The south drift on this level has been advanced 42 ft., and is now out 163 ft. south of the north line. For a distance of 155 ft. south of the north line, the face since previous report, showed a width of from 18 in. to 2 ft. of good ore, since which point porphyry has predominated.

**CONSOLIDATED CALIFORNIA & VIRGINIA, BEST & REICHER AND GOULD & CURRY.**—The joint shaft No. 2 has been sunk 10 ft. on the incline; total depth, 317 ft; the bottom is in hard porphyry. 150-ft. level—The south drift started from east crosscut No. 1 has been extended 8 ft., passing through porphyry and stringers of quartz; total length, 129 ft.

**HALE & NORCROSS.**—Shaft No. 1 has been sunk 15 ft. on the incline, passing through porphyry and stringers of quartz; total depth, 567 ft., 300-ft. level—Advanced main north drift from station 57 ft; total length, 238 ft.; face in porphyry and stringers of quartz.

**SAVAGE.**—Shaft No. 1—300 level—The joint north drift has been advanced 39 ft., making its total length from the shaft station 192 ft.; face in porphyry, clay and seams of quartz giving low assays.

#### WASHOE COUNTY.

**JIM BLAINE.**—This mine at Wadsworth was sold recently to San Francisco parties. The price paid is reported to be \$14,000.

#### NEW JERSEY.

##### MONMOUTH COUNTY.

**HOLMESBURG GRANITE COMPANY.**—This company has been organized to open a granite quarry at Holmesburg. The office of the company is in Camden, N. J.

#### NEW MEXICO.

##### GRANT COUNTY.

**GOLDEN GIANT.**—Sinking below the 350-ft. level has been resumed at this mine. Between 40 and 50 men are employed at the mine and mill. The mine is keeping up its usual product of gold ore, running from 1½ oz. to 2 oz. per ton. The mill is running steadily on the ore and making regular weekly shipments of gold bullion.

**MOUNTAIN KEY.**—W. C. Chandler is working 12 men on this mine and getting out good gold ore which is being reduced at the Stanley-Martin mill.

##### SOCORRO COUNTY.

**CONFIDENCE.**—This mine is said to be producing its regular quota of 80 tons of ore per day which is reduced at the mill on Whitewater. Extensive development is being pushed on the mine in which about 80 men are employed.

##### TAOS COUNTY.

**MIDNIGHT.**—Another strike of rich ore is reported to have been made in this mine at La Belle.

#### NEW YORK.

##### CLINTON COUNTY.

(From an Occasional Correspondent.)  
Several bloomeries are still in operation along the Chateaugay Railroad above Lyon Mountain, notwithstanding the very general dismantling of the old forges elsewhere in the Adirondack region.

##### ESSEX COUNTY.

(From an Occasional Correspondent.)

**MINEVILLE.**—Work is in progress at the local mines of the Port Henry Iron Ore Company and Witherbees, Sherman & Company, with a reduced force. The past winter the diamond drill has disclosed great reserves of ore on the southeast side of the old workings, along the Joker and Bonanza shafts. Witherbees, Sherman & Company are therefore building a large new engine house between these shafts and equipping the same with new engines and machinery. The Bonanza shaft has also been remodeled, so that work can be carried on much more conveniently and economically than heretofore.

#### NORTH CAROLINA.

##### ALAMANCE COUNTY.

**JONES BROTHERS.**—This firm has discovered a gold mine near Altamaha, which, it is said, promises well.

##### MECKLENBURG COUNTY.

**GOODMAN'S.**—Messrs. George G. Ritchie, M. M. Ritchie and Calvin Basinger several weeks ago formed a syndicate and purchased this property in No. 6 township. Last week they struck a rich vein,

and it is said that several thousand dollars worth of gold, in ore and nuggets, has been taken out.

OHIO.

ALLEN COUNTY.

**WILSON OIL AND GAS COMPANY.**—Maire Brothers have petitioned the Common Pleas Court to appoint a receiver for this company of Spencerville. The company controls the majority of the gas territory and several oil wells in the Spencerville field, and Maire Brothers own a large share of the stock. The petitioners make no allegations except that their own interest will be best subserved by the appointment of a receiver.

STARK COUNTY.

**UNION MINING AND POTTERY COMPANY.**—This company of Meadville, Pa., has made arrangements to locate at Justus, about 6 miles from Massillon, O. They will put in a plant that will cost in the neighborhood of \$100,000, and when in full running operation will give employment to over 100 men.

WYANDOT COUNTY.

**CRAWFORD OIL COMPANY.**—It is reported that this company, composed of Columbus capitalists, has struck a fine oil well in the Lovell fields. The well ran 250 barrels in the first 24 hours and since has been flowing at the rate of 10 barrels an hour. The well is not through the sand as it was necessary to move the boilers from the well, so great was the flow. The company is composed of F. J. Picard, Theo. Leonard and W. E. Guerin.

PENNSYLVANIA.

ANTHRACITE COAL.

**CENTRALIA COLLIERY.**—This colliery is working full time of 10 hours a day and this promises to be the rule for some time to come, as the Logan colliery allotment has been added to this colliery.

**CONNELL COAL COMPANY.**—The William A. colliery of this company made a record recently in running 1,800 tons of coal through the breaker in 10 hours.

**LINDERMAN & SKEER.**—No. 2 breaker, at Stockton, Luzerne County, owned and formerly operated by this firm, was completely destroyed by fire recently.

**TWIN SHAFT.**—Work in this mine, at Pittston, was resumed on Monday of last week, and some 20 cars of coal were hoisted for several days. The miners were then ordered out by Superintendent Law, because, it is said, of the danger of further caving of the workings.

BITUMINOUS COAL.

**ALEXANDRIA COAL COMPANY.**—This company, of Greensburg, has closed a contract with Cunningham & Company, 1,033 Monadnock Building, Chicago, for the erection of a coal washer on the Lührig system, with a capacity of 600 tons in 10 hours. Cunningham & Company control the Lührig patents in the United States and Canada. The plant is expected to be in operation before the end of the year.

**ROGERS COAL COMPANY.**—The strike at the Chamouni Works, below Brownsville, operated by this company, has been broken, and the mine is running with 80 men.

LUZERNE COUNTY.

**HENDLER QUARRIES.**—These quarries near White Haven have been transferred by Joseph Hender to a New York syndicate, which expects to work them on a large scale and to supply the stone for the great bridge over the Hudson River at New York.

NORTHAMPTON COUNTY.

**ATLAS CEMENT COMPANY.**—This company is erecting a very large mill for the manufacture of high-grade cement at Siegfried. A quarry will be opened adjoining the mill, where a fine bed of cement rock lies near the surface.

**NORTH BANGOR SLATE COMPANY.**—This company, which operates quarries near Bangor, held its annual meeting recently at its office in Newark, N. J., when the following directors were elected: F. A. Wilkinson, Elkanah Drake, Benjamin Atha and Dr. D. H. Keller. The board of directors elected Elkanah Drake president and treasurer, and an executive committee composed of Dr. D. H. Keller, chairman; F. A. Wilkinson and Benjamin Atha. The reports showed the past year to have been a prosperous one.

WESTMORELAND COUNTY.

**EQUITABLE GAS COMPANY.**—This company, of Greensburg, which has been drilling a well near Delmont, struck a small flow of oil. The prospect is held to be good for a big well, and the company will drill deeper. This is an entirely new field.

**T. N. BARNSDALL & COMPANY.**—A new strike was made this week on the Bradford tract, 5 miles back of Braden, near the Beaver County line, owned by this company. The oil was developed at 50 ft. in the 100-ft., and the well will probably be good for 10 bbls. a day.

SOUTH DAKOTA.

PENNINGTON COUNTY.

**HOLY TERROR.**—This mine made a clean-up from two weeks' run and it is reported saved 11 lbs. of gold, about \$2,600. The shaft has reached a depth of 375 ft. A drift will be run to connect it with the vein.

**MONTANA.**—Preparations are being made to begin development work at this mine and start up the mill. F. R. Lewis, who is interested in the mine,

has lately arrived from Alaska, and Harry Hibbard, the superintendent, has just arrived from the East. They will begin cross-cutting at the bottom of the 130-ft. shaft.

TEXAS.

HOPKINS COUNTY.

**GOSPEL HILL QUARRIES.**—New machinery is being put into these quarries, and work will be begun on an extensive scale as soon as a branch track connecting the quarries with the International & Great Northern Railroad is completed. The quarries are to furnish the stone for the new jetties at Galveston.

UTAH.

JUAB COUNTY.

**PRIMROSE.**—A strike is reported to have been made in this mine, at Silver City. For 75 ft. the shaft was put through what is known as the iron zone, when, at a depth of 175 ft., 4 ft. of ore was uncovered that is said to assay 40 oz. in silver, 26% lead and gold of the value of \$2 a ton.

SALT LAKE COUNTY.

**TILDEN.**—This crosscut tunnel, in the Phoenix group, begun in 1891, had been run over 1,200 ft., when recently it broke into the vein, showing a lead carbonate ore of good quality. This tunnel will ultimately form a handy outlet on the Carr fork side of the Coramandel, and in fact all the claims of the Phoenix group.

(From Our Special Correspondent.)

**BIG COTTONWOOD.**—This district, which is located about 10 miles distant from Salt Lake City, is opening up a number of fine new properties under the activity that has struck that locality in the present year. The Baby McKee mine has encountered a fine body of silver and lead ore that the management has been looking for the past eight months. The Phoenix has entered the list of shippers and is sending a good grade of ore to the smelters.

TOOELE COUNTY.

**ALPINE GROUP.**—A deal has been consummated whereby W. H. Remington and C. E. Bolton, of Salt Lake City, become the possessors of this group of four claims, located in Blue Bell District, just over the mountains from the property owned by the New Guinea Mining Company, on the head of Government Creek. On this group there is a 5-ft. ledge carrying high-grade silver and lead ores. On two of these claims there are six openings, ranging from 6 to 30 ft. in depth, which demonstrates the continuity of the ore body. The mineral from these openings is said to carry values of 75% lead and 26 oz. in silver to the ton.

(From Our Special Correspondent.)

**CREIUS.**—The big Creius tunnel in Dry Canyon, on which work was commenced in 1874, will in all probability be completed this year. It is now into the mountain 1,820 ft. and has a vertical depth of nearly 1,500 ft.

**DEEP CREEK DISTRICT.**—While the almost limitless mineral wealth of the Deep Creek country is at present scarcely available for the lack of railroad communication, the strictly milling propositions are rapidly being converted into producers. The latest mill to be erected is now nearly completed on the Queen of Sheba mine in Spring Creek district. The average of the ore is \$8 per ton, but it is entirely free milling, and the mill will be operated by water power, Pelton wheels being used; the expenses of reduction will be comparatively light. The manager is G. D. Havens, of Salt Lake City.

**MERCUR.**—Another immense strike has been made in the Resolute tunnel, one of the properties recently acquired by the Mercur Company. The new ore body is heavily impregnated with cinnabar, a common feature in the higher grade ores of the district, and although nearly a week has elapsed since the ore was first encountered its extent between walls has not yet been determined. It is the intention of the Mercur management to erect another and larger mill at the mouth of the Resolute tunnel for the working of the ores from the Mattie group.

VERMONT.

RUTLAND COUNTY.

**SMITH & BRAINERD MARBLE COMPANY.**—This company, says Stone, has sold its entire property to the Florenine Marble Company, of Chicago. It is understood that the price paid was \$101,000. The Smith & Brainerd property includes quarries at Florence, Brandon, Middlebury and Bellows Falls, with machinery, besides farm, cattle, farm and other buildings, together with a considerable amount of real estate in the towns in which the quarries are located. The company also owns a branch railroad, which runs from the Rutland road to the quarries in Florence. The sale was a surprise, as it was commonly believed that the property was not in the market.

WASHINGTON COUNTY.

**WETMORE & MORSE GRANITE COMPANY.**—This company paid on August 1st a dividend of 6% on the profits of the past year, besides putting a considerable sum into improvements on its quarries near Montpelier.

WASHINGTON.

LEWIS COUNTY.

It is reported that a deposit of nickel has been discovered on the headwaters of the Cowlitz River in the Mount Tacoma District. One vein is said to be 100 ft. wide, with very rich ore in sight.

WEST VIRGINIA.

MONONGALIA COUNTY.

**SOUTH PENN OIL COMPANY.**—In the Fairview District this company and Ira Dewitt have completed No. 2, Naomi Tennent. It produced 75 bbls. the first 24 hours after it was drilled in. The same company is drilling in the sand at No. 1, Joseph Beam, and have a small show of oil. It will make a light well.

PLEASANTS COUNTY.

**STEEL & COMPANY.**—This company's well, on the Wells farm, north of Raven Rock, on Ben's Run, according to late reports, is quite a good producer. Late information from the well places the production at 100 bbls. a day.

WOOD COUNTY.

**SMITH & PARKER OIL WELLS.**—In the Rosenberry pool, west of Parker, the second well of this firm has turned out a producer good for between 400 and 500 bbls. per day. This strike extends the pool some distance to the northwest.

WISCONSIN.

SAUK COUNTY.

**ABLEMANS QUARRY COMPANY.**—This company has been organized to open a granite quarry at Ablemans. The officers are W. A. Harding, president; Frank Kleb, treasurer; William Ree, secretary.

WYOMING.

CARBON COUNTY.

**DOUGLAS CONSOLIDATED PLACER MINING AND MILLING COMPANY.**—At a meeting of the board of directors of this company, held in Laramie August 11th, the following officers were elected: President, M. A. Hance; vice president, E. J. Tunnison; treasurer, H. D. Beemer; secretary, C. S. Dawson; attorney, C. W. Bramel; general manager, M. N. Grant. A lease was granted to Messrs. Campbell, Davis, Frisbee, Grant, Tannyhill and Fisher for property on Muddy Creek. Messrs. Frisbee, Tannyhill and Fisher are practical placer miners. They will proceed under the lease to put in a hydraulic plant, so as to begin active operations in the spring.

CONVERSE COUNTY.

**DEER CREEK COAL COMPANY.**—This company, at Glenrock, is enlarging its mine with a view to increasing the output of coal. Two hundred cars a month are now being shipped, most of which is used by the War Department at Forts Meade, Robinson and Russell. A new shaft is being sunk which will increase the shipping capacity 50%.

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

ROSSLAND DISTRICT.

(From Our Special Correspondent.)

There has been a considerable increase of late in the shipment of ore to the Trail Creek smelter by the Columbia & Western. The ore is now moving out faster than it ever did before and the activity of the road both ways is now constant. The greatest shipment was made one day last week, when there was an output of 300 tons. As previously intimated, there will be a large quantity of accumulated ore at the various mines until the Northport branch of the Nelson & Fort Shepherd Railway is complete.

In a special visit which your correspondent is now making to the various mines in the vicinity of Rossland, the importation of machinery into many of mines is noticeable. The increase of plants is an especial feature in this year's growth of the camp.

