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Visitors to New York will find at the offices of *The Engineering and Mining Journal*, 253 Broadway, files of papers from the mining districts of this and other countries, books of reference and every convenience for correspondence. They can also have their letters addressed in care of *The Engineering and Mining Journal*, P. O. Box 1833, New York.
 All are cordially invited to make use of these facilities.

Nickel Producers Combine.

In our issue of January 4th we referred to a rumored agreement come to between the American refiners and "La Société le Nickel," of Paris known as the French New Caledonia Nickel Company, which would probably have some influence on the price of nickel during the current year. We are now informed on undoubted authority that there has been no such agreement entered into, and consequently there is not much probability of any advance in price; indeed, on the other hand, the value is more likely to decline with improvements in the method of refining tending to cheapen the process.

A Vanadium-Platinum-Bearing Coal.

We learn from a reliable correspondent that a firm of merchants in London are in possession of some extensive deposits of most remarkable coal somewhat similar to that described by Mr. W. P. Blake in our issue of August 11th, 1894, as containing vanadium. For obvious reasons they do not want to divulge the name of the exact locality, but it may be inferred that it is in the same district as that described by Mr. Blake, in the province of Mendoza, in Argentina, near the frontier of Chile.

The most remarkable point about the coal is that besides vanadium it contains considerable quantities of the platinum group of metals. Altogether some 10 tons of the coal have been shipped to London, and the whole sampled and analyzed. Through the coal there are several very thin bands of earthy matter consisting of sand, limestone, etc., apparently an alluvial deposit, and these bands contain varying amounts of vanadium and platinum metals. A ton of this coal has been burnt and the remaining ash was 15 per cent. of the total weight. This ash gave the following analysis: Metallic vanadium, 2.9 per cent.; platinum metals (chiefly platinum), 0.23 per cent.; oxygen combined with metals, 5.10 per cent.; sand, carbonate of lime and other earthy matters, 91.77 per cent.; total, 100.

The metallic contents of one ton of coal are therefore 141 ounces of vanadium and 11.24 ounces of platinum metals.

In reply to the inquiries of our correspondent the firm of merchants in question assure him that the deposits are very extensive and of fairly uniform contents. They are prepared to supply the ash by carload lots, and are at present engaged in looking for customers who want vanadium in large quantities. There is one use, viz., for making vanadium black (the most satisfactory of all black dyes), which would be immensely developed if large quantities of vanadium can be supplied at a low price.

TABLE SHOWING VALUE OF ASH.

Per ton of ash.	Per cent.	Troy oz., per ton.	Value.
Vanadium.....	19.37	95.8	\$40,000
Platinum.....	1.53	75.08	1,000

Counting the value of vanadium at \$40 to \$45 per oz. troy, and \$13.50 to \$14 per oz. troy for platinum.

Naval Engineers.

The complaints which have been repeatedly made since the building of the new navy began of the insufficiency in numbers of the engineer force have their origin largely in the fact that the service is not an attractive one to the best men under the present regulations. The modern fighting ship depends entirely upon its machinery for efficiency both in manœuvering and fighting, and the engineer is the most important man on board after the commander, since he really controls the fighting power. It is high time that the antiquated distinctions, which date from the time when the sailor was the head and the engineer merely a subordinate of little importance—if he was needed at all—should be done away with. Of course discipline must be maintained on a man-of-war; but it is not in accordance with present conditions that the engineer should not be accorded the full rank which the importance of his services deserves. As long as the engineer is held to be an inferior in grade, a majority of the students who enter the Naval Academy will prefer the other branches of the service, and the naval engineer corps will have difficulty in keeping up its numbers. The reverse should really be the case and would be if the engineer were granted full rank, as in the army, where the value of his services is fully recognized. It is to be hoped that Congress will find time to take action on the bill now pending, which, we understand, includes this necessary reform in its provisions.

The naval engineer has even greater responsibility than his brother in the army and much greater than any line officer, and both on this account and because of his professional training as a mechanical and electrical engineer he is fully entitled to the absolute rank, which he is now supposed to possess under the indefinite title of "relative rank." The naval battles of the future will be won, or lost, by the naval engineers, and attracting to this branch of the service the ablest men possible, is the most economical manner of increasing the strength of our navy.

In the *Journal* of last week we gave a short account of the events occurring in the Transvaal, with a map of the gold mining districts and portraits of a number of the leading actors in the events which have passed so rapidly there. As further advices have made the situation clearer, we are now able to present a statement of the present condition of affairs in the great

gold producing country, and a summary of the causes which have led up to it.

Briefly, the facts are these: In the South African Republic, founded and organized by the Boers, there had grown up a great mining industry, with the growth and extent of which our readers are already sufficiently familiar. This industry has brought in a large alien population, which has certain grievances, to which the government of the country, it is charged, has refused to give attention or to grant redress.

For the Uitlanders, as they are called—the word means simply foreigners—it is claimed that though really in the majority they are denied political rights or any share in the government; that taxation is oppressive and unequal; that heavy duties are levied which add largely to the cost of machinery and supplies; that oppressive monopolies have been created, as, for instance, in the manufacture of explosives; that the government does not attempt to regulate or control the management or charges of the Netherlands Company, to which alone it has given the right to build railroads; that it does not attempt to regulate the native laborers upon which the mines largely depend. There are minor matters, but these are the chief.

For the government it is claimed that the taxes are not too great and that their amount is largely caused by the Uitlanders themselves, the main expenses being for police and other purposes made necessary by the presence of the mining population. The supply of native labor is a question with which it cannot deal, since most of the men employed come from beyond its borders. As to the political question, it is said that the Boers are the permanent settlers, while the Uitlanders are really, from the very nature of their occupation, transitory residents, who do not expect to pass all their lives in the country, and who would be unwilling to renounce their citizenship elsewhere. The mines, it is further said, do not belong to the residents, but to companies in London, Paris and elsewhere, their real owners never expecting to set foot in the Transvaal. The miner, it is stated, is essentially a wanderer and not a settler, and can show no claim to a share in the government. Property is sufficiently protected and the integrity of the courts has never been questioned.

The Transvaal is an inland country, and its access to the sea is either through the Cape Colony or Natal to the south and southeast, or through Portuguese territory eastward to Delagoa Bay. At first it had nothing to the north but the native tribes, but the extension of settlement and the discovery of what are believed to be valuable mines led to the occupation of Mashonaland and Matabeleland to the northward, shutting in the Transvaal completely. The new territories are not under British colonial rule, but have been turned over to the British South Africa Company—more commonly known as the Chartered Company—which is at once a trading and land owning company and a political ruler. At its head is Sir Cecil Rhodes, formerly Prime Minister of the Cape Colony; a man of great ability, who is credited with the ambition to organize a South African Empire.

From the dispatches in the daily papers our readers have learned how, when the dispute between the Transvaal Government and the Uitlanders was approaching a critical stage, Dr. Jameson, the local administrator of the Chartered Company, suddenly gathered together its troops and invaded the Republic; how the government was prompt in its action, and not only intercepted, but captured him and all his force; and how the raid was followed by the arrest of a number of prominent Uitlanders suspected of complicity with the movement. Among these were several Americans, including John Hays Hammond, the mining engineer, who has had much to do with the success of mining in South Africa, and is at present consulting engineer of the Chartered Company.

To understand the real equities of the case and to appreciate fully the position and claims of the Boers, a brief summary of South African history is necessary.

The Boers are the descendants of the Hollanders, the first European settlers in South Africa, and they have been throughout the pioneers of the country. They never cordially accepted English rule during all the eighty years which have passed since the Cape Colony was finally transferred from Holland to England. Very soon after that occurred, and when the first English colonists began to come in, a northward movement began. Disliking his new English neighbors and resenting what he considered the oppression of the colonial laws, the Boer, not strong enough yet to rebel, had one recourse—in South African parlance he "trekked." That is, he gathered up his family and his goods, his herds and flocks, loaded his wagons and "trekked" forward into the almost unknown lands to the northward. Time after time this movement took place with more or less concert and to a greater or less extent, and each time the English came in behind and occupied the abandoned country. In reality the Boer did more for his hated English rulers than he did for himself. These sturdy Dutchmen formed the outer skirmish line behind which the Cape Colony, and later Natal, grew and prospered. It was the Boers who found out the possibilities of the interior country; it was the Boers who conquered and practically enslaved the Kaffirs who had remained the real victors over the English troops in a dozen petty, harassing wars; it was the Boers and their half-bred kinsmen, the Griquas, who, more than forty years ago, turned back and broke that strange in-

vasion of desperate fugitives from beyond the Zambezi, which, for a time, threatened the very existence of the Cape Colony; it was the Boers who finally tamed the Zulu, and who drove northward the dreaded Matabele. In a word it was the Boers who made the growth of the English South Africa safe and possible.

Colonization in that country has always presented one serious difficulty. The African seems to be the one savage race which does not disappear in the presence of the European. On the other hand, he thrives and multiplies, and in all South Africa to-day the negroes far outnumber the white men. The Dutch have always shown a greater capacity for dealing with savage neighbors than any other European colonists. In our own country, when the English pioneers in Pennsylvania and New England made their way rifle in hand and when Canada was desolated by Indian raids, the Dutchman was a welcome guest in the "Long House" of the Iroquois, and the outlying farmer in the Mohawk or Schoharie Valley was safer than the Frenchman within sound of the guns of Quebec. The same faculty has been shown in South Africa, almost everywhere.

When the last great "trek" carried a considerable number of Boers out into the High Veldt beyond the Vaal and Orange rivers and beyond even the nominal limits of English rule, they felt strong enough to consider their wandering at an end. Under the leadership of the present President Krüger and his associates the Orange Free State and the South African Republic were founded. To most of our readers the history of the South African Republic—more often called the Transvaal—is now familiar. When the English attempted to subdue these States they found that to the stubborn independence of their ancestors the Boers had added the warlike skill acquired in three generations of savage fighting and hunting. The war of independence was not a credit to the English army in its conduct and results, and practically ended at Majuba Hill, where the Boers inflicted the worst defeat experienced by a British force since the disaster of the Khyber Pass half a century before.

In a word, the Hollander in South Africa, with all the unfavorable circumstances of a purely agricultural and pastoral community, widely scattered in a new country, has shown the same stubborn love of freedom and the same strong and masterful spirit which achieved the independence of Holland, and which, in our own country, have given the Dutch element an importance in the history of the State of New York out of all proportion to its numerical strength.

From the beginning the Boers deprecated the introduction of any industries beyond the agricultural and pastoral pursuits which they preferred. The Transvaal law at first prohibited even prospecting for mines, and this prevailed for some years after the organization of the State. The discovery of diamonds close to their borders, and later in the Transvaal itself; the discovery of gold at first in the DeKaap district at the Sheba and other mines; and finally, the location of the great basket beds of the Witwatersrand were all unwelcome to them. They were unable to prevent, however, the influx of foreigners whom the wealth of the country attracted, but they took care to keep the government in their own hands by preventing or restricting naturalization, and refusing in this way to grant any share in it to the newcomers. Hence arose the discontent referred to in the opening of this article. How long the discussion between the two parties might have continued we do not know, but the matter has been suddenly brought to a point by the raid of Dr. Jameson—or of the Chartered Company, as many will call it.

The case seems to be that on the one hand the Boers of the Transvaal certainly have the first claim to the country so far as discovery, permanent occupation and cultivation can give it to any people. They are the owners of the land by a title universally received among all modern civilized people; by exactly the same title that we have in this country. The Uitlanders came in later, and were bound to recognize the sovereignty and submit to the laws of their predecessors. On the other hand, the rulers of the Transvaal rest under the obligation, also recognized among civilized nations, to give protection to persons and property by just laws and equitable taxation. So far as the Uitlanders' claim is to a share in the government and to citizenship it may be contested with strong arguments; so far as it relates to unequal and oppressive taxation, the creation of monopolies or the denial of justice, they have a claim to redress. The present would seem to be a good time for compromise, and the rulers of the Republic, if they are wise, will accept it and grant such reforms as may be needed.

There seems to have been without doubt a conspiracy to annex the Transvaal to the dominion of the Chartered Company. How far the unfortunate Dr. Jameson had reason to expect the support of his superiors in the company may possibly never be known; but it seems in the least degree improbable that he would undertake the invasion with an armed force of an independent State solely on his own authority. Undoubtedly he expected to find the Uitlanders of Johannesburg in arms at his approach, and he probably believed that, with the existing government overthrown, the result would be accepted both in South Africa and England. The prompt action of President Krüger and the failure of the local movement put him in the position of a beaten filibuster, instead of the head of a successful revolution.

Sir Cecil Rhodes is now on his way to England, and the explanations he may make on his arrival will be received with much interest, though the degree of belief accorded to them will vary with nationality and opinion.

The Transvaal question is further complicated by the fact that it does not affect English interests alone. The German property interests in the country are considerable, though far less than those of other nations, in spite of the fact that Germany has been the only nation to take official action. A conservative estimate is that fully one-third of the stock in the Transvaal mining companies is owned in France, and that country would have ample excuse for intervening in certain contingencies to protect the rights of her citizens. The whole affair has given opportunity for diplomatic complications of the first order.

The immediate result has been an enormous loss in the current values of Transvaal mining stocks—much of which is doubtless temporary only. How far the operation of the mines themselves will be interfered with we do not yet know; but a temporary check to the increase in their gold production is to be expected.

Our own pecuniary interest in the Transvaal is very small. We have a share in the world's general interest in the great gold producing region, and an especial sympathy with the American engineers whose skill and energy have done so much in developing its resources. Though few in number they are picked men whose ability has generally put them in prominent positions. This sympathy, however, should not lead us to forget the equities of the case, though it excites in us a keen interest in the outcome of the trouble, and the manner in which so called "manifest destiny," which simply means the domination of the majority, will work itself out. The final result will doubtless be the same as in previous cases of the Rand. The progress of the Transvaal has gone too far to be stopped by the inertia of the Boer conservatives. Violence or disorder may be the occasion of a temporary check, but the progressive element is so strong in numbers, and its pecuniary interests are so great, that there can be no doubt that it will prevail in the end, history repeating itself in South Africa on the same lines as in our own country and elsewhere.

BOOKS RECEIVED.

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

Chemistry of Pottery. By Karl Langenbeck, Easton, Pa.; Chemical Publishing Company. Pages, 197. Price, \$2.00.

Lettering for Draftsmen, Engineers and Students. By Charles W. Reinhardt. New York; D. Van Nostrand Company. Pages 23; illustrated. Price \$1.

Geological Survey of Canada: Division of Mineral Statistics and Mines and Annual Report for 1893 and 1894. Ottawa; H. M. Printers. Pages 194; with maps.

New York State Museum: Bulletin No. 14, Volume III., on the Geology of Moriah and Westport Townships, Essex County, N. Y. Albany, N. Y.; State University. Pages 21; illustrated.

New York State Geological Survey: Preliminary Report on the Geology of Essex County for the Year 1893. By James Hall, State Geologist. Albany, N. Y.; State Printers. Pages 37; with maps and illustrations.

CORRESPONDENCE.

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

Cleaning Boiler Feed-Water.

Sir: We read in the Chemiker Zeitung an article on "Cleaning Boiler Feed-Water" by Dr. Francis Wyatt, taken from your Journal of September 7th, 1895, and we wish to inform you that our Mr. Alwin Nieske has taken out about a year ago a series of patents in most of the industrial countries of the world for "processes for preventing boiler-incrustation through the medium of chromates and bi-chromates or the like" and that patents have been applied for the same in the United States many months ago. We claim that Dr. Wyatt is only repeating at least two formulas taken from Mr. Nieske's application. We request you to allow us to state that the first reply of the United States Patent Office, January 15, 1895, on the subject to Mr. Nieske so far antedates Dr. Wyatt's communication that the process should be declared to be the real and true property of Dr. Nieske.

ALWIN NIESKE,
Chemische Fabrik Altherzberg.

DRESDEN, Germany.

Sir: With reference to my article on the subject of "Boiler Feed-Water," I beg to say that it was written without any knowledge of Mr. Nieske's patent. If this gentleman has been able to secure a monopoly for the use of chromium compounds as preventers of boiler scale, he will doubtless have no difficulty in establishing his rights and securing his interests. In this event my article cannot have done him any injury, but should rather be regarded by him as an excellent introduction of his merchandise.

NEW YORK, Jan. 9, 1896.

FRANCIS WYATT.

Cripple Creek—Some Corrections.

Sir: Why is it that the business of mining is so pervaded by the spirit of exaggeration? The ethics of a horsedealer seem to be shared by those engaged in an industry as honorable as it is ancient. It is rare that a

newspaper paragraph or a company prospectus affords a description which to a mining engineer who is really aware of the true condition of affairs is even faintly recognizable as an accurate account. At the present time the daily press, financial journals and even serious publications are loaded down with statements regarding Colorado's new camp which justify these "obiter dicta."

The "London Mining Journal," for instance, gives, in a recent issue, an account of the meeting of a syndicate. At this gathering it was stated that "four big mines produce 1,500 tons per day," that "the State experts," whoever they may be, had been misled in restricting the area of the gold field, that a certain mine, (incorrectly described as being situated on Gold Hill), had a 12-ft. lode which carried a foot of 200 oz. ore and a remainder consisting of material which was termed low grade. "What do you suppose they (the miners at Cripple Creek) mean by 'low grade'?" triumphantly ejaculates this authority. "From 5 to 30 oz. gold per ton," he himself replies, and then the reporter has inserted (applause). It is not for us to know whether the gentlemen present at the meeting applauded the magnificent extravagance of the fellows who throw 100 to 600 dollar ore over the dump or whether it was the perspicacity of their informant that they marked with their approval. Then amid a mass of other loose statements came the assertion that the camp has produced \$15,000,000 during "the last year." Later on the chairman, in his speech, laid emphasis on the conservatism of their manager and says, "We know him to be cautious—I was about to say pessimistic—in his conclusions." But, Great Scot! what a generous pessimism! all of which is the more amusing because it is taken with characteristic seriousness.

The diffusion of statements such as the above is unfortunately common at the present time. The spirits of exaggeration and speculation have made a compact, and are striding rampant over the land. This is the more regrettable because Cripple Creek does not in the least need the aid of glittering falsehood to recommend it to the real mining investor.

Let me utilize the opportunity to correct the above data. The present daily output averages about 500 tons having a mean gold content of 3 oz. per ton. The ores thrown over the dump are rarely such as to be profitable of treatment, that is, they are really waste material, as is ordinarily the case in other localities. In one or two cases, owing to carelessness or dishonesty, some good ore has been so thrown out, but with the exception of a few rare and not very important instances of mines which went into operation before the railway reached the camp, there are no large accumulations of the kind referred to. The agents of the leaching establishments who have sampled every large dump in the district will smile at you when you talk about immense heaps of valuable ore.

Similarly the statement of the existence of unlimited quantities of low-grade material to be rendered available by an increase of reduction facilities, although it is a statement recently voiced by a distinguished authority, is only vain fantasy. Cripple Creek is essentially and peculiarly a district of high grade ores, and in this respect it is in marked contrast to other regions with which it is often carelessly compared. The mines of the Rand produce, monthly, 300,000 tons of 1/2-oz. stuff, those of our Colorado camp yield 15,000 tons of 3 oz. ore. It requires but a small width of Cripple Creek ore to make a very valuable mine. The Victor, for instance, one of the first developed properties and one of the most continuously profitable, pays handsome dividends on a pay streak averaging 6 in. But then the first-class ore carries on an annual average on no less than 18 oz. of gold per ton.

Other mines have, of course, lodes measured in feet instead of inches, but even then taking the average over a considerable territory, the width is small when compared to the Main Reef series at Johannesburg, to the Broken Hill vein, to the Comstock, or to other famous precious metal depositories. Moreover, even where they widen, the Cripple Creek veins maintain their high grade, so that small rich streaks flanked by a much larger width of low-grade stuff are not at all usual.

For 1895 the output of the camp will be worth fully \$8,000,000. The closing months of the year have been marked by a production double that of its beginning. The present outturn is from three-quarters to a million dollars per month and it is increasing steadily. The yield for 1891 was \$2,000; 1892, \$538,010; 1893, \$2,010,367; 1894, \$2,908,702, and 1895, about \$8,000,000. These figures tell a story more eloquent than words.

T. A. RICKARD, State Geologist of Colorado.

DENVER, Dec. 21, 1895.

American Mining Engineers in the Transvaal.

Sir: Between 30 and 40 members of the American Institute of Mining Engineers are now professionally at work in the territory of the South African Republic. I think that most of them, though not all, are American citizens, and, taking into account the American engineers who are not members of the Institute, I am safe in saying that, besides a host employed in subordinate capacities in the mines, or in commercial operations connected with that industry, there are at least 50 Americans of professional training and ability, charged with the administration of vast property interests and the management of vast mining and metallurgical operations, in the region referred to.

This list comprises some of the brightest ornaments of American mining and metallurgy. For several years past the mining companies operating in the Transvaal have been drawing from the United States such skilled mine superintendents and mill managers as had made a record of professional ability at home, and paying them for their ability and experience salaries much larger than are paid in this country. To these men the swift and surprising development of the gold production of the Witwatersrand has been largely due. As a result of this development, the government of the South African Republic has been delivered from bankruptcy and supplied with a large annual surplus revenue; the town of Johannesburg, with 60,000 inhabitants and all the facilities of modern civilization, has been created in the wilderness, and great international trade and travel have grown up. By reason of the intelligent preferences of the American engineers, American machinery has been largely demanded for the Transvaal, and the commercial relations of the United States with this distant inland state have therefore acquired unexpected and constantly increasing importance.

These facts fully justify and loudly invoke the manifestations by our government of a vigilant and effective interest in the protection of its own citizens in the Transvaal. Whatever be the grounds on which it is

believed to be justified in acting with regard to the affairs of Venezuela or Cuba, no one alleges that, in either of those cases, the lives of American citizens are in instant peril. But, in the Transvaal, a large number of our citizens are charged with "treason," and threatened with summary punishment, involving, in some cases, the loss of their lives.

The general tenor of the published despatches indicates that the Transvaal government, while surrendering unhurt to the British authorities Dr. Jameson and his associates, who were taken prisoners as armed filibusters in actual warfare, is not unlikely to sacrifice to popular clamor some of the members of the "Reform Committee" of Johannesburg, and especially John Hays Hammond, who, for some reason, appears to have been selected as a chief offender. This impression is confirmed by private advices from Pretoria, which represent him as in special danger of vindictive proceedings.

I have known Mr. Hammond for many years, and I am not prepared to believe that he has been guilty of crime deserving death. Moreover, I know enough of the conditions which have hitherto existed in Johannesburg to feel sure that there is another side to the story, which will put in a very different light the action of those who constituted the Reform Committee. Hereafter I may have more to say on this subject; but the immediate question is far more pressing, namely, Shall an American citizen be selected as the scapegoat for a host of alleged offenders and be sacrificed without full and deliberate inquiry? One would think that this question demanded more than that of Venezuela or Cuba, vigorous action on the part of our Secretary of State, and even a message from the Executive. In the first case, there is a boundary-line, in dispute already for half a century; in the second case, there is an internal war, in which we may properly recognize the insurgents as belligerents (without any immediate result, except the enforcement of our own rights and duties as neutrals); in the third case, there is an American citizen in jail threatened with death.

President Krüger, by promising important reforms to the representatives of foreign interests in Johannesburg, has already admitted, to some extent, the justice of their complaints. But it is not safe to presume, on this account, that Mr. Hammond (who is now imprisoned, while many of his associates have been released on bail) will not be treated with exceptional severity, as the representative of the aggregate alleged offences of all those who have been allowed to escape.

Under these circumstances, there can be no question that the United States ought to insist upon deliberation, delay, a fair inquiry, the opportunity of a full defence, and the further opportunity of a study of the case by this government before the execution of any sentence.

The friends of Mr. Hammond are pressing upon the State Department the necessity of prompt and vigorous action in his behalf. Every reader of this letter is urged to reinforce their efforts by the immediate use of his influence, direct or indirect, at Washington. If you command no better channel, write to your Senators and your Representative (whether you know them personally or not) and entreat them to use their utmost endeavors for the rescue of a man who, besides being one of the foremost members of our profession in the world, is an American citizen in imminent danger.

In reply to inquiries on this subject, the State Department says that the United States Consular Agent at Johannesburg has been directed to render Mr. Hammond and other American citizens all possible aid and protection, and has telegraphed that the orders given him are being obeyed. Moreover, the good offices of the British representatives in South Africa have been requested on our part, and promised on the part of Her Majesty's Government. But all this had happened 10 days ago, and Mr. Hammond's situation is more perilous than ever. The telegram from President Krüger, and published in the *Journal*, New York, January 22d, emphasizes this inference.* What is needed is the instant appointment of a special representative by our government to proceed to South Africa for inquiry into the circumstances, and a telegram should be sent to President Krüger, informing him of this appointment and requesting him to suspend proceedings against American citizens until the special representative has arrived.

R. W. RAYMOND.
NEW YORK, Jan. 22, 1896.

The Acetylene Mystery.

Sir: The calcium carbide and acetylene excitement seems to be subsiding here, the general expression of opinion being formulated in "as they'll soon have their plant going at Buffalo, we'll wait and see." We will, indeed, wait some time, if we are expecting the Willson party to keep its promises to produce calcium carbide at from \$5 to \$7 per ton, and see much before they succeed—at \$20 either for that matter! They are clawing around desperately just now, and are gradually going up in cost, claiming a commercial possibility anyway! Investigators, however, are being led into fresh pitfalls, the principal one of which is: they are being sworn to secrecy and are then shown some ideas, theories or claims to new patents—"valid," no doubt. One of them is said to be a new electrical furnace over which much high legal opinion is being secured. The furnace has got to be proved in practice, however, and when this time comes, so far as practical results are concerned, it will, no doubt, be about on a par with others. They have the Cowles furnace now, and, for technical reasons, we don't believe they will get a better one. This one won't prove their claims though. Where, if I may be permitted to ask, is "Wizard" Willson's great furnace which was to control the earth on calcium carbide?

* To HEARST, *Journal*, New York:

Everything quiet at present. Americans are in no danger whatever. They enjoy full protection of law like any other foreigners, therefore no need of protection from outside against any illegal or revolutionary movements. Even if such protection against revolutionists were necessary, which is not so, the Americans are capable of taking care of themselves.

The Government regrets deeply that whilst almost all the Americans took the side of order and law, a very few of them have joined the revolutionary so-called Reform Committee. These, together with a majority, mostly British, will be tried according to law, and justice will be done all concerned without respect of nationality.

Information Bureau.

KRUGER.

PRETORIA, Jan. 21st.

I am reproached for my recent reference or hint that these people had ulterior reasons for sticking to their plant at Spray, with the old mill race, old water wheel, the one-armed man and their "coon," instead of coming East where power was plenty and knowledge a little more general upon such subjects than at the point in question. The insinuation contained in the hint in question is repelled by these gentlemen with scorn. Nevertheless, they did have some tests made in the East sometime since and although they were conducted at their own request, by the General Electric Company, they showed such ridiculously high cost that they just ran on at Spray, where the estimates were so much lower! The Eastern experiments showed the cost to be at the rate of \$84.50 per ton, instead of from \$5 to \$7. They showed several other things, one of which was that if Prof. Suckert's coal dust or culm were used, that the cost would probably be more than by the use of pure materials. They also showed, as I have before stated, that the production of calcium carbide was the result of heat and that electrosis played no part in the matter. All this is old to technical people, no doubt, and especially so to electrical engineers. It is only referred to to show the "outsider" how inconsistent the "insiders" have been.

I learn that statements of expert judgment as to cost are based largely on error or worse. One of their lists shows Dr. Wyatt as giving the cost at \$15; Mr. M. P. Wood, \$16 to \$19, and Professor Vivian Lewes, of London, \$20. The facts are Dr. Wyatt states cost at \$30 to \$40, and gives Professor Willson as authority for the figures upon which his conclusions are based. Mr. Wood's figures of cost are over \$60, and Professor Lewes has publicly stated that the reports of figures of this enterprising set of gentlemen are ridiculously jumbled, are grossly misleading and cannot be depended upon at all. Mr. James Hewes, electrical engineer, who I think puts down \$20, is credited to Johns Hopkins University. I believe he is a graduate of that college, but he has been the engineer of the Philadelphia Acetylene concern since about its inception. Many others on the list are known to be interested in the scheme. Several others on the list have undoubtedly acted in good faith, and have no doubt failed to measure that cheap old power at Spray and count the revolutions of that old water-wheel.

Now we are requested to suspend judgment until this party gets to work at that plant at Buffalo which, according to Prof. Suckert, is to use up all the power (in time) of the Niagara Falls Power Company. We will agree to wait, provided we are not asked to accept their own figures as final. We have had some experience with their Spray figures. How satirical is the fate which forces the chief engineer of the Spray concern to reside at Leaksville, N. C. ! In the meantime, while we are waiting for "the wheels to go round" at Buffalo, the press is being worked—though it is not as easy now as it once was—and the public is asked to pay no attention to purveyors of "inaccurate criticisms." I join in this request, amended, though, to read "inaccurate statements." I cannot get rid of that \$5 to \$7 ghost. I wonder if Professor Suckert ever will?

Their position now is defensive. They explain that our charges are ridiculous in the face of the fact that they have been taken up by "the leading gas interests" of the country. This is not true. The leading gas interests are really anxious to find some substitute for naphtha, the use of which as an enricher now makes up the chief cost of illuminating gas,—anxious because the Standard Oil Company controls the market more closely every year, and fear exists that the day may come when they will pay more attention to profit on gas than profit on naphtha. If calcium carbide could be produced for \$5 to \$7 we would have the desired substitute. But the leading gas interests, having examined the calcium carbide situation carefully, have concluded that Willson's claims for cheap production are entirely false and misleading. The usual argument that the gas interests cry down everything new (as all of us generally do) will not do here, for reasons just given.

The carbide people have done some business with some gas people, and let us see who? The "outsider" is soothed with tales. "We have sold to Boston's leading gas interest," "We have sold to Chicago," and "we have sold to the Equitable Company, of New York."

All this sounds well, but when we turn the penetrating rays of acetylene on the picture, much that has been indistinct becomes plain. For instance, so far as Boston is concerned, the Standard has already obtained a foothold there in the Brookline Company. The Bay State Company, which now has the lion's share of the Boston business, and heretofore has had a monopoly, has reached the end possibly of its palmy days. The Brookline tentacle of the great octopus has gently fastened itself upon the Boston situation. Its pull will be at first hardly perceptible. As time goes on its power will increase, and its strength is almost irresistible. Gradually and in deadly quiet the Bay State will be pulled below the profit mark, so gradually that there will be no "hue and cry." It will be absorbed as surely as the Beckton Construction Company was in Brooklyn, N. Y. The Bay State bought the calcium carbide gas rights for Boston in the hope that it could make calcium carbide at about \$20 per ton, have its own enricher, be independent of the oil interest and so cut off the tentacle of the octopus, and thus have done with it. This Boston calcium carbide deal was founded on pure desperation, and I think the carbide party will not receive much cash from it, until it proves its \$20 claim at least, which it can never do.

The Equitable Gas Company (N. Y.) deal has certainly not been profitable to that company to date, to judge by its stock quotations. This deal looks odd, in that Count Jerzemenowski, who, I think, is president of the Equitable, is the vice-president of the Electro-Gas Company, the seller of the rights. Perhaps this is another case of naphtha desperation!

The sale of Chicago gas interests will be found again closely connected with Mr. Dietrick and Count Jerzemenowski, both of whom have been interested as leaders in the Chicago Gas Trust, which has served its part as one of the rottenest elements of speculation that the most speculative element of Wall Street has ever seen, out of which "insiders" have taken millions from the enthusiastic "outsiders."

So we find a very suspicious aroma (like sulphuretted hydrogen, for instance, to be technical) of danger surrounding the "gas experts," whom the very able letter writer, Mr. George F. Seward, refers to as safe men to follow. From Mr. Seward's possible "inside" standpoint, they can be safely followed, for they are sure to get the cash themselves, while with the follower, or the "outsider," their position is, to judge by their past, very much like that of a deceased Wall Street magnate, who summed up the "insider's" creed in the brief words, "The public be damned!"

