

# THE ENGINEERING AND MINING JOURNAL



Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. LIV. NOVEMBER 5. No. 19.

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THE SCIENTIFIC PUBLISHING CO., Publishers.

### SUBSCRIPTION PRICE:

Weekly Edition (which includes the Export Edition), for the United States, Mexico and Canada, \$4 per annum; \$2.25 for six months; all other countries in the Postal Union, \$7.

Monthly Export Edition, all countries, \$2.50 gold value per annum.

REMITTANCES should always be made by Bank Drafts, Post-Office Orders or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING CO. All payments must be made in advance.

### THE SCIENTIFIC PUBLISHING COMPANY.

OFFICERS: R. P. BOWELL, Pres. & Gen'l Mang. / P.O. Box 1833. SOPHIA BRAEUNLICH, Sec'y & Treas. / 27 Park Place, New York.

Cable Address: "Rothwell, New York." Use A. B. C. Code, Fourth Edition

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ACCORDING to articles which have been making the rounds of the press, the American Waltham Watch Company, on leaving the building in which they had manufactured gold watch cases for thirteen years, had a clean-up made of the flooring, and, indeed, all the woodwork of the building. The yield of the ashes after the wood had been burned amounted to, it is stated, over \$65,000. While this total may be somewhat exaggerated we believe that when the greatest care is used where the precious metals are handled losses necessarily occur, a portion of which may afterwards be recovered, as in this case.

These losses are not confined to industrial establishments but occur in even larger quantities in our mills and smelting establishments. The tendency of gold amalgam to escape through a small crack in an iron mortar is well known. Cleanups at old mills have been made at which thousands of dollars have been realized from the treatment of the earth surrounding the battery and the amalgamated copper plate sluices. The woodwork of the sluices has been burned and more gold recovered, and the earth under the retorting and melting furnaces is often a veritable bonanza. In chlorination works the wood of the tanks, when they are being rebuilt or abandoned should be burned, and the gold recovered. This is sometimes overlooked, and in one case to our knowledge some \$12,000 was made by an individual who purchased an abandoned plant. The hearths of these reverberatory furnaces have a tendency to absorb bullion of any kind, and this, or even matte, has been known to penetrate not only the hearth and foundation but even the surrounding earth without the knowledge of those in charge. Nowadays engineers are acquainted with this elusive tendency of the precious metals and take pains to guard against those losses.

### EFFECTS OF HEAT ON STEEL.

In the "W. P. I.," the publication of the Worcester Polytechnic Institute, Worcester, Mass., of Friday, October 14th. H. W. Wyman has a paper on "The Effects of Heating upon Steel." It is hardly more than a review of Brinnell's conclusions, but sets these forth clearly and concisely. To say, however, that the effects of heat upon steel are due mainly to changes in the condition of the carbon is to lose sight of the possible alterations of chemical and physical structure due to changes in the other ingredients. We are not yet in a position to say that the change in carbon alone produces that result which for lack of a better term we call "hardening."

The fact is, we know very little about the ultimate condition of any of the ingredients of steel, whether in their chemical or in their spacial relations. It is not safe to assume that because our present methods of analysis enable us to observe the changes in the carbon more readily than in the sulphur, the silicon, and the phosphorus, yes, even in the iron, therefore these others are of minor importance. It may be, and evidence is not lacking in support of the view, that elements other than carbon likewise suffer changes, *pari passu*, with this, when under stress, be the source of the stress what it may.

We see the effect of certain reagents upon steel, as in hardening, but we cannot yet say that it is due to the change from cement to hardening carbon at a low yellow heat.

If by cement carbon is meant the tertiary form of carbon, first definitely observed by Rinmann, as distinct from graphitic and combined carbon, it is to be remarked that our knowledge of it is at present unsatisfactory. It would have been well had Mr. Wyman defined his terms more exactly, so that his audience of students might have understood what was meant by cement and hardening carbon. Evidently, hardening carbon is carbon that induces hardness, but this is not a scientific definition, any more than to say that cement carbon is the kind of carbon that is changed into hardening carbon at and above low yellow heat.

Care in definitions is never labor lost, especially when lecturing before students at a technical school. We have nothing but the heartiest commendations for such attempts to interest young men in practical matters, but a greater care in definition is certainly advisable.

### THE CONSOLIDATED TENNESSEE COAL, IRON AND RAILWAY COMPANY.

The consolidation of the De Bardeleben Coal and Iron Company and the Cahaba Coal Mining Company with the Tennessee Coal and Iron and Railway Company, which, after many months of preparation, is now accomplished, is likely to exert a powerful influence upon the Southern coal and iron trade, directly, and, indirectly, upon the trade at large.

It is a significant fact that this company now controls a pig iron output of 633,000 net tons annually, all of it non-Bessemer coke iron. As regards capacity it is third on the list, the Illinois Steel Company coming first with 1,240,000 tons, and the Carnegie Bros. & Co. Ltd. second with 850,000 tons. The Maryland Steel Company is fourth with 400,000 tons, and the Cambria Iron Company fifth with 380,000 tons. As regards uniformity of product it will sustain to the non-Bessemer trade the same relations borne by the Illinois Steel Company toward the Bessemer trade, with this important difference, however, that it sells its entire output of pig iron in the open market without attempting to convert it

into wrought iron or steel before it leaves its hards, while the Illinois Steel Company sells the product of its rolling mills and steel works.

Furthermore the Tennessee Coal and Iron Company owns and operates its coal mines and coke ovens, and has a large number of railway cars. On account of its large output and the favorable situation of its furnaces it will be in a position to secure the most favorable rates from transportation companies. These are great advantages. Per contra, it will find itself in the position of a producer of one of the crudest of all raw manufactures, pig iron not destined for the steel furnace, and the largeness of its output will, to some extent, be a cause of embarrassment. The fact that the Southern furnaces hold on to their iron so well, in spite of the temptation to meet almost any offer, is very encouraging to the trade at large; this disposition is especially noticeable at this time and is to be taken as one of the signs pointing, not to high, but to better prices. The return to the prices of even a few years ago is not to be expected, though we must admit that a somewhat recent sale of forge iron at a Southern furnace at the price of \$8.15 a ton does not illustrate this. The return to remunerative prices will come with the general improvement in business now visible.

While there are elements of weakness in the new consolidation, we think that, upon the whole, it will be beneficial not only to the Southern iron business, but also, and what is of far greater consequence, to the iron industry of the country.

#### THE SILVER QUESTION.

On another page we print a long letter giving Mr. EMIL E. GRANIER'S views on the silver question. We need not say we cannot accept these as representing the world's experience, in fact, he bases his arguments on what we believe to be unfounded assumptions. It is not therefore necessary to reply to conclusions drawn from them, we would merely remark that Mr. GRANIER surely forgets that when the government of the United States was issuing legal tender greenbacks, it required more than two and a half dollars of them to buy one dollar of legal tender gold. Has he also forgotten that notwithstanding the United States enactment requiring everyone to accept greenbacks at their face value in full satisfaction of all debts, no one would accept them in California? We have demonstrated for ourselves, just what every other nation found before us, that unless a government is able to redeem its paper or silver dollars in the only universal standard, gold, its *dictum* that a piece of paper or a certain number of grains of silver are equal to a gold dollar is worth no more than any private individual's "promise to pay" if he has not the wherewithal to redeem it. There is but one way in which the price of silver, whether in coin, or in bullion, can be advanced or even permanently maintained, and that is by making it in fact, and not in words only, exchangeable the world over, for gold at a fixed ratio, and this cannot be done by one more country adopting free silver coinage. The only reason our silver dollars to-day are at par, is because the government will give gold dollars for them. If it were unable or unwilling to do this our silver coins would immediately be at a discount which would quickly get to that of the silver dollars of free coinage Mexico or Japan, that is, they would decline to about the market price of bullion, whether they were legal tender or not.

The idea that the adoption of free silver coinage by this country alone would advance or maintain the price of silver is wholly chimerical. The world's silver would come here to be exchanged into gold if we should attempt to maintain a parity between the metals on any fixed ratio, and if we declined to give gold for silver our silver coins would at once descend to their bullion value. In either event our gold would disappear and we would forge for ourselves the fetters that are so galling to every free coinage country to-day. It is always wiser to look at things as they are and not as we would wish them to be. There is neither sense nor safety in pursuing the mirage of our desires until we perish in the desert of realities.

The question of the adoption of free coinage by the United States alone has, we believe, been settled. It will not be adopted. The question now is to convince the other great nations represented at the monetary conference that it is to their interest to adopt a common ratio between gold and silver, and to agree to accept the metals, as offered, at this ratio. There is no agreement but that dictated by enlightened self-interest that will be durable, therefore let us show other nations on the one hand the dangers and disasters which the universal demonetization of silver will occasion, and on the other the safety and advantages of a universal international bimetalism.

It is certain that the United States must soon stop the present heavy purchase of silver; its continuance would inevitably bring us before long to the single silver standard, all our gold disappearing from circulation in a twinkling, just as it has in all silver standard countries. Assuming, therefore, that the United States ceases its purchases of silver, and that other nations refuse to adopt bimetalism or other measure making a large market for the metal; let us seek answers to these questions:

1. What will the price of silver decline to?
2. Who will be chiefly injured by this decline?

The total quantity of silver used in coinage in the world is variously estimated at from \$3,000,000,000 to \$4,000,000,000 at coinage value, which is for the most part 15½ silver to 1 of gold. It is held about as follows:

|                                   |                 |         |               |
|-----------------------------------|-----------------|---------|---------------|
| United States.....                | \$600,000,000   | or 20%  | of the whole. |
| Great Britain & Colonies.....     | 125,000,000     | " 4.2%  | " "           |
| France.....                       | 700,000,000     | " 23.4% | " "           |
| Germany.....                      | 220,000,000     | " 7.3%  | " "           |
| Austro-Hungary.....               | 100,000,000     | " 3.3%  | " "           |
| Italy, Belgium & Switzerland..... | 100,000,000     | " 3.3%  | " "           |
| Netherlands.....                  | 70,000,000      | " 2.3%  | " "           |
| Russia.....                       | 75,000,000      | " 2.5%  | " "           |
| India.....                        | 750,000,000     | " 25.0% | " "           |
| All other countries.....          | 260,000,000     | " 8.7%  | " "           |
|                                   | \$3,000,000,000 | 100%    |               |

From this we see that the United States holds about 20 per cent. of the world's supply; England and her colonies, including India, about 29 per cent.; France, about 23 per cent., and the rest of the world about 29 per cent. The direct loss from a decline in the value of silver will fall upon the nations in about these proportions.

What may this decline amount to should no international agreement be arrived at?

The vast accumulation of silver in the world, a large part of which would then be thrown upon the market, would undoubtedly depress the price to a point far below the cost of production, for in the arts, silver is not a very much more desirable metal than nickel, which for years (and until the adoption of the fad for using nickel in armor plate), vainly sought to extend its uses at 50 to 60 cents a pound.

With fluctuating values for silver and no large demand for subsidiary coinage the hoards and stocks of the metal, both in coin and manufactures, would find their way on to the market, and the price would go down far below the cost of production and remain there an indefinite time.

If the stock were finally absorbed in the arts and the price again began to rise to the producing point, the metal would come out from many of its uses and again depress the market. Moreover, a certain amount of new silver would still be produced in connection with gold, copper, lead, &c., an amount which would have to be marketed at whatever price it would bring. Under these conditions, it is impossible to foresee to what price silver would descend, but it is safe to say it would go very far below 50 cents an ounce, which may be assumed to be a present limiting figure for the operation of even the greatest silver mines of the world. If it should go only to 40 cents an ounce, two thirds of the value of the world stock of silver coin would be destroyed, or say \$2,000,000,000 would be taken from the holders of silver who are chiefly the industrial classes in every country.

This direct loss, enormous as it appears and actually is, would still equal but a small part of the indirect losses, which this depreciation would bring in its train. Everyone is familiar with the sacrifices which poverty necessitates. If \$2,000,000,000 were suddenly taken from the banks of the world, that is, chiefly, from the reserves of the industrial classes, it would create a panic in which everything but gold would suffer. Since the failure of one debtor to meet his obligations frequently brings with it the failure of a long list of houses, each solvent if this one debt were paid, so the practical bankruptcy which this inevitable decline in the value of silver would bring upon the silver standard countries would demoralize trade throughout the world, and the disasters which commenced with the centimes, the annas, the "cash" of the pitiful wages of the poor in the silver basis countries, would gather force and grow in intensity and destructiveness as they reached the great merchants and finally the banks and bond holders in gold-standard England. The ominous lesson of the Baring's failure should not be forgotten.

The showers that wash away the Indian ryot's little plot of rice and the comparatively valueless ridge of beans in Mexico or South America would be the sources of the torrent that, as a devastating flood, would destroy the rich valleys and cities of civilization, sparing neither the home of the artisan nor the palace of the millionaire. It is easier to control this stream at its source, and by foresight cause the shower to penetrate and render fruitful the soil than to protect the homes of civilization from the mad torrent which neglect and a feeling of false security may start upon its course.

This is not a question which affects chiefly the producers of \$60,000,000 a year of United States silver, nor even the producers of the whole world's \$170,000,000 of this metal, but it chiefly affects Great Britain with its imports and exports aggregating \$3,750,000,000 annually, and with its holdings of countless millions of foreign securities.

Assuredly the Silver Congress about to assemble has a much more momentous problem to solve than the light-hearted English financial papers appear to appreciate. And its solution will affect, for good or ill, Great Britain and her colonies infinitely more than it will this or any other country.

In another article we will endeavor to show that the simplest, safest, perhaps the only safe course to pursue is in the adoption of at least a temporary international agreement for bimetalism on a fixed ratio between gold and silver, and we shall do this from no narrow partisan point of view, but from considerations of universal public policy which affect all nations, and, most of all, Great Britain.

## NEW PUBLICATIONS.

PROCEEDINGS OF THE ALABAMA INDUSTRIAL AND SCIENTIFIC SOCIETY. Vol. I. No. 2. 1891. Published by the Society. E. A. Smith, Secretary, University, Ala.

Contents—Going Into Blast with a Coke Furnace, Jno. S. Kennedy; The Thomas Patent Coke Oven, 3 plates, J. T. Hill.

A notice of Mr. Kennedy's paper appeared in our issue of last week.

Mr. Hill sums up the results obtained from the Thomas oven as follows: 1. The yield is equal to the bee-hive oven. 2. The quality of product is fully up to the standard. 4. It is practicable to quench the coke outside the oven without detriment to its quality, and the oven is left hot and dry for the following charge. 4. The saving in handling, resulting in less waste in breeze. 5. Economy of production.

PUBLICATIONS OF THE ILLINOIS MINING INSTITUTE. Vol. I., No. 1. May, 1892. Springfield, Ill. Illinois Mining Institute. \$1.00.

Contents.—Purposes of the Institute, Jas. C. Simpson, president; The Water Gauge, Walton Rutledge; Coal Cleaning, Thos. R. Stockett, Jr.; The Mine Manager, Hugh Murray; Electricity in Mining Operations, Elmer A. Sperry; Mine Inspection, Thomas Hudson; Endless Rope Haulage, Walton Rutledge; Drainage in Wet, Long-Wall Mines, Ramsay; Fire Damp in Illinois Mines, John Rollo.

The Illinois Mining Institute was organized in February, 1892, and will hold quarterly meetings, the first one of which was held May 17, 1892.

As pointed out in the address of the President, Illinois offers many excellent opportunities for observing not only the methods employed in long wall and room and pillar work in coal mining, but also the use and efficiency of coal mining machines and haulage systems. Illinois leads the country in the mining of coal by machinery, Indiana being second, while Ohio and Pennsylvania together use fewer machines than does Indiana alone. In 1891 the output of machine mined coal in Illinois was 3,027,000 tons, as against 1,216,000 tons hand mined. Mr. Simpson also points out the great advantage to the protection to life and property which is rendered possible by the free and full discussion of safety devices in coal mines; including ingress and egress, ventilation, haulage, lighting and explosives. The sixty lives that are now lost annually, although there are 33,000 men employed, are just so many lives thrown away if by the diffusion of better knowledge and insistence upon greater care they can be saved. The \$18,000,000 now invested and the \$11,000,000 paid out in wages and supplies would be surer of profits if employers and employes alike would meet together for counsel. The tendency of scientific papers read at meetings of institutes and societies is to ignore, to too great an extent, the questions of cost, which, after all, are the main questions in mining as in most other operations.

It is to be hoped that the members of the Illinois Mining Institute, which begins with so great promise of an active and useful life, will bear this in mind, and, wherever possible, give us the cost of results.

## 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 in another page of the Journal.

*Bulletin de la Société D'Encouragement pour L'Industrie Nationale.* Publié sous la direction des Secrétaires de la Société, Mm. Colliquan & Aimé Girard. Septembre, 1892, 91e Année. No. 81. Tome VII. 4e Serie. Paris, Siège de la Société, Rue de Rennes, 44.

*Bulletin de la Société Géologique de France.* 3e Serie, t. xix. 1891. No. 13. Réunion extraordinaire de la Société Géologique en Provence. Feuilles 66-67. Pl. xxiv.-xxix. Tables des Matières. Paris: Au siège de la Société, Rue des Grands-Augustins 7, 1892.

*Bulletin de la Société Internationale des Electriciens.* Tome IX. Aout, Septembre-October, 1892. No. 91. Paris: Gauthier, Villars et Fils, Imprimeurs—Libraires du Bureau des Longitudes, de L'Ecole Polytechnique. Quai des Grands-Augustins, 55.

*Jahrbuch der Kaiserlich-Königlichen Geologischen Reichsanstalt.* Jahrgang 1892. xlii. Band. I. Heft. Mit Tafel I.-V. Wien, 1892. Verlag der K. K. Geologischen Reichsanstalt, III. Rasmoffskygasse 23.

*Revue de D'Legislation des Mines et Statistique des Houillères en France et en Belgique.* Publiées sous la direction de M. Emile Delcroix, Docteur en droit, Avocat du Barreau de Lille. 9e Année. Juillet, Aout, 1892. Lille L. Danet, 93, Rue Nationale.

## 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. All letters should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.

Who Built the First Gas-Fired Copper Furnace?

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have just read in your issue of September 24th the article on the use of gas furnaces in the metallurgy of copper. I take the liberty to remind you that I was the first to make the application of such furnaces to copper melting, I established in 1872 in my copper works at Védèves, France, two gas furnaces for melting and refining copper. The furnaces were modifications of the Siemens type with regenerators, and gave results which were absolutely satisfactory. It was not until several years after other metallurgists followed my example and installed gas furnaces, which have since gone into general use in copper works. I would thank you to insert this rectification in your next issue. P. MANHES.

LYONS, France, Oct. 18, 1892.

Chrome Steel Shoes and Dies.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The latter part of an article on chrome steel on page 415 of the JOURNAL of October 29th says "Chrome steel shoes and dies were formerly, if not yet, manufactured in some quantity by the Chrome Steel Works of Brooklyn. The wearing parts of crushers, rolls, etc., were also manufactured by this firm, but although in some cases the increased length of wear, in spite of the high first cost, made their use economical, their adoption was by no means general, as the portions unworn were

unsalable, while those of cast iron found ready purchasers in local foundries," is an error. The shoes, dies, cams, tappets and the wearing parts of crushers and rolls made by the Chrome Steel Works of Brooklyn, are at present more generally and extensively used than ever before—in some mining districts almost exclusively. The demand has increased steadily year after year for several years past and it has been pretty generally demonstrated that notwithstanding the "high first cost" they are the most economical castings of their kind to be obtained.

J. G. DUNSCOMB, Secretary Chrome Steel Works.

BROOKLYN, Oct. 31.

Preliminary Crushing Before Stamps.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I quite agree with your editorial upon preliminary fine crushing in your issue of October 1st as being beneficial in increasing the capacity of stamp mills, and in one instance can remember when at Silver King, Arizona, that on ores broken by crushers to 2½ in., containing no fines of consequence, the capacity of 20 stamps was 64-66 tons per diem; but when the fine stuff from the stopes, 80% of which nearly would pass ½-in. mesh screen, was sent to the mill, the output was 72-75 tons per diem, an increase of 12½%.

But there is a limit to preliminary fine crushing for stamps, and I think your figure of 4 mm. is below that limit. Especially would it be too fine when working with heavy stamps, as there would be a likelihood of breaking the stems.

Your idea of rolls for this work is good when the ore is so sticky and soft that crushers will not answer, but under other circumstances why use rolls when the same result can be obtained by means of multiple jaw crushers with far less wear and tear and power.

I would not recommend the applicability of any particular machine for all cases, not even the almost universally used stamp mill, which, it would seem, will have to give place in some localities to the improved Chili mill, which has given the wonderful product of 24 tons to 100 fine per diem with the expenditure of 8 H. P. Yours very truly,

EL ORO, MICHOACAN, Mexico, October 12th, 1892.

F. H. BLAKE.

A Suggestion for Bimetallism.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Universal free coinage at any existing coinage rates of gold and silver is undesirable because the average cost of production of silver bullion has been so diminished that a price of \$1.29 per oz. would cause an output too great to be in any way consumed.

To recoin all silver now circulating at any new or international ratio is practically impossible.

Might not the various governments agree, however, each to purchase at a stated ratio (say 1 of gold for 20 silver) a minimum amount of silver annually, if offered at that rate, to be coined at such ratio as should best suit each nation?

The amounts to be so bought by the nations need not be the same; the coinage would be subsidiary; the profit resulting to the Government would be a credit on taxation; there would be no inducement to remelt the coins or sell resulting bullion; and, on the whole, would this not involve fewer evils than the great calamities which will inevitably follow a much greater decline in selling price of silver in all silver producing districts and countries? It is absurd to say that the present average cost of production of silver is as low as the recent average market price, and is it not probable that the comparatively few mines producing silver at less than 85 cents per oz. could not continue to do this if their less fortunate neighbors shut down and left the cheap producers to alone support the mining districts, their dependent railway, smelting and other industries? Respectfully,

ASPEN, Col., Oct. 17.

T. L.

Suggestions for the Solution of the Silver Question.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The disturbance of the fixity of money since 1873 is attributed to the fall of the material value of silver while it is solely caused by its demoralization. It is a misconception of money which deserves full comment.

Silver and gold were not selected for money on account of their material value, but on account of their physical qualities and of their limited quantity, important enough, however, to furnish a sufficient quota per capita of inhabitants. For these reasons silver and gold were, by common consent, recognized as representing the combined values of all other merchandise, their own included, and, as such, they were tendered and received as a full equivalent for all merchandise. Thus they were made the measure of value of all things and consequently can neither be valued or priced as long as they remain money.

It is not the material value of silver and gold that generates money. The law creates money; the word money itself signifies law, and in investing silver and gold with the exclusive privilege of legal tender it renders them precious, and it is their combined quantity accumulated since centuries, and not their material value, that regulates the purchasing power of money.

As soon as deprived of the privilege of legal tender, silver and gold are no more precious. Being, then, only useful for ornaments, they are appreciated like other merchandise, and their fictitious value, kept up so long as they could be turned into money, falls comparatively to nothing. It is just what has happened to silver since 1873; and we have not yet seen the end of its disastrous fall, should its full rehabilitation be long delayed.

It is not the insignificant value of a paper bill that renders it precious, it is the fact of its being legal tender.

The value of its substance creates so little money that, were it possible to find a fixed and invariable limit to the issue of paper money, and were all the world closely united into a single nation, paper could fulfill the function of money, and much cheaper than silver and gold, to the great advantage of all taxpayers. But the issue of paper money is unlimited and left entirely to the discretion of governments. While it is absolutely beyond the power of man to increase the production of silver and gold, so both have been recognized by all nations as the only safe material for money, and it is what renders them so precious.

Silver and gold do not serve merely in their capacity of coins to operate payments from hand to hand; their combined quantity accumulated since centuries constitutes the unit measures of value.

This unit of value or monetary mass, so limited by nature, is the final and supreme referee of value that serves to make the inventory of the wealth of the world. And its fractions serve to appreciate the value and pay for the price of any merchandise.

Suppress that measure of value and there is no more check left to the issue of paper money, consequently no more possibility to appreciate any merchandise and fix a price on it.

No matter how many thousands of millions of dollars of paper money or credit certificates are issued in the world by banking and clearing house institutions, all these millions must, in the end, come to the unit of value or supreme referee, that is to say, to the monetary mass of silver and gold, and must be able to command a share of it to prove and realize their mere factitious value. When bank bills or credit certificates of any kind cannot be turned into silver or gold on demand, they are an injurious inflation producing crises which, by the losses they cause, bring back the inflated value of all things to what it ought to have been if appreciated by the only true measure of value, that is to say, the entire monetary mass. Therefore the greater the monetary mass, the greater the opportunity to obtain a share thereof, the greater the number of transactions and the greater the profits of all financial institutions. It is an error to believe that, because banks and clearing-houses operate payments almost without handling any money, silver and gold are no more needed, and can be dispensed with. No, they cannot be, because the entire monetary mass is the automatic check, and the only one to the issue of fictitious money; it is the only and true measure of value without which the world would be in complete chaos.

All measures are conventional and determined by law. So, money is a conventional measure of value expressed by a conventional weight of a conventional material, and not by the value of this material. As money serves not only to appreciate the value of all things, but also to pay for them in passing from hand to hand, it was necessary to embody it into some material of some kind. The choice of silver and gold has been so judicious that, since centuries, their combined production by nature

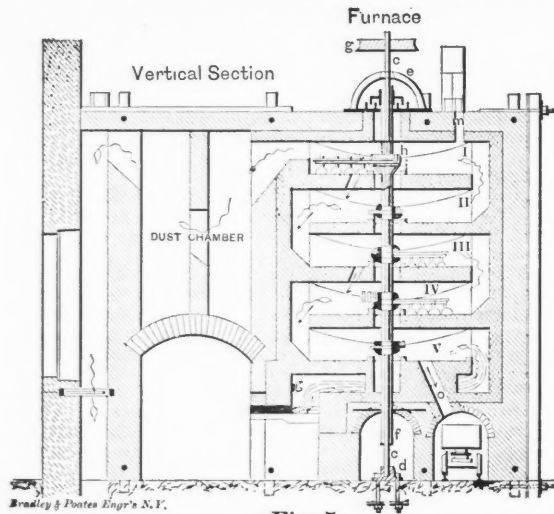


Fig. 5.

counterbalances the excesses of each other and forms a mass gradually increasing with the increase of population, thus keeping up its monetary fixity.

As silver and gold are both equally fit to fulfill the function of money, but, as they are of different specific weight, it was left again to the caprice of legislators to determine their relative weight, so that the unit coined in either of them should represent the same purchasing power. Hence the different national ratios between silver and gold. Had the same ratio been adopted from the origin by all nations there would never have been any monetary crisis, and nobody would ever have dreamt of demonetizing silver or gold.

Ever since money was invented silver has been the money of mankind. Its entire mass has attained such an immensity that it is folly to attempt to suppress it. Had silver a small importance it would be different, but it is in every pocket, in every safe; it circulates in every country, in most of them as their unique legal tender, and, above all, it is the half of the money of the world. Let us add that civilization has progressed so rapidly of late years that the combined production of silver and gold barely keeps pace with it. Therefore, how can it be expected that gold alone will suffice? Instead of suppressing one of the two metals every encouragement ought to be given to the discovery of both. The solution of the problem is easy, simple and infallible, as demonstrated by Newton in 1717; by Henri Cernischi, the chief of bimetalism, and by other eminent writers of our days.

The ratio of 15½ of silver for one of gold has kept up, through the whole world, the relative value of silver and gold at par without any variation since 1785 to 1873. It has held at par their value from 1785 to 1853, during which period the regular production of silver was thrice that of gold. It has continued to keep it up at par from 1853 to 1873 when the production of gold was thrice the regular production of silver. This demonstrates in the most irrefutable manner that, whatever the ratio is, provided it is fixed and universal, it matters not whether it represents, or not, the relative proportion of the existing quantity of each metal to keep up their value at par.

The ratio of 15½ to one is not better than any others, but there is an honest consideration that imposes its maintenance. It is, that since 1785 to 1873 this ratio has been the basis of all private and public contracts at long term. Because the French mint being, then, constantly ready to coin at the rate of 15½ to one all the silver and gold presented, no matter from what part of the world, the ratio of 15½ to one was, without question, accepted and used in every country—gold monometallic England included

—as the fixed international unit of money. In fact, it practically was so. Another decisive consideration is, that the 15½ ratio is the basis of almost all the monetary systems of the world. Therefore, it would cause an immense loss to increase the ratio to 18 or 20 under the mere pretense that the proportion of silver to gold is no more 15½ but 18 or 20. But when was that proportion exactly 15½? for it worked equally well from 1785 to 1873, during the two periods of alternate extreme scarcity and extreme abundance of the production of gold.

Let us figure only some of the results of the alteration from 15½ to 20. It means that to every 15½ lbs. of silver coins circulating in the world 4½ lbs. of silver should be added, that is to say, a dead loss of 29% for all nations. For the United States alone, possessing 500 millions of dollars in silver, it is a loss of 145 millions. Consequently it means a reduction of 29% of the circulating silver money of the world; and, as silver represents about the half of the value of the monetary mass, the diminution of this mass would increase by about 15% the purchasing power of money, to the detriment of all debtors. On the other hand, the ratio of 15½ requires, instead of an increase, a slight reduction of about 3% of the weight of the silver coins of only three countries: Japan, Mexico, and the United States, thus producing a profit for them and no loss for all the others. At the same time the interest of bondholders is not impaired, as they shall be paid at their option either in silver or gold, as they were previously to 1873. The steady working of the 15½ ratio has been proved infallible for one hundred years by the fact that during that long period the most unprecedented jumps have happened in the production of gold. For in four years it jumped from 25 millions of dollars in 1849 to 155 millions in 1853. After this capricious production who can venture to say that gold alone offers more money fixity than the two metals combined by a uniform ratio.

The solution of the problem being already tested by a long experience

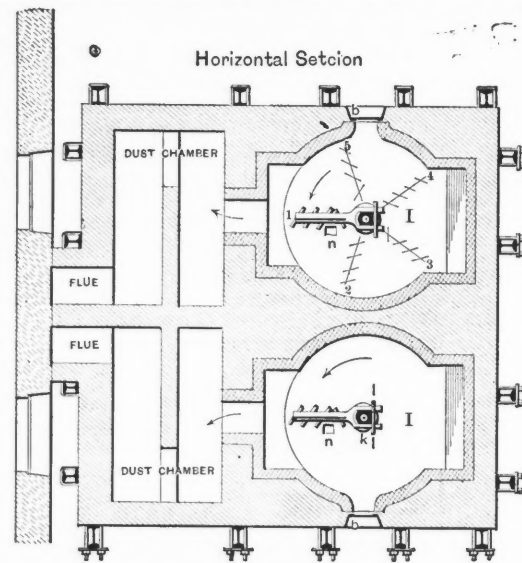


Fig. 6.

only requires to be sanctioned by an international compact. Let the international monetary convention trust in bimetalism and proclaim: "Free and unlimited coinage of silver and gold at the uniform and universal ratio of 15½ kilogrammes of silver for 1 kilogramme of gold shall be in force in every country from January 1st, 1894, and shall so remain until denounced by a majority of them."

There is no danger of any country denouncing bimetalism once universally practiced, because it would be against its own interest.

Should this resolution not be adopted by the unanimity of the convention let England, Germany, France and the United States sign the compact for themselves; it will be sufficient to keep silver and gold at par in the other countries.

Should it be impossible, however, to get the four named countries to agree to bimetalism then let the United States either boldly open alone their mint to the unlimited coinage of the two metals, or, in presence of their denied efforts, precipitate the crash by stopping entirely the coinage of silver. This last resource will be disastrous, but shall force, before long, the bitterest enemies of silver to beg for its complete rehabilitation.

ATLANTIC CITY, September, 1892.

EMILE GRANIER, OF WYOMING.

**Cheap Aluminum.**—A French electro-metallurgical company, which employs the Hérault-Kilian aluminum process, asserts that it will be able to sell the aluminum at a price equivalent to less than 15 cents a pound, provided it is in a position to dispose of a yearly output of 3,000 tons of the metal.