As yet the statistics connected with the production of the mines in the Trail Creek and Slocan countries are very crude, and in the absence of any regular system for their collection, much of this information cannot be regarded as accurate, but there are some facts and figures furnished which throw some light on this trade and the business arising from it. Taking the year which ended June 30th last, the official value of silver ore which reached Northport, in Washington, from the Slocan country was \$2,000,000. The value of gold ores which have been shipped from Trail Creek and neighboring districts up to the same date reaches similar figures, \$2,000,000. This makes the total value of ores for a year \$4,000,000, on which duty was paid at Northport. The weight of these ores and bullion is placed at 40,000 tons. During the same period goods consisting largely of foodstuffs were exported to the Trail Creek and Slocan countries via Northport, which have paid duties amounting to at least \$1,000,000. It is stated by a reliable authority that 75% of this trade has come from Spokane, and the bulk of it has been to Rossland.

The preparations which have been going on for some time in this camp, and the activity which is noticeable all over the Kootenay District, will certainly bring the figures up far beyond the most conservative estimate as to the value of the output for 1896. This seems to be a reasonable conclusion judging from the present outlook.

**CALIFORNIA.**—During the past few days about a dozen men under the management of Mr. Bert Cook have been stripping the ledges on this property. The result has been to uncover some very promising rock.

A diamond drill, with Mr. Kelly in charge, is being placed in position. Considerable progress has already been made in this direction. It is the intention of the management to drill in the ledge for

200 ft. For this purpose, the drill will enter the present tunnel, which runs in a distance of 56 ft. The direction will be a slant downward, but following the ledge as much as possible.

The location and surface showing of this property add very much to the interest that is being taken in it.

The California has recently been stocked in Eastern Canada, principally in Toronto, it is said. Mr. Loring, a well-known mining man in this camp, is in charge. He is showing much energy. The diamond drill has come into widespread use in this camp of late.

**GEORGIA.**—This property, which adjoins the Evening Star, is making considerable progress. At the Georgia your correspondent met Mr. Newman, who has the management of the O. K. Mr. Newman exhibited some rock from the Georgia which was very similar to that of the best showing of the Evening Star. The Georgia is owned by parties in Victoria. Its officers are Headley Chapman, president; B. W. Pearce, vice-president; E. Crow Baker, treasurer; I. Gauberling, secretary. The headquarters of the company are at Victoria, B. C. The capital stock is \$1,000,000.

**HOMESTAKE.**—This property is situated about a mile from Rossland. The Columbia & Western Railway runs so close to it that the line divided the dump. At present no work is being done in the mine, though from 150 to 200 tons of shipping ore are ready for the cars. The total extent of shafting and tunneling on this property is 320 ft. Mr. Gillespie, who was temporarily in charge of the mine, informed me that the Homestake would soon be in a position to announce its management. It is understood that sufficient English capital has been raised to place the Homestake in running order.

**LILLIE MAY.**—This mine, in the South Belt, which recently passed into a new management is making considerable headway. There are at least 200 ft. of shafting and tunneling, and a considerable quantity of ore awaiting shipment. At present the only machinery in use at the mine is a whim, but hoisting and other machinery will soon be introduced, and as the property lies but a short distance from the Columbia & Western, shipments to the Trail Creek Smelter will begin as soon as a wagon road to the railway is completed. The interests of the Lillie May in the camp are represented by Messrs. Harris and Watson, of Vancouver.

**BRITISH GUIANA.**

**BARIMA MINING COMPANY, OF DEMERARA.**—A dispatch to the London office says that the first clean-up showed a return of 766 oz. gold from 450 tons of ore, an average of 1.65 oz. per ton. This is the first vein mine in the colony.

**INDIA.**

**COLAR GOLD FIELD, OF MYSORE.**—The returns of the different mining companies in this field show the following results for the month of July:

	Tons worked.	Gold.	Average per ton.
Balaghat-Mysore.....	.....	211 oz.	.....
Champion Reef.....	5,000	6,617 "	1.32 oz.
Coromandel.....	1,300	710 "	5.46 "
Mysore.....	5,454	9,038 "	1.66 "
Mysore West & Wynaad.....	1,350	452 "	0.45 "
Nundydroog.....	3,550	3,803 "	1.07 "
Ooregum.....	5,360	5,288 "	0.99 "

The returns of the Mysore Company were increased by the working of its accumulated tailings by the cyanide process. The Balaghat-Mysore is at present taking out no ore, the gold reported being all from tailings. The Coromandel Company is this year making regular returns for the first time.

**NEWFOUNDLAND.**

The first cargo of chrome ore from the mines lately discovered was received in Philadelphia, August 18th. The shipment is 150 tons, and the ore will be sub mitted to practical tests. The mines are 30 miles northeast of Cape St. George.

**ONTARIO.**

(From Our Special Correspondent.)

**RODI.**—This extension (westward) is attracting considerable attention lately, and a large block has just been surveyed for local and foreign investors.

**FOLEY MINE, AL 74-5.**—Nothing extraordinary happened here since last report. There are 40 men employed upon the claims. This includes a force of surface hands clearing roads and site for their new reduction works. The Ingersoll drills (3) are continuously at work in the two shafts. Both veins are still conspicuous for uniformity of value and quantity of free milling ore.

**H. P. 426.**—Near the east shores of Bad Vermillion lake is this claim, owned by Colonel Ray, and now in course of development. This prospect also shows up well, and its ores are apparently uniformly free-milling.

**LA SEINE RIVER (ONTARIO) GOLD MINES, LIMITED.**—Under the superintendence of Mr. A. Whitley, E. M., this company has, apparently, commenced mining upon the claims of AL 110, AL 111 and K 223 in good earnest. These three gold claims, heretofore known as the Ferguson group, are traversed by at least nine well-defined auriferous quartz lodes, that wherever opened up yield excellent results in free-milling ore. Upon the New vein no less than a dozen test pits have been driven. Next in order, going south, comes the Daisy vein, with 11 test pits

and one shaft. Next is an irregular vein in strike, and called by Mr. Whitley, upon his excellent ground plans and profiles, the Wiggler. This lode first outcrops upon K 223, where considerable development work was done. Its general strike is southeast, running into AL 110, toward the north-west angle, which it intersects and probably crosses the Government vein. This, by the way, was first discovered by the government employees engaged in roadmaking. Next in order of descent south comes the Big vein with several test pits and much stripping. And last is the Finn vein. This vein traverses the southerly limits of K 223 with a strike of S. 45° E., crossing the government road toward the south of AL 110. Beyond this point on its well-defined outcropping for a distance of over 700 ft. (within the limits of AL 110), several test pits are visible—also the Finn shaft, now under contract and down 55 ft. The vein at top of shaft measured 2 ft. 6 in., and at bottom to-day it exceeds 6 ft. The dimensions of shaft here is 9 ft. x 6 ft. The ore of the Finn shaft is of a free-milling character. The Daisy shaft is now down over 65 ft. Its dimensions are 9 ft. x 6 ft. with a dip 80° south. This vein, like others of this group, carries considerable argentiferous galena. The deepest shaft on the Big vein is 23½ ft. The vein in the shaft is 3 ft. wide. Greatest depth in main shaft on Government vein is 22 ft. The geological formation traversed by the entire series of auriferous quartz lodes referred to here is the coarsely crystalline granites or *protogene*. The Government vein is, however, conspicuous for its apparent occurrence in a dyke carrying schists and the usual greenstone accompaniment. This vein is also beautifully defined, with polished walls. The total force of employees, including assayer, secretary and accountant, is 35. Little, if any, machinery has so far been delivered upon the ground, and as the shafts there are much troubled with water, the pumps and hoists now ordered by the superintendent are almost indispensable. Upon the arrival of hoists, etc., the mining force will be largely increased. Meantime contracts have been let for additional buildings. The resident engineer is Arthur B. Whitley.

**NOVA.**—This gold claim, on Bad Vermillion Lake, with three auriferous quartz veins, is being thoroughly prospected by its owners. The claim is adjacent to the Australian and the Lilly, and between the latter and the Seine River gold mines.

**THE HUNTER CLAIMS (LA SEINE RIVER).**—These, the original gold claims of La Seine, are known as K 74 and K 75, surveyed in August, 1885, and contain nearly 500 acres. The owner is Mr. R. M. Hunter, of Duluth, Minn.

**LATE NEWS.**

**F. C. BROWN,** late manager of the Poorman Company, of Idaho, has resigned that position and has accepted the management of the mines of Maoritano and Irene Mining companies in New Zealand. He sails from New York August 29th.

**COAL TRADE REVIEW.**

**NEW YORK, Friday Evening, August 28.**

Statement of shipments of anthracite coal (approximate) in tons of 2,240 lbs., for the week ending August 22d, 1896, compared with the corresponding period last year:

	1896.	1895.
Pennsylvania Railroad.....	74,784	2,191,192
22d, 1896, compared with the corresponding period last year:		2,285,137

**PRODUCTION OF BITUMINOUS COAL,** in tons of 2,000 lbs. for week ending August 22d, and for years from January 1st, 1896 and 1895:

	1896.	1895.
Shipped East and North:		
Allegheny, Pa.....	34,896	1,476,362
Barclay, Pa.....	820	26,071
Beech Creek, Pa.....	41,894	1,928,674
Broad Top, Pa.....	5,696	255,964
Clearfield, Pa.....	46,024	3,045,223
Cumberland, Md.....	167,173	2,679,492
Kanawha, W. Va.....	161,419	1,975,137
Phila. & Erie.....	547	46,343
Pocahontas Flat Top.....	53,283	2,263,705
Totals.....	311,752	13,696,869

\* Week ending Aug. 8th.  
† Week ending Aug. 14th.  
‡ Week ending Aug. 15th.

	1896.	1895.
Shipped West:		
Monongahela, Pa.....	22,320	661,863
Pittsburg, Pa.....	23,399	1,252,382
Westmoreland, Pa.....	31,953	1,243,408
Totals.....	77,672	3,157,653

**Grand totals.....** 389,424 16,251,522 15,613,547  
Production of coke on line of Pennsylvania Railroad for the week ending August 22d, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 51,669 tons; year, 2,768,333; to corresponding date in 1895, 3,610,777 tons.

**Anthracite.**

The advance of 25c. a ton on all domestic sizes of anthracite coal reported last week has now become a reality. The Philadelphia & Reading Coal and Iron Company issued its new circular of prices August 26th, taking effect the same day. The other companies will make the advance on September 1st. The prices according to the new schedule are as follows: \$4 for broken, \$4.25 for egg and chestnut, and \$4.50 for stove.

The volume of business has not increased during the past week, though it is said certain dealers had a more active trade. Egg and broken are the sizes that continue in best demand, especially free-burning egg coal. The trade in stove and chestnut is reported very slack.

The output for September has not been officially announced, but it is expected to be 3,750,000 tons, an increase of 250,000 tons over August.

On September 7th the freight rates to tidewater and to the West are to be increased 25c. a ton on all prepared sizes.

**Bituminous.**

The condition of this market continues about the same. Present indications do not point toward an improvement for some time to come; the volume of business continues to be curtailed by the closing down of factories of all kinds in the East. The number of consumers thus cut off is already considerable, and promises to be materially increased during the next two months.

There can be no question that prices have been cut by shippers in Baltimore, and this fact gives rise to no small amount of uneasiness. We hear of many vessels tying up for lack of cargoes, and this is affecting the large class as well as those of smaller tonnage. The latter are reported very scarce at present at shipping ports, which is in part accounted for by the recent long-continued unfavorable winds and fog. Weather conditions, however, have been considerably modified during the past few days, and arrivals are looked for.

Transportation was never better than at the present time. Cars may be said to be in excess of requirements, except, perhaps, in the case of the Baltimore & Ohio Railroad.

We quote current rates of freight from Philadelphia as follows: To Boston, Salem, Portland and the Sound ports, 50c.; Portsmouth and Bath, 55c.; Wareham, 70c.; Lynn, 60@75c.; Newburyport, 60c.; Dover, 80c. alongside and towage; Saco, 70c. alongside and towage; Gardner, 55@60c. and towage; Bangor, 55@60c. Five and ten cents above these rates are asked from Norfolk, Newport News and Baltimore.

The Association prices remain as follows: F. o. b. Philadelphia, Norfolk and Newport News, \$2.35; Baltimore, \$2.28; New York Harbor shipping ports, \$2.80, alongside; New York Harbor, \$3. There is a 20c. differential in favor of Clearfield and Beech Creek coals.

**Buffalo.**

(From Our Special Correspondent.)

The sales of anthracite coal locally for fall consumption has not commenced. Dealers expect to receive orders before September 1st.

Lake freights are fairly active at unchanged quotations. Coal is not so scarce as it was at the beginning of the month. Of the vessels clearing this week, at least one-third left port light.

Bituminous coal is very dull. Many factories have closed up lately in consequence of the political and monetary situation, and many others talk of following suit.

The advance in railroad freight announced to take place on September 1st is being considered by the trade, and it is said that some lively buying has been in order since for stocking up.

The shipments of coal westward by lake from Buffalo, from August 16th to 22d, both days inclusive, aggregated 85,730 net tons, distributed as follows: 23,350 tons to Chicago, 25,350 tons to Milwaukee, 19,050 tons to Duluth, 2,700 tons to Toledo, 800 tons to Saginaw, 3,500 tons to West Superior, 1,500 tons to Gladstone, 320 tons to Sand Beach, 600 tons to Green Bay, 1,000 tons to Menominee, 2,450 tons to Lake Linden and 110 tons to Pequaming. The rates of freight were 20c. to Chicago, Milwaukee, Toledo, Gladstone, Superior, Duluth, Green Bay, Marquette and Menominee; 40c. to Saginaw and Pequaming, 35c. to Sand Beach and 25c. to Lake Linden. Closing steady.

Messrs. Loomis & Company's bid for run-of-mine soft coal for the Hamburg Canal pump for a month was \$1.59.

**Chicago.**

(From Our Special Correspondent.)

The buying of anthracite coal continues only in a modest way, and there is but little inclination on the part of purchasers to come into the market. Out-of-town trade continues slow, though there is a trifle more inquiry noticed. It is not thought here that anthracite prices will increase September 1st, as present circular rates are high enough for such times as are at present prevailing. A shortage in egg coal makes shippers hesitate concerning immediate delivery. Circular prices are fairly held; they are \$5.35 for grate, and \$5.60 for egg, stove and chestnut f. o. b. Chicago.

**Bituminous Coal.**—There is no improvement, the depressed commercial condition still continuing to interfere seriously with sales. There are but few manufacturing concerns of any size that are buying anywhere near their usual wants, and there are a number dropping out of the market each week. The awards for the supply of soft coal for the city's pumping stations are as follows: Twenty-second street—Philadelphia & Reading Company, 1,800 tons, \$2.15 a ton; Canal station—Baker Bros., 1,640 tons, \$2.15 a ton; Lake View—John T. Conery, 10,000 tons, \$2.27 a ton; Chicago avenue, 10,000 tons; Harrison street, 8,000 tons and Fourteenth street, 9,500 tons; all to Weaver Coal Company, at \$2.29 a ton in each case; Fullerton avenue—Philadelphia & Reading Company, 2,000 tons at \$2.18;



Washington Heights—Baker Bros., 1,000 tons, at \$2.35 a ton; Norwood Park—Baker Bros., 80 tons, at \$2.60 a ton.