Now, Mr. Editor, you need not call on the carbide party for answers to your queries. These gentlemen are bright enough to see that they are "in for it," and their only safety lies in silence. Mr. Dickerson, wrapped securely in the mantle of his distinguished father, leads the stately minuet. It is a dance of ghosts, as funny as a ghost dance! Noble Romans, all, wrapped in their togas, the shafts of doubt and ridicule are shivered in their very midflight in contact with the rays of effulgent (acetylene) reason which surround their mighty Jovelian (*velian* almost makes villain) brows, as mighty in their impenetrable strength as a panoply of horns of Texas steers.

All the same, the Electro-Gas Company which was to have used up all the power of the Niagara Company, has done a very queer thing, and that is, instead of holding on to their most wonderful bonanza, have turned it over to the Philadelphia Acetylene concern, and it is going to make the money now out of the power of Niagara. This looks mightily like the chief body of noble conspirators were getting into position to let some one else fail to carry out their own promises, so they may be able to say, when the smash comes, "it's all the fault of the other fellow." Time is what they need to break down the anger of "outsiders" so that they may be led by degrees away from the dreams of great profit from \$5 to \$7 cost, to the calm consideration of the fact that all they have is a bare commercial possibility instead of a revolution. This party of schemers should be held down to their \$5 to \$7 per ton promises, togas or no togas! Dignity is a great thing! Let us see if they pay back the "outsiders'" money.

I regret to have to go into the underlying motives of these artists, but as they have invited it themselves, I am justified, especially as we are forced to try the issue on circumstantial evidence. Especially has this been invited by that able investigator, Mr. Seward, who openly invites us to this course. And, by the way, I beg to advise that I would not advertise Mr. Seward's accident company in your efforts to find his interest (disclaimed in tricky fashion by him) in this scheme. He circumstantially convicted himself of such interest in his first letter.

It might prove interesting to know how much these schemers have made among themselves, and compare such results with how much the "outsider" won't make.

It may be my pleasure—nay, Senators, my duty—to go further into this matter. For the moment I will look me to the coming fray by having my toga patched up for my next possible appearance in the Forum.

Yours, etc.,
ACETYLENE.

Photography Extraordinary.—A new conductor of light has been discovered by Professor Röntgen, the well-known physicist at the Wurzburg University. He has discovered that light penetrates wood and the flesh of men and animals, without, however, penetrating bones and metals. The professor succeeded in photographing metal weights placed in a shut up wooden case. Another photograph of a man's hand shows only the bones while the flesh remains invisible. The experiments are conducted in the following way: Crooke's tube is used viz., a well pumped-out glass pipe, with an induction current going through it, and by means of the rays which that pipe is emitting he photographs on ordinary photograph plates. In contrast with the ordinary rays of light those rays penetrate wooden and organic matter and other opaque substances, just in the same way as the ordinary rays of light penetrate glass.

Price of Tinplate in England.—The prices of tinplates during 1895 have been almost unprecedentedly low, Bessemer having run from 9s. to 9s. 6d., and Siemens (coke finish) from 9s. 6d. to 9s. 9d. It is remarkable how difficult it has been to move this branch of the trade within late years. Until 1876 such a thing as coke tinplates under 20s. per box had not been known. In 1872 the price rose as high as 42s. per box, or nearly five times the current quotation. By 1878, however, the other extreme had been reached with a quotation of 13s. per box, and in most of the years that followed the minimum price reached was below this figure, although the maximum generally fluctuated between 16s. and 18s. The difference is mainly explained by the greater cheapness of tinplate bars, in common with all other steel products. The price of tinplate bars during 1895 has ranged from £4 7s. 6d. to £5 per ton.

A Short Method of Determining Carbon in Steel.—In a recent number of *Dingler's Polytechnisches Journal* Dr. Weeren states that Mr. Peipers, an engineer at Reimscheid, Germany, has introduced a method of determining carbon in steel which is similar in principle to the assay by touch in use for gold. A series of test bars of known carbon contents, and varying from each other by about 0.2% between the limits 0.2% and 1.2%, form the touch needles, while the touch stone is represented by a slab of porcelain. The bar is hammered and filed to a blunt conical point, which leaves a black mark when rubbed on the porcelain slab. The sample to be examined is rubbed upon the center of the plate to form a patch of about the breadth and length of the finger, a similar one being made on either side of it with two of the bars whose composition is known. The chief point to be attended to is to make the patches uniform in depth of tint, which can be readily done with a little practice. The marked slab is then immersed to about half its depth in a beaker containing a 12½% solution of copper-ammonium chloride in water, which dissolves away the iron from the immersed portions of the patches, leaving the carbon behind as a gray stain, whose intensity increases with the percentage proportion. Steel with about 1½% of carbon is nearly as dark after as before immersion, while that with 0.25% gives only a very pale shade when the iron is removed. If the metal were perfectly free from carbon the mark would be completely dissolved. Numerous substances have been tried for streak-plates, including agate, Arkansas stone, hard glass and feldspar, but none of them have been found equal to unglazed porcelain. In its ordinary state, however, the latter is too rough to abrade the metal equally so that it must be rubbed down with coarse emery cloth to render the surface sufficiently uniform. The markings may be nearly completely removed by washing in water, but a more satisfactory method is to clean the slab by immersion for 15 minutes in nitric or hydrochloric acid, which removes rust spots and stains, and restores the original white surface. The method is capable of indicating differences of 0.05 or 0.025% of carbon under favorable conditions. The cost of the apparatus is about \$5.

CAMP FLOYD DISTRICT, UTAH.

Written for the Engineering and Mining Journal by James W. Neill.

What the Cripple Creek District is to Colorado the Camp Floyd District promises to be for Utah; indeed it may safely be said already to be this, for "Mercur" is the most common topic with mining men nowadays.

What, where, and why is Mercur?

Firstly, the camp is re-named after the principal mine, the Mercur, having been formerly known as Lewiston, and under that name flourished as a silver mining camp in the years 1869, '70 and '71, when Dry Cañon, Ophir Cañon, Lion Hill and other camps on the west slope of the Oquirrh range were all producing silver ores of high grade and in large quantities.

Lewiston Cañon cuts a deep notch into the Oquirrh range near its southern end, entering this cañon from the west, where it opens out onto the broad desert of Rush Valley, its course is about due east till the town of Mercur is reached; here it forks, one arm extending eastward one-half mile, the other and main arm turning sharply to the north and extending for about two miles to where it ends in the summit dividing this watershed from that of Ophir Creek. The sides of the cañon from entrance to forks are mostly quite steep, but from there on a sort of basin opens out, broken, it is true, by numerous small hills, but with more gradual slopes and numberless smaller gulches.

The elevation of Lewiston, now "Mercur," is 6,700 ft., and the town is similar in all its features to the mushroom mining towns of Colorado, has its several hotels, numerous saloons and stores, and, moreover, has at the present writing a well-defined "real estate" boom. That means that town lots 25 ft. by 100 ft. are actually changing hands for money consideration at a rate of from \$500 to \$1,500, according to location and desire of purchaser. Mercur will shortly have two banks. I mean by this, banking institutions, not faro banks; of these latter there have been a sufficient number for sometime past.

Mercur is reached from Salt Lake via the Union Pacific Railway with one change of cars at Lehi Junction, change again at Fairfield, where the Salt Lake & Mercur Railroad, with a little narrow gauge car on broad gauge trucks, meets the Union Pacific trains and conveys one to Mercur. This railroad is a wonder to the traveler: the trip over it is well worth the taking even if the mining camp at its western end were no attraction. This little road was built by private parties for the hauling of the ores from the Mercur mine to the Mercur mill, and continued to the Union Pacific Railroad track, so as to have the benefit of freight to and from camp. It is 12 miles long, and I heard an old railroad man say that he would wager "big money" that in four miles of it one could not find a straight rail! It crosses a divide 1,800 ft. above the Fairfield station, reaching this point by a series of curves, loops, twists and turns which fairly make one dizzy, and discounts any of the scenery on the famed Marshal Pass on the D. & R. G. Railway or the Hagerman Pass of the Colo. Midland. The single car is taken over by a diminutive engine of the Shay type, and at every turn the passenger holds his breath for fear this little machine will actually jump over what, to all appearances, is the end of the track. The rails are not yet laid into the town of Mercur proper, but a short drive of one-half mile in a "hack" fills the gap.

Why Mercur exists is readily apparent, as it is the home of the numerous miners employed in the producing mines which are close to town. Just now this is the chief reason for the growth of Mercur. The Mining District of which Mercur is the chief point is called the Camp Floyd District; it embraces a large amount of country, from about two miles north of Mercur, where it joins on to the Ophir district, and for I do not know how many miles to the south; judging from the maps of claims staked out, the distance must be fully six miles.

The rock formation of the Oquirrh range at this southern end is mainly limestone, alternating with more or less quartzite, both deposited in layers which vary from one to many feet in thickness. Conforming with these main rocks in strike and dip are two wide shale belts, one closely overlying the ore deposits, the other known as the "water belt" several thousand feet to the north.

To the south of Mercur proper a belt of porphyry occurs, whether a dyke, overflow, or both, is not yet determined; but though it cuts the other formations squarely it does not seem to have faulted them to any considerable extent. To the north and between Mercur and Ophir is another belt of porphyry of different appearance and composition; this being a so-called "birdseye."

The bedded formation, as exposed by the section shown in Lewiston Cañon, forms a distinct anticlinal, the axis of the fold being about on the high ridge which lies half a mile west of Mercur, and this axis has a trend of about 35° west of north. From this point, towards the east, the formation dips to the east of north, and the further to the north the steeper the dip, till in places where the strata are cut by the railroad work below the summit the strata stand vertical.

In the region occupied by the mines the average dip of the beds is from 12° to 22° from the horizon, and the direction about N. 40 E. From the summit of the ridge which forms the axis of the anticlinal fold the slopes of the mountain are much more steep than those of the strata, and the trend of the mountainside is more or less that of the strata. From this general description will be seen the following: Lewiston Cañon, with its general easterly direction, cuts through the strata, at about right angles to their dip, as the ore bearing strata are bedded with the others; it also cuts through these and exposes the outcrop on both sides of the cañon, and following in many cases the contour lines of the hillsides. Furthermore, the slope of the mountain to the west again cuts the strata, this time on their strike, and the outcrop should be again traceable on this western slope, both to the north and to the south. This has been done to the north with small success, but to the south with the result that at a point about three miles from Mercur the ore-bearing horizon has been opened up and the Sunshine Mine, with its surrounding groups of claims and a town of the same name, is the result. Briefly, then, the features of the district are a bedded formation of very considerable regularity, tilted slightly, and no doubt having many smaller foldings and faults, but with a very uniform dip and strike. The mountains containing this formation have been seriously eroded; to the south they slope out into the plain of Rush Valley, hence the line of the outcrop of the ore-

bearing strata might practically conform to that of some one contour line of the western mountain slope, running with it up each little cañon and again on each little point down into the plain, thus the variety of apparent dip and strike along such an "apex" can be readily comprehended.

The Mercur Mine is situated on the sidehill just above the town of Mercur on the south side of the cañon. Here the outcrop as defined by the various tunnels of the mine shows very clearly the dip of the strata, about 17°. On the north side of the cañon and occupying about the same position from the axis of the fold is the Marion Mine, and midway between the two in the bottom of the gulch and on what would be the turn in the contour line marking the outcrop, is the Golden Gate or De Lamar Mines. At this place the outcrop is beneath the detritus of the gulch, and the ore was first cut in a shaft 45 ft. deep, since then developed through many openings to a depth of several hundred feet from the surface. The De Lamar workings are, however, not less than 1,700 or 1,800 ft. from the original apex or outcrop, the scouring out of the gulch having removed all the rock and ore for that distance back.

The ores of the camp are two in kind, the oxidized and the base or arsenical, and each is peculiar in its composition.

The oxidized ore, which is that now being mined and treated by the Mercur Company, and in fact by all the mines now producing, is of a yellowish color when seen in mass, its composition is mainly silicious or quartz matter, with, however, much limestone mixed through it, all stained by a clayey or talcose substance which gives the mass its color, while each distinct species of rock retains its usual characteristics.

Much of the limestone is more or less decomposed, and to my mind the ore-bearing horizons are simply replacements of limestone by the mineral-bearing aqueous solutions. I say "strata," for there are two distinct horizons carrying ore, the lower or "Mercur" "vein" and the upper or "Ruby" "vein." These are separated by about 50 to 70 ft. of limestones. Both carry pay ore, but the upper layer is, so far as at present developed in the Mercur mine, usually both smaller and lower in grade. The base or arsenical ore is unique in its occurrence. It is quite black in general appearance, but on fresh breaking shows to be seamed with thin layers of Realgar or sulphide arsenic, which in places actually makes up such a large proportion of the mass that it is practically an arsenic ore. This mineral seems to coat the gold in some way so that the cyanide solution will not attack it; these ores are therefore not at present available, some other process which will involve roasting being necessary. After roasting, this ore shows itself to be of such a porous nature that it would be a good material for leaching.

In this condition it will yield as high a percentage of its values to the cyanide solution as does the regular oxidized ore, therefore it is only a question of roasting and getting rid of the arsenic fumes by some method of condensation. This latter point is vital to success, as the ore often runs up to 10% arsenic, and should there be a permanent plant to handle 100 tons per day, the fumes from 8 or 10 tons of arsenic in the surrounding atmosphere would no doubt be a serious matter to life.

Arsenic sulphide is readily sublimated as such, and almost as readily condensed, hence a system of chambers would probably suffice.

It is said that this base ore also carries up to 2% quicksilver; should this be the case the treatment would be more complex, as that amount of mercury would probably pay for a variation in the treatment method. So far, the only large body of this ore has been opened up in the De Lamar property, where there are vast quantities of it, several hundred thousand tons, it is said.

The Mercur mine is the oldest in the rejuvenated camp; it was formerly—that is, in the silver days—worked for the mercury its ores contained, but this not paying, it was again abandoned. Taken up in 1890 by the present owners as a gold proposition, it ran its owners in debt to a large amount, as they built an amalgamating mill which did not save sufficient of the values. Catching at the cyanide method, as a drowning man at straws, they found it effective and cheap, and, in spite of the doubts and scoffs of the mining community at large, they put in a plant to treat the ore by this system, and have made the mine and camp what it is to-day. The mine is operated by a system of tunnels run into the side hill on the strike of the vein; through these the ores are extracted, run into bins and dumped into the railroad cars for hauling to the mill.

The underground workings are a confusing network of openings, but leave on the mind of the observer the impression of a vast amount of available ore with large territory yet undeveloped from which to draw. The ore body in some places is 30 ft. thick, all of which goes to the mill, in many places 16 to 20 ft., and averages, they tell me, 16 ft., or, as the engineers put it, a ton to the square foot of surface. The mine is shipping about 200 tons of ore per day to the mill, which is about five miles by rail.

The De Lamar property, already mentioned, was only purchased by Capt. De Lamar last spring, but he has since then prosecuted work with a vigor which bespeaks his confidence in the mine, and to-day it no doubt well repays for this outlay. It is opened by several shafts, these connected by inclines and all showing bodies of ore which are as thick as any in the Mercur, of a grade as high, but mostly base ore.

Later developments here are showing up large bodies of the oxidized ore, and the opinion of many of the best informed men in the camp is that this occurrence of arsenical ore will be found to be not a permanent change of all the ore at this depth, but rather a body of the ore which for some reason has not been oxidized, or which has in some manner been impregnated with this arsenical mineral. If this proves to be the case, this mine will very soon be added to the list of actual producers, a cyanide mill being not such a serious proposition as the roasting plant, etc., for the base ores.

The Marion Mine and the Geyser Mine are both operating on the north side of the cañon, close to town, each has a mill on the property, treating in each case about 50 tons per day of oxidized ores of low grade. These are the only producers in the camp. From the town of Mercur a stage takes passengers to the town and mine of Sunshine, three miles to the south. As a town it is not yet much of a success, but its enthusiastic "real estate" men say it is "a sure winner," and that is surely recommendation enough.

The mine of this section is the Sunshine. It is well developed by an incline which has now attained a depth of nearly 500 ft. on the dip, from this numerous levels have been run, ore is everywhere blocked out, all

faces are in ore, and the eye of the visitor can see no difference between this ore and that of the Mercur mine itself.

The property is equipped with a brand new mill which is now handling about 50 tons per day; this will be rapidly increased as experience demonstrates just what changes may be necessary in the process for the best extraction of the values. Enough ore has been treated to demonstrate the values, and the company apparently has a prosperous future before it.

These, then, are the Mines of the district; other companies have spent money in the camp, own large amounts of surface ground, and have done considerable work; prominent among these is the Viking Company, who own ground immediately adjoining the Mercur, on which they have sunk a large shaft to the depth of 475 ft. in the hopes of cutting the ore on its dip.

Either the ore-bearing strata are barren at this point or some local fold has thrown the horizon out of place, for this shaft which should have cut the ore at 225 ft. did not find any values!

It would be useless as well as impossible to try to mention the various prospective bonanzas of the region, every day there is some new incorporation and stocks will soon be thicker than leaves in Vallombrosa. That many of them will be about worth the printing and paper goes without saying. The fact that this is a flat formation, and that the "vein" appears so regular where opened is an argument which will be used to bolster up the hopes and stock in many a wildcat venture, out of which the only gold to be produced will be from the investors' pockets. While the ore chutes in this deposit are of immense extent, the best informed do not doubt that they are chutes and not a complete mineralization of this strata evenly throughout. Moreover, it has been repeatedly demonstrated that there are several layers of decomposed limestones at different levels above the regular ore-strata, which resemble these so closely in appearance that to have material "exactly like the Mercur" is no sign that that material is of any value at all. Again we are reminded of the old saying that gold is where you find it.

This is no "poor man's camp." The ground for miles around the producers is located once, often twice, and frequently several times. Away from the apex, development is expensive and disappointing; even granting that a prospector finds ore of a pay grade, he must build a mill before it will repay him any money, and that means that he must seek capital. Those who have been through this know that finding capital is about as hard as finding the ore.

For capitalists there is a field worth investigation. The camp will be a camp of large aggregations of claims under one ownership, thus minimizing the outlay for milling and working capital; ground of prospective value from its vicinity can be secured at "prices" under bond and lease, and there is room for many a good mine in the claims surrounding the present producers. It is needless to say that prices are high, that developed ore can be sold in the mine for more than it would bring in a mill, and that the market for "suckers" is a brisk one.

The water supply has been a grave question till this present season; now it is merely a question of quantity and price.

The Gold Belt Water Co. has put in a large pipe line from Ophir Creek with a water-driven pump and complete appointments, so that they can contract to deliver to a leaching mill or a private house. They furnish the water to the Sunshine and one other mill of the district, as well as to the town.

The actual production in gold at the present time is as follows:

Mercur.....	200 tons,	\$12.00	less loss	\$2.00	.....	\$2,000
Marion.....	50 "	6.00	" "	1.00	.....	250
Geyser.....	50 "	6.00	" "	1.00	.....	250
Sunshine.....	50 "	6.00	" "	1.00	.....	250

Total daily output of producing mines\$2,750

Multiply this by 30 and we get a monthly product of \$82,500 gross. The cost of mining, hauling, milling and marketing product, per ton of ore, is currently quoted for the large producers at \$3.25 per ton.

As per table, we have to deduct from this gross output the costs, viz., 350 tons at \$3.25 per ton = \$1,137.50 per day, or \$34,125 per month, leaving as a possible net product of the district \$48,375 per month, and it will be readily seen that the most of this is in the pockets of the Mercur Company. From this it will also be seen that the limit of "pay-ore" is about \$5 at present, though with better mills and methods of treatment the cost of milling and also the tailings loss should both be decreased, thus raising the net profits.

To the uninitiated an examination of the tailings dumps from one of the Mercur cyanide mills would be a surprise, for some of these mills do not crush finer than $\frac{1}{2}$ in., which means that the tailings look more like road material than anything else.

While the present output of the district is ridiculously small compared to the advertising it gets, we must not forget that this has been a season of development, next season will see several mills in operation, a large increase in output, and no doubt many valuable properties opened up. To Capt. J. R. De Lamar we must give thanks for the impetus given the camp this season, and to him, in the building of new mills, etc., the camp must look for its greatest impetus the coming season.

Underground Trolley Patents.—The recent decision of Judge Townsend, of Connecticut, sustaining the Van Depoele patent, now held by the General Electric Company, which covers the use of an under-running trolley, will affect mine tramways as well as surface roads where electricity is used, if sustained by the higher courts. It is probable, however, that in mine work it would be comparatively easy to use some other device, like the Westinghouse side-running trolley, recently patented, owing to the shorter and more readily controlled trolley arm usually required.

Electric Coal Cutting by Contract.—The Electric Coal-Cutting Contract Corporation, Ltd., is the name of an English company whose business it is to cut coal for different mines at a pre-arranged price, the corporation making the installation entire for this purpose. This plan has many good features and some drawbacks, and, judging from its recent annual report, it is not yet at least on a paying basis. It is not, however, fair to assume that this necessarily means that the plan will not yet succeed, and it is undoubtedly doing a good work in increasing the interest in, and number of, electric installations in England.

THE SALT CREEK OIL FIELD, WYOMING.

Written for the Engineering and Mining Journal by Wilbur C. Knight.

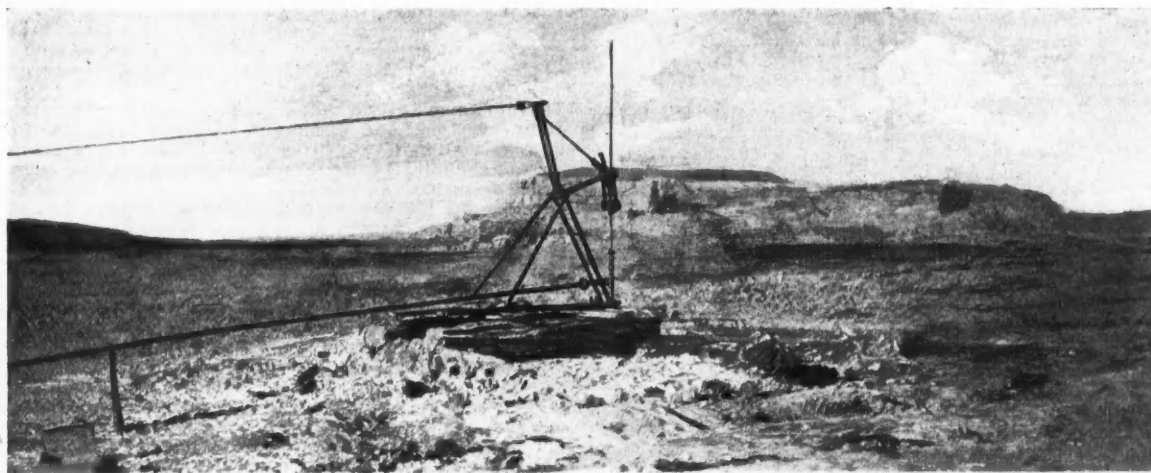
The Salt Creek oil field, the first worked of many oil fields in Wyoming, is located in the northern part of Natrona and the southern part of Johnson County, 50 miles north of Casper, the county seat of Natrona County and the terminus of the Fremont, Elkhorn & Missouri Valley Railroad. This field, as it is known to-day, is 18 by 30 miles, but this is merely an approximation, not based upon any scientific investigation, and from time to time will probably have to undergo changes as the field is explored. It lies along Salt Creek and its tributaries, which drain northward and empty into Powder River, and is a rough country, cut by deep gulches, between which there are some tablelands of small extent. Vegetation is scanty and timber scarce, being found only on the highest bluffs, and then very scattered; while water, with the exception of the spring months, is found only where springs occur, and, as a rule, is very inferior, containing a high percentage of sodium sulphate.

Oil was discovered on Salt Creek many years ago, but did not excite much attention until early in the 80's, when large tracts of land were lo-

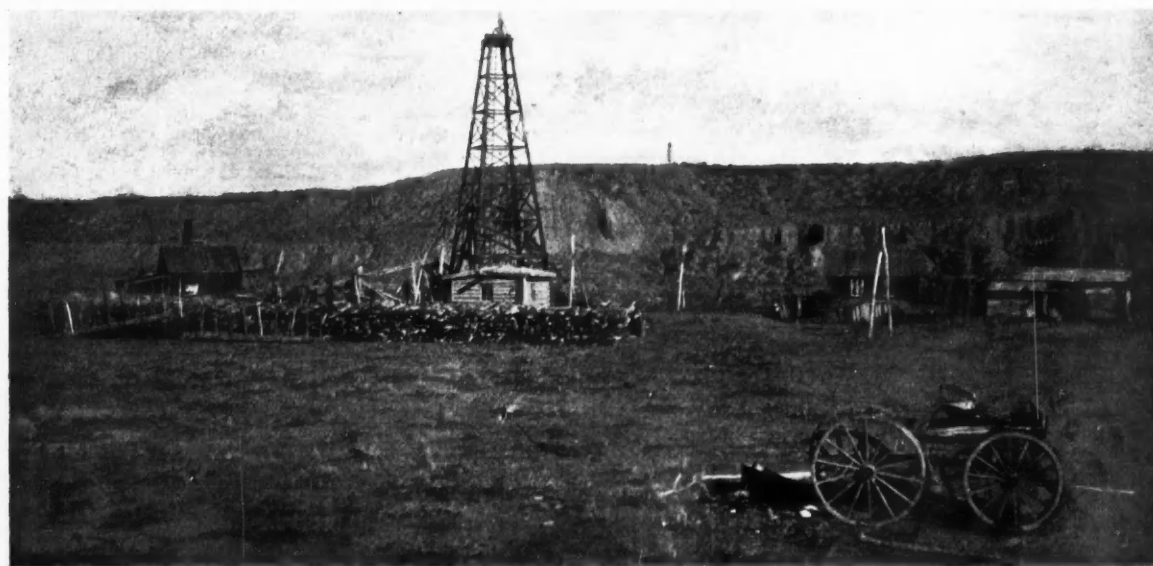
men, own a valuable tract of land, and have now their No. 1 well nearly, if not wholly, completed.

Six miles west of the Pennsylvania Company's wells the French syndicate, Mr. French, of Douglas, Wyo., Manager, are erecting buildings and a derrick, and probably the best drilling outfit ever sent West. Although the distance from the producing wells is considerable, the indications are good, and wells ought to be found at depths not varying much from those to the East. This syndicate, which includes some of the richest men in the West, own a large tract of oil land, and expect to develop very extensively.

The geology of this new oil field is of especial interest, since the oil is found very much higher, geologically speaking, than that in the Eastern States. The field is a gentle anticlinal fold, with the axis extending northwest and southeast, and is over fifteen miles in length. Along the greater portion of the axis there has been considerable erosion, the Laramie group, which varies from 3,000 to 5,000 ft. in thickness, being entirely removed, and also a large portion of the underlying Fox Hills bed. The rocks along the eastern flank of the fold dip to the northeast 6 degs., but on the western flank the dip is not so great. The oil is found in either lower Fox Hills or Upper Ft. Benton sandstone, of the Cretaceous



PUMPING JACK.



PUMPING STATION AND WELL, PENNSYLVANIA OIL COMPANY.

cated as oil claims. The development was exceedingly slow, for prior to 1890 no wells were bored, and the assessment work of the claimants seldom amounted to more than a 10-ft. hole. In 1889 the Pennsylvania Oil Company, composed of Pennsylvanians, and under the management of George B. McCalmont, located on Salt Creek and drilled a well which, early in the spring of 1890, struck oil, but the strike was not made public until the following autumn, the company in the meantime acquiring more territory and making arrangements for extended development. Obstacles of no small magnitude were met with; the oil had to be freighted 50 miles by wagon; the railroad freights were controlled by Eastern oil producers, and rates that would allow shipment seemed almost impossible; the oil was new and had to be proven before it could be placed upon the market in successful competition with well-known brands, but, in the face of all these difficulties, the company continued work, and in the spring of 1894 succeeded in making arrangements to ship crude oil. Storage tanks were erected at the wells and at the railroad; and before the close of 1894 2,300 bbls. had been marketed, and early in 1895 a refinery was erected and commenced the manufacture of several grades of lubricating oils. The success of the Pennsylvania company induced others to follow.

One mile northeast of the Pennsylvania Oil Company's headquarters the Wyoming Lubricating Oil Company, composed of wealthy Colorado

men, own a valuable tract of land, and have now their No. 1 well nearly, if not wholly, completed. Six miles west of the Pennsylvania Company's wells the French syndicate, Mr. French, of Douglas, Wyo., Manager, are erecting buildings and a derrick, and probably the best drilling outfit ever sent West. Although the distance from the producing wells is considerable, the indications are good, and wells ought to be found at depths not varying much from those to the East. This syndicate, which includes some of the richest men in the West, own a large tract of oil land, and expect to develop very extensively. The geology of this new oil field is of especial interest, since the oil is found very much higher, geologically speaking, than that in the Eastern States. The field is a gentle anticlinal fold, with the axis extending northwest and southeast, and is over fifteen miles in length. Along the greater portion of the axis there has been considerable erosion, the Laramie group, which varies from 3,000 to 5,000 ft. in thickness, being entirely removed, and also a large portion of the underlying Fox Hills bed. The rocks along the eastern flank of the fold dip to the northeast 6 degs., but on the western flank the dip is not so great. The oil is found in either lower Fox Hills or Upper Ft. Benton sandstone, of the Cretaceous

age; but the line of separation of these groups at this point is so difficult to determine that the absolute determination must be made at some future time. The rocks of the Fox Hills group are chiefly shales separated by an occasional band of friable sandstone. The oil-bearing sandstone outcrops to the surface at two points south of the Pennsylvania Oil Company's wells, indicating that there are probably two oil sands, though, without drilling, this question cannot be settled, for one of the horizons may be caused by oil coming through a fracture, which, however, is improbable, the anticlinal being too flat. The number of producing zones may be even six or more, for beneath the Ft. Pierre group, in the oil districts in Natrona county, west and south of Salt Creek, oil occurs in the Niobrara, Ft. Benton and Dakota groups, which exist beneath the Salt Creek field, and may be oil-bearing there also. The producing oil wells vary in depth from 900 to 1,500 ft., but to the south of the Pennsylvania Company's wells they will be found at a much less depth, while to the north and east they will rapidly increase in depth owing to the dip of the formation and the sudden introduction of uneroded rocks of upper groups. On the west side of the anticlinal the depth will be more constant, since the entire Laramie group has been eroded. The drilling is accompanied with considerable difficulty on account of the soft nature of the formation, which causes it to cave, while artesian water, strongly impregnated with sodium and calcium sulphate,

is found at several horizons, especially just above the oil sandstone; owing to the great viscosity of the oil, all of the wells have to be pumped. The oil sandstone has been penetrated to a depth of 45 ft., but it may be much thicker. So far no attempt has been made to increase the flow by "shooting" the wells.

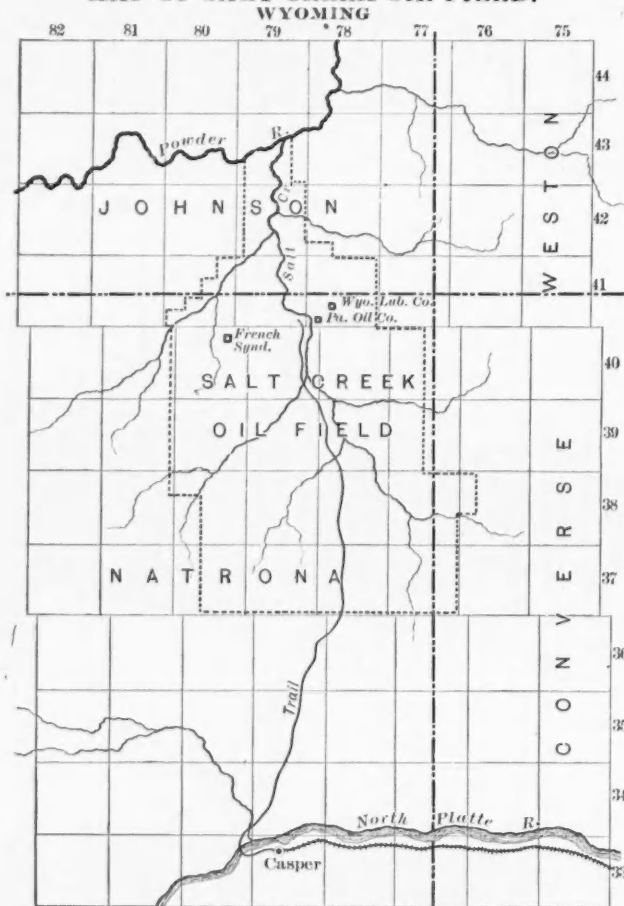
The Salt Creek oil has a specific gravity of .9100, flashes at 246 deg. F., is fluid at zero, Cent., has a greater viscosity than is usually found in oils of this gravity and it is neutral and does not show any trace of tarry matter when 5 ccm. are dissolved in 95 ccm. of 88 deg. gasoline and let stand for double the required time, and is, so far as I am able to learn, the best natural lubricant ever discovered. The oil is a beautiful olive, green color by refracted and an amber color by transmitted light. If refined by dry distillation it yields about ten per cent. of light oils, but if superheated steam is used the yield in light oils is insignificant.