**Iron Industry of Scotland.**—A branch of the British Iron and Steel Institute has been established in Scotland for the benefit particularly of the young engineers and metallurgists in the west of Scotland. James Riley, of the Steel Company of Scotland, has been appointed the first president. In his inaugural address, on October 14th, he gave some interesting statistical figures of the iron trade in Scotland. The productive capacity of the blast furnaces in operation in Scotland is 1,250,000 tons per annum. One-third of the ore used is domestic and two-thirds imported, chiefly from Spain. To produce this pig 2½ millions of coal and 500,000 tons of limestone are required. The wrought iron works of the country have a productive capacity of 300,000 tons per annum, and use 350,000 tons of pig and scrap, 100,000 tons of ore and 650,000 tons of coal. Of Bessemer and open hearth steel about 900,000 tons of ingots are produced every year from 800,000 tons of pig iron, 180,000 tons of ore and 1,000,000 tons of coal.

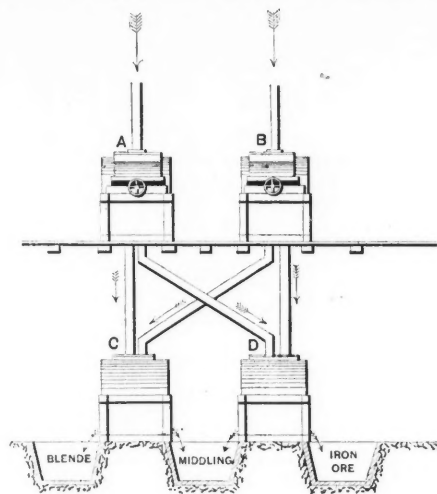
MINES ON THE LAHN, NASSAU, GERMANY.

Written for the Engineering and Mining Journal by John W. Meier.

The Friedrichsseggen mine is located in a side valley of the Lahn, a short distance from the Rhine at Oberlahnstein. The main shaft is near the top of a high ridge. The general office and laboratory of the company is just below, and the different concentrating plants are distributed at intervals down the road. In the first of these plants dry culling is practiced on a large scale. The ore, raised up on an inclined plane from one of the levels of the mine, being dumped on a cast iron grating in the floor of the building, with meshes 35 mm. (1 1/4 in.) square, which retains the coarse for culling purposes, while the fine falls into cars and is delivered further down the hill to the next concentrator. A part of the coarse stuff is broken by Blake crushers, then assorted by men. The culled lots are broken by hammers by boys. These work carefully, making a final division into copper (the amount of this ore is small), lead, and zinc ores; making several qualities of each ore, the richer stuff being clean enough to sell. Some of the mixed lead ores are crushed by a smaller Blake crusher and divided by a dry screening into five or six sizes, for each of which there is a bin. A small three-compartment jig dresses these. It is scraped off by hand in the old-fashioned way, and the headings are hand picked, producing some clear galena.

The wet jig house, further down the hill, is not a modern plant, and, like all old works, requires too much wheeling and shoveling. The ores are finely disseminated through the gangue, and some of them show bands of siderite mixed with blende. The reduction ores, after roasting, are subjected to magnetic separation as well as to wet dressing. A peculiarity of this jig house is the combination of coarse jiggling with hand picking.

Ores from the culling house are screened and the grade over 30 mm. and finer than 35 mm. is jigged on a special three-compartment jig with



Magnetic Separators

Fig. 3.

a stroke of 75 mm. The tails from this are handpicked, the refuse going to the dump. The concentrates are taken to the rolls, from which they go to other screens and jigs. Still further below are two small concentrators containing spitzkastens and rotary tables for slime treatment.

Magnetic separation is undoubtedly the object of greatest interest at this mine. A large proportion of the concentrates is very rich in siderite, which cannot be separated from blende on account of its high specific gravity. The furnaces and magnetic separators form a special plant. They have been fully described by Mr. A. Heberle, engineer of the mines, in the official paper of the Frankfort electrical exposition, from which the following description is condensed:

The concentrates treated contain 11-15% Zn and 18-23% Fe; calcination of these at red heat leaves the blende unchanged, while the CO<sub>2</sub> of the siderite is driven off and magnetic oxide of iron is formed. The calcination is done in a high reverberatory furnace with five floors. The ore is delivered to it by elevators and conveyors, nothing over 5 mm. size being charged. Figs. 5 and 6 show a double furnace as used (the five different floors are marked I., II., III., IV. and V.; respectively). The ore drops through *m* on to the floor I., it is then moved forward by a stirring arm and flows to the opening *n*, through which it drops to floor II., there it is moved around and forward in direction of the periphery until it reaches this and drops over on to floor III., etc. A vertical shaft *c*, with journals at *d* and *e*, has an outside pipe casing *f*, to protect it against the smoke, and receives its motion from the worm gear *g*. Cast iron sleeves are attached to the casing *f*, which have collars *h* and *i*, and the stirring arm of cast steel and iron is fastened between these collars. For this purpose each arm has a fork *k*, that fits around the body of the sleeve, and a wedge, *r*, tightens it when it has been pushed into position; four wrought iron plows are bolted to it. The simultaneous position of the arms on the different floors is shown in the horizontal section by the numbers 1, 2, 3, 4 and 5. The plows are set at proper angles in order to push them forward slowly, and to give it a long travel before it is discharged on to a lower floor. Arrows show the direction in which the arm travels downward until it finally drops into a car placed below the shoot *o*. The progress of the work can be watched from the doors *bb*, and through them, if need be, broken arms can be withdrawn and replaced. Coal is burned on the grate *g*, and the gases of combustion pass upward through a furnace, their direction being upward and opposite to that of the ore. Two men, per shift of 12 hours, attend to a double furnace of this kind, and it calcines 20,000 to 25,000 kilogrammes (22 to 27 tons) per day of 24 hours, burning 1,200 kilogrammes (1 1/4 tons) of nut coal.

These men deliver the calcined ore to the cooling floor, where it remains until the temperature has gone down to 50° C., where the magnetic separation gives the best results.

There are three divisions of magnetic separators, each containing four machines, and these are arranged as shown in the elevation Fig. 3. The calcined ores are raised by an elevation into a screen with 2 mm. and 4 mm. holes; by the decrepitation of ores under heat the amount of fines has been much increased and sizing becomes necessary. Ore finer than 2 mm. goes to divisions I. and III., while the coarser stuff goes to division II. The screen discharges into a wrought iron tank placed near the top of the building and wrought iron pipes deliver the ore from it to the different divisions of the separators.

The separator is shown in a cross section, Fig. 4, the outer shell being removed. It is of very simple construction. The shaft *b* is supported by a wooden frame *aa*; a casting of four electric magnets; slipped over this shaft, is held in one fixed position, allowing the shaft and with it the brass casing *cc* to revolve without moving the magnets: a hole bored partially through the shaft and a second hole at right angles to the first allow the insulated wire to be introduced through the center of shaft and to be connected with the magnets. The brass drum has a number of horizontal strips of brass soldered to it.

The ore is delivered from the tank to the funnel *d* by means of a pipe. The automatic shaking feeder *e*, receiving its motion from cams, delivers the ore in a fine sheet to the surface of the separator. The magnetic portions are attracted and carried in the direction of the arrow, while the new magnetic stuff falls downward. To permit of an adjustment for the different sizes of ore the funnel *d* and the feeder *e* are fastened to a slide *k* which can be approached to or withdrawn from the drum *cc* by means of the head wheel and screw *l*. The brass drum makes 36 revolutions and the feeder 180 to 200 strokes per minute; one separator requires 1/4 H. P. for the purpose. In the division of separators shown in Fig. 3 the blende from separators A and B is delivered by pipe to the separator C, while the iron ore from the two receives a second treatment on separator D. A continuous treatment is the result and it produces blende with 38 to 40% Zn and an iron ore with 6-8% Zn. The latter is treated again and iron ore with 3-4% Zn is obtained, which represents the loss of zinc in the process. All middlings are treated on division V. of two separators, while the iron ore is finally treated on division IV. of four separators. The cur-

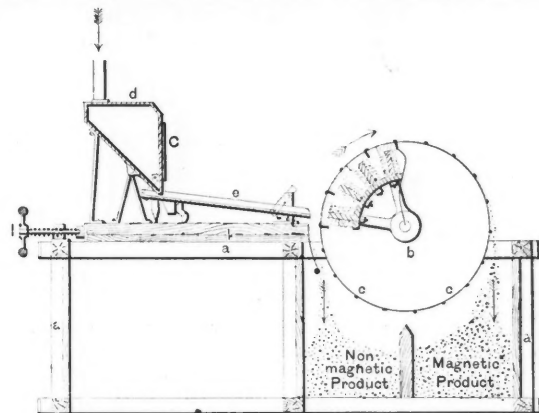


Fig. 4.

rent for the 18 separators is supplied by five dynamos (of 20 to 25 amperes and 65 volts), three of which are Gramme machines and two built by Siemens & Halske.

**Elimination of Sulphur from Iron**, the excellent article by Mr. J. E. Stead, begun in our issue of October 15th, will be continued in our next.

**Tennessee Coal, Iron Railway & Company's Consolidation.**—The absorption of the De Bardeleben C. & I. Co. and the Cahaba Coal Mining Co. by the Tenn. C. & I. Ry. Co. is now accomplished. The following officers took charge November 1st: Board of Control: Nat. Baxter, A. M. Shook, T. T. Hillman, T. H. Aldrich, H. F. De Bardeleben. The Alabama officers are consolidated at Birmingham, with H. F. De Bardeleben, general financial manager; T. H. Aldrich, sales agent for coal; David Roberts, sales agent for iron; G. B. McCormack, superintendent of coal mines. The consolidated company will control 17 furnaces, with a total annual capacity of 633,000 net tons of pig iron, 3,000,000 tons of coal, and 1,000,000 tons of coke.

**The Manufacture of Sodium Nitrite.**—Though sodium nitrite is used extensively as a reducing agent in the arts and manufactures, no process has hitherto been invented for making it cheaply and of uniform high quality. The price in England at present is £30 per ton for 98% quality. In order to keep the nitrite up to this percentage expensive plant is required, and the plant unfortunately depreciates rapidly. Consequently the manufacturers complain that there is no profit to be made out of this chemical. The communication of Mr. H. N. Warren, of Liverpool, to the *Chemical News*, describing a new and more satisfactory process is therefore interesting. In addition to producing a commercial sodium nitrite of regular quality, he claims to be able to manufacture as a by-product a carbonate of lead equal to the best Dutch white lead. In his process commercial sodium nitrite is mixed with ground galena and placed together with a sufficiency of water in a leaden retort. Sulphuric acid is then added. The acid acting on the galena forms sulphate of lead, and its action on the nitrate of soda is to liberate nitrous fumes and form sulphate of soda. The nitrous fumes are passed through a solution of soda ash; carbonic acid is given off and sodium nitrite remains behind in solution. The nitrite thus formed only requires to be crystallized out before it is ready for market. The sulphate of lead in the retort is treated with solutions of carbonate of soda and caustic soda, and the mixture is boiled until white lead is produced.

## THE BASIC BESSEMER STEEL PLANT OF THE POTTSTOWN IRON COMPANY.\*

By Joseph Hartshorne.

Since the Pottstown Iron Company is to have the honor of a visit from the Institute during this meeting, it seems appropriate to bring before it at this time some description of their basic Bessemer plant and process.

This plant is situated in the Borough of Pottstown, on the banks of the Schuylkill River, and lies between the Philadelphia & Reading Railroad and the Schuylkill Division of the Pennsylvania Railroad. The plot of ground on which it is built comprises about 125 acres, most of which is reserved for future extensions. About 45 acres are to be used for houses, 40 of which have already been built.

The accompanying plan will give a clear idea of the general arrangement of the works.

Beginning at the lower or eastern end, the first building is the basic cinder grinding plant. At present it consists of a 2,000 mm. Jenisch ball mill (Kugelfallmühle) similar to those used so extensively for grinding basic cinder in Europe. It was built by Herman Lohnert, of Bromberg, Magdeburg. The mill is very simple in design and efficient in execution. About 13 H. P. is required to run it, and the average output is 20,000 lbs. in 10 hours. The best work we have done is 29,000 lbs. in 10 hours, with perfectly dry cinder; 95 to 98% of the product will pass through a sieve with 100 meshes to the inch, while from 70% to 75% will pass through a 150-mesh sieve. The mill has been in service since last March, part of the time on double turn, and the renewals and repairs have been very slight.

The product of the plant is sold as a fertilizer. It runs from 18 to 24% of phosphoric acid, about 14% of which is reverted. The merits of this fertilizer have already been brought to your notice by Mr. W. H. Morris, at the Baltimore meeting of the present year (vol.—p.—) and by Mr. W. B. Phillips at the Birmingham meeting of 1888 (vol. xvii., p. 84). You are also conversant with the results obtained by its use in Europe, where over 600,000 tons were used last year. It is not necessary, therefore, to describe it farther, or to enlarge upon its merits at this time.

Near to the cinder grinding plant will be situated the new machine shop, which is now being erected.

The next buildings contain the brickmaking plant and ovens. The brickmaking plant consists of two No. 1 Gates crushers, of which one is kept as a spare, a 96-in. Fisher chaser mill, a series of elevators, a dry mixer, a wet mixer, and a Whittaker brick machine. All the work, from the crude stone to the finished brick, is done by machinery, except a slight preliminary mixing by hand between the bins and the dry mixer. Four men and an engineer make 10,000 bricks in 10 hours. The bricks are taken from the machine by hand, and are sent to the ovens in small cars. They are piled wet into the ovens, where they are fired, first at a low and then at a very high temperature.

We have found great advantage from this method of making basic refractory material, as it insures the production of a perfectly homogeneous and very hard burnt brick, which is free from all admixture of ash or clinker. This is much better than burning the stone just as it occurs in nature. The stone is always more or less irregular in composition, and when it is burnt in a cupola the lining material made from it always contains a considerable amount of clinker, ashes and unburnt coke irregularly distributed through it.

The limestone we use is low in silica, and contains not more than 1.5% of magnesia, oxide of iron and alumina. It is crushed and ground quite fine and then fed into the bins through a sieve, which returns the coarse material to the pan. The finely ground stone is measured out of the bins on to the floor, where it is slightly mixed by hand with about 2% of ground basic Bessemer cinder. It is then shoveled into the dry mixer. From thence it passes into the wet mixer, where just enough water is added to make the mass ball slightly in the hand. From the wet mixer it is taken by an elevator to a hopper, from whence it is fed into the brick machine.

This process of making basic material for lining vessels and furnaces was developed by Mr. Ernst Bertrand, of Kladno, Bohemia. The cinder is a very valuable ingredient, as it sinters the material together, and makes the bricks much harder and more compact than they otherwise would be. We estimate that the use of this process has added about 20 heats to the average life of the vessel linings.

The ovens are simply tunnels 15 ft. long, 10 ft. wide and 6 ft. high to the crown of the arch. They have a door at each end, and a 32 in. × 51 in. grate on each side of the doors. Each oven has 9 flues, 24 in. × 3 in. in size, which open into a large flue running longitudinally under them. These flues open in turn into chimney flues which run in front of the ovens on each side. There is a damper in the longitudinal flue in front of each door, and each group of four ovens has a stack 56 in. in diameter and 95 ft. high. With our 12 ovens we can turn out 12 heats of bricks per week when necessary. The ovens hold about 5,000 bricks each, or about 14,000 lbs. of finished material. The average length of burn is from 36 to 38 hours, and the consumption of fuel is about 2,700 lbs. per ton of burnt bricks. The bricks, as they come from the press, are 9 in. × 4½ in. × 2 in. in size, and they shrink about 60% in firing. They are taken in small cars from the ovens to the grinding and mixing plant in the converting mill.

Next in order come the lime-kilns. At present they are two in number, with a third in course of construction. The complete plant will consist of six, should they all be needed. They are 9 ft. in diameter and 30 ft. high, from furnace to charging door, with an 8 ft. high cooler below the furnaces. They stand at a sufficient height to enable the lime to be drawn from four doors directly into drop bottom cars, in which it is carried to the converting mill. Each kiln has two external firing grates 36 in. × 42 in. in size. The average product is 25,000 lbs. per kiln per 24 hours, with a consumption of 300 lbs. of semi-bituminous coal per gross ton of lime. This comparatively small product and high fuel ratio is due to the necessity of insuring the total calcination of the stone. Unburnt stone or "core" gives rise to trouble in the vessels, owing to the absorption of heat in driving off the carbonic acid. The kilns are continuous in action, being drawn every three hours. They are charged by means of an Otis hoisting engine. We use the same stone for the lime as for the bricks.

Next comes a battery of 10 return tubular boilers, and two Wellman gas producers. The latter furnish gas for the open hearth furnace. The boilers are 60 in. in diameter and 20 ft. long, with 56 tubes 4 in. in diam-

eter. The grates are of the Sheffield type, and 60 in. × 72 in. in size. They are blown by the Cornell apparatus of the Natural Gas Fuel Company. With an ordinary semi-bituminous coal we have evaporated 10.75 lbs. of water per pound of combustible from and at 212° Fahr.

This brings us to the Converting Mill, in a small annex to which is placed the Open Hearth furnace. The furnace was originally built as a preheater for the cupola metal before it was charged into the vessel. This fact accounts for its location and for its comparative inefficiency as regards production. It is 11 ft. wide between walls, and 15 ft. long between ports, and is 8 ft. from tapping hole to the crown of roof. The gas checkers are 6 ft. 2 in. wide, 9 ft. long and 14 ft. high, and the air checkers are 7 ft. wide, 9 ft. long and 14 ft. high. The valves are of the Bethlehem type, with water-cooled seats, and are 20 in. in diameter. Both the valve and checker areas are too small for the size of the furnace. The furnace works hot, but rather slowly, the production being from 12 to 14 heats per week. The Saturday turn generally stops about noon.

The loss is between four and five per cent. and the full consumption averages about 1,000 lbs. per ton of ingots, heating up included. The original bottom was rammed in, exactly as is done in the vessels, but all subsequent repairs have been made with re-ground old vessel lining. A little magnesite is sometimes used in front of, and in the bottom of, the ports, and, occasionally, crushed basic brick is used when a particularly large hole is to be repaired. About 100 lbs. of old vessel lining is used per ton of steel. Of course, much less would be required if magnesite or basic brick were used, but the old vessel lining is cheaper.

The pig and scrap process is used, and there is nothing unusual in the manipulation. The ferro-manganese is broken quite fine, and is added in the ladle or runner. The steel is cast in the Bessemer pit.

The following analyses and physical tests will give a fair idea of the general run of the product. They are taken from the last heats made and are no better or worse than the average.

| Heat No. | Plate.      | Elastic Limit. | Ultimate Strength. | Elong. % | Red. % | C.   | S.    | P.    | Mn.   |
|----------|-------------|----------------|--------------------|----------|--------|------|-------|-------|-------|
| 804      | 46" × 7/16" | 34,040         | 57,730             | 29.25    | 50.70  | 0.14 | 0.043 | 0.035 | 0.403 |
| 805      | 16" × 3/8"  | 36,908         | 60,080             | 29.00    | 61.50  | 0.14 | 0.033 | 0.015 | 0.417 |
| 806      | 94" × 3/8"  | 35,530         | 51,000             | 28.00    | 72.00  | 0.11 | 0.033 | 0.30  | 0.288 |
| 807      | 42" × 3/8"  | 35,400         | 60,500             | 25.50    | 61.80  | 0.15 | 0.040 | 0.025 | 0.474 |
| 808      | 42" × 3/8"  | 35,560         | 60,160             | 26.75    | 55.00  | 0.14 | 0.044 | 0.015 | 0.359 |
| 809      | 38" × 3/8"  | 29,150         | 61,650             | 26.50    | 48.60  | 0.13 | 0.039 | 0.040 | 0.532 |
| 810      | 47" × 3/8"  | 35,700         | 56,190             | 27.50    | 52.50  | 0.13 | 0.036 | 0.020 | 0.475 |
| 811      | 68" × 3/8"  | 32,290         | 52,700             | 30.00    | 63.00  | 0.09 | 0.025 | 0.020 | 0.309 |

| Heat No. | Ingot No. | C.   | S.    | P.    | Mn.   |
|----------|-----------|------|-------|-------|-------|
| 812      | 1         | 0.11 | 0.032 | 0.015 | 0.410 |
| "        | 2         | 0.12 | 0.032 | 0.020 | 0.386 |
| "        | 3         | 0.12 | 0.032 | 0.015 | 0.396 |
| "        | 4         | 0.12 | 0.032 | 0.020 | 0.374 |
| 813      | 1         | 0.09 | 0.025 | 0.025 | 0.417 |
| "        | 2         | 0.09 | 0.025 | 0.025 | 0.410 |
| "        | 3         | 0.08 | 0.032 | 0.020 | 0.367 |
| "        | 4         | 0.08 | 0.032 | 0.020 | 0.353 |
| 814      | 1         | 0.12 | 0.034 | 0.015 | 0.384 |
| "        | 2         | 0.11 | 0.032 | 0.015 | 0.406 |
| "        | 3         | 0.13 | 0.032 | 0.015 | 0.417 |
| 815      | 1         | 0.11 | 0.033 | 0.015 | 0.397 |
| "        | 2         | 0.13 | 0.032 | 0.015 | 0.331 |
| "        | 3         | 0.11 | 0.032 | 0.015 | 0.355 |
| 816      | 1         | 0.10 | 0.020 | 0.015 | 0.330 |
| "        | 2         | 0.10 | 0.032 | 0.015 | 0.375 |
| "        | 3         | 0.10 | 0.032 | 0.015 | 0.370 |
| 817      | 1         | 0.09 | 0.020 | 0.010 | 0.417 |
| "        | 2         | 0.10 | 0.032 | 0.010 | 0.405 |
| "        | 3         | 0.10 | 0.032 | 0.010 | 0.420 |
| "        | 4         | 0.10 | 0.032 | 0.015 | 0.400 |
| 818      | 1         | 0.11 | 0.033 | 0.010 | 0.403 |
| "        | 2         | 0.11 | 0.032 | 0.015 | 0.407 |
| "        | 3         | 0.11 | 0.032 | 0.015 | 0.398 |
| "        | 4         | 0.11 | 0.032 | 0.015 | 0.410 |
| 819      | 1         | 0.12 | 0.043 | 0.015 | 0.460 |
| "        | 2         | 0.12 | 0.032 | 0.010 | 0.450 |
| "        | 3         | 0.11 | 0.032 | 0.010 | 0.445 |
| "        | 4         | 0.12 | 0.032 | 0.015 | 0.460 |
| "        | 5         | 0.12 | 0.032 | 0.015 | 0.450 |
| 820      | 1         | 0.10 | 0.035 | 0.025 | 0.365 |
| "        | 2         | 0.11 | 0.032 | 0.025 | 0.342 |
| "        | 3         | 0.10 | 0.032 | 0.025 | 0.342 |
| "        | 4         | 0.09 | 0.032 | 0.025 | 0.355 |

As a matter of precaution, we analyze each ingot of the Open Hearth heats. It is exceedingly rare that we find any more variations than those shown above, and we probably will not continue this practice beyond the 1,000th heat.

The engine house is situated in the southeast corner of the converting house. In the cellar there is a 16 in. centrifugal pump, driven by a 9 × 16 in. Porter-Allen engine, both built by the Southwalk Foundry and Machine Company, of Philadelphia. This pump has a lift of about 19 ft. 6 in. from low water mark. It has been in continual service for over five years, and the only repairs put upon it were the renewal of the wooden journal packings, nearly two years ago. In the same cellar there are five small pumps for general service and boiler feeding.

Inside the cellar there is a brick and cement tank containing 12,000 gallons, and outside the building there is another tank made of steel plate, and sunk in the ground, which contains 60,000 gallons. These tanks combined give us about an hour's supply of water, independent of the condensers.

The engine house also contains two Southwalk blowing engines, 42 in. × 48 in., with 54 in. blowing tubes; one Southwalk and one Worthington duplex compound-condensing pressure pump with 9½ in. plungers; two Baker blowers No. 7½, driven direct by a 15 in. × 14 in. Wilbraham engine; and a 30 light dynamo, with its engine.

Just outside of the engine house, in the converting mill, is the grinding and mixing plant for basic lining material. It consists of tar storage tanks, placed outside the building, two open tar boilers, a No. 1 Gates crusher, a 96 in. Fisher chaser mill; a system of elevators and sieves, two bins and a mixer. The bricks are crushed either in the crusher or the mill, and divided into two degrees of coarseness by the sieves. These two sizes of ground brick are measured out of the bins on to the floor in certain proportions, where the proper amount of tar is roughly mixed in by hand. The mass is then shoveled into the mixer, whence it comes ready for use. The proportion of fine and coarse stuff depends upon the pur-

\* Read at the Reading Meeting, Amer. Inst. Min. Engrs., Oct., 1892.

pose for which the mass is to be used, and the amount of tar is determined by the way in which the mixture balls up in the hand. From 10 to 12% of tar is generally sufficient for lining, and it should stick together moderately well when pressed in the hand. The tar should be added hot, and the whole mass should be kept warm while being mixed and rammed up in place.

Next to the mixing plant are the cupolas. Two of these are in use; the third is just about completed; and space is reserved for a fourth when needed. They are placed at the corners of a square, and tap into a ladle, which stands on a weighing machine in the middle. The ladle rests on a car, by which a small locomotive transfers it along the ground to the vessels. The cupolas are 10 ft. in the shell, and are 24 ft. from charging

THE HOFFMANN-OTTO COKE OVEN.

At the last meeting of the German Mining Engineers, held at Breslau, Mr. B. Leistikoff read a paper describing the Hoffmann-Otto coke oven. This oven is one in which the tar, benzene and ammonia of the expelled gases are collected, and the hot gases themselves are used in heating the ovens. An economy of this sort has been striven after for many years with but indifferent success, for ironmasters have always held that coke produced in an oven where the bye-products are recovered is inferior to the coke produced in an ordinary oven. The Hoffmann-Otto oven appears to be meeting with considerable success in Germany, for already 1,205 ovens are in operation in Westphalia, Silesia, etc. The illustrations given

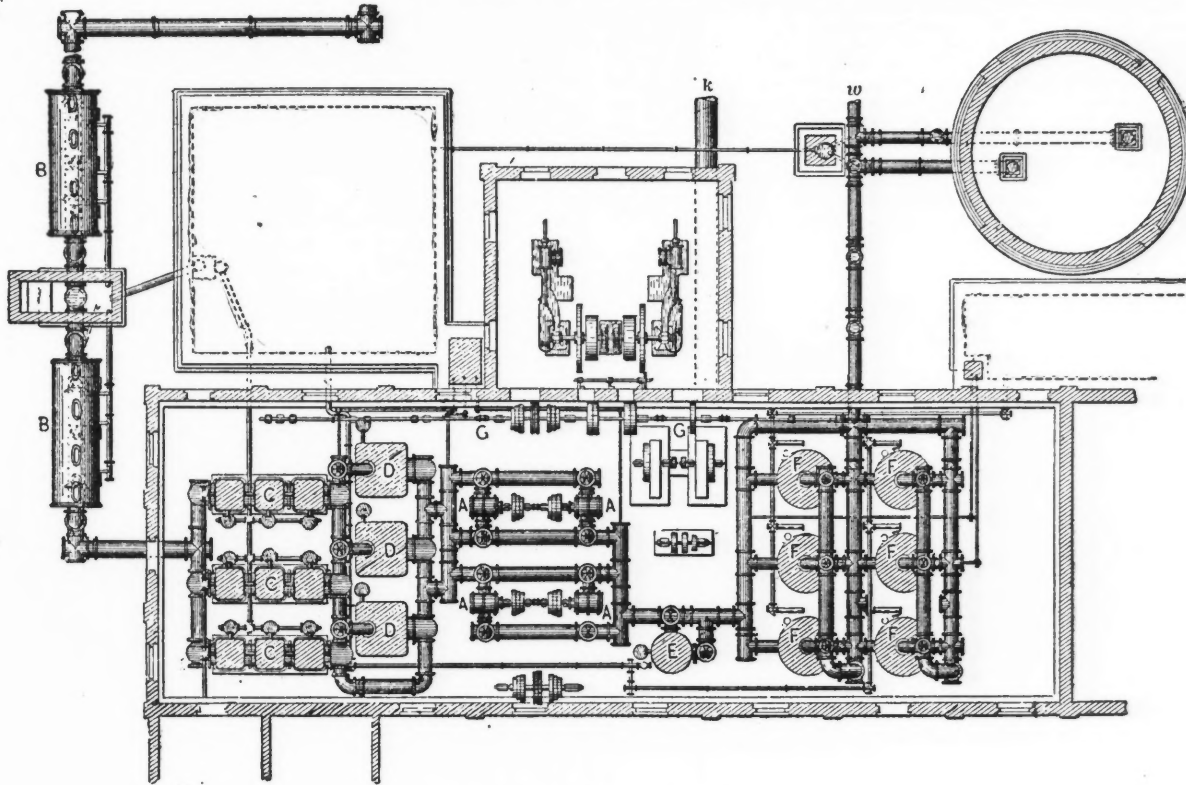
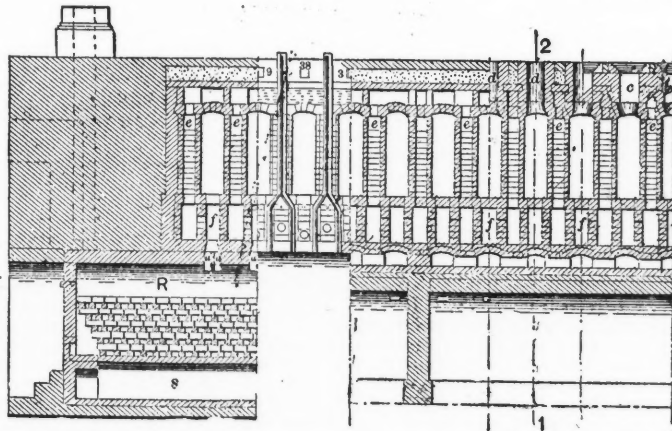


Fig. 3.—Plan of Condensing Plant.



Section through Head Wall, Side View, Section 3 4, Sec. 6 7, Sec. 7 8, Coke Side, Fig. 1, Fig. 1, Fig. 1.

Fig. 2.—Section of Oven.

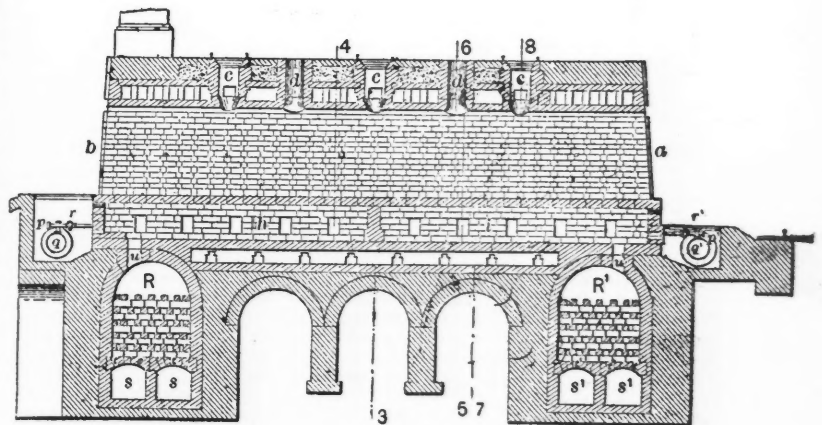


Fig. 1.—Section 1 2, Fig. 2.

door to tapping hole. They have 19 tuyeres 6 in. in diameter. The tuyeres are 4 ft. above the tapping hole, and the slag hole is 6 in. below the tuyeres. The cupolas do not quite hold a melted vessel-charge.

(To be continued.)

**Alabama Beryl.**—The range of metamorphic schists and coarse granites that traverse Coosa County, Ala., yield some interesting minerals. Among them are Tantalite, Cassiterite and Beryl. Some fine specimens of the latter have been cut for exhibition at the Alabama State Fair soon to be held in Birmingham. The better specimens are found near the old town of Rockford in the vicinity of Hissop, P. O.

The most striking geological feature of the district is the occurrence of heavy bands of a coarse schist in places heavily impregnated with graphite and pyrite and lying between extensive ledges of granite. Some large pieces of Tantalite have been found near Rockford, the largest weighing 45 ounces, being now in the Museum of the Alabama Geological Survey. Tin ore also occurs, but, so far, only surface fragments and crystals have been found.

herewith represent the complete plant which has been erected at the Julienhütte Coke Works, in Upper Silesia. These cuts are reproduced from *Stahl und Eisen*. Figs. 1 and 2 show the battery of ovens; Figs. 3, 4 and 5 the plant for extracting the tar and ammonia from the gases, and Figs. 7, 8, 9, 10 the plant for treating the ammonia.