**Pittsburg.** Aug. 27.  
(From Our Special Correspondent.)

**Coal.**—The situation is not getting any brighter; if anything, it is growing worse. It has been developed that the operators have been cutting each other, especially on third-pool orders. A member of one of the leading companies said some of their customers had been offered coal at a price 10% less than they could afford. This should be the height of the lake shipping season, but the coal business is unusually dull for this time of the year. The Fort Wayne shipment to the lakes last month averaged 500 cars daily; this month the shipments will not exceed 400 cars a day. The majority of river mines are idle, and no coal whatever is being loaded for outside markets at present, though it is expected that with the approach of cool weather the demand will improve. From Johnstown we hear that the coal business in the mountain and Cambria districts continues to be very dull. At home there is no improvement, and the operators are not looking for much improvement this month. What the manufacturer, operator and workmen are waiting for is a boom. The present conditions are not normal, and a demand is sure to come with a rush sooner or later. A permanent improvement in all lines of business is not expected until after the result is recorded in November.

Col. Wm. P. Rend has closed his mine at McDonald, which employed 400 men. Mark Hanna's Panhandle is closed. These mines paid the 70c. rate. The Svan mine, at Miller's Run, has resumed paying the 70c. rate.

**Connellsville Coke.**—A still greater decrease in production in the past week is reported, and another big movement toward total idleness in the region was made. Last week about 586 ovens went cold, making the active list almost 1,000 less than half the ovens in the region; in addition to the decrease in the number of ovens burning there was a decrease in time made, cutting down production 8,897 tons. If the furnaces scheduled to bank down do so, there is little doubt but that more ovens will be blown out. Speculation as to when this thing will end has ceased, and those dependent on the coke industry to live are seeking employment elsewhere.

Twenty new Ohio buckets have been erected at the Eliza furnaces at Soho by Jones & Loughlin. They are not ordinary bee-hive furnaces, but are of a new design, patents on which has been applied for by Henry A. Laughlin of the firm.

Ovens in blast this week, 8,150, with 9,797 idle. Production for the region, estimated upon the ovens drawn, amounted to 70,058 tons as against 78,955 tons the week previous; decrease, 8,895 tons. A number of five-day plants, of last week's plants, are scheduled for a four days run this week. The shipments of coke from the region for the week amounted to 4,545 cars against 4,692 cars the week previous; decrease, 134 cars. Shipments were as follows: To Pittsburg and river points, 1,972 cars; to points west of Pittsburg, 1,595 cars; to points east of Everson, 976 cars. Prices nominally unchanged.

**Shanghai, China.** July 17.

(Special Report of Wheelock & Co.)

**Coal.**—Trade in Japan is absolutely at a standstill and nothing is doing. Australian Wollongong has suffered by competition with Kaiping. We quote for American anthracite, 9 tals per ton, nominal; Welsh steam coal, 10.75 tals; Australian Wollongong, 9 tals. For Japanese coal quotations are: Takasima lump, 5.75 tals; Namazuta lump, 4 tals; other sorts, small and dust, 2.75@3 tals.

**Kerosene Oil.**—Business has been chiefly speculative, but prices are stronger. We quote for Devoe's 1.64½ tals per case; Comet, 1.55 tals; Batoum, 1.55 tals; Batoum bulk, 1.50 tals; Langkat, 1.52 tals. Stocks are estimated at 450,000 cases Devoe's; 6,500 cases Comet; 275,000 cases Russian (Batoum), and 4,000 cases Langkat.

**IRON MARKET REVIEW.**

NEW YORK, Friday Evening, Aug. 28, 1896.

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

Fuel used.	Week ending		From		From	
	Aug. 23, 1895.	Aug. 21, 1896.	Jan., '95.	Jan., '96.	Tons.	Tons.
Anthracite.	41	23,257	35	21,460	689,768	876,510
Coke.....	140	148,820	112	133,110	4,812,394	5,378,664
Charcoal....	22	4,428	23	6,760	140,065	192,965
<b>Totals....</b>	<b>203</b>	<b>176,505</b>	<b>170</b>	<b>161,300</b>	<b>5,642,227</b>	<b>6,448,079</b>

The iron market generally continues very quiet, and reports of limited business are the rule from all quarters. There has been a slight increase in Pittsburg and Chicago in sales of foundry iron, partly because manufacturers' stocks have been very low, and partly because iron can be had very cheaply. As a rule, however, people are not buying beyond their immediate requirements, and those are not large. The heavy reduction in pig-iron output has not served to improve prices.

There has been some talk of large purchases of pig iron to be held as a speculation. If such purchases have been made, they have been kept very

quiet, for it is impossible to locate any movement of this kind. Cheap iron can be had, of course, but the risk is considerable and the time during which the money must be locked up is too indefinite.

Some interest attaches to the meeting of the Steel Combination at Cresson Springs, Pa., to-day. The market is by this time pretty bare of steel and there are reports that some important members of the pool are in favor of trying lower prices. It is expected that the meeting will be a lively one.

**NOTES OF THE WEEK.**

A shipment of a small lot of pig iron, said to be 300 tons, to Japan is reported from Philadelphia. The iron was foundry pig, from an Alabama furnace.

A Pittsburg despatch of this date says that the Tin Plate Manufacturers' Association has been dissolved. The association was made up of nearly all the tin-plate manufacturers in the country. The withdrawal recently of the American Tin Plate Company, of Elwood, Ind., and its fight with the Amalgamated Association which ended in defeat, are among the causes of the break.

A report received at the Department of State from Consul W. D. Warner, at Cologne, indicates that Americans are underselling the Germans in barbed wire and wire nails in Japan. Hamburg importing houses are forced to buy the American wire because their customers have begun to purchase it directly from the United States. American competition, though felt elsewhere, has been especially noticeable in Japan.

**New York.** Aug. 28.

The local market continues very dull. There are no large transactions to report, and the volume of small ones is very moderate indeed. The local shops and foundries are generally running light, with little but repair work. Moreover, cash or short credits, now the general rule prevailing, does not help the trade.

**Pig Iron.**—While we can report no change in the nominal quotations, the market is in a demoralized condition. Some furnaces maintain prices and prefer selling nothing to cutting below the present level; but others are in need of money and are reported to be selling iron for what they can get. It is a "Chatham street market," according to one agent; the question is "What will you give?" Even with these conditions sales have been light.

With the reservations noted, and considering prices rather nominal except for high-grade irons, we quote for Northern iron: No. 1 foundry, \$11.75@12.50; No. 2, \$11.25@11.75; gray forge, \$10.50@11. For Southern iron prices are: No. 1 foundry, \$10.75@11.25; No. 2 foundry, \$10@10.75; No. 1 soft, \$10.25@10.75; No. 2 soft, \$9.75@10.25; forge, \$9.25@9.75. Basic pig is offered at \$10.50@11. All prices are for tidewater delivery.

**Cast-Iron Pipe.**—No new contracts are noted. The talk of a combination of makers has only served to develop the fact that nobody wants to go into such a movement now. "Too many combines already" is a very common opinion.

**Spiegeleisen and Ferro-Manganese.**—Nothing is reported in spiegel. There have been a few sales of imported ferro at \$47@47.50 for 80%, New York.

**Steel Billets and Rods.**—The pool price is \$21.75 per ton, New York. No sales are noted. Rods are quoted \$28@29, with little doing.

**Merchant Iron and Steel.**—Business has been light, but prices are nominally unchanged. We quote: For common bars, 1" @ 1.15c.; refined bars, 1" @ 1.45c.; soft steel bars, 1" @ 1.30c. Other quotations are: Steel hoops, 1" @ 1.60c.; steel axles, 1" @ 1.75c.; links and pins, 1" @ 1.70c.; tire steel, 1" @ 1.90c.; spring steel, 1" @ 2.15c. All prices are for delivery on dock, New York.

**Plates.**—Prices are nominally unchanged. We quote for universal mill plates, 1" @ 1.50c. For steel plates we quote: Tank, 1" @ 1.45c.; boiler shell, 1" @ 1.55c.; good flange, 1" @ 1.75c.; firebox, 2" @ 2.40c. Charcoal iron plates are quoted 2.25c. for shell, 2.75c. for flange, and 3.25c. for firebox. Rivets are 2.15@2.25c. for steel and 3@3.25c. for iron.

**Structural Iron and Steel.**—There is talk of some contracts to be let soon, but nobody can locate them exactly. Deliveries on present contracts are now pretty well completed. We quote for angles, 1" @ 1.45c.; channels, 1" @ 1.75c.; tees, 1" @ 1.70c.; beams, 1" @ 1.75c. for large orders, and 1" @ 1.90 for small lots.

**Wrought-Iron Pipe.**—Only a retail business is reported. Discounts are unchanged, as follows, out of store: For black, large, 67, 10, 10, 10 and 10; 1½ in. and smaller, 57, 10, 10, 10 and 10. For galvanized, large, 55, 10, 10, 10 and 10; for 1½ in. and smaller, 52, 10, 10, 10 and 10.

**Nails.**—The pool price continues \$2.55 per keg f. o. b. Pittsburg for steel wire nails, and \$2.30 per keg, f. o. b. Pittsburg, for cut nails. Buyers are taking only small lots for their immediate requirements, and these are generally light.

**Steel Rails and Rail Fastenings.**—The combination price is still \$23.75 per ton at tide water, or \$28 at mill, for heavy sections. Girder rails are \$29@31, tidewater. No business is reported.

Little is doing in rail fastenings. Angle bars are 1" @ 1.25c. and spikes 1" @ 1.65c., tidewater deliv-

ery. Bolts are 1" @ 2.05c. for square nuts, and 2" @ 2.15c. for hexagon nuts.

**Old Rails.**—Quotations continue \$12.25@13, with no sales. There is some demand for old steel rails, if they can be had at a low price, say \$10@11.50, New York harbor. The large lot which we mentioned last week has been withdrawn, we hear, the owner preferring to wait for better prices. There have been sales of two or three small lots, 56 and 68 lbs., suitable to relay, at \$40 New York, and \$20.75 Sound port delivery.

**Scrap Iron.**—The demand for foundry scrap is light, and in the absence of any large transactions we continue to quote \$10@11.50 for good machinery; \$8.50@9.50 for ordinary cast scrap; \$6@7.50 for stove-plate and mixed. A sale of a small lot of old car-wheels is reported at \$11, on cars at Jersey City.

**Buffalo.** Aug. 26.

(Special Report of Rogers, Brown & Co.)

There is undoubtedly a better feeling in this market than was reported last week. The orders coming in are generally of a smaller size than furnace-men like to see, but more of them have been placed than for several weeks past. The reports of heavy buying by speculators has called the attention of pig-iron consumers to the extremely low prices now ruling, and, as a consequence, several inquiries from the larger buyers in this territory are at hand.

Foundrymen are taking a more encouraging view of the situation, and, from the present outlook, it is fair to presume there will be at least a slight improvement in the situation here. We quote on a cash basis f. o. b. cars Buffalo as follows: No. 1 foundry strong coke iron, Lake Superior ore, \$12.50; No. 2 foundry strong coke iron, Lake Superior ore, \$12; Ohio strong softener No. 1, \$12.50; Ohio strong softener No. 2, \$12; Jackson County silvery No. 1, \$15.25; Southern soft No. 1, \$11; Southern soft No. 2, \$10.75; Lake Superior charcoal, \$14@14.50.

**Chicago.** Aug. 26.

(From Our Special Correspondent.)

The condition of the Chicago market has not changed in any respect; the same old stage of uncertainty still preventing business of any importance or size to be transacted. There is some talk of a gaining degree of confidence, but it has not yet reached the stage wherein consumers are willing to buy beyond actual present requirements. There have been no sales of any importance made in this market during the past week. There is rather more inquiry noted in certain lines, but this appears to be mostly from those who are anxious to test the market from week to week.

**Pig Iron.**—Small orders run up rather a fair week's tonnage, sales being of the carload to 100-ton lot. Those manufacturing concerns that depend on this market for their supply of pig iron are in many cases very short, but at present appear to be keeping them out of the market. It is understood that many of them are running on a very limited supply of iron, but it may be presumed that lack of business is preventing them from buying their usual quantity. Both Northern and Southern iron sold in about equal quantity, though the latter iron is quoted at times below standing prices. We quote as follows: Lake Superior charcoal, \$13.50@14; local coke, foundry, No. 1, \$11.75@12; No. 2, \$11.25@11.75; No. 3, \$11@11.25; local Scotch, No. 1, \$11.75@12; No. 2, \$11.25@11.75; No. 3, \$11@11.25; Southern coke, No. 1, \$11@11.35; No. 2, \$10.60@10.85; No. 3, \$10.35@10.60; Southern, No. 1, soft, \$10.60@10.85; No. 2, soft, \$10.60@10.85; Jackson County silveries, \$14.50@16; Ohio strong softeners, \$15@15.50; Alabama car-wheel, \$16.85@17.35; coke, Bessemer, \$13@13.50.

**Bar Iron.**—Not much new business has been transacted, orders being mainly for small quantities. The mills are running steadily, though mostly on past contracts. Common iron is quoted 1" @ 1.35c. and guaranteed 1" @ 1.40c.

**Steel Rails.**—No large business has yet appeared, sales continuing of a fair number, though mostly all for limited lots.

Rails are quoted \$19, Chicago.

**Billets and Rods.**—But little business is being done in either billets rods, and inquiry is small.

**Old Rails and Wheels.**—There have been no sales of old rails or wheels. Old iron rails are quoted nominally \$13, and old wheels \$12.50@13.50.

**Cleveland.** Aug. 28.

(From Our Special Correspondent.)

**Iron Ore.**—The word "dead" describes very clearly the condition of the ore trade in this city at the present time. Pickands, Mather & Company's representative said to-day that while there was some ore being brought down the lakes at the present time there was no call for it, and the movement was for the convenience of shippers later. The nominal prices of ores have not been changed this week, because there are no sales at any price under present conditions. The quotations are: Standard Bessemer, \$4; non-Bessemer hematites, \$3@3.25 and Mesabi non-Bessemer, \$2.45@2.60.

There is practically no change in freight rates from the lake ports since last week. Few vessels are plying between Cleveland and the upper lake ports, and the shippers have the vessel owners at their mercy.

**Pig Iron.**—There is a slight improvement in the market this week, quite a number of small sales of foundry iron being reported. The foundrymen had

allowed their stock to run low and have now been making purchases to replenish stock and keep their establishments in operation.

prices is one of the best investments that could be made, and parties who have money to spare run no risk at present prices.

Latest.—Market dull, sales still confined to limited amounts; last week's prices were fairly maintained.

Philadelphia. Aug. 28.

(From Our Special Correspondent.)

Pig Iron.—Up to day noon very little business had been done in pig iron this week.

Steel Billets.—The result of to-day's Cresson meeting will be awaited with interest.

Merchant Bars.—Some business has been lost to bar iron makers because of the growing preference for steel bars.

Nails.—The nail trade has suffered on account of declining business activity, and because of the feeling that nail prices are artificially high.

Sheets.—Manufacturers have been disappointed over the failure to capture some large fall and winter business in sheet iron that has been expected.

Pipes and Tubes.—It is a little better just now for small size wrought pipe and tubes, but all the business heard of is for small quantities.

Merchant Steel.—It is said by persons up in this line that several large consumers are getting ready to do large buying of winter steel on the first indications of an improving market.

Plates.—The only comfort offered this week is that manufacturers have been assured that just as soon as the financial flurry is over orders will come in.

Structural Material.—Matters are in a little better shape this week in consequence of a few orders for material for buildings.