The Pennsylvania Oil Company's refinery, the first erected in Wyoming, is located at Casper, has one 50 barrel still, and is arranged to manufacture four grades of oil, named—car, engine, machine and valve oils, and it is also possible that some kerosene may be made. The refinery, under the superintendency of Mr. W. H. Clarke, an oil expert from Pittsburg, Pa., is expected to handle the entire output of the company, which is from 60 to 70 barrels per day.

The oil industry in Wyoming just started is in a fair way to become important and may make an output for 1896 of over 50,000 barrels. The smallness of the production in 1895, about 7,000 barrels, valued at \$9 per barrel, was due to the fact that four of the six wells now producing were drilled during the year.

The transportation of the oil to the railroad is effected in freight

MAP OF SALT CREEK OIL FIELD.



wagons of the ordinary sort, but behind them is a fourth wagon, or the freighters' home, which has wide boards projecting from the sides of the wagon box over the wheels, making a box of unusual width covered with heavy canvass over the ordinary wagon bows, and provided with a window in the back end, a door in the front, and a spring bed, cook stove, table, cupboard, and all the necessary equipment for keeping house. In this house on wheels the freighter passes the night and the severest storms in a very comfortable manner, and in breaking camp he is not bothered with his camp outfit. This novelty has been recently introduced by Mr. Johnson, the leading freighter for the Pennsylvania Co. With 16 mules he draws his four wagons, loaded with 18,000 pounds of oil, over a very sandy road.

Underground Electric Haulage.—Underground electric locomotives at the Marles colliery, in the Pas-de-Calais, each weighing three tons, draw 30 corves holding 15 tons of coal, at the rate of 16 kiloms. = 10 miles per hour, thus taking the place of 30 horses. Of the two Saint-Augustin shafts, A and B, 4m. = 13 ft. in diameter, at No. 5 seat of working, each shaft is provided with a vertical winding engine, one of 200 H. P. and the other of 250 H. P. The A shaft has landings at depths of 210m. = 114 fathoms, and 260m. = 142 fathoms; and shaft B is fitted with rail guides and electric signaling apparatus. The whole Marles concession, which covers 2,990 hect. = 7,388 acres, has three other seats of working, all situated at Aichel, seat No. 3 comprising the Saint-Firmain and Saint-Abel shafts, and No. 4 the Saint-Emile shaft, 4m. = 13 ft. in diameter, with its air shaft of 2½m. = 8 ft. 3 in.

THE LEAD AND ZINC FIELDS OF WISCONSIN.

Written for the Engineering and Mining Journal by A. J. Roethli.

The lead and zinc industry of Wisconsin is confined mainly to the counties of Iowa, Lafayette and Grant, with a few mining spots here and there as far east as Madison, north to Wisconsin River, and west to the Mississippi River, comprising a large tract of land. Highland is the northern terminus of the mines, while Dubuque, Ia., is the border line on the south. Between these two points lie the greatest lead and zinc producing mines in the United States, barring Jasper County, in Missouri.

These limits include all of the lead region which has ever been productive, as well as much that has never as yet proved so. The area thus included, which has been, or may hereafter become, productive, is necessarily that of the Galena limestone, which is about 1,776 square miles.

There does not appear to have been any absolute and unvarying order in which the minerals of the lead region were deposited in the mines. The following conclusions are derived from the inspection of the ore as it occurs in place in the numerous mines visited, and from the examination of a great number of specimens; and it is assumed that when crystals of one mineral are coated or covered with another the overlying one is the more recent. The minerals appear to have been deposited in the following general order: Galenite, sphalerite, dolomite, calcite, pyrite, marcasite, chalcocopyrite, barite, calcite, cerussite, smithsonite, malachite, and azurite.

The order above given, however, is subject to very numerous and important exceptions, and is more particularly applicable to crystallized specimens than to heavy ore deposits. Large bodies of ore frequently consist of galenite, sphalerite and pyrite, so mingled together that no order of deposition can be ascertained.

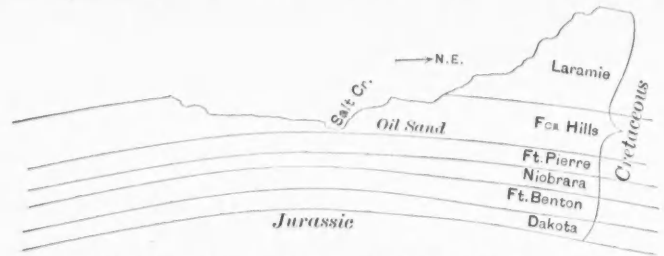
In general, it appears that the sulphurets of the metal were deposited first, and that the carbonates have been generally, if not invariably, derived from them. Carbonate of lead (cerussite), when found crystallized, always occurs in connection with galenite; and carbonate of zinc (smithsonite) is so frequently found graduating into the sulphuret as to leave but little doubt of its origin from that mineral.

It seems not improbable that the formation of the carbonate of zinc may even now be taking place in the ground to quite a large extent, especially in such deposits as are not below the water-level, or are only periodically submerged.

It is a well-known fact that the drybone diggings are usually comparatively free from water, and that the zinc ore below the water-level is usually blende, with but little admixture of the carbonate. As the level of the water in the ground becomes gradually lower, and it is a well-known fact that it does, the atmosphere, together with surface water charged with carbonic acid, is permitted to act upon the blende, and a transformation from the sulphuret to the carbonate is the result.

Up and down, far and near, are myriad holes in the ground, with surrounding dumps, looking in the distance like prodigious mounds. These are the mines; some abandoned; some yielding fortunes; all telling stories of man's hope and indomitable will.

Twenty-five years ago, zinc was unknown to be in the bowels of the earth in this region, but lead was found in large quantities, ruled at high prices, was easily obtained, and more exclusively sought after than its sister metal. The new mines were rich and developed very rapidly, and prosperity was seen on every side. But what a contrast in 1893, when the panic came, from which we now see the first signs of recovery! The mines were closed the latter part of that year and the miners thrown out



GEOLOGICAL SECTION OF SALT CREEK OIL FIELD.

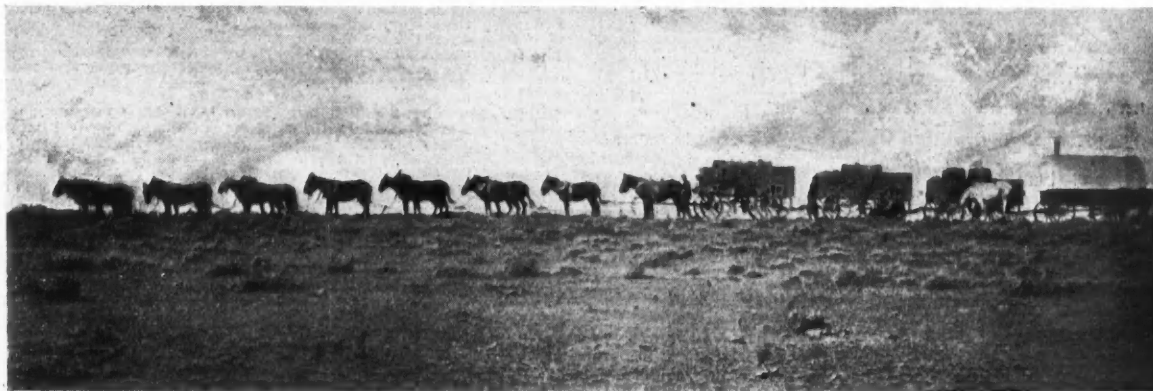
of employment. Most of the unmarried men in the mines went away, and some of those with families. At the present the different camps still present a sorry spectacle, with their numerous store buildings and homes empty, but better times are dawning; the shut-down mines are starting up again, and by next spring we expect to see the miners and laborers earning good pay, merchants enjoying brisk trade, and the whole community in that contented and happy state which good fortune and prosperity alone can bring, as in 1891 and 1892. It makes me sigh to think that this region may never again see times quite so flourishing. When one contemplates the vast area the zinc fields of Wisconsin cover, the fact plainly and strongly asserts itself that there is a brilliant field and large opportunities for capitalists here. All of the big producers are commencing operations again, and the signs all point for a successful year. Readers of the *Engineering and Mining Journal*, perhaps, never heard of this great zinc belt, and perhaps an enumeration of the largest mines in this district will not be amiss.

In years gone by Highland was the queen mining camp of this district, but of late she has declined. The largest producers are owned and operated by Richard Kennedy and Lewis & Lynch. At present these mines are idle, but will be re-opened before long. Before discontinuance 100 men were employed. Only recently 1,500,000 lbs. of blende was sold to R. Lanyon & Co., of Pittsburg, Kan., and over 2,000 tons of carbonate of zinc, which is used in the manufacture of oxide, is ready for market. Lead is also found in large quantities, and in the early times miners only sought for "float" lead which was near the surface. Drybone and Section 4, a few miles south of Highland, are old mining camps, and all the mines are in operation. Over 4,000 tons of zinc, including that at Highland, is ready for market. At Benton the Raisbeck mine, owned and

operated by Wm. Raisbeck, is the largest producer of blende. Between 30 and 40 men are constantly employed, and at the present time are working on a solid sheet of blende 2 to 4 ft. in thickness and from 25 to 40 ft. wide. Southeast of Benton are the famous Ida and Blende mines, employing from 80 to 100 men, who are working on some large sheets of blende and lead. The Empress, owned by Coulthard Bros. and McCarthy Bros., runs two shifts, and 40 men in all. This mine is perhaps the only tunnel mine in this district, and is a heavy producer. One-half mile southeast of Empress is the Sally Waters mine, which employs 15 men. Extensive mining is done at Turden, Iowa county, where the Anaconda mine is to be found. Three shifts are run, with a force of 50 men. Jack or blende being the product. At Dodgeville, Mineral Point, Mifflin, and Edmund, all located mining camps which have good outputs. Shullsburg has been a mining camp, but has, in late years, declined. From here we

years she will eventually become the "stamping" ground for all the capitalists and big smelters in the United States.

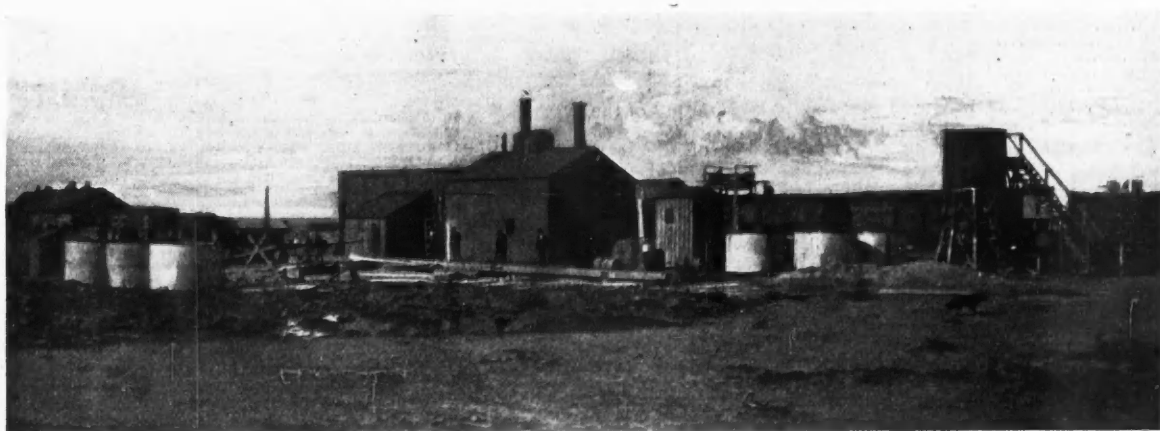
Australian Coal Resources.—An important industrial undertaking, calculated to give a great impetus to the New South Wales coal trade, is in contemplation at Sydney. The Illawarra district is rich in mineral wealth, the seams of coal being from 6 ft. to 21 ft. in thickness. Numerous collieries are at work, but the development of the trade is hindered by the absence of a harbor, vessels having to be loaded at jetties, which can accommodate only small craft. It is now proposed to alter all this by constructing a harbor in the so-called Lake Illawarra, which communicates with the sea by means of a narrow channel. The channel will be dredged and the lake rendered available for the largest mail



SIXTEEN-MULE FREIGHT OUTFIT, PENNSYLVANIA OIL COMPANY, CAPACITY 18,000 LBS. OIL.



STORAGE TANKS BANKED IN EARTH, CAPACITY, 1,000 BBLs.



OIL REFINERY, PENNSYLVANIA OIL COMPANY, CASPAR, WYO.

strike Galena, which has taken her name from the rich lead mines in her vicinity. Dubuque has the title of being the biggest lead mine in the district. It is the Ahearn, owned by the Dubuque Lead Mining Company, its officers being A. W. Hosford, president; E. T. Goldthorpe, superintendent, and Richard Hosford, secretary and treasury. It was sometime ago when this strike was made. The crevice is from 3 to 20 ft. wide and the ore has been cut down to the depth of 25 ft. and is still going down. The mine has produced 60,000 lbs. in eight hours. It gives employment to 75 men. The ore at the top of the opening is mixed with rock 9 ft. high and 4 ft. wide. The solid block mineral makes under this and is from 12 to 20 ft. wide. One block of this ore was broken up which produced three carloads of pure lead ore, or 120,000 pounds.

By this brief synopsis it can readily be seen that Southwest Wisconsin is still rich in the production of lead and zinc ores, and before many

steamers. Simultaneously, a company has been formed for the utilization of coal on the spot by smelting the ores, and notably the zinc blende, from the Broken Hill mines.

Iron Ore Production in Sweden.—The production of iron ore in Sweden amounted in 1894, according to the *Sveriges Officiella Statistik*, to 1,926,524 tons, being 445,036 tons more than in 1893, and that of manganese ore to 3,359 tons. The quantity of iron ore put out, which shows an increase of 30%, has never before been attained. The principal mine, Gellivara, which contributed 655,401 tons last year, against 306,594 tons in 1893, is followed by that of Grängesberg, with 401,513, against 261,865 tons. Moreover, the iron content of the ore put out increased from 54% in 1893 to 64.4% last year. Although the use of lake and bog ore is decreasing yearly, 659 tons were utilized in 1894, bringing up the total iron ore production to 1,927,212 tons.

PIG IRON PRODUCTION IN THE UNITED STATES IN 1895.

The American Iron and Steel Association has received from the manufacturers complete returns of the production of pig iron in the United States in 1895, and also complete returns of the stocks of unsold pig iron in the hands of makers or their agents at the close of the year. Detailed statistics of both production and stocks are given in the *Bulletin* of the Association, from which we take the statements following:

"The total production of pig iron in 1895 was the largest in our iron-making history, amounting to 9,446,308 gross tons, against 6,657,388 tons in 1894, 7,124,502 tons in 1893, 9,157,000 tons in 1892, 8,279,870 tons in 1891, and 9,202,703 tons in 1890. The production in 1895 was 2,788,920 tons, or nearly 42%, more than in 1894, and 243,605 tons more than in 1890, when our largest previous production was attained. The production of pig iron by half years during the last four years has been as follows, in gross tons:

Periods.	1892.	1893.	1894.	1895.
First half	4,769,683	4,562,918	2,717,963	4,087,558
Second half	4,387,317	2,561,584	3,939,405	5,358,750
Total	9,157,000	7,124,502	6,657,388	9,446,308

All the large pig iron producing States shared in the greatly increased production in 1895 over 1894. As might be expected, the most notable increase was in Pennsylvania, which produced 4,701,163 tons, or 49.81% of the total production, Allegheny County alone producing 2,054,585 tons, which was 590,796 tons more than the production of Ohio, more than double that of Illinois and nearly two and a half times that of Alabama; and yet Ohio, Illinois and Alabama made splendid records in 1895 as compared with 1894. Allegheny County made 43.7% of the total production of Pennsylvania in 1895. The Shenango and Mahoning valleys also made remarkably large gains in production in 1895 over 1894. Strange as it may seem, five States made less pig iron in the whole of 1895 than in 1894—Connecticut, New Jersey, Georgia, Michigan and Colorado.

"The increase in the production of pig iron in the second half of 1895 over the first half was also very evenly distributed, nearly every State which produces pig iron sharing in the increase and most of them in fair proportion to their record in the first half. The most notable increases were in Illinois, Pennsylvania, Ohio, Wisconsin, Kentucky, Alabama, Virginia, West Virginia and Tennessee.

"The production of Bessemer pig iron in 1895 was 5,623,695 tons against 3,808,567 tons in 1894, an increase of 1,815,128 tons. The great increase in the total production of pig iron in 1895 over 1894 was largely caused by the extraordinary demand for Bessemer pig iron, which demand was in turn chiefly caused by the extraordinary demand for structural steel."

The quantity of spiegeleisen and ferro-manganese produced in 1895 was 171,724 gross tons, against 120,180 tons in 1894. These totals are included in the aggregate output above.

The total production in 1894 and 1895, classified according to fuel used, was as follows:

	1894.		1895.	
	Total.	First half.	Second half.	Total.
Anthracite	914,742	487,479	783,420	1,270,899
Coke	5,520,224	3,497,078	4,452,990	7,950,068
Charcoal	222,422	103,001	122,340	225,341
Total	6,657,388	4,087,558	5,358,750	9,446,308

The output of the leading producing States for four years past has been as follows, in the order of their importance:

	1892.	1893.	1894.	1895.
Pennsylvania	4,133,805	3,643,022	3,370,152	4,701,163
Ohio	1,221,913	875,265	900,029	1,463,789
Illinois	949,450	405,261	604,795	1,006,991
Alabama	915,290	726,888	592,392	854,667
Virginia	342,847	302,856	298,086	346,589
Tennessee	300,081	207,915	212,773	248,129
New York	310,395	191,115	175,185	181,702
Wisconsin	174,961	131,772	91,595	148,400
West Virginia	154,793	81,591	80,781	141,968

These nine States last year produced 96.3% of the total output of the country.

As above stated, Bessemer pig iron in 1895 formed 59.5% of the total output. Four States made over 100,000 tons each of this class of iron, Pennsylvania furnishing 3,430,880 tons; Ohio, 1,031,735 tons; Illinois, 885,744 tons and West Virginia 141,968 tons.

The stocks of pig iron which were unsold in the hands of manufacturers or their agents on December 31st, 1893, and which were not intended for their own consumption, amounted to 662,068 gross tons; on June 30th, 1894, they had fallen to 517,036 tons; on December 31st, 1894, they had risen to 597,688 tons; and on June 30th, 1895, they had fallen to 439,290 tons; and on December 31st, 1895, they amounted to 444,332 tons, a very slight increase over the unsold stocks on June 30th, 1895. These unsold stocks of pig iron do not include pig iron sold and not removed from the furnace bank, nor pig iron manufactured by rolling-mill proprietors for their own use.

Although the aggregate quantity of unsold pig iron on December 31st, 1895, was virtually the same as on June 30th, 1895, there have been some notable changes in the distribution of unsold stocks. There has been a decrease in charcoal stocks from 200,687 tons to 135,033 tons, Alabama and Michigan sharing largely in the decrease. On December 31st, 1894, the charcoal stocks amounted to 250,183 tons. They are now much smaller than they have been for a number of years. There has been an increase in bituminous stocks from 129,596 tons on June 30th, 1895, to 193,363 tons on December 31st, 1895, chiefly in Alabama and in the Shenango and Mahoning valleys. The small quantity of all unsold stocks at the close of 1895 is remarkable. It was only 4.7% of the year's total production, and represents about 15 days' production of the active furnaces on December 31st.

In addition to the stocks of pig iron above noted as unsold on December 31st, 1895, there should be added 61,800 tons in the yards of the American Pig Iron Storage Warrant Company which had passed out of the hands of the makers, making 506,132 gross tons which may be said to have been then on the market, against 520,590 tons which were similarly held on June 30th, 1895. The total quantity of stocks in warrant yards on December 31st, 1895, was 106,200 tons.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

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

- 552,372. SMELTING FURNACE. Hermann Huber, Kansas City, Mo. Filed March 29th 1894. Serial No. 505,612. A furnace provided with a charging device comprising a hood erected over the mouth of the stack, and provided with self-closing doors, a track extending transversely through the hood and over the charging floor, wheeled vehicles adapted to travel on the rail and each provided with a floor made of sections, trunnions carried by each section and journaled in opposite sides of the car, and means, substantially as described, for manipulating the sections to close the same or permit the same to open to discharge the load into the stack.
- 552,375. ACETYLENE GAS GENERATOR. Charles C. Jones, Minneapolis, Minn., Assignor of one-third to Kenneth Macrae and William Huxton, same place. Filed June 13th, 1895. Serial No. 552,628. A receptacle comprising telescoping sections, the lower member of which contains the gas producing liquid and the upper member a central cage passage; a removable reticulate cage, having a collar, engaging the upper head of one of the sections to removably support the cage, and removable air-tight cover, closely fitting over the passage and collar, and serving to hold the cage from displacement.
- 552,392. APPARATUS FOR TRITURATING AND AMALGAMATING AURIFEROUS AND ARGENTIFEROUS ORES. John T. Penny and William H. Richardson, Adelaide, South Australia. Filed May 9th, 1895. Serial No. 548,714. Combination with a series of plates arranged in pairs with means for revolving the plates of each pair in opposite directions, means for feeding the ore between the upper pair of plates at the center, and an annular pan having a raised wall surrounding each pair of plates to catch the material thrown therefrom, the pan having an annular amalgamating channel and a funnel-shaped bottom for conveying the material to the central portion of the next pair of plates.

WEEK ENDING JANUARY 7TH, 1896.

- 552,519. ORE CONCENTRATOR. Henry R. Ellis, San Francisco, Cal. Filed December 1st, 1894. Serial No. 530,580. A belt frame having a series of supporting rollers, in combination with a belt having downwardly projecting edge flanges.
 - 552,624. LEAD-BATH APPARATUS FOR WORKING ORES. Andrew M. Shields, Oakland, Assignor, by mesne assignments, to the Morosco, Shields & Bishop Fusion Company, San Francisco, Cal. Filed May 13th, 1895. Serial No. 549,159. A pan having an inclined bottom, a chamber connected with the lower and deeper part of the pan and adapted to contain molten lead, a channel carrier having a central shaft by which it is turnable, an annular channel around its upper periphery, the carrier being adapted to receive the ore at the upper and shallower side of the pan and deliver it within the bottom portion of the channel at the opposite side, hinged gates adapted to swing across the channel to carry the ore from its point of reception to its point of delivery, and then to be turned out of the channel to allow the ore to be discharged, and means at the point of delivery and in the path of the gate, for moving the gate out of the channel and at the same time lifting the ore therefrom and delivering it into the molten metal above.
 - 552,750. ORE CAR. William C. Davis, Denver, Colo. Filed August 7th, 1895. Serial No. 558,473. Combination with a dumping car, a swinging door, a bell-crank mounted on the car, and pivotally connected with the door, and an operating connection between the bell-crank and the truck.
 - 552,807. METHOD OF AND APPARATUS FOR EXTRACTING METALS FROM THEIR ORES. Henry G. Williams, Pueblo, Colo. Filed February 15th, 1895. Serial No. 538,510. Combination of two series of connecting screw conveyors, means for actuating each series, a gate for feeding solid materials into the first series of conveyors, pipes for the introduction of water, steam and liquid chemicals into the conveyors, a passage uniting the two series, provided with a gate, a discharge spout for conducting away solid materials, also provided with a gate, leading from the second series, pipes for conducting away liquids leading from the second series, a series of tanks connecting consecutively one with another, suitable pipes to convey liquids from the second series of conveyors to the said series of tanks, and a discharge pipe from the last tank of the series.
 - 552,853. PLACER-MINING APPARATUS. Robert C. Roach, Hutchinson, Kans., Assignor of two-thirds to Frank L. Fonda, same place, and Samuel F. Sacket, Marion, Kans. Filed April 5th, 1895. Serial No. 544,578. A pump, provided at a suitable point with a discharge nozzle, a V-shaped spider secured to the lower end of the outer and inner tubes of the pump and a shaft extending axially through the inner tube, a spiral cutting-wheel mounted upon the shaft near its lower end, and means to operate the shaft, substantially as set forth.
- TUESDAY, JANUARY 14TH, 1896.
- 552,890. MANUFACTURE OF CARBIDE OF CALCIUM. Wm. C. Clarke, New York, N. Y. Filed August 24, 1895. Serial No. 560,382. The improvement in manufacture consists in building up the furnace wall as the formation of the carbide progresses, adding fresh charges of the material to be treated as the wall is built up and keeping the lower end of the upper electrode at all times near the upper edge of the furnace wall.
 - 552,931. ORE CONCENTRATOR. Frank Soper, Denver, Colo., Assignor of one-third to Nelson O. McClees, Filed December 1st, 1893. Serial No. 492,555. Combination of a sluice box with transverse riffles; a succeeding steeply inclined screen having graded, transverse stops, an open lower end and a transverse trough-shaped receptacle for the coarser gangue; and an open-top overflow box having a steeply inclined bottom continuous with that below the screen, and a valved outlet at its lower end, and having its end wall of greater height than its side walls, whereby lateral overflow of the water carrying lighter impurities is permitted.
 - 552,952. CONCENTRATOR BELT. William F. Bowers, San Francisco, Cal. Filed March 6th, 1895. Serial No. 540,757. A belt having its sides formed with opposing separated upwardly converging lips, forming an undercut groove and an independent flange having a flaring wedge-shaped base fitted in this groove between the opposing lips, the walls of each of the lips converging to present a thin edge at the upper end against the inclined walls of the wedge-shaped base of the flange whereby the edges automatically fold down and clamp the base as the belt passes over the terminal drums.
 - 552,966. PROCESS OF PRODUCING CUPROUS OXIDES. Carl Hoepfner Geissen, Germany. Filed October 7th, 1893. Serial No. 487,413. The process consists in leaching cupriferos materials with a cupric chloride solution containing a solvent of cuprous chloride whereby a solution containing cuprous chloride is obtained, reconverting the cuprous chloride in a portion of the solution into cupric chloride, and converting the cuprous chloride in the other portion of the solution into cuprous oxide by means of a suitable reagent.
 - 552,985. CONCENTRATOR. John Frey, Berkeley, Cal. Filed January 24th, 1894. Combination of a revoluble upright shaft, an eccentric rigidly secured thereto; suspension ropes; a vertical series of circular pans supported by the ropes and agitated by the eccentric; the upper surfaces of the pans inclining downward alternately toward the center, and the circumference, and formed with a series of concentric depressions, and discharging perforations therein; means for regulating the discharge through the perforations; and a circular trough secured to the lower rim of each of the pans.
 - 553,082. MACHINE FOR HANDLING AND DISTRIBUTING COAL, ETC. Richard Thew, Cleveland, O., Assignor to the Thew Automatic Shoveling Company, same place and Christstown, W. Va. Filed June 22, 1895. Serial No. 533,655. Combination of an elevated bridge, truck rigid with the bridge, a carriage engaging and movable endwise of the track, a suitably actuated winding drum supported centrally, or approximately centrally, of the bridge, a continuous cable engaging the drums and having its opposite ends engaging the carriage, suitably supported pulleys for the cable, shovel suitably suspended from the carriage and suitably actuated cables for swinging the shovel in an upright plane.

PERSONAL.

MR. A. W. WALBURN, President of the Walburn-Swensen Manufacturing Company, of Chicago, is in New York City this week.

MR. T. A. RICKARD, mining engineer and metallurgist, of Denver, Col., has gone to the Silverton District, San Juan County, Col., to examine a group of mines.

MR. R. N. DICKMAN, mining engineer, will, in the future, have his headquarters in the Atwater Building, Cleveland, O., and in the Rookery Building, Chicago, Ill. He will continue to make occasional trips to El Concheño, Chihuahua, Mex.

MR. WILLIAM P. PALMER, assistant to President Leishman, of the Carnegie Steel Company, Limited, has resigned and withdraws from the company with which he has been identified for years. Mr. Palmer's successor has not been appointed yet.

OBITUARY.

ISAAC RUSSELL CORNELL, died in New York City on January 19th, aged 91 years. He made a fortune in the manufacture of white lead, and retired from active business many years ago.

CHARLES D. ARMS died at Youngstown, O., on January 17th, aged 70 years. He had been largely identified with the iron and coal industries of Eastern Ohio for over 40 years, and had been largely interested for many years also in gold and silver mining in Colorado, Arizona, New Mexico, Idaho and Washington, his interests being especially large in the mines of the Aspen district, Colorado.

JOSE JIMENEZ Y FRIAS died recently in Madrid, Spain. He was born in Villagarcia in 1835, and in 1860 joined the National Mining Corps. He spent some time in the Almaden quicksilver mines, and from there went to the mining district of Murcia, where he remained until 1864, when he was made assistant professor at the School of Engineers. In 1867 he was appointed professor of analytical chemistry and assaying. This position he filled with notable success until 1894, when he was appointed inspector general of the second class.

CHARLES WILLIAM HEWISON, who achieved some fame as an inventor and was a lifelong friend of John Ericsson, died in New York City on January 19th, aged 66 years. He made the principal engines on the *Monitor* and was chief engineer of one of the armored ships which went South during the war. He had a large brass foundry and finishing shop in New York, and a few years later built a factory. It was here that he fashioned the first phonograph for Edison. Many of the improvements in marine engines were the products of his inventive ability.

JOHN ALLSTON WILSON, the eminent civil engineer and senior member of the firm of Wilson Brothers & Co., died in Philadelphia, Pa., on January 19th, aged 59 years. He belonged to a family of distinguished civil engineers. Both his father and grandfather adopted that calling, and his two brothers, who survive him, are graduates of the Rensselaer Polytechnic Institute, Troy, N. Y. In 1857 and 1858 he served as topographer of the surveys made in Central America for the Honduras Inter-Oceanic Railway, under Mr. John C. Trautwine. He entered the service of the Pennsylvania Railroad Company in 1861, and for a number of years was the chief engineer of that company. He was also chief engineer for various railroads in Pennsylvania and New York, and was interested in coal mining and manufacturing enterprises. In 1876, after retiring from his active duties on the railroad, he organized the firm of Wilson Brothers & Co. Many notable buildings in Pennsylvania and elsewhere were erected from plans prepared by the firm. He was also chief engineer of the Bloomsburg & Sullivan Railroad, the North and West Branch Railroad, the Staten Island Rapid Transit Railroad, the Bellefonte and Buffalo Run Railroad, the Nittany Valley and Southwestern Railroad, the Columbia & Sullivan County Railroad, the Philadelphia Belt Line Railroad and the Philadelphia and Reading Terminal Railroad; consulting engineer of the Philadelphia and Reading Subway, etc. Also as expert engineer or witness on a large amount of railroad and similar public work, including many cases in litigation, such as railroad crossings, etc.

Mr. Wilson had remarkable ability in matters connected with railroad law, making him extremely valuable as an expert adviser or witness in such cases. In some instances he has worked up the whole plan of procedure for a case, and on a recent occasion where he rendered an opinion to a prominent lawyer he was highly complimented by the lawyer's remark that the proficiency displayed made him worthy of an LL. D. He was a member of the Franklin Institute of Philadelphia and of the American Institute of Mining Engineers, the American Society of Civil Engineers and other technical bodies. He leaves a widow, four daughters and two sons.

SOCIETIES AND TECHNICAL SCHOOLS.

ENGINEERS' CLUB OF ST. LOUIS, MO.—The 428th meeting of this club was held on January 8th. Mr. William Bouton was elected director to fill a vacancy. Mr. Geo. B. Leighton then read a paper

on "Some Notes on English Railway Practice." It was illustrated by numerous maps, drawings and pamphlets.