The row of ovens are fed through the openings *c*, and the gases escape through the openings *d*; the pushers are at the end *a* and the discharge is at the end *b*. These are the only openings in the ovens. Underneath the ovens are the flues *f*, which are each divided into two lengths, *i* and *h*, by a brick partition. From these flues extend the vertical flues *e* between each oven, and these in turn enter return flues at the top. The gases which come off through the openings *d* first go through the apparatus for recovering the tar and ammonia and then are burnt in the flue *f*. The heating is conducted on the regenerative system by means of the two regenerators *R R'*. The gas may be fed through either the pipes *q* or *q'* to either the *h* or *i* end of the flues. If through *q*, then it meets in *h* the supply air which comes through the openings *u* from the regenerator *R*. The products of combustion travel up from *h* through the flues *e* to

to the top flue, and descend through the other set of flues *e* to the *i* part of the bottom flues *f*. Then they pass through the regenerator *R*, and away through *s*, to the chimney. When the regenerator *R* is cool the valves are reversed and the gas is supplied through *q*, and the heated air *R*. The direction of the burnt gases through the flues is then in the opposite direction.

The gases, on leaving the ovens through the openings *d*, are drawn by the exhausters *A* (Fig. 3) through the pipe *v* to the dust catchers *B*. Here a large part of the tar and carbon dust is caught. Afterward some more of the tar and some of the ammonia is extracted by the condensers *C*. These condensers are upright boxes filled with iron pipe through which water flows. The gas then enters the scrubbers and is made to pass up through water containing some ammonia. A further portion of the ammonia is here condensed from the gases, and also most of the remaining tar. The gases then pass through the exhausters *A*, and are afterwards of course exposed to pressure instead of suction. This increases their heat, so they are passed through a cooler, *F*, before entering the washer *F*. The remainder of the tar and ammonia is here extracted and the gases are ready for the benzene process. As this process is a secret we cannot describe it. After leaving the benzene extractors the gases are ready for combustion in the oven flues.

The tar is separated from the ammonia and delivered into tank cars, while the ammonia goes to plant shown in Figs. 7, 8, 9, 10. Here it is heated in the chambers *O* on the Gruneberg-Blum system, and milk of lime from *Q* is added to the liquor in *O* in order to free any combined ammonia. If the escap-

#### THE APPLICATION OF THE CYANIDE PROCESS AT THE MERCUR GOLD MINE FAIRFIELD, UTAH.

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

The following report was made for Messrs. Louis Janin, Sr., and Henry Bratnaber, mining engineers, who, in the face of the various conflicting reports, desired to acquire some definite and impartial information concerning the working of the process, and the results obtained, at the above-mentioned mine. The investigation covers the following points: 1. Kind of ore; its chemical and physical composition; 2. Crushing; 3. Leaching and washing; 4. Precipitation; 5. Disposal of product; 6. Yield per ton, assay and bullion; 7. Itemized cost.

The Mercur ore is a siliceous limestone, carrying magnetic oxide of iron, traces of cinnabar and gold (no silver). As to the condition of the gold, I am as yet not clear. Certain experiments now under way may determine this point. I panned two and concentrated some five pounds of the ore and could not see any free gold. On subjecting the concentrates to a microscopical examination, however, I found considerable magnetic oxide of iron which appeared to be more or less coated with a thin film of gold.

The vein is clearly of aqueous origin and fossils have been found within the vein matter. The mine itself appears to have been within the confines of Lake Bonneville. The ore contains considerable silt, and any attempt at fine crushing results in the sliming of the greater portion.

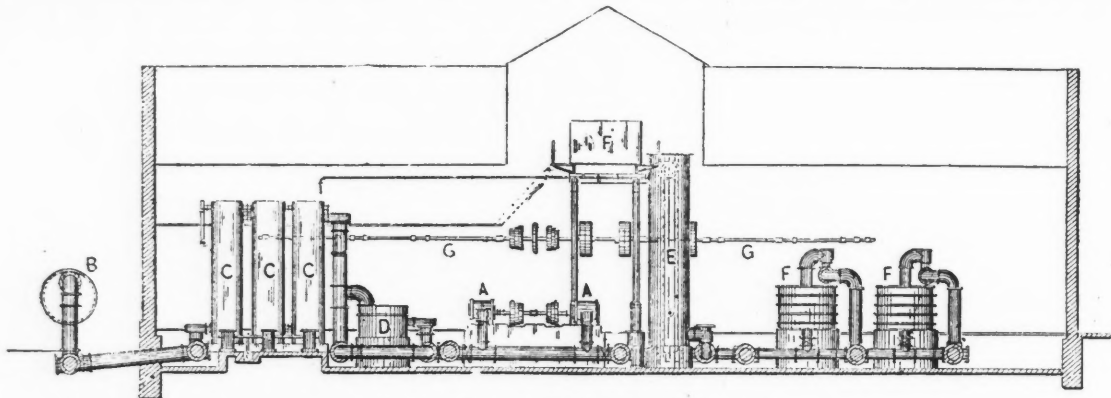


Fig. 5.—Elevation of Condensing Plant.

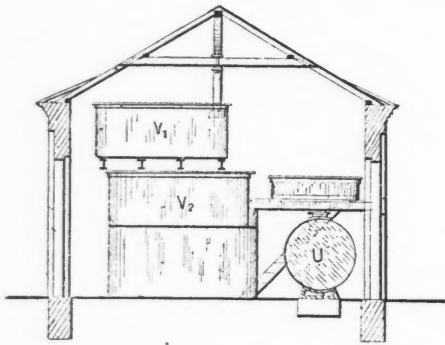


Fig. 8.—Section 5 6, Fig. 7.

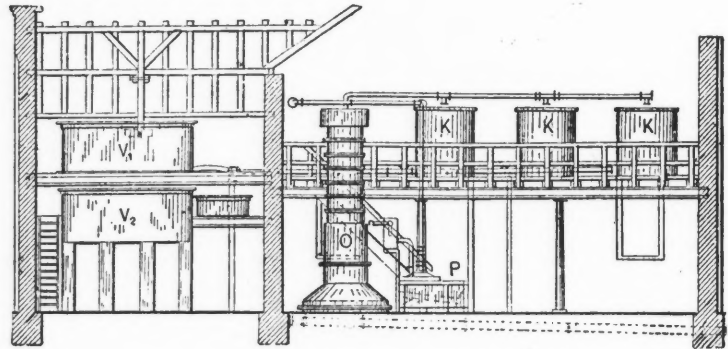


Fig. 10.—Section 1 2, Fig. 7.

ing ammonia is to be condensed, it is delivered into the cooler *K*, from whence it passes to the storage tank *U*. If, however, it is to be used in the manufacture of sulphate of ammonia, it is introduced into sulphuric acid contained in the vessels *P*.

As we have said before, 1,205 ovens have already been erected in Germany on this system. The cost of each is put at 5,000 marks per oven, and 7,000 marks per oven for the recovery plant. This gives 12,000 marks per oven, so that a group of 60 ovens calls for a capital investment of 720,000 marks, or say \$170,000. This seems high, but the profit to be made is great enough to make the investment pay. The figures of results obtained at a plant of 60 ovens in Westphalia will be interesting. When working on 48-hour coke, and running 30 days a month, the plant cokes 5,625 tons of dry coal per month, and yields 64.7 tons of sulphate of ammonia and 154.7 tons of tar per month. This sulphate of ammonia is valued at 13,584 marks, and the tar at 5,626 marks. The total expense of working the recovery plant is 5,700 marks per month. Each oven is found to give 1,000 cubic metres of gas per day, and of this about 600 cubic metres is used in supplying the heat to the oven. There is, therefore, in the Westphalia plant a surplus of 24,000 cubic metres per day, which is used in heating boilers, etc.

**A Large Diamond.**—The second largest diamond in the world is now undergoing the cutting process at Antwerp. Its weight is at present 474 carats, but it will lose no less than 274 carats before it is ready for the market. Even then, however, it will be the second largest diamond in the world, standing between the 280 carats of the Persian diamond "Great Mogul," whose existence is considered very mythical to-day, and is said to weigh 193 carats, and the Victoria, or Imperial, diamond, the property of the Nizam of Hyderabad, and the Russian "Orloff" brilliant. The De Beers Yellow weighs 225 carats, recently sold to an Indian rajah. Roughly speaking, the Antwerp stone will be about the size of a pigeon's egg. In its present state it measures 2.741 inches by 1.767 inches. Its polished surface will measure .786 inches each way.

This having proven fatal to successful leaching, the owners were compelled to crush coarse, which has the disadvantage of requiring much more time for successful beneficiation. A mistaken impression is prevalent that coarse crushing is an advantage. Such is not the fact, finer crushing giving quicker and more complete extraction where the lixiviation is not impeded. I have made a number of experiments which demonstrate this point. There are but few ores which can be treated with any degree of success unless crushed fine enough to pass a 20 or 30-mesh screen.

**Crushing.**—The ore, after passing an inch grizzly, is fed to a No. 1 Dodge rock-breaker set to size the ore to one inch. Then through 20-in. corrugated rolls of Wall's patent, which reduce it to  $\frac{1}{2}$  in. thence over a  $\frac{1}{2}$ -in. grizzly to a pair of 12-in. corrugated rolls of the same make, set to size the ore to  $\frac{1}{4}$ -in. I found that this gave a product, 21% per cent. of which remained on a No. 4 screen, 40% on a No. 12, 13% on a No. 30 and 26% passed a No. 30 screen. Of this last 26%, nearly the whole was an impalpable powder.

**Leaching.**—The ore is carried by means of cars and an overhead tramway to the leaching vats. The best size and pattern of the latter, according to the experience at this mill, is a round vat, the shell of which is of No. 10 or 12 sheet iron. The bottom is of 3-in. California redwood, and is caulked with oakum, over which is poured a mixture of tallow and resin. On this bottom are placed 1 x 1-in. slats, 18 in. apart. Upon this rests a false bottom of 1-in. yellow pine, every square inch of which is perforated by a  $\frac{1}{4}$ -in. augur hole. Over this perforated false bottom is stretched a burlap filter. There is, of course, a stopcock between the true and false bottom, which should be of iron, as the solution attacks brass, and a leakage may ensue. The dimensions of this vat are: diameter, 12 ft. 8 in.; depth over all, 40 in.; depth to false bottom, 35 in.; capacity, 14 tons. I see no reason why larger tanks should not be used, as in the case of the Russell process, provided only that they be round.

The ore having been charged and leveled to within about 6 in. of the



top of the vat, and the stopcock being closed, the one-quarter of one per cent. (1 lb. C. P. potassium cyanide, to 400 lbs. of water) solution from the standardizing tank is run in through a pipe over the top until about 3 in. of solution cover the top of the ore. It has been found that the solution acts slowly at first, but more rapidly after extraction has begun, possibly from some galvanic action. The charge is allowed to soak until a test of the solution by bright zinc shows that extraction has begun. At the Mercur mill the ore is allowed to soak from 12 to 24 hours. Then the solution is allowed to percolate, flowing in at the top and out at the bottom, for from 24 to 240 hours according to the leaching rate of the ore. That from near the surface of the mine is very slimy and requires a long time for leaching. The average time is about 60 hours, or practically, until the outgoing solution does not discolor bright zinc. The test is made by placing a little sieve containing bright zinc threads under the stopcock and allowing it to remain there an hour or so. If it remains bright the solution has extracted all it will, and the flow is stopped. The outgoing solution from all the vats flows to a sump and is pumped from there to a second or gold solution tank. From this tank it is allowed to flow constantly through two boxes containing spongy or thread zinc, each box being 40 ft. long, one of wood 12 in. square (interior dimensions), and the other of iron, 15 in. square. Each box is provided with partial partitions, which deflect the current from the bottom to the top and vice versa. These partitions are about 3 ft. apart. The zinc should occupy so many of them as will give bright zinc in the last compartment, thus insuring complete precipitation. The solution flows from the zinc boxes back to the standardizing tank, where it is occasionally tested, and if below the required strength, potassium cyanide is added in proper quantities.

After the gold has been extracted and the solution has been turned off, the vats are allowed to drain. It has been found that there remains 400 lbs. of 1/2% cyanide solution to the ton in the tailings. To wash this out

This product is sampled and treated by the Omaha Smelting Company who return \$20.00 per ounce of their assay of its gold content. The charges for express amount to 12 cents for every \$20.00 value, which leaves the owners a net return of \$19.88 for every ounce of gold extracted.

*Yield per ton, according to assays and bullion produced.*—I was kindly allowed access to the books of the company, from which I compiled the following figures: From April 1st to July 1st, there was milled 1,513 tons of moist ore of an average assay value per dry ton of \$15.22. The average tailings assay was \$2.60. The apparent extraction was therefore \$12.62 per dry ton, or 83%. Thus, without allowing for moisture, we should have a bullion return of \$19,272.60.

The actual bullion returns from the smelter were for \$16,805.80 = 73% = \$11.04 per ton of moist ore. The discrepancy is accounted for by the fact that the ore is weighed wet and assayed dry, making a difference of at least 6% due to moisture, besides further loss by leakage and absorption (the mill as yet not being in perfect shape), and also by loss in handling and drying the product. The first and second of these causes of discrepancy can be avoided, and would, I believe, leave a difference of not more than 2 or 3%. The ore is weighed in wagons at the mill.

While at the mill I took tailings samples from two tanks. I obtained from the superintendent a part of the corresponding pulp samples, not having been there myself at the time the tanks were charged. I took, however, while there a pulp sample, which upon assay agreed sufficiently with those obtained from the superintendent.

| Tank No. | treated | Pulp Assay. | Tailings Assay. | Percentage. |
|----------|---------|-------------|-----------------|-------------|
| 9        | 10 days | 18.88       | 2.51            | 87          |
| 7        | 4       | 15.57       | 5.85            | 63          |
| Average  |         | 17.22       | 4.18            | 75          |

It should be said that the pulp in tank No. 7 was not average pulp, as it contained a very large amount of very coarse material.

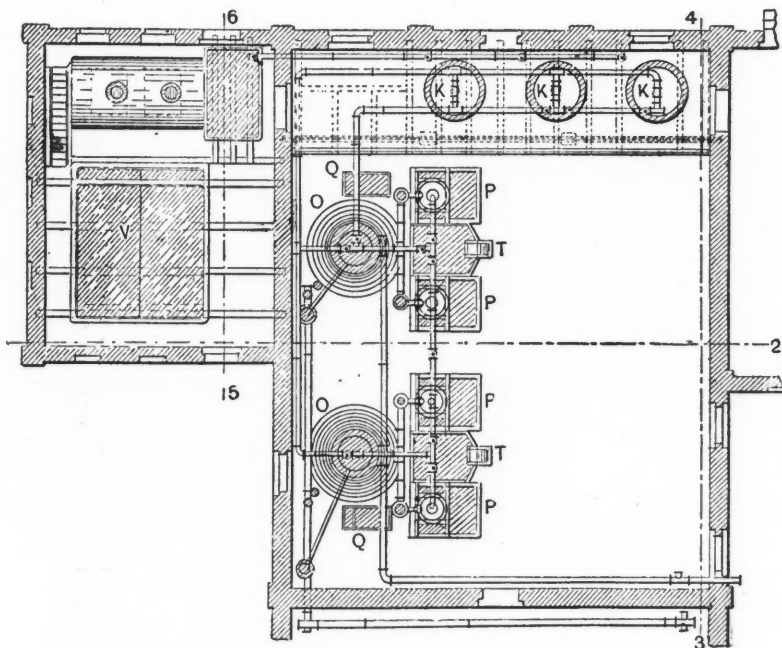


Fig. 7.—Plan.

about 400 lbs. (the same quantity) of waste water is added, replacing the 400 lbs. of cyanide solution, which is thus forced out. This flows to the sump, there joining the main body of rich solution, and is treated with it. In this manner, as is easily seen, a constant amount of stock solution is maintained. The tailings are shoveled out of the vats into cars and dumped.

This treatment I found, by repeated tests, still left in the vats from 0.3 to 0.4 of a pound of cyanide to the ton. Mr. Brown, the superintendent, has perfected a still more effectual washing by the following addition: After the forced out solution as above stated has drained back into the sump, a second wash of 400 lbs. of water to the ton is added, and the very weak solution remaining in the vats is thus forced out and runs to a waste solution tank. From this waste solution tank is drawn the first wash of succeeding charges. Water is then used as the second wash, forcing the last weak solution to the waste solution tank, etc. This should give perfect washing without accumulation of solution. I regret that owing to the lack of tank capacity this important feature was not in operation during my visit.

I should here state that the original stock solution has been used constantly for over nine months and is still in use.

*Disposal of Product.*—At the end of the month the outlet from the gold solution tank to the zinc boxes is closed and the latter are allowed to drain. When comparatively free from solution, the richest portion of the zincous product, which is easily determined by the property which it possesses of powdering in the fingers, is removed and new zinc is added to that in the boxes. This "clean-up" is said to take an hour or two, but the leaching continues uninterrupted, the solution accumulating in the gold solution tank. After removal the zinc product, or crude bullion, is carefully and slowly dried over a fire, sampled, sacked and shipped within 10 hours from the time the "clean-up" commenced.

I am indebted to Mr. A. Hanauer for the following almost complete analysis of this zinc and gold product. It was given as an average of three made by the Hanauer Smelting Company. Zinc, 39.1; carbonate of lime, 36.7; gold, 4.4; cyanogen, 3.5; sulphur, 2.6; iron, 2.4; residue, 6.0.

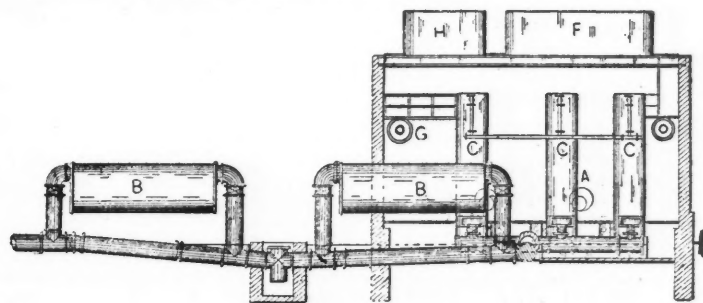


Fig. 4.—Side Elevation of Condensing Plant.

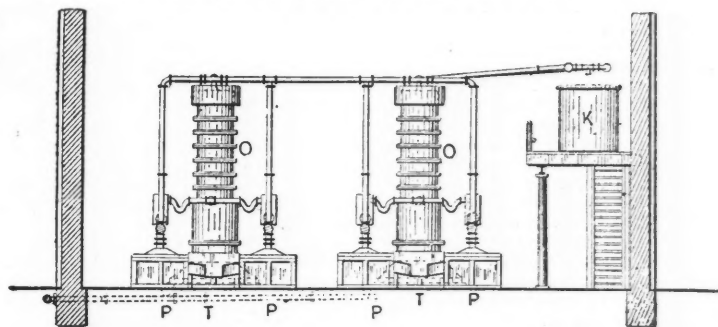


Fig. 9.—Section 3 4, Fig. 7.

Before putting in the cyanide process the company had erected a \$3,000 pau-amalgamation mill, with which they treated 1,500 tons. By this method they claim to have extracted only \$4 per ton, or about 3% of the assay value. The estimated cost of milling was \$4.25 per ton, which is certainly not high for pau-amalgamation. Against this they now have a bullion yield of 73% at a cost of \$2.40 per ton.

*Cost.*—The following itemized cost per ton I compiled from the books of the company, segregating the items myself. It is exclusive of superintendence, office expenses and royalty. It covers a period of six months between January 1st and July 1st:

|  |               |
|--|---------------|
| Potassium cyanide 1.27 pounds per ton            | \$0.66        |
| Zinc, 0.53 pounds per ton                        | .05           |
| Labor (7 shifts per 24 hours, 6 day and 1 night) | 1.12          |
| Supplies, repairs, fuel, freight, etc.           | .57           |
| <b>Cost per ton</b>                              | <b>\$2.40</b> |

In regard to the labor item, it may be stated that since the period covered by these figures the capacity of the mill has been doubled, and is worked with the same number of men, thus cutting the labor item to \$0.56 per ton, and the total cost per ton to \$1.84. It is intended in the near future to again double the capacity of the mill, requiring the addition of only four shifts to run the crushing machinery and to charge the tanks at night; at present only the solution man is on the night shift.

While the process is assuredly a comparative economical and scientific success at Mercur, and while one offers difficulties to leaching, owing to its marked disposition to sliming, one cannot put too strongly, in testing other ores, the necessity of having extensive and comparative laboratory experiments made on the given ore by an impartial investigator. These should be on a sufficiently large scale to give results which could be depended upon. I am indebted to Mr. Peyton, the manager, and Mr. Brown, the superintendent, for their frank and courteous treatment, for admission to the books of the company, and permission to take whatever samples I saw fit.

REPORT OF THE DIRECTOR OF THE MINT.

Mr. E. O. Leech, the director of the Mint, has submitted to the Secretary of the Treasury a report on the operations of the mints and assay offices of the United States for the fiscal year ended June 30th, 1892, and through his courtesy we are enabled to publish the following abstract thereof:

**Deposits and Purchases.**—The value of the gold deposited at the mints and assay offices during the year was \$66,476,975, of which \$61,131,460 were original deposits, and \$5,345,516 were redeposits. Of the original deposits \$31,961,546 were the product of our own mines; \$24,975,342 foreign gold coin and bullion; \$557,968 light weight domestic gold coin, and \$3,638,604 old material. The deposits and purchases of silver aggregated 72,121,28 standard ounces, of the coining value of \$83,922,930, of which 640,461 standard ounces, of the coining value of \$745,264, were redeposits. Of the silver received, 63,130,609 standard ounces, of the coining value of \$73,461,072, were the product of domestic mines and refineries; 2,118,078 standard ounces, of the coining value of \$2,464,672, were foreign silver bullion and coin; 5,593,907 standard ounces, of the coining value of \$6,509,278, were uncurrent domestic coins for recoinage; 1,921 standard ounces, of the coining value of \$2,238 trade dollars, melted; and 636,290 standard ounces, of the coining value of \$740,411, old plate, jewelry, etc.

**Coinage.**—The coinage of the mints during the last fiscal year aggregated 113,556,124 pieces, valued as follows: Gold, \$35,506,987.50; silver dollars, \$8,329,867.00; subsidiary silver, \$6,659,811.60; minor coins, \$1,296,710.42; total, \$51,792,976.52.

The number of silver dollars coined during the fiscal year from bullion purchased under the act of July 14th, 1890, was 3,450,995, and from trade dollar bullion 4,878,472, a total of 8,329,467 silver dollars, upon which the seignorage, or profit, was \$930,487. The total coinage of silver dollars under the act of February 28th, 1878, to the close of such coinage, was \$378,166,793, and under the act of 1890, to November 1, 1892, \$33,167,570, under the act of March 3d, 1891, \$5,078,472, a total coinage of silver dollars since March 1st, 1878, of \$416,412, 835. The net profit on the coinage of silver during the 14 years ended June 30th, 1892,, including the balances in the coinage mints on July 1st, 1878, has aggregated \$72,736,065.

**Bars.**—In addition to the coinage, gold bars were manufactured of the value of \$36,125,552, and silver bars of the value of \$7,130,270, a total of \$43,255,822.

**Silver Purchases.**—The purchases of silver by the Government during the last fiscal year were all made under the mandatory provisions of the act of July 14, 1890, requiring the purchase of four and one-half million ounces of silver in each month. The total amount purchased during the year aggregated 54,355,748 fine ounces, costing \$51,106,608, at an average cost of 94 cents per fine ounce. The total amount of silver bullion purchased under the act of February 28, 1878, from the commencement, March 1, 1878, to the end, August 13, 1890, was 323,635,576 standard ounces, costing \$306,199,261, an average cost of \$1.058 per fine ounce.

**Price of Silver.**—The price of silver fluctuated during the last fiscal year from \$1.02 per fine ounce, which was the price at the beginning of the year, to \$0.855, March 28th, the lowest price, closing June 30th, at \$.873, a variation of \$0.17 an ounce during the last fiscal year.

Since July 1st, 1892, the price of silver still further declined, until on August 11th, 1892, it reached 83 cents a fine ounce, the lowest price silver ever reached. Since then the price has advanced, and at the present writing, November 1st, 1892, it is \$0.86 per fine ounce.

At the lowest price of silver during the fiscal year, the commercial value of the pure silver contained in a silver dollar was 66 cents; at the highest price, it was \$0.786, and at the average price, \$0.724.

**Distribution of Silver Dollars.**—The number of silver dollars distributed from the mints during the last fiscal year was 9,407,920, being 13,800,374 less than in the previous year.

**Recoinage of Subsidiary Silver Coins.**—The beneficial results of the liberal appropriations for the last two years for loss or recoinage of worn and uncurrent silver coins in the Treasury, is shown by the fact that the balance of such coins has been reduced from \$23,002,268, on July 1st, 1890, to \$11,499,579 on November 1st, 1892, a reduction of \$11,502,689.

By the recoinage of uncurrent coins in the Treasury, principally half-dollars, into new quarter-dollars and dimes, for which there was an urgent demand, the Treasury has been relieved of a large unavailable asset, and the small change of the country increased to a corresponding extent.

**Imports and Exports.**—The total exports of gold from the United States during the fiscal year aggregated \$50,305,533, while the imports aggregated \$50,162,879, showing a net loss of \$142,654, against a loss for the preceding fiscal year of \$67,946,768. The exports of silver aggregated \$33,800,562; and the imports of the same metal, \$28,764,734, showing a net loss of silver by export of \$5,035,828, against a net gain during the previous year of \$2,745,365, a change of \$7,781,193.

**Earnings and Expenditures.**—The total expenditures for the support of the mints and assay offices during the last year aggregated \$1,106,538, against \$1,335,910, expended in the prior year, a reduction of expenses amounting to \$229,371. The total earnings from all sources aggregated \$2,294,288, while the total expenditures and losses of all kinds aggregated \$1,500,494, a net profit of earnings over expenditures of \$793,794.

**Product of Gold and Silver.**—The mines of the United States produced during the calendar year 1891 precious metals as follows:

|             |              |                   |                |
|-------------|--------------|-------------------|----------------|
|             | Fine Ounces. | Commercial Value. | Coining Value. |
| Gold.....   | 1,604,840*   | \$34,175,000      | \$33,175,000   |
| Silver..... | 58,330,000   | 57,630,040        | 75,416,565     |

The product of the refineries and reduction works of the United States, as contradistinguished from the products of our own mines, aggregated:

|             |              |
|-------------|--------------|
|             | Fine Ounces. |
| Gold.....   | 2,169,863    |
| Silver..... | 69,333,415   |

The product of gold and silver in the world, based upon returns to the Director of the Mint, was as follows:

|             |              |                   |                |
|-------------|--------------|-------------------|----------------|
|             | Fine Ounces. | Commercial Value. | Coining Value. |
| Gold.....   | 6,162,893    | \$126,158,000     | \$126,158,000  |
| Silver..... | 143,394,000  | 142,266,000       | 186,174,000    |

\* It will be remembered that the ENGINEERING AND MINING JOURNAL'S estimate presented January 2d, 1892, was 1,620,000 fine ounces and was correct to within nineteenth of one per cent. That of silver was even yet closer, being 58,000,000 oz., or correct to within six-tenths of one per cent.

**World's Coinage.**—The coinage of gold and silver in the various countries of the world during the calendar year 1891, so far as reports have been received, aggregated: Gold, \$119,183,735; silver, \$135,008,142.

**Metallic Stock of the United States.**—The stock of gold and silver in the United States on November 1st, 1892, based upon official tabulations brought forward from year to year was, approximately: Gold, \$656,041,863; silver, \$587,614,951; total, \$1,243,656,814.

The amount of money in actual circulation (outside of Treasury vaults), including paper and metallic, was \$1,606,139,735, or \$24.34 per head.

**Use of Gold and Silver in the Industrial Arts.**—The value of the gold bars furnished for industrial use during the last calendar year was \$16,644,953, against \$14,605,901 in the prior year, an increase of \$2,039,052; and of silver, \$9,631,746, against \$9,031,178 in the prior year, an increase of \$600,568.

If there has been no falling off in the amount of coin melted annually for use in repairs and jewelry, the total value of the precious metals used in the industrial arts and manufactures in the United States during the last year was, approximately: Gold, \$19,700,000, and silver, \$9,630,000, a total of \$29,330,000, of which \$10,967,679 gold, and \$7,289,073 silver, consisted of new bullion.

The report of the Director is replete with valuable information and statistical tables covering the product, coinage, and movement of the precious metals in the various countries of the world.

DIVIDENDS PAID BY MINING COMPANIES DURING OCTOBER AND FROM JANUARY 1ST, 1892.

| NAME OF COMPANY.                     | Paid in Oct. | Paid since Jan. 1st. | NAME OF COMPANY.           | Paid in Oct.     | Paid since Jan. 1st. |
|--------------------------------------|--------------|----------------------|----------------------------|------------------|----------------------|
| Adams, Colo.....                     |              | \$7,590              | Helena & Frisco, Mont..... |                  | \$20,000             |
| Alaska, Tr'dw'll, Alaska.....        | \$75,000     | 300,000              | Homestake, S. Dak.....     | \$12,500         | 125,000              |
| American Coal, Md.....               |              | 90,000               | Hope, Colo.....            | 25,000           | 50,000               |
| American-Nettie, Colo.....           |              | 30,000               | Horn Silver, Utah.....     |                  | 150,000              |
| Argyle, Colo.....                    |              | 20,000               | Idaho, Cal.....            | 7,750            | 51,150               |
| Aspen, Colo.....                     |              | 100,000              | Iron Mountain, Mont.....   | 15,000           | 135,000              |
| Aurora, Mich.....                    |              | 100,000              | Kennedy, Cal.....          |                  | 60,000               |
| Bald Butte, Mont.....                |              | 20,000               | Lake Superior, Mich.....   |                  | 252,000              |
| Bannister, Mont.....                 |              | 6,000                | Leadville Cons., Colo..... |                  | 12,500               |
| Belden Mica, N. H.....               | 5,000        | 35,000               | Lexington, Colo.....       | 3,000            | 30,000               |
| Best Friend, Colo.....               |              | 20,000               | Maid of Erin, Colo.....    |                  | 139,725              |
| Brotherton, Mich.....                |              | 46,000               | Maryland Coal, Md.....     |                  | 81,000               |
| Bull-Domingo, Colo.....              |              | 4,000                | Maxfield, Utah.....        |                  | 18,000               |
| Bulwer Cos., Cal.....                | 5,000        | 15,000               | Minnesota Iron, Minn.....  | 210,000          | 840,000              |
| Buxton, S. Dak.....                  |              | 50,000               | Mollie Gibson, Colo.....   | 150,000          | 1,000,000            |
| Calumet & Hecla, Mich.....           |              | 1,500,000            | Monitor, S. Dak.....       |                  | 22,500               |
| Centennial-Eureka, Utah.....         |              | 60,000               | Morning Star D., Cal.....  | 7,200            | 68,400               |
| Champion, Cal.....                   | 3,400        | 51,000               | Napa, Cal.....             | 20,000           | 70,000               |
| Colorado Central, Colo.....          | 13,750       | 55,000               | New Guston, Colo.....      |                  | 123,750              |
| Consolidation Coal, Md.....          |              | 205,000              | Omaha, Cal.....            |                  | 7,200                |
| Colorado Fuel, Nev.....              |              | 67,120               | Ontario, Utah.....         | 75,000           | 750,000              |
| Contention, Ariz.....                |              | 50,000               | Oscola, Mich.....          |                  | 100,000              |
| Cook's Peak, Colo.....               | 10,000       | 50,000               | Pacific Coast Borax.....   | 15,000           | 150,000              |
| Coptis.....                          |              | 15,000               | Pandora, Mont.....         |                  | 3,000                |
| Cortez, Nev.....                     |              | 95,000               | Parrott, Mont.....         | 18,000           | 180,000              |
| Daly, Utah.....                      | 37,500       | 37,500               | Plumas, Eureka, Cal.....   |                  | 25,313               |
| Deadwood Terra, S. Dak.....          | 10,600       | 100,000              | Poorman, Ltd., Colo.....   |                  | 36,450               |
| De Lamar, Idaho.....                 |              | 272,000              | Quincy, Mich.....          |                  | 200,000              |
| Dexter, Nev.....                     |              | 80,000               | Red Cloud, Idaho.....      | 10,000           | 50,000               |
| Diamond, Kyune & Castle, Utah.....   |              | 7,501                | Rescue, S. N., Mex.....    |                  | 12,000               |
| Elkhorn, Mont.....                   |              | 275,000              | Rialto, Colo.....          |                  | 18,000               |
| Enterprise, Colo.....                | 50,000       | 350,000              | R'ky Fork Coal, Mont.....  |                  | 100,000              |
| Franklin, Nev.....                   |              | 12,500               | Running Lode, Colo.....    |                  | 6,000                |
| Franklin, Mich.....                  |              | 16,000               | Sierra Butte, Cal.....     | 22,050           | 38,750               |
| Golden Reward, S. Dak.....           | 5,000        | 45,000               | Standard, Cal.....         | 10,000           | 40,000               |
| Granite Mountain, Mont.....          |              | 590,000              | Tamarack, Mich.....        | 200,000          | 600,000              |
| Great Western Quick-silver, Cal..... | 12,500       | 112,500              | United Verde, Ariz.....    |                  | 30,000               |
| Hecla Con., Mont.....                | 15,000       | 150,000              | W. Y. O. D., Cal.....      | 3,000            | 30,000               |
|                                      |              |                      | Yosemite No. 2, Utah.....  |                  | 5,000                |
|                                      |              |                      | <b>Total.....</b>          | <b>1,045,650</b> | <b>11,426,863</b>    |

**Electric Welding of Boiler Flates.**—An English boiler making firm has adopted electric welding, instead of riveting, for fastening together the plates of the boilers. Not only is the cost thereby considerably reduced, but it is said that the safety and durability of the boilers are considerably enhanced.