Steel Rails.—Orders are few and far between. Quotation, \$28.

Old Rails.—Offered at \$14. No sales reported.

Pittsburg. Aug. 27.

(From Our Special Correspondent.)

Raw Iron and Steel.—Business during the week has continued generally quiet, but the conditions have slightly improved and there has been a gain in confidence.

Repairs and improvements have been made in the mills and furnaces on a very extensive scale, so that when business does open there will be nothing to do but start up.

Table with columns: COKE, SMELTED, LAKE AND NATIVE ORE; BLOOMS, BILLETS AND SLABS AT MILL; Tons, Cash; and various grades of iron and steel.

METAL MARKET.

NEW YORK, Friday Evening, August 28, 1896.

Gold and Silver.

Prices of Silver per Ounce Troy.

Table showing prices of silver per ounce troy for August, with columns for St. Ex., London, N. Y. Cts., and Value of \$1. in \$1.

The market has steadied this week on more liberal buying by the Indian banks, and has shown only small fluctuations.

The United States Assay Office in New York reports the total receipts of silver at 67,060 oz. for the week.

Gold and Silver Exports and Imports.

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

Table with columns: Coin and bullion (Exports, Imports), In ores (Exports, Imports), Total excess, Exp. or Imp.

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 August 28th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

Table with columns: Gold (Exports, Imports), Silver (Exports, Imports), Total Excess, Exp. or Imp.

No gold was exported during the week; the silver went chiefly to London. The gold imported came from London and the West Indies; the silver from South America.

Average Monthly Prices of Silver

in New York and London, per ounce Troy, from January 1st, 1896, and for corresponding months, 1895 and 1894.

Table showing average monthly prices of silver for 1896, 1895, and 1894, with columns for Month, London, New York, and Pence/Cents.

FINANCIAL NOTES OF THE WEEK.

The money market is still in a somewhat strained condition, though the reported imports of gold have produced some feeling of relief.

The total amount of gold reported taken for import is now about \$11,600,000, an addition of \$3,500,000 being reported this week.

The failure of a large house, Hilton, Hughes & Company, in New York this week, and the number of failures reported from all parts of the country, are marked features of the present situation.

Foreign exchange continues weak, and the indications are that the inward movement of gold will continue for a time, though it is not possible to predict its approximate amount.

The statement of the United States Treasury on Thursday, August 27th, 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 in excess of outstanding certificates for August 20, 27, and changes.

Treasury deposits with national banks amounted on August 27th to \$16,309,422, showing a decrease of \$37,028 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$126,902,280.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending August 22d, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

Table showing New York banks' financials for 1891, 1895, and 1896, including loans and discounts, deposits, and circulation.

Changes for the week this year were increases of \$576,800, in circulation; decreases of \$5,948,700 in loans, \$9,095,100 in deposits, \$66,400 in specie, \$2,334,900 in legal tenders and \$127,525 in surplus reserve.

Shipments of silver from London to the East for the year up to August 13th are reported by Messrs. Pixley & Abell's circular as below:

Table showing silver shipments from London to the East for India, China, and the Straits, comparing 1895, 1896, and changes.

Arrivals for the week this year were \$2,99,000 in bar silver from New York; \$40,000 from China, and \$15,000 in Mexican dollars from New York; a total of \$264,000.

Indian exchange continue fairly steady and applications for the 45 lakhs of Council bills offered in London largely exceeded the amount.

dollar and tael exchanges, due to the lower price of silver.

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:

Asso. Banks of New York	1895	1896
1895	\$46,796,900	66,208,500
Bank of England	\$231,860,240	231,860,240
1895	206,194,760	206,194,760
Bank of France	413,602,745	251,075,600
1895	410,880,512	252,166,037
Imp. Bank of Germany	231,370,000	664,678,345
1895	258,680,000	663,646,549
Austro-Hungarian Bank	142,760,000	64,321,000
1895	106,770,000	66,093,000
Netherlands Bank	13,172,000	34,040,000
1895	21,424,000	34,715,000
Belgian National Bank	20,135,000	21,002,000
1895	42,282,000	53,538,000
Bank of Spain	40,221,000	60,101,000
1895	60,625,000	10,550,000
Bank of Italy	60,410,000	10,355,000
1895	477,545,000	477,545,000
Imp. Bank of Russia	465,770,000	465,770,000
1895		

The return for the Associated Banks of New York is of date August 22d; all the others are of August 27th, except the Bank of Italy, July 20th, and the Bank of Russia, July 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England and the Bank of Russia report gold only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately, but their reserves are mainly gold, the silver being chiefly subsidiary coin.

The movement of the precious metals in Great Britain for the seven months ending July 31st is given by the Board of Trade returns as follows:

GOLD:			
	Imports.	Exports.	Excess.
1895	£17,493,918	£12,471,986	£5,021,932
1896	16,594,559	10,912,731	5,681,828
SILVER:			
1895	5,830,759	6,179,571	E. 349,308
1896	8,163,943	7,642,981	E. 520,962

There was a decrease this year of £899,359 in the gold imports, but an increase of £659,896 in the net imports. The heavier receipts of gold this year were from South Africa, £4,702,056; from the United States, £3,103,329; from Australasia, £3,046,114. The United States furnished £5,779,285, or 70.8% of the silver imported.

The foreign merchandise trade of Great Britain for the seven months ending July 31st is given by the Board of Trade returns as below:

	1895.	1896.
Imports	£38,785,461	£250,834,885
Exports	161,598,397	171,550,982
Excess, imports	£77,067,157	£76,283,903

There was an increase in the imports this year of £12,049,421, or 5%, and in the exports of £12,852,675, or 8%; leaving a decrease of £803,254, or 1%, in the net balance of imports.

**Domestic and Foreign Coins.**

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

	Bid	Asked.
Mexican dollars	\$0.51½	\$0.52
Peruvian soles and Chilean pesos	.47	.48½
Victoria sovereigns	4.86	4.90
Twenty francs	3.85	3.90
Twenty marks	4.73	4.80
Spanish 25 pesetas	4.78	4.85

**Other Metals.**

Copper has eased off slightly further, owing to some of the holders having commenced to press somewhat on the market. While Lake Copper is still held by some of the companies at 11c., some sales have been reported at a little above 10½c., but even at this figure there are hardly any buyers to-day. Electrolytic copper has again been forced on the market, and sales of round quantities have been made for cakes, wire bars and ingots at 10½c., cathodes at 10c., which is practically below the price of casting copper for which we still have to quote 10½c. Very little of the latter is being offered, and in consequence of this scarceness fairly high prices are obtainable. Buyers are still rather indifferent and have not yet entered the market to any extent, but for export the demand has been quite good. Raw material has of late been pressed for sale and copper matte has been sold in large quantities at lower prices than have ruled for a long time past.

The foreign market has been somewhat weak in consequence of the reports received from this side, and the sales made for fine copper were all at considerably lower prices, whilst the speculative sorts have kept up fairly well, and showed a decline of about 5c. for the week. G. M. B's, in which a fairly heavy business has been done all week through, closed £46 15s. @ £46 17s. 6d. for spot and 2s. 6d. more for three months' prompt.

For refined and manufactured we quote: English tough, £48 5s. @ £50 5s.; best selected, £49 5s. @ £50 5s.; strong sheets, £50 10s. @ £57 5s.; India sheets, £54 @ £54 10s.; yellow metal, 4½c.

Imports of copper into Great Britain for the seven months ending July 31st are given by the Board of Trade returns as follows, in tons of 2,240 lbs.:

	1895.	1896
Copper ore	51,507	41,739
Regulus and precipitate	51,327	51,627
Fine copper	27,220	35,847

There was a large increase in fine copper, with small decreases in ore and matte. Estimating the ore at 10%, the regulus and precipitate at 50%, the total in fine copper was 63,864 tons this year against 59,534 tons last year. Of the imports this year, 764 tons ore, 12,412 tons matte and 17,225 tons copper—about 23,607 tons fine copper, or 36.9% of the total—were from the United States.

Tin remains exceedingly scarce for immediate delivery and 13.50 has been readily paid. For tin on steamships to arrive next week 13.35 @ 13.40 is obtainable, while it is understood, that most of the tin on vessels near at hand has already been sold. For futures hardly any demand exists. The London market has kept very steady, and fluctuations were only slightly lower than last week, £59 10s. @ £59 12s. 6d. for spot, £60 @ £60 5s. for three months prompt.

**St. Louis Lead Market**—The John Wahl Commission Company telegraphs us as follows: No improvement in pig lead; common is obtainable at 2.45; corroding 2.50. The demand is very light, and the consumer continues to buy from hand to mouth only.

Lead has again made a new record and early in the week sales were made in round quantities at 2.60, but with these sales, the accumulation which existed in the West appears to have been marketed, and since then no more pressure has been exercised, which has caused prices to become rather firmer, and at the close we have to quote 2.67½ @ 2.70. Advice received from the producing and mining camps leads us to believe that at these figures production will fall off quite heavily in the near future. For forward delivery there are no sellers at any price.

The London market has shown a slightly better tendency, and Spanish lead is quoted at £10 16s. 3d. @ £10 17s. 6d., English lead 5s. higher.

**Spelter.**—The demoralization continues and prices are again lower. We have now to quote 3.60 @ 3.65 New York. The galvanizing business is almost at a standstill and this tells heavily on the consumption of the article.

The foreign market keeps up well and good ordinaries are quoted in London at £17 3s. 9d.; specials, £17 7s. 6d.

**Antimony** remains dull. Cookson's is quoted at 7c.; United States French Star at 6½c., and Hallett's at 6½ @ 6¾c.

**Nickel.**—With no marked change in demand, which is rather light, prices are firm. We quote 35 @ 36c. per lb. for ton lots and 37 @ 39c. for smaller orders. London prices are 14d. @ 15d. for large orders and 15d. @ 16½d. 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.**—Demand is steady and prices are firm at \$14.50 @ \$15.50 per oz., New York. London quotations are 57s. 6d. @ 59s. per oz.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotation, 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 \$35.50 per flask, New York. The London quotation is higher by 2s. 6d., and now stands at £6 10s., with the same price named from second hands.

Imports and exports of quicksilver in Great Britain for the seven months ending July 31st are given by the Board of Trade returns as below, in pounds:

	1895.	1896.
Imports	3,455,875	3,444,462
Exports	1,820,513	1,615,095

Approximate Consumption..... 1,635,362 1,829,367

There was a decrease of 11,413 lbs. in the imports and 205,418 lbs. in the exports; showing an increase of 194,005 lbs., or 11.9%, in the quantity retained for consumption.

**The Minor Metals.**—Quotations for these metals are given in the table below, the prices being for New York delivery:

Aluminum:	
No. 1, 98% pure rolling ingots, per lb	50 @ 55c.
No. 1, ingots for re-melting, per lb	48 @ 53c.
No. 2, 9½% pure,	38 @ 42c.
Ingot from scrap, per lb	35 @ 40c.
Aluminum-nickel casting metal, per lb.	40 @ 45c.
Bismuth, per lb.	\$1.30 @ \$1.75
Phosphorus, per lb.	50 @ 55c.
Platinum, per oz	\$14.50 @ \$15.50
Tungsten, pure, powder per lb.	70c.
Tungstic acid, per lb.	45c.
Ferro-tungsten, 80% in ton lots, per lb.	60c.

The variations in price are usually with the size of the order.

**British Imports of Metals.**—Imports of various metals into Great Britain for the seven months ending July 31st, are given by the Board of Trade returns as follows, in tons of 2,240 lbs:

	1895.	1896.	Changes
Lead	93,433	98,044	1. 4,611
Tin	22,155	19,526	D. 2,629
Zinc	34,824	41,445	I. 6,621

Of the tin imported this year 15,294 tons were from the Straits, and 2,342 tons from Australasia. Imports of pyrites (including both iron and copper) valued for their sulphur and not their metallic contents, were 369,321 tons, an increase of 14,849 tons over last year.

**Average Monthly Prices of Metals**

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

Month.	1896.	1895.	1894.	1893.	1892.
<b>Copper:</b>					
January	9.87	10.00	10.13	12.13	11.00
February	10.64	10.00	9.63	12.00	10.00
March	11.03	9.75	9.81	11.88	10.38
April	10.98	9.75	9.50	11.38	11.50
May	11.15	10.25	9.80	11.00	11.63
June	11.67	10.63	8.91	11.00	11.86
July	11.40	11.25	9.00	10.88	11.50
August	10.98	12.00	9.13	10.00	11.50
<b>Tin:</b>					
January	13.62	13.23	20.16	19.59	20.50
February	13.44	13.35	19.67	20.30	20.00
March	13.30	13.20	19.09	20.71	20.25
April	13.34	14.00	19.75	20.81	20.50
May	13.54	14.00	20.21	19.96	20.30
June	13.59	14.15	19.75	19.76	22.00
July	13.63	14.40	19.22	19.15	21.00
August	13.19	14.35	19.22	18.81	20.50
<b>Lead:</b>					
January	3.08	3.10	3.19	3.87	4.20
February	3.19	3.12	3.31	4.22	4.12
March	3.14	3.12	3.57	3.96	4.21
April	3.07	3.08	3.43	4.08	4.15
May	3.03	3.16	3.39	3.89	4.22
June	3.63	3.25	2.31	3.77	4.16
July	2.96	3.21	3.50	3.78	4.13
August	2.73	3.50	3.41	3.41	4.11
<b>Spelter:</b>					
January	3.75	3.28	3.56	4.39	4.69
February	4.03	3.20	3.85	4.39	4.69
March	4.20	3.23	3.89	4.28	4.89
April	4.19	3.30	3.62	4.38	4.88
May	3.98	3.50	3.47	4.41	4.79
June	4.10	3.65	3.40	4.27	4.71
July	3.97	3.75	3.43	4.13	4.78
August	3.76	4.15	3.38	3.89	4.69

**Imports and Exports of Metals.**

New York.*	Week, Aug. 21.		Year, 1896.	
	Expts.	Impts.	Expts.	Impts.
Aluminum..... lbs.			10,000	2,010
Antimony ore..... short tons		42	10,000	2,398
"    regulus, casks				1,521
Brass, old..... short tons			186	
Copper, fine..... long tons	1891		47,185	2,429
matte..... "	1312	125	10,751	1,281
ore..... "				4,592
sulphate..... "				4,431
Iron ore..... "				2,769
pigs, bars & rods..... "		125		50,218
Iron pyrites..... "				1,200
sulphate..... "				610
Ferro-manganese..... "		157		656
Ferro-silicon..... "				
Manganese ore..... "		22		5,266
Spiegeleisen..... "				24,001
Lead ore..... "				
pigs and bars..... "	1747	11,176	6,845	26,947
Magnolia metal..... "				42
Nickel..... "		10		30
Steel, billets, rods..... "		174		17,895
"..... "		157		451
Tin..... "			23,383	6,808
Tin and black plates, boxes..... "				12
Zinc (spelter)..... long tons	49		1,205	

\* Metal Exchange Reports. † Week ending Aug. 27.