AMERICAN CHEMICAL SOCIETY.—At the recent meeting of the New York section of the society the following papers were read: "Review of the Present Status of Steel Analyses," by G. C. Henning; "Note on the Probable Formation of Permanganates by Direct Combustion of Manganese," by G. C. Stone, and "Some Notes on Highly Compressed Gases," by J. S. Stillwell. On January 16th a meeting of the Lehigh Valley section was held in Lafayette College, Easton, Pa. Papers were read by Prof. Hart on "Some Curious Forms of Zinc Oxide" and on a "Blast Furnace Slag Containing Barium." Remarks were made by Albert Ladd Colby, metallurgical engineer of the Bethlehem Iron Company, on "The Relation Between the Chemical Composition and Strength of Pig Iron." The following officers were unanimously elected for the ensuing year: Albert Ladd Colby, president; Albert H. Welles of Easton, secretary and treasurer; Prof. Edward Hart of Lafayette College, member of the Executive Committee of the parent society.

FRANKLIN INSTITUTE.—The annual meeting of the Franklin Institute was held in Philadelphia last week and the following officers were elected: President, Joseph M. Wilson; Vice-President, Charles Bullock; Secretary, William H. Wall; Treasurer, Samuel Sartain; Auditor, Samuel H. Needles; Board of Managers, Thomas P. Conard, Isaac Norris, Theo. D. Rand, Stacy Reeves, Coleman Sellers, William L. Boswell, James M. Dodge, Henry Gawthrop; Committee on Science and the Arts, Arthur Beardsley, Hugo Bigram, Frank P. Brown, John H. Cooper, N. H. Edgerton, G. M. Eldridge, F. L. Garrison, W. N. Jennings, Arthur Kittson, Edward F. Moody, C. J. Reed, E. Alex. Scott, Coleman Sellers, H. W. Spangler, William H. Wahl.

The report of the Board of Managers showed that the total membership at the end of last year was 1,905. Total cash receipts, inclusive of a balance on hand January 1st, 1895, of \$1,782, were \$20,414; total payments, \$20,397. The total permanent endowment funds of the Institute amount to \$62,417, an increase of \$4,965 over 1894.

Mr. William H. Wahl, the Secretary, in his report, gave an interesting resume of the principal events in engineering, naval architecture and ordnance, electric roads and the production of iron and gold during the past year.

Mr. Lewis Nixon, late constructor, United States Navy, delivered an address on "American Cellulose." The cellulose first used by the Naval Department was made from the husks of the coconut, but now we have a substance invented by Mr. Mark W. Marsden, of Philadelphia, which is made from ordinary cornstalk. The tests which were made with this substance were outlined in an interesting manner, and show that the corn-stalk cellulose has wonderful powers of absorption and is cheaper than the cocoa cellulose and quickly packed.

AMERICAN INSTITUTE OF MINING ENGINEERS.—The seventieth meeting of the Institute will be held at Pittsburg, Pa., beginning Tuesday evening, February 18th, 1896. The Secretary of the Local Committee is Mr. George H. Clapp, 325 Water street, Pittsburg, Pa. The chairmen of local sub-committees are: Reception, E. M. Ferguson; Finance, Julian Kennedy; Hotels and Headquarters, J. C. McDowell; Excursions, Alfred E. Hunt; Programme, Badges, etc., James Gayley; Banquet, William H. Rea. Hotel headquarters will be at the Monongahela House, where the sessions will also be held. The provisional programme, subject to change and addition of details hereafter (which will be communicated in the programme of the Local Committee, to be distributed in Pittsburg), is as follows: Sessions, Tuesday evening, Wednesday evening, and Thursday morning and afternoon; Excursions, Wednesday and Friday; Banquet, Thursday evening.

The question of reduced railway fares depends upon the number of those who attend the meeting. If the replies received by the secretary warrant him in certifying to an attendance of 100 outside of Pittsburg members, the usual certificate rates (*i. e.*, one and one-third fare for continuous trip, going and returning by the same route) can doubtless be secured, at least for the "Trunk Line territory," *i. e.*, for those going from Niagara Falls, Buffalo and Salamanca, N. Y.; Bellaire, O.; Wheeling, Parkersburg and Charleston, W. Va., and points east of these, except in New England. The price of tickets for the subscription banquet of Thursday evening, Feb. 20th, has been fixed at \$7 each for gentlemen and \$3 each for ladies.

Among the papers and discussions of this meeting, special prominence will be given to the subject of the physics of cast iron, presented in a preliminary paper by Mr. Webster at the Florida meeting, March, 1895, and in a discussion distributed to members in August last. Contributions to the further discussion of this subject are cordially invited from all competent persons, whether members of the Institute or not; and it is understood that, in such discussion, the participants are not confined to the consideration of data published in the *Transactions*, but may include for consideration whatever has appeared elsewhere. In order to be able to allot sufficient time to the subject, the secretary earnestly requests that persons desiring to participate in the discussion shall notify him. Copies of Mr. Webster's original paper, and of the pamphlet discussion, will be sent to such persons upon

application, subject to such change as may prove necessary, it may be said that this subject will be considered at the session of Thursday morning.

INDUSTRIAL NOTES.

The Midvale Steel Company has received an order from the Government for \$50,000 worth of first-class shells.

The Girard Water Wheel Company has just shipped a 16½-in. wheel to Kennison & Johnson, Auburn, Cal.

The National Galvanizing Company of McKeesport, Pa., has commenced work on the erection of a new plant at Bissell.

The Mahoning Valley Iron Company, of Youngstown, O., has started up all departments of its plant, including the nail factory.

The Golden Gate Miners & Iron Works, of San Francisco, are working on an order for 2 100-H. P. gas engines for some schooners.

The Iroquois Furnace Company has just put in a new Weimer blowing engine at the Iroquois Furnace, South Chicago, Ill., making the third engine at that furnace.

The Denver and Rio Grande Railway Company has just placed an order with the Colorado Fuel and Iron Company for 6,000 tons of steel rails for early Spring delivery.

The A. Leschen & Sons Rope Company, of St. Louis, Mo., report an improved demand for their iron and steel wire ropes. Some inquiries have been received from Louisiana for the Flattened Strand wire rope for pull-boats.

On January 21st 50 union employees of the Midvale Foundry, South Allentown, Pa., went on strike. The president of the union says that the manager of the foundry asked the men to take either 10% less pay or work half-time.

The Franklin (Pa.) Steel Casting Company has started up its large plant for the manufacture of high grade open hearth steel castings for all purposes, making a specialty of electrical metal, rolling mill, bridge and railroad detail.

The Vulcan Iron Company, Limited, of New Castle, Pa., has added to its plant an electric pressure blower for the foundry, and a new smith shop. The facilities of its foundry have also been increased by the addition of a 15-ton steam crane.

The firm of Pratt & Letchworth, malleable iron, of Buffalo, N. Y., which shut down recently, has been reorganized as the Pratt & Letchworth Company, and will resume business. Part of the works was put in operation on January 21st, and in about four weeks between 500 and 600 men will be employed.

The Berlin Iron Bridge Company, of East Berlin, Conn., has just completed for the Ansonia Brass and Copper Company, of Ansonia, Conn., a new boiler house 65 ft. wide and 142 ft. long. The side walls are of brick, and the roof is entirely of steel, covered with the company's patent anti-condensation corrugated steel.

George L. English & Co., of New York City, have been incorporated to deal in minerals and gems and mineralogical supplies, capital \$15,000. The directors are: Albert C. Bates, Lazard Cohn, George L. English, Charles L. Hatch, Albert H. Peterel and Ernest Scherik, of New York City, and William C. Rothe, of Brooklyn.

Samuel F. Vinnedge has been appointed receiver for the Montpelier Sheet and Tin Plate Company by the Circuit Court at Hartford City, Ind. The company was capitalized at \$2,000,000, of which \$68,000 was paid in. Besides the stock the company owes \$90,000, and its property has decreased until it is now said to be worth not more than \$40,000.

While operations at the Pennsylvania Steel Company's works at Steelton, Pa., are still active, there has been a falling off lately in the output. Wages the past two weeks aggregated \$83,883, which is slightly below the usual average. Last year the works were in operation 281 days and employed on the average 4,600 men and boys, to whom was paid a total of \$1,927,424.

The Ludlow-Saylor Wire Company of St. Louis, Mo., have closed a contract for a new building for the necessary increased capacity of their works. The new works will give ample facility to the large business of the company, and will enable them to turn out ornamental iron work and other specialties for which they are so famous with even greater despatch and higher finish than before.

Adam Shilling & Sons, of San Francisco, report sale of an 8 H. P. hoisting plant to the Santa Rosa Mining Company, of Riverside County, Cal.; 6 H. P. well boring plant to Wm. Harp, Norwalk, Cal., and gas engines as follows: 20 H. P. to Oakland High School, 12 H. P. to Mysell & Rollins, Berkeley, 4 H. P. to *Standard Print*, 3 H. P. to Pacific Electrical Works, also 3 to Bakersfield and 1 to Redding, Cal.

The works of the Morgan Engineering Company, of Alliance, O., are running double turn. The

largest order at present in hand is for 15 electric traveling cranes for the Carnegie Steel Company, and when these are installed the company will have 47 Morgan cranes. The capacity ranges from 15 to 30 tons, and in the armor plate department four 60-ton cranes ordered from England are being rebuilt by the Morgan Company.

The National Bar Iron Association met at Pittsburgh, Pa., January 21st and completed its organization by electing the following officers: President, James G. Caldwell, Louisville, Ky.; vice president, H. T. Wallace, Wilmington, Del.; treasurer, George M. Bard, Muncie, Ind.; secretary, J. S. Elverson, Catawqua, Pa. The association was formed in December above the base of other sizes of iron, and at this week's meeting the old classification was re-adopted. This organization is an amalgamation of the Merchants' Bar Iron Association and the Eastern Association of Makers of Bar Iron.

The Ashland (Ky.) Coal and Iron Railway Company, operating two furnaces of its own and one leased from the Norton Iron Works, will assume control of the plant of the Ashland Steel Company. The trouble with the latter company is the difficulty in procuring Bessemer pig iron which is secured partly from Ironton, O., partly from one of the local furnaces of the Ashland Coal and Iron Railway Company, and the remainder at different points. Should the deal be made, the Ashland Coal and Iron Railway Company would put two of its furnaces on Bessemer and supply the plant steadily.

The new works of the Finished Steel Company, at Haselton, O., are completed and active operations commenced last week. The output, when running full, will amount to 20 tons of finished steel per day. The plant consists of the main building, 62x224 ft., and two additions, 70x20 and 24x55 ft. to be used as a picking room and boiler house respectively. The company has a capital stock of \$100,000. The officers are: C. Seymour Dutton, president and general manager; H. M. Garlick, vice-president; Thomas E. Davey, secretary and treasurer. Philip M. Haas will have charge of the works.

TRADE CATALOGUES.

We have received a well-written descriptive catalogue from the Colorado Iron Works of Denver, Colo. This, as is indicated by the opening page, is more particularly addressed to engineers, and deals specially with crushing machinery, but it will have a great interest for all who are engaged directly or indirectly in milling plants, or who are contemplating the erection of such. Standard crushing rolls are fully dealt with and illustrated, also improved crushing rolls, high feed special rolls, and finally the Black Hawk and Blake ore crushers. The special features and advantages of all these styles are fully and clearly described, and with the aid of the illustrations all necessary information is obtainable, worthy in every way of Mr. J. M. Nesmith, President of the Colorado Iron Works. The little pamphlet is perfect in appearance from the excellent typography and the clearness of the cuts.

MACHINERY AND SUPPLIES WANTED.

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

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

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

GENERAL MINING NEWS.

ALASKA.

FORTY MILE CREEK.—According to a press dispatch from Washington it has been decided that the gold-fields of Forty Mile Creek belong to the United States and not to Great Britain. The 141st meridian of longitude has been accurately determined by an employee of the British Government and properly marked at certain distances. General Duffield, the chief of the Coast Survey, says it shows that but 16 miles of the creek as the bird flies and but 23 miles as the water flows are in British territory and that in this portion no gold has been discovered. The remaining portion of the creek and that in which gold has been discovered is in Alaska and belongs, therefore to the United States. A bill has been introduced in Congress providing for the appointment of commissioners to fix the boundary, but it has not yet been acted upon.

ARIZONA.

PINAL COUNTY.

SILVER KING MINING COMPANY.—At the recent election of this company the old management and principal officers, with J. W. Pew as secretary, were re-elected.

CALIFORNIA.

BUTTE COUNTY.

(From Our Special Correspondent.)

BIG BETSEY.—Development work has been commenced on this property. A 160-ft. tunnel has been

run, cutting a 4½-ft. ledge of good ore which shows 5% in sulphurets and \$7 free gold per ton. This mine is located 5 miles from Forbestown.

INYO COUNTY.

(From Our Special Correspondent.)

INYO MARBLE CO.—This company is furnishing the marble for the City Hall in Alameda, Cal. This marble was selected in competition with many others.

KERN COUNTY.

(From Our Special Correspondent.)

AMALIE.—This mine, in the Agua Caliente District, is shipping about a carload per month, which nets about \$5,000 per car. The company has purchased the Chris Mohr claim and the mines owned by the Redlands Company and now owns the whole group with the exception of the Ferris mine.

CLINE DALE CAMP.—This new camp, on the Caliente Creek, about 6 miles from Caliente, is attracting considerable attention. Development work has commenced on the Slate Wall mine by Los Angeles parties. The ledge in this mine is from 10 to 100 ft. wide, carrying a streak that assays very high while the main body of ore is said to average over \$25 at a depth of 25 ft.

NEVADA COUNTY.

(From Our Special Correspondent.)

HARMONY.—This mine, 2½ miles northeast of Nevada City, gives steady employment to a 10-stamp mill which crushes 120 tons of gravel per day at a cost of \$3,000 per month.

PENNSYLVANIA.—A very promising strike has been made at this mine. A 2-ft. ledge, showing free gold and highly mineralized, was discovered in the 600-level, between well defined walls.

SANTA BARBARA COUNTY.

MONTECITO OIL AND LAND COMPANY.—This company has acquired 3,200 acres of land in the foothills near Carpentaria, and will at once commence boring for oil. This company is reported to be acting under the direction of Charles Canfield, an experienced oil prospector, who is satisfied that the general formation of these hills promises an abundant supply of oil.

SUMMERLAND OIL FIELD.—A press dispatch from Santa Barbara states that the Summerland oil field has made a big stride forward. A flowing well, the first in the region, has been struck by Solomon Kaiser, of the Kaiser Brothers, of Santa Maria, who came on the ground only a few weeks since to sink 50 wells on lots purchased by the company which he represents. At a depth of 212 ft. the drill pierced the bituminous shale and oil poured out of the 4-in. pipe at a height of 2 feet from the ground. This is the first flowing well in Summerland.

COLORADO.

BOULDER COUNTY.

(From Our Special Correspondent.)

BARBER.—News came in to-day concerning a rich strike of silver ore made on the ranch of W. Barber, near Boulder. Considerable excitement prevails in consequence.

COTTONWOOD.—This is one of the newest camps to spring up near Boulder, and several new strikes are reported. The ore is found at a shallow depth, and is low grade, but increases in value with depth.

GRAND CENTRAL.—Work has been suspended at the old workings of this mine, and is now centered at a point near the old tunnel, where a shaft, sunk to a depth of 50 ft. over 20 years ago, is being re-timbered and put in condition for sinking. Machinery is being placed in position and the lower dips of the ore bodies will soon be developed through the new shaft.

GRAPHITE.—This property, owned by Guy Fairhurst, is becoming a good producing mine. An additional streak of ore was opened up recently, a sample of which gave an assay of remarkable richness.

GOLD FARM MINING COMPANY.—The Little Lizzie, owned and operated by the Gold Farm Company, has become one of the big mines of this district by the disclosure of a large body of rich ore. A good plant of machinery has been placed on the property and everything is working smoothly. Henry Neikirk has been engaged as manager.

HILDA J.—Considerable excitement was caused during the week by the exhibition of very rich ore specimens from this property. The ore body was encountered at a depth of 20 ft.

MODOC.—The capacity of the Modoc mill has been increased to 100 stamps. The mine is developing a large body of pyrites and is supplying more than the mill can handle.

NELLIE BLY.—The bromide process has been introduced at this mill and is proving successful. The management expects to treat successfully \$15 ore.

PINE SHADE MINING COMPANY.—Bert Langridge, of this company, left this week for London, where he expects to effect the organization of an English company to develop his property.

RUBY.—The big strike at this property is proving satisfactory. The vein, 4 ft. in width, is found in the 200 ft. level, and the ore is apparently of a high class smelting quality.

CLEAR CREEK COUNTY.

(From Our Special Correspondent.)

ANON.—Denver banking men have secured a controlling interest in this property located at the head of Hukill Gulch, Idaho Springs, and are sinking the

shaft on an 18 in. streak of iron pyrites worth \$27 a ton. As freight and treatment charges are low it can be worked at a profit.

COLUMBIA.—This claim at Idaho Springs has been sold to a number of Denver parties who are preparing to actively work it. The shaft is down 90 ft., from which a level was run opening a large body of pay quartz with a streak of rich free gold through the center.

DONALDSON.—A crosscut of 80 ft. and 80 ft. of drifting on the vein has opened out at 18-in. streak of \$40 ore in this property. Lessees are also working in the upper levels and are making regular shipments of ore. They also have some mill dirt.

GENERAL THOMAS.—In drifting west from the shaft at 160 ft. a nice body of smelting ore has opened out. The management declines to give out information.

HUMPHREY MILL.—This was sold last week to the Colorado Iron Works, of Denver, through foreclosure. Several mining men are trying to secure control and start it up again.

NEWHOUSE TUNNEL.—Two shifts of air drillers and three of trammers are working night and day on the tunnel. Some lodges have been cut, but the great bulk of the claims on Seaton Mountain will not be reached for several months. Mr. Samuel Newhouse, the promoter, left England on January 15th for Idaho Springs.

SENATOR.—An important meeting of the stockholders of the company operating this property near Idaho Springs was held in Denver on January 18th, for the purpose of ratifying the action of the Board of Directors in making an agreement for the sale of the company's mining property to R. B. Estey and S. W. Mudd, of the Union Leasing and Mining Company, of Leadville. C. F. Loose has been placed in charge and the new company intends to immediately begin development work. The claims show good mineral, the Senator lode of silver and a cross lode of gold. The latter has recently been drifted on, with both milling and smelting ore in sight.

LAKE COUNTY.

(From Our Special Correspondent.)

BIG SIX.—The strike referred to last week in this property has opened out into a very good ore body. It was opened up in the 190-ft. level of the Nettie Morgan shaft. The vein is from 2 to 8 ft. thick and about 40 ft. wide. About 150 tons of this ore have been taken out, which averages 2 to 5 oz. gold and 12 oz. silver to the ton.

CASTLE VIEW.—A good grade of iron is being taken out and shipped by lessees and in the meantime new exploration work is being carried on.

LEADVILLE GOLD BELT.—A great deal of important work is to be conducted in this section during 1896. The Brece Hill, the South Evans, Printer Boy Hill and Iowa Gulch sections are all showing signs of renewed activity. The Big Six discovery can be counted upon as being of great importance to the Gold Belt section.

MAHALA.—In the annual review of the Leadville district, attention was called to the fact that a recent strike in the Mahala was very important to the camp. The old ore bodies having been about exhausted, the diamond drills were brought into use and after many months of work, the old ore bodies were again located larger and richer than ever. The find was made in a winze 100 ft. deep and run 700 ft. south of the shafts. The Mahala is shipping 100 tons daily and the ore is of a very good grade.

MATCHLESS.—Shipments are steady at 50 tons a day of iron ore at present.

SOUTH EVANS GULCH.—Development on the Cleveland, Big Four and Louise is being pushed ahead and the workings are looking well, especially those of the Big Four.

THE STARS.—Shipments of iron ore from both the Morning and Evening Star properties have been commenced. The Porter, the No. 5, Kitchen and other shafts are among the new shippers of this consolidation.

VALLEY, FOREST ROSE AND ROSE BUD.—A title bond was filed January 18th, from S. J. Glover and J. J. Simmons, of Cook County, Ill., to A. M. Levy, of the same place, to an undivided third of the Valley, Forest Rose and Rose Bud lodes. The sale is for \$15,000, payable March 1st, June 1st and September 1st.

WINAN AND ECLIPSE.—Ex-Governor Grant, Mayor James A. A. Blow and other Denver parties are conducting very important work on these properties on Printer Boy Hill. On the Winan a tunnel is being run which is rapidly nearing the great Lillian ore chute. The stuff so far encountered is of low grade but it is improving and is of exactly the same character as the Lillian ore.

MINERAL COUNTY.

UNITED MINES LEASING COMPANY.—It is announced that this Creede company has decided to at once suspend operations on the United Mines property. No previous intimation had been given out of the company's intentions. Manager Ray is reported to have advised the miners and employees to secure their back pay by filing liens on the property. The miners, some 60 in number, went to town on January 15th to file their claims. Meantime, the Amethyst mine, by its manager, sought to take possession of the mammoth compound pump, valued at \$14,000, on the United Mines property. Hearing of this move, the United miners tried to secure an injunction to prevent the removal of the pump, but

were unable to obtain it from either the county or district judge, and for this reason decided upon heroic action. They gathered some Winchesters and revolvers, and proceeding to the United Mines, prevented the removal of any kind of property, including the big pump, until they had been paid for their labor. Captain Campbell, manager of the Amethyst mine, has notified his superiors in Denver that assistance is necessary if the pump is to be seized. Ray is said to have given the Amethyst an order for the pump previous to his leaving Creede. The United Mines Company and the United Mines Leasing Company are both comprised of Denver men. The owners of the property spent nearly \$200,000 on the mine and then turned the property over to the Leasing Company, which, for the most part consisted of the larger owners in the mine, for further development. The Leasing Company is said to have spent \$85,000 in the past six months, and while there is plenty of ore uncovered, its grade is too low to handle with a profit. Mr. Eben Smith is the president of the Leasing Company.

IDAHO.

OWYHEE COUNTY.

BANNER GROUP.—The bond upon this property has expired and it now reverts to its original owners, Messrs. F. Grete, Jr., Dave Farmer and R. H. Leonard, Sr. The parties having the bond during the past year have crosscut some 350 ft. through hard rock, and at the expiration of their bond they had only 20 ft. further to go, by survey, to reach the ledge, says the Silver City *Avalanche*. An extension of time was desired, but the owners declined to grant it unless a cash payment was made. The owners will very likely complete the cross-cut tunnel this winter. It is something over 700 ft. in length and will tap the Banner ledge at a depth of over 300 ft.

DE LAMAR MINING COMPANY, LIMITED.—The superintendent's report for December is as follows: Crushed during the month 3,825 tons; bullion produced in the mill, \$58,025; estimated value of ore shipped to smelters, \$11,000; miscellaneous revenue, \$460; total product, \$60,485; total expenses, \$39,460; profit for the month, \$30,025. The directors have declared an interim dividend (No. 19) for the quarter ending December 31st of 1s. per share, payable on January 31st to all shareholders on the company's books on January 7th.

MAINE.

ANDROSCOGGIN COUNTY.

MINOT FELDSPAR BEDS.—A small force is now employed getting out feldspar on the beds 1½ miles from Minot, and arrangements have been made to put some 60 men at work in the spring.

HANCOCK COUNTY.

INFUSORIAL EARTH COMPANY.—This company has been organized for the purpose of digging infusorial earth near Blue Hill and preparing it for market. The office of the company is at Blue Hill, and the officers are: Dunbar Marshall, president; Edward E. Chase, treasurer.

KNOX COUNTY.

MCLOON & STOVER LIME COMPANY.—The lime interests which have been developed at Warren by McLoon & Stover and the Rockland & Warren Lime Company have been consolidated in a corporation bearing the name of McLoon & Stover Lime Company, says *Stone*. The paid-in capital stock is \$100,000, with the following officers: Silas W. McLoon, president and manager; Alden A. Stover, treasurer; A. O. Spear, secretary; and these, with W. T. Cobb, W. W. Chase, J. H. Stover and A. C. McLoon, constitute the board of directors.

PISCATAQUIS COUNTY.

SHIRLEY SLATE COMPANY.—This company has been organized by A. W. Chapin, R. C. Pinney and others, of Monson, to work a slate vein recently opened at Shirley, near that place.

MICHIGAN.

COPPER.

It is stated that immediately after completing the survey between Champion and Ishpeming, the Chicago, Milwaukee & St. Paul Railroad engineers will begin surveying a line from Champion to Calumet. Whether a line will be finally built to Calumet from Ontonagon or from Champion will depend largely on the result of the coming survey, but the line to the copper districts will be built in the spring.

MINNESOTA.

DULUTH.

(From Our Special Correspondent.)

The Duluth & Iron Range road has ordered six 240,000-lb. road locomotives, and these are under construction at the Baldwin works. They will be the heaviest road engines in the United States, and the road will have several of them by spring. Work on the new 1,000-ft. double dock for this road has begun and pile driving is well started. At this dock, as well as at that building at Duluth for the Duluth, Missabe & Northern, the lack of ice on which to work has been seriously felt.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

ADAMS.—At this mine former No. 2 shaft has been changed to No. 3, and a new No. 2 started, to be mined by the milling process. Over 100 men are at work, in addition to those employed by the stripping firm.

CHEESEBROUGH.—This undeveloped property, bought a short time ago by the Eddy Brothers, lumbermen of Michigan, for \$100,000, has a very valuable body of ore, and it is stated that the new owners will become active miners in a very short time. A very large body of fine ore has already been shown up. The property is located close to Hibbing.

FAYAL.—At this mine a combination of 500-light incandescent and 20-light arc electric light plant is being put in. The stock pile already assumes importance, and now contains not far from 40,000 tons. Considerable development work is being done for the future.

FRANKLIN.—This company, operating the Franklin, Bessemer and Victoria mines, at Virginia, has some 700 men on its pay rolls, and is hoisting very vigorously from the first two mines, and from the developments of the third. A new shaft house and machinery is complete at the Victoria and active mining will soon begin. The group will be one of the most important properties on the range the coming year, especially for an underground mine.

LAKE SUPERIOR CONSOLIDATED.—There are four steam drills at work for this company on the recently optioned 80-acre tract taken from the Rouchelean-Ray Company at \$1,250,000. One set of four holes has been completed and another is well into ore. The option runs till March, and by that time the tract will have been thoroughly explored. The results of the work already done are not given out, but it can be stated on the best authority that they are satisfactory so far. The company is doing little anywhere except at its Burt, Hull and Rust mines at Hibbing, all Lake Superior Iron company leases where very active operations are kept up, and at its Adams mine.

MINNESOTA IRON COMPANY.—Stripping at the Auburn mine has been stopped for the winter, though a few men are at work about the mine. At the Canton about 200 men are at work, underground, and 350 in all. Shaft C, where water has been a terrible setback, has been allowed to fill, all pumps having been pulled up. Deeds for the purchase of a portion of the Genoa property have been filed, for the consideration of \$100,000. The company is rapidly making a mine at the Genoa location, under the supervision of R. H. Channing.

IRON—VERMILION RANGE.

(From Our Special Correspondent.)

MINNESOTA IRON COMPANY.—This company's subsidiary Chandler Iron Company has declared a dividend of \$3 per share of \$25, payable February 1st, on its capital of \$2,500,000. The mine is at present working 630 men, and will increase this number slightly. Its record for the past year shows not one life lost at the mine by any fault of the company, and its average employment during that time has been 500 men. The state mine labor inspector of Minnesota has inspected the mine the past week, and states that it cannot be too highly commended for its labor saving appliances. At the Minnesota's Soudan mines, some 1,000 men are employed and the force is to be increased.

PIONEER IRON COMPANY.—This company is raising about 500 tons of ore daily, and will by March increase this quantity to not less than 2,000 tons. At present 200 men are at work. The large new hoisting plant is being set up, and the new shaft house is completed.

ZENITH IRON COMPANY.—This property is now in charge of Major Burt, of Ironwood, who has already overhauled the machinery and will be raising ore in a few weeks. The main shaft is to be sunk another level and drifts run.

ST. LOUIS COUNTY.

(From Our Special Correspondent.)

COAL PROSPECTS.—A considerable area, some 7,000 acres, lying about 80 miles west of the Vermilion range mines of Tower, has within the past few weeks been taken up for coal, some of it, it is stated, by the employees of the Great Northern road. This latter, however, is mere conjecture. There is no question that some lignite has been found in that locality, but, as has been before stated in these dispatches, it is entirely unlikely that any coal of value, either in quantity or quality, will be found there. At the present time speculations as to the wonderful effect this coal will have on the iron manufacture of this part of the country are being freely indulged in, but of course by no one who knows the facts as to coking coals.

LYLE MINING COMPANY, which closed down in the Rainy Lake region some time ago, states that it will resume work soon on some of its extensive properties, and that it has no fear but that somewhere on its lands it will find gold.

RAINY LAKE DISTRICT.—W. D. Furgurson, who represents an English syndicate which has bought properties in the Rainy Lake country, is now in England and is expected back in March. It is claimed that he will soon after his return put a large force of men at work on the company's options in the Seine River section. The Keller-Mosher claim of this company is showing good indications, and the vein has widened to nearly 6 ft., with a pay streak of considerable richness.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

ALBA MINING COMPANY. This company has completed its new steam jig plant, which will be one of the largest in the district.

JOPLIN ORE MARKET.—The ore turn-in from the mines last week was light throughout the district, except at Galena. The price of lead declined to \$16 per thousand, with 50c. added for hauling, and many operators, particularly those at Webb City and Cartersville, preferred to hold their ore for a raise. The jack market was about the same. Two lots sold at \$24.50 per ton, which was the top price. The average at Joplin was \$23 per ton, at Webb City and Cartersville \$22 per ton, and at Galena something less. The turn-in was as follows: Joplin, zinc, 972,680 lbs.; lead, 216,850 lbs.; value, \$14,763. Cartersville, zinc, 773,780 lbs.; lead, 208,500 lbs.; value, \$11,943. Webb City, zinc, 492,710 lbs.; lead, 46,950 lbs.; value, \$6,209. Spring City, zinc, 24,740 lbs.; lead, 15,690 lbs.; value, \$380. Galena, Kan., zinc, 2,060,000 lbs.; lead, 390,000 lbs.; value, \$27,000. Aurora, zinc, 40,000 lbs.; value, \$4,000. Oronogo, zinc, 4,410 lbs.; lead, 15,590 lbs.; value, \$252. District totals, zinc, 4,370,320 lbs.; lead, 893,580 lbs.; value, \$63,497.

MOTLEY.—The Motley concentrating plant at Cartersville was totally destroyed by fire on January 16th. The machinery, with the exception of the pump, which has been kept running to keep the water down, has been idle for some months. The owners are the Motley Company of St. Louis, of which S. C. Edgar is the president. The plant cost about \$12,000 and has only \$3,000 insurance. The plant will not be rebuilt right away.

MONTANA.

FERGUS COUNTY.

NEW YEAR.—H. S. Sherard, formerly superintendent of the Gilt Edge, has negotiated a deal whereby the New Year and some adjacent mines in the Judith Mountains, belonging to W. G. Norman and Adolphus Harmon, have been bonded for \$100,000 for one year to New York capitalists. The first payment, \$25,000, is to be made May 1st, 1896; the second, \$25,000, September 1st, 1896; and the third, \$50,000, January 1st, 1897. There shall be deposited in the bank of Fergus County, before work commences, a forfeit of \$5,000.

FLATHEAD COUNTY.

(From Our Special Correspondent.)

B. & B.—This mine, near Troy, is showing up well. The vein is large and the ore body increases in size as development is extended. There is some rich ore in the mine that will pay to ship, but so much of it is low grade that a concentrator will be erected if the ore body should prove large enough to justify the expenditure.

GRANITE COUNTY.

ANDERSON.—Ore is being hauled from this property to Bearmouth and shipped to Helena. Mr. Grant is now working his property and taking out considerable ore.

McDERMITT.—The strike in the McDermitt mine, north of Bearmouth, is greater than reported. They now have two rich streaks of very high grade gold ore, a shipment of which will be made soon. They have recently put in a new steam pump and otherwise have the mine in good working shape.