**Treasury Decisions.**—By the decision of the Treasury Department railway cars, wheels, etc. manufactured in this country from imported materials may be exported, subject to drawback. The same is true of articles manufactured from lead produced in a bonded smelting warehouse from imported ore upon which duty has been paid.

Concerning drills made from imported round bar tool steel, by the process of cutting the drill from the cold bar, the Department states that on exportation a drawback equal to the duty paid, less one per cent., will be allowed. The quantity of material so used shall be determined by adding to the net weight of the exported articles 96% of such weight.

When articles entitled to drawback on exportation, made wholly from imported tin or tern plates, and on which no allowance for waste is to be made, are exported in such condition that their weight may be determined by a United States weigher at the time of exportation, such weight shall be accepted as the basis for the liquidation of the drawback entry.

**Incapability of Masonry Joints for Resisting Tension.**—At a recent meeting of the Engineers' Club of Philadelphia, Mr. John C. Trautwine, Jr., presented notes on the Distribution of Pressure in Masonry Joints, illustrated with sketches on the blackboard, showing that the true significance of the "middle third" of the joint, and of the "tension" which is said to occur when that limit is exceeded, lies in the fact that masonry joints are practically incapable of resisting tension, so that when in such a joint the resultant of all the pressures falls outside the middle third, the portion of the joint which, if capable of tension, would be called upon to exert it, is simply idle, and the entire pressure is concentrated upon the remainder of the joint, the width of which is three times the distance from the resultant to the nearest edge. Owing to this, the maximum unit pressure in such joints increases very rapidly after the middle third is exceeded; whereas, in a surface capable of resisting tension (such as a cross section of an iron bar) the maximum unit pressure increases uniformly, however far from the centre of the section the resultant may fall.

## WOOD'S EYELESS STEEL PICK.

A new steel pick that has many advantages is being placed on the market by Mr. Marvin F. Wood. The pick is made of an eyeless piece of steel, and the socket into which the handle fits is composed of four clamps of malleable iron riveted through the blade. The wooden handle fits in the socket, thus made and is fastened in place by a steel bolt which passes through the wood and is threaded into the iron itself. There are thus no



nuts to work loose, and the handle is always firmly attached. The advantages of this pick are that the handle never gets loose and yet is easily removable, and that the pick is not weakened by an eye. Both railroad men and miners have tried the pick and express unqualified approval both as regards its safety and strength and length of life. The pick is made in several sizes, from the largest to a prospecting pick. The latter is specially useful. The maker is putting a very low price to his manufacture in order to compete successfully with the ordinary pick.

## LAUNCH OF THE PROTECTED CRUISER "OLYMPIA."

The launch of the protected cruiser "Olympia" is officially announced to take place to-day from the yard of her builders, the Union Iron Works, of San Francisco. This vessel belongs to the first class of unarmored protected cruisers, which include the "Chicago," "Charleston," etc., but she is considerably larger than any of her predecessors. Her dimensions are: Length between perpendiculars, 340 ft.; breadth, 53 ft.; mean draught, 21.5 ft.; displacement, 5,500 tons. She will be propelled by two sets of triple expansion engines, which are calculated to obtain a maximum speed of 20 knots. The armament includes 4 8-in. breech-loading rifles, 10 5-in. rapid fire guns, 14 6-pounder and 6 1-pounder rapid fire guns and 4 Gatling guns.

There are also six torpedo tubes. The 8 in. guns are mounted on the main deck in barbettes, the sides of which are made of steel plates 4 in. thick. The 5-in. guns are mounted in sponsions in the superstructure, and each is protected by four inches of armor. The 8-in. guns and 5-in guns are respectively 26 ft. and 18 ft. above the water line. The protection consists of (1) an armored deck; (2) a belt of water-excluding substance at the water-line (3) a system of bulkheads dividing the hull into a number of watertight compartments. The protective deck is near the water line, and extends the whole length of the vessel; the flat crown is 2 in. thick, and the sloping sides are 4½ in. thick amidships, and 8 in. thick fore and aft. The belt of water-excluding substance extends right round the vessel at the water line, and is 6 ft. high and 2 ft. 9 in. thick. The substance used will probably be cellulose. It was originally provided in the contract that the vessel should be ready for service on the 1st of April, 1893, but the deliveries of the material have been so slow that in all probability this date will not see her completed. The contract price was \$1,796,000.

## RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

## Digest of Interior Department Decisions.

## COAL LAND ENTRY—HOMESTEAD ENTRY.

A coal land entry attacked by a subsequent homestead claimant may be canceled as to the legal subdivisions in conflict which are not valuable for coal.—(Locality in question, Seattle Land District, Washington.)—*Scott v. Sheldon*. [Decision, August 30th, 1892.]

## CALIFORNIA SCHOOL GRANT—MINERAL LANDS.

In settling the question whether land is excepted from the school grant to the State of California on account of its mineral character the status of the tract at the date of its survey is the subject of inquiry.—*Joseph Pereira vs. Christina Jacks*.—[Secretary's decision, September 8th, 1892.]

## HOMESTEAD ENTRY—PLACER STONE LAND.

A homestead entry of land that is valueless except for the stone suitable for building purposes which it contains and made with speculative interest to secure the quarries thereon which have been opened and developed by other parties must be cancelled for want of good faith on the part of the entryman.—(Colorado case) *Jamison Homestead, Entryman vs. Hadden Placer Mining Ground, Entryman*.—[Secretary's decision, September 8th, 1892.]

## MINING CLAIM—STONE LANDS.

1. Land that contains a valuable deposit of stone that may be utilized for special purposes may be entered as a placer claim.  
2. Though the term "mineral" is more frequently applied to substances containing metals, nevertheless, in its proper sense, it is applicable to all fossil bodies or material taken out of mines, and includes stone taken from quarries. (Locality, Pueblo Land District, Colorado.)—*McGlenn v. Wienbroer*.—[Decision October 12th, 1892.]

## APPEAL—CERTIORARI—HOMESTEAD ENTRY—MINERAL LAND.

1. The withdrawal of an appeal from the action of the local officers of the General Land Office leaves their decision final as to the facts precisely as if no appeal had been taken.

2. A writ of certiorari will not be granted where the right of appeal is not asserted by the applicant nor denied by the Commissioner.

3. An appeal will lie from the Commissioner's refusal to order a hearing.

4. The submission of final homestead proof will not preclude a hearing as to the subsequent discovery of mineral on the land involved, where final certificates are not issued on said proof, and the General Land Office requires new proof to be made. (Case on application for writ of certiorari involving certain premises in Sec. 26, Township 11, N. W., R. 2 W., Helena, Mont.)—*Spratt, applicant, vs. Edwards*.—[Secretary's decision, September 13th, 1892.]

WASHINGTON, D. C., Sept. 13, 1892.

## DIGEST OF RECENT DECISIONS.

## RIGHTS ON FAILURE TO ISSUE MINING STOCK.

Where the purchaser of shares of stock to be issued by a mining corporation pays the purchase price, and the corporation is prevented by an injunction from issuing the stock so that the vendor cannot perform his contract, the purchaser, after waiting a reasonable time, and making demand for the repayment of the purchase money, may maintain an action therefor against the vendor's administrator.—*Rose v. Foord*, Supreme Court of California, 30 Pac. Rep., 1114.

## MONTANA MINERS LIEN LAW.

A statement showing the performance of work on a mine claim, at a certain rate, for so many days, between certain dates, and amounting in all to a fixed sum, no part of which it is stated has been paid, is sufficient for a mechanic's lien, under the Montana statute, declaring merely that the account shall be a "just and true" one after deducting all credits, and that no error or mistake shall affect the validity of the lien, without a showing also as to the items or nature of the work. The act of the first legislative assembly restricting the mechanic's lien to one acre of the land on which any building, structure or improvement was situated, if outside of any town, did not apply to work done upon a mining claim, but section 1370, which supplied the omission as to such claim, and without mention of any such restriction, alone applies, and the description, therefore of the property required by section 1371 does not demand a designation of the boundaries, so as to ascertain the extent included in the lien, if the property "may be identified" merely by name. *Smith v. Sherman Mining Company*, Supreme Court of Montana, 31 Pac. Rep., 72.

## INJUNCTION AGAINST TUNNELLING UNDER MINING DITCH.

In an action to restrain a person from constructing a tunnel on his own mining claim under plaintiff's mining ditch, it appeared that, about two years before the action, defendant, without objection, had run a tunnel into the mountain beneath plaintiff's ditch, extending about 50 feet beyond the ditch, and 35 to 40 feet below it; that this tunnel was abandoned; that afterward defendant commenced another tunnel, about 300 feet from the first tunnel, and 48 feet, vertically, lower than the ditch. Eight experienced miners testified, on the part of defendant, that, in their opinion, the extension of the lower tunnel, turned under and beyond the ditch, would not injure it; that the earth in which the ditch was dug was clay and broken rocks; that the upper tunnel has stood more than two years without injury to the ditch; and that the lower tunnel was partly in bed-rock at a distance of 29 feet from its mouth. Five witnesses testified for plaintiff in substance that, in their opinion, the construction of the tunnel would injure the ditch; that "the effect of water percolating through ground of this character is to loosen it, and cause it to cave or slide;" that the upper tunnel did not injure the ditch, and that the lower tunnel is 300 feet further down stream. The evidence failed to entitle plaintiff to the injunction. *Lorenz v. Waldron*, Supreme Court of California, 31 Pac. Rep., 54.

## BROWN'S GRADIENT INDICATOR.

The gradient indicator which we here illustrate is intended for rough measurements of gradients and verticle angles. The measurement is obtained by the position of the bubble in a curved tube. The left-hand end of the tube is curved sharply and indicates the large angles. The curva-



ture of the tube gradually decreases from this end until the right-hand limb is nearly straight, in order that the smaller angles shall be measured with accuracy. Of course the instrument does not give very exact readings, but as no adjustment of any sort is required, it will be very convenient in rough preliminary work of all sorts.

## PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office:

- TUESDAY, NOVEMBER 1TH, 1892.
- 485,185. Apparatus for Carburetted Air or Gas. Edward J. Frost and Willis C. Squire, Philadelphia, Pa.  
485,340. Glass Furnace. Richard M. Atwater, Pittsburg, Pa.  
484,343. Method of and Apparatus for Electro-Deposition of Metals. Charles R. Fletcher, Boston, Mass.  
485,387. Apparatus for Cleaning Tin and Terne Plates. Thomas Jenkins, Llanelly, England. Assignor to John Henry Rogers, same place.  
485,390. Furnace for Melting Glass. John Kitson, St. Louis, Mo.  
485,391. Glass Producer. William A. Koneman, Chicago, Ill. Assignor to the Chicago Heat Storage Company, same place.  
485,392. Method of and Apparatus for Recarburizing Metals. William A. Koneman, Chicago, Ill. Assignor to one-half to Charles G. Singer, same place.  
485,453. Chemical Reagent for Use in the Manufacture of Alloys. Sherwood E. Cheeseman, Kansas City, Mo.  
485,461. Process of Obtaining Alumina and Acetic Acid. Frederic P. Dewey, Washington, D. C. Assignor to the Chemical Supply Company, of New York.  
485,475. Centrifugal Ore Separator. Orrin B. Peck, Chicago, Ill. Assignor to Melinda Peck, same place.  
485,501. Ore Feeder. Ernest A. Langford, Grass Valley, Cal.  
485,517. Rock Crushing Machine. Giles W. Weller, Baker City, Ore.

## PERSONALS.

Harvey B. Morse, a well-known mine operator of Gilpin county, Colorado, is dead.

Mr. R. O. Lowry, a mining man of Concouly, Wash., has been in this city recently.

Mr. Paul Richards, mining engineer, has been examining the coal mines of Carbon, Wyo.

Mr. Henry C. Deming, of Harrisburg, Pa., is visiting a number of gold mining properties in North Carolina.

Mr. Augustus St. Gaudens, the great sculptor, has been requested to design the award medal for the World's Fair.

Mr. H. R. Wagner, of Denver, Colo., has been visiting Mexico in the interest of the Globe Smelting Company, with which he is connected.

Mr. N. P. Gutelius, of Birmingham, Ala., who is interested in the Huntington coal mines in the state of Alabama, has been visiting these properties.

Mr. O. H. Harker, mining engineer for the Great National Smelting Company, of Monterey, and formerly of Leadville, Colo., has been visiting the Sierra Mojada mines under his charge.

The New York Metal Exchange resumes its regular calls beginning on Tuesday, November 15th. The daily market report, which was discontinued sometime since, will again be resumed.

Mr. Ralph Mojeski, civil engineer, a graduate of the Ecole des Ponts et Chaussées, of Paris, has opened an office at 218 La Salle street, Chicago, for designing, inspecting and building bridges, viaducts and all-metallic structures.

Mr. A. C. Washington, president of the Horn Silver Mining Company, has returned from Utah, whither he had gone to preside over the annual meeting of the stockholders of the company, held in Frisco, Utah, on October 4th. He reports the property to be in good condition.

Mr. James Gayley, superintendent of the furnace department of the Edgar Thomson Works, has succeeded Mr. Chas. M. Schwab, the superintendent, whose promotion was noticed in a former issue. Mr. D. J. Kerr, of the laboratory department succeeds Mr. Gayley.

Mr. Charles H. Krause, of Marquette, Mich., has left for Desloge, Mo., where he has a four months' contract to superintend the construction of a 500-ton concentrator for the Desloge Consolidated Lead Company. Mr. Krause has had fourteen years' experience in the Calumet & Hecla mills.

Mr. W. Williams, a representative of the London "Engineer," and manager pro tem of the Michoacan Railway and Mining Company, of Mexico, has arrived in San Francisco. His present visit to the United States is made for the purpose of inspecting the Chicago World's Fair site and the Niagara Falls power works in the interest of the paper he represents.

Mr. Wm. H. Radford, mining engineer, has returned from Cana, Republic of Colombia, where he had charge of the Darien Gold Mining Company's mine, and opened an office for general mining engineering business, with placer mining a specialty, at 71 Broadway. Mr. Radford was formerly superintendent of the North Bloomfield Mining Company, and is now in California to examine and report on the condition of that property. His address until the middle of December, will be care of H. Pichior, Esq., 320 Sansome street, San Francisco.

It is now stated that Senator John P. Jones, whose appointment as a representative of the U. S. at the Silver Congress, was and is an insult to the nations which participate and a disgrace to this country, will actually attend the congress. The Engineering and Mining Journal will refer in an early issue to the unsavory history of Senator Jones, illustrating the same and showing that at least the press of this country has protested against this outrage, and has showed the injury his appointment and attendance at the congress will occasion.

Count Pourtales, Mr. T. C. Parrish, G. de la Bouglise, of Paris, France, consulting engineer of the Societe Anonyme des Mines de Lexington, Montana, and of the Boleo Copper Mining Company, G. Chartier, of Denver, and L. Lavanigno, superintendent of the Bingham, Utah, property of the Societe Anonyme des Mines de Lexington, are at Cripple Creek, Colo. Mr. de la Bouglise, according to the Cripple Creek papers, has gone to that camp directly from France on special mining business, and represents a French syndicate headed probably by Baron Ellanger.

## EXPORT NOTES.

The United States Treasury Department has been advised that the imperial parliament of Austria has established a new standard coin called the Krone, ten of which are equivalent in value to ten gulden (or ten florin) pieces, whether in specie or not. Customs officers have been instructed to act in conformity with this law in the valuation of

Austrian invoices dated on and after October 1st, 1892. No consular certificates of depreciation will be accepted in such cases.

The Canadian government will submit a proposition at the next session of Parliament, offering a subsidy of \$750,000 for a fast mail service between Canada and Great Britain. It is said the Canadian Pacific will purchase the International Railway, thereby obtaining greater facilities to connect the new steamship line with their transatlantic railway system. If this be accomplished, it is calculated that passengers can be landed in Quebec, in the summer season, within five days, and in Chicago as soon as they can now reach New York.

It is understood that after many months, Minister Abbott has succeeded in negotiating with the Republic of Colombia, a reciprocity arrangement, under the tariff act, covering the commercial relations of that country and the United States. The Minister of Foreign Affairs in the old cabinet opposed the negotiation of a treaty, but the new Vice-President, M. A. Caro, who, since the last election has been acting in the place of President Nunez, seems to have favored the arrangement. The failure to enter into a reciprocity arrangement with the United States before January 1st, last, put Colombia with Hayti and Venezuela in the list of those countries, on which after March 15th, retaliatory duties on sugar, molasses, coffee and tea and hides were imposed by proclamation of President Harrison. The United States Minister at Bogota reported that in 1888 34% of the exports went to Great Britain, 10% to France, 12% to Germany and 40% to the United States. The imports consist of cloth, of wool, cotton and silk, shoes, ready-made clothing, furniture, machines, haberdashery, watches, paper, drugs, shoes, books, liquors, pottery, iron, flour, cigarettes and other domestic and industrial commodities. In 1888 40% of the imports came from Great Britain, 21% from France, 13% from Germany and 12% from the United States.

## WORLD'S FAIR NOTES.

A gold brick worth \$230,000 will be exhibited at the World's Fair by Montana.

The nitrate industry of Chili will be illustrated by an elaborate exhibit at the World's Fair.

The owners of the Mammoth Cave of Kentucky, propose to reproduce the "starry chamber" in the Mining Building at the World's Fair.

Hayti will make a notable exhibit at the World's Fair. Agriculture, forestry, minerals and a historical display will constitute the main features of its exhibit.

Building material dealers will make an exhibit at the World's Fair. They will also hold an international congress for the discussion of matters of interest to the building trade.

Arkansas will exhibit at the World's Fair a relief map of the state, showing all the elevations, depressions, lakes, swamps, coal and stone areas, arable lands, wheat, corn and cotton regions, timber and prairie lands, etc.

Prof. Elisha Gray, the electrician, has returned from an extensive European tour taken in the interest of the electrical congress which will be held in Chicago in connection with the World's Fair. He secured the promise of 200 electricians to attend the congress.

Two powerful Schuckert search lights of 3 and 4 ft. diameter respectively, were installed at the Chicago Exposition during the dedicatory ceremonies. A member of the Schuckert company says that his firm will have in Chicago next summer, a lamp 6 ft. in diameter, which will throw a strong light 60 miles.

Col. de Palitschek, the Austrian Commissioner-General, writes that the glassmakers of Austria, especially of Bohemia, and the china manufacturers of Carlsbad and the surrounding neighborhood, have agreed upon making a display of their industries at the Exposition. The manufacturers of stained glass in Tyrol will join in the exhibit.

Superintendent Ward, of the Colorado State mining department of the World's Fair, has received official notice of the space allotted to Colorado's mineral exhibit. The space is 37 by 10 ft., in the center of the main building, but is much smaller than was hoped for, and will require a material change in the plans arranged by Mr. Ward. It will give space for a very creditable exhibit, however.

Mr. F. J. V. Skiff, chief of the Department of Mines, Mining and Metallurgy, writes: "Nearly every leading country of the world has signified its intention of participating in this department. With but few exceptions, it may be stated that every mineral deposit of the Old World, every leading mine of metals or gems, will embrace the opportunity afforded by the mining display at the exposition. The interest at home has been awakened in no less degree, for out of 50 mineral producing states and territories, 35 have decided to enter in the mining building collective exhibits showing in fullness and in detail the magnitude and variety

men will enjoy the wonderful mechanism which has wrought such changes in the operating of mining establishments. The scientific man will find on the gallery floor an elaborate museum of mineral cabinets containing in systematic series a complete exhibit of mineral suites. The owners of the largest mineral collections in the world will show in attractive array complete collections of minerals and ores, semi-precious stones, and specimens illustrating the formations of the earth. In one section the mine engineers will illustrate the technique of their profession by exhibits of plottings, charts, maps, models, and pictures of one kind and another, exemplifying the peculiar problems met with in opening up and equipping the mines. Among the special exhibits worthy of mention are the technical library, comprising the rarest and most valuable works of reference bearing on the sciences and arts pertaining to mining and metallurgy, and an assay laboratory in active operation.

## INDUSTRIAL NOTES

The Rome Rolling Mill, at Rome, Ga., was placed in the hands of a receiver on the 31st ult. It employed 300 hands.

Several thousand tons of Mesaba ore are to be tried by certain Pennsylvania furnaces. The shipment will be made from the Mountain Iron mine.

The new coal washing plant of the Standard Coal Company, Brookwood, Ala., capacity 500 tons per day, has gone into operation. The product will be coked.

A nitro-glycerine factory two miles south of Lima, O., exploded on the 28th ult. It is reported that 5 men were killed. The plant was completely destroyed.

The Courtright Hydraulic Machine Company are building pumps with a capacity of 100,000 cubic ft. per second for the new drainage canal at Bridgeport, Ill.

The New Glasgow Iron, Coal and R. R. Company, Pictou Countk, N. S., are building an additional battery of 18 Belgian copper ovens at their Ferrona furnaces. This will make 54 Belgian ovens at this plant.

A wire rope tramway from the San Antonio mine near Monterey, Mexico, to the Mexican National Railroad, is being built by the Trenton Iron Company, Trenton, N. J., United States, under the charge of W. Dusedan.

The Reading, Pa., Rolling Mill Company has received the contract for the structural iron for a 17-story office building in Chicago. The contract will require 1,500 tons of structural iron. The mill is running double turn with 700 men on the pay roll.

The Ohio Iron Company, Zanesville, O., which has been shut down for the past 18 months on account of refusal of the officials to sign the scale, fired its furnaces on the 31st ult. and will begin with non-union men this week. It is feared trouble will follow.

The National Malleable Casting Company have purchased ten acres of land for \$75,000, and will put up ten buildings at a cost of \$120,000. The company's capital stock is \$3,000,000. The company now owns what is known as the Chicago Malleable Iron Works.

It is said that Krupp, of Essen, is looking towards Labrador as a source of a part, at least, of the 500,000 tons of iron ore consumed each year at his establishments. Hitherto he has obtained his ore in Spain, and the freight of \$4.08 per ton is more than he is willing to pay.

The Calumet & Hecla Mining Company now has in place 60 boilers, the total weight of which is 2,100 tons. Forty of these are the 47-ton Belpaire steel boilers, of which the company expects to get 17 more, and when in place their boilers, when all in use, can develop over 100,000 H. P.

The Gadsden Alabama Furnace Company's plant has been advertised at a special Master's sale on the 28th inst., to satisfy a claim held by the East Tennessee, Virginia & Georgia Railroad. This furnace was built in 1887-88, and blown in October 14th, 1888; 75 x 15; closed top; 3 Whitwell stoves; annual capacity, 37,000 net tons.

The Wellman Iron and Steel Company, Thurlow, Pa., will be ready by the middle of January to start up the furnace which has been relined. The capacity will be increased from 120 to 150 tons per day, all from foreign ores, African, Elban and Spanish, very low in phosphorus, 0.006 to 0.1%. The company consumes its product in its own mill.

It is possible that the New River district on the Chesapeake & Ohio Ry. in West Virginia, may soon rival in coke production the Connellsville district in Pennsylvania. Along the Loop, Gauley and New River, and in the counties of Raleigh and Fayette, preparations are making for a large increase in the mining of coal and the production of coke.

By this time the Chicago Economic Fuel Gas Company is ready to supply natural gas at 50 cts. per 1,000 ft. from the wells in the Kokomo district,

Indiana, flowing all the way from 1,000,000 to 10,000,000 ft. per day. The gas is piped to Chicago in two 8-in. pipes, entirely separate from each other, so that it would require an accident to both to disable the service.

The first importation of foreign ores into this country under the national flag, was in the whale-back steamer Joseph L. Colby, which arrived at Philadelphia, October 15th from Sigua, Cuba, consigned to the Sigua Iron Company. The harbor at Sigua and the loading facilities are said to be very good, and as the Siguan iron ores are of high grade we may expect further importations.

A new magnetic iron ore mine has been opened in Carter County, Tennessee, by the Iron King Mining and Milling Company, Sheel Creek, Tenn., Thomas E. Teegarden, general manager. The ore is said to show the following composition, 10,000 tons having been mined: Iron, 52.55; silica, 20.92; lime, 3.21; magnesia, trace; titanitic acid, none; phosphorus, 0.032. The property is on the line of the E. Tenn. & N. C. Ry.

The Pennsylvania Railroad will soon begin the construction at its Altoona shops of the largest freight car ever built by any American or European company. The car will have thirty-two wheels, and a carrying capacity of 124 tons. It will be used for transporting the cannon which is now being manufactured at the Krupp Works, Essen, Prussia. The gun is expected to arrive in this country early in the ensuing year for exhibition at the World's Fair.

Judge Bruce, of the Federal Court, has rendered at Birmingham, Ala., a decree ordering the sale at public auction of the United States Rolling Stock Company's works at Decatur and Anniston, Ala. The decree is rendered on account of the Central Trust Company, of New York, to whom the Rolling Stock Company is indebted in the sum of \$1,185,000. The date within which this money must be paid expires November 8th.

Fraser & Chalmers, Limited, new foundry, machine and boiler plant will be traversed by Ridgway's balance steam hydraulic cranes, manufactured by Craig, Ridgway & Company, of Coatesville, Pa. There will be six of them in the foundry, two in the yard for handling flasks, etc., and others in the shops. The company have a perfect electrical installation for driving the traveling cranes, and their plant, when completed, will embody the latest improved machinery and practice.

The launch of cruiser No. 6, or the Olympia, at the Union Iron Works, occurs to-day. A dredger has been put to work to deepen the channel, and will continue to be employed until a sufficient depth of water is reached to overcome any possible danger. A new method will be employed in launching the Olympia. Instead of an electric button, as was used in starting the Monterey, only a string will be used, which will connect directly with the last blocks. A stroke of an axe will sever this string and cause the blocks to fall, when the cruiser will slide into the water.

The Midvale Steel Company will furnish under its contract with the War Department, twenty-five sets of forgings for 3 2-10-in. guns, ten sets of forgings for 5-in. siege guns, ten sets of forgings for 7-in. siege howitzers and ten sets of forgings for 8-in. guns. The Bethlehem Iron Company will furnish twelve sets of 10-in. forgings, nine sets of 12-in. forgings and seven sets of 12-in. steel armor forgings. The contract for 12-in. steel armor piercing shot has not yet been awarded. The lowest bidder was the Sterling Steel Company. The Midvale contract amounts to \$250,000, and the Bethlehem contract to \$700,000.

The Pelton Water Wheel Company, of San Francisco, has been awarded the contract for the wheels and pipe line for the new Morning mill now under construction at Mullan, Idaho. The pipe line consists of 2,850 ft. of 10-in. and 500 ft. each of 11 and 13-in. pipe. The concentrators are to be run with two 6-ft. wheels working independently and a 3-ft. wheel furnishes power for the rock-breakers. All of the wheels are to run under a vertical head of 900 ft. The Gates crushers have been adopted by the Morning mine for this new mill, which are furnished by the Pacific Iron Works. These have a capacity of 20 tons per hour. These crushers have been adopted by the Bunker Hill & Sullivan Company.

The Union Iron Works of San Francisco, are building some machinery for the Tepezala copper mine, which is about six miles from Rincon de Ronas, on the Mexican Central R. R., in the state of Aguas Calientes. The Union Works furnished them last February with a hoisting engine, boiler and pump. Since that time the owners of the mine have ordered another hoist of greater capacity, with a larger pump, boiler, etc., to be put on a shaft adjoining the present mine. It is on another mine belonging to the same company. They have one shaft 350 ft. deep and the one of which they are now sinking is 250 ft. deep. It is the intention to continue this down much deeper. The new machinery is capable of doing this work to 800 or 1,000 ft.

The East River Bridge Company was given permission some time ago to build two more bridges

between New York and Brooklyn at points higher up the East River than the present bridge. Arrangements have already been made for one to be built between Rivington street, New York, and Broadway in East Brooklyn. The height at the center above mean tide has been arranged to be the same as that of the present bridge, viz., 135 ft. A difficulty has, however, arisen. The best navigating channel under the present bridge happens to be in the center of the stream, but in the part of the river that the proposed bridge is to cover, the navigable channel is close to the Brooklyn side. Consequently under the new bridge there will not be the same headway. The Board of Engineers of the United States Army is at present engaged in deciding what is to be done.

Twelve of the largest rubber companies have combined under the name of the United States Rubber Company. In the combination are the American, Boston and Para Rubber Companies, of Boston; the Meyer, New Brunswick, and New Jersey Rubber companies of New Brunswick, N. J.; L. Candee & Co., of New Haven, Goodyear's Metallic Rubber Shoe Company, of Naugatuck, Conn.; the Lycoming Rubber Company of Williamsport, Pa.; the National India Rubber Company, of Bristol, R. I., and two other boot and shoe properties. The whole of the common stock is retained by those concerned and 105,000 out of 134,735 \$100-shares of preferred stock only have been offered to the public. The common stock will only receive dividends after 8% has been paid on the preferred stock. The combination is of considerable importance to mining men, for rubber is extensively used in connection with mining machinery. Rubber springs, hose and belts are in demand and the consumption of rubber boots and coats is extremely large.

#### MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting machinery or supplies of any kind will notify the Engineering and Mining Journal of what he needs, his "Want" will be published in this column, and his address will be furnished to any one desiring to supply him.

Any one wishing to communicate with the parties whose wants are given in this column can obtain their address at this office.

No charge will be made for these services. 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, thus enabling the purchaser to select the most suitable articles before ordering.

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 of goods of any kind.

#### Goods Wanted at Home.

2.817. Three or four 3 ft. tram cars and a lot of belting. Arkansas.

2.818. Prices, catalogues and circulars of kaolin machinery. Georgia.

2.819. Shaft pulleys and belts. North Carolina.

2.820. Fine wire cloth from 60 to 150 mesh, both brass and iron. North Carolina.

2.821. A hand power elevator. Florida.

2.822. 2,600 ft. 56-lb. second-hand T rails. South Carolina.

2.823. A 30 in. x 12 in. x 15 ft. engine lathe and a 24 in. x 24 in. x 5 ft. or 6 ft. planer; also 45 squares of corrugated iron roofing, a set of blacksmith's tools, forge, a blower for cupola, etc. Florida.

#### GENERAL MINING NEWS.

##### ALABAMA.

###### Cherokee County.

(From our Special Correspondent.)

The best paying brown ore mines in this vicinity are the Baker Hill and Grady, especially the latter, where the washing is inexpensive and the management economical. Dr. Eugene A. Smith, State Geologist of Alabama, is to visit the bauxite localities of this and adjoining districts at an early date. At Dikes, in this county, good bauxite has been discovered and the beds opened to some extent. Much interest is shown in the location of deposits of this mineral, on account of its use in the manufacture of aluminum and its compounds.