Baltimore.**	Week, Aug. 27.		Year, 1896.	
	Exp.	Imp.	Exp.	Imp.
Bismuth metal, cases.....				52
Chrome ore..... long tons			40	4,291
Copper, fine..... "	124		21,097	
matte..... "			500	
sulphate..... "			2,664	
Iron ore..... "		13,472		208,426
pigs, bars, ingots, blooms..... "				2,076
Iron oxide..... bags				300
pyrites..... long tons			150	
Ferro-manganese..... "				
Ferro-silicon..... "	211		211	1,458
Lead..... "		300		3,397
Limestone..... short "			21	2,743
Manganese metal, long "				6,518
Spiegeleisen..... "				415
Steel..... "				21
Steel wire, bundles..... "				7,488
Tin, long tons..... "		1,109		1,347
Tin and black plates, boxes..... "		4,072		125,617
Zinc (spelter) long tons.....				241

\*\*From our special correspondent.

Table with columns: Philadelphia, Week, Aug. 20, Year, 1896. Lists various metals like Antimony, Copper ore, Ferro-manganese, etc.

From New York Metal Exchange Reports.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, August 28. Heavy Chemicals.—The condition of this market is much the same as has been reported for some time past, and no marked improvement is looked for.

Acids.—Business has been somewhat better during the past week in certain directions, though the conditions are generally reported about the same as have existed recently.

Quotations show no change, and are as follows: Acetic acid (in barrels or carboys), \$1.25@1.40; muriatic acid, 18°, 75c.; 20°, 75c./85c.; 22°, \$1.10@1.25, according to make and quantity.

Brimstone.—Spot quotations for best unmined seconds are not given this week, as it is said no brimstone is on hand for spot delivery.

It is said a cablegram has been received advancing the price of brimstone \$1 per ton. This may be accounted for by the following despatch from Washington: "The State Department has received a cable dispatch from Consul Caughy, at Messina, Italy, stating that the Italian Government, beginning to-day, exacts 1 lire (19 3/4c.) tax per ton on sulphur, besides the recent export duty of 11 lire per ton."

It was only recently announced that through the efforts of the Anglo-Sicilian Sulphur Trust the Italian Government had consented to remove the export duty on sulphur, beginning October 1st.

The quotations for best unmined seconds, November delivery, are \$18.75@19.50 per ton.

Fertilizing Chemicals.—No change is reported in this trade during the week, business having remained very dull. The quotations for nitrate of soda have not changed, but it is said it is very firm at those prices.

Sulphate of Potash: 90-95%, New York and Boston, \$1.96 1/2; Philadelphia, Baltimore and Norfolk, \$1.98; Southern ports, \$2.

Muriate of potash: The new prices are 1.78c. at New York and Boston; 1.79 1/2c. at Philadelphia, Baltimore and Norfolk, and 1.81 1/2c. at New Orleans for 80@85% (basis of 80%), in lots of 50 tons and upward.

Quotations for 1896 are as follows: New York, Boston, Philadelphia and Baltimore, \$8.80 per ton; Norfolk, \$9.15, and New Orleans, \$9.30 per ton, for 25 tons and upward.

Nitrate of Soda.—The prices quoted are 1.77 1/2c. @

1.80c. for spot, according to quantity; 1.80c. to arrive, and 1.82 1/2@1.85c. for futures.

NOTES OF THE WEEK.

The ninth annual convention of the National Paint, Oil and Varnish Association will be held in Philadelphia, Pa., October 13th, 14th and 15th. It is the earnest desire of the officers of the association that the trades affiliated with the same shall attend this reunion, and contribute to confirming the influence and usefulness of the organization.

Charleston, S. C.

(From Our Special Correspondent.)

The shipment of phosphate rock from this port for the month of July, 1896, were as follows, comparison being made with the corresponding period one year and two years ago:

Table with columns: 1894, 1895, 1896. Rows: Crude rock (2,240 lbs.), Ground (2,000 " ), Total tons.

The decrease this year was 3,022 tons as compared with 1895, and 12,220 tons as compared with 1894.

Liverpool.

Aug. 18.

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

There is nothing new to report respecting the market for chemicals, the demand being still disappointing.

Soda ash is dull, but without quotable change in values. For tierces, the nearest spot range according to export market, is about as follows: Leblanc ash, 48%, £4@£4 5s. per ton; 58%, £4 5s.@£4 10s. per ton net cash; ammonia ash, 48%, £3 8s.@£3 10s. per ton; 58%, £3 10s.@£3 15s. per ton, net cash; bag, 5s. per ton less.

Soda crystals held for £2 7s. 6d per ton, less 5% for barrels, and 7s. less for bags with usual jobbing trade passing.

Caustic soda in retail request. We quote spot range, as to market, as follows: 60%, £6 5s.@£6 7s. 6d. per ton; 70%, £7 5s.@£7 7s. 6d. per ton, net cash; 74%, £8 5s.@£8 7s. 6d. per ton; 76%, £9@£9 5s. per ton, net cash.

Bleaching powder neglected and hardwood is nominally quoted at £6 12s. 6d.@£7 per ton net cash, as to export market.

Chlorate of potash is not wanted, and 4 1/4d. @ 4 1/2d. is about nominal value. Bicarb. soda is in moderate demand at £6 15s. per ton, less 2 1/2% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is slow at £2@£2 5s. per ton, less 2 1/2% for good gray, 24% @ 25%, in double bags f. o. b. here, as to quality. Nitrate of soda is unchanged at £3 2s. 6d.@£3 5s. per ton, less 2 1/2% for double bags f. o. b. here, as to quality. Carb. ammonia, lump, 3d. per lb.; powdered, 3 1/4d. per lb., net cash.

Valparaiso, Chile.

July 18.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—Transactions during the fortnight have been large, though as before, mostly confined to sales to speculators or between producers. The prices have been advanced 1/4d. all round, producers showing a decided tendency to hold out for higher figures or retire from the market altogether for the present.

Up to now the price of 6s. has not been passed, so that the committee of the combination is not yet empowered to determine whether the declared exports for the year ending March 31st, 1894, are to be increased or maintained, though in all likelihood this point will shortly be solved definitely. We quote 95%, July-August 5s. 11d., September 5s. 11 1/2d., October-December 6s. 1/2d. sellers, the refined quality being held for 6s., and forward for 6s. 2d. The price of 5s. 11d. with 20s. all round freight stands in 4s. 8d. per cwt. net, cost and freight without purchasing commission. Reported sales are 692,000 quintals. Freights to United Kingdom or United States are steady at 20s. for nitrate in iron bottoms.

MINING STOCKS.

Complete quotations will be found on pages 214 and 215 of mining stocks listed and dealt in at:

Table with columns: New York, Boston, Philadelphia, Baltimore, Pittsburg, Denver, Colo., Aspen, Colo., Colorado Springs, Duluth, Minn., Helena, Mont., Salt Lake, Utah, San Francisco, St. Louis, Paris, France, Mexico, Shanghai, China, Valparaiso, Chile, London, England.

NEW YORK, Friday Evening, August 28.

This has been another quiet week for the mining stock market, although the number of sales recorded by the Consolidated stock and Petroleum Exchange and the New York Stock Exchange was 16,890 shares.

The Comstocks have been in some demand. Sales were made as follows: 140 shares of Consolidated California & Virginia at \$1.95; 250 shares of Chollar

at \$1.90@1.95; 200 shares of Best & Belcher at \$1; 200 shares of Hale & Norcross at \$1.45; 200 shares of Ophir at \$1; 1,700 shares of Comstock Consolidated at 7c.; 100 shares of Eureka Consolidated at 25c., and 300 shares of Crown Point at 29c.

The Crown Point Mining Company has levied its 68th assessment; it is for 20c. per share, delinquent September 22d, and day of sale October 13th. The Sierra Nevada Mining Company has also levied an assessment of 25c. per share, making 111 assessments since the organization of the company; it becomes delinquent on September 11th, the day of sale being October 1st.

The assessment levied by the Belcher Mining Company for 25c., and by the Confidence Consolidated Mining Company become delinquent in September.

The only California stock which showed any activity during the week was Brunswick Consolidated, which shows dealings of 7,800 shares at 20c. In the Colorado stocks Iron Silver was dealt in to the extent of 1,000 shares at 30c.

Boston.

Aug. 27.

(From Our Special Correspondent.)

There is little in the mining stock market calling for comment. The dealings in the copper stocks are small, and prices show but little rallying power, while in the gold stocks there is scarcely anything doing. Boston & Montana is the only really active stock, and the dealings for the week hardly exceed 10,000 shares.

Boston & Montana opened at \$76, sold down to \$73, and rallied to \$74 1/2 in the later dealings. Old Dominion has been very dull with sales of only about 500 shares, at \$12 1/2 to \$13 1/2.

Calumet & Hecla was strong, and advanced to \$304 on small sales. Quincy continues to decline, touching \$104 on moderate sales. The scrip sold at \$78. Tamarack sold at \$70, same as last week; and Atlantic sold at \$16 for 25 shares only. Franklin advanced 1/2 to 3/4 to \$8 3/4 for one lot of 125 shares. Osceola sold in a small way at \$22 1/2 @ \$23, and Kearsarge at \$10. Wolverine was steady at \$6.

In the gold stocks Pioneer holds steady at \$3 1/2 @ \$4. Merced was a little more active, at \$5 1/2 to \$5 3/4. Gold Coins sold at 55c. for the old stock and \$2 3/4 @ \$2 1/2 for the new.

Chicago.

The following table gives the highest prices with sales of the stocks recorded on the Chicago Mineral and Mining Board for the week ending August 26th:

Table with columns: Stocks, Aug. 20, Aug. 21, Aug. 22, Aug. 23, Aug. 24, Aug. 25, Aug. 26, Sales. Lists various mining stocks like Capazone, C. C. & C. C., C. C. Golden Group, etc.

Total shares sold, 101,250.

Cleveland.

Aug. 26.

(From Our Special Correspondent.)

Several blocks of stock were withdrawn from the market during the past week on account of a lack of interest in those securities by investors and speculators. A careful canvass made to-day revealed the fact that if a sale of stock was made during the past week the principal brokers of the city knew nothing about it. In fact, the only movement of stocks that could be ascertained was from the vaults of the brokers to the pockets of the owners. The quotations are:

Table with columns: Name of Company, Par. val., Bid., Ask. Lists companies like Aurora, Biwabik, Champion Iron Company, etc.

Salt Lake City.

Aug. 22.

(Special Report of James A. Pollock.)

There was a slight improvement in the general tone of the market during the week just closed, although the recovery in the prices of the majority of the stocks was not very extensive. Outside inquiry contributed largely to what strength the market developed. Prices all along the line are now so low that investors realize more fully their practical inability to make a serious mistake in buying. For no good reason several of the heavy securities suffered some loss, but a change for the

better should not be long in coming. Alliance and Anchor were dull and noted no special change. Bullion-Beck paid its double dividend of 30c. per share Thursday. The stock remained strong. Bogan did very little, the stock remaining down. Centennial-Eureka paid its dividend of \$1 per share August 15th. There was little done in the stock, sales being confined to odd blocks. The offerings were very light, as usual. Daly paid its first dividend since 1893 on Saturday. It is 25c. per share. The stock did not show the anticipated strength, but will doubtless advance as the regularity of the dividend is demonstrated. Daly-West continued fairly strong, and was in some demand, with no very heavy offerings. Dalton & Lark was unchanged. Dalton remained about stationary. Eagle and East Golden Gate were inactive. Galena remained practically unchanged, although there was an improvement in inquiry. Geyser was fairly strong, but many would be buyers are awaiting the decision of the suits now before the courts. Mammoth has declared its August dividend, payable on the usual date. The stock was shaded again during the week. Mercer is looking extremely well, and the output showing a healthy increase. Ontario was without feature, but the offerings were not heavy. Silver King did not do much business, but was offered in very limited quantities. Sunshine remained quiet. The offerings of the stock were so light as to hardly merit quotations under \$2.85.

San Francisco. Aug. 22.

(From Our Special Correspondent.)

The market opened very quietly on Monday and continued dull all through the week, notwithstanding a little surfeit on Wednesday, which did not last very long. In the Comstocks there was really nothing to report.

Chollar closes \$1.95@\$.92; Consolidated California & Virginia, \$1.85@\$.90; Hale & Norcross, \$1.20@\$.1.25; Best & Belcher, \$1.10@\$.1.15c.; Potosi, 87@.88c.; Savage, 51@.52c.; Yellow Jacket, 33@.34c.

The Bodies were the active end of the market this week, and made a very good showing. To-day Bodie Consolidated was quoted 75@.76c.; Bulwer, 42@.44c; Mono, 22@.23c.

On the Gold Mining Exchange Comstocks are rather crowding out the California stocks, and have furnished a large part of the quotations of a dull week. At the close Sebastopol was 32@.35c.; Lockwood, 29@.30c.

The Crown Point Mining Company has levied an assessment of 20c. per share.

The annual meeting of the Alta Mining Company was held Thursday and resulted in the re-election of the old directors and officers as follows: John Landers, president; H. Zadig, vice-president; G. C. Snieder, W. McBoyle and Werner Stauff, directors; E. D. Boyle, superintendent; J. E. Jacobus, secretary, Nevada Bank, treasurer. The company has \$3,450 in its treasury with all obligations paid in full to date. Superintendent Boyle's annual report showed that much work had been done in the mine during the past year, and two locations of very important mining ground east of the Alta had been recently made, recorded and deeded to the company.

British Columbia.

(From Our Special Correspondent.)

ROSSLAND, B. C., Aug. 20, 1896.

During the past few days there have been more arrivals from the outside world than have taken place for some time past, and as many of these are men representing considerable capital the business of the brokers has received an impetus. At present new mining companies are certainly appearing, and claiming the attention of the investor, and the complaint is now heard on all sides that there is too much capitalization.

The quantity of new machinery which is seen everywhere in this district is the most encouraging feature. The progress made by the construction party of the Fort Shepherd & Red Mountain Railway makes it probable that Spokane and Rossland will be connected by railway before winter sets in.

Inquiries for stocks have been more numerous and there is no loss of confidence in those propositions, which are well known, with the management in good hands.

Strikes of more or less importance have been made in the O. K. the Deer Park, the Great Western and the Mugwump. The Salmon River country is again claiming much attention from prospectors.

An excursion party from the Eastern provinces is now on a visit to the camp.

London. Aug. 15.

Though business in the mining stock market has not been very great, there has been considerable firmness and a strong undercurrent of quiet buying. This state of things has been most noticeable in the South African section, where there are unmistakable signs of a general revival shortly. The output of the Rand for July was the highest on record—203,573 ounces, a fact which goes far to show that things are settling down again in the Transvaal. The expected passage of an act restricting the sale of spirits to native laborers has also had a good effect on the market, as it is universally granted that such restrictions will appreciably reduce the cost of working. Most gold shares have advanced slightly in quotations. The stock of the Chartered Company has recovered to £3 on the expectation of the war coming to an end soon.

The West Australian market has been quiet, though promoters have been effecting sales of shares steadily and sending out encouraging reports as to

the results of crushing at a few leading mines. On the whole, it may be said that the flotation of new companies has ceased for the present, and there is not much sign of any renewal in this direction in the near future.

In other sections New Zealand mines have been fairly active, but they do not come to the front as much as might be expected; in fact, it is open to doubt whether the New Zealand boom will ever assume the proportions that were prophesied for it, because promoters have been switched off the track and been brought up to British Columbia instead.