JEFFERSON COUNTY.

(From Our Special Correspondent.)

BLUE BIRD.—The lessees have faith in this mine. They have put in new machinery and will be able soon to ship several carloads of ore daily.

EAST RUMLEY.—Some fine specimens of ore have been found in the East Rumley, an extension of the Comet.

FREE COINAGE.—This Lump Gulch property shows up better as development proceeds. The shaft is down 300 ft., and will be sunk 100 ft. more. It looks as if this mine was soon to become one of the largest producers in the camp.

GOLDEN GATE.—Joseph Garneau, the owner of this property, has put on two shifts. The ore from this mine is treated in a concentrator, which has been erected especially to treat the ore from this mine. The concentrator is reported to be a success, and is now running night and day. The concentrates are shipped to the East Helena smelter. The success of Mr. Garneau will probably induce the owners of other claims in this district—a gold belt east of Prickly Pear Creek—to put in concentrators also. There are a large number of gold properties in this locality which are too low-grade to mill, especially as the gold is hard to save on plates.

HOPE.—The management of this mine at Basin has not changed as reported. Mr. F. N. Fletcher will continue to be superintendent, and Mr. E. W. Bach, of Helena, will represent the purchasers. Mr. Martin Buckley will retain his place as foreman. Every indication points to the fact that the Hope will produce more gold this year than in any former year of its history.

LITTLE NELL.—In this mine in Lump Gulch such a quantity of water has been encountered that the pumps could not lift it. Other pumps will be put in and this mine will continue to be a large shipper.

PILOT.—A fine shoot of ore has been found in the Pilot, in the vicinity of Lump Gulch, but on the east side of Prickly Pear Creek. It is the intention of the owner, Mr. Wm. L. Vinson, to develop the mine and put on machinery to work it if the ore body holds out.

WAR EAGLE.—A large body of good ore has been uncovered in the War Eagle, which lies not far from the Hope, across the Boulder River, at Basin. The vein is large and the owners are much encouraged.

MEAGHER COUNTY.

(From Our Special Correspondent.)

JOHANNESBURG—Work has closed at Johannesburg, five miles north of Neihart for the winter. This is the new gold-field opened up late in the fall. The properties explored give encouragement that good gold mines will be found there. The snow will make it difficult to work these mines in winter until better roads are constructed.

MAGPIE GULCH—Court Sheriff, of Canyon Ferry, has uncovered a good body of ore in a claim in Magpie Gulch, in the Great Belt Mountains, 26 miles east of Helena.

MISSOULA COUNTY.

(From Our Special Correspondent.)

MISSOULA GOLD MINING COMPANY.—This company has been organized to operate the San Martina mines. The officers of the company are Hal S. Corbett, president; T. C. Marshall, vice-president; H. L. Frank, of Butte, treasurer; W. Q. Ranft, secretary. The property of the company is in a good district, and is of much promise.

WHITE CLOUD.—This mine, on Eight Mile, on the Cœur d'Alene branch of the Northern Pacific road, is showing up well. The quality of the ore has improved, and the extent of the ore body is known to be great.

PARK COUNTY.

(From Our Special Correspondent.)

GREAT EASTERN.—D. G. Ross has bonded the Great Eastern mine near Cooke City, in the New World district, for \$3,000. It is a gold property and but little developed.

HORR COAL MINES—Mr. C. E. Strong, of Birmingham, Ala., has been appointed general manager of the coal mines at Horr. He arrived last week and took full control.

SILVER BOW COUNTY.

WASHINGTON VALLEY MINING COMPANY.—Development work on this company's claims near Timbered Butte, is progressing favorably. At a depth of about 40 ft. the ledge showed up some pretty pieces of copper, which is said to be richer than anything ever discovered at the same depth around Butte.

NEVADA.

EUREKA COUNTY.

RICHMOND CONSOLIDATED MINING COMPANY.—At its annual meeting this company reported that during the year 458 oz. of gold and 17,990 oz. of silver were produced, principally by tributaries, the proceeds being \$27,515. A dividend of 2s. per share was declared.

STOREY COUNTY—COMSTOCK LODGE.

OPHIR MINING COMPANY.—This company has received the sum of \$7,326 as gross proceeds of concentrates treated by the Selby Smelting and Lead Works. These concentrates came from 472 tons of base ore worked at the Mexican mill. The total cost of working the ore, treating the concentrates, and all freight charges did not exceed \$3 53 per ton.

SIERRA NEVADA MINING COMPANY.—At the annual meeting of the stockholders of this company, held at San Francisco last week, 82,827 shares were represented, and the following were elected to serve as officers for the ensuing year: Chas. H. Fish, president; Chas. Hirschfeld, vice-president; and H. Zadig, Thos. Cole and A. K. P. Harmon, trustees. Roger Pendergast was re-elected superintendent, and E. L. Parker, secretary. The financial statement showed a credit of \$2,692.

Following are extracts from the latest weekly official letters of the mine superintendents:

BELCHER.—On the 300-ft. level the joint Belcher and Segregated Belcher west crosscut from the south lateral drift is out 220 feet; the face shows porphyry and quartz of no value. There were hoisted and stored in the ore house at the mine 37 carloads of ore, the average top car sample of which shows an assay value of \$24.87 per ton.

CROWN POINT.—The southwest drift on the 600-ft. level is now out a total distance of 120 ft. Have completed the repairs in the southeast crosscut on the 600-ft. level and started a north drift on the eighth floor of the slope above the 700-ft. level. The drift is out 23 ft. and the face is in low grade quartz. Completed repairs in the east crosscut on the 1,100 ft. level and are now preparing to make a raise from it to the 1,000 ft. level at a point 300 ft. east of the shaft station, on a body of low grade quartz exposed at that point.

OVERMAN.—We extracted from north drift 900-ft. level 6½ tons of ore, the assay value being \$33.39 per ton. On the 9th inst. shipped to the Brunswick mill 33½ tons of ore.

SEGREGATED BELCHER.—There have been hoisted during the week and stored in the ore house at the mine 10 carloads of ore, the average top car sample of which shows an assay value of \$28.25 per ton.

NEW HAMPSHIRE.

GRAFTON COUNTY.

HOLDEN GRANITE QUARRY.—Negotiations have been completed, it is said, for the sale of this quarry at Rumney to parties who will open it upon a large scale in the spring.

NEW JERSEY.

SUSSEX COUNTY.

ROCK IRON TRACT.—This property was sold re-

cently to Mr. Mengis, of Brooklyn, N. Y., who has recently put men at work clearing out the old shafts and preparing for further explorations to test the extent of the iron ore deposit. The property includes 150 acres on Mine Hill, on the road from Stanhope to Andover.

OHIO.

HARDIN COUNTY.

EXCELSIOR COAL COMPANY.—John Wagener, president of this company, has been appointed receiver of its property, including mines at Silver Creek and New Comerstown. In the application it is stated that certain new mines have been operated at a loss, and that the debts of the company are now \$50,000. The property will be sold to satisfy creditors.

PENNSYLVANIA.

ANTHRACITE COAL.

CHAMBERLAIN COAL COMPANY.—This company's colliery, near Pottsville, was sold on January 14th upon executions for over \$200,000. The company is composed of Wilkes-Barre and Scranton capitalists. W. W. Watson, of Wilkes-Barre, was the purchaser, as trustee.

MT. LOOKOUT.—In building the new breaker at Mount Lookout, to replace the breaker recently destroyed by fire, Messrs. Simpson & Watkins will follow the general plan of the old breaker, although the new structure will be larger and the interior differently arranged. One side will be adapted for the preparation of dry coal, while the other side will be fitted with jigs for the preparation of wet coal in sizes below stove. While the rebuilding is in progress the main shaft and the air shaft of the colliery will be sunk to the lower veins, in order that the plant may be in better shape than ever before when the new breaker is completed. The Harry E. and Babylon collieries, which are the property of Messrs. Simpson & Watkins, will be operated to the largest capacity, in order to furnish employment to as many as possible of the men employed at the Mount Lookout colliery.

SUGAR LOAF COAL COMPANY.—A preliminary injunction has been granted by the court of Luzerne County to restrain the firm of Linderman & Skeer from removing their personal property, consisting of pumps, engines, boilers, breaker machinery and breakers from their extensive operations at Stockton. After having operated at this place for over 40 years, Linderman & Skeer, early last year notified the land owners who are incorporated under the name of the Sugar Loaf Coal Company, that they would not renew on the same terms their lease on January 1st, when it expired by limitation. A temporary arrangement was entered into by the lessees and the land owners by which Linderman & Skeer consented to continue to work the mines until a new lease was made, or new lessees secured. No arrangement having been made up to January 15th, Linderman & Skeer notified their lessors that they would begin to remove from leased premises their property and that the first step would be to take out the pumps in the lower levels. In order to prevent this a bill in equity was filed and an injunction obtained. The consequence of the removal of the pumps would have been a flooding of the mines that are among the most extensive in the Hazleton region, and a damage to the landowners that would in all likelihood prove beyond repair as it would have placed the workings in the condition of the flooded Harleigh and Ebervale mines which to free from water required the building of a five mile tunnel to the Butler Valley at a cost of \$500,000, and four year's work, after they had been flooded 10 years. It is claimed by those who are familiar with the Stockton workings that the amount of coal still remaining in the lands would not warrant such an expense should the mine be flooded.

GREENOUGH TRACT.—This tract consisting of about 100 acres of coal land, near Shamokin, has been secured by M. W. O'Boyle and other capitalists from the Luzerne region and it is expected that a big colliery will be opened up there in the Spring. A \$50,000 breaker will be erected, the capacity of which will be 125,000 tons per month. This will give employment to 500 additional men and boys. This tract consists of virgin coal land and has been leased for a period of 20 years.

WADESVILLE.—The new shaft at the old Wadesville colliery, owned by the Philadelphia & Reading Company, has reached a depth of over 30 feet, and work is progressing very rapidly. It is the purpose of the Reading Company to sink the shaft to the depth of 1,000 feet.

SOUTH CAROLINA.

PHOSPHATE INDUSTRY.—The annual report of State Inspector Jones was filed recently, showing the condition of the phosphate industry in the State of South Carolina for the year commencing September 1, 1894, and ending August 31, 1895. During the year the mining operations were carried on by the following companies: Coosaw Mining Company, Farmers' Mining Company, Beaufort Phosphate Company, Carolina Mining Company, W. Y. Frupp and James O'Hear, and James C. Netson, suspended. Inspector Jones reports the companies as in good condition, having added new machinery, and fully recovered from the effects of the cyclone of August, 1893. The total shipment of rock for the year was 174,400.25 tons, distributed as follows: Foreign ports, 129,822 tons; coastwise, 30,451.25 tons; at Charleston, 6,573 tons, and at Beaufort, 7,554 tons. The amount of royalty paid to the State on

shipments was \$87,200, and an additional amount for excess of value \$457, making a total of \$544,200. The number of tons mined during the year is estimated at 201,400, and the number of tons on hand September 1, 1895, at 35,857, divided as follows: Coosaw Mining Company, 10,925 tons; Farmers' Mining Company, 11,323 tons; Beaufort Phosphate Company, 7,437 tons; Carolina Mining Company, 4,944 tons; John C. Nelson, 452 tons; W. Y. Frupp, 153 tons, and James O'Hear, 623 tons. The companies now mining have reduced their forces, and are practicing the strictest economy. Prices are down to the lowest point, and it is claimed that with the present royalty paid the companies cannot exist. Inspector Jones urges upon the board of commissioners and the legislature the question of a reduction in the royalty, and expresses his opinion that the interests of the State will be best subserved by reducing the royalty to 25c. a ton until an improvement is shown in the market.

TENNESSEE.

A press dispatch from Chattanooga states that new oil fields have been found in Northern Tennessee, and wild excitement prevails. Options and leases on hundreds of thousands of acres have been taken. The Standard Oil Company is said to be interested.

TEXAS.

BURNET COUNTY.

MARBLE FALLS GRANITE COMPANY.—This company has been organized to open and work a granite quarry at Marble Falls. The president is James R. Barret, of Marble Falls.

UTAH.

JUAB COUNTY.

AJAX MINING COMPANY.—Henry M. Ryan, J. C. McNally, Frank Hoffman and G. W. Shores, owners of 57,000 shares of the capital stock of this company, began injunction proceedings against the company on January 18th to prevent the sale of their stock under an alleged pretended assessment levied on November 25th, 1895. It is alleged in the complaint that the levying of the assessment was void, because at the meeting at which it was levied only one member of the board of directors voted for it, and that he did not constitute a majority of the board, and had no authority to levy such assessment. It is further alleged that the assessment was not necessary, as the property is yielding more than the amount necessary to pay the running expenses, and that it was made for the sole purpose of annoying a majority of the stockholders. In conclusion, it is alleged that at a meeting of the Board of Directors, held on January 15th, at which five directors were present, it was ordered that the former assessment be rescinded, three of the directors voting in favor of it. Hence the plaintiffs pray that the officers of the company be temporarily enjoined from selling any of the stock, and that upon a hearing the injunction be made perpetual. The temporary injunction was granted upon the plaintiffs filing a \$2,500 bond.

BULLION BECK TUNNEL COMPANY.—Two shifts are now at work on the Big Eastern tunnel of this company and it is being rapidly driven ahead. This tunnel will tap much unexplored ground in a great mineral section and should prove of much importance to Tintic.

DAGMAR-EUREKA.—Work on this property is progressing as usual. At a depth of 40 ft. the shaft is following the foot wall, and as soon as the 50-ft. level is reached they will crosscut the vein to the hanging wall. The same character of lead is found all the way down, with the exception that it is improving in quality. It is expected that ore shipments will begin soon from this property.

GODIVA.—A strike of another kind of ore was made in Godiva recently, being a lead carbonate which runs 60% lead and high in silver.

KING JAMES MINING COMPANY.—Two men are now at work on the property retimbering and generally cleaning up preparatory to commencement of active mining operations. There is now about 70 ft. of water in the shaft, which will have to be pumped out in order to reach the best ore body, which is located on the 150-ft. level. This ore is high grade silver and lead and the vein is from 2½ to 4 ft. wide. The King James has produced considerable good ore in the past.

NORWAY.—Arrangements are in progress for the incorporation of the Norway and Ole Bull claims, which lie within the town limits of Eureka, and were excepted therefrom in the recent decision of the Secretary of the Interior.

UTAH MINING COMPANY.—This company is steadily shipping its high grade gold ore. The value of recent shipments is said to be about \$800 in gold per ton, says the *Tintic Miner*. The Sioux is also producing steadily and the work of the new mill is satisfactory.

WEST TINTIC DISTRICT.—Considerable activity is reported in this district. A great deal of assessment work has been done, and considerable development work will be started in the spring. A St. Louis company, which owns the Mt. Pleasant mine in Desert Mountain, has a force of men at work, and has made contracts which insure a continuation of operations all through this year. This property is now producing some good grade ore.

WHITTAKER.—The showing in the Whittaker, which is being developed by E. N. Jenkins, of Salt Lake, is improving. At a depth of 45 ft. the ore

shows \$5 in gold and \$3.80 in silver. The Whittaker joins the Mammoth property on the south. A small stamp mill will be erected in the Spring.

TOOELE COUNTY.

MERCUR GOLD MINING & MILLING COMPANY.—Capt. J. R. De Lamar's option on this company's stock having expired, and an extension of time having been refused, the deal is now off.

VERMONT.

RUTLAND COUNTY.

HUGHES SLATE QUARRY.—Stripping is now going on at the Hughes property near Pawlet, where prospectors have found three beds of slate of good quality.

PITTSFORD QUARRY.—A ledge of granite of fine quality and of a dark green color was recently uncovered in Pittsford and arrangements are being made to open a quarry on a large scale.

WASHINGTON COUNTY.

BARRE GRANITE QUARRIES.—Arrangements are now being made at Barre, Vt., says Stone, to form a stock company for the purchase of all the leading granite quarries in that section, the prime mover in the plan being S. C. White. Others are Mayor E. L. Smith, Treasurer C. N. Field of the Granite Savings Bank, W. A. Boyce, a lawyer; James Gazeley, of Albany, N. Y., and President A. F. Sortwell, of the Montpelier & Wells River Railroad. Options have already been secured on many of the best quarries, but it is understood that the syndicate will not be formed unless some quarry owners take stock in the proposed company. It is not intended to take the cutting plants, but only the quarrying business. It is estimated that \$1,000,000 will be required to carry the deal into effect.

WEST VIRGINIA.

MINERAL COUNTY.

PIEDMONT LIME COMPANY.—This company has been organized to work limestone quarries at Piedmont, and to make lime there.

MINGO COUNTY.

THACKER COAL AND COKE COMPANY.—This company has bought \$50,000 worth of coal land from the Terrel Brothers and other extensive land owners in that immediate vicinity. Additional mines will be opened.

WISCONSIN.

MARATHON COUNTY.

ANDERSON BROTHERS & JOHNSON.—This new firm is now opening a new quarry in the Kickbush ledge, two miles from Granite Heights.

WAUKESHA COUNTY.

WISCONSIN LIME & STONE QUARRY COMPANY.—This company has been incorporated at Genesee to work quarries near that place. The incorporators are George A. Abert, John Cook and Sigmund Kleiser.

FOREIGN MINING NEWS.

BRAZIL.

ST. JOHN DEL REY GOLD MINING COMPANY.—This company reports an output of 3,573 oz. gold in December and of 37,008 oz. for the year 1895. The average return was about 0.72 oz. gold per ton.

BRITISH COLUMBIA.

(From Our Special Correspondent.)

KASLO.—Considerable impetus has been given to the Kaslo-Slocan country, since the narrow gauge railway between London and Three Forks was constructed; since the Canadian Pacific connection was made with Kaslo and Three Forks, and since the erection of a smelter by the Hall Mining Company, at Nelson. Though the Kaslo-Slocan country is principally a silver district, there is a great deal of activity in mining there. The ore not treated by the Nelson and Pilot Bay smelters is shipped by Revelstoke on the line of the Canadian Pacific Railway.

LE ROI MINING COMPANY.—The thaw which commenced early this month, causing a suspension of ore shipments, has been followed by cold weather and shipments from Le Roi and War Eagle mines have been resumed. The shipments made from Le Roi mines are under contract with the British Columbia Refining and Smelting Company. A considerable quantity of ore has already accumulated at the Trail Creek Smelter, and the War Eagle has resumed its shipments to Northport. The annual meeting of Le Roi Mining Company has resulted in the election of W. W. D. Turner, president; D. W. Healy, vice-president; L. F. Williams, secretary, and Major Armstrong, treasurer.

PARIS BELL.—The coming litigation between the owners of the Paris Bell Mine and the Spokane & Northern Railroad, which came before the courts at Victoria on January 15th, is attracting much attention. The Paris Bell is said to be a promising mine in the heart of this camp, and some months ago Mr. Cabor, of the Spokane & Northern, had an injunction placed on the mining company, on the ground of a prior title. The injunction was to prevent surface explorations and the use of timber by the mine claimants.

PILOT BAY SMELTER.—The capacity of the Pilot Bay smelter, that at Nelson erected by the Hall mines, and the one at Trail which will soon be completed, will reach 164,250 tons per annum. The

present capacity of the Trail Creek smelter is placed at 91,250 tons.

ROSSLAND TRAMWAY.—Work on the tramway between Rossland and Trail Creek Landing is going on steadily. Grading is now going on at both ends and by the middle of April it is expected to be completed.

ECUADOR.

PLAYA DE ORO MINING COMPANY.—At a meeting of the stockholders of this company, held at Versailles, Ky., on January 14th, the following directors were elected: J. S. Elliott, O. S. Gage, Seymour Van Nostrand, Jos. D. Baucus, Stuart A. Coates, George Du Ruelle, Peter Marie, J. W. Clendenin, Jas. G. Janeway, Clarence E. Dougherty, Wm. H. Young. At a meeting of the directors held in New York on January 20th, the following officers were elected for the ensuing year: J. S. Elliott, president; O. S. Gage, vice-president; Seymour Van Nostrand, secretary; Jos. D. Baucus, treasurer. The new president, Mr. J. S. Elliott, expects to sail for Ecuador by the next steamer, and take with him an expert mining engineer and two expert miners to increase the available working force of the mine.

QUEENSLAND.

The Vulcan Tin Mine, Irvinebank, is the most productive in the north. Since operations were started in 1890, no less than 15,020 tons of stone have been crushed, which yielded 2,357 tons of black tin, worth £35,784. Dividends amounting to £28,013 have been declared and distributed among the shareholders. The figures for the last half year convey an even better idea of the extent of the work. During that period 2,272 tons of ore were crushed for 397 tons of black tin; and 408 tons of tin were sold for £9,459, the sum of £4,950 being paid away in dividends. The tin deposit is bumpy, and rich strikes are frequently made. At the 100-ft. level a bunch was taken out which measured 70 ft. long, 25 ft. wide, and 12 ft. deep, this being the largest met with since the first opening of the mine. It averaged all through 17.5% of black tin. A second bunch of similar dimensions is now being mined. The management is up-to-date, and work is now expedited by a rock-drill plant.

LATE NEWS.

The Engineers' Society of Western Pennsylvania, held its annual meeting in Allegheny, Pa., this week when the following officers were elected: W. G. Wilkens, president; George S. Davison, vice-president; Daniel Carhart, secretary and A. C. Frost, treasurer. The president appointed H. W. Fisher, L. B. Stillwell and W. A. Bole a committee to collect statistics relating to electric and steam plants.

A reliable correspondent writes to us from Socorro, N. Mex., that a very important discovery has been made recently on Socorro Mountain. A vein, apparently a fissure, has been opened up, showing a body of ore 3 ft. in width, with a tendency to widen as depth is attained. The ore is a honey-combed quartz largely filled with iron oxide, in which free gold is visible. It is quite uniform in composition, averaging 13 oz. of gold and 350 oz. of silver to the ton.

Socorro Mountain is made up of stratified rocks of the sub-carboniferous formation, overlaid with porphyry and basalt, and containing several extensive dikes. There are two distinct fault lines, near one of which the recent discovery has been made. A great deal of prospecting has been done on the mountain and several good silver mines have been worked, but this is by far the richest discovery. The development work will be rapidly forwarded, and the owners are very hopeful of receiving a rich reward for their efforts.

The regular monthly meeting of the Western Foundrymen's Association was held in Chicago. The president, John M. Sweeney, occupied the chair. The following applicants were unanimously elected members of the association: Wm. Bayley & Sons Company, Milwaukee, Wis.; Stockham Manufacturing Company, Chicago; G. W. Scott, Chicago; W. D. Mahaney, Joseph Dixon Crucible Company, Chicago; Western Foundry Company, Chicago, and American Trading and Storage Company, Chicago. The secretary read the following topical questions, which were open to discussion by the association. They related to "The Working Time of Molders":

1. Does the employer derive any benefit from compelling molders to remain in the foundry until quitting time, if their molds have been poured off before? If so, what benefit?

2. Are there characteristic conditions in foundries which necessitate different practice and management from those followed in other industrial pursuits?

3. Is a molder in fit condition to do further work after he has poured off his day's molding?

4. Is it desirable to have a recognized apprenticeship system, and if so, what is the best form?

On motion, it was decided to discuss only the first three questions before the fourth should be taken up. The secretary read several written answers, which were supplemented by verbal discussions from members present, some interesting facts being brought out.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 24.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending January 18th, 1896, compared with the corresponding period last year.

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	71,313	183,664	200,280
Pa. & Reading Railroad..	281,145	789,329	686,292
Totals.....	354,458	972,993	886,572

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs., for week ending January 18th, and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	47,814	139,185	118,351
Barclay, Pa.....	1,375	2,766	2,766
Beech Creek, Pa.....	177,638	1,138,585	2,184,649
Broad Top, Pa.....	12,428	25,976	26,082
Clearfield, Pa.....	113,298	330,312	255,751
Cumberland, Md.....			139,280
Kanawha, W. Va.....	1103,358	1,164,310	218,253
Phila & Erie.....	896	2,756	5,072
Pocahontas Flat.....	163,347	163,347	785,827
Totals.....	420,134	876,517	1,755,265

Production of coke on line of Pennsylvania Railroad for the week ending January 18th, 1896, and year from January 1st, in tons of 2,000 lbs.: Week, 101,753 tons; year, 274,238; to corresponding date in 1895, 320,606 tons.

Anthracite.

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Muncy, Pa.....	16,737	50,353	36,236
Pittsburg, Pa.....	36,965	111,872	129,345
Westmoreland, Pa.....	34,902	129,264	180,886
Totals.....	88,604	291,449	346,437

Grand totals..... 598,738 1,158,966 2,101,702

Production of coke on line of Pennsylvania Railroad for the week ending January 18th, 1896, and year from January 1st, in tons of 2,000 lbs.: Week, 101,753 tons; year, 274,238; to corresponding date in 1895, 320,606 tons.

Intrinsically, no change has taken place in the anthracite market since our last report. The announcement that the presidents of the coal-carrying companies would hold a meeting on January 23d caused a feeling of vague expectancy to spread over the trade.

To some extent the announcement also induced more buying. From a thorough canvass of the market we gather that the demand was a timid "emergency demand," as it were. Buyers thought that the presidents might decide to take steps which would ultimately lead to higher prices and deemed it prudent to place some orders at current rates, which are certainly low enough. The aggregate volume of new business was not very heavy, after all, for sellers would not accept long time orders and again buyers had no great fear of an immediate advance.

An idea of the condition in which the market has been may be gained from the fact that the improved demand did not have much effect on prices. All the orders that were booked favored the buyer, in spite of the oft-repeated statement that an "understanding" would be reached by the various interests tending to benefit the market from the sellers' standpoint. There is indeed to-day a superabundance of coal. Many of the companies not only have their storage plants filled to their utmost capacity, but have large amounts standing in cars. To such a degree has the latter condition extended that some of the railroads are very short of cars, and have been forced willy nilly to order a restriction in the output. So far as we can gather, this is the only restriction that has been carried on, and those companies which a fortnight ago were short of cars, but are now able to handle more tonnage, are not restricting to any appreciable degree.

During the week rumors regarding low prices have continued to circulate, but fair market quotations are as follows: Stove, \$3.20@ \$3.25; egg, \$2.95@ \$3; chestnut, \$2.85@ \$2.95; broken, \$2.75, all net on board. Some sales of inferior grades have been made at lower figures, but the above represent the market. A grade of broken, which ordinarily brings as much as the average stove, is authoritatively reported to have been offered this week by a large company at \$2.90 on board.

The much heralded meeting of the presidents of coal carrying roads was held at the rooms of the Trunk Line Association on Thursday. There was a full attendance present and the meeting lasted several hours.

From the statistics furnished by the various interests it was learned that the total shipments of anthracite coal during 1895 amounted to 46,545,760 tons, an increase of over 5,000,000 tons from the shipments in 1894.

After discussing the trade in its various aspects and suggesting and rejecting several measures tending to relieve the market at once, the question of percentages of allotments was brought up. After much talk there was still a difficulty amounting to about 2% on which the interests could not agree. As one of the discontented interests said: "Because we restricted our output last summer on account of a disinclination to mine coal which we would have had to sell at about \$2.50 per ton, we cannot consent to the acceptance of a percentage based on our 1895 production." Another interest claimed that certain physical difficulties, now overcome, prevented it from showing an increase in its output proportionate to that shown by other companies. At length it was decided to appoint a committee consisting of President J. Rogers Maxwell, of the Jersey Central; President E. B. Thomas, of the Erie; and Vice-President E. R. Holden, of the Delaware, Lackawanna & Western. Mr. Wilbur, who presided at the meeting, will pre-

sumably form an ex-officio member of the new Salvation Committee, which will report next week, and will "recommend" percentages and other plans tending to improve the trade, from the sellers' standpoint.

Everybody who was present expressed a desire to avoid a repetition of last year's unfortunate experiences and claimed to be more than willing to adopt any reasonable arrangement. The fact that only 2%, or about 900,000 tons out of an output of 46,545,760 tons, is in dispute is taken as an encouraging sign that something will be done.

The meeting was one of the most important held within a few years. The personnel of the committee, Mr. Wilbur excepted, is said to show Mr. J. Pierpont Morgan's "fine Italian hand." At this writing it seems probable that developments of great moment to the trade will transpire within a week. As we go to press private information, which we are unable to publish, reaches us which makes it advisable for buyers to place their orders at once. "There's many a slip 'twixt the cup and the lip," and it may be that the new Salvation Committee will be unable to save the coal interests from themselves. But there is little likelihood that prices will decline from present figures and there are some prospects that February 1st will see advances in all the sizes of anthracite.

Bituminous.

If there is any change in the soft coal market this week it is for the better. There is a slight increase in the orders coming from east of Cape Cod. The Sound business continues unchanged and still forms the basis for other business. The New York harbor trade is fairly good, and, by reason of contrast with the dullness prevailing elsewhere, seems of more importance than usual. The all-rail trade is steady, and producers appear to be seeking new business in points off the main lines "all-rail delivery," now that the railroads have removed the embargo on cars to those points.

Most of the old contracts are pretty well filled up and the trade is beginning to look forward to the coming season's contracts, deliveries on which begin with the placing of the contracts, and thus open the active season.

The Pennsylvania Railroad Company has issued a circular letter to the soft coal shippers along its line advancing its rates from 5 to 15c., to take effect on April 1st, and withdrawing certain rebates that have been allowed. It is reported that other roads will follow the Pennsylvania's example in advancing rates. This action at first was viewed with alarm by shippers, who thought that their already slim margin of profit would be cut into by the advance. Of late, however, it has been suggested that this action is indicative of a desire on the part of the railroads to co-operate with the committee which is now considering the arrangements for a combination of the soft coal interests. There is a good deal of gossip circulating in trade circles regarding the "combine," and it is difficult to sift the wheat from the chaff. The committee is "laying low" and saying nothing for publication.

Transportation is all that could be desired, and the car supply is ample for present requirements.

Vessels are scarce. We quote nominal rates of freight as follows from Philadelphia: To Boston and Salem, 95c.; Portland, 95c. @ \$1; Providence, New Bedford, New Haven and other Sound ports, 80c.; Portsmouth, \$1; Wareham, 90c. From the lower ports rates are 5 @ 10c. higher.

Nominal prices are unchanged. We quote f. o. b. at the various ports, as follows: Norfolk and Newport News, \$1.90 @ \$2.15; Baltimore, \$2 @ \$2.20; Philadelphia, \$1.75 @ \$2.20; New York harbor shipping ports, \$2.20 @ \$2.65; alongside New York harbor, \$2.40 @ \$2.75; alongside Boston, \$2.75 @ \$3.

Buffalo, N. Y.

Jan. 23.

(From Our Special Correspondent.)

There were no new noticeable features regarding the anthracite coal business since last week's letter. The few incidents bearing upon the trade are appended hereto. The old story—light demand for home and interior points, as well as for Canada and Western cities. No variation in quotations. Weather, as a rule, mild and pleasant.

Bituminous coal also without change in supply, price and demand. Stocks are large, and from reports some mines have discontinued sending their product to this market, as prices are so unsatisfactory, many times barely reaching expenses.

Nothing made public relative to a bituminous coal combination looking to the improvement of the mine owners' prospects. Coal men carry the banner for "silence" generally on all occasions.

A bill has been introduced into Congress by Senator Brice to make inquiry as to what concurrent legislation is necessary on the part of United States, Great Britain and the Dominion of Canada, "to authorize and permit the erection and maintenance of any dam or dams or other works that may be necessary to regulate the waters of the great lakes and maintain them practically at a uniform level from the head of Lake Superior to the foot of Lake Erie."

Shipbuilding and repairs are being carried on very extensively at all lake ports.

The Lehigh Valley Company are building a new coal dock at Chicago, and the Reading Company have just completed one at the same port.

Last week the Ohio Coal Company's stock of coal

at Superior was decreased about 2,500 tons, the result of fire.

The official statement, just published, states that 10,429,037 gross tons of iron ore were shipped from the Lake Superior mines, divided as follows: Mesabi range, 2,781,587 tons; Gozebic, 2,547,976 tons; Marquette, 2,097,834 tons; Menominee, 1,923,798 tons, and Vermilion, 1,077,838 tons.

Captain J. J. H. Brown, of Buffalo, was unanimously elected President of the Lake Carriers' Association last week, and Mr. Henry Keep reappointed secretary.