##### ALASKA.

Late advices from the Denver-Summit mine contain very acceptable news. The superintendent has traced the vein down the mountain 1,200 ft., nearly to the basin, where he has started a tunnel on the vein running directly into the mountain. The tunnel is now in 15 ft. and a good grade of ore is encountered. Work will be pushed on the tunnel all winter. Up to date there had been no frost.

##### ARIZONA.

###### Pinal County.

(From our Special Correspondent.)

The Jack Rabbit Mine, Casa Grande.—The property is owned by Colorado capitalists who appear to be satisfied with the outlook. It has been found that what was supposed to be the foot wall is really a large body of ore averaging \$18 per ton, some portions running as high as \$42 per ton.

##### Yavapai County.

Seven Stars Mining Company.—This company cabled its London agents on date of the 22nd of October: "Mine looks splendid. Have struck it rich in the lowest level. Ore shipped to smelters in October; up to present, 85 tons, assays 130 to 140 oz. per ton silver, and 5 oz. per ton gold. Milling ore extracted during the same period 200 tons, estimated value, \$15,000. (These familiar "boom" telegrams to assist the selling of stock should have an exactly opposite effect and make investors more timid.—Ed. E. and M. J.)

(From our Special Correspondent.)

The Lida Mine, Prescott.—A tunnel has been driven 300 ft. and the ledge tapped at a depth of 80 ft., the vein showing an ore streak more than 2 ft. wide, averaging \$70 per ton in silver. The vein carries horn silver, and some rich ore has been accumulated on the dump with over 100 tons of second grade ore.

##### Yuma County.

Agua Fria Mining Company.—According to the Prescott "Journal-Miner," a car load of copper and copper matte was to have been shipped on the 20th ult., the result of the recent run of this company's smelter. The product contains a good per cent. of gold and silver also. The experimental run of the smelter, says the "Journal-Miner," proved satisfactory, although the most of the ores require roasting before being run through the furnace. A force of men will be kept at work in the mine and in making preparation for roasting the ores, and the smelter will be started up again in a few months and be run continuously.

(From our Special Correspondent.)

The Gold Nugget Mine, Yuma.—This property is the most important of the group, situated in the Sierra Madre Mountains, 15 miles from Yuma, which is now being actively worked. There are in this mine two shafts, one 145 ft. and the other 200 ft., with 400 ft. of drifts. The vein is a contact and averages 4 ft. of free milling ore. The ledge shows very evenly the deeper the shaft is sunk, and the entire workings shows the average to be high grade. The gold is coarse and worth \$20 per oz., and there is about \$500,000 of ore in sight.

##### CALIFORNIA.

###### Amador County.

(From our Special Correspondent.)

The Contentment Mine, Pioneer Creek.—Active work is being prosecuted on this property. The ore covers a heavy percentage of sulphurets and considerable free gold. The sulphurets yield from 18 to 20 oz. gold per ton.

###### Los Angeles County.

(From our Special Correspondent.)

A smelting works appears to be an assured fact in this vicinity. Ground has been broken for the plant at Los Angeles and machinery has been ordered that will have a smelting capacity of 200 tons a day.

##### Nevada County.

Brunswick Consolidated Gold Mining Company.—The superintendent of this company, writing under date of the 25th ult., says: "Since my last report a decided change has taken place in the mine; it has improved in both drifts and shaft. The ledge in the shaft in now 3 ft.; in the East drift, 1 ft., and in the West drift, 10 in., and I find a good prospect of free gold in all the quartz tried. Some of it is low grade but the average of it is good. All of the ledge in the shaft came into the foot-wall in 4 days; in the west drift it is the same. It is a new shute of ore and shows gold in the quartz plainly. It is the best prospect yet found because of the size of the ledge. The shaft has been sunk 10 ft.; present depth, 660 ft. East drift, total length, 82 ft.; West drift, total, 92 ft."

##### Placer County.

(From our Special Correspondent.)

The Eclipse Mine, Doby's Flat.—Last spring the mine was worked on royalty, and ten tons having been taken out which paid at the mill \$57 per ton, on the 1st June the mine was leased for 6 months, the owner, O. T. Walter, to receive 10% of the net profits. The first crushing under the new lease—30 tons—has been made, and, as a result, 331 oz., valued at \$5,000, has been obtained. The shaft has been sunk only 40 ft., at which point a drift was started, the crushing alluded to all being taken out in removing 75 ft. of the drift. The ledge ranges from 1 to 3 ft. in.

##### COLORADO.

The Old Golden Smelting Works, at Golden, which for the past few months have been leased by the Denver & Golden Smelting Company, have been purchased outright by the latter company. The consideration is not stated. The new owners of the plant will, it is said, increase its capacity. The old furnaces will be overhauled or torn down and a new one of a capacity of 125 tons will be erected.

##### El Paso County.

Cripple Creek Syndicate Mining and Milling Company.—C. S. Hooper has brought suit against the Cripple Creek Syndicate Mining and Milling Company, J. L. Russell, Louis Youngmark, W. H. Young, J. C. Henry and A. T. Brasher. The complaint sets forth that Hooper and the defendants purchased the Mountain Boy, Wichita, Electric and

Summit lodes in the Cripple Creek district, organized the company and set aside 66,666 shares of the capital stock for a working capital; that the plaintiff owns 55,000 shares of the capital stock, and that by conspiracy between Russell, Youngmark, Young and Harris on the one side and Henry and Brasher on the other, the Mountain Boy claim is to be delivered to the latter for but \$2,000, whereas \$20,000 has been refused for it from outsiders. It is also charged that the defendants named are conspiring to obtain possession of the working stock and practically freeze out other stockholders. Judge Graham has granted a temporary restraining order prohibiting the transfer of stock to Henry and Brasher until the case is heard.

#### Lake County.

(From our Special Correspondent.)

Alps Mining Company.—A large amount of work is now going forward upon this property and the results of development work are interesting. The principal work is now being done through the Helvetia shaft, which has attained a depth of 200 ft. The present company has lately been paying considerable attention to the report made a few years ago by "Uncle" Billy Stevens concerning this property, to the effect that the Alps was undoubtedly located upon an extension of the famous iron-silver ore shoot, and, with the proper development, it would become one of the prominent mines of the Leadville district. Some very good ore has lately been taken out, but in such small quantities that shipments cannot be made upon a regular basis. A number of drifts are now going forward in the first contact and the shaft is to be rapidly pushed to the second contact, when drifting will be pushed with vigor from that point.

Fanny Rawlings Mining Company.—An immense amount of dead work has lately been done at this property so that but few shipments have been made during the past month. The copper shoot to the west of the shaft, however, is now being thoroughly prospected and shipments are to be commenced from that point within the next few days. A fine strike was made there a short time ago of carbonate ore, but as yet the dimensions of the body or commercial value of the mineral has not been learned.

Flagstaff Mining Company.—The main drift in this property, running to the southeast, was destroyed by a cave-in of dirt recently, and the operators have found it necessary to run a new drift from a point near the shaft, in order to get around the dolomitic formation and into an extension of the Humboldt shoot, which will be accomplished within the coming week. The contact at that point has been found to pitch abruptly to the westward and henceforth prospecting will be much easier and more rapid.

Fludden Mining Company.—Arrangements are now pending and will soon be perfected for a resumption of work on the Fludden property, which adjoins the Louisville and Ulster-Newton. The Fludden was at one time considered one of the most valuable pieces of ground in this section, but it has not been developed since 1880, at which time a suspension of operations was necessary owing to a sudden influx of water. It is stated that a strike of rich mineral was made at the same time which was then thought to be an extension of the well known Louisville shoot, and it is now the intention to lower the water and prospect the old strike. The shaft is also to be carried down considerably deeper.

Gold Park Mining Company, (Holy Cross district).—This well known property has lately been leased to Mr. J. B. Havens, formerly of this city, and work with a large force of men is to be resumed at once. The old workings have been idle for several years and a large amount of water invests the property, but preparations are now being made to remove this so that work will probably be resumed by the first of the coming month. This mine is one of the oldest in that section, and something over \$1,000,000 was sunk in it not many years ago by an English syndicate.

Grey Eagle Consolidated Mining Company.—The Penrose has started pumping again and is to continue the same until the shaft has been unwatered. During the late railroad strike the shaft was allowed to fill to a point 100 ft. above the bottom, owing to the scarcity of fuel, which naturally affected the Sixth Street and Bohn properties to such an extent that it was deemed useless to continue the pumping at those points until the Penrose should resume. The water problem at the Bohn shaft seemed for awhile to be almost unsolvable, but a firm in the East recently offered to make a pump which would satisfactorily cope with the influx of water. The new pump was received in due time but had run only a few days when the valves broke and it was found necessary to send for an agent of the company before the machine could be repaired. It is now thought that the water will be successfully handled during the next week and that the property will be in condition to resume sinking within the next few days. At the Grey Eagle shaft a good strike of very high grade ore was made during the past week and preparations are now going forward to begin shipping from that point. The Pocahontas is producing a large amount of very good ore, carbonate and iron inclusive, and shipments continue regularly on a large scale. The Sixth Street will begin its battle with the water again in a few

days, or as soon as the Penrose resumes pumping, having now but three sets of timbers to put in before the work of retimbering the shaft is completed. During the cessation of pumping on the Penrose, the Sixth Street has been pumping on an average 1,700 gallons of water per minute.

Leadville Consolidated Mining Company.—A force of 35 men is at present employed on this property and some very high grade ore is being mined and shipped. Considerable prospecting is also going forward and the indications are quite favorable.

Small Hopes Consolidated Mining Company.—The usual amount of good work is going steadily on at this property and the shipments are quite up to the average. The ore mined at present consists chiefly of carbonates, although a fair sized amount of sulphides is also being produced.

#### GEORGIA.

##### Floyd County.

(From our Special Correspondent.)

Bobo's bauxite banks are situated at Van's Valley, in this county. Shipments were first made from these banks late in 1891 to the extent of 500 tons, which proved so satisfactory in quality that work has been continued during the present year, about 2,000 tons having been mined from the bank first opened, which shows a surface area of about 50 ft. square and an ascertained depth of solid bauxite of 25 ft., with the floor still bauxite, continuing down an undetermined depth. Beside this Mr. Bobo showed me five other distinct deposits of bauxite on his property, but no work other than prospecting has been performed on these. The existence of bauxite in this locality was first discovered in 1889 when the Republic Manufacturing Company, of Ridge Valley, some 18 miles to the northeast, commenced operations on banks in that vicinity. In Van's Valley the known bauxite deposits cover an area about 4 to 5 miles in width, and are of pocket formation and irregular as to dip and surface area, so that the extent as to quantity of tons in each cannot be estimated; for beyond prospect work to determine the actual existence of a pocket, no efforts have been made to develop the banks except in the one Bobo bank mentioned above. These deposits are within 10 miles of Rome, Ga., in a southwesterly direction, while the Ridge Valley deposits are about the same distance from Rome in a northerly direction. The erection of an aluminum plant is under way and future developments are awaited with much interest by the owners of bauxite properties in this section. How extensive the deposits of bauxite in Georgia and Alabama will prove to be when the mountains are thoroughly prospected for that mineral is entirely a matter of speculation. So far as I have ascertained from personal examination, there are four districts where bauxite of good quality and in paying quantities has been discovered and mined, viz., in Georgia, the Ridge Valley, Van's Valley and Cave Springs; in Alabama, the Dikes. This may be called the bauxite belt, the districts being situated in a direction somewhat south of west from Ridge Valley, that being the most northerly. The distance from Ridge Valley to Dikes, is about 30 miles. In breadth, this belt is known to be 5 miles and by some is claimed to be much broader. The deposits are found in each district at short distances from each other, but in the country lying between each district, except at Etina, between Cave Springs and Dikes, I have failed to discover the existence of the mineral. Some samples and specimens have been found near Anniston, about 30 miles to the southwest of Dikes, but, as no development work has been performed I cannot say whether it is in paying quantities or not. As a matter of fact no thorough prospecting has been done.

##### Polk County.

(From our Special Correspondent.)

I hear that the Augusta Mining and Investment Company, of Cedartown, Ga., has gone into the hands of a receiver. I am reliably informed that the purchase price paid by this company for its property in Georgia and Alabama was in excess of a fair valuation.

#### IDAHO.

##### Lemhi County.

Comet and Katie.—These mines, situated 14 miles from Salmon City, have been worked for a month or more. It is said that there is enough ore in sight in the Comet alone to work 10 stamps for two years. The vein is well defined in all the openings and is three-fourths of a mile from Salmon River. There is water enough on the ground for milling purposes.

Silver King.—The vein is in lime and quartzite. It is opened by a shaft 32 ft. deep, with a 100-ft. drift on an incline of 20° to the south. A tunnel from the surface of 30 ft. connecting with the incline 50 ft. down, and an extensive stope at that point has been worked to the amount of \$20,000. From the breast of the tunnel a winze of about 100 ft. in depth, and a tunnel on the second level cut to tap the vein at a depth of 300 ft., is now in 115 ft., 50 ft. short of intersecting the line of the winze. The mine is the property of A. F. Elder, of Junction, and is under lease to F. H. Ewan, of Montana, and H. Sorsen, of Salt Lake City.

##### Owyhee County.

A sensation was created at De Lamar on the

24th ult. by a report that under orders issued by Captain Plummer, manager of the De Lamar Mining Company, Mr. Oxnam, foreman of the mine, had proceeded to the Stoddard, one of the De Lamar group, placed a shot at the bottom of the shaft and blew out a large quantity of rock, boulders and air-pipe and otherwise demolished and injured the shaft. Up to within a year the mine was owned by C. M. Hayes and Tim Regan, of Boise, Hayes owning three-fifths and Regan two-fifths. Hayes sold his interest last spring to the De Lamar Mining Company for \$20,000, leaving Regan, who refused to sell, in possession of a two-fifths interest. Very little development work was done by Regan and Hayes before the sale, but since that time Regan has done enough, he claims, to find that the De Lamar Mining Company was extracting large bodies of ore from a mine in which he still owned a two-fifths interest, and have been doing so for a long time past. He will bring suit against the company, it is said. Other reports say that Regan's action is merely blackmailing and will lead to nothing.

##### Shoshone County.

Last Chance Mining Company.—The Last Chance mill has begun running night shifts. This mine has a large quantity of ore, but owing to the amount of water in the mine, it is difficult to work. About 300 ft. of vein matter has been crosscut and its limits not yet reached. It will probably be several months before the mine will be drained to admit of its being worked to advantage and to its fullest capacity. It is expected, however, that it can be worked to the extent of supplying the present mill. The ore taken from this mine concentrates three and one-half tons into one.

Stemwinder Mining Company.—The mine is turning out a better quality of ore and more concentrates than it ever did before. It is working to its full capacity, night and day.

#### ILLINOIS.

##### Sangamon County.

At a delegate meeting of miners of the Springfield district held at Springfield on the 29th ult., a resolution was adopted that on and after November 7th the price for mining coal shall be 50 cts. per ton gross weight; that powder shall be furnished at not to exceed \$2 per keg, and that payment shall be made weekly.

#### MICHIGAN.

Kanawha Iron Company.—At the meeting of the directors a proposition was received from responsible parties offering to pay a royalty of two-fifths of the net profits made, to the stockholders for mining the ore. The matter is now under consideration.

##### Copper.

Allouez Mining Company.—The Calumet conglomerate, where drilled into on the Allouez company's property, does not carry copper. A number of good mining men have suggested that a crosscut across the property from some of the lower levels would be the most thorough way of proving up the different belts that are known to traverse the location.

Calumet & Hecla Mining Company.—A holder of Calumet & Hecla stock tells the Boston "Transcript" that he is convinced that the policy of the company is to get out all of the copper it can and to exhaust its ground hereafter rather than to create copper reserves. If the mine have seventy years of life at the present rate of production, the policy will be to get it all out in fifty years. The company is producing about 60,000,000 lbs. of copper per annum, and the stockholder referred to is satisfied that a 90,000,000-lb. product is in contemplation. The stamping facilities are increasing at the new Whiting shaft, and will enable the company to hoist 50% more ore than at present. The company should pay 50% more in dividends next year, or \$30 per share, concludes this stockholder.

Tamarack Mining Company.—At the 14th level north of No. 1 shaft they are stoping on the Osceola lode. The lode is showing a good width and is very rich. The same lode has just been cut at the 17th level by No. 2 shaft. It is also showing up excellent rock.

##### Iron—Marquette Range.

The Lake Superior Iron Company is taking advantage of the few remaining days of this shipping season to send out some of their hematite of which they have large stockpiles at the mine. They are operating two steam shovels, but one of them broke down, and they are now working the larger shovel one turn and a half.

Cleveland Cliff Iron Company.—The Marquette "Daily Mining Journal" understands that the Cleveland Cliff Mining Company do not intend to build a new furnace at present, as they do not consider the market for charcoal iron in a sufficiently healthy condition. All summer plans have been in preparation for the new furnace and the indefinite postponement of its erection is disappointing to Marquette people.

East New York.—Since the pumps have been stopped at the East New York mine the water has been constantly rising in the mine. On Monday, the 31st of October, a serious cave-in occurred which may be the means of preventing further work there should the company be reorganized. This property is going to wreck fast. Tuesday,

the 1st November, was the day set for final settlement with the men for their two months' work during the summer.

(From our Special Correspondent.)

**Lake Superior Iron Company.**—Large development work is now going on at section 21, three miles south of Ishpeming. Upon a row of three "fortys," running east and west, the Winthrop Hematite Company had been mining ore for years, until they had worked the body out up to the line, leaving stopes of first-class ore, 80 to 100 ft. high extending the length of the mine belonging to the Lake Superior Company. The three compartment shafts, now down 300 ft., have been started about 1,000 ft. north of the Winthrop open pit and probably 1,000 ft. apart. Work now is stopped owing to the erection of shaft houses and the building of a large four-drum double-engine electrical hoisting plant, with boiler and other necessary outbuildings.

From a mining standpoint, the work of sinking and mining here as it progresses will be of great interest as it will demonstrate the truth or falsity of the idea of all bodies of iron ore being mere bodies or lenses and not, as some think, true massive veins. At any rate the true bottom of our deposits of ore has not yet been reached in any of the mines in very nearly fifty years of mining. Five hundred feet will have to be passed before the ore is reached. This will be all the way in Jasper rock, highly schistose and containing 40% iron. Often seams of rich ore from 1 to 10 in. in thickness and very soft, are passed. As the Winthrop has mined out the ore to at least 500 ft. deep, these shafts are perfectly dry.

Nearly 2,000,000 tons more iron ore have been shipped so far this year than in 1891 from upper lake points, and 1892 will probably be the second largest year in point of production, in the history of iron mining on Lake Superior. Perhaps equaling the famous year 1890 when shipments aggregated over 9,000,000 tons. From 1877 when shipments first passed 1,000,000 tons, to 1890, there was a constant increase, but in 1891 there was a falling off owing to limited demand, but there is no doubt but that the great ore producing basin of Lake Superior will be able to furnish in 1893 14,000,000 tons of ore, all of which will yield over 50% metallic iron, and when the phenomenal Mesaba Range is developed, the output can be enlarged beyond this.

**Lake Angeline.**—The pumps were started on the 28th inst., afternoon, and if no further drawbacks are experienced the water can be removed in three days. During the last 36 hours when the pumps were working, the water was lowered 2 ft. On account of the length of the lift the pump is not run at full speed, raising only about 12,000 gallons per minute, or half its capacity. The water in the deepest place is 7 ft.

**Iron—Menominee Range.**

**Buffalo Mine.**—General Manager T. F. Cole of the Schlesinger mines at Negaunee, states that in this mine as new lense of ore has been struck.

**Chapin Mine.**—The foundation of the new haulage engine house at D shaft, Chapin mine, is completed, and the construction of the building is being pushed as rapidly as possible. The system to be operated from this point will be underground and overhead haulage from D shaft. The machinery for the new building will be moved from another portion of the mine.

**MINNESOTA.**

**Iron—Mesaba Range.**

**Minosin Iron Company.**—E. J. Longyear has just made some finds of high grade ore on the lands of the Minosin Iron Company, which is an offshoot of the North Star Iron Company. The lands were bought of A. M. Miller, the Duluth lumberman, two years ago and, with others, cost \$400,000 in cash. Mr. Longyear has an option for a lease of the property from the North Star company, and will probably develop.

**Iron—Vermilion Range.**

The shipments of Vermilion range ores for the season ending October 19th, 1892, were as follows: Minnesota, 433,869 tons; Chandler, 593,596; Pioneer, 2,625; Zenith, 11,046, making a total of 1,041,136 tons.

A mine leased from William C. Boyd to the Virginia Iron Company was filed on the 29th of October. Explorations are to be carried on and the mine is to be worked to its fullest capacity. A royalty of 30 cts. a ton on all ore is to be paid to the C. N. Nelson Lumber Company, owners of the fee simple.

**Homestead Iron Mining Company.**—The directors of the Homestead Iron Mining Company held a special meeting on the 26th to consider the proposition made them by the Standard Ore Company to lease one forty. The proposition was accepted and the deal will be closed at once. The terms are \$5,000 advanced royalty, 30,000 tons annual minimum output at 40 cts. a ton. The Homestead people are considering an offer to lease another forty of their property.

**MONTANA.**

**Cascade County.**

**Boston & Montana Consolidated Copper and Silver Mining Company.**—H. R. Cawfield, of Pawtucket, R. I., since the 10th of October, has been drawing plans for the sulphate of copper plant

to be worked in connection with the electrolytic plant at the smelters, now in course of construction. The building will be 100 ft. long by 45 ft. The capacity of this plant will be ten tons of sulphate of copper per day. The house will accommodate three of the largest dynamos for electrolytic work in the United States, having a capacity of 250 H. P. Two of the above have arrived and the third is expected in a few days. There will be fifty or sixty men continually employed at these works which will be ready to begin operations in sixty days.

**Lewis and Clarke County.**

**Montana Company, Limited.**—Mr. Rawlinson T. Bayliss, managing director of this company, says in a letter to the stockholders: "Although the work accomplished in the 1,600-ft. level to the date of the fire did not result in the discovery of any bodies of ore of noticeable extent or value, the general appearance of the vein in that level, and conclusions fairly drawn from the indications presented, fully warrant, and in my opinion, render imperative, the sinking of No. 1 shaft to greater depth, and the vigorous development of this level longitudinally in both directions. As funds would permit, we have given effect, as speedily as possible in the past, to the recommendations of the company's expert advisers, to prosecute our developments in depth in order to discover the ore deposits which in their judgment will be found deep in the body of the mine, and it would seem to me like hesitating on the eve of success to delay further work in this direction at a time like the present, when the indications for and prospects of success are so much more encouraging than they have been for the past four years, and when there is good reason forced upon us for the belief that the expectations and opinions of our advisers may shortly be realized and fulfilled. My remarks concerning the 1,600-ft. level and No. 1 shaft apply with equal emphasis to other points in the mine awaiting exploration, with which you are familiar. I need not enumerate them herein, and if we are enabled to carry out expeditiously the development of the mine at these points, there seems little room for doubt that it will fulfill the expectation of future prosperity and continued productiveness in depth, which has marked the opinion of each mining expert who has visited and examined your property. Notwithstanding all the drawbacks of the past half-year, very favorable results were accomplished from the limited amount of development work executed, affording the strongest evidence of the large increase in our supply of profitable ore, which will attend the future exploration of the mine, if it is carried out upon a scale approximating that outlined in the foregoing remarks."

**Park County.**

Three Crawford mills have arrived at Big Timber for Boulder Camp, two of which will be erected on the Poorman mine and the third will be used for custom work.

**Silver Bow County.**

**Blue Bird Mining Company, Limited.**—Montana papers state that experts have been examining this property but it is thought will report unfavorably. W. M. Kellar, the former general manager of the company, is still at work endeavoring to straighten out things. During the past week he has been in consultation with the agent of the Russell luviviation process. The company's attorney left for Boston during the week to have a consultation with Mrs. Van Zandt.

**Colorado Mining and Smelting Company.**—This company has added new improvements to its smelter and concentrator. The improved calcining process now in use is said to be superior in every respect to the Bruckner. The output now exceeds that of any previous record. It is said the ore is mostly obtained from the Gagnon and National. A large amount of custom ore is also worked.

**Glengary Mining Company.**—The workings of the Glengary, north of Walkerville, are filled with water. The shaft on the property was sunk to a depth of 450 ft., and, although a large quantity of ore was extracted from the vein, it is said that nothing save barren rock remained when work was suspended.

**Moulton Mining Company.**—Good strikes of ore have been made there within the last week on both the 200 and 500 levels, and Superintendent Clark is confident again that the main lead for which they have long been looking has at last been encountered. In a stope about 80 ft. above the 500, and 300 ft. west of the crosscut, there is 5 ft. of ore that averages from 25 and 35 oz. and seems to be growing richer.

**Ophir.**—At this mine drifting is still in progress on the 300 level. As the vein is explored it grows richer, the 20-in. pay streak showing the richest ore yet encountered in the mine. The crosscut on this level is now in 387 ft. from the shaft. Manager Lamson states that enough ore is exposed now to insure steady operation with the present force for four years hence.

**Parrot Copper Mining Company.**—At the Parrot all the converters have been closed down about a week, as is also one of the blast furnaces. The latter is being repaired. Three new converters are being built, and these with three others will be started up in about two weeks. There are twelve in all. The other departments of the smelter are being operated full blast. At the company's mines considerable work is also being done. The Moscow

which up to a few days ago had been closed down about six weeks, is yielding about 60 tons of ore per day. Sinking is in progress at the Little Mina, another of the Parrot claims. The Parrot and Virginus are both in operation and are producing a large quantity of good ore.

**Societe Anonyme des Mines de Lexington.**—It is reported that work has been suspended below the 800-ft. level. The ore now being custom ore and that from the upper levels.

**NEVADA.**

**Lincoln County.**

(From our Special Correspondent.)

**The Keystone Mine.**—This property was located in 1888, and is six miles east of the California line. Little work was done until this summer, when C. O. Perry and other San Francisco capitalists purchased it and began active work. The first shipment of ore sold for \$716 per ton at Pueblo, Colo., and the second shipment will average \$800 per ton, some of it ranging as high as from \$1,000 to \$2,600. Such a showing promises well for the future when it is remembered that the shipments being made are not from specially selected ore. Unfortunately the nearest railroad point is Ferner, Cal., on the Atlantic & Pacific Railroad, 80 miles distant, and consequently work, etc., etc., has not been carried on as extensive a scale as might have been desired.

**Storey County—Comstock Lode.**

**Alpha Consolidated Mill and Mining Company.**—The annual meeting of this company was held in San Francisco on the 25th ult. with 89,000 shares represented. The old managers were unanimously re-elected, the directors being Charles Hirschfeld, A. K. P. Harmon, Thomas Anderson, A. W. Jackson and C. C. Harvey, with Charles Hirschfeld, president; A. K. P. Harmon, vice-president; Charles E. Elliot, secretary, and A. C. Hamilton, superintendent. The company has a cash balance of \$7,443 on hand, with \$1,000 to be collected on the pending assessment.

**Hale & Norcross Mining Company.**—The defendants in the case of M. W. Fox vs. the Hale & Norcross Silver Mining Company filed with the county clerk their appeal bond in the sum of \$2,030,000, October 25th. The bond was furnished by the Western Surety and Guaranty Company. Major Charles P. Egan, one of the mining company, was to-day exempted from the operation of the decision, as it was shown that he was in New York during the trial and was not served with a summons.

**Overman Mining Company.**—The latest official weekly letter says: "Extracted 412 tons and 1,775 lbs. of ore. Car samples average \$20.33 per ton. Shipped to Vivian mill 336 tons and 1,970 lbs. of ore. In the mine no changes have taken place."

(From our Special Correspondent.)

The following is the weekly tabulated statement of ore hoisted from Comstock mines and milled, with the car and battery assays, hullion and shipments, etc.:

| Mine.                 | Tons hoisted. | Av. car sample. | Tons milled. | Av. battery assay. | Bullion product for week. | Bullion at Oct. |
|-----------------------|---------------|-----------------|--------------|--------------------|---------------------------|-----------------|
| Con. Cal. & Va.,..... | 975 27.11     | 980 22.64       |              |                    |                           | 118,253.76      |
| Overman.....          | 412 20.33     | 336             |              |                    |                           |                 |
| Potosi.....           | 379 20.69     | 400 19.96       |              |                    |                           | 584 lbs.        |
| Savage.....           | 140 26.53     | 450 19.19       | 6,202.25     |                    |                           | 367 1/2 "       |

<sup>1</sup>Total to Oct. account \$36,554.31 <sup>2</sup>Cars. <sup>3</sup>Crude Bullion.

The Western Guaranty and Surety Company, which went on the bonds of the defendants in the suit of M. W. Fox vs. the Hale & Norcross Mining Company et al., was incorporated in July last after the verdict was rendered by Judge Hebbard. The officers of the corporation are well known, Isaac Regua and Walter E. Dean. The former was, years ago, superintendent of the Chollar mine, when A. K. P. Harmon, Hayward's president, was controlling the affairs of the mine according to order. At the same time Dean was secretary for several of the mining schemes in which Hayward was at that time interested. As the newly-formed Surety and Guaranty Company has, it is reported, not done a stroke of business since its incorporation, under the laws of the State of California, in July, until it went surety for these, Hale & Norcross defendants, it is scarcely to be wondered at that the business standing of this embryo corporation should be viewed askance. The company was incorporated with a capital stock of only \$100,000, and has not even thought it worth while to open an office.

The plaintiffs in the suit have, accordingly, objected to the bond and to the sufficiency of the sureties upon it. They score the Western Surety and Guaranty Company as follows: The Western Surety and Guaranty Company is a corporation organized by the defendants in said action, not for the bona fide purpose of doing a legitimate business under the laws of the State of California, but for the sole and express purpose of furnishing an undertaking on appeal in said action, enabling the defendants to evade the provisions of the laws requiring the giving of a good and sufficient undertaking on appeal sufficient in amounts to stay the execution of the payment in said action. Said Western Surety and Guaranty Company has a paid up capital of not more than \$100,000, and has no other assets or property; and the promises and undertaking of said company to pay a judgment of more than \$1,000,000 is a roaring farce and a wicked, despicable attempt

to violate the laws of the State under and by virtue and by permission of which it exists. Such a bond is a "straw" bond, given knowingly and wilfully, and it is the duty of the Attorney-General of the State to at one institute proceedings to forfeit the charter of said company.

What the next move of the defendant may be remains to be seen. It was understood that some help was to be obtained from New York in the way of giving bond, but that has fallen through, and as it can scarcely be believed that a fraudulently conceived trust company having only \$100,000 will be accepted on a bond for over \$2,000,000, the situation is becoming interesting.

Consolidated California & Virginia Mining Company.—President Fish in his annual report has given statistics showing the bullion product of the mines composing the present corporation. With the additional items showing the assessments levied during the same period of time, the information is herewith tabulated:

| Mine.                 | Assessments. | Dividends. |
|-----------------------|--------------|------------|
| California. ....      | 1,404,000    | 31,320,000 |
| Con. Virginia. . . .  | 1,155,900    | 42,930,000 |
| Con. Cal. & Va. . . . | 168,000      | 3,682,000  |
| Total. ....           | 2,667,900    | 77,932,000 |

| Bullion Product Mine. | Gold.         | Silver.       | Total.         |
|-----------------------|---------------|---------------|----------------|
| California. ....      | 23,395,270.01 | 25,473,804.97 | 48,869,074.98  |
| Con. Virginia. . . .  | 29,377,441.91 | 36,234,233.14 | 65,611,675.05  |
| Con. Cal. & Va. . . . | 8,209,145.00  | 9,355,643.06  | 17,564,788.06  |
| Total. ....           | 60,981,856.92 | 69,063,681.17 | 130,045,538.09 |

While this is a statement of the product, as made public from time to time, it is, of course, only approximate. The grand total can only be arrived at by remembering that the immense quantity of ore extracted was worked on the Comstock, or looting system, and therefore it is only by taking the above total of bullion produced, plus the fortunes of the three or four millionaires who have guided the destinies of these mines, that a true accurate showing can be arrived at.