Two American properties have been brought before the public this week by the offering of shares in the Gold Fields of Mexico, Limited, and the Prize Gold Mines, Limited.

The Prize Gold Mines, Limited, has been formed to acquire from the Hearst estate, through the intermediary agency of Irwin C. Stump, the properties known as the Prize and Springfield claims at Granite Butte, Deerlodge County, Mont. The capital of the company is £150,000, of which £127,000 in shares and £23,000 in cash is the purchase price to be paid to Mr. Stump, while £20,000 is to be the working capital. The mines have been fully developed, and a 10-stamp mill is already at work. The managers of the Anaconda and the Homestake mines have reported favorably on the mines. There seems reason to believe that there are large bodies of medium-grade ore which can be worked at profit, but it is a pity that some one quite unconnected with the vendor circle had not been asked to put in a report. The terms of purchase also are far too onerous on the subscribers. I have reason to believe that special efforts are being made to dispose of the stock in France.

The other company, "The Gold Fields of Mexico, Limited," has been formed to acquire 26 properties in the district of Huruapa, Chihuahua, Mexico. The properties are being bought on the recommendation of Frank Drake, whose connection with Eberhardt, Nevada, and Palmarajo, Mexico, is a matter of history. The mines are not gold mines but silver mines, one of them showing a small streak of gold ore. The mines have been frequently under option to foreign purchasers.

Paris. Aug. 16.

(From Our Special Correspondent.)

The most marked feature of the week just ended is a revival of the South African market. One cannot say that there was great activity, but there was more business done than for months past, and prices have generally improved. The motive for this was the improvement in the output shown by the July report from the Witwatersrand. While this was considerable, it was not what ought to be expected at the present time; but it has given people more hope for the future. I do not look for much more increase in prices, since there are a great many holders waiting to sell, and any considerable rise will bring out so much stock that a reaction will be inevitable.

The copper shares continue strong, notwithstanding the lower price of the metal and the increase in unsold stocks reported in July.

Huanhaca (silver) has improved a little. The shares of zinc and lead companies have been quiet, except that Laurium has declined. The Greek company, it is said, will pay a dividend of 4 drachmas (about 250 fr. at present exchange) for the first half of 1896.

Reports from the iron trade continue very good, and it seems evident that our iron and steel companies will have a prosperous year, even if they do not secure any of the orders from China, about which all Europe has been excited. The success of your people in getting Japanese rail orders has disturbed some of our manufacturers.

The report of the Paris Mint for the half-year ending June 30th last shows that during the six months there were 24,013,399 coins executed, the face value of which was 104,533,398 fr. Of these, French coins proper had a value of 44,072,078 fr., the remainder being executed for French colonies or for foreign nations. The details of the work done are as follows, in face of coinage values:

Table with 4 columns: Country, Gold (Francs), Silver (Francs), Bronze (Francs). Rows include France, French colonies, Indo-China, Foreign countries, Russia, Morocco, Chile, and a Total.

The Tunis coins are of the same denomination as our own. The silver coined for Indo-Chi was in dollars of weight and value similar to the Mexican dollars which circulate in the East. Those for Morocco and Chile were of the standards of those countries. The Russian coins included 13,297,988 fr., coinage value, in silver roubles and 8,000,000 fr. in quarter rouble pieces.

A statement published by M. Paul Dreyfus in L'Economiste Francais puts the exports of gold from Korea in 1895 at \$1,360,279, as compared with \$950,000 in 1894; and it is conjectured that the amount not entered at the custom house was large. M. Dreyfus says that operations at the Wonsan gold mines increased largely, in spite of the war troubles; also that work will soon be begun on the American concession at Ping-Yang.

Our Eastern brethren appreciate the value of gold, it seems, notwithstanding their supposed preference for silver.

AZOTE.

MEETINGS.

Florence Mining Company, at the office of the company at White Sulphur Springs, Mont., on September 5th, at 8 o'clock p. m.

Geyser Mining and Milling Company, at the office of the company in Silver Cliff, Custer County, Colo., on September 17th, at 10 a. m.

Hope Gold and Silver Mining Company, at the office of the company at West & Clutes, Forest City, Cal., on September 5th, at 7.30 p.m.

W. Y. O. D. Gold and Silver Mining Company, at the office of Weissbein Brothers & Company, Main street, Grass Valley, Cal., on August 15th, at 7.30 p. m.

ASSESSMENTS.

Table with 6 columns: Name of Co., Loc'n., No., Dinq., Sale, Amt. Rows include various mining companies like Alpha Con., Anita Gold, Argonaut, etc.

\* New assessment.

DIVIDENDS.

Table with 5 columns: Name of Company, Current Dividends (Date, Amount), Paid since Jan. 1, 1896, Total to date. Rows include Etna Con., Alaska-Mexican, Alaska Treadwell, etc.

\* July dividend paid. † Extra dividend of \$2 included.

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

STOCK QUOTATIONS.

BOSTON, MASS.\*

Table of stock quotations for Boston, Mass. listing companies like Aloues, Arnold, Atlantic, etc., with columns for location, par value, and daily price movements.

\* Official quotations Boston Stock Exchange. Total sales, 14,766.

INDUSTRIAL COAL AND COAL RAILROAD.\*

Table of stock quotations for Industrial Coal and Coal Railroad companies, including Baltimore & Ohio, Ches. & Ohio, etc.

\* Official quotations N. Y. Stock Exchange. Total shares sold, 82,208.

NEW YORK.\*

Table of stock quotations for New York, listing companies like Adams, Ajax, Alamo, etc., with columns for location, par value, and daily price movements.

\* Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. Total shares sold, 16,899.

COLORADO SPRINGS, COLO.†

Table of stock quotations for Colorado Springs, Colo., listing companies like Ajax, Alamo, Antronic, etc., with columns for par value and daily price movements.

\* Official quotations and sales Colo. Springs Mg. Stock Assoc. \* Board of Trade Exchange.

ST. LOUIS, MO. Week ending Aug. 4.

Table of stock quotations for St. Louis, Mo., listing companies like Central Lead, Con. Coal, etc., with columns for company name, office, par value, and bid/ask prices.

SAN FRANCISCO, CAL.\*

Table of stock quotations for San Francisco, Cal., listing companies like Alta, Belcher, Best & Belcher, etc., with columns for location, par value, and daily price movements.

\* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.\*

Table of stock quotations for Baltimore, Md., listing companies like Balt. M. & S. N. C., Conrad Hill, etc., with columns for location, par value, and bid/ask prices.

\* Official quotations Baltimore Stock Exchange.

BRITISH COLUMBIA.\*

Table of stock quotations for British Columbia, listing companies like Boundy Creek, Old Iron Leas., etc., with columns for name, selling price, and other details.

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

LONDON.

Aug. 14.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations (Buyers, Sellers), and Sales. Includes entries for Nth Americans, Alaska-Mexican, and various mining companies.

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par val, Aug 17, Aug 18, Aug 19, Aug 21, Aug 22, and Sales. Lists various mining and industrial companies with their stock prices and sales figures.

PARIS.

Week ending Aug. 14.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Div. last year, Prices (Opening, Closing). Lists companies like Acieries de Creusot, Agnes Tendas, and others.

MEXICO.

Week ending Aug. 13.

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

VALPARAISO, CHILE.\*

July 16.

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

SHANGHAI, CHINA.\*

July 17.

Table with columns: NAME OF COMPANY, Country, No. of shares, Par. Paid up, Last dividend, Price. Lists companies like Celebu & Trad., Funion Mfg. Co., etc.

SALT LAKE CITY, UTAH.\*

Week ending Aug. 22.

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

PHILADELPHIA PA.\*

Table with columns: NAME OF COMPANY, Loca. tion, Par val, Bid, Asked, Selling price. Lists companies like Cambria Iron, Choc. & Gif. Cifs, etc.

HELENA, MONT.\*

Week ending Aug. 7.

Table with columns: NAME OF COMPANY, Location, Par value, Bid, Asked, Price. Lists companies like Am. Dev. & M. Co., Bald Butte, etc.

PITTSBURG, PA.\*

Week ending Aug. 21.

Table with columns: NAME OF COMPANY, Loca. tion, Par val, Bid, Asked, Selling price. Lists companies like Nat. Gas, Allegheny, etc.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Date and Amount of Last. Includes entries for Adams s. l. c., Alamo, American Belle, etc.

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



CLASSIFIED LIST OF ADVERTISERS.

**Air Compressors and Rock Drills.**  
 Bullock, M. C. Mfg. Co. Leyner, J. Geo.  
 Burlington Rock Drill Co. McKiernan Drill Co.  
 Clayton Air Compressor Works. N. Y. Diamond Drill Co.  
 Fraser & Chalmers. Philadelphia Eng. Wks., Ltd.  
 Ingersoll-Sergeant Drill Co. Rand Drill Co.  
 Laidlaw-Dunn-Gordon Co. (See Diamond Drills.)

**Air Hoists.**  
 Whiting Foundry Equipment Co.

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

**Amalgam Plates.**  
 Western Plating and Mfg. Co.

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

**Architects and Builders.**  
 Berlin Iron Bridge Co. Shiffer Bridge Co.  
 Pittsburgh Bridge Co. Walker Co.  
 Pollock, Wm. B., & Co.

**Assayers' and Chemists' Supplies.**  
 Ainsworth, Wm. Penn. Salt Mfg. Co.  
 Baker & Adamson. Roessler & Hasselacher  
 Chemical Co.  
 Baker & Co. Sargent, E. H., & Co.  
 Becker, Christian. Solvay Process Co.  
 Bullock & Crenshaw. Taylor, John, & Co.  
 Denver Fire Clay Co. Troemner Chem. Co.  
 Elmer & Amend. Western Chemical Co.  
 Henry Hill Chem. Co.  
 Neiden Judson Drug Co.

**Attorneys, Corporation.**  
 Emig, C. E.  
 Hammersley, Hamilton & Le Mabre.

**Automatic Boiler Needs.**  
 Fenberthy Injector Co.

**Babbitt's Metal.**  
 Besley, Chas. H., & Co.

**Bankers and Brokers.**  
 Arkell, E., & Co. Farridge & Storer.  
 Bartlett & Co. Park, Frank G.  
 Bonbright, W. P., & Co. Prentice, Russell.  
 Breitung, E. N. Proudfit, J. W., & Co.  
 Crooks, E. E. Rope, Key & Co.  
 Dorsey Investment Co. Sheldon, E. C.  
 Grant, E. B. Sill & Sill.  
 Handy & Harman. Smith, C. H., & Co.  
 Hendrickson, W. J. Snow, E. P.  
 Heron Bros. State Trust Co.  
 Kinney, M. Weyand Bros.  
 Lelphelmer, N. White, Samuel.  
 Meyer, Andrew, & Co. Williams, W. W.  
 Miller, J. W., & Co. Woods Investment Co.  
 North Investm't Co. Wyoming Mfg. Bureau  
 Northwest Mfg. & Investment Co.

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

**Belt Lacing.**  
 Bristol Co.

**Blasting Caps.**  
 Metallic Cap Mfg. Co.  
 Rhenish Westphalian Explosive Co.  
 Schroeder, Fr.

**Blasting Batteries, Cars and Mags.**  
 Climax Fuse Co. Metallic Cap Mfg. Co.  
 Lau, J. H., & Co. Standard Fuse Co.  
 Macbeth, James, & Co.

**Blowers, Pressure.**  
 Connorsville Blower Co.

**Boilers.**  
 Denver Eng. Wks. Co. Risdon Iron Works.  
 Fraser & Chalmers. Stillwell-Bierce & Smith-Valle Co.  
 Philadelphia Eng. Wks., Ltd. Standard Boiler Co.  
 Pollock, Wm. B., & Co. (See Machinery.)

**Brattice Cloth.**  
 Besley, Chas. H., & Co.

**Brick Machinery.**  
 Fresso, E. M., & Co.

**Bridges.**  
 Berlin Iron Bridge Co. Shiffer Bridge Co.  
 (See Machinery.)

**Car Wheels.**  
 Whiting Foundry Equipment Co.

**Carbons.**  
 Bishop, Victor, & Co.  
 New York Diamond Drill Co.  
 Lexow, Theodor.

**Chain and Link Belting (See Belting.)**

**Chemicals.**  
 Baker & Adamson. Roessler & Hasselacher  
 Chemical Co.  
 Bullock & Crenshaw. Solvay Process Co.  
 Elmer & Amend. Western Chemical Co.  
 Henry Hill Chem. Co.

**Chemists.**  
 Simonds & Wainwright.

**Chilled Castings.**  
 Whiting Foundry Equipment Co.

**Coal.**  
 Maryland White Coal Co.  
 Fotta, F. A., & Co.  
 Stickney, Conyngham & Co.  
 Ward & Olyphant.

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

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

**Concentrators, Crushers, Pulverizers, Separators, Etc.**  
 Allis Co., Ed. F.  
 Blake, Theo. A.  
 Bradley Pulverizer Co.  
 Colorado Iron Works Co.  
 Denver Eng. Works Co.  
 Dodge Mining Machinery Co.  
 Fraser & Chalmers.  
 Hendrie & Bolthoff Mfg. Co.  
 Krupp, F.  
 Link Belt Machinery Co.  
 McCully, R.  
 McClellan Foundry & Mach. Co.  
 Walburn-Swenson Co. (See Machinery.)

**Conveyors. (See Machinery.)**  
 Conveying Belts.  
 Robins Conveying Belt Co.

**Copper Dealers and Producers.**  
 American Metal Co. Elliott's Metal Co., Ltd.  
 Arizona Copper Co. James & Shakspeare.  
 Atlantic Mining Co. Lambert's Wharf, Co.  
 Balbach S. & Ref. Co. Lewisohn Bros.  
 Baltimore Cop. Wks. Orford Copper Co.  
 Bath, H., & Son. Pass, C., & Son, Ltd.  
 Bridgeport Copper Co. Penn Salt Co.  
 Canadian Copper Co. Phelps, Dodge & Co.  
 Copper Queen Mfg. Co. Vivian, Younger & Bond.  
 Detroit Cop'g M. Co.

**Corrugated Iron.**  
 Berlin Iron Bridge Co.  
 Cincinnati Corrugating Co.  
 Sykes Steel Roofing Co.

**Cranes.**  
 Whiting Foundry Equipment Co.

**Crucibles, Graphite, Etc.**  
 Bishop, Victor, & Co. Stedman's Foundry  
 Dixon, Jos. Crucible Co. & Machine Works.  
 Cvanide.  
 Roessler & Hasselacher Chemical Co.

**Diamonds.**  
 Bishop, Victor, & Co.  
 Lexow, Theodor.  
 New York Diamond Drill Co.

**Diamond Drills.**  
 Bishop, Victor, & Co.  
 Bullock Mfg. Co., M. C.  
 Lexow, Theodor.  
 New York Diamond Drill Co.  
 Sullivan Machinery Co.  
 (See Air Compressors and Rock Drills.)

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

**Dryers.**  
 Brown, Horace F. Denver Eng. Wks. Co.  
 Cummer, F. D. & Son Co.

**Dump Cars.**  
 Denver Eng. Works Co. Hunt, C. W., & Co.  
 Hendrie & Bolthoff Mfg. Co. Fraser & Chalmers  
 Truax Mfg. Co.