The quantity of anthracite coal which passed through the Welland Canal from Lake Ontario ports, principally Oswego, N. Y., during 1895, was 142,317 net tons.

From the port of Erie, Pa., during 1895, 480,350 net tons of anthracite coal were shipped to Western points by lake.

Mr. Charles M. Hayes, general manager of the Grand Trunk Railway, has issued a circular asking for bids on soft coal. The requirements and places of delivery are as follows:

Portland, 30,000 tons gross; Chaudiere Junction, 12,000 tons; Montreal, in company's coal-yard, 70,000 tons; Montreal at company's workshops, 10,000 tons; Montreal, 20,000 tons; Brockville, 36,000 tons net; Detroit, D & M. slip, 25,000 tons net; Detroit, G. T. tracks, 35,000 tons net; Suspension Bridge, International Bridge or Port Dover, 430,000 tons net.

The Buffalo Merchants' Exchange coal committee this year are: Messrs. Horace A. Noble, Thomas Loomis, John H. Ball, Arthur E. Hedstrom and Joseph C. Batchelor. Mr. John M. Brinker continues as a trustee, representing the coal interests.

Chicago.

Jan. 22.

(From Our Special Correspondent.)

Weather conditions having been very much against a large consumption of coal, the past week has been one of very poor business to both the wholesaler and retailer of this city. But little anthracite coal was disposed of, and the tonnage coming to the city from the mines was undoubtedly of larger proportions than the amount of coal disposed of during the week. In prices there is yet a considerable cutting, the circular price hanging around the \$5 mark.

There has not been a great deal of business transacted in bituminous coal, the market having been affected also by the prevailing weather conditions. The receipts of soft coal are very large and the proper disposal of it will soon be a problem to some of the shippers, if business does not become more active. Prices in soft coal are not firm and consumers are possibly giving their orders at nearly their own figures. Coke is in fair demand, and the recent increase in its price holds firm.

Pittsburg.

Jan. 23.

(From Our Special Correspondent.)

Coal.—Trade may be said to be at a standstill. The demand is local and not very extensive. The river at this point is too low to talk about. Many mines in the pools have been closed for the want of empties to load. None will be received until we have a rise. In the pools and harbor the coal loaded will reach about 8,110,000 bushels. Prices in the lower markets are down to a low figure. In railroad coal circles satisfaction is expressed over the practical solution of the uniformity problem after 20 of the operators have complied with the conditions established. The results of the miners' convention will, it is hoped, still further strengthen the basis of uniformity. The partial or entire shut down of many iron mills in the Mahoning and Shenango valleys has had its effect upon railroad coal shipping.

The residents of Townville, near Meadville, Pa., as well as other citizens of eastern Crawford County, are excited over a discovery of coal in Steuben Township. The find is located on the farm of Ira B. Peary, which lies on the Centreville road between Townville and Athens mills. The coal was discovered while drilling for oil.

Connellsville Coke.—The coke trade in this region has not yet improved, as it was expected it would, nor will it improve much before about the first of March. The coke advance caused all the furnaces to use up their stock and consequently there was a decreased demand for the newly manufactured product. The operators predicted a slump in the trade and say it may continue for some time. The production of pig iron for the last year has been beyond the immediate demand; many furnaces have closed down until their stock has been disposed of. The Charlotte furnace at Scottdale will not resume for some time.

Since our last 945 ovens were blown out, leaving 14,870 burning, but these produced a slightly increased amount of coke. The week's summary shows a material falling off. In the running order of the active ovens 4,153 made six days; 9,645 ovens made five days, and 1,541 ovens made four days, an average of 5.16 days. The shipments of coke from the region amounted to 6,897 cars, against 7,525 cars the preceding week. The shipments were distributed as follows: To Pittsburg, 1,437 cars; to points east, 1,649 cars; to points west, 3,751 cars; the shipments amounted to 125,820 tons, against 136,463 tons the week previous, and 13,250 tons less than production. Prices steadily maintained.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 24, 1896.
Fig Iron Production and Furnaces in Blast.

Fuel used.	Week ending				From	
	Jan. 25, 1895.		Jan. 24, 1896.		Jan. '95.	Jan. '96.
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Anthracite.	38	21,632	53	76,700	77,257	125,828
Coke.	124	145,123	160	180,200	518,296	617,829
Charcoal.	23	5,140	21	4,900	18,357	16,800
Totals	185	171,895	240	221,800	613,910	760,457

The improvement noted last week has continued, and the iron markets have been generally strong and active. The decrease in production, the growing probability of a steady demand and the apparent determination of furnacemen to insist on maintaining prices in view of the higher cost of ore and fuel have combined to alarm purchasers. The waiting market is at an end, and the record this week is of active buying and rising quotations. The chief points in the market have been Bessemer pig and steel billets, in both of which transactions have been large. Foundry irons have also been in good demand, and some important orders have been taken for future delivery. There is every appearance of good business, for a time at least.

The report of the American Iron and Steel Association, given in another column, puts the total production of pig iron in the United States in 1895 at 9,446,308 tons. Our own figures, published in the *Engineering and Mining Journal* of January 4th, were 9,346,636 tons. If we deduct the ferro-manganese and spiegeleisen, which are included in the Association's statement, the difference between our figuring and the corrected official report was only 0.2%.

We understand that the expectation of lower prices for rails is not to be realized at present, the steel rail-makers' combination, at a recent meeting, having decided to maintain the current quotation of \$28 per ton ac mill for standard sections, in spite of the light orders. It is said, however, that one or two large contracts have been offered with a clause giving the buyer the benefit of any decrease in price made before delivery.

NOTES OF THE WEEK.

In our last issue our Pittsburg correspondent included Mr. W. J. Rainey among the operators in the Connellsville coke region, who had blown out ovens. Mr. Rainey informs us that the statement was a mistake; all his ovens are going full time, and he is building more. We are pleased to make the correction, and to note a prosperous business.

The Tennessee Coal, Iron and Railway Company reports that its net earnings for the year 1895 were \$1,008,118; fixed charges were \$595,785, leaving a surplus of \$412,333 for the year. In 1894 the net earnings were \$661,200, and the fixed charges \$717,000, leaving a deficit of \$55,800. This shows a total improvement in surplus of \$468,133 last year over 1894.

The production of pig iron in Lawrence County, O.—the Hanging Rock district—in 1895 was 103,061 tons from seven furnaces. Three of these ran steadily through the year; one was in blast 10 months; the other three a short time only. All of them are now in blast. The production of the district was 78,875 tons in 1894, and 68,475 tons in 1893.

According to the *Railroad Gazette*, all of the 13 locomotive building companies in the United States, except one, built more locomotives in 1895 than in 1894, and the total number of engines built footed up 1,109 against 695 in the previous year. This is a good increase, but not yet up to a normal production, as the average for five years up to 1893 was about 2,000 locomotives a year. Reports from the car building companies show that car building also has taken an upward turn, the output of the contracting shops in 1895 being 31,893 freight cars. This is in comparison with 17,029 freight cars built in 1894, and thus shows a large increase; but in 1893 there were 51,000 freight cars turned out, and in 1892 no less than 93,000 were built.

New York.

Jan. 24.

While the local market has shown none of the excitement which stirred up Pittsburg early in the week, it is generally in very good condition for the time of year. Demand in different branches—notably foundry iron and structural steel—is good, and the run of small orders, which was a notable feature of last year's business, has begun again in an encouraging way. The electrical people are promising a great deal of new work and the engine-builders are generally busy. A prominent tool-builder says that while new orders have not been plenty for a month past, he has let none of his men go, but has kept them busy on stock, feeling quite sure that he can sell everything a little later on.

Pig Iron.—Demand is improving, and prices for Northern brands are unchanged. There is an evident determination to press the sale of Southern iron here, and prices of all kinds have been cut 25c. or thereabouts. As usual the shading of prices is talked about, but it is impossible to locate it definitely.

We quote, for tidewater deliveries: Northern iron, No. 1 foundry, \$13.25 @ \$13.75; No. 2, \$12.25 @ \$12.75

grey forge, \$11.75@12.25. For Southern irons prices are: No. 1 foundry, \$12.50@13; No. 2 foundry, \$12@12.50; No. 1 soft, \$12.25@12.50; No. 2 soft, \$11.75@12; forge, \$11.50@11.75.

Cast Iron Pipe.—We hear of some good contracts pending, but there is a difference of opinion as to prices. Buyers are reluctant to pay what is asked, while sellers are not anxious to take contracts ahead until pig iron prices are better defined.

Spiegeleisen and Ferro-Manganese.—The market is quiet, and we quote nominally \$51.50@52 for ferro and \$25@25.50 for spiegeleisen. Sellers are looking for an increase in demand.

Steel Billets and Rods.—The increased demand and rising prices in the Western market have been felt here, and there has been more business by buyers who want to secure a supply before prices go up any further. Billets are to-day \$20.50@21 at tidewater, with an increase probable. Some business has been done in wire rods at \$26@27 at tidewater.

Merchant Iron and Steel.—Business has been moderate and small orders continue to come in. A little more anxiety for orders has been shown but not enough to affect prices materially. Bars are 1.25@1.35c for common and 1.35@1.50c for refined. We quote for soft steel bars 1.30@1.40c; open-hearth machinery steel, 1.50@1.60c; steel hoops, 1.65@1.75c; steel axes, 1.65@1.80c; links and pins, 1.60@1.75c; tire steel, 1.85@2c; spring steel, 2.10@2.25c. Rivets are 2.20@2.30c for steel, and 3@3.30c for iron.

Plates.—Business has been fairly good and prices are well maintained. Universal can be quoted a shade lower, but other sorts are unchanged in price. The mills all seem to be busy. Prices for Universal mill plates are 1.45@1.55c. For steel plates we quote: Tank, 1.45@1.55c; boiler shell, 1.55@1.65c; good flange, 1.80@1.95c; firebox, 2.10@2.40c. Charcoal iron plates are 2.20@2.30c for shell, 2.70@2.80c for flange, and 3.20@3.30c for firebox.

Structural Iron and Steel.—Contracts aggregating about 3,000 tons have been let for new buildings up town. Several large orders are pending, but it is said that they will be held back till the bond issue is over. There has been some pressure to sell and prices are a shade lower. We quote, for angles, 1.45@1.55c; channels, 1.60@1.75c; tees, 1.65@1.75c; beams (up to 15-in.), 1.55@1.70c for large lots and 1.80@1.95c for small orders.

Steel Rails and Rail Fastenings.—Rails are unchanged at \$28 per ton at mill, or \$28.75 at tidewater for standard sections. No sales are reported here. In girder rails some small sales are reported, and negotiations are going on over at least two contracts of considerable size. Girder and street rails are \$28@32 per ton at mill, according to section.

Rail fastenings are quiet and prices unchanged. Quotations are: For fish and angle-plates, 1.40@1.50c; spikes, 1.65@1.80c; bolts, 1.95@2.05c, for square nuts, and 2.05@2.15c for hexagon nuts.

Scrap Iron.—Demand for foundry scrap is improving, and there are customers for all that is offered. Transactions of this kind are usually on private terms, but we can quote \$9.50@11 per ton, according to size and quality of lots. Wrought scrap is not much in demand; it never is in the local market.

Buffalo, Jan. 23.

(Special Report of Rogers, Brown & Co.)

Signs of an improvement are noticed. Local furnaces report having received orders during the past week for more than their output, and several large sales of Southern iron have been reported in this district. Lake Superior charcoal has also improved, and there has been quite a movement in this iron, owing probably to the recent advance in Bessemer. There has been considerable talk of higher prices, but as yet there has been no actual advance in anything except in the Bessemer, although those furnaces that were weak and willing to sacrifice for orders, have apparently filled up, which has helped strengthen the general market. We quote on the cash basis f. o. b. cars, Buffalo: No. 1 foundry strong coke iron, Lake Superior ore, \$13.50; No. 2 foundry strong coke iron, Lake Superior ore, \$13; Ohio strong softener, No. 1, \$15.50; Ohio strong softener, No. 2, \$14.50; Jackson County silvery, No. 1, \$16.25@17; Southern soft, No. 1, \$13.75; Southern soft, No. 2, \$13.25; Hanging Rock charcoal, \$18.50; Lake Superior charcoal, \$15.75@16.25.

Chicago, Jan. 22.

(From Our Special Correspondent.)

The iron market here has assumed a decidedly better aspect and there is every indication that the coming weeks will show enhanced business. There is not so much buying going on, but the inquiry has become very active, and it is presumed that as prices are again on the upward scale consumers will soon take advantage of the prevailing conditions and buy. Pig iron billets and steel rails are much stronger through the influence of the increase in the Pittsburgh market. The advance in Pittsburgh in these three lines, while it has not been actually put into force in Chicago, has had the tendency to put consumers on their guard, and therefore inquiry for early delivery is large.

Pig Iron.—The market for pig iron is stronger and prices are firmer. The actual sales for the week will not aggregate more than a few thousand tons, but the enhanced prices in the East have caused a great deal of good inquiry here, and it is quite probable that some good buying will soon begin.

The largest sale of the week, and the largest for some weeks past, was one of 500 tons of charcoal iron. The Northern furnaces are doing the bigger part of the prevailing business. Southern furnaces are holding well, and business has a better outlook in every respect. Prices are: Lake Superior charcoal, \$14@15; local coke foundry, No. 1, \$14@15; No. 2, \$13.50@14; No. 3, \$13@13.50; local Scotch foundry, No. 1, \$14@15; No. 2, \$13.50@14; No. 3, \$13@13.50; Southern coke, No. 2, \$12.85; No. 3, \$12.60; Southern, No. 1, soft, \$13.10; No. 2, soft, \$12.85; Southern silveries, No. 1, \$14; No. 2, \$13.50; Jackson County silveries, \$14.50@16; Ohio silveries, No. 1, \$15@15.50; No. 2, \$14.50@15; Ohio strong softeners, \$15@15.50.

Bar Iron.—There has been an increased trade during the past week, but buying as yet is small. Inquiry is more active, and prices are a trifle firmer; 1.30 f. o. b. Chicago is the quoted price on common iron, and 1.40 for refined.

Billets and Rods.—The inquiry for billets has been large during the week, presumably from the fact that consumers are aware that the price of billets has advanced almost \$1.50 at Pittsburgh. The Illinois Steel Company here has booked a number of orders during the week, and it is presumed that the works, now closed, will soon open. Rods have been in some demand.

Steel Rails.—Like billets, there has been a considerable inquiry for rails, most of it for limited lots. The larger buyers are apparently keeping away from the market as long as possible. The quoted price on rails is \$29, Chicago.

Merchant Steel.—Business has been better and prices a little firmer. Inquiry is fair and trade promises to be of larger proportions soon. The mills are evidently doing little towards pushing business, and are awaiting the advent of improved prices. Quotations are as follows: Smooth finished machinery steel, 1.80@1.85c; tire, 1.65@1.70c; tool steel, 5.50@7.50c; specials, 11c and upward; Bessemer bars, 1.55@1.65c.

Old Rails and Wheel.—A few sales of both iron rails and wheels have been made during the week at fair prices.

Philadelphia, Jan. 23.

(From Our Special Correspondent.)

Pig Iron.—Buyers of pig iron have come into the Eastern Pennsylvania markets and have made extensive purchases, particularly of mill and foundry irons. They waited as long as they dared, and when it was wired that big buyers were covering in Western Pennsylvania they rushed in and ordered iron enough to last for from one to three months. This is partly due to the feeling that the Lake ore people and the Connellsville coke interests will be able to hold their own. Without being over-sanguine about a little improvement, it may be said that pig iron consumers all along the line feel that the time has come when there is danger of an advance. Prices have hardened without an hour's notice, and sales of No. 1 foundry were made at \$13.25, tidewater delivery; No. 2, \$12.75; forge, \$11.25@11.75.

Steel Billets.—The plunge of about a dozen buyers within the past few days hardened prices to \$19.50@20. More sales are probable. There is a rumor to-day that prices dropped to \$19.25, but it turned out on inquiry to be only an offer of that much money for large lots.

Bar Iron.—Under the new classification there is some friction and misunderstanding, but we have sold a good deal of iron since Monday. Prices are keeping low, because of the general scramble for business. Sales at mill are as usual, 1.25; store, 1.45.

Skelp.—Grooved is quiet at 1.30; sheared, 1.40.

Sheet.—In view of the probability of stronger prices for raw material, there has been an increase of business at mills with a number of the large consumers, and mill men think this prudential consideration will lead to a larger and a continuous business. In accordance with this anticipation, prices have hardened by the withdrawal of exceptionally low quotations in time to save their acceptance by some over-cautious people.

Wrought Iron Pipes.—This week brought a few buyers into market for the same reason which operated in other cases, but mill owners are too anxious to get business to advance prices.

Merchant Steel.—All mills report fair business.

Plates and Tank.—If certain large buying interests drop certain orders that have been figured on, smaller buyers who want iron in less than a month may have to pay a little extra. Tank is 1.45; universal plates, 1.45; shell, 1.60; flange, 1.88; and firebox, 1.90.

Structural Material.—Under the low prices now ruling there is considerable pending business and agents say nothing will bring buyers to a point as quickly as a turning upward of quotations. Angles, 1.80; tees, 1.60.

Steel Rails.—Small orders, mainly for repairing requirements, are going to mills.

Old Rails.—Stock is freely offered at \$14, and it now looks as if business were near at hand.

Pittsburg, Jan. 23.

(From Our Special Correspondent.)

Raw Iron and Steel.—The iron trade since our last shows a liberal advance in values as well as largely increased trading. The time so anxiously waited for has put in an appearance; indications at the present time point to an active spring business.

The advance in raw material will undoubtedly be followed by a similar movement in the various kinds of finished iron and steel. The iron trade conditions are certainly very encouraging, particularly as the improvement has begun so early in the year; the declining tendency seems to have been checked at most points. It is to be hoped that the advance will be a steady one; no booms are wanted to derange business and make speculators wild, as was the situation last fall. Production is decreasing and will soon be down to the consumption point. The sales of city furnace iron were the largest for many weeks. Bessemer sales last week were the largest since October 22d. This fact shows that consumers are in earnest and are losing no time in preparing for the spring trade. Grey forge was in good request, with liberal transactions with prices on the up grade. The fact is, for some time past prices of most descriptions of iron and steel have been so near cost that profit was lost sight of. This condition of affairs is ended, at least for the present; moreover, the demand will certainly be a large one, and the orders for spring delivery are expected to be placed early. The market, therefore, has a firm look, with prospect for better prices decidedly favorable.

The current demand for foundry iron in the local market is quiet and without special feature; buyers are taking supplies only in small amounts, and apparently have no concern about possible inability to secure prompt deliveries wherever desired in the future.

Latest.—The advance telegraphed last week has been fully maintained and a further one established, with a liberal volume of transactions, prices of leading products being the highest for months. Bessemer pig sold up to \$13.35 from March to June, delivered at Pittsburgh. Valley Bessemer sold for \$12.50 at furnace; grey forge, Pittsburgh, \$11.35. Steel billets touched \$18.50.

COKE, SMELTED, LAKE AND NATIVE ORE.		Tons.	Cash.
5,000	Bessemer, Feb., Mar., Pitts.	1,000	Billets, Jan., Feb. at mill, 18.00
5,000	Bessemer, Feb., March, April, Pitts.	500	Billets, spot, at mill, 17.00
5,000	Bessemer, Jan., Feb., Valley	500	Billets, 2-inch, at mill, 19.00
3,000	Bessemer, Mar., Apr., May, Pitts.	500	Billets, Jan., at mill, 17.75
3,000	Bessemer, Feb., Mar., Pitts.	500	Billets, Jan., at mill, 18.00
2,500	Bessemer, Mar., Apr., June, Pitts.	100	No. 2 Foundry, 17.00
2,000	Bessemer, Feb., March, Pitts.	100	Cold Blast, 22.50
2,000	Bessemer, Feb., March, Pitts.	75	No. 4 Foundry, 17.00
2,000	Bessemer, Feb., March, Pitts.	50	Cold Blast, 22.75
2,000	Bessemer, Mar., Apr., May, Jun., Pitts.		SKELP IRON.
1,600	Gray Forge, Feb., Mar., Pitts.	300	Sheared, \$1.40 4 m.
1,000	Bessemer, Jan., Feb., Valley	250	Wide gr'v'd., 1.25 4 m.
1,000	Gray Forge, Feb., March, Pitts.	200	Nar'w gr'v'd., 1.25 4 m.
1,400	Gray Forge, Mar., Pitts.		SKELP STEEL.
1,000	Gray Forge, Feb., March, Pitts.	1,000	Nar'w gr'v'd., \$1.35 4 m.
400	Gray Forge, Feb., March, Pitts.	300	Wide gr'v'd., 1.25 4 m.
50	No. 1, Silvery, Pitts.	350	Sheared, 1.20 4 m.
50	No. 2, Silvery, Pitts.		MUCK BAR.
		600	Neutral, del'v'd., \$20.00
		500	Neutral, " " 20.50
			BLOOMS, BILLETS AND BAR ENDS.
		1,000	Billets and bloom ends, delivered, \$14.15
			FERRO-MANGANESE.
			75 80%, Feb., del'v'd., \$32.00
			STEEL WIRE RODS.
		1,000	5-gauge, del'v'd., \$24.50
			BLOOMS, BILLETS AND SLABS AT MILL.
3,000	Billets, March, April, at mill, \$17.80	2,500	At makers mill, \$19.00
3,000	Billets, Feb., Mar., at mill, 17.50		SPELTER.
2,000	Billets, Feb., Mar., at mill, 17.40	50	Prime, \$3.75
2,000	Billets, March, April, at mill, 18.00		SCRAP MATERIAL.
1,500	Billets, Jan., Feb., at mill, 17.75	500	No. 1 R. R. Wrot, net, \$12.25
1,200	Billets, March, April, at mill, 18.50	500	Sheet, W. R. R., net, 11.50
1,000	Billets, Jan., Feb., Mar., at mill, 17.35	500	Wrot. Turnings, net, 8.50
		500	Melting Stock, gross, 13.50
		400	Cast Borings, net, 8.00
		300	Cast Scrap, net, 11.50

Stockholm, Sweden, Dec. 27.

(From Our Special Correspondent.)

The Swedish iron and steel market, which was in a very depressed state during the first months of the year, has improved considerably in the last four months.

Pig iron of high quality is in good demand, and a good deal of next year's make is disposed of. Prices paid are \$19.50 and more. Ordinary quality iron, on the contrary, is not much asked for in consequence of the decreased making of wrought iron by the Lancashire process.

This process is gradually losing ground, as wrought iron is replaced by soft steel. The make of Lancashire blooms for 1895 has been less than that of steel ingots, the proportion being about 48% against 52%. Only six years ago the figures were 62 to 38%.

Of steel we think a good lot of next year's production is sold and all the steel works are very busy at present. Prices are good, and in many cases they may be called high; a raise of £3 is reported from England, £8 and more being paid for Swedish ingots there. These quotations may be considered high, but not too high, in view of the increased prices now paid for charcoal. The prices quoted for wrought

iron at the last quarterly meeting of the Associated Swedish Ironworkers are as follows: Ordinary hammered bars \$35.30 Stockholm and \$38.95 Gothenburg; ordinary rolled bars, \$35.90 Stockholm and \$37.10 Gothenburg; hoop iron, \$36.50 Stockholm and \$37.10 Gothenburg. Prices are per gross ton, f. o. b., at ports named.

METAL MARKET.

New York, Friday Evening, Jan. 24, 1896.
Gold and Silver.

Prices of Silver per Ounce Troy.

Jan.	St. Ex.	London Pence.	N. Y. Cts.	Value of \$1. in \$1.	Jan.	St. Ex.	London Pence.	N. Y. Cts.	Value of \$1. in \$1.
18 1/8	89	30 1/2	67 1/2	.519	22	4 7/8	30 1/2	67	.518
20 1/8	89	30 1/2	67 1/2	.519	23	4 7/8	30 1/2	67	.518
21 1/8	89 1/2	30 3/4	67	.518	24	4 7/8	30 1/2	67	.518

Silver has been in fair request at current rates, and shipments this week have been large. There are no new features in the market.

The United States Assay Office in New York reports the total receipts of silver at 123,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, December, 1895, and years 1895 and 1894 in coin and bullion:

	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Dec.	\$15,481,347	\$1,311,048	\$5,159,537	\$870,759	E. \$18,459,077
1895.	1-4 605,023	32,529,336	53,833,133	11,273,277	E. 111,625,563
1894.	101,819,924	20,607,561	47,044,205	9,824,408	E. 118,432,169

The statements in the table above include only gold and silver in coin and bullion. The exports and imports of gold and silver in ores are reported as below, also for the year ending December 31st:

	Gold.		Silver.	
	1894	1895	1894	1895
Imports.....	\$743,046	\$1,840,357	\$7,909,186	\$12,610,327
Exports.....	29,811	361,315	201,602	368,351

Excess, exports, \$713,235 \$1,479,042 \$7,607,584 \$12,241,976
Adding the exports and imports in ores to those in coin and bullion, we have the following statement for the year 1895:

	Exports.		Imports.		Excess.
	Gold.	Silver.	Gold.	Silver.	
Gold.....	\$104,966,338	\$34,379,693	E. \$70,586,645		
Silver.....	51,201,534	23,883,604	E. 30,317,930		
Totals.....	\$156,167,872	\$58,263,297	E. \$107,904,575		
Totals, 1894.....	149,095,512	38,981,201	E. 110,114,314		

This shows an increase in 1895 of \$10,072,300 in exports and of \$19,279,096 in imports, the result being a decrease of \$9,206,796 in the balance exported.

The figures above are furnished by the Bureau of Statistics of the Treasury Department and include all United States ports.

Gold and Silver Exports and Imports, New York

For the week ending January 24th, 1895, and for year from January 1st, 1896, 1895, 1894, 1893 and 1892:

Week	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
1896	\$2,437,691	\$488,937	\$827,650	\$57,453	E. \$2,181,861
1895	8,318,923	5,143,087	2,701,841	130,014	E. 5,776,762
1894	18,261,676	354,635	2,403,247	105,345	E. 20,213,453
1893	959,296	261,828	3,412,790	113,782	E. 3,976,476
1892	11,735,895	83,260	2,493,784	75,285	E. 13,971,134
1891	129,972	389,904	1,818,832	106,242	E. 1,420,588

The gold exported for the week went to London, with the exception of \$12,500 to the West Indies; the silver went to London. Of the gold imported \$300,000 came from London, the balance from the West Indies; the silver came from the West Indies and Central America.

FINANCIAL NOTES OF THE WEEK.

While the general tone of business is better and more hope is expressed for the future, interest still continues to center in the bond issue. It is regarded as certain now that the loan will all be taken and probably over-subscribed. The main question is as to the source from which the gold will be derived. Part of it may come from abroad in payment for foreign subscriptions; part will be furnished by the banks; a little may be drawn from private accumulations, and a part will come from the Treasury itself, drawn out in exchange for legal tenders, either openly now, or later to replenish stocks of the banks and others. Any attempt now to determine what proportion may come from each of the sources named would be useless.

Gold is being accumulated in considerable amounts in New York by bankers and others in readiness for the bond issue. Gold coin continues to command a small premium, which has ranged this week from 0 1/2 up to 0 3/4, generally near the lower figure. Legal tenders have also commanded a premium a little below gold (which would indicate that gold is to be

drawn from the Treasury), but the transactions, so far as known, have not been large.

Gold exports still continue, and \$2,500,000 went to Europe by Wednesday's steamers. So far, no gold is reported taken for shipment on Saturday. At the same time \$150,000 arrived from Germany on Thursday, and \$1,000,000 more is reported on the way, having left Liverpool last Saturday. It is hinted in some quarters that the gold shipped this week will be returned from Europe at once; but this would seem to be a pretty expensive way of covering up a withdrawal of gold from the Treasury to be used in paying for bonds.

A meeting of free silver coinage advocates was held in Washington, January 22d, at which it was resolved that a convention should be held at St. Louis about the middle of July next, no matter what action may be taken on the silver question by the Democratic and Republican National conventions. A call will be issued and arrangements made for selecting delegates and for other details. Gen. A. J. Warner, of Ohio, and Senator John P. Jones, of Nevada, were the leaders in the conference.

In the Reichstag, January 23d, Dr. Barth asked Chancellor Von Hohenlohe what had been done with the resolution in favor of bimetalism that had been introduced during the last session of the Reichstag. The Chancellor replied that he was not yet able to make any statement to the Chamber concerning the resolution.

The statement of the United States Treasury on Thursday, January 23d, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	Jan. 16.	Jan. 23.	Changes.
Gold.....	\$34,934,075	\$50,775,187	D. \$15,841,112
Silver.....	17,751,822	19,219,482	I. 1,467,660
Legal tenders.....	8,622,516	76,730,116	D. 68,107,600
Treasury notes, etc.	23,429,655	24,065,953	I. 636,298
Total.....	\$170,731,138	\$170,731,738	D. \$6,065,400

Government deposits with national banks on the same date amounted to \$14,865,412, a decrease of \$310,016 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$137,471,280. Against these are held in the Treasury 13,464,928 coined standard silver dollars, and silver bullion purchased at a cost of \$124,001,352, making a total of \$137,471,280.

The stocks of money in the United States on January 1st, 1896, as estimated by the Treasury Department, were as below:

	In circulation.	In the treasury.
Gold coin.....	\$84,728,547	\$3,278,392
Silver dollars.....	59,205,927	361,083,702
Subsidiary silver.....	64,417,685	12,764,321
Gold certificates.....	49,946,439	163,459
Silver certificates.....	339,676,618	9,623,856
Treasury notes of 1890.....	115,726,769	22,014,511
United States notes.....	239,855,873	115,835,143
Currency certificates of 1872.....	31,605,000	2,845,000
National bank notes.....	296,634,836	7,063,513
Totals.....	\$1,579,206,724	\$617,794,512

The total amount in circulation was \$22.56 per capita. In addition to the amounts noted above, the Treasury held, on January 1st, \$28,820,315 in gold bullion, and \$124,612,532 in silver bullion. It will be seen that the total stock of gold coin in the country is estimated at \$568,006,939. This estimate has been carefully made on the latest available data. It shows a considerable reduction from former estimates, but is no doubt much nearer correct.

A Washington despatch says that the abstract of the condition of the 3,706 National banks on December 13th last, as compiled by Comptroller Eckels, shows that they have \$2,020,960,000 in loans and discounts and \$1,720,550,000 in individual deposits. The specie holdings are stated at \$206,712,410, of which \$168,244,439 was in gold. On September 28th last the gold in the National banks was \$162,925,290.

Last week we mentioned the formal opening of the fine new building erected by the New York Clearing House for its own use. The regular transaction of business in the new house was begun on Monday of this week, January 20th, with a very brief introductory ceremony.

The statement of the New York banks—including the 93 banks represented in the Clearing House—for the week ending January 18th, gives the following totals, comparison being made with the corresponding weeks in 1895 and 1894:

	1894.	1895.	1896.
Loans and discounts.....	\$419,685,900	\$490,322,900	\$453,938,200
Deposits.....	512,306,200	562,302,900	492,403,800
Circulation.....	12,742,200	11,412,100	13,924,400
Specie.....	123,630,100	77,955,300	73,610,500
Legal tenders.....	114,700,900	108,885,500	81,836,000
Total reserve.....	\$238,331,000	\$181,440,800	\$155,446,500
Legal requirement.....	135,576,550	140,575,725	123,100,950
Surplus reserve.....	\$102,754,450	\$45,465,075	\$32,345,550

Changes for the week this year were increases of \$2,264,300 in specie; \$3,181,900 in legal tenders, and

\$1,135,000 in deposits; decreases of \$4,250,200 in loans, and \$79,200 in circulation. All the changes still show preparations for the bond issue.