## PENNSYLVANIA.

### Coal.

The mining village of Newbuck Mountain, belonging to the Mill Creek Coal Company, was entirely destroyed by fire on the 31st ult.

The Schuylkill Coal Exchange, in calculating the wages of miners and laborers of the Schuylkill region for the last half of October and first half of November, have fixed the rate at 8% above the \$2.50 basis. This is an advance of 2% over last month's wages.

Philadelphia & Reading Coal and Iron Company.—This company's financial statement for September, 1892, shows gross receipts of \$1,902,648.56; gross expenses, \$1,683,701.20, (which includes operating expenses, \$1,585,494.71; colliery improvements, \$95,728.99; expenditures for permanent improvements, \$8,477.50); leaving a profit from mining of \$212,947.36. From this is deducted \$68,000 as one-twelfth of the current year's fixed charges, thus showing a surplus for the month of \$144,947.36, an increase of \$69,672.09 compared with September, 1891. The deficit for ten months of the current fiscal year is \$125,870.63. The deficit for the corresponding period of the last fiscal year was \$651,601.

The result of the operation of the Philadelphia & Reading Railroad Company, lessee of the Lehigh Valley Railroad, for the month of August, 1892, shows receipts of \$1,584,769.77; expenses, 1,600,146.49, leaving earnings of \$448,523.28, an increase of \$41,147.49 compared with the month of August, 1891. For nine months ending August 31st, 1892, the earnings were \$3,250,210.58, an increase of \$859,479.25 compared with the same period of the preceding fiscal year.

### Oil.

There are 157 new wells completed in the Pennsylvania fields during October, 34 of which are dry. The new production was 8,823 bbls. This is a decrease of 11 wells and 2,466 bbls. production from last month's report. The work under way consists of 117 rigs and 245 wells drilling, an increase of 30 over September. In northeastern Ohio (Lima oil fields) 174 wells were finished, with 13,782 bbls. production. The dry holes numbered 34. Compared with September, there is an increase of three wells and 874 bbls. production. New work shows a decline of 15, there being 112 rigs and 114 wells drilling under way on October 31st. The Indiana fields completed 52 wells, 18 of which were dry. The new production was 4,155 bbls.; new rigs, 31; wells drilling, 23. Compared with September, there is an increase of 27 wells completed, 2,010 bbls. production and of two rigs and drilling wells.

## SOUTH DAKOTA.

### Lawrence County.

Troy Mining Company.—It is reported that this property has been purchased by Mr. Thomas H. White for the syndicate which he represents, and which has bought so many properties recently.

## UTAH.

### Piute County.

(From our Special Correspondent.)

Dalton Gold Mining and Milling Co.—It is reported a rich strike has been made on this property in the drift which was run in at 200 ft. from the mouth of the lowest tunnel to get below the shaft in tunnel No. 1. From this shaft a large quantity of rich ore was extracted over a year ago, and about a month or six weeks ago a contract was let to have the drift in the lowest tunnel continued to the shaft line. There remains about 190 ft. yet to run before that line will be reached. Indications point to the fact that a rich body of gold ore has been encountered but its extent cannot be ascertained until more progress has been made in the drift.

During some months past continuous dead work has been done on this property, mostly in the lowest tunnel and drift. In order to cut the vein at a lower level. The lowest tunnel was run straight in for a distance of 375 ft., when work was stopped at that point and the contract let for the continuance of the drift. The contract provided that should ore be struck work should be discontinued and the management at Salt Lake City notified immediately. On receipt of a telegram that ore had been encountered the general manager of the company started for the mine. If the ore in the new strike proves of the same value as that in the shaft of tunnel No. 1, this property has undoubtedly a very bright future. Some weeks ago a concentrator was set to work on the tailings of the mill of the company. These tailings assayed about \$18 per ton in gold, of which about 82% was saved. Owing to the lack of water the concentrator had to be stopped, but it will be put in operation again early in the spring when the mill will also be started up. The mill is located in Bullion Cañon about three miles, by trail, from the mine.

### Tooele County.

(From our Special Correspondent.)

Post & Haven (Cane Springs Mining Company).—Mr. M. E. Post states this company has been operating its mills about two months. Owing to the scarcity of water only three of their six Crawford mills are now at work, but as each mill has a capacity of 10 tons they are working about 30 tons of ore per day, which will be increased as soon as a larger supply of water is obtained. The mine and mill are located in the Clifton Mining District, Tooele County. The property contains 29 claims with gold ore containing some copper, also six silver and lead claims and two copper claims. The mill is the first plant put in operation in this district. The present mill is experimental, but when a larger supply of water has been obtained, which may have to be piped a long distance at considerable expense, a much larger plant will be erected. The present supply of water comes from Cane Springs, distant about one-half mile, excepting some water that is obtained from a shaft 30 ft. deep and a tunnel 200 ft. long and which is pumped to about 150 ft. above the mill to a series of tanks. The pump which elevates this water has a capacity of 60,000 gals. per 24 hours. It is stated that the Crawford mills on this property during the two months they have been in operation have saved over 90% the assay value of the ore.

## WASHINGTON.

### Slocan District.

S. H. Cross, a well known mining man in the Colville and Okanogan mining country, who has recently been operating in the Kaslo country, came down from that district last night.

James F. Wardner has bonded the Idaho mine for \$20,000. The ore in the property runs \$150 to \$200 in silver, and 60% lead. The ore body is large, and already there is enough in sight to pay for the property, it is claimed. It is located near the forks of Carpenter Creek, and so far very little development work has been done. On the Freddy Lee mine the ore is growing richer, it is said. At present the assays run \$150 in silver and 70% lead.

## WYOMING.

### Fremont County.

(From an Occasional Correspondent.)

The John A. McConnell & Co. asbestos properties on Casper Mountain are being developed on an extensive scale. The company owns about 120 acres of asbestos lands. They propose to develop the property on the same plan that a silver mine is worked, and not in an open quarry as done at Thetford, Canada. In working the mine in this style the owners hope to escape handling so much waste matter.

At the present time the company has 12 men at work sinking a main shaft. Capt. A. A. Findlay has charge of the work.

Edwin S. Murphy, of McKeesport, Pa., bought 12 claims on the Mountain the past week at an average price of \$800.

The Bell Manufacturing Company of Glasgow Scotland, has an expert and a capitalist here looking over the property. It has not yet invested. Hogadom & Co., are working their claims by an open cut and have struck a deposit of Asbestos bearing rock over four feet wide.

Reuben Hiney, in digging a prospect hole, struck a 3-in. fibre of asbestos. It is white as snow and has strength superior to the darker colored asbestos. Very little work has been done on this claim, but it promises well.

Capt. Eads has interested some Chicago capitalists in his claims and they propose to work their properties, not so much for the clear asbestos as for the

asbestos bearing rock, of which they intend to make a plaster for fire-proof buildings.

The prospects of the Casper Mountain Camp never looked better than now. The camp is going to hold a meeting to ask Congress to put a duty on all kinds of asbestos and to make such laws as will tend to the development of the camp. The firms working on Casper are paying \$2.50 and \$3.00 to their head men. Our asbestos is equal in all respects to the foreign article and there is no reason why we should not supply the domestic demand and figure extensively in the foreign markets.

## FOREIGN MINING NEWS.

### AUSTRALIA.

(From our Special Correspondent.)

#### Silver.

The strike in the silver mines at Broken Hill continues. About the 15th August a "Government Gazette" notice was issued to the effect that the labor clauses of the Mining Act had been further extended for a month, or to the 14th September. A week or so later the Directors of the mines issued a notice that miners would be engaged and the mines opened for work on the 25th August. The old rates of wages were adhered to, but a clause said that parties desirous of taking contracts for stoping could do so. A mass meeting of the miners decided that these terms should not be accepted. A meeting of the wives, sisters and daughters (numbering between 4,000 and 5,000) was held in the reserve, and resolutions were adopted that the women should support the men in resisting the employers to the bitter end; that the women would undertake picket duty if required; that any married woman whose husband wants to work should take steps to procure a divorce, and that the single women should not speak to or recognize (much less marry) any single man who went over to the enemy. The mines were thrown open on the date named, and there are now in the Proprietary Mine about 170 men, and in the other 10 mines from 20 to 50 men each (or about 450 men altogether). These have been housed in the mines and their food taken to them. They have been employed in cleaning the machinery, concentrators, smelters, etc., and fixing up the timbering in the shaft, drives, and in such other work as was necessary. In some cases the fires have been lighted, some pumping done, but it is not intended to attempt to start mining for a week or so, when it is hoped that more men will be available. The strike so far has been conducted in a peaceable manner, only one or two assault cases having been reported. The end of the strike is probably not far off. The large fall in the price of silver is said to have had a strong influence, and the possibility of free coinage being stopped in the United States is also having some effect. The mine directors say that the shareholders will not lose much by the stoppage of work for a time, as keeping off the large amount of silver produced at Broken Hills for a few months will probably have some influence in steadying the market. They only require to have as many men at work as are necessary to comply with the labor conditions, and they can then wait patiently until the strikers exhaust their funds and sue to be taken on at any terms. In the meantime the funds do not show any signs of failing. The labor unions all over the colonies are contributing liberally, and it is quite possible that very little work may be done for some months. On the other hand, Mr. Bill Adams, a former manager of the Junction mine, addressed the men and advised them to go to work, and, as he was listened to quietly, it is supposed that there are a number of the men who are tired of loafing, and if those of this mind increase in number a ballot may settle the dispute at any moment.

#### Copper.

The twenty-first half yearly report of the Nymagee copper mine shows that 4,435 tons of ore were smelted for 406 tons of copper; 411 tons of copper were sold at an average of £45 2s. 3d. Since the formation of the company £94,000 have been paid in dividends, but the directors, in view of the low rate at which copper is being sold, could not advise the shareholders to continue work. The report was adopted, and was resolved to close the mine for a time.

#### Cobalt.

The Carcoar Cobalt Company has 100 tons of ore at grass, which will be shipped to England as a trial shipment. The lode formation is 12 ft. wide, and consists of feldspar rock intermixed with country. The lode has been traced to Dodd's treehold, where several tons have been raised.

## BRITISH COLUMBIA.

Henry Croft, M. P., of British Columbia, has spoken as follows concerning the projected Canada Western Central: "The road will be built from Victoria to Seymour Narrows on Vancouver's Island, and from Bute Inlet, on the mainland, through the Chicotin, Carihoo and Peace River countries to the Yellow Head Pass, a distance of 1,045 miles. The estimated cost will be offset by the sale of 18,940,000 acres of land at an average of \$2.27 an acre, which aggregates \$43,122,500. To this may be added the subsidy of the dominion government, 1,045 miles at \$3,200 a mile. This added to the product of the land sale gives the total assets \$46,466,400. Furthermore the provincial government has guaranteed from \$6,000,000 to \$10,000,000 on the sale of bonds. Victoria guarantees dividends on \$2,000,000 of stock and donates the company land and terminals worth



\$1,000,000 more. To show the interest the dominion government has taken in the enterprise, I will state that it surveyed over 500 miles of the route free of cost." This railroad will undoubtedly open up a mining country both rich and virgin.

**BRITISH GUIANA.**

The last fortnightly shipment of gold on October 5th from British Guiana amounted to 5,991 oz. valued at \$105,997 by the British steamship "Dee," and 112 oz. by the French steamship "Salvador." This brings the total output of gold for the year to 94,090 oz. valued at \$1,695,261.

**BURMAH.**

The tin-bearing deposits in Burmah are, according to Mr. H. Warth, of the Government Central Museum, Madras of two kinds: First, there is the tin gravel which is found in all or most of the valleys, a mixture of rough white quartz pebbles with sand, garnet, black tourmaline, and grey cassiterite. The thickness of the gravel varies from 1 ft. to 6 ft., and the yield of cassiterite may be put down as at least 1/4% or 1 lb. of cassiterite—tin dioxide—in 400 lb. of gravel. There are washings going on at many places, but some valleys have been more or less exhausted. The work suffers also under the disadvantages that the greater part of the country is quite uninhabited, that food has to be brought from a distance, and that there is always danger of sickness. Chinamen are the chief workers. The second kind of tin-bearing deposit is the original eruptive rock, which is weathered so that it is possible to wash out the grains of whiteish cassiterite which it contains. Mr. Warth visited the principal deposits of this kind near Malewun in July, 1891. The yield is only 0.04% of impure wash tin.

**FRANCE.**

The miners on strike at Carmaux have concluded, after consultation, to accept the terms of arbitration and resume work at once. This decision was hastened by the fact that the non-union miners were determined to go to work any way, and that a large number of non-unionists from Belgium and elsewhere were prepared to take the places of the strikers.

**MEXICO.**

**Sinaloa.**

(From our Special Correspondent.)

Candelaria Mining Company.—A shipment of hullion, valued at \$50,000, has been received at the San Francisco office.

Teresa Mining Company.—A meeting of the stockholders was held in this city this week at which it appeared the affairs of the company are in a chaotic condition. Alexis S. Cheminant was the secretary until two months ago, and A. J. Taylor, an expert, who had been employed to assist two directors in an examination of the books, did not add credit to the reputation of the former secretary in his rather startling report. According to Mr. Taylor's report erasures were found in the stock books, and discrepancies existed between the assessment roll and cash book in amounts varying from \$5 to \$325. In the stock book was found a stub for a stock certificate, which showed on its face that the stock was cancelled, but as the certificate itself is missing there is no means of knowing how many shares it represents. Vouchers fail to tally with the cash book, and the latter shows payments to which receipts were even not made for months subsequently. The actions with the company's agents at Sinaloa, Mexico, are badly tangled, and generally lumped under expenses. Mr. Taylor reported that he had only superficially examined the books, and recommended that the work be done thoroughly. The following Board of Directors were elected for the ensuing year: C. F. Hanlon, J. H. Cosgrove, C. A. McPike, H. H. Johnson and J. H. Struckmeyer. At a meeting of the directors it was decided to have a thorough investigation made, so as to learn where the money of the company has so mysteriously disappeared to during the past two years.

**NOVA SCOTIA.**

**Coal.**

(From our Special Correspondent.)

The past season in Cape Breton has seen the shipments to Montreal well maintained. The mildness of the past winter has greatly lessened the local sales, and the St. Johns fire has lessened the amount usually taken in Newfoundland. The shortage from these causes will, it is expected, reach 50,000 tons. The patent fuel plant at Cow Bay has resumed work. The Gardener and Emery mines have now been fully opened out for mechanical coal cutting and are giving a steady output.

In Pictou County work has been fair, except at the Intercolonial, where their output will be 182,000 tons. The total output for the district will be about the same as last year. All the mines have been improved during the past season by the addition of new rope haulage, pumps, screens, etc.

In Cumberland County work is fair. A new company, called the Canada Coal and Railway Company, has taken over the Joggins, Patriek and Milner mines, and controls in all about 15 square miles of territory. The Springhill mines have their new haulage plants in operation, and are removing a large number of horses from their pits.

Iron Mining.—The furnaces at Ferrona and Londonderry are running steadily. A new battery of copper ovens is being built at Ferrona, as the company will in future make all their own coke.

**Gold.**

This industry continues dull. At Seal Harbor a very promising lode, about 6 ft. wide and running between \$10 to \$20 to the ton, is being opened up. At Montagu the Nova Scotia Mines Company are putting the old Armand and Kaye mines in shape. The quartz continues to yield well, the result of the last six weeks' work being reported to be 400 oz., with the mine only partially working. The Thompson mine at South Uniacke returned for September 160 oz. from 20 tons of rock. Work continues steady at Malaga, Moose River, and Fifteen Mile Stream.

**SOUTH AFRICA.**

The British South Africa Company have received the following report from their representative at Salisbury, dated August 2d: "Mr. Griffith, Mining Engineer of the De Beers Syndicate, has reported a valuable discovery of nitrate near Mount Darwin, Mashonaland, in the direction of the Hanyani River. The deposit which consists of pure nitrate of potassium, lies in beds varying in thickness from 3 to 20 ft., and extending over an area of some 20 miles. He has also discovered a rich bed of plumbago in the same neighborhood; this latter lies in the alluvium, but is very pure, and he says there is a sufficient quantity to be worked for 50 years. Dr. Jameson considers that both these discoveries will prove of value when the railway opens up communication with the coast."

**STRAITS SETTLEMENTS.**

(From our Special Correspondent.)

The oil field in the Northern part of the Island of Sumatra, in the State of Langkat, with a seahoard on the Malacca Straits, has recently become very productive. English and Dutch capitalists gained concessions from the Dutch Government, but so far only the latter have got to work. With a beginning, made over during the past year, the product now ranges from 15,000 to 20,000 cases per month, and is steadily increasing. Concessions have been granted for 320 square miles of what has been pronounced very rich oil-producing territory, and has the advantage of being on the seahoard, with an excellent harbor, thus very materially reducing the cost of handling the product.

**TRANSVAAL.**

Once again the Witwatersrand region has distanced all previous records, the return for September showing that 107,851 oz. of gold were produced at the mines. These figures exceed those for August by 5,521 oz., and are more than 4,500 oz. greater than the so-called phenomenal output in June last. Calculated at £3 10s per oz., the value of the yield amounts to £377,479, a total representing considerably over four and a half millions sterling per annum. That a million ounces will be largely exceeded for the current year is now a foregone conclusion. Already the production reaches as nearly as possible 875,000 oz., and three months returns have yet to come. The steady progress made at the mines is best shown by comparing the September output for five consecutive years: 1888, 20,495 oz.; 1889, 34,363 oz.; 1890, 45,466 oz.; 1891, 65,602 oz., and 1892, 107,851 oz.

**MINING STOCKS.**

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, Deadwood, S. Dak.; St. Louis, Helena, Mont.; London and Paris, see pages 454 and 456.]

**NEW YORK, Friday Evening, Nov. 4.**

The mining market has been very quiet during the week. With the exception of Phoenix of Arizona no great interest was taken in any of the stocks. The presidential election seems to occupy the minds of the brokers who have wagered a greater amount of money on the result than has been invested in mining stocks for many a day.

The Comstocks were without any intrinsic interest this week. Consolidated California & Virginia underwent sales of 620 shares at \$2.95@3.40; the last sale was made at \$3. Comstock Tunnel stock shows sales of 3,100 shares at 11@12c.; of the bonds of this company we note sales of \$13,000 at 16@17c. Other sales of Comstock stock were as follows: 100 shares of Gould and Curry at \$1; 100 shares of Hale & Norcross at \$1.40; 200 shares of Ophir at \$2.55@2.60; 200 shares of Savage at 75@1.30 (the last figure with assessment paid); 400 shares of Sierra Nevada at \$1.20@1.45; 300 shares of Yellow Jacket at \$1.05@1.10; 200 shares of Consolidated Imperial at 14c.; 100 shares of Mexican at \$1.50; 200 shares of Scorpion at 30c., and 200 shares of Union Consolidated at \$1.20@1.25.

Among the Tuscaroras there was a sale of 500 shares of Belle Isle at 15c. No other stock was dealt in.

The California stocks were rather quiet. Of Brunswick Consolidated the sales officially reported amounted to but 1,000 shares at 12c. on the 29th ult., and no other sales were reported this week. Of Bodie Consolidated 400 shares changed hands at 30@31c. At the close to-day 300 shares of Bulwer Consolidated were sold 30c.

Of the Colorado stocks we note sales of 250 shares of Chrysolite at 15c.; an account of the annual meeting of this company will be found in our mining news column. Sales of 300 shares of Entreprise at \$3.75 are reported. Leadville consolidated was quiet during the week; sales amount to but 500 shares at 16c. There was a solitary transaction of 200 shares of Robinson Consolidated at 35c., and another of 200 shares of Breece at 40c.

Of El Cristo there were sold 300 shares, of which

100 shares were sold at the New York Stock Exchange at 22c., and the remaining 200 shares at the Consolidated Exchange at 35c. In addition to these, 3,000 shares were sold at auction on the 3rd inst. for 20c. a share. The latter sale has occasioned considerable comment on the Exchange, but we are in a position to state that the sale did take place.

Of the Black Hills' stocks there were sales of 150 shares of Caledonia at 85c. to 90c.

The property of the San Sebastian Gold Mining Company, as exclusively announced in our last week's paper, was sold at auction on the 31st ult. It was bought in by a committee of bondholders representing about \$136,000. The price was \$500, subject to a mortgage of \$40,000. We are informed that the Atlantic Trust Company, to whom the mortgage was executed, has sent down an engineer to the property, and that as soon as the buyers get clear title, active operations will commence at the mine. Acting upon our suggestion last week the Committee on Mining Securities at the Consolidated Stock Exchange will take steps to strike the stock off the list when the period expires within which the stockholders may redeem the property.

Phoenix, of Arizona, was the most active stock in the list. During the week 7,000 shares were sold at 50@55c. Owing to the courtesy of the officers of this company we are enabled exclusively to publish some extracts from a statement to the stockholders signed by the president and issued just as we go to press. A full account of this will appear in our next week's issue. Doubtless, the stockholders cannot fail to be pleased at the receipt of so complete a statement of the work already done as well as of that contemplated. Says President Chamberlain: "Owing to the fact that the mill owned by your company, consisting of 30 stamps operated by steam power, was too small to crush sufficient ore and was necessarily operated at too high a ratio of expense, about 18 months ago it was resolved to suspend operations until the mill could be enlarged and the property placed upon a more practical footing. The failure of the mine to pay had resulted in the accumulation of debt and it became necessary to provide capital to purchase additional stamp power and enable your company to make use of the great water power which it controls in Cave Creek, thereby reducing the expenses of milling and amalgamating to a minimum and placing your company on the best possible basis, as regards the expense of its operations. Stamp mills with a capacity of 100 tons per day have been purchased and shipped and are now being erected upon the property. In addition to the large stamping plant your company has also purchased a complete concentrating outfit which is also being set up in connection with the stamps upon the property, and it is also provided with a chemical plant for the treatment of the concentrates under the ferrocyanide process which has been successful in the treatment of concentrates upon ore taken from this mine. The material for the completion of this new plant has all been purchased and paid for, and the work of erecting the same is proceeding with all possible speed. Within about 30 days your mines will again be in active and productive operation."

**Boston. Nov. 3.**

The speculative interest in copper stocks centers in Boston & Montana, which stock is said to be largely oversold, and the feeling in it continues to be bearish, although it is noticeable that whenever an effort is made to cover, the stock quickly recovers and the bears cease their efforts. The reports from the Centennial being of a favorable character there is a disposition to buy the stock, and as there is no great amount of it in the market at the recent prevailing prices it advances quite rapidly on good buying orders. Outside of these two stocks there is not much interest, although a few orders for investment in Calumet & Hecla and Tamarack serves to keep the market steady for these stocks. The Quincy Mining Company has at last been reinstated on the list at the Exchange, and dealings in it are now in order. The Quincy does not seem to have lost its prestige as a Boston favorite by its enforced absence, but is to-day a greater favorite than ever. Its prospects were never so bright as at the present.

The output of copper for the past month is nearly 200 tons more than that of a year ago and the price of the stock, viz., \$128 per share has not been exceeded for a long period. The dealings in Boston & Montana for the week foot up to about 10,000 shares, ranging from \$33 1/2 to \$31, with recovery to \$32 1/2 on to-day's sales. Butte & Boston has been inclined to weakness, selling down to \$8 3/4; and closing at 1/2 higher at \$9.

Calumet & Hecla dropped from \$290 to \$287, but fully recovered the decline in the later dealings.

Tamarack declined from \$157 to \$155, and rallied to \$158 on free buying.

Osceola has been inclined to lower prices and sold at one time to \$33. There was a better demand for it to-day, which carried it up to \$34, about the highest price for the week.

Centennial was very dull early in the week at \$7 1/2. Late advices from the mine indicated a much better outlook, which induced free buying of the stock, carrying it up to \$9 3/4 to \$9 1/2.

Tamarack, Jr., was also favorably affected by the reports from the Centennial, and advanced from \$21 to \$23 on the theory that the success of the Centennial tended to prove the value of the property of this company.

Dealing in Franklin and Kearsarge were on a limited scale and prices were not materially changed.

Atlantic sold at \$10 1/2, a decline of 1/2, and Wolverine at \$2, an advance of 1/2.

Arnold was steady but dull at \$1 1/4, and the same may be said of Allouez at \$1.

The dealings in Quincy were very light, only 7 shares being reported at \$126 to \$128, the latter price being bid for it and \$130 asked. We note a sale of Mesnard at 50c.; Napa Quicksilver at \$5 1/4, and Catalpa at 15c.

3 P. M.—At the afternoon call Quincy sold at \$129; Tamarack, Jr., at \$24; Centennial at \$9@9 1/4, and Tamarack at \$157 for 5 shares. Boston & Montana unchanged at \$3 1/4.

**San Francisco.** Oct. 23.

The excitement of election time is diverting interest from the mining stock market as well as other centres of business. During the week just ended, however, although prices are somewhat under those ruling a week ago, a steadier feeling has been noted. The middle group of Comstocks have received most attention, but the north enders, particularly Ophir and Mexican, have been in demand. There has been a dearth of news from the Comstock owing to interrupted trains, etc.

Of the north end Comstocks Consolidated California and Virginia sold to-day for \$3 05; Ophir for \$2.70; Mexican, \$1.35; Sierra Nevada, \$1.35, and Union Consolidated, \$1.20. All these prices are an advance on yesterday's ruling rates.

In the middle groups Potosi is rapidly clearing off its debt, and for that reason, probably, is receiving considerable attention just now. It ruled to-day at \$1.15, an advance of 15c. during the week. Hale & Norcross shared with Potosi most of the attention to this group of stocks, selling for \$1.45, showing at this price, however, no advance on the week's trading. Best & Belcher, at \$1.00, has sold very steady, and Gould & Curry, at \$1.00; Chollar, at 75c., and Savage, at 85c., have been in fair demand.

Some of the South End and Gold Hill stocks have shown signs of strengthening. Ore shipments will be resumed next week and milling commenced meantime, the selling price to day was \$2.55. Alta sold at 25c., Crown Point at \$1.45, an advance of 10c. on the week; Exchequer at 15c.; Justice at 10c.; Occidental at 15c. (a 25c. assessment levied during the week); Overman at 45c., and Yellow Jacket at \$1.15.

As usual, sales of outside stocks have been very light throughout the week. In the Bodie group Bulwer went at 25c.; Bodie 25c., and Mono at 25c.

Of the Tuscaroras no sales were made to-day, the quotations bid being: Belle Isle, 8c.; Commonwealth, 5c.; Grand Prize, 5c.; Nevada Queen, 5c., and Navajo, 10c.

The Quijatoa's are entirely ignored at present; Crocker 5c.; Peer, 10c., and Silver King, 30c. being bid only.

Of the miscellaneous stocks Eureka Consolidated was held for \$2.00, and Mt. Diablo for \$1.00.

The Comstock Pumping Association has levied another assessment aggregating \$25,000 upon the Gold Hill Companies, who are members, apportioned in amounts ranging from \$1,250 to \$3,750 per company. This is the seventeenth assessment and will have a tendency to depress the price of these stocks as the discount at the pumping operations is becoming very general.

SAN FRANCISCO, Nov. 4.—(By Telegraph.)—The opening quotations to-day are as follows: Best & Belcher, \$1.40; Bodie, 20c.; Belle Isle, 5c.; Bulwer, 20c.; Chollar, 65c.; Consolidated California & Virginia, \$2.80; Eureka Consolidated, \$2; Gould & Curry, 8c.; Hale & Norcross, \$1.20; Mexican, \$1.30; Mono, 25c.; North Belle Isle, 45c.; Ophir, \$2.45; Savage, 65c.; Sierra Nevada, \$1.10; Union Consolidated, \$1.05; Yellow Jacket, \$1.

**ASSESSMENTS.**

| COMPANY.                 | No. | When levied. | D't'nc't in office. | Day of sale. | Amt per share. |
|--------------------------|-----|--------------|---------------------|--------------|----------------|
| Atlas, S. Dak.           | 6   | Sept. 26     | Oct. 31             | Nov. 21      | .001           |
| Hullion, Nev.            | 40  | Oct. 29      | Nov. 24             | Dec. 14      | .25            |
| Brunswick Con., Cal      | 4   | Sept. 29     | Oct. 31             | Nov. 17      | .02            |
| Carra, Cal.              | 1   | Sept. 28     | Nov. 28             | Dec. 28      | 1.00           |
| C'm'n'we'lth Con., Nev.  | 9   | Sept. 7      | Oct. 13             | Nov. 9       | .10            |
| Con. St. Gothard, Cal.   | 6   | Oct. 13      | Nov. 17             | Dec. 7       | .05            |
| Crown Point, Nev.        | 58  | Sept. 15     | Oct. 20             | Nov. 10      | .25            |
| Dalton, Utah.            | 3   | Oct. 7       | Nov. 3              | Nov. 29      | .01            |
| Derbec Blue Gravel, Cal. | 10  | Sept. 14     | Oct. 17             | Nov. 7       | .07            |
| Eureka Con. D., Cal      | 5   | Sept. 19     | Oct. 24             | Nov. 14      | .10            |
| Exchequer, Nev.          | 34  | Oct. 28      | Nov. 30             | Dec. 20      | .10            |
| Golden Fleece, Cal.      | 18  | Oct. 10      | Nov. 16             | Dec. 7       | .800           |
| Jack Rabbit, Cal.        | 1   | Sept. 17     | Oct. 19             | Nov. 8       | .05            |
| Justice, Nev.            | 52  | Oct. 14      | Nov. 18             | Dec. 8       | .15            |
| Kentuck Con.             | 5   | Oct. 5       | Nov. 7              | Nov. 29      | .10            |
| Mexican, Nev.            | 46  | Oct. 13      | Nov. 17             | Dec. 7       | .25            |
| North Belle Isle, Nev    | 2   | Sept. 11     | Oct. 24             | Nov. 17      | .10            |
| Northwestern, B. C.      | 5   | Aug. 27      | Oct. 24             | Nov. 12      | .20            |
| Occidental, Con., Nev.   | 11  | Oct. 25      | Nov. 30             | Dec. 21      | .25            |
| Overman, Nev.            | 65  | Oct. 5       | Nov. 1              | Nov. 30      | .30            |
| Savage, Nev.             | 79  | Oct. 7       | Nov. 9              | Nov. 29      | .50            |
| Teresa, Mex.             | 9   | Oct. 25      | Nov. 29             | Dec. 16      | .10            |
| Tierakoff, Cal.          | 9   | Oct. 11      | Nov. 11             | Dec. 20      | .02            |
| Yellow Jacket, Nev.      | 52  | Sept. 5      | Oct. 7              | Nov. 10      | .25            |

**MEETINGS.**

Early Bird Phosphate Company, at the office of the New England Loan and Trust Company, Des Moines, Ia., November 16th, at 3 p. m.

Oswego Mining Company, at the office of Galen Spencer, Joplin, Mo., November 19th, at 9 a. m.

**DIVIDENDS.**

Mollie Gibson Consolidated Mining and Milling Company, dividend No. 28 of fifteen cents per share, 150,000, payable November 15th, at the office of the company in Colorado Springs, Colo. Transfer books close November 8th, and reopen November 16th.

Sierra Buttes Gold Mining Company, dividend of eighteen cents per share, \$22,050, payable at the office of the company in London, Eng.

**METAL MARKET.**

NEW YORK, Friday Evening, Nov. 4, 1892.  
Prices of Silver Per Ounce Troy.

| Oct. | Sterling Exch. g. | London, Pence. | N. Y. Cents. | Value of sil. in \$. | Nov. | Sterling Exch. g. | London, Pence. | N. Y. Cents. | Value of sil. in \$. |
|------|-------------------|----------------|--------------|----------------------|------|-------------------|----------------|--------------|----------------------|
| 29   | 4 85 3/4          | 39 1/2         | 85           | 650                  | 2    | 4 85 3/4          | 39 1/2         | 85 1/4       | 652                  |
| 31   | 4 85 3/4          | 39 1/2         | 85 1/4       | 652                  | 3    | 4 86              | 39 1/2         | 84 3/4       | 649                  |
|      | 4 85 3/4          | 39 1/2         | 85 3/4       | 653                  | 4    | 4 86 1/4          | 39 1/2         | 85 3/4       | 651                  |

\* Nov. 1.

Inquiry for bullion from London has been good, but the demand has been in large part supplied by the shipment of Mexican dollars, which are now ruling at about their hullion value. The Chinese demand, and the premium incident thereto, for these coins having fallen off as we approach the end of their season.