**Educational Institutions.**  
 Arizona School of Mines.  
 Columbia University.  
 Columbian University.  
 Chicago School of Assaying.  
 International Correspondence Schools  
 Lehigh University.  
 Mass. Inst. of Technology  
 Michigan Mining School.  
 Missouri School of Mines.  
 Rose Polytechnic Institute.  
 Worcester Polytechnic Inst.

**Electrical Batteries.**  
 Macbeth, James, & Co.

**Electrical Machinery and Supplies.**  
 American Engine Co. Jeffrey Mfg. Co.  
 Besley, Chas. H., & Co. Link Belt Mach. Co.  
 Card Electric Co. Okonite Co., Ltd.  
 Denver Eng. Wks. Co. Repanno Chem. Co.  
 Electrical Engineer- Walker Co.  
 Ing Co. Westinghouse Elec.  
 General Electric Co. Mfg. Co.

**Elevators, Conveyors and Hoisting Machines.**  
 Brown, H. Hoist. & Conv. Frasier & Chalmers.  
 Mach. Co. Hunt, C. W., & Co.  
 Caldwell, H. W., & Co. Jeffrey Mfg. Co.  
 California Wire Wks. Link Belt Mach. Co.  
 Cooper, Hewitt & Co. Nelsonville Foundry  
 & Machine Co.  
 Crook, W. A., & Bros. Co. Vulcan Iron Works.  
 Denver Eng. Wks. Co. Walkins, L. E.  
 Electrical Engineer- Ing Co.  
 (See Wire Rope Tramway and Machinery.)

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

**Engineers, Chemists, Metallurgists**  
 See Directory Pages 4, 5 and 6.

**Engineer's Instruments and Supplies.**  
 A. O. S. Co. Gurley, W., & L. E.  
 Buff & Berger. Heer, Peter.  
 Bullock & Crenshaw. Keuffel & Esser Co.  
 Dietzen, E., & Co. Liets Co.  
 Fauth & Co. Mann & Co.

**Engines.**  
 American Engine Co. Risdon Iron Works.  
 Bullock, M. C. Mfg. Co. Smith-Valle Co.  
 Frasier & Chalmers. Tod, William & Co.  
 Hercules Gas Engine Co. Union Iron Works  
 Co. Vulcan Gas Engine Co.  
 Lidgerwood Mfg. Co. Webster, Camp & Lane  
 Works, Ltd. Mach. Co. (See Machinery.)

**Excavators.**  
 Bucyrus Steam Shovel & Dredge Co.  
 Souther & Co.  
 Vulcan Iron Works.

**Fire-Brick and Clay.**  
 Chur, A. T.  
 Hoskins, Wm.

**Furnaces.**  
 Brown, Horace F. Moore, S. L., & Son Co.  
 Dodge Mining Mach Co. Pollock, W. B., & Co.  
 Denver Fire Clay Co. (See Machinery.)

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

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

**Gas Works.**  
 Pollock, Wm. B., & Co. | Wood, R. D., & Co.

**Gauges, Recording, Etc.**  
 Bristol Co.

**Gearing.**  
 Besley, Chas. H., & Co. | Denver Eng. Wks. Co.  
 Chester Steel Cast. Co. | Fraser & Chalmers.  
 (See Machinery.)

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

**Heavy Machinery.**  
 Denver Eng. Works Co.  
 Frasier & Chalmers.

**Rose, Rubber, Etc.**  
 New York Belting & Packing Co., Ltd.

**Injectors.**  
 Jenkins Bros.  
 Fenberthy Injector Co.

**Insulated Wires and Cables.**  
 Okonite Co., Ltd.

**Insurance Companies.**  
 Hartford Steam Boiler Inspect'n and Ins. Co.  
 Mutual Life Insurance Co.

**Joint Fittings.**  
 Tight Joint Co.

**Lead Linings for Chlorination Tubs.**  
 Raymond Lead Co.

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

**Lubricators.**  
 Asbestos Paraffine Co.  
 Detroit Lubricator Co.

**Machinery, Milling and Other Machinery.**  
 Allis, Edw. P., & Co. Montgomery, J. H.  
 Bacon, E. C. Mach. Co.  
 Blake, T. A. Moore, Sam. I., & Son.  
 Bradley Pulverizer Co. Nelsonville Foundry  
 & Machine Co.  
 Caldwell, H. W., & Co. New York Diamond  
 Drill Co.  
 Card Electric Co. Norwalk Iron Wks. Co.  
 Colorado Iron Works. Parke & Lacy Co.  
 Connersville Blower Co. Philadelphia Eng. Wks.,  
 Ltd.  
 Denver Eng. Wks. Co. Pollock, Wm. B., & Co.  
 Denver Eng. Wks. Co. Risdon Iron Works.  
 Dodge Mfg. Mach. Co. Stedman Fdy. & W. Co.  
 Field, F. R. Snow Steam Pump  
 Co.  
 Frasier & Chalmers. Stearns-Roger Mfg. Co.  
 Hammond, Mfg. Co. Sullivan Machinery Co.  
 Hendrie & Bolthoff Mfg. Co. Tod, Wm., & Co.  
 Ingersoll-Sergeant Drill Co. Truax Mfg. Co.  
 Jeffrey Mfg. Co. Union Gas Engine Co.  
 Jessop, W., & Sons, Ltd. Vulcan Iron Works.  
 Leyner, J. Geo. Walburn-Swenson's Co.  
 Lidgerwood Mfg. Co. Krupp, F.  
 Lidgerwood Mfg. Co. McCully, R.  
 McClellan Drill Co. McClellan Drill Co.  
 Mecklenburg Ir. Wks. Merralls' Mill Co.

**Manganese Steel Co.**  
 Taylor Iron & Steel Co.

**Metal Dealers.**  
 American Dev. & Mfg. Co.  
 American Metal Co.  
 Am. Zinc-Lead Co.  
 Baker & Co.  
 Bath, Henry & Son.  
 Besley, Chas. H., & Co.  
 Bridgeport Copper Co.  
 Cherokee Lead & Alloy Spelter Co.  
 Cookson & Co.  
 Elliott's Metal Co., Ltd.  
 Eureka Co.  
 Foster, Blackett & Wilson.  
 James & Shakspeare.

**Metallurgical Works and Ore Purchasing Offices.**  
 American Dev. & Mfg. Co.  
 Amer. Zinc Lead Co.  
 Baker & Co.  
 Balbach S. & Ref. Co.  
 Baltimore Copper Wks.  
 Bridgeport Copper Co.  
 Canadian Copper Co.  
 Con. Kas. City S. & R. Co.  
 Cookson & Co.  
 Denver Eng. Wks. Co.  
 Elliott's Metal Co., Ltd.  
 Electro Cyanide Gold & Silver Exctn Co.  
 Foster, Blackett & Wilson.  
 James & Shakspeare.

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

**Mine, Mill and Smelters' Supplies.**  
 Denver Eng. Wks. Co.  
 Dodge Mining Machinery Co.  
 Gates Iron Works.  
 Park's & Wilkinson.  
 Roessler & Hasselacher Chemical Co.  
 Stieren, William E. (See Machinery.)

**Mining and Land Companies.**  
 American Dev. & Mfg. Co. Copper Queen Con.  
 Co. Mfg. Co.  
 Atlantic Mfg. Co. Detroit Copper Mfg. Co.  
 Arizona Copper Co. Eureka Co.  
 Rio Tinto Copper Co.

**Nickel.**  
 Canadian Copper Co.

**Ore Cars.**  
 Truax Mfg. Co.

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

**Ore Testing Works.**  
 Hunt, F. F. Ricketts & Banks.  
 Ledoux & Co. Robertson, W. F.  
 Montana Ore Purchasing Co. Simonds & Wainwright  
 State Ore Sampling Co.

**Packing and Pipe Coverings.**  
 Asbestos Paraffine Co. New York Belting &  
 Braudt, Randolph. Packing Co., Ltd.  
 Jenkins Bros. Wyckoff & Son, A.  
 Hine & Robertson.

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

**Peroxide of Sodium.**  
 Roessler & Hasselacher Chemical Co.

**Phosphor Bronze.**  
 Phosphor-Bronze Smelting Co.

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

**Pipes.**  
 Pollock, Wm. B., & Co. | Wyckoff, A., & Sons.

**Platinum.**  
 Baker & Co.  
 Johnson, Matthey & Co.

**Powder.**  
 Atlantic Dynamite Co.  
 Ingersoll-Sergeant Drill Co.  
 Drill Co.

**Pressure Blowers.**  
 Connersville Blower Co.

**Publications.**  
 American Fertilizer. Arms & Explosives.  
 Australian Mfg. Stand. Bullionist.  
 Denver Republican. Denver Scientific Pub. Co.  
 El Minero Mexicano. So. African Mfg. Jour.  
 Electrical Plant & Electrical Industry | Zeitschrift fur Practische Geologie  
 Pumps. Snow Steam Pump  
 Blake, Geo. F. Mfg. Co. Co.  
 Cameron, A. S., Steam Pump Works. Stillwell-Bierce &  
 Denver Eng. Wks. Co. Smith-Valle Co.  
 Frasier & Chalmers. Tod, Wm., & Co.  
 Jonesville Iron Wks. W'ashington, Henry  
 Jonesville Iron Wks. Co.

**Quarrying Machines.**  
 Ingersoll-Sergeant Drill Co.  
 Rand Drill Co.  
 Sullivan Machinery Co.

**Quicksilver.**  
 Eureka Co.

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

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

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

**Rock Drills. (See Air Compressors)**

**Roofing.**  
 Berlin Iron Bridge Co. Phelps, Dodge & Co.  
 Cincinnati Corrugating Co. Shiffer Bridge Co.  
 Ing Co. Sykes Steel Roofing Co.

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

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

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

**Separators.**  
 Dodge Mining Machinery Co.

**Shoes and Dies.**  
 Chester Steel Cast. Co. Denver Eng. Wks. Co.  
 Carome Steel Works. Frasier & Chalmers.  
 Crescent Steel Co.

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

**Smelting and Refining Works.**  
 Balbach S. & Ref. Co. Orford Copper Co.  
 Baltimore Cop'g Wks. Penna. Salt Mfg. Co.  
 Bridgeport Copper Co. Penn Smelting and  
 Con. Kas. City S. & R. Co. Refining Works.  
 Elliott's Metal Co., Ltd. Photo. For. Bronze  
 Mathison Smelting Co. Smelting Co.

**Steel Rails, Castings, Bolts, Drill Steel.**  
 Bethlehem Iron Co. Robinson & Orr.  
 Carpenter Steel Co. Robertson, W. B., & Co.  
 Chester Steel Cast. Co. Taylor Iron & Steel Co.  
 Chroms Steel Works. Jesop, Wm., & Son  
 Crescent Steel Co. Ltd.  
 Moore, S. L., & Sons Co. (See Metal Dealers)

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

**Telegraph Wires and Cables.**  
 Okonite Co., Ltd.

**Tools.**  
 Besley, Chas. H., & Co. Pratt & Whitney Co.  
 Besley, Chas. H., & Co. | Pollock, Wm. B., & Co.  
 Williams Bros.

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

**Turbine Water-Wheels.**  
 Leffel, Jas., & Co.  
 Pelton Water Wheel Co.  
 Stillwell-Bierce & Smith-Valle Co.

**Valves.**  
 Eddy Valve Co. | Jenkins Bros.

**Ventilators.**  
 Bullock, M. C. Mfg. Co. Tod, Wm., & Co.  
 Frasier & Chalmers.

**Volcanic Emery Wheels.**  
 New York Belting and Packing Co., Ltd.

**Water-Wheels.**  
 Leffel, James, & Co.  
 Pelton Water Wheel Co.  
 Stillwell-Bierce & Smith-Valle Co.

**Well Drilling Machinery.**  
 Sullivan Mach'y Co. | Williams Bros.

**Wharface.**  
 Lambert's Wharface Co.

**Wheels, Car.**  
 Chester Steel Cast. Co.  
 Taylor Iron & Steel Co.

**White Lead.**  
 Cookson & Co.  
 Foster, Blackett & Co.

**Wire Cloth.**  
 Aitchison, R., Perf. Metal Co.  
 Harrington & King Perforating Co.

**Wire Rope and Wire.**  
 Besley, Chas. H., & Co. Hunt, C. W., Co.  
 Broderick & Bascom. Phelps, Dodge & Co.  
 Rope Co. R'bling, J. A. Sons & Co.  
 California Wire Wks. Ropeways Syndicate  
 Carpenter Steel Co. Trenton Iron Co.  
 Cooper Hewitt & Co.

**Wire Rope Tramway.**  
 Brown Hoist. & Conv. Machine Co.  
 California Wire Wks. & Co.  
 Colorado Iron Works. Ropeways Synd., Lt.  
 Denver Eng. Wks. Co. Vulcan Iron Works.  
 Frasier & Chalmers.

POSITIONS FREE ADVERTISING VACANT.

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.

1472 WANTED—A FIRST-CLASS MILLWRIGHT accustomed to quartz mill for mine in Central America. Contract three years. Give terms and references. Address MILLWRIGHT, ENGINEERING AND MINING JOURNAL.

1473 WANTED.—A GOOD BLACKSMITH for mining camp in Central America. Must understand mule shoeing. Contract three years. State terms and references. Address BLACKSMITH, ENGINEERING AND MINING JOURNAL.

1476 WANTED—A FIRST-CLASS ASSAYER and ore sampler, also as assistant manager and engineer in the operating of a large deposit of manganese of the kind known as "wad" or "bog." Address with full particulars, references, etc. PRINCIPAL, ENGINEERING AND MINING JOURNAL.

1477 WANTED.—A PRACTICAL MINING engineer and metallurgist to take charge of a gold mine and mill in one of the Northern States. Send references and name salary wanted. Address M. & R. Co., ENGINEERING AND MINING JOURNAL.

1478 WANTED.—A FIRST-CLASS ASSAYER for custom sampling works in the Northwest; experience and credentials of the best class indispensable; acquaintance with the business of custom sampling would be an advantage. Reply, stating record, references and salary, to NORTHWEST, ENGINEERING AND MINING JOURNAL.

1480 WANTED — A SUPERINTENDENT who understands handling mica. Apply with particulars, etc., MICA, ENGINEERING AND MINING JOURNAL.

1481 WANTED—A COMPETENT MINING manager, by an American company, to develop a gold mine near Rat Portage, Ontario, Can., and erect a stamp mill if everything proves satisfactory; must assay and have knowledge of chemistry; age about 40 years; reference to persons in New York, Philadelphia or Cleveland; state salary. Address C. P. E., ENGINEERING AND MINING JOURNAL.

1482 WANTED—TWO TECHNICALLY educated young men for electric furnace work residing in or near New York City. Work is hard and exacting, but chances good for right men. Reply fully. Address ELECTRON, ENGINEERING AND MINING JOURNAL.

1483 WANTED—A SUPERINTENDENT to erect and manage a dynamite factory. Must have had successful practical experience in this line. Address DYNAMITE, ENGINEERING AND MINING JOURNAL.

1484 WANTED.—A MILL MAN WITH some experience, who understands concentrating ores by Cornish Jig process, to act as night foreman in small concentrating plant in northern part of Mexico; must speak Spanish. State salary, which must be moderate to commence with. Address CONCENTRATOR, ENGINEERING AND MINING JOURNAL.