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

	Gold.	Silver.	Total.
Asso. Banks of New York.....	.....	.....	\$73,610,500
1895.....	.....	.....	77,955,300
Bank of England.....	\$238,481,905	.....	238,481,905
1895.....	176,790,035	.....	176,790,035
Bank of France.....	\$87,439,400	\$247,406,670	634,846,000
1895.....	421,613,246	216,811,919	668,455,175
Imp. Bank of Germany.....	.....	.....	224,510,000
1895.....	.....	.....	265,455,000
Austro-Hungarian Bank.....	12,350,000	63,541,000	185,891,000
1895.....	77,520,000	69,580,000	147,100,000
Netherlands Bank.....	15,947,000	31,221,000	50,168,000
1895.....	20,479,000	34,342,000	54,839,000
Belgian National Bank.....	.....	.....	27,537,800
1895.....	.....	.....	26,695,000
Bank of Spain.....	40,022,000	50,056,000	90,078,000
1895.....	40,021,000	56,397,000	96,618,000
Bank of Italy.....	59,890,000	9,950,000	69,810,000
1894.....	59,745,000	13,676,000	73,415,000
Imp. Bank of Russia.....	351,560,000	44,075,000	395,635,000
1894.....	214,033,000	112,761,600	326,794,600

The return for the Associated Banks of New York is of date January 18th; all the others are of date January 23d, except the Bank of Italy, whose return is dated December 10th, and the Bank of Russia, December 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of specie from San Francisco to China and Japan in December were: Silver bars, \$426,100; Mexican dollars, \$812,926; Peruvian soles, \$17,200; total silver, \$1,256,224; gold coin and dust, \$13,610; total \$1,269,834. For the year ending December 31st the shipments were, by months:

Month	1895	1894	Changes.
January.....	\$996,138	.....	\$1,031,229
February.....	580,388	.....	744,677
March.....	1,562,913	.....	3,503,115
April.....	1,478,059	.....	2,113,201
May.....	1,461,844	.....	2,223,931
June.....	1,124,522	.....	1,269,838

The total for 1895 was \$18,032,830, against \$12,824,907 in 1894, showing an increase of \$5,207,923, or 40.6%, last year.

Shipments of silver from London to the East for the year up to January 9th are reported by Messrs. Pixley & Abell's circular as below:

	1895.	1896.	Changes.
India.....	\$174,600	\$81,900	D. \$92,700
China.....	.....	205,200	I. 205,200
The Straits.....	23,500	13,800	D. 9,700

Arrivals for the week were \$147,000 bar silver, and \$7,000 Mexican dollars; from New York; a total of \$154,000. Shipments for the week were \$74,500 to Bombay and \$7,400 to Calcutta in bar silver, and \$13,800 in Mexican dollars to Penang; a total of \$95,700.

Indian exchange is somewhat lower, the rate for Council bills having fallen a fraction below 14d. The usual 50 lakhs of bills were offered in London, and were all taken, the average rate being 13 9/16d. per rupee.

The foreign merchandise trade of Great Britain for the year ending December 31st, as reported by the Board of Trade, was as follows.

	1894.	1895.
Imports.....	\$108,344,910	\$416,687,630
Exports.....	273,785,867	285,139,937
Excess, imports.....	.....	\$130,547,693

The increase in imports in 1895 over 1894 was 2.4% while that in exports was 4.5%; both comparatively small differences. The gold and silver movement for the year is given by the returns as below:

	Gold.		Silver.	
	1894.	1895.	1894.	1895.
Imports.....	\$27,572,347	\$36,006,038	\$11,005,417	\$10,609,682
Exports.....	15,647,551	21,269,323	12,165,049	10,367,436
Excess.....	\$11,924,796	\$14,736,715	E. \$1,599,632	I. \$2,024,246

The notable feature of the gold movement last year was the large gain—\$8,433,091, or 30.5%—in gold imported. The silver imports slightly exceeded the exports, which is something unusual.

The foreign trade returns of the Cape Colony for the eleven months, to November 30th, give the following statement:

	1894.	1895.
Exports.....	\$12,753,073	\$15,410,418
Imports.....	10,517,894	17,335,874
Excess.....	E. \$2,205,179	I. \$1,933,456

The exports in 1895 included gold to the amount of \$7,286,170 and diamonds valued at \$4,350,821, these two items forming 75.7% of the total. The imports included \$5,082,300 gold, so that the net export of the yellow metal was only \$2,203,870.

in one cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is steady at £8 15s. @ £3 17s. 6d. per ton, less 2½% for good gray, 24, 25%, in double bags f. o. b. here, according to quality. Nitrate of soda is in limited request and still quoted at £7 17s. 6d. @ £8 per ton, less 2½% for double bags f. o. b. here, according to quality and quantity. Carb. ammonia, lump, 3¼ per lb.; powdered, 3¼ per lb., less 2½%.

MINING STOCKS.

Complete quotations will be found on pages 102 and 103 of mining stocks listed and dealt in at:

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

NEW YORK, Friday Evening, Jan. 24.

Although the mining stock boom does not seem to have struck New York yet, more business was done on the Consolidated Exchange during the last week than for many months past. The total sales of mining stocks there and at the New York Stock Exchange for the week ending to-day amounted to 58,425 shares.

Brokers report more inquiry from the public generally, and although sales have not been remarkably heavy the prospects for greater activity in the near future seem to be brighter. The Cripple Creek stocks have been in the best demand, and the fact that the public does not want to trade in some of the old exploded bonanzas or mismanaged Comstocks should teach brokers to be very careful in the class of stocks which they recommend to their clients.

The New York Mining Exchange continues to make active preparations for starting business within a very short time. Mr. Porter, the president, is expected to arrive next week, and it is probable that we shall be able to publish in our next issue the names of the companies which will be placed on the list of the Exchange. The officers of the new organization express their anxiety that none but worthy stocks shall be listed, and they have already rejected numerous applications.

There was very little doing in the Comstocks during the past week. Comstock Tunnel was stationary at 7c. with sales of an even thousand shares. Of Consolidated California & Virginia only 75 shares were sold at \$2.45. There were also sales of 300 shares of Barcelona at 5c., and 500 shares of Consolidated Imperial at 4c.

The Colorado stocks were in active demand. Of the Cripple Creek group there were sales of 500 shares of Alamo at 10c.; 2,000 shares of Anaconda at 67¢@69c.; 4,700 shares of Creede & Cripple Creek at 8c.; 14,700 shares of Croesus at 4¢@5c.; 3,200 shares of Pharmacist at 17¢@19c.; 200 shares of Portland at \$1.55, and 800 shares of Victor at \$5.25@5.50.

Of the other Colorado stocks there was a sale of 50 shares of Argentum-Juniata at 56c. Chrysolite was quiet, only 800 shares being sold at 22c. Golden Fleece was in some demand, and the official sales list reports transactions of 3,500 shares at \$1.60@1.75. Other sales were: 100 shares of Lacrosse at 9c.; 2,000 shares of Leadville Consolidated at 11¢@12c.; 450 shares of Mollie Gibson at 48c.; and 600 shares of Small Hopes at 85¢@90c.

Of the California stocks Standard Consolidated was the most active, showing sales of 2,400 shares at \$1.70@1.85.

Brunswick was stationary at 10c., with transactions of 1,600 shares.

Phoenix of Arizona opened at 7c., advanced to 12c. and declined again to 8c., with total sales for the week of 17,900 shares.

There was a sale of 100 shares of Horn Silver at \$2.25, and Ontario at \$10 and \$11 shows transactions of 250 shares.

Of Kingston and Pembroke 300 shares were sold at 20¢@23c.

Boston. Jan. 23.

(From Our Special Correspondent.)

The copper share market the past week has ruled extremely dull, with a downward tendency to prices. Boston & Montana opened at \$71¼ and sold down to \$70¼; later, dividend off (\$2), it rallied to \$69½, but soon lost its hold and gradually declined to \$68¼, at which price it sold to-day, closing ½ higher at \$68¾. The sales have been comparatively small and it has been uphill work to keep the price firm. Butte & Boston was more freely offered than of late, and in the absence of buying orders it weakened and sold down to \$10¼, a loss of \$1¼ from opening price; later it rallied slightly and sold at \$11¼ and closed at \$11¼.

Calumet & Hecla was in request at \$295, all the stock sold being at that price. Quincy at one time was heavy and declined to \$120, but later it recovered to \$123. A dividend of \$4 per share was announced last week. The scrip sold at \$63 and later at \$65. Tamarack still rules heavy with considerable stock pressing for sale. After selling at \$116 it gradually declined to \$111 and closed at that figure. The scrip sold at \$80. There was very little business in the remainder of the list. Atlantic sold in a small way at \$17, Kearsarge at \$11¼@11; Osceola declined to \$22, rallying later to \$24; Tamarack, Jr., was steady at \$14, Wolverine at \$6¼@6½; Franklin advanced from \$11¼ to \$12¼ on a short supply of stock; Tecumseh declined from \$3 to \$2 on forced sales. Old Dominion declined from \$17¼ to \$16¼. Lake Superior Iron sold at \$29.

The gold stocks were all lower. Merced declined from \$33 to \$28¼, Boston & Cripple Creek from 42¼c. to 37¼c. Gold Coins from 95c. to 90c. Pioneer dropped from \$4¼ to \$4, with later sales at \$4¼ and Santa Ysabel from \$11 to \$10.

Napa Quicksilver sold at \$7¼ and \$7.

Chicago Mineral and Mining Board.

(From Our Special Correspondent.) Jan. 22.

For the first time in its history Chicago has now a Mining Exchange that bids fair to become a substantial institution in every respect. A fine board room has been opened in the New York Life Insurance Building, with all facilities necessary to a modern exchange. The formal opening of the exchange took place Tuesday and the exchange was crowded all day with mining men from all over the country. President John Marder opened the board with an appropriate address in which he said:

You have provided in your charter and by-laws for conducting a mineral and mining exchange business on sound, comprehensive and honest principles, and I have no doubt but that the standing committees will carry into effect the high trading principles on which this board is founded, and have also carefully devised measures for the protection of the public against fraud and imposition, or improper practices.

I regard mining, and you will undoubtedly agree with me, or you would not be members of this board, as perfectly legitimate business and not beneath the highest standard of banking, manufacturing or merchandising. In our open circular to the public we state that the management desires to have it distinctly understood that the board is not limited to affording facilities for dealing in properties, stocks bonds and securities connected with the precious metals only, but that especial facilities will be afforded for the presentation of coal, iron, copper, zinc, phosphates and all other mineral properties, by bringing into immediate contact and intimate relations those who have mineral properties to sell or develop with those who have capital to make them productive. It is the aim of this board to bring the now dormant mining industries of this country into a vitalized activity, and there has been no time in the history of Chicago that this could be accomplished so successfully as the present.

With our mineral land only partially developed and the encouraging outlook owing to the discovery of new mines and the improved methods of treating ores heretofore regarded as unprofitable, we look forward to a new era in the mining industries of our country. The mineral wealth of the United States yet untouched by the hand of man cannot easily be measured by American dollars or English pounds. The business matters of this board are now in your hands. You can make it an institution that will be an honor alike to its members and the city of Chicago.

Other speeches were made by A. L. Tomblin, vice-president of the Colorado Springs Mining Board of Trade; W. J. Davenny, of Chicago; W. H. Eckman, of Chicago, who created considerable mirth in a speech on the mineral resources of South Dakota. He declared that there was more gold in the Black Hills than in all South Africa and Cripple Creek combined. A. H. Gamel spoke for the State of Washington and the mining district contiguous in British Columbia. He alluded to the famous Monte Cristo Mine and to some wonderful British Columbia producers. He wound up his speech by saying that his State was unsurpassed in its mineral resources, and all that was wanted to develop that fact was capital. A. H. Nelson, of Montana, made a speech in the interest of Montana mineral resources, and declared that Montana was the greatest metal producing State in the United States, and backed his statement by the production of the great copper mines of Butte and statistics of other metals produced in his State during the past year. Already nearly twenty reputable stocks have been listed on the exchange, and there are as many more applications awaited to be acted on. Nothing but legitimate stocks will be dealt in, and the membership will be composed entirely of men of good standing, as may be evidenced from the fact applications for membership have been refused in a few instances. Among those who attended the opening exercises were:

A. L. Tomblin, vice-president, and C. F. Kjellander, of the mining board of trade of Colorado Springs, Colo.; Asa Baldwin, Cripple Creek, Colo.; J. N. Hill, Cripple Creek, Colo.; A. H. Nelson, Helena, Mont.; Judge Birney Hoyt, Kansas City, Mo.; Captain Darringer, Grand Rapids, Mich.; A. B. Garcia, City of Mexico; Count H. Lubjenski, Victor, Colo.; H. L. Kuykardall, Cripple Creek, Colo.; C. B. Hale, Cripple Creek, Colo.; A. F. Graeter, Red Rock, Mont.; H. J. Reiling, president Gold Dredging Company, Bannack, Mont.; William Poillon, New York City; E. C. Clark, New York City; J. Gastburg, Denver, Colo.; Charles Barclay, Leadville, S. D.; S. H. Crogar, Philadelphia, Pa.; F. R. Hoisington, Philadelphia, Pa.; S. G. Beatey, Eureka, Colo.; W. L. Giles, Denver, Colo.; Pearce Atkinson, Cripple Creek, Colo.; George Sylvester, Milwaukee, Wis.; Thomas Ashley, Bloomington, Ill.; D. C. Plumb, Prescott, Ariz.; and G. S. Scott, Chicago, representative of the *Engineering and Mining Journal*.

The officers and standing committees of the Exchange are as follows: President, John Marder, first vice-president, Joseph Underwood; second vice-president, Charles E. Rollins; treasurer, John Hill, Jr.; secretary, Henry Burkholder; counsel, John Mayo Palmer; Board of Trustees, 1895-6: Green B. Raum, R. H. Field, R. L. Martin, Benj. A. Seitz, John Marder, Charles E. Rollins, S. E.

Magill, John Hill, Jr.; C. E. Gates, Edward C. Billings, M. J. Sheridan, Joseph Underwood.

Standing Committees.—Finance: H. W. Treat, Edward C. Billings, J. B. Reeme, C. Schaer, James W. Proby. Arrangements: S. E. Magill, W. H. Underwood, Jr., Edward F. Bogart. Membership: Green B. Raum, C. E. Sawtelle, Robert Connelly, Edward Andrews, A. H. Nelson, Timothy Cole, G. A. Webster. Arbitration: J. W. Fernald, George S. MacKenzie, C. C. Chapin, Peter F. Daly, Peter F. Dudley. Listing: M. J. Sheridan, B. A. Seitz, R. H. Field, R. L. Martin, C. E. Gates. Statistics and Information: H. S. Downs, H. T. Griffin, Wilson J. Davenny, John Mayo Palmer, C. W. Pomeroy, David Jamieson, L. A. Davies.

The Exchange will be open each week day from 10 a. m. to 3 p. m., and calls will be made at intervals.

The stock brokerage firm of Underwood & Wells, of the New York Life Insurance Building, Chicago, will hereafter deal in mining securities. They will promote mining enterprises of known worth and also buy and sell mines.

The opening quotations and sales of mining stocks on the Chicago Mineral and Mining Board were:

Name.	Bid.	Asked.	Sales.
Anaconda	.66		
Anchora Leland	3.50		
Cardinal	.10	.10½	
Crown Point			
Elkton			
Favorite	.10¼	.10½	
Finance	.04½		
Golden Fleece	1.55	1.57	
Goldfield	.02¼	.02½	5,500
Iron Mountain			
Isabella	.57	.59	500
Jefferson	.20	.25	
Justice			
Mollie Gibson	.40	.50	
Pharmacist	.18		
Portland	1.65	1.80	
Sleepy Hollow	1.00	1.02	
Squaw Mountain	.12¼		
Tom Boy			
Union Gold	.35		
Total shares sold			5,500

Colorado Springs, Colo. Jan. 18.

(From Our Special Correspondent.)

The mining stock market during the past week was aptly described by a prominent broker as "a see-saw market." There were some fluctuations, and, in comparison with some weeks, in 1895, the market was rather quiet. Toward the close, however, an undertone of firmness is noticeable. The best brokers claim to be satisfied with the present trading, because now that the reputation of the Cripple Creek stocks is established what they most dread is over-speculation.

The Colorado Springs Mining Stock Exchange continues to do a prosperous business and some of its members inform me that the demand from Eastern investors shows but little abatement. During the past week it did a business of 738,630 listed shares and 1,984,067 unlisted shares. Needless to say, the Board of Trade is also doing its legitimate share of the business. Its total sales for the week amounted to 4,227,924 shares, of a cash value of \$169,997. The Consolidated Exchange also reports a fair trading.

BY TELEGRAPH.

Messrs. Gardner & Co. wire us the closing quotations of the Colorado Springs Mining Stock Exchange for the week ending January 23d, as follows:

Name of Company.	17	18	19	20	21	22	23
Alamo	.08¾	.10	.10	.08½	.08½	.08½	.08½
Anaconda	.8	.70	.69	.64	.68	.69	.69
Argentum-Juniata	.57	.58	.58½	.58	.58½	.58½	.60
Blue Bell	.14	.14	.14	.14	.14	.14	.14
Cripple Creek Con.	.14	.14	.14	.14	.14	.14	.14
Golden Fleece	.0	1.58	1.55	1.50	1.54	1.56	1.56
Isabella	.58½	.58	.58	.57½	.57	.57½	.57½
Mollie Gibson	.45	.47	.48	.48	.48	.48	.48
Mount Rosa	.17	.17	.16	.16	.16	.16	.16
Pharmacist	.14	.14	.14	.14	.14	.14	.14
Portland	1.87	1.90	1.90	1.85	1.80	1.87	1.87
Silver State	.03¼	.24	.02½	.02½	.02	.02	.02
Union	.43¼	.43	.42	.41	.41	.41	.41
Work	.23½	.23	.22½	.21	.20	.20	.20

In addition to the above quotations Messrs. A. Pick & Co., of New York, furnish the following:

Name.	17	18	20	21	22	23
Bankers	.19½	.20	.19½	.18½	.18½	.19½
Desmoines	.08	.08½	.08	.08¼	.08½	.08¼
Gold & Globe	.24	.25	.25	.23	.23	.23
Gold Standard	.11	.11	.10½	.10½	.10½	.10
Isabella	.59	.58½	.58	.57½	.57½	.58
Jefferson	.23½	.23	.22½	.21	.19½	.21½
Keystone	.08¼	.08¼	.08¼	.08¼	.08¼	.08¼

Salt Lake City, Utah. Jan. 18.

(Special Report of James A. Pollock.)

The past week in mining stock circles has been characterized by satisfactory activity, and the demand for stocks has not been confined to any particular line, except that the cheaper or speculative securities have rather had the call. Orders from the outside were not as numerous as was the case during the previous week.

The board of directors of Ajax rescinded the recent assessment of 5c. per share, the report being that the mine had so improved that heavier shipments can be made. The stock held its own only during the

week, the tendency being slightly downward. Alliance did not recover its lost strength, and the stock is now selling lower than for many months. Stockholders are displaying their old faith, however, and paying the twentieth assessment. Gas displayed considerable strength and recorded an advance of several cents. The annual meeting is to be held today. The company reports another well. Anchor showed no activity.

Bogan did some business, but not at advanced quotations. Bullion-Beck paid another dividend of \$25,000 on the 15th, making \$1,975,000 for the company. The properties are in splendid shape. The regular double dividend of \$1 per share was paid by the Centennial Eureka on the 15th, making a total of \$1,530,000. Very little of the stock is on the market and none below \$60. Crescent and Comstock are doing no business in the local market. Dalton was a favorite during the week, but at considerably lower prices than were in force a few weeks ago. The heavy holders have no desire to sell at anywhere near present figures. Daly and Daly West were neither very active. The new mill of the latter is working smoothly but has not yet gotten down to full capacity. Horn Silver is making heavy shipments. The stock is not coming out in response to the bids made. Lucky Bill continues development work with little change in the showing.

Mammoth held very close to its record of the week previous and considerable business was done in the stock. Morgan, of Park City, was wanted but not at the offering price. The Mercur deal was declared off the first of the week, the board of directors declining to grant the extension requested by De Lamar, who stated that his failure to connect was not the fault of the property but simply due to the financial uncertainty of the East. The regular monthly dividend of 12½ cents per share comes on the 20th. Recent developments in the mines of the company are of a highly encouraging nature and stockholders are congratulating themselves that the option was not taken up. Ontario was very quiet. Rover showed some weakness, but recovered somewhat toward the close. Silver King was in demand, but little of the stock came out. The mines are making a splendid showing. Preparations are being made for the coming battle with Alliance.

The shipments of product that have been made from the Sunshine in Camp Floyd district have given very flattering returns. The cyanide saves the values in the ore to a very high percentage. Dividends should not be more than two months away, as the company has no debts. Considerable stock changed hands during the week. Tetro will double its present working force within the next few days and the company proposes to rush the development work with great vigor. The subscriptions for the Gold Dust treasury stock took the entire block recently ordered sold by the board of directors, and no more of the remaining stock will be sold for the present.

San Francisco. Jan. 18.

(From Our Special Correspondent.)

At the opening on Monday there was quite an appearance of activity in the market, and prices were generally pretty strong. Later there was something of a break and quotations were lower, without much helping the amount of business done, which was less for the week than the opening day had promised. At the close matters were again quiet, and prices could not be called strong. There were no new developments of any particular importance to be recorded. Occidental fluctuations were the main point of interest.

Some quotations were: Consolidated California & Virginia, \$2.35@2.40; Onbir, \$1.35@1.40; Hale & Norcross, \$1.10@1.15; Confidence, \$1@1.05; Occidental, 79@8c; Mexican, 61@62c; Potosi, 54@55c; Sierra Nevada, 45@47c; Crown Point, 23@24c; Bullion, 17@18c.

Very little was heard of the Bodies during the week. Bodie Consolidated sold at 40@42c, and Bulivar at 12c. No others were quoted.

At the annual meeting of the San Francisco Stock and Exchange Board, which was held on Monday, the following officers were elected to serve for one year: President, A. G. Gurnett; vice-president, Emmet P. Barrett; chairman, O. V. Walker; secretary, Fred W. Hadley; treasurer, George T. Marye, Jr. There was a sharp little contest over the presidency, and Mr. Gurnett had a majority of only two votes over his opponent, Joseph Marks.

Four new Comstock assessments were announced this week: Alta, 10c, delinquent February 17th; Justice, 10c, delinquent February 17th; Union Consolidated 20c per share; Julia Consolidated, 5c per share, delinquent February 20th.

Mining assessments delinquent in January amounted to \$57,321, of which Nevada mines called for \$52,320. For the same month last year \$151,100 was the total amount delinquent.

The Utah Consolidated annual meeting has been called for January 29th.

The new San Francisco Gold Mining Stock Exchange held a meeting this week and adjourned for a week. It is said that this was done to give time for the completion of necessary arrangements, and the organization will be finally completed at the next meeting.

BY TELEGRAPH.

San Francisco, Cal., January 24th.—The opening quotations to-day were as follows: Best & Belcher, 90c; Bodie, 40c; Bulwer, 20c; Chollar, 62c; Consolidated California & Virginia, \$2.45; Eureka Consolidated, 25c; Gould & Curry, 53c; Hale & Norcross, \$1.30; Mexican, 63c; Mono, 6c; Ophir, \$1.45;

Savage, 36c; Sierra Nevada, 44c; Union Consolidated, 38c; Yellow Jacket, 46c.

The Pueblo Mining Stock Exchange.

(From our Special Correspondent.)

The members of this Exchange took part in the opening of the new Exchange at Florence on Saturday last which with usual Colorado hospitality was celebrated by a banquet thoroughly enjoyed by both guests and hosts.

Mr. Willisford Day has been elected to fill the vacancy of Secretary to the Pueblo Mining Stock Exchange occasioned by the resignation of L. B. Strait. The transactions on the Pueblo Exchange grow more numerous and important as the advantages of the exchange became better known. As an example of this, the transactions on January 20th at morning call alone, amounted to 150,500 shares. The total transactions for the week ending January 20th were 1,289,400 shares. Naturally the most popular stocks are those most dealt in elsewhere, but in addition to these there are at least 30 more listed stocks quoted and called daily.

London.

(From Our Special Correspondent.)

Jan. 11, 1896.

Throughout the whole of the past week the mining market has waited on news from South Africa, and, in the absence of anything decisive, the movements have been unimportant. The general feeling has gradually verged round in favor of the English and the British South Africa Company, and instead of Jameson being considered a traitor, the inclination to regard him as a popular hero has become uppermost. The action of Kruger in arresting Mr. Hammond and other prominent Americans is just as unpopular here as it would be if they were English subjects, and the British authorities, both at home and in South Africa, will safeguard the American interests as closely as those of the English. Not only is there the bond between the two nations, England and the United States, which will always be recognized in any country, but in this case Mr. Hammond and his fellow countrymen went to Africa at the direct invitation of the English companies, and under those circumstances will receive double consideration. Various rumors have been spread as to the future of Charterland, and Mr. Rhodes' resignation of the premiership of Cape Colony has led to a vast amount of speculation as to the future. It is obvious, however, that nothing will be done in the question of the government of Charterland until the Transvaal difficulty is settled. It is generally considered probable that the administration of Charterland will be ceded to the Imperial authorities, while the mining rights will be left in the hands of the company. This supposition has had considerable influence in sustaining the market in Chartered shares and preventing a panic.

It would be useless to give any details of the movements of shares, for speculation is entirely suspended in South African stocks. There has been some bear selling now and then, but whenever this takes place the bears soon lose courage and begin to buy back again.

The paralysis of the South African market has given the West Australian section a chance to engage general attention. A good deal of business has been done in many directions, but of course there has been no sign of anything above the average. The announcement of the results of the crushings at Great Boulder mine has had a good effect, as 1,392 oz. were obtained from 249 tons. The first crushings of White Feather show 1,037 oz from 489 tons. The Indian section has also received attention and Champion Reef has followed up the advance noted in my last two reports.

Comparatively little has been done in Americans, though Anacondas and the Alaska group have received attention. It is announced that the New Elkhorn Company have taken over the new property, particulars of which I gave a few weeks ago.

As regards the public issue of new companies, stagnation reigns supreme, and during the past week only one such has appeared, viz., Herbert Gold, Limited, to work gold properties in West Australia. The American boom is indefinitely postponed and at present British Columbia is the only American mineral field which attracts attention. From inquiries I have made, there appears to be a good deal of English capital going privately to this district, and as yet the professional promoter has not got there.

Paris.

Jan. 10.

(From Our Special Correspondent.)

Interest in the troubles in South Africa for the past week has overcome everything else, and one hears really of nothing on all sides but the Transvaal, its policy and foreign relations, while the news continues to be meager and unsatisfactory. There is every disposition here to condemn the conspiracy, which seems certainly to have existed for the purpose of seizing the Transvaal and its gold mines for the benefit of the Chartered Company. It is one of the forms in which our excellent neighbors across the channel cover up their purposes, when the direct execution would shock the moral sense too much. The Chartered Company would step in to assist the oppressed foreigners of the Transvaal; the Chartered Company has exceeded its legitimate powers, so the British Government would deprive its administrators, deprive them of their political rule, and then—pocket the plunder as a British colony. This pretty little programme, which, we must believe, was arranged so carefully, has all been spoiled by the promptness and courage of Mr. Kruger and his followers.

What will be the result? We shall see in time, no doubt, but just now it is not very clear.

A sensation of the first order, which everyone is discussing at present, is the intervention of Germany in the case. Does it mean war? That is the universal inquiry. Certainly it would if Germany were a smaller nation; but now it is most probable that the defeated plunderer will put up with the insult. It has been the case before; why not now?

In all this little has been said of the interests of France in the matter. You know how large a share French investors hold in the Transvaal mining companies. Some have claimed that it amounts to fully one-half, but this is an over-estimate undoubtedly and one-third is nearer the truth. Some shrewd observers have believed all along that our people were making a mistake in placing so much money where it was entirely under the control of foreigners, and many others now begin to realize this. It is too late now, and all we can do is to make the best of it. How is not quite clear, but at any rate we cannot sell at the present time.

Naturally the prices of South African stocks have fallen heavily. There has been little selling here so far, and it does not seem probable that any general movement will take place.

I have said so much of South Africa that there is little room to speak of anything else; but really it is hardly necessary for the rest of the market has been so uncertain there is very little to be told.

The copper shares have been pretty well sustained, though the course of the metal itself has been uncertain.

Nickel still retains a large part of its recent advance. No official statement has been made, but it is generally believed here that an agreement will be made with the American producers which will stop competition and benefit prices.

The New Year promises us stormy times enough; let us hope that prospects will improve, and that the prophets of evil, who are just now so plentiful, will be disappointed.

AZOTE.

MEETINGS.

AMALIE MINING COMPANY, annual meeting at the office, Room 39, Mills Building, San Francisco, February 1st, at 1 p. m.

GOLD COLLAR MINING AND MILLING COMPANY, special stockholders' meeting, at the office, Central City, Colo., February 3d, at 2 p. m., for the purpose of amending the articles of incorporation.

MAMMOTH MINING COMPANY, annual meeting, at the office, No. 163 South East Temple street, Salt Lake City, Utah, February 4th, at 2 p. m. Transfer books close February 1st and reopen February 5th.

MARYLAND COAL COMPANY, annual meeting, at the office, No. 1 Broadway, New York City, February 4th, at 11 a. m. Transfer books will close January 20th, and reopen February 5th.

MICHIGAN IRON MINING COMPANY, annual meeting, at the Colby House, Ashland, Wis., February 4th, at 2 p. m.

PORTLAND GOLD MINING COMPANY, annual meeting, at the office, Council Bluffs, Ia., February 3d, at noon. Transfer books close January 28th, at noon, and reopen February 6th, at Colorado Springs, Colo.

UTAH CONSOLIDATED MINING COMPANY, annual meeting at the office in San Francisco, January 29th.

DIVIDENDS.

CHANDLER IRON COMPANY, dividend of \$3 per share, amounting to \$300,000, payable February 1st.

CONSOLIDATED COAL COMPANY OF MARYLAND, dividend of \$2 per share, payable at the office, No. 71 Broadway, New York City, February 1st. Transfer books are closed from January 22d to February 2d.

VICTOR MINES AND LAND COMPANY, dividend amounting to \$3,000, paid January 20th. This makes a total of \$27,000 paid in dividends to date.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Delq.	Sale.	Amt.
Alta	Nev.	6	Feb. 17		.10
Anchor Coal	Wash.	6	"	Mar. 5	.03
Anita Gold	Cal.	7	Jan. 18	Feb. 4	.08
Bullion Con.	"	6	Dec. 24	Jan. 27	.10
Butte & Boston	Mont.	"	Jan. 19	Feb. 3	.0074
Channel Bend	Cal.	29	Feb. 21	Mar. 13	.35
Chas.	"	"	Jan. 30	"	.03
Con. New York	Mont.	11	" 15	Feb. 6	.15
Florence G. & S.	S. D.	8	Feb. 1	" 1	.0214
Gray Eagle	Cal.	42	" 7	Mar. 3	.05
Good Hope	"	4	Jan. 30	Feb. 20	.70
Hale & Norcross	Nev.	108	" 15	" 7	.15
Haskell	Cal.	1	" 18	" 8	.01
Hite	"	2	" 20	" 10	.10
Inter-Mountain	S. D.	3	" 19	" 8	.0014
Jenny Lind	Cal.	"	Feb. 1	Mar. 18	.014
Justice	Nev.	"	Feb. 17	"	.10
Kimberly G. & S.	Cal.	7	Jan. 25	Feb. 15	.002
New Basil Con.	"	29	" 6	" 19	.05
Occidental Con.	Nev.	21	" 20	" 16	.15
Overman	"	74	" 6	Jan. 27	.10
Rainbow	S. D.	9	" 22	Feb. 11	.001
Red Jacket	Nev.	1	" 27	"	.014
Savage	"	88	Feb. 6	Feb. 26	.20
Superior	Cal.	1	Dec. 9	Jan. 30	.05
Tetro	Utah.	2	" 21	Feb. 1	.01
Ybarra	Mex.	3	Jan. 27	" 12	.50

STOCK QUOTATIONS.

BOSTON, MASS.*

Table of stock quotations for Boston, Mass. listing companies like Alouez, Arnold, Atlantic, and others with columns for Name of Company, Location, Par value, and various price columns (H, L, H, L, H, L, H, L, H, L) and Sales.

* Official quotations Boston Stock Exchange. Total sales, 30,946.

NEW YORK.*

Table of stock quotations for New York listing companies like Alamo, Anaconda, Argentinian, and others with columns for Name of Company, Location, Par value, and various price columns and Sales.

* Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. Total sales, 55,425.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table of stock quotations for Industrial Coal and Coal Railroad listing companies like Bail & Ohio, Ches. & Ohio, Col. C. & I. Dev, and others with columns for Name of Company, Par value, and various price columns and Sales.

* Official quotations N. Y. Stock Exchange. Total shares sold, 10,217.

COLORADO SPRINGS, COLO.*

Table of stock quotations for Colorado Springs, Colo. listing companies like Ajax, Alamo, American C, and others with columns for Name of Company, Par value, and various price columns and Sales.

* Official quotations and sales Board of Trade Exchange. † Mining Stock Association. ‡ Consolidated Exchange.

PITTSBURG, PA.*

Week ending Jan. 23.

Table of stock quotations for Pittsburgh, Pa. listing companies like Coal, Mansfield, N.Y. & C. Gas, and others with columns for Name of Company, Location, Par value, Bid, Ask, and Sell price.

* Official quotations Pittsburgh Stock Exchange.

ST. LOUIS, MO., STOCKS.

Week ending Jan. 21.

Table of stock quotations for St. Louis, Mo. listing companies like Central Lead, Con. Coal, and others with columns for Name of Company, Company's Office, Par value, Bid, Asked, and Last Dividend.

SAN FRANCISCO, CAL.*

Table of stock quotations for San Francisco, Cal. listing companies like Alta, Belcher, Best & Belcher, and others with columns for Name of Company, Location, Par value, and various price columns.

† Official telegraphic quotations San Francisco Stock Exchange.

BALTIMORE, MD.*

Week ending Jan. 23.

Table of stock quotations for Baltimore, Md. listing companies like Balt. M. & S. N. C., Conrad Hill, and others with columns for Name of Company, Location, Par value, Bid, Ask, and Last Dividend.

* Official quotations Baltimore Stock Exchange.

MISCELLANEOUS SECURITIES.

Jan. 24.

Table of miscellaneous securities listing companies like American Coal, Catecaugy Ore & Iron R. R., and others with columns for Name of Company, Location, Par value, Bid, and Ask.

LONDON.

Jan. 11.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations (Buyers, Sellers), and Prices. Lists various mining companies like Alaska-Mexican, Banner, Cripple Creek, etc.

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par value, Jan. 13, Jan. 14, Jan. 15, Jan. 16, Jan. 17, and Sales. Lists companies like Addie C., Agate, Alamo, Amity, etc.

PARIS. Week ending Jan. 9.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Divs. last year, Prices (Opening, Closing). Lists companies like Acieries de Creusot, Firminy, etc.

*All the companies are located in Colorado. Total shares sold: 5,015,704; unlisted, 3,256,05.

PHILADELPHIA, PA.

Table with columns: NAME OF COMPANY, Location, Par value, Jan. 16, Jan. 17, Jan. 18, Jan. 20, Jan. 21, Jan. 22, and Sales. Lists companies like Acety. L.H. & P., Bethlehem Iron, etc.

* Official quotations Philadelphia Stock Exchange. Total sales, 15,230.

MEXICO. Week ending Jan. 16.

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

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

VALPARAISO, CHILE. Week ending Dec. 7.

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

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

SHANGHAI, CHINA. Dec. 27.

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

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

SALT LAKE CITY, UTAH. Week ending Jan. 18.

Table with columns: Name of Company, Par value, Bid, Asked, Actual selling price. Lists companies like Ajax, Alliance, Amer. Nat'l, etc.

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

ASPEN, COLO. Week ending Dec. 27.

Table with columns: NAME OF COMPANY, Location, Par value, Bid, Asked, Sales, Price. Lists companies like Alta Argent., Argonaut, etc.

* Special Report of Arkell, MacMillan & Stewart. Total sales, 198,300.

HELENA, MONT. Week ending Jan. 11.

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

* Special Report of Samuel K. Davis. Total sales, 1,900.

DULUTH, MINN. Week ending Jan. 18.

Table with columns: NAME OF COMPANY, Location, Company's Office, Par value, Bid, Ask, Price. Lists companies like Adams Iron, Blewitt Mt. Iron, etc.

* Official quotations Duluth Board of Trade.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES

Main table containing two columns: 'DIVIDEND-PAYING MINES' and 'NON-DIVIDEND-PAYING MINES'. Each column lists company names, capital stock, shares, and dividend payment details.

Gold, S. Silver, L. Lead, C. Copper, B. Borax. * Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. ‡ Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends, and the Cons. Virginia \$42,300,000. § Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. ¶ Previous to this company's acquiring Northern Belle, that mine paid \$400,000 in dividends against \$425,000 in assessments.

CLASSIFIED LIST OF ADVERTISERS.

Air Compressors and Rock Drills
 Bostelmann, Louis F.
 Bullock, M. C., Mfg. Co.
 Burling Rock Drill Co.
 Clayton Air Compressor Works.
 Fraser & Chalmers.
 Gates Iron Works.
 Ingersoll-Sergeant Drill Co.
 Dominion Bronze Fairbanks Co.

Amalgamators
 Bucyrus Steam Shovel & Dredge Co.
 Fraser & Chalmers.
 Gates Iron Works.

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

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

Assayers and Chemists
 Alnsworth, Wm.
 Baker & Adamson.
 Becker, Christian.
 Bullock & Crenshaw.
 Denver Fire Clay Co.
 Elmer & Amend.
 Gates Iron Works.
 Henry Hill Chem. Co.

Attorneys, Corporation
 Emig, C. E.
 Jones & Rhett.
 McIndoe, H.

Automatic Boiler Feeds
 D'Este & Seelye.

Babbit's Metal
 Besley, Chas. H., & Co.

Bakers and Brokers
 Bonbright, W. P., & Co.
 Carduff, A. A.
 Decker, L. R.
 Dougladay, H. H.
 Doubleday, Rope & Co.
 Etsall, Clarence & Co.
 Farnsworth, C., & Co.
 Fletcher, C. S., & Co.
 Gardner & Co.
 Grant, E. B.
 Handy & Harman.
 Harriott, W. M.
 Hendrickson, W. J.
 Hicks & Benzie.
 Kinney, M.
 Kjellander, C. F. & Co.
 Lents, John S.
 Lindley & Fitzpatrick.

Belting
 Carpenter, Geo. B., & Co.
 Hendrie & Bolthoff Mfg. Co.
 Leiphelmer, N.
 Miller, Chas. N., & Co.
 Mayor, Andrew.

Belt Lacing
 Bristol Co.

Blasting Caps
 Metallic Cap Mfg. Co.

Blasting Batteries
 Climax Fuse Co.
 Ingersoll-Sergeant Drill Co.

Pressure Blowers
 Connorsville Blower Co.

Boilers
 Denver Eng. Wks. Co.
 Enterprise Boiler Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Philadelphia Eng. Wks., Ltd.

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

Brewers
 Pabst Brewing Co.

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

Bridges
 Berlin Bridge Co.
 Pittsburgh Bridge Co.

Buckets
 Scaife, Wm. B. & Sons. (See Machinery.)

Carbons
 Bishop, Victor, & Co.
 Bostelmann, Louis F.
 Lexow, Theodore.

Chain and Link Belting (See Belting.)

Chemicals
 Baker & Adamson.
 Bullock & Crenshaw.
 Elmer & Amend.
 Henry Hill Chem. Co.

Coal
 Serward-White Coal Mfg. Co.

Coal and Curran
 Consolidation Coal Co.

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

Compressors
 Clayton Air Compressor Works.
 Norwalk Iron Works Co.

Concentrators, Crushers, Pulverizers, Separators, Etc.
 Allis, Ed. P. & Co.
 Beckett Foundry & Machine Co.
 Blake, Taso, A.
 Boston Ore Machinery Co.
 Bradley Fulverizer Co.
 Colorado Iron Works.
 Denver Eng. Works Co.
 Engelbach Mach. Mfg. Co.
 Fraser & Chalmers.
 Frue Vanner Concentrator.
 Gates Iron Works.
 Hendrie & Bolthoff Mfg. Co.
 Joplin Mach. Co.
 Krom, S. B.
 Krupp, F.
 Link Belt Machinery Co.
 McCully, R.
 Scoville, H. H., & Co.
 Stedman Foundry & Mach. Co.
 Walburn-Swenson Mfg. Co. (See Machinery.)

Copper Dealers and Producers.
 American Metal Co.
 Arizona Copper Co.
 Atlantic Mining Co.
 Balbach S. & Ref. Co.
 Baltimore Cop. Wks.
 Bath, H., & Son.
 Boston & Mont. M. Co.
 Bridgeport Copper Co.
 Butte & Boston M. Co.

Canadian Copper Co.
 Copper Queen Mfg. Co.
 DeLore & Co.
 Elliott's Metal Co., Ltd.
 Corrugated Iron
 Berlin Iron Bridge Co.
 Scaife, W. B. & Sons.
 Crucibles, Graphite, Etc.
 Denver Fire Clay Co.
 Dixon, Jos. Crucible Co.
 Damper Regulators
 D'Este & Seelye.
 Diamonds
 Bishop, Victor, & Co.
 Bostelmann, L. F.
 Lexow, Theodore.
 Diamond Drills
 Bishop, Victor, & Co.
 Bostelmann, L. F.
 Bullock Mfg. Co., M. C.
 Lexow, Theodore.
 Sullivan Machin'g Co.
 (See Air Compressors and Rock Drills.)
 Draughtsmen
 Young, Wm. R.
 Drawing Materials
 Besley, Chas. H., & Co.
 Dietzgen, E. & Co. (See Engineering Instruments.)
 Dredges
 Bucyrus Steam Shovel & Dredge Co.
 Souther & Co.
 Dryers
 Brown, Horace T.
 Cummer, F. D. & Son Co.
 Denver Eng. Wks. Co.
 Dump Cars
 Denver Eng. Works Co.
 Gates Iron Works.
 Hendrie & Bolthoff Mfg. Co.
 Educational Institutions
 Arizona School of Mines.
 Columbian University.
 Chicago School of Assaying.
 Correspondence School of Mines.
 Mass. Inst. of Technology.
 Michigan Mining School.
 Electrical Batteries
 Macbeth, James, & Co.
 Electrical Machinery and Supplies
 Besley, Chas. H., & Co.
 Card Electric Co.
 Denver Eng. Wks. Co.
 Gates Electric Mfg. Co.
 Gates Iron Works.
 General Electric Co.
 ELEVATORS, CONVEYORS and HOISTING
 Brown Hoist & Conv. Mach. Co.
 California Wire Wks. Co.
 Cooper, Hewitt & Co.
 Crook, W. A., & Bros. Co.
 Denver Eng. Wks. Co.
 Field & Goetzman.
 (See Wire Rope Tramway and Machinery.)
 Emery Wheels
 Besley, Chas. H., & Co.
 New York Belting & Packing Co., Ltd.
 Engineers, Chemists, Metallurgists
 See Directory pages 4, 5 and 6.
 Engineers' Instruments and Supplies
 Buff & Berger.
 Bullock & Crenshaw.
 Dietzgen, F., & Co.
 Fauth & Co.
 Engines
 Buckeye Engine Co.
 Bullock, M. C. Mfg. Co.
 Dayton Gas Engine & Mfg. Co.
 Enterprise Boiler Co.
 Ellison, Wm., & Son.
 Fraser & Chalmers.
 Lidgerwood Mfg. Co. (See Machinery.)
 Philadelphia Eng. Works, Ltd.
 Excavators
 Bucyrus Steam Shovel & Dredge Co.
 Souther & Co.
 Vulcan Iron Works.
 Fire-Brick and Clay
 Chur, A. T.
 Denver Fire Clay Co.
 Fuel Meal
 Jassin, E.
 Furnaces
 Brown, Horace.
 Gates Iron Works.
 Hoskins, Wm. (See Machinery.)
 Fuses, Powder
 Ingersoll-Sergeant Drill Co.
 Fuse, Safety
 Climax Fuse Co.
 Gas Engines
 Dayton Gas Engine & Mfg. Co.
 Gas Works
 Pollock, Wm. B. & Co.
 Wood, R., & Co.
 Gauges, Recording, Etc.
 Bristol Mfg. Co.
 Gearings
 Besley, Chas. H., & Co.
 Chester Steel Cast. Co.
 Denver Eng. Wks. Co. (See Machinery.)
 Grease, Graphite, Etc.
 Besley, Chas. H., & Co.
 Hendrie & Bolthoff Mfg. Co.
 Pierce & Miller Engineering Co.
 Heavy Machinery
 Denver Eng. Works Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Hose, Rubber, Etc.
 New York Belting & Packing Co., Ltd.
 Hotels
 Antlers Hotel.
 Injectors
 Fenberry Injector Co.
 Insulating Wires and Cables
 Okonite Co., Ltd. The
 Insurance Companies
 Hartford Steam Boiler Inspect'n and Ins. Co.
 Mutual Life Insurance Co.
 Joint Fittings
 Tight Joint Co.
 Lead Linings for Chlorination Tubs.
 Raymond Lead Co.
 Locomotives
 General Electric Co.
 Hunt, C. W. Co.
 Porter, H. K., & Co.

Machinery.
Dealers in Mining, Milling and Other Machinery
 Allis, Ed. P. & Co.
 Bacon, E. C.
 Besley, Chas. H., & Co.
 Blake, T. A.
 Bostelmann, L. F.
 Boston Ore Mach'g Co.
 Bradley Fulverizer Co.
 Buckeye Engine Co.
 Bullock, M. C. Mfg. Co.
 Caldwell, H. W., & Co.
 Card Electric Co.
 Carpenter, Geo. B., & Co.
 Channon, H. Co.
 Colorado Iron Works.
 Connorsville Blower Co.
 Crook, W. A., & Bros. Co.
 Davis-Colby Ore R. Co.
 Denver Eng. Wks. Co.
 Ellison, Wm., & Son.
 Engelbach Mach. Mfg. Co.
 Field & Goetzman.
 Fraser & Chalmers.
 Gates Electric Mfg. Co.
 Gates Iron Works.
 Hammond, Mfg. Co.
 Hendrie & Bolthoff Mfg. Co.
 Ingersoll-Sergeant Drill Co.
 Manganese Steel.
 Taylor Iron & Steel Co.
 Metal Dealers
 American Metal Co.
 Am. Zinc-Lead Co.
 Baker & Co.
 Bath, Henry & Son.
 Besley, Chas. H., & Co.
 Bridgeport Copper Co.
 Elliott's Metal Co., Ltd.
 Eureka Co.
 Foster, Blackett & Wilson.
 James & Shakspeare.
 Johnson, Matthey & Co.
 Lambert's Wharf Co.
 Metallurgical Works and Ore Processors
 Amer. Zinc Lead Co.
 Baker & Co.
 Balbach S. & Ref. Co.
 Balbach & Co.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Denver Eng. Wks. Co.
 Elliott's Metal Co., Ltd.
 Foster, Blackett & Wilson.
 Fraser & Chalmers.
 Gates Iron Works.
 Mathiessen & Hegeler Co.
 Mine Cars
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Hendrie & Bolthoff Mfg. Co.
 Hunt, C. W. Co.
 Sheffield Car Co. (See Machinery.)
 Mine, Mill and Smelters Supplies.
 Carpenter, Geo. B., & Co.
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Park's & Wilkinson. (See Machinery.)
 Mining and Land Companies
 Atlanta Mfg. Co.
 Arizona Copper Co.
 Boston & Mont. M. Co.
 Butte & Boston M. Co.
 Clark Lane Mines Co.
 Copper Queen Mfg. Co.
 Detroit Copper Mfg. Co.
 Nickel
 Canadian Copper Co.
 Ore Roasters
 Brown, Horace F.
 Cummer, F. D. & Sons Co.
 Davis-Colby Ore Roaster Co.
 Ore Testing Works
 Hunt & Robertson.
 Ledoux & Co.
 Packing and Pipe Coverings
 Brandt, Randolph.
 Jassin, E.
 Jenkins Bros.
 Perforated Metals
 Alcheson, R. Perf. Metal Co.
 Fraser & Chalmers.
 Harrington & King Perforating Co.
 Phosphor-Bronze
 Phosphor-Bronze Smelting Co.
 Pipe Drivers
 Bucyrus Steam Shovel and Dredge Co.
 Ingersoll-Sergeant Drill Co.
 Pipe Joints
 Tight Joint Co.
 Pipes
 Pollock, Wm. B., & Co. | Wyckoff, A., & Sons,
 Platinums
 Baker & Co.
 Johnson, Matthey & Co.
 Powder
 Atlantic Dynamite Co.
 Atlas Powder Co.
 Ingersoll-Sergeant Drill Co.
 Drill Co.
 Pressure Blowers
 Connorsville Blower Co.
 Pressure Regulators
 D'Este & Seelye. (Curtis.)
 Publications
 Iron & C. Trade Review
 Australian Mg. Stand.
 Bulletin.
 Colliery Guardian.
 Denver Republican.
 El Minerio Mexicano.
 Electrical Plant & Electrical Industry
 Financial Times.
 Indian Engineer
 Jeaneville Iron Wks. noGowan, S. & Co.
 Pumps
 Blake, Geo. F. Mfg. Co.
 Cameron, A. S., & Co.
 Pump Co.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Goulds Mfg. Co.
 Hooker Steam Pump Works.

Quarrying Machines
 Bostelmann, L. F.
 Gates Iron Works.
 Ingersoll-Sergeant Drill Co.
 Rapid Drill Co.
 Sullivan Machinery Co.

Quicksilver
 Eureka Co.

Railroads
 C. B. & Quincy R. R.
 Denver & Rio Grande R. R.
 Denver, Leadville & Gunnison Ry.
 Florence & Cripple Creek R. R.
 Midland R. R. of Kentucky.
 Rio Grande Southern R. R.
 U. P., D. & G. R. R.

Railroad Supplies and Equipment
 Carpenter, Geo. B., & Co. | Hunt, C. W. Co. |
 Channon, H. Co. | Porter, H. K., & Co. |
 Fairbanks Co. | Robinson & Orr. (See Machinery.)

Regulators, Damper, Heat, Etc.
 D'Este & Seelye Co. | Jenkins Bros.
 Eddy Valve Co.

Return Steam Traps
 D'Este & Seelye. (Curtis.)

Rock Drills. (See Air Compressor.)

Roofing
 Berlin Iron Bridge Co. | Scaife, Wm. B., & Sons |
 Phelps, Dodge & Co. | Shiffler Bridge Co.
 Pittsburgh Bridge Co.

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

Scales
 Fairbanks Co.

Screens
 Alcheson, R. Perf. Metal Co.
 Denver Eng. Wks. Co.
 Fraser & Chalmers
 Gates Iron Works
 Harrington & King Perforating Co.
 Link Belt Machinery Co.
 Ludlow-Saylor Wire Co. (See Machinery.)

Second Hand Machinery
 Robinson & Orr.

Separators
 D'Este & Seelye Co.

Shoes and Dies
 Chester Steel Cast. Co. | Fraser & Chalmers |
 Chrome Steel Works. | Gates Iron Works |
 Crescent Steel Co. | Pierce & Miller Engi-
 Denver Eng. Wks. Co. | neering Co.

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

Smelting and Refining Works
 Balbach S. & Ref. Co. | Orford Copper Co. |
 Baltimore Cop'g Wks. | Penna. Salt Mfg. Co. |
 Bridgeport Copper Co. | Penn. Smelting and
 Elliott's Metal Co., Ltd. | Refining Works.
 Kan. City Sm. & Ref. Co. | Phosphor-Bronze
 Mathison Smelting Co. | Smelt. Co.

Steam Traps.
 D'Este & Seelye. (Curtis.)

Steel Rails, Castings, Rolls, Drill Steel
 Bethlehem Iron Co.
 Carpenter Steel Co.
 Chester Steel Cast. Co.
 Chrome Steel Works.
 Crescent Steel Co.
 Garrison, A. Fdry. Co.
 Hobson, Seaman & Co.
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Jessop Wm. & Sons Ltd.

Store Coupon Books.
 Allison Coupon Co.

Telegraph Wires and Cables
 Okonite Co., Ltd. The
 Temperature Regulators
 D'Este & Seelye. (Curtis.)

Testing Laboratories
 Fairbanks Co.

Tools
 Besley, Chas. H., & Co.
 Pratt & Whitney Co.
 Strelinger, G. A., & Co.

Tool Steel. Hobson, Seaman & Co.

Tubes
 Besley, Chas. H., & Co. | Pollock, Wm. L. & Co. |
 Taylor Iron & Steel Co. | Williams Bros.

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

Turbine Water-Wheels
 Gates Iron Works.
 Stilwell-Bierce & Smith-Valle Co.

Valves
 D'Este & Seelye Co. | Fairbanks Co. |
 Eddy Valve Co. | Jenkins Bros.

Ventilators
 Besley, Chas. H., & Co. | Tod, Wm., & Co. |
 Fraser & Chalmers.

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

Water-Wheels
 Girard Water Wheel Co.
 Lefel, James, & Co.
 Stilwell-Bierce & Smith-Valle Co.

Well Drilling Machinery
 Bostelmann, L. F.
 Sullivan Machinery Co.
 Williams Bros.

Wharfage
 Lambert's Wharfage Co.

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

White Lead
 Foster, Blackett & Co.

Wire Cloth
 Alcheson, R. Perf. Metal Co.
 Barnum, E. T.
 Gates Iron Works.
 Harrington & King Perforating Co.

Wire Rope & Wire
 Besley, Chas. H., & Co. | Gates Iron Works. |
 Broderick & Bascom | Hunt, C. W., & Co. |
 Rope Co. | Leechan, A. & Sons. |
 California Wire Wks | Rope Co. |
 Carpenter, G. B., & Co. | Phelps, Dodge & Co. |
 Carpenter Steel Co. | R'bling, J. A. Sons & Co. |
 Channon, H. Co. | Ropeways Syndicate. |
 Cooper Hewitt & Co. | Trenton Iron Co. |

Wire Rope Tramway
 Brown Hoist & Conv. | Gates Iron Works. |
 Machine Co. | Hunt, C. W. Co. |
 California Wire Wks. | Roebing, J. A., & Son |
 Colorado Iron Works | & Co. |
 Denver Eng. Wks. Co. | Ropeways Synd. Lt. |
 Fraser & Chalmers. | Vulcan Iron Works

POSITIONS VACANT.

FREE ADVERTISING

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

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

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

1425 WANTED—A GENERAL MANAGER for an iron ore company making a large output. Familiarity with the Spanish language is desirable. Address with full particulars of experience and references, M. H. HIERRO, ENGINEERING AND MINING JOURNAL.

1426 WANTED—AN EXPERIENCED foreman capable of taking charge of the construction and operation of a lead refining plant of 20 tons daily capacity. Must have references from former employers. Address BULLION, ENGINEERING AND MINING JOURNAL.

1427 WANTED—A FIRST-CLASS ASSAYER and ore sampler, with a knowledge of the Spanish language, to take charge of an ore purchasing agency. References imperative. Address ORE BUYER, ENGINEERING AND MINING JOURNAL.

1429 WANTED—A MAN FAMILIAR with the refining of sulphur from its ores, by the most improved modern processes, and who can give estimates of cost of such plant. Address SULPHUR, ENGINEERING AND MINING JOURNAL.

1430 WANTED—A YOUNG MAN CONVERSANT with the Cyanide process and able to properly superintend the installation of plant. Moderate salary until ability is proven. Address, with references, TANKAGE, ENGINEERING AND MINING JOURNAL.

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1434 WANTED—THOROUGHLY COMPETENT draftsman, familiar with designing steel buildings, roofs and columns, to take charge of office. Must understand how to handle men to good advantage. None others need apply. State where employed, remuneration required, and give full copies of recommendations. Address Box 22, ENGINEERING AND MINING JOURNAL.

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GRADUATE MINING ENGINEER AND chemist desires position. Eleven years' successful experience in the economical management and development of mining properties and the milling of ores by amalgamation and cyanide process. Understands Spanish. Best of references. Address COLORADO, ENGINEERING AND MINING JOURNAL. No. 17,328, Feb. 22.

A FIRST-CLASS ASSAYER DESIRES A position: experienced in ore sampling, analytical work and making charges for blast furnaces. Speaks Spanish. Best of references. Address PLOMO, care ENGINEERING AND MINING JOURNAL. No., Feb. 1.

METALLURGIST AND MECHANICAL ENGINEER; specialties, erection of plants and treatment of gold and silver refractory ores. Thirty years' experience; no objection to foreign countries. Open to engagement Jan. 1. References, prominent mine owners. Address PACIFIC, ENGINEERING AND MINING JOURNAL. No. 17,329, Feb. 1.

GRADUATE MINING ENGINEER DESIRES position. Six years' practical experience. Successful assayer, bookkeeper and assistant superintendent. Can handle machinery. Best of references. Address N. J., ENGINEERING AND MINING JOURNAL. No. 17,353, Feb. 1.

WANTED—POSITION AS MANAGER OR Superintendent of Gold or Silver Mining and Milling Property. Thorough knowledge of every detail of the business, both as to construction and operating. Practical assayer, expert accountant. Specialty—Careful business management and close supervision of details. Best of references. Address PRACTICAL, P. O. Box 298, Prescott, Ariz. No. 17,337, Feb. 8.

METALLURGICAL ENGINEER, SPECIALTY in Cyanide process, who has designed, constructed and put in operation two of the largest and most successful plants in this country, will be open for engagement February 1st. Best of references. Address M., ENGINEERING AND MINING JOURNAL. No. 17,352, Feb. 8.

WANTED—POSITION AS CHEMIST AND assayer, age 27, 5 years' experience. Will co-operate with responsible people. Have commercial education, scientific and practical knowledge of prospecting, some little of mine engineering, and a graduate in chemistry and assaying, can be useful; fair salary expected. Address "AU, AG, CU AND PB," ENGINEERING AND MINING JOURNAL. No. 17,353, Feb. 15.

A YOUNG CHEMIST AND ASSAYER, four years' experience, desires a position with some silver lead smelter or mine in Mexico or United States. Best of references. Address H. A., ENGINEERING AND MINING JOURNAL. No. 17,353, February 15.

Contracts Open.

PUMPING STATION.—Sealed proposals will be received at the office of Office Board Commissioner, Orleans Levee District, Masonic Building, New Orleans, La., until February 11th, for the erection of a pumping station, including machinery, foundations, buildings, etc., in conformity with plans and specifications on file in the above office. Other information as to the location and character of work and terms of payment, as also blank forms of proposals may be obtained at the office of the board. FRANK MARQUEZ, Secretary.

PIPING.—Tenders will be received, by registered post only, addressed to the City Engineer, Toronto, until February 15th, 1896, for the supply and delivery of 2,350 ft. of steel or cast-iron pipe, 6 ft. in diameter, with the necessary flexible joints.

Specifications and plans may be seen at the office of the City Engineer, Toronto.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 2 1/2 per cent. on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained. Tenders must bear the bona fide signatures of the contractor and his sureties or they will be ruled out as informal. Lowest or any tender not necessarily accepted. DANIEL LAMB, Chairman Committee on Works.

TUNNEL.—Sealed proposals will be received at the office of the Metropolitan Water Board, No. 3 Mt. Vernon street, Boston, Mass., until February 11th, 1896, building sections 2 and 3 of the Nashua Aqueduct, consisting of about two miles of tunnel and 1,000 ft. of masonry aqueduct in open trench, in the towns of Clinton and Berlin, Mass. The tunnel excavation is to be about 13.5 ft. wide and 12.2 ft. high, and the masonry aqueduct 11.5 ft. wide and 10.5 ft. high. A pamphlet containing further information for bidders, a form of proposal and contract, specifications and plans, will be ready about January 15th, and will be mailed to contractors who apply to the Chief Engineer for the same, or may then be obtained at his office, 3 Mt. Vernon street, Boston, Mass. Plans may be seen at the office of the Chief Engineer, or at the office of the Engineer of the Aqueduct Department of the Metropolitan Water Board in Clinton, Mass. The printed forms must be used in making proposals. The Board reserves the right to reject any or all proposals or to accept the proposal deemed best for the Commonweath.

HENRY H. SPRAGUE, Chairman; WILMOT R. EVANS, JOHN R. FREEMAN, Metropolitan Water Board; FREDERIC P. STEARNS, Chief Engineer; WILLIAM N. DAVENPORT, Secretary.

PIPE.—Tenders will be received, by registered post only, addressed to the City Engineer, Toronto, the 15th of February, 1896, for the supply and delivery of 2,350 ft. of steel or cast-iron pipe, 6 ft. in diameter, with the necessary flexible joints. Specifications and plans may be seen at the office of the City Engineer, Toronto, on and after Wednesday, the 11th inst. A deposit in the form of a marked cheque, payable to the order of the City Treasurer for the sum of 2 1/2 per cent. on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained. Tenders must bear the bona fide signatures of the contractor and his sureties or they will be ruled out as informal. Lowest or any tender not necessarily accepted. DANIEL LAMB, Chairman Committee on Works.

WATER-WORKS, Rockford, Mich.—Sealed proposals will be received until February 12th, 1896, for a system of water-works, including about 16,000 ft. of pipe from 4 to 8 in., 22 hydrants, a pair of pumps capable of pumping 1,000,000 gallons of water per 24 hours. Plans may be seen and specifications obtained by applying to the undersigned. J. M. SPORR, Village Clerk.

SEWERS.—Logan, O.—Sealed proposals for furnishing all labor and material required in the construction of a system of sanitary sewers for the village of Logan, O., will be received until February 4th, 1896. The engineer's approximate estimate of the quantities of material required and the work to be done is as follows: 1,800 lin. ft. of 15-in. pipe sewer; 2,100 lin. ft. of 12-in. pipe sewer; 8,800 lin. ft. of 10-in. pipe sewer; 24,150 lin. ft. of 8-in. pipe sewer; 25 flush tanks; 37 manholes; 10 lamp holes; 10 tons cast-iron pipe; one stone outlet and all necessary Y's, branches, etc. All proposals must be addressed to the Village Clerk, at whose office plans may be examined and forms of proposals, specifications, bonds, etc., may be obtained. H. E. SPARNON, Clerk. FRANK SNYDER, Consulting Engineer, 33 East State street Columbus, O.

BRICK OR CONCRETE SEWERS, STEEL Trestle, etc. Mayor's Office, San Antonio, Tex.—Sealed proposals for furnishing all materials and performing all the work required for the construction of about four miles of brick or concrete sewers and appurtenances will be received by the Mayor of the City of San Antonio, Tex., until February 10th, 1896, the approximate quantities being as follows: 7,695 lin. ft. of 36-in. sewer, 11,695 ft. of 44-in. sewer, 1,600 ft. of 44-in. concrete invert, 1,755 ft. 36-in. steel pipe, 55 ft. 44-in. steel pipe, 38 manholes, 170 slants, 1,700 lin. ft. steel trestle, 82.5-ft. steel truss bridge, 100 cu. yds. concrete, 100 cu. yds. stone masonry, 1,000 cu. yds. trenching, 10,864 cu. yds. embankment for sewer, 3,000 cu. yd. embankment for filter beds, 10,000 ft. B. M. lumber, 5 1/2-in. cast-iron gates, 20 12-in. cast-iron gates; approximate average cut, 10 ft.

Plans and specifications can be seen at the office of A. C. Pancoast, City Engineer of San Antonio, Tex.

Each proposal must be accompanied by a cash deposit or certified check of \$5,000 as liquidated damages, conditioned that the party whose bid is accepted will execute the contract and give the required bond. HENRY ELMENDORF, Mayor.

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THE ANNUAL MEETING OF THE STOCKHOLDERS OF THE

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H. SUHR, Secretary.

THE ANNUAL MEETING OF THE BOWER-BARFF RUSTLESS IRON COMPANY,

For the election of directors and other business will be held at the office of the company, No. 31 Nassau street, New York City, on Tuesday February 11th, 1896, at 12 o'clock noon. **GEO. W. MAYNARD, Secretary.**

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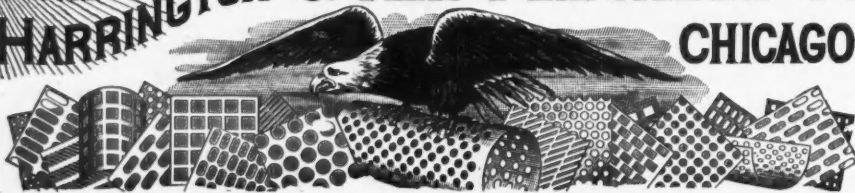
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