The United Assay Office at New York reports the total receipts of silver for the week to be 102,000 oz.

There were sold during the week ending Friday November 4th, 95,000 ounces in silver bullion certificates, at from 85 1/2 to 85 3/4 cents per ounce.

**Gold and Silver Exports and Imports at New York for Week Ending October 29th, 1892, and for Years from January 1st, 1892, 1891.**

|            | Gold.      |            | Silver.    |           | Excess of Exports. |
|------------|------------|------------|------------|-----------|--------------------|
|            | Exports.   | Imports.   | Exports.   | Imports.  |                    |
| Week...    | \$4,000    | \$244,152  | \$497,231  | \$352,237 | \$144,994          |
| 1892.....  | 59,185,937 | 7,530,136  | 17,728,750 | 2,674,416 | 66,710,145         |
| 1891*..... | 75,369,944 | 21,997,542 | 15,388,178 | 1,805,898 | 66,951,562         |

\* These figures are for the week ending October 22d, 1891. They will be brought to date in our next issue.

During the week ending November 5th, the exports and imports, so far as ascertained, have been as follows: Exports, gold, \$14,000; silver, \$308,710. Imports, gold, \$183,635; silver, \$17,636. All the silver exported went to London; of the total amount nearly one half was American. The figure here given as the total export of gold to date has been corrected to correspond with the record of the U. S. Assay office. A slight difference had appeared, owing to the confusion existing in the first half of the year in marking "gold shipped in transit."

An abstract of the report of the Director of the United States Mint will be found on another page. A recent despatch from London says that a census taken by the Institute of Bankers showed the silver coin held by the banks of the United Kingdom to be £4,548,775. Out of 4,587 banks but 92 failed to report. The aggregate of amounts given as being in excess of average requirement was £1,222,545.

The time of meeting of the International Silver Conference is now near at hand. It is announced that Secretary Foster has prepared the instructions, and that they are now in the President's hands. The instructions are in line with the President's views, expressed in his message to Congress. Delegates Cannon and Jones and the director of the mint, E. O. Leech, will sail from New York on Wednesday, November 9th. The remaining three delegates will meet in Washington, November 10th, for the purpose of receiving final instructions regarding the policy to be adopted by them. The position of secretary to the Conference has been offered to Professor Faulkner of the University of Pennsylvania, whose work in connection with the investigation of the effect of the tariff upon prices and wages before the Senate Finance Committee is well known.

The Belgian delegates include three monometal lists and one bimetalist.

A telegram from Rome, dated November 3rd, states that Messrs. Luigi Luzatti and Romero Simonelli, two of the three Italian delegates to the conference have resigned, as they are opposed to the policy of the government.

In England the Manchester India merchants continue their work of spreading the doctrines of bimetalism.

At a meeting held October 27th, the Hon. A. J. Balfour, first Lord of the Treasury under Lord Salisbury, said: "If I was given the unwelcome choice between a standard which has appreciated and a standard which has depreciated, but which has led to rising prices, I should choose the latter. The Government ought to interfere in this question." The coinage executed at the United States mints during October, was as follows: Gold pieces, 169,000, value, \$1,962,500; silver pieces, 4,910,000, value, \$1,340,000; minor coinage, pieces, 3,982,000, value, \$103,900; total coinage, pieces, 9,061,000, value, \$3,406,400.

**Domestic and Foreign Coin.**

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

|                                       | Bid.   | Asked. |
|---------------------------------------|--------|--------|
| Mexican dollars.....                  | 66 3/4 | 67 1/4 |
| Peruvian soles and Chilean pesos..... | 61     | 63     |
| Victoria sovereigns.....              | 4.85   | 4.90   |
| Twenty francs.....                    | 3.86   | 3.90   |
| Twenty marks.....                     | 4.74   | 4.78   |
| Spanish 25 pesetas.....               | 4.78   | 4.81   |

Copper.—Very little has been done, and buyers and sellers are alike holding off. There really is very little copper offered, but the demand is even less, and only a few isolated transactions took place, mostly at 11 1/4@11 80c. for Lake. The approaching close of lake navigation and the consequent higher cost of transporting copper has so far produced no effect on consumers, who evidently well covered their wants up to the end of the year when the advance recently took place. Casting copper is firmly held at 10 1/2, and no transactions have occurred in Arizona copper. From all we hear consumption appears to be very good, and lately the exports, especially of copper matte, have been rather heavy. London cables a decrease of 600 tons in statistics for the second half of October. The market remains quiet, and G. M. B. copper shows a slight decline, closing at £45 7s. 6d. for spot and £45 17s. 6d. for three months. For refined and manufactured, we quote: English tough, £49@£49 10s.; best selected, £50@£50 10s.; strong sheets, £57@£58; India sheets, £53@£54; yellow metal, 5d.

The published annual report of the Boston & Montana Copper Co. clearly shows that at present prices producers in Montana can hardly exist, and in judging the copper situation this important factor ought not to be lost sight of. Nothing definite has yet transpired regarding the action of the Anaconda Co. in connection with the report, of a few weeks ago, that they would close their works on November 10th.

The exports of copper from the port of New York during the past week were as follows:

| To                     | Copper Matte. | Lbs.    | Value.   |
|------------------------|---------------|---------|----------|
| S. S. Helvetia.....    | 3,120 bags.   | 353,300 | \$18,000 |
| " Cufic.....           | 2,154 "       | 237,995 | 12,000   |
| " Halby.....           | 2,012 "       | 235,040 | 17,000   |
| " America.....         | 2,175 "       | 252,145 | 12,000   |
| " Serbia.....          | 4,043 "       | 442,408 | 22,000   |
| " Arizona.....         | 2,185 "       | 246,385 | 12,000   |
| " Dalton.....          | 2,080 "       | 229,148 | 12,000   |
| To Liverpool—          |               |         |          |
| S. S. Michigan.....    | 45 blbs.      | 56,250  | \$6,469  |
| " Cufic.....           | 430 pgs.      | 15,638  | 14,000   |
| To Havre—              |               |         |          |
| S. S. La Touraine..... | 3 plates.     | 344     | \$.40    |
| To Rotterdam—          |               |         |          |
| S. S. Obdam.....       | 329 cakes.    | 52,866  | \$32,051 |
| " ".....               | 1,607 bars.   | 225,707 |          |
| " ".....               | 410 pgs.      | 111,542 | 10,700   |

Tin is very sensitive and during the week a large business has been done in spot as well as forward delivery. The article is much affected by the approaching election, and premiums are bid for the right to call, which will be exercised if the Republican ticket is elected, though, no matter what the result, we cannot see how the prospective duty of 4 cents can help becoming operative July 1st, next. Prices close at \$20.85 for spot and November, \$20.90 for December, \$21 1/2 for January and for February. Early in the week the London market was weak, but it has now recovered and closes at the best at £94 12s. 6d. for spot, and £95 for three months. The visible supplies show a decrease during the second half of October of 400 tons.

Lead continues on its downward course and sales have been made at \$3.90@3.92 1/2, principally at the latter. It is quite evident that production has considerably increased of late. The foreign market is also weaker, Spanish lead having declined to £10 1s. 3d. and English to £10 2s. 6d.

St. Louis Lead Market.—The John Wahl Commission company telegraphs us as follows: "Lead is again slightly lower. Some retail sales have been made at \$3.67 1/2 cents. The demand, owing to the decline is very light."

Spelter is in good demand and spot and nearby delivery is rather scarce. We have to quote \$4.45@ \$4.47 1/2 New York. In London the quotations are unaltered, and therefore are £19 for ordinary and £19 2s. 6d. for specials.

Antimony is quiet but firm, Cookson's at 12 1/2 c.; L. X. at 11 1/2@11 3/4 c., and Hallett's at 10 1/2 c.

Nickel.—The business done has been limited and quotations are somewhat lower at 53@55c., according to brand and delivery.

**IRON MARKET REVIEW.**

NEW YORK, Friday Evening, Nov. 4, 1892.

Pig Iron Production.—The following table gives the number of furnaces in blast and the estimated production of pig iron in the United States during the week ending Saturday, October 24th, 1891, and for the corresponding week ending October 22d, 1892. Also the total estimated production from January 1st of last year to November 4th. This table has been corrected by the official returns of the American Iron and Steel Association for the first

six months of each year. The figures are in gross tons:

**Pig Iron Production During Week Ending October 24th, 1891, and October 22nd, 1892, and During Both Years to Date.**

| Fuel used.        | Week ending—  |                |               |                | From Jan., '91.  | From Jan., '92.  |
|-------------------|---------------|----------------|---------------|----------------|------------------|------------------|
|                   | Oct. 24, '91. |                | Oct. 22, '92. |                |                  |                  |
|                   | F'cs.         | Tons.          | F'cs.         | Tons.          | Tons.            | Tons.            |
| Anthracite.....   | 86            | 33,500         | 67            | 29,500         | 1,535,860        | 1,414,796        |
| Coke.....         | 162           | 135,300        | 129           | 120,000        | 4,529,000        | 5,674,700        |
| Charcoal.....     | 59            | 12,900         | 40            | 9,200          | 465,927          | 412,525          |
| <b>Total.....</b> | <b>306</b>    | <b>181,700</b> | <b>236</b>    | <b>158,700</b> | <b>6,530,927</b> | <b>7,560,321</b> |

The pig iron market is still very quiet and uneventful.

The report that some gray forge Southern iron had been sold for \$8.15 f. o. b. furnace does not affect the market here, nor is it likely to do so any where in the East, such iron not coming this way to any considerable extent. The sale was probably made for Western delivery.

In the absence of positive information as to the kind of iron held, particularly in the south, it is believed that there is not much difficulty in selling the better grades of foundry and mill.

The Southern furnaces make not quite one-third of the total iron Bessemer output of the entire country, but this amount seems to be a very important factor in the market. Just now the influence of these furnaces is of salutary effect, tending to stiffen prices and to infuse something more of courage into the holders of other stocks. We do not think that the stocks of foundry iron are excessive anywhere. The low grades have to be sold at almost any price offered.

We quote: Southern iron, ex-steam New York, No. 1 F., \$15.26; No. 2 F., \$14.26; No. 3 F., \$13.76; Gray Forge, \$13.01.

Northern iron, tidewater No. 1 X., \$15; No. 2 X., \$14; No. 2 plain, \$13.50; Gray Forge, \$13. Some Southern producers have advanced their rates, as will be seen from the above figures, 25c. per ton; others have not yet done so.

It can not be said that there is any general upward movement, but the indications are that it will not be long before this will become apparent.

**Spiegelisen and Ferromanganese.**—Ferromanganese is stiffening, owing to the demands of the soft steel men. It is now firm at \$61. Spiegel, \$26.50.

**Steel Rails.**—The market is quiet. Prices \$30 at mill, special rates for designs and weights not included in ordinary contracts.

**Rail Fastenings.**—Nothing of especial importance has taken place this week. Prices rule as follows: Fish and angle plates, 1.55@1.65c. at mill; spikes, 1.90@2c.; bolts and square nuts, 2.40@2.70c.; hexagonal nuts, 2.70@2.80c., delivered.

**Merchant Iron and Steel.**—No large orders have come in; the usual volume of business has been transacted at ruling prices, except that O. H. spring is now quoted at 2.30c. instead of 2.50c. as last week. Prices stand: Musbet's special, 48c.; English tool steel, 15c. net; American tool steel, 6 1/2@7 1/2c.; special grades, 13@18c.; crucible machinery steel, 4.75c.; crucible spring, 3.75c.; open hearth machinery, 2.2c.; open hearth spring, 2.30c.; tire steel, 2.25c.; toe calks, 2.25@2.50c.; first quality sheet, 10c.; second quality sheet, 8c.

**Structural Iron and Steel.**—The approach of winter finds the business in structural iron and steel in a fairly satisfactory condition. As stated in our issue of October 22d, Cofrode & Saylor, Philadelphia, secured the contract for the 6,000 tons of material to be used in the Fifth avenue extension of the Brooklyn Elevated Railroad, and the Edge Moor Bridge Works, Wilmington, Del., the 4,000 tons for the Fulton avenue extension. The bids on the steel varied from 2.98 to 3.80, with the same figures for the iron. We give the details below.

|                          | Ful. ave. ex. |              | 5th ave. ex.  |              |
|--------------------------|---------------|--------------|---------------|--------------|
|                          | Steel per lb. | Iron per lb. | Steel per lb. | Iron per lb. |
| Cofrode & Saylor.....    | 3.05          | 3.05         | 3.05          | 3.05         |
| Edge Moor Bridge Works   | 2.98          | 2.98         | 3.15          | 3.15         |
| Carnegie Steel Company.. | No bid.       | No bid.      | 3.05†         | 3.25         |
| Union Bridge Company.... | No bid.       | No bid.      | 3.25          | 3.25         |
| Pencoyd Iron Works.....  | 3.14          | 3.14         | 3.14          | 3.14         |
| Cooper, Hewitt & Co..... | 3.22*         | 3.22         | No bid.       | No bid.      |
| King Bridge Company....  | 3.80          | 3.80         | 3.80          | 3.80         |
| Phoenix Bridge Company.  | No bid.       | No bid.      | 3.45          | No bid.      |

\*Terms of contract to be made satisfactory. †Time to be extended to 30 days.

As to ruling prices here we quote: Beams, 2.3@2.55c., except for 20-in. beams which are 2.75c.; angles, 1.95@2.15c.; sheared plates, 1.90@2.10c.; tees, 2.30@2.60c.; channels, 2.35@2.50c.; universal plates, 2@2.10c.; bridge plates, 2@2.10c.; steel hoops, 1.90@2.8c. All on dock.

**Buffalo.** Nov. 1.

(Special Report by Rogers, Brown & Co.) The market continues active at the advance which is now general. Those slowest to respond to the upward step in which the Southern Furnaces led off, were Northern Lake ore coke irons which have been pursuing a conservative policy in the matter of prices and made no change until in a measure forced to by their sold up condition for the balance of the year. The advance as now fixed, ranges from 25 to

75 cents per ton. The latter being on certain grades of Southern iron which had been abnormally depressed during the decline. Buyers appearing to recognize that prices are very low even at the small advance are entering into contracts for season's wants with greater freedom. We quote below on the cash basis f. o. b. cars Buffalo:

No. 1 X. Foundry strong coke iron Lake Superior ore, \$15.25; No. 2 X. Foundry strong coke iron Lake Superior ore, \$14.50; Ohio strong softener, No. 1, \$15.50; Ohio strong softener, No. 2, \$14.50; Jackson County silvery, No. 1, \$17.50; Jackson County silvery, No. 2, \$16.80; Lake Superior charcoal, \$17.00; Tennessee charcoal, \$17.00; Southern soft, No. 1, \$14.10; Alabama car wheel, \$19.; Hanging rock charcoal, \$20.50.

**Chicago.** Nov. 3.

(From our Special Correspondent.)

The Penn Mills Company which has been established for upwards of forty years at Allegheny City, Pa., is now in course of transference to one of the suburbs here. This is the first cotton factory to be established in Chicago, and it is a large one, employing some 400 operators. We welcome its advent and believe it to be the precursor of other textile manufacturers. The Illinois Steel Company will in the very near future expend several hundred thousand dollars in the erection of steel rolling mills at their Bay View Works, Milwaukee, Wis., other improvements there and a lot of new machinery are all in contemplation. To a certain extent building operations are being restricted here on account of the steady advance in material of all kinds and a number of projected buildings have been dropped because of the necessarily higher figures named by the contractors.

The elements of healthy strength noted in the crude iron market for the past three weeks are emphasized by the fact that some large consumers of coke and charcoal iron are inquiring for round lots for long extended deliveries. If the report on November 1st of the visible supply of pig iron shows the anticipated reduction, there is no doubt as to the ability of producers to hold their own. This seems to be the only influence that would affect the market as foundrymen are well supplied and furnace order books comfortably filled. With regard to finished iron and steel, the market is a little less active on bars and plates, but structurals, sheets and merchants steels continue in good demand. But in no one branch is there any weakness except in spots, which is insufficient to affect the general healthy situation as a whole.

**Pig Iron.**—Consumers are evidently becoming convinced that the stiffer tone adopted by producers and furnace agents is due to actual conditions existing to-day, and they are therefore more inclined to place orders. The volume of business on local coke iron rolled up a fair tonnage last week, and the inquiry during the early part of this week is very promising. The firmness developed in coke iron is taken as an indication that higher prices will eventually be in the near future. The conservative tone taken by the local furnace men has not been without its good effect in restraining Southern manufacturers from making further advances. These latter are not only asking outside figures, but are holding to them, while buyers are indisposed to place large business at the advance, consequently orders are small. Some large consumers, who were in the market for a considerable tonnage, may postpone buying until end of year. Lake Superior charcoal iron is much firmer, and a number of good orders have been closed at \$17.

Quotations per gross ton f. o. b. Chicago, are: Lake Superior charcoal, \$16.07@17.25; Lake Superior coke, No. 1, \$14.25@14.75; No. 2, \$13.75@14; No. 3, \$13.25@13.75; Lake Superior Bessemer, \$15.50; Lake Superior Scotch, \$15@15.50; American Scotch, \$16.50@17; Southern coke, foundry No. 1, \$14.50; No. 2, \$13.10; No. 3, \$12.85; Southern coke soft, No. 1, \$13.85; No. 2, \$13.10; Ohio silveries, No. 1, \$17; No. 2, \$16.50; Ohio strong softeners, No. 1, \$17; No. 2, \$16.50; Tennessee charcoal, No. 1, \$17; No. 2, \$16.50; Southern standard car wheel, \$20@21.

**Steel Billets and Rods.**—Billets have advanced to \$25.50 and in moderate demand. Rods are also higher at \$35.50, and inquiry better than supply.

**Structural Iron and Steel.**—New business is certainly much lighter for architectural shapes, but bridgework continues active. Shipments are heavy and promise to continue so this month. Mills are inclined to stiffness on orders for forward delivery. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, \$2@2.20; tees, \$2.35@2.45; universal plates, \$1.95@2; sheared plates, \$1.95@2; beams and channels, \$2.35@2.50.

**Plates.**—Mill orders are less active, and prices less firm. Warehouse business continues good, and the close of navigation will further increase demand from dealers. Steel sheets, 10 to 14, \$2.30@2.40; iron sheets, 10 to 14, \$2.20@2.30; tank iron or steel, \$2.10@2.15; shell iron or steel, \$2.75@3; firebox steel, \$4.25@5.50; flange steel, \$2.75@3.00; boiler rivets \$4.00@4.15; boiler tubes, 2 1/4 in. and smaller, 60%; 7 in. and upward, 70%.

**Merchant Steel.**—There is a strong tendency on the part of jobbers and consumers to cover future requirements at present prices, but makers are less anxious than they have been in the past to book further contracts. Tool steel continues in moderate demand. We quote: Tool steel, \$6.50@6.75 and upward; tire steel, \$2.10@2.20; toe calk, \$2.40@2.50; Bessemer machinery, \$2.10@2.20; Bessemer bars,

\$1.75@1.80; open hearth machinery, \$2.40@2.60; open hearth carriage spring, \$2.25@2.30; crucible spring, \$3.75@4.

**Galvanized Sheet Iron.**—Demand continues greater than the supply, but discounts remain unchanged at 70% off on Juniata and 70 and 10% off on charcoal, and jobbing quantities at 67 1/2% off on the former and 70% off on the latter.

**Black Sheet Iron.**—There is still an active demand for light gauges at \$2.85@2.90 for No. 27 Common. Heavy sheets are moving freely and some mills are nearly two months behind with deliveries. Steel sheets are higher at \$3.05@3.10 in mill lots. Dealers quote 3 1/2% c. from stock and \$3.10 for iron.

**Bar Iron.**—Local mills are well filled with orders and firmer in their views. Several rolling mills in Ohio are reaching out for business, and on desirable orders would shade prices. Regular quotations are \$1.65, rates, half extra f. o. b. Chicago. Jobbers prices are \$1.80@1.90, rates and demand good.

**Nails.**—Mills in this vicinity are having a good demand at \$1.62 1/2. Jobbers quote \$1.70 from stocks in less than carloads. Wire nail makers are decidedly firmer on account of the sharp advance in steel billets, and \$1.65 base, Chicago, is bottom on any sized order. Demand is improving. Jobbers now quote \$1.75 in small quantities from stock.

**Steel Rails.**—Inquiry for heavy sections continues limited to small lots only for early shipment. No large orders are reported as having been placed within the week. Quotation is unchanged at \$31@32. Repair material is in good demand in carloads at 1.75c. for iron or steel splice bars; spikes, \$2.05@2.15 for 100 lbs.; track bolts, hexagonal nuts, \$2.65; square, \$2.55.

**Scrap.**—The movement has much improved during the past few days. Prices have stiffened and the outlook is better. No. 1 railroad, \$16.51; No. 1 forge, \$15.50; No. 1 mill, \$9.50; fish plates, \$17; axes, \$19; horseshoes, \$16; pipes and flues, \$7; cast borings, \$6; wrought turnings, \$8; axle turnings, \$9.50; machinery castings, \$10; stove plates, \$6.50; mixed steel, \$10.50; coil steel, \$15; leaf steel, \$15.50; tires, \$14.50.

**Old Material.**—Iron rails are in better inquiry and prices higher. A mill in this vicinity paid \$19.10 delivered for 500 tons; an offer to duplicate order was refused by seller. Steel rails are also in fair demand, and prices hardening at \$13@15.50, according to length, etc. Old car wheels are very dull at \$14.50@15.

**Louisville.** Oct. 29.

(Special Report by Hall Bros. & Co.)

There remains about the same degree of firmness and confidence on the part of Southern furnaces, and some are asking \$8.75 to \$9 for grey forge, and \$9.75 to \$10 for No. 2 foundry, Birmingham basis, and some of the larger companies claim to have booked large orders for six months ahead, while others have sold large lots for six to ten months' delivery from December, 1892, and January, 1893, grey forge at \$8.75 and No. 2 soft \$9 to \$9.25. Many consumers, however, express the opinion that the advance is a little premature and think Southern furnaces will try to force iron too high and break the stability of the market, which has been the case for years. Northern and Eastern furnaces, however, take a more conservative view and are feeling the situation and as yet have not taken a decided step. Mills and foundries, car works, etc., are busy, yet they do not desire a flurry as they feel it might result in a break in the iron market, therefore it is to the interest of all to study the situation prudently and create a healthy advance. We quote firm as last.

**Hot Blast Foundry Irons.**—Southern coke No. 1, \$13@13.50; Southern coke No. 2, \$12.25@12.5c.; Southern coke No. 3, \$11.75@12; Southern charcoal No. 1, \$16@17; Southern charcoal No. 2, \$15.00@15.50.

**Forge Irons.**—Neutral coke, \$11.50@12.00; cold short, \$11.25@11.50; mottled, \$10.75@11.

**Car Wheel and Malleable Irons.**—Southern (standard brands), \$20@21; Southern (other brands), \$18.50@19.50; Lake Superior, \$19.50@20.50.

**Philadelphia.** Nov. 4.

(From our Special Correspondent.)

**Pig Iron.**—While there is a nominal advance of 25c. per ton in both No. 1 foundry and forge iron, there is no actual advance on large buyers who have been negotiating for supplies during the past month. The advance made affects new customers who want iron immediately. Large sales have been made of medium quality, at strong prices. A decided improvement is promised. Heavy orders will probably be placed next week, and it must be said, in this connection, that politics will have something to do with the placing, or not placing of orders. Mill owners are much more concerned about winter supplies of forge, than they have been for a month. Southern foundry has been sold at \$15 for No. 1, and \$14 for No. 2; and forge, at \$13. Bessemer is quiet at \$16 to \$17, according to phosphorus.

**Steel Billets.**—Buyers are not inclined to pay the quotations made this week on billets for December and January. In a general way higher quotations are being adhered to, but sales are being made at as low figures as have ruled for months past. As things stand the steel billet market will not fluctuate much.

**Muck Bars.**—Muck bars are quoted strong, and inquiries are increasing; but not for the purpose of

placing orders until the general market turns in an upward direction.

**Merchant Iron.**—A rather moderate volume of business is reported this week. Quotations from \$1.60@1.75. The mill owners are all deeply interested in the political situation, and from what can be gathered, the volume of business done will depend upon results reached next week.

**Nails.**—A strong retail demand set in last week among the stores, evidently for the purpose of stocking up for the winter. A little inquiry, however, shows that very favorable rates were made by factory agents.

**Skep Iron.**—Large sales of skep are reported almost every day, at \$1.60 to \$1.65.

**Wrought Iron Pipe.**—This has been quite a week for the wrought iron pipe people, and prices are gradually hardening. Boiler tubes are quoted at 67½ off.

**Merchant Steel.**—The active demand heretofore reported is still maintained.

**Sheet Iron.**—Mill men have been requested to hurry up supplies as stocks are pretty well exhausted. There is no difficulty in selling soft steel sheets at 3c. to 4c., according to gauge.

**Plate and Tank Iron.**—The statement was made to-day on pretty good authority, that if the election goes all right, there will be some very large contracts placed for iron and steel plate, to be delivered during the fall and winter as construction requirements demand. Orders have been taken this week for small lots at \$1.85 for both iron and steel. Steel flange \$2.50 and iron \$2.75.

**Structural Material.**—A heavy demand for structural material is maintained from week to week, and nearly all of it comes in at low figures. There is great anxiety to secure business for the winter, in fact, as far ahead as possible; and this keeps prices lower than they otherwise would be. Angles and sheared plates are \$1.90; beams, tees and channels, \$2.20@ \$2.30.

**Steel Rails.**—It is impossible to gather any real information in regard to steel rails. Quotations, \$30.

**Old Rails.**—About all the rails that can be had are selling at \$19 delivered, for iron; steel, \$16.

**Scrap.**—Railroad scrap is worth \$17, and there is a market for all that can be had.

Pittsburg. Nov. 3.

(From our Special Correspondent.)

**Raw Iron and Steel.**—Trade continues moderately active, still there is ample room for improvement. The tone in the market is steadily gaining strength and the impression is becoming daily stronger that higher prices for raw material and finished product is not far off. Unless all indications fail next year's prices will certainly show a very material advance in prices. The inquiry for both iron and steel is steadily increasing, and most of the pig iron makers have already begun to consider the advisability of revising quotations. As it is, long time contracts at present prices are not desirable, and few makers are willing to make sales for later delivery than December. Raw iron and steel is relatively lower in Pittsburg than at any other point; there is no particular reason for this, the same, however, is a fact.

It is not to be supposed that this condition of affairs can hold out much longer; the increased demand will be certain to force prices upward. The demand for soft steel blooms and billets is very active; in fact, the demand for spot or early deliveries is so pressing that all the mills are now running to their full capacity. The fact is steel is fast crowding iron from the market. It is said to be cheaper, besides, has many advantages over iron. The advance in steel, noted in our last, has been fully maintained.

The situation in the Mahoning and Shenango valleys is reported very healthy. A short time ago we heard of a sale of 10,000 tons Bessemer at a valley furnace at \$13.10 for future delivery; this would be equal to \$13.70 delivered at Pittsburg. The present week we heard of a similar sale at \$13.65; this would be equal to \$14.25 delivered here. These sales fairly represent the condition of the market at the time noted. While the advance thus seems to be with the seller, there is no anxiety felt by the buyers, who feel that any advance will be but for a small amount, and that an increasing capacity will easily supply the market's needs.

Some of the Southern makers have been able to obtain 25 cents more for the iron than before, and this advance has become established.

An Eastern dealer on the situation.—“Soft steel billets are strong and scarce, the demand in excess of the supply; prices relatively higher. Most other specialties remain about last week's prices. The general opinion in the trade seems to be that the uncertainty will continue until after the Presidential election, and then either a decidedly active or a profoundly dull market will ensue. In case the present administration continues in office, it is expected that a vast amount of business will be pushed to completion. Pig iron is firm and in some directions is gradually working toward a higher level.” The outlook continues very favorable for a large business the balance of 1892. Bessemer firm, many sellers are holding for an advance. Grey forge steady with an upward tendency. Spot billets blooms and slabs are very firm for November delivery, prices well maintained, and several large sales have been made for next year's delivery of Bessemer and billets.

| Coke Smelted Lake and Native Ore.                            |               |
|--|---------------|
| 5,000 Tons Bessemer, Dec., Jan., Feb., March                 | \$14.00 cash. |
| 5,000 Tons Bessemer, Dec., Jan., Feb., March                 | 14.10 cash.   |
| 5,000 Tons Bessemer, Dec.                                    | 13.75 cash.   |
| 2,000 Tons Bessemer, prompt                                  | 13.85 cash.   |
| 2,000 Tons Bessemer, prompt                                  | 14.00 cash.   |
| 1,500 Tons Grey Forge  | 12.50 cash.   |
| 1,000 Tons Grey Forge  | 12.50 cash.   |
| 1,000 Tons Grey Forge  | 12.50 cash.   |
| 1,000 Tons Bessemer, prompt                                  | 14.00 cash.   |
| 500 Tons Grey Forge all ore                                  | 12.75 cash.   |
| 500 Tons Grey Forge  | 12.50 cash.   |
| 200 Tons White and Mottled                                   | 12.00 cash.   |
| 200 Tons No. 1 Foundry                                       | 14.50 cash.   |
| 200 Tons No. 2 Foundry                                       | 13.50 cash.   |
| 150 Tons No. 1-Silvery                                       | 16.50 cash.   |
| 100 Tons No. 3 Foundry                                       | 13.00 cash.   |
| Charcoal.  |               |
| 200 Tons Cold Blast  | 26.50 cash.   |
| 100 Tons Lake Superior                                       | 19.00 cash.   |
| 100 Tons Warm Blast  | 18.00 cash.   |
| 75 Tons No. 2 Foundry  | 12.00 cash.   |
| 50 Tons Cold Blast   | 26.50 cash.   |
| Steel Blooms, Billets and Slabs.                             |               |
| 4,500 Tons Steel Billets, Jan., Feb., March, at makers' mill | 23.00 cash.   |
| 3,000 Tons Billets and Slabs, Jan., Feb. March, at mill      | 23.80 cash.   |
| 3,000 Tons Billets at makers' mill                           | 22.85 cash.   |
| 2,000 Tons Billets, Dec., Jan., at mill                      | 22.85 cash.   |
| 2,500 Tons Slabs Dec., Jan., del at Pittsburg                | 23.75 cash.   |
| 500 Tons Billets, prompt del. Pittsburg                      | 25.00 cash.   |
| Muck Bar.  |               |
| 500 Tons Neutral, prompt                                     | 25.00 cash.   |
| 500 Tons Neutral, Dec.                                       | 25.00 cash.   |
| Skep Iron.   |               |
| 750 Tons Narrow Grooved                                      | 1.62½ 4 m.    |
| 600 Tons Wide Grooved  | 1.65 4 m.     |
| 500 Tons Sheared Iron  | 1.80 4 m.     |
| Skep Steel.  |               |
| 1,000 Tons Wide Grooved                                      | 1.50 4 m.     |
| She t Bars.  |               |
| 500 Tons Sheet Bars, at mill                                 | 30.50 cash.   |
| Steel Wire Rod, five-gauge American.                         |               |
| 800 Tons, Five Gauge, American, at mill                      | 33.00 cash.   |
| Ferromanganese.  |               |
| 100 Tons, 80%, Foreign, Dec., Jan., Feb.                     | 62.75 cash.   |
| 50 Tons, 80%, Foreign, delivered                             | 62.50 cash.   |
| Old Iron and Steel Rails.                                    |               |
| 1,000 Tons, Old Steel Rails                                  | 16.50 cash.   |
| 600 Tons American T's  | 20.50 cash.   |
| 200 Tons American T's  | 20.00 cash.   |
| Scrap Material.  |               |
| 1,000 Tons Cast Borings, gross                               | 8.00 cash.    |
| 1,000 Tons No. 1 R. R. W. Scrap, net                         | 16.00 cash.   |
| 500 Tons Cast Scrap, gross                                   | 11.75 cash.   |
| 130 Tons Metal Scrap, gross                                  | 12.00 cash.   |
| 100 Tons Iron Axles, net                                     | 24.00 cash.   |
| 100 Tons Old Car Wheels, gross                               | 14.00 cash.   |
| 180 Tons Wrought Punchings, net                              | 13.00 cash.   |

**COAL TRADE REVIEW.**

New York, Friday Evening, Nov. 4.