1485 WANTED.—A CHEMIST TO TAKE charge of a small chlorination mill treating pyritic concentrates containing gold, silver and a little copper. Address OREGON, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

A MINING ENGINEER, CHEMIST AND Assayer, graduate of technical school, three years' practical experience in mining and timbering, desires position. Locality no object. Address MINER, ENGINEERING AND MINING JOURNAL, No. 14,799, Sept. 12.

WANTED—POSITION AS ACCOUNTANT and purchasing agent for a large company. Had wide experience in this direction. Best of references given. Address C. A. C., ENGINEERING AND MINING JOURNAL, No. 17,498, Sept. 5.

WANTED—POSITION. LONG AND varied experience in opening and working mines of coal, gold, silver, copper, lead and zinc ores; in concentration, smelting and milling; in planning and erecting works; in examination of mining lands. Address H. C., ENGINEERING AND MINING JOURNAL, No. 17,489, Oct. 10.

A GRADUATE MINING ENGINEER NOW under engagement with well-known mining company desires change. Has been continuously engaged for past 20 years with the most successful mines in the West in every capacity. Best reference. Address WEST, ENGINEERING AND MINING JOURNAL, No. 17,462, Sept. 26.

POSITION WANTED—BY YOUNG GRADUATE engineer. Has had one year's experience in active mining, mostly in Colorado. Can assay, survey, keep books, etc. Best of references. Address J. F., ENGINEERING AND MINING JOURNAL, No. 17,473, Sept. 5.

WANTED—SITUATION AS CHEMIST, ASSAYER or assistant, by a young engineer of thorough experience and education; neat, accurate, reliable and not afraid of work; correspondence so invited. Address ACTIVE, ENGINEERING AND MINING JOURNAL, No. 17,490, Sept. 5.

YOUNG CHEMIST AND ASSAYER DESIRES position. Can draught, survey and handle men. Not afraid of hard work. Best of references. Address VOLENS, ENGINEERING AND MINING JOURNAL, No. 17,494, September 8.

WANTED—POSITION BY ASSAYER AND Millman, experienced in concentration, amalgamation and cyanidation. Address T., ENGINEERING AND MINING JOURNAL, No. 17,495, Sept. 5.

MINE BLACKSMITH—A FIRST-RATE MECHANIC, able to do well everything, from setting diamonds in a drill to the heaviest forging. An excellent, industrious, sober man, desires a permanent position, where he will get high wages—which he will earn—and have good educational advantages for his children. He has the very best references. Address BLACKSMITH, ENGINEERING AND MINING JOURNAL.

Contracts Open.

TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, Washington, D. C., August 8th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m., on the 8th day of September, 1896, and opened immediately thereafter, for all the labor and materials required for the erection and completion (except heating apparatus) of the U. S. Post Office Building at Youngstown, O., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Youngstown, O. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any and all bids and to waive any defect or informality in any bid if 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. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for Erection and Completion (except heating apparatus) of the U. S. Post Office building at Youngstown, O.," and addressed to WM. MARTIN AIKEN, Supervising Architect, Orig.

TREASURY DEPARTMENT, OFFICE OF THE SUPERVISING ARCHITECT, Washington, D. C., August 28th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m., on the 18th day of September, 1896, and opened immediately thereafter, for furnishing and putting in place the laundry machinery for the U. S. Marine Hospital building at New Orleans, La., in accordance with the drawing and specification, copies of which may be had at this office or the office of the Custodian, New Orleans, La. Each bid must be accompanied by a certified check for a sum not less than 10% of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the Government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked "Proposal for Laundry Machinery for the U. S. Marine Hospital, New Orleans, La.," and addressed to WM. MARTIN AIKEN, Supervising Architect, Orig.

ELECTRIC LIGHT PLANT.—Sealed proposals will be received by the Board of Water and Light Commissioners of the village of Mohawk, N. Y., up to 12 o'clock, noon, of September 10, 1896, for the furnishing and erecting in place: One 100-H. P. compound engine, tandem style; one 50-H. P. compound engine, tandem style; one 100-H. P. return tubular horizontal boiler; one jack shaft and stand and coupling clutch; pulleys, as per plan; one 50-arc light dynamo; one 60-kw. alternator, complete. Switchboard and appliances, belts, piping, transformers, meters, etc., etc., also 230 poles and about six miles of wire and pole line, complete string, lamps and all appurtenances to perfect a first-class job, according to plans and specifications, which may be seen or had by applying to C. O. MAILLOUX, 150 Nassau street, N. Y., Electrical Engineer, or of Water and Light Commissioners, Mohawk, N. Y., Lock Box 54, to which all proposals and bids, sealed, should be sent. The commissioners reserve the right and privilege to reject any or all bids.

DREDGING.—U. S. Engineer's Office, Army Building, New York.—Sealed proposals for dredging 413,000 cu. yds., more or less, material from Harlem River and Spuyten Duyvil Creek, on line Harlem River improvement, and for furnishing materials and workmanship for construction of about 800 linear feet crib-work revetment for protection of west side of cut through meadow south of Fordham Bridge, will be received here until 12 m., September 10th, 1896. Information furnished on application. G. L. GILLESPIE, Colonel Engineers.

DREDGING PLANT.—U. S. Engineer's Office, Morgan Building, Buffalo, N. Y.—sealed proposals for furnishing dredging plant at Niagara River will be received here until 11 a. m., Sept. 7th, 1896. Information furnished on application. T. W. SYMONS, Major Engineers.

DREDGING.—U. S. Engineer Office, Savannah, Ga.—Sealed proposals for dredging in Darien Harbor, Ga., Brunswick Harbor, Ga., and Inside Water Route between Savannah, Ga., and Fernandina, Fla., will be received at this office until 12 m., city time, on the 8th day of September, 1896, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application. O. M. CARTER, Captain Corps of Engrs., U. S. A.

BEAR TRAP DAM, ETC.—Sealed bids addressed to the Board of Trustees of the Sanitary District of Chicago, Ill., and indorsed: "Bids for Constructing Foundations for Bear Trap Dam and Collateral Work" will be received by the Clerk of said Sanitary District at Room H, Rialto Building, Chicago, Ill., until 12 m. (standard time), of September twenty-third (23), 1896, and will be publicly opened by the said Board of Trustees at the regular meeting held that day, or at a special meeting called for that purpose. The work for which the said tenders are invited is the furnishing, delivering and erecting in place ready for continuous use the various parts of the Foundations for Bear Trap Dam and Collateral Work, described and specified in the detailed specifications furnished by the Chief Engineer. Each bid must be accompanied by a certified check or cash to the amount of \$3,000. All certified checks must be drawn on some responsible bank doing business in the City of Chicago, and be made payable to the order of the Clerk of the Sanitary District of Chicago. Said amount of \$3,000 will be held by the Sanitary District until all of said bids have been canvassed and the contract awarded and signed, the return of said check or cash being conditioned upon any bidder to whom the award of said work may be made appearing within ten days after notice of such award being given, with bondsmen, and executing a contract with the Sanitary District for the work so awarded, and giving a bond satisfactory to the said Board of Trustees for the fulfillment of the same in the amount of \$15,000. All bids must be made upon blank forms furnished by the Sanitary District, and must give the price for each separate class of work or material called for by the specifications. The bids will be compared on the basis of the aggregate of the lump sum bids, and of the prices per cubic yard for all other work. The quantities of such work to be done being estimated inside of lines on the plans being marked "estimate line." No bid will be considered unless the party making it shall furnish evidence satisfactory to the Board of Trustees of his experience and ability in this class of work, and that he can control sufficient capital to enable him successfully to prosecute same in case the contract therefor shall be awarded him. Bidders are required to state in their bids their individual names and places of residence in full. Specifications and plans may be seen at the office of the Chief Engineer, Room 522, Rialto Building, Chicago, Ill. The said Board of Trustees reserve the right to reject any and all bids. THE SANITARY DISTRICT OF CHICAGO, By B. A. ECKHART, President. JAMES REDDICK, Clerk.

JETTIES.—U. S. Engineer Office, Savannah, Ga.—Sealed proposals for constructing jetties at Cumberland Sound, Ga., will be received here until 12 m., city time, September 8th, 1896, and then publicly opened. Information furnished on application. O. M. CARTER, Captain Engineers.

NASHUA AQUEDUCT—OPEN CHANNEL.—Sealed proposals will be received at the office of the Metropolitan Water Board, 3 Mt. Vernon street, Boston, Mass., until September 15th, 1896, for excavating an open channel in Southborough, Mass., about three miles in length, and constructing two small stone dams and six or more stone bridges across the same. The quantity of earth excavation is about 290,000 cubic yards and the quantity of masonry about 2,800 cubic yards. Pamphlets containing further information for bidders forms of proposal, contract and specifications will be mailed to contractors who apply to the Chief Engineer for the same, or may be obtained at his office, 3 Mount Vernon street. Plans may be seen at the office of the Chief Engineer, and also at the office of the Engineer of the Dam and Aqueduct Department, Clinton, Mass. Printed forms must be used in making proposals. The board reserves the right to reject any or all proposals, or to accept the proposal deemed best for the Commonwealth.

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**NOTICE OF SALE OF MINING PROPERTY.**

Notice is hereby given that the undersigned, Receivers of the Charter Oak Life Insurance Company, acting under authority and in pursuance of an order passed on the 12th day of June, 1896, by the Superior Court of Hartford County and State of Connecticut, will, between the hours of 12 o'clock, noon, and 2 o'clock P. M. on Saturday, the 29th day of August, 1896, at the west front entrance to the City and County Building, in the City and County of Salt Lake, in the State of Utah, offer for sale, and sell at public auction, to the person or persons who shall make the highest bid therefor for cash, upon delivery of the deed therefor by said Receivers, within thirty days after said sale, all the right, title and interest vested in, and which they now as Receivers as aforesaid have, of, in and to the following described mining claim and machinery, and tunnel claim and other property connected therewith, situate in Ophir Mining District, Tootoe County, State of Utah, described as follows, to wit:

That certain mining claim situate in said district commonly known as and called the Mono Mine, being more particularly described as follows, to wit: Mineral entry No. 105 in the series of the Land Office at Salt Lake City, Utah, designated by the Surveyor-General as lot No. 46, containing 3.67 acres of land, more or less, and according to the return on file in the General Land Office in said City of Salt Lake, described and correctly described, with magnetic variation at 16° 30' east, as follows, to wit: Beginning at corner No. 1 a post marked No. 1, Lot No. 46, thence south 83° 30' east, 1,600 feet to corner No. 2 a post marked No. 2, Lot No. 46, from which a fir tree 17 inches in diameter marked B. T. bears north 71° 30' west at the distance of 31.5 feet; thence from said corner No. 2 north 6° 30' east 100 feet to corner No. 3, a post marked No. 3, Lot No. 46, from which a fir tree 17 inches in diameter, marked B. T. bears north 76° west at the distance of 13 feet, and U. S. Mineral Monument No. 6 a fir tree 17 inches in diameter, marked U. S. M. No. 6 on the south side, and U. S. Mineral Monument No. 6 on a board nailed on the east side bears north 59° west at the distance of 462 feet; thence from said corner No. 3 north 83° 30' west 1,600 feet to corner No. 4, a post marked No. 4, Lot No. 46; thence south 6° 30' west 50 feet to a point from which discovery stake bears north 83° 30' west, at a distance of 800 feet, 110 feet to the place of beginning. A description of which is also found recorded in the Recorder's office in said county of Tootoe, in Book BB of records on pages 632 to 636, inclusive. Nevertheless, however, reserving and excluding therefrom all that part thereof which is situate east of the center of the ravine crossing said premises nearest the eastern boundary thereof, which ravine is further designated and identified as the one in which a living spring rises a short distance above the north boundary of said premises. Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in any wise appertaining, including all hoisting works, engines and machinery, tailings and property therein and thereon. Also in the same district and nearby the same, and once worked in relation to said mine, that certain mining tunnel commonly known and called in that vicinity "The Aetna Tunnel."

Upon such sale being so made and the purchase money paid, said Receivers will convey said property to the purchaser within thirty days after said sale.

Dated this 7th day of July, 1896.

**ISAAC W. BROOKS & EDMUND A. STEDMAN,** Receivers as aforesaid. **MARSHALL & ROYLE,** Salt Lake City, Utah, Attorneys. **GROSS, HYDE & SHIPMAN,** Hartford, Conn., Attorneys.

**DIVIDENDS.**

**ISABELLA GOLD MINING COMPANY.**

COLORADO SPRINGS, Colo., August 10th, 1896.

A dividend of ONE CENT PER SHARE (\$22,500) has been declared, payable August 25th, 1896, to stockholders of record August 18th, 1896.

The stock transfer books will be closed August 18th, 1896, at 3 o'clock p. m., and will be re-opened on the morning of August 25th, 1896.

**PERCY HAGERMAN,** Vice-President and Treasurer.

**CONTRACTS OPEN.**

Continued from Page 18.

**TREASURY DEPARTMENT, OFFICE SUPER-**

vising Architect, Washington, D. C., September 2d, 1896. Sealed proposals will be received at this office until 2 o'clock, p. m., on the 29th day of September, 1896, and opened immediately thereafter, for all the labor and materials required for the plumbing and gas piping for the U. S. Court House, Post Office, etc., at Omaha, Neb., in accordance with the drawings and specifications, copies of which may be had at this office or at the office of the superintendent at Omaha, Neb. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids, and to waive any defect or informality in any bid should it be deemed in the interest of the government to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for Plumbing and Gas Piping for the U. S. Court House, Post Office, etc., at Omaha, Neb.," and addressed to **WM. MARTIN, Aiken, Supervising Architect, Orig.**

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**CO-PARTNERSHIP NOTICE.**—THE FIRM of Chandler & Shapleigh, consisting of Wm. Henry Chandler and Waldron Shapleigh, Consulting Chemists, of 46 Broadway, New York City, has this day been dissolved by mutual consent. The business will be continued at the same location by **WM. HENRY CHANDLER.** Aug. 24, 1896.

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**MINING ENGINEER AND METALLUR-** gist, graduate of Lehigh University, '95, desires a position with reliable mining company. Address **LEHIGH, ENGINEERING AND MINING JOURNAL.** No. 17,488, Sept. 12.

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**MECHANICAL ENGINEER, TECHNICAL** graduate, with practical experience, wants a position; is familiar with use of transit and level and has had considerable drafting room experience; would prefer position in the East. Address **MECHANICAL, ENGINEERING AND MINING JOURNAL.** No. 14,807, Sept. 5, 1896.

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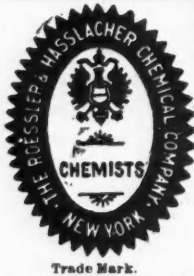
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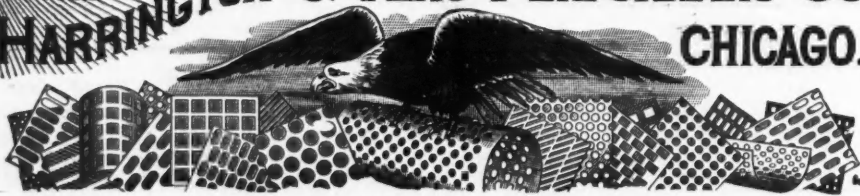
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