Statement of shipments of anthracite coal (approximated) for week ending October 29th, 1892, compared with the corresponding period last year.

| Regions.               | 1892.      |            | 1891.    |           | Difference. |
|------------------------|------------|------------|----------|-----------|-------------|
|                        | Oct. 29.   | Oct. 31.   | Oct. 29. | Oct. 31.  |             |
| Wyoming Region         | 524,631    | 594,437    | Dec.     | 69,806    |             |
| Lehigh Region          | 154,314    | 164,486    | Dec.     | 10,172    |             |
| Schuylkill Region      | 246,612    | 356,120    | Dec.     | 109,508   |             |
| Total                  | 925,557    | 1,115,043  | Dec.     | 189,486   |             |
| Total for year to date | 34,332,459 | 32,732,808 | Inc.     | 1,599,651 |             |

PRODUCTION OF BITUMINOUS COAL for week ending October 29th, and year from January 1st.

| Eastern and Northern Shipments. | 1892.   |            | 1891.      |       |  |
|---------------------------------|---------|------------|------------|-------|--|
|                                 | Week.   | Year.      | Week.      | Year. |  |
| Phila. & Erie R. R.             | 2,451   | 73,720     | 140,271    |       |  |
| Cumberland, Md.                 | 92,228  | 3,150,070  | 3,453,444  |       |  |
| Barclay, Pa.                    | 1,002   | 57,722     | 157,173    |       |  |
| Broad Top, Pa.                  | 16,795  | 516,523    | 415,362    |       |  |
| Clearfield, Pa.                 | 84,355  | 3,278,114  | 3,318,428  |       |  |
| Allegheny, Pa.                  | 28,841  | 1,055,766  | 1,051,092  |       |  |
| Beach Creek, Pa.                | 30,784  | 1,909,514  | 1,998,302  |       |  |
| Pocahontas Flat Top             | 55,105  | 2,165,483  | 1,902,190  |       |  |
| Kanawha, W. Va.                 | 59,728  | 2,052,348  | 1,984,307  |       |  |
| Total                           | 371,289 | 14,259,290 | 14,420,569 |       |  |
| Western Shipments.              |         | 1892.      |            | 1891. |  |
| Pittsburg, Pa.                  | 25,596  | 1,047,594  | 1,044,315  |       |  |
| Westmoreland, Pa.               | 40,366  | 1,429,513  | 1,617,776  |       |  |
| Monongahela, Pa.                | 15,989  | 546,204    | 497,029    |       |  |
| Total                           | 81,951  | 3,023,311  | 3,141,120  |       |  |
| Grand total                     | 453,240 | 17,282,601 | 17,561,689 |       |  |

PRODUCTION OF COKE on line of Pennsylvania R.R. for the week ending October 29th, 1892, and year from January 1st, in tons of 2,000 lbs.: Week, 111,328 tons; year 4,451,865 tons; to corresponding date in 1891, 3,521,736 tons.

**Anthracite.**

The anthracite coal trade is in better condition than it was a week ago. It has been announced that the freight blockade on the Reading has been virtually raised, and this road is now able to handle its coal and other freight without the delays that have recently been forced upon it by lack of cars. The new freight line that is being surveyed around Reading will relieve the pressure in the yards there, so as to facilitate shipments. This, of course, will have no immediate effect upon the market here, but can be taken into consideration in estimating the future position of deliveries.

The reported construction of a special freight track from Reading to Philadelphia does not harmonize with the report that the water transportation of coal between Boston and New York and Boston and Philadelphia, now in the hands of the Reading system, will be discontinued. All kinds of stories can be heard about the effect of the New England combine on the anthracite coal trade; but, in our opinion, it will have very little effect, if any. It is a

railroad deal, and must be regarded in that light. The pro rata distribution of freights among the roads in the deal can not very well be figured out beyond the office of the general managers.

The coal shipments of the Reading system for week ending October 29th (estimated) were 415,000 tons, 20,000 tons going to Port Richmond and 50,000 to New York waters. Water freight from Port Richmond to Boston is quoted at 70@75c. and discharge, and to Providence 60@65c. From New York to Boston, discharge, 45@60c.

The shading of circular prices seems to be due to the holding of grades not strictly standard. The net circular prices of a month ago can be obtained now, and these are 15c. a ton less than the gross. The difference between gross and net prices is the modulus of elasticity, and depends, among other things, upon the desirability of the customer and the probability of retaining his trade. Fluctuations in the market are supposed to be covered by the modulus of elasticity. Just now sales are making at net figures, or about the following: Broken, \$3.85 egg, \$4.25; stove, \$4.60; chestnut, \$4.50. Prices for November are not likely to be advanced. The mild weather of the last few weeks still continues, but we are promised a cold snap following on the snow in northern New England.

**Bituminous.**

There is nothing of any great moment to record here. The Rate Convention, called at the request of W. P. Clyde, to meet here on the 12th, will include representatives of the owners and presidents of every railroad and steamship line east of the Mississippi River. The traffic managers will meet on the 15th, in this city. It is thought that some plan is on foot for the benefit of the Richmond Terminal in particular and the other Southern roads in general. Just what the outcome will be is, of course, uncertain, but in view of the present condition of the market, both coal and iron, it does not seem probable that any attempt will be made to advance rates. It may be done, however, and would not be the first offense of railroad companies in this field of trade.

The Norfolk & Western has completed its connection at Ironton, O., and with the Louisville & Nashville, and it is said that west bound coal shipments will be increased within 60 days to 23,000 tons per month. The Norfolk & Western is steadily increasing its facilities for handling coal and coke, and, in connection with other Southern coal roads, may be a factor in the market that cannot be neglected.

Charter rates are: Philadelphia to Boston, Salem and Portland, 80@85c., and to Sound Ports, 75@80. From Baltimore to Boston, 80@85c. Newport News and Norfolk to Boston, Salem and Portland, 80 c., and to Sound Ports, 70@80c.

Boston. Nov. 3.

(From our Special Correspondent.)

The agents of the coal companies did less last month than for many an October. Not that just as much coal is not being used here in New England, but that the retailers stocked up well early in the fall before prices advanced to the high standard they have been ruling. The trade here commends the action of the companies in deciding to restrict production for November. If they do not, and materially too at that, some weakening may be expected to develop as it did last month. Trade in the past week has been very limited, and it looks now as though it were to continue so for some little time. Some of the larger dealers here, in my interviews with them, have given me the impression that they have stock enough on hand to carry them through until January. There is no doubting, the fact that about all the dealers here in New England have heavy stocks, as a tour of the yards plainly shows. Prices remain the same as last reported, ruling very steady.

We quote: f. o. b. prices at New York on free burning coal: Stove, \$4.75; egg, \$4.35; free broken, \$4; chestnut, \$4.65; Lykens Valley (at Philadelphia) broken, \$4.85; egg \$5.45; stove, \$6; chestnut, \$5.

In soft coal the demand is light, but what there is, is taken care of very poorly. Complaints are heard on all sides concerning the delinquency of the roads running out of Philadelphia or Baltimore, in handling coal freight. Of course we know that the movement of the crops at present is taking a great deal of their attention, and also that passengers from Chicago are also very numerous after the festivities there. Until the rush in both of those lines is over soft coal buyers will probably be obliged to wait. Prices on soft coal are reported higher owing to the reasons above stated, and owing to the advances in ocean freights. Georges Creek coal on cars here is worth from \$3.60@3.70 per ton, and Clearfield from \$3.25@3.30.

Freight rates are: From New York, 45@55c.; from Philadelphia, 75@80c.; to both, 90c @ \$1.00; to Providence, 65@70c.; from Baltimore, 80@90c.; from Newport News, 70c.; to Sound Ports, 70c.

The retailers are all busy now, as consumers are all anxious to lay in their winter supplies. Prices are: Stove, \$6.25; nut, \$6.25; egg, \$6.00; furnace, \$5.75; Franklin, \$7.50; Lehigh egg, \$6.25; Lehigh furnace, \$6.25. Wharf prices are 50c. less than the foregoing.

The receipts of coal at the port of Boston for the week ending October 29th, were: 44,100 tons of anthracite and 18,800 tons of bituminous, against 40,380 tons of anthracite and 23,369 tons of bituminous for the corresponding weeks last year. The total receipts thus far this year have been 1,760,362 tons of anthracite and 70,282 tons of bituminous, against

1,685,979 tons of anthracite and 862,229 tons of bituminous for the same time last year.

**Buffalo.** Nov. 3.

(From our Special Correspondent.)

The anthracite coal trade is quiet and quotations unchanged. No features of interest to report.

The bituminous coal trade is active and the market firm with upward tendency. Supply light in consequence of meagre transportation facilities. Manufacturers are running full time; propellers and tugs busy. Many families are using the best kinds of soft coal for grates instead of anthracite, finding it cheaper although not so cleanly.

Next month the fires will be kindled in the mammoth furnace of the Buffalo Furnace Company, whose plant is the finest in the country for manufacturing pig iron. Starting with 300 men the proprietors expect before long to engage the services of 1,000. The furnace has a capacity of 300 tons per day and will require every 24 hours 1,000 tons of material, viz., 600 tons of ore, 300 tons of coke and 100 tons of limestone. The company say that they will make what is called "all ore pig iron for foundry purposes."

Bituminous coal is selling at Buffalo in car lots on track to consumers at about the following quotations: Reynoldsville Region, \$2.30 to \$1.90; Mercer County Region \$2.35 to \$1.55; Pittsburgh Region of A. V. R. Roads, \$2.40 to \$2.20; low grade Division of A. V. R. Roads, \$2.25 to \$1.55; and A. V. R. Roads Division Region, \$2.30 to \$1.55, according to size etc., etc.

Coke is selling at \$4.30 for foundry, and \$4.65 for crushed per 2,000 lbs. on cars at Buffalo.

Lake freighting of coal has again been large. Toledo rates advanced 15c., and Duluth declined for two or three days 10c., but since the old figures of 25c. have been paid. The demand for vessels closed active and quotations quite strong.

A severe northwestern gale prevailed Friday night and part of Saturday last on the Lakes. Little or no damage at this port, but at others a very large list of disasters is reported, probably footing up to hundreds of thousands of dollars in value.

The movement of coal by lake westward from October 26th to 31st, both days inclusive, aggregated 92,813 net tons, distributed about as follows: 40,325 to Chicago; 27,500 to Milwaukee; 9,200 to Duluth; 6,700 to Superior; 1,350 to Toledo; 630 to Detroit; 1,283 to Sarnia; 700 to Saginaw; 2,500 to Gladstone; 25 to Hancock; 1,700 to Green Bay, and 900 to Sault Ste. Marie.

The rates of freight were 75c. to Chicago; 70c. to Milwaukee; 25¢ to Duluth; 25c. to Superior, Washburn and Detroit; 35c. to Ft. William; 40c. to Toledo (an advance of 15c.); 45c. to Sarnia; 75c. to Green Bay; 40c. to Gladstone; 50c. to Saginaw, and 60c. to Sault Ste. Marie.

The following coal statistics were collated by Mr. William Thurston, Secretary of the Merchants' Exchange, November 1st, 1892: Railroad receipts and shipments of coal at Buffalo not reported by request. Receipts of coal by lake thus far this season none; shipments of coal by lake westward for month October, 546,523 net tons, as compared with 355,470 net tons in 1891 and 365,010 in 1890. For the season to November 1st, 2,344,432 net tons, as compared with 2,043,050 net tons in 1891 and 1,790,870 net tons in 1890. The receipts of coal by canal for the month of October, 20,616 net tons, as compared with 192 net tons in 1891 and 10,048 net tons in 1890; total receipts for the same to November 1st, 46,829 net tons, as compared with 817 net tons in 1891, and 31,452 net tons in 1890. The shipments of coal by canal for the month of October, 3,570 net tons, as compared with 4,414 net tons in 1891 and 7,449 net tons in 1890; total shipments for season to November 1st, 25,577 net tons, as compared with 23,741 net tons in 1891 and 16,074 net tons in 1890. The aggregate shipments of coal by lake this year to November 1st, as compared with 1891, show an increase of 301,382 net tons, and as compared with 1890 an increase of 553,562 net tons. The rates of freight on coal from Buffalo to points named by lake during the month of October were as follows: 55¢ to Chicago, 55¢ to Milwaukee, 25c. to Duluth and Lake Superior ports, 60¢ to Green Bay, 25c. to Detroit, 25¢ to Toledo, and 70¢ to Racine. A year since the rate to Chicago was 40¢ to 50c. per net ton, and to Milwaukee 40¢ to 50c., net tons, free on and off, during the month of October.

**Chicago.** Nov. 3.

(From our Special Correspondent.)

Within the last month, and particularly within the last week, the largest coke manufacturing company in the United States have realized that the high prices of anthracite coal in the land has opened a new field, and prospectively a profitable one, for the introduction on a large scale of crushed coke for domestic use. It is learned from some of the larger retail dealers that they are having more inquiries for this fuel than ever before. Consumers appear to feel an interest in securing a fuel which has the advantages claimed for this, and as it can be sold at a dollar a ton under the price of anthracite and afford the dealer the same profit as on the coal, it is anticipated that quite a large trade will be done this season, and that the anthracite retail trade from now on to the close of the season will suffer correspondingly. Judging from their remarks, dealers do not believe that the great public stand any further advances on hard coal, and are of opinion that they will take this product eventually in preference to anthracite at the same price. Of a certainty will they do this, if, on trial, they find that it bears out the claims made for it of being a

really cheaper fuel, to say nothing of its greater cleanliness, freedom from gas and other annoyances directly traceable to anthracite coal.

Quite a diversity of opinion exists among the different shippers as to the condition of the wholesale trade. Some claim they could do more business if they could get their all-rail coal forward with greater dispatch. Others state that orders are slow, and in many instances a wire is received cancelling them. Much of this inactivity is due to the mild weather and some of the larger shippers look for no improvement until cold weather comes to stay. Prices are only fairly well maintained, and there is less strength to the market than there was several weeks ago. Some shippers are of opinion that a notification from head-quarters to the effect that prices have reached their maximum for this season and authorizing them to make that statement to the trade, would help business considerably. On the other hand several believe it would have the contrary effect. Retail trade is quiet but steady, what there is of it; in this department dealers expect business to be largely of a hand to mouth character for the remainder of the season.

Bituminous coal is in unprecedented demand and operators declare their utter inability to supply one-half of it owing to shortage of cars. The C. & E. I. R. R. has issued a peremptory order refusing to allow its cars when coal laden to go beyond Chicago on the western connecting lines for commercial purposes. The situation on these same western lines is that they are utterly unable to furnish to either load at the mine or to transfer coal coming over the C. & E. I. into cars so that they can go forward to their western and northwestern destinations. Bitter complaint is made from shippers and consumers at this order, though they think that an absolute enforcement of it during November will result in the return of a large amount of cars to Eastern lines. Hence the situation to all parties concerned will be easier when the severity of the weather will necessitate heavier shipments of coal. One operator states that in his opinion the demand for soft coal is somewhat exaggerated and fictitious, accounted for by the fact that in many instances orders are duplicated or even quadruplicated by dealers in their anxiety to secure supplies before bad weather sets in. Many mines in Indiana and Illinois have been shut down part of the time on account of car shortage and political rallies. Spot Hocking, Pittsburgh and other eastern coals are not to be had in quantity, and circular all throughout is well maintained. Coke is in good demand, foundries active and the outlook very encouraging for increased consumption of foundry and crushed domestic.

Quotations are: \$4.65 furnace; \$5.05 foundry; crushed, \$5.40 Connellsville; West Virginia, \$3.90 furnace, \$4.10 foundry; New River foundry, \$4.75; Walston, \$4.65 furnace, \$5 foundry.

Circular prices are at the following rates: Lehigh lump, \$6.50; large egg, \$5.85; small egg, range and chestnut, \$6.10. Retail prices per ton are: Large egg, \$7.25; small egg, range and chestnut, \$7.25.

Prices of bituminous per ton of 2,000 lbs., f. o. h. Chicago, are: Pittsburgh, \$3.40; Hocking Valley, \$3.20; Youghiogheny, \$3.25; Illinois block, \$1.90 to \$2; Brazil block, \$2.50 to \$2.60.

**Pittsburg.** Nov. 3.

(From our Special Correspondent.)

**Coal.**—The river trade presents nothing of special importance. The operators claim to be gaining ground in the matter of the strike or lock-out that has been in force the past seven weeks. It is reported that the Eclipse Company's works in the fourth pool are about ready to start up and they will be operated by old men and at fourth pool reduction rate. The Eclipse Company employ over 150 men at its mines, and the fact that its former employees have agreed to return to work is regarded by the coal men as a favorable indication of an early settlement of the miners' strike all along the Monongahela Valley. Coal in the lower markets is reported scarce. Cincinnati advanced the price to \$3.50 per ton down town and \$4.00 on the hilltops; a further advance is talked of. Louisville—all grades of coal have been advanced 1 cent per bushel by retail dealers. The local trade at Pittsburg is quite lively by river and rail, though the railroads do the largest share of the business. There has been a large falling off in production.

**McConnellsville Coke.**—There is little new to note so far as the coke trade is concerned. The drought has caused a suspension of work at some of the coke plants and others have only been operated about half time. A decreased production is the result and some of the furnaces are reported short on yard stocks; this is especially so of Eastern and Western furnaces. The Pittsburg furnaces are very well supplied, so far, and the demand there is increasing. The foundry trade is good, prices in consequence are stiffer than they have been for some time. Furnace coke is still being shaded some. There are no idle men in the region. Those employed at works compelled to bank down on account of inadequate water supply have drifted to other works. In the running order of the plants of the region 50 made 6 days, 21 plants made 5 days, 11 plants made 3 days. The shipments for the week aggregated 125,125 tons distributed as follows: To Pittsburg, 2,000 cars; east of Pittsburg, 1,225 cars; west of Pittsburg, 3,150 cars; total, 6,375. Coke operators contemplate a project that will protect them from the consequences of a drought like the present. It is proposed to pipe water from the Cheat River in West Virginia.

**CHEMICALS AND MINERALS.**

NEW YORK, Friday Evening, Nov. 4.

**Heavy Chemicals.**—The past week has seen a quiet market in heavy chemicals. The volume of business was not large, and now dealers claim that activity will not return to the market until "after election." Caustic soda is unchanged as to price or position. Alkali was in fair demand, and stocks on hand are rather small. The same may be said of carbonated soda ash. Bleaching powder has been very quiet and slightly lower. Our quotations this week are as follows: Caustic soda, 60%, 3-17½¢@3-27½¢; 70%, 2-95¢@3-12½¢; 74%, 2-97½¢@3-15¢; 76%, 3-12½¢@3-25¢; 77%, 3-12½¢@3-25¢. Carbonated soda ash, 48%, 1-57½¢@1-60¢; 58%, 1-47½¢@1-52½¢. Alkali, 48%, 1-50¢@1-55¢; 58%, 1-45¢@1-50¢. Sal soda, English, 1-02½¢@1-05¢; American, 1-05¢@1-10¢; bleaching powder, 2-50¢@2-75¢.

**Acids.**—There is absolutely no change to report of the acid market, and the demand keeps up and stocks are light; in some cases manufacturers have been unable to meet with promptness the requirements of their trade. There is no change in prices and we quote this week: Acid per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, \$1.60 @ \$2, according to quality; muriatic, 18", \$1 @ \$1.25; 20", 90c. @ \$1.10; 22", \$1.25 @ \$1.50; nitric, 40", \$4; 42", \$4.50 @ \$4.75; sulphuric, 85c. @ \$1.10; mixed acids, according to mixture; oxalic \$7.25 @ \$7.75. Blue vitriol is quoted all the way from \$3.25 @ \$3.75; Glycerine for nitroglycerine, 11½¢ @ 12½¢, according to quality and quantity.

**Brimstone.**—This market has been very quiet during the past week. Quotations for best unmixed seconds are as follows: Spot, \$25; near by arrivals, \$24; shipments, \$22.50. Best unmixed thirds are offered at 75c. @ \$1 less.

**Fertilizers.**—The market for fertilizing chemicals has been quite active during the week. The ammoniates are firm, and in some fair demand. Prices show no signs of declining just now; in some instances they have advanced. We quote this week: Sulphate of ammonia, \$2.90 @ \$2.95 for bone goods and \$2.95 @ \$3 for gas liquor. Dried blood, \$2.25 @ \$2.35 per unit for high grade; and \$2.20 @ \$2.25 for low grade; acidulated fish scrap, \$14 f. o. b. factory; dried scrap, \$24.50 @ \$25; Azotine, \$2.20 @ \$2.25. Tankage, high grade, \$23.50 @ \$24; low grade, \$20 @ \$22, according to grade. Bone tankage, \$22.50 @ \$23.50; bone meal, \$23.50 @ \$25.50.

Double manure salts are unchanged. The price has been fixed by the syndicate's agents, and has not changed during the year. Quotations are as follows: \$1.13½ cwt., basis 48 @ 50%, in 50 ton lots, on foreign weights and analysis. High grade sulphate, \$2.13 cwt., basis 90% foreign weights and tests.

**Phosphates.**—Phosphate rock, Florida, 60 @ 90%, is quoted from Punta Gorda at \$4.50 per ton of 2,400 lbs. Charleston rock is quoted at \$4.75 @ \$5 f. o. b. Charleston.

**Kainit.**—Prices continue as follows: \$8.75 for invoice weight and \$9 for actual weight, New York and Philadelphia; Southern ports \$1 higher.

**Muriate of Potash.**—The inquiry from the South continues. Arrivals during the week amounted to about 200 tons, all of which went into consumption. New sales were 200 tons, for future shipments. Prices are: For 50 tons or over, New York or Boston, \$1.81½; Philadelphia or Baltimore, \$1.84; Southern ports, \$1.86½.

**Nitrate of Soda.**—This market has ruled firm during the week. Stocks on the spot are rather light, and as no vessel is due for some time to come there is little probability of a decline in the near future. Quotations for nitrate on the spot are \$2.12½ @ \$2.15. We are in receipt of Messrs. Mortimer & Wisner's interesting monthly statement of nitrate:

|  | 1892.                 | 1891.          | 1890.          | 1889.          |
|--|-----------------------|----------------|----------------|----------------|
|  | Bags.                 | Bags.          | Bags.          | Bags.          |
| Imported into Atlantic ports from West Coast S. A. from Jan. 1, 1892, to date... | 571,456               | 577,492        | 589,162        | 444,447        |
| Imported into Atlantic ports from Europe.....                                    | .....                 | 18,802         | .....          | .....          |
| .....  | 571,456               | 596,294        | 589,162        | 444,447        |
| Stock in store and afloat Nov. 1, 1892, in New York.....                         | 30,148                | 67,098         | 25,535         | 41,905         |
| ..... in Boston.....   | 821                   | 900            | .....          | .....          |
| ..... in Philadelphia.....   | .....                 | .....          | .....          | .....          |
| ..... in Baltimore.....  | 1,000                 | 1,000          | 4,700          | 2,500          |
| To arrive, actually sailed.....  | 139,000               | 122,000        | 173,500        | .....          |
| Visible supply to Jan. 31, 1893.....   | 170,969               | 190,998        | 203,735        | .....          |
| Additional charters ..   | 160,000               | 200,000        | 285,000        | 273,700        |
| Total supply, when shipped.....  | 330,969               | 390,998        | 468,735        | 318,105        |
| Stock on hand, Jan. 1, 1893.....   | 53,585                | 36,454         | 22,009         | 84,043         |
| Deliveries past month.....   | 62,400                | 61,405         | 57,915         | 76,492         |
| Deliveries since Jan. 1 to date.....   | 593,072               | 563,750        | 579,936        | 484,085        |
| Total yearly deliveries.....   | .....                 | 634,207        | 673,679        | 522,021        |
| Prices current Nov. 1, 1892.....   | 2'10 @ 2'10½ @ 2'10c. | 2'07½ @ 2'10c. | 1'77½ @ 1'80c. | 1'90 @ 1'92½c. |

NEW YORK MINING STOCKS QUOTATIONS. NON-DIVIDEND-PAYING MINES.

Table with columns for Name and Location of Company, Oct. 29, Oct. 31, Nov. 1, Nov. 2, Nov. 3, Nov. 4, SALES, and Name and Location of Company, Oct. 29, Oct. 31, Nov. 1, Nov. 2, Nov. 3, Nov. 4, SALES.

\*Ex-dividend. +Dealt in New York Stock Ex. Unlisted securities. †Assessment unpaid. Dividend shares sold, 7,720. Non-dividend shares sold 12,100. Total shares sold, 29,820.

BOSTON MINING STOCK QUOTATIONS.

Table with columns for Name of Company, Oct. 28, Oct. 29, Oct. 31, Nov. 1, Nov. 2, Nov. 3, SALES, and Name of Company, Oct. 28, Oct. 29, Oct. 31, Nov. 1, Nov. 2, Nov. 3, SALES.

Dividend shares sold, 10,633. Non-dividend shares sold, 5,610. Total shares sold, 16,243

DIVIDEND-PAYING MINES.

NON-DIVIDEND PAYING MINES

Table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, Name and Location of Company, Capital Stock, Shares, Assessments.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Name and Location of Company. It lists various mining companies and their financial details.

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. \* Non-assessable. † This company, as the Western, up to December 10th, 1881, paid \$1,400,000. ‡ Non-assessable for three years. § 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 \$42,900,000. \*\* Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. †† This company paid \$190,000 before the reorganization in 1880. ‡‡ This company acquired the property of the Raymond & Kly Company which had paid \$3,075,000 in dividends. \*\*\*\* Previous to this company's acquiring Northern Belle, that mine declared \$2,400,000 in dividends against \$425,000 in assessments.

STOCK MARKET QUOTATIONS.

Table with columns: Aspen, Oct. 29. The closing quotations were as follows: Argentum Junlata, Aspen Deep Shaft, Aspen Contact, Best Friend, Bimetallic, Bushwacker, Carbonate Chief, Emprle Champion, Justice, Little Annie, Mollie Gibson, Pontiac, Sheep Mountain S. & M. Co., Stungler, St. Joe & Mineral Farm, Yellow Boy.

Baltimore, Md. Nov. 3.

Table with columns: COMPANY, Bid, Asked. Atlantic Coal, Balt. & N. C., Cons. G. & C. Co., George's Creek Coal, Lake Chrome, Silver Valley.

Pittsburg, Pa.

Table with columns: COMPANY, H, L. Prices highest and lowest for the week ending November 3d: Bridgewater Gas Co., Chartiers Val. Gas, Enterprise Mining Co., La Norla Mining Co., Luster Mining Co., People's Natural Gas Co., People's N. G. & P. Co., Philadelphia Co., Red Cloud Mining Co., Wheeling Gas Co., W. House F. Light, W. House Air Brake, W. House Brake Co., Ltd.

St. Louis, Nov. 2.

Table with columns: Bid, Asked. American & Nettie, Bi-Metallic, Central Silver, Elizabeth, Granite Mountain, Hope, Little Albert, Mickey Breen, Pat Murphy, Small Hopes.

Helena, Mont.

Table with columns: Bid, Asked. (Special report by SAMUEL K. DAVIS.) Prices highest and lowest for week ending October 29d: Bald Butte, Benton Group, Bi-Metallic, Chamption, Combination, Cornucopia, Cumberland, Elizabeth, Glengary, Helena & Victor, Iron Mountain, Lone Pine Consolidated, Moulton, Polariss, Poorman, Queen of the Hills, Whitlach Union & MacIntyre.

Deadwood, Oct. 29.

Table with columns: Bid, Asked, Sales. Bullion, Carthage, Golden Reward, Harmony, Iron Hill, Lucile, Mikado, Ross-Hannibal, Ruby, Ruby Bell, Seabury-Calkins, Tornado, Troy.

Foreign Quotations.

Table with columns: London, Oct. 22. Highest, Lowest. Alaska Treadwell, Amador, American Belle, Can. Phosphate, Colorado, De Lamar, Dickens Custer, Eagle Hawk, East Arevalo, Eberhardt, Elkhorn, Elmore, Emma, Esmeralda, Flagstaff, Golden Feather, Golden Gate, Golden Leaf, Jay Hawk, La Luz, La Plata, Mald of Erin, Mammoth Gold, Mount McClellan, Montana, Mona Lake Gold, New California, New Consolidated, New Eberhardt, New Gold Hill, New Guston, New Hoover Hill, New Russell, New Viola, Old Lout, Parker Gold, Pittsburg Cons, Poorman, Plumas Eureka, Richmond Con, Ruby, Sierra Buttes, Silver King, United Mexican, Yankee Girl.

Paris, Oct. 20.

Table with columns: Francs. East Oregon, Golden River, parts, Laurium, Lexington, parts, Nickel, Rio Tinto, parts, Tharsis, Vieille-Montagne, Belgium.

San Francisco, Cal.

Table with columns: CLOSING QUOTATIONS, NAMES OF STOCKS, Oct. 28, Oct. 29, Oct. 31, Nov. 1, Nov. 2, Nov. 3, Nov. 4, Nov. 5. Includes stocks like Alpha, Alta, Belcher, Belle Isle, B. & Belch, Bodie, Bulwer, Chollar, Com'w'th, Con. C. & V., Con. Pac., Crown Pt., Del Monte, Eureka, G. & C., Hale & N., Mexican, Mono, Mt. Diablo, Navajo, New Gu'n, N. B. Heife, N. Co'w'th, Ophir, Potosi, Savage, Sierra Nev, Un'f'n Con, Utah, Vel. Jack.

CURRENT PRICES.

Table with columns: These quotations are for wholesale lots in New York unless otherwise specified. Acid-Acetic, Commercial, Carbonic, Chromic, Hydrobromic, Hydrocyanic, Hydrofluoric, Alcohol, Absolute, Ammoniated, Alum, Ammonia, Muriate, Aqua Ammonia, Antimony, Argols, Arsenic, Asbestos, Ashes, Asphaltum, Barium, Bromine, Cadmium, Chalk, China Clay, Chlorine, Chrome, Chromalum, Cobalt, Copper, Cryolite, Fluor, Fluorspar, French Chalk, Fuller's Earth, Glauber's Salt, Glass, Gold, Gypsum, Iodine, Iron, Kaolin, Kieserite, Lead, Litharge, Magnesite, Manganese, Mercuric Chloride.

Table with columns: Powdered, Marble Dust, Metallic Paint, Mineral Wool, Naphtha, Nitre Cake, Ochre, Potassium, Potassium Cyanide, Bromide, Chlorate, Carbonate, Caustic, Iodide, Nitrate, Bichromate, Yellow Prussiate, Red Prussiate, Pumice Stone, Original cks., Powdered, Pyrites, Quartz, Rotten Stone, Lump, Original cks., Sal Ammoniac, Salt, Domestic, Common, Turkish Island, Salt Cake, Saltpeter, Soapstone, Block and slab, Sodium, Phosphate, Stannate, Tungstate, Hyposulphite, Strontium, Sulfur, Flour, Sylvinit, Tale, American No. 1, American No. 2, Terra Alba, English, American No. 1, American No. 2, Tin, Muriate, Double or strong, Oxymuriate, Vermilion, Am. quicksilver, Chinese, Trieste, American, Zinc White, Antwerp, Paris, Muriate solution, Sulphate crystals.

THE RARER METALS.

Table with columns: Aluminum, Arsenic, Barium, Bismuth, Cadmium, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Glucinum, Indium, Iridium, Lanthanum, Lithium, Magnesium, Manganese, Molybdenum, Niobium, Niolum, Osmium, Palladium, Platinum, Potassium, Rhodium, Ruthenium, Strontium, Selenium, Sodium, Strontium, Tantalum, Tellurium, Thallium, Titanium, Thorium, Tungsten, Uranium, Vanadium, Yttrium, Zirconium.

COAL STOCKS.

Table with columns: NAME OF COMPANY, Oct. 29, Oct. 31, Nov. 1, Nov. 2, Nov. 3, Nov. 4, Sales. Includes companies like Col. C. & I., Cons Coal, Del. & H. C., D. L. & W. R. R., Hocking Valley, Hunt & Br'd Top, Lehigh C. & N., Maryland Coal, Morris & Essex, N. J. C. R. R., N.Y., Susq. & W., Norfolk & W. R. R., Penn. Coal, Penn. R. R., Ph. & R. R., Penn. C. & I. Co.