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THE INDEX to Volume LXXIII-January-June, 1902-of The Engineering and Mining Journal accompanies this issue, and subscribers should receive it with their copies. As usual this index has been carefully prepared and is very full. It includes nearly 11,000 titles and over 15,000 page references showing the variety of the topics covered by the Journal and the diversity of news given during the half-year.

Among the signs of returning activity and prosperity in the Transvaal, we find that the societies which had their headquarters in Johannesburg are renewing their organization and holding meetings once more. Prominent among these is the Chemical and Metallurgical Society of South Africa, which has done excellent work in the past, and to which thanks are due especially for the valuable information it has collected and published as to the various applications of the cyanide process. The first meeting since the outbreak of the war in 1899 was held in Johnnesburg, May 10 last, and provision was made for regular monthly meetings. We congratulate the society on its new start, and wish it a successful and useful future.

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THE PREDICTIONS of the early decadence of the Leadville District in Colorado, which have been made from time to time for several years past, have not been fulfilled and the review of the work of the half-year just closed, which our correspondent gives on another page, shows no signs that they will be fulfilled. Leadville is a very busy and prosperous district still, and there are signs that it will continue to grow and prosper, in spite of envious forecasts. In addition to gold, silver, lead and manganese ores, the zinc ores of the district promise to be a valuable addition to its output; and they will probably become a feature in the zinc market before long. It will be a long time before. Leadville ceases to add to the mineral wealth of Colorado and the country at

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THE GOLD MINES of the Kolar District in Mysore, India, which have been making steady and satisfactory progress for several years past, are now showing a considerable decrease in production. This is not due to the failure or exhaustion of any of the mines, but to a cause which threatens serious results over a large section of India. The absence of seasonable rains this year has made water so scarce in the district that it has been impossible to operate the mills and cyanide plants to their full capacity, though there is plenty of ore, if it could be handled. The successful mines in the Kolar District have paid large dividends to their stockholders for several years past, and the companies are in position to pass through a poor year without trouble. Unless the rains set in very soon, they will have this experience.

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A BEGINNING has been made by the Canadian Mining Institute in carrying out the policy approved at the general meeting in Montreal last March, of establishing local branches. It is the intention to locate these branches in such a way that each shall cover one of the mining regions of the Dominion, and furnish a center for a group of mining districts. The two branches which have been successfully organized

thus far cover the iron and corundum districts of Eastern Ontario, and the asbestos, mica and copper mines of Quebec. Later it is proposed to establish other branches in Nova Scotia, in Western Ontario and in Quebec. It is believed that this plan will extend the influence of the Central Institute and attach to it many useful members who are now deterred by distance from attending the general meetings. The plan is a promising one and deserves at least a fair trial.

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THE STRIKE of the Alabama coal miners, which began on July 1, has no relation to that in the anthracite coal-fields, nor to the proposed sympathetic strike of Western bituminous coal miners. It is a purely local trouble, especially so since the Alabama miners are not included in the Western mining agreement, but have a contract of their own. Under this contract the rate paid for mining is based upon the price of pig iron, the maximum rate being 55 cents per ton. The reason for this is that a very large part of the coal mined in the State is used by the blast furnaces; and the plan has worked very well. Under it the miners have been receiving the maximum rate for over a year. The agreement ran out June 30, and for the new year the miners asked for several changes, their chief demands being an increase of 5 cents in the maximum; semi-monthly pay-days, and eight hours as a day's work. The operators were not willing to concede these demands, and no agreement was reached in conference, so the men ceased work at the end of the year. The strike is not likely to last, however, and it is believed that a compromise will be made and a new contract concluded in a few days. The stoppage of work, however, caused much inconvenience, as the mines generally were very busy and none of the furnaces had any considerable stocks of coal or coke on hand.

Several important mines in Alabama are worked by convicts, whose labor is leased by the companies from the State. These mines, of course, are not affected by the strike, but their output is not sufficient to meet current demands for fuel.

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MARKET CONDITIONS.

Iron and Steel.-While the usual midsummer rest is beginning to have some effect on the market, the furnaces and mills are very busy, as they have been all through the year. New business is less pressing, but deliveries on existing contracts leave no opportunity for rest, and production shows no change. Some of the Alabama blast furnaces are banked on account of the strike of the coal miners in that State. but it is probable that the trouble will be settled in a

Copper.—The copper market remains quiet. But little new business has been done, and quotations are almost nominal. While consumption continues large, manufacturers are still occupied by stocktaking and yearly settlements, and do not appear to be taking any interest in the market. This cannot continue very long, however, and the demand for metal will soon be apparent.

Other Metals.-Tin remains in good consumptive demand. Buyers are still taking only for current requirements, but these make up a good business.

Lead is quiet and unchanged, with only about the usual amount of business done.

Spelter continues strong and in good demand. The prices of ore in the Joplin market are still high, with no signs of a drop. The Joplin District has had its full share of prosperity this year, but the smelters are complaining.

The silver market has been quiet and rather dull. Nothing has been done towards the settlement of the Chinese indemnity question. Advices from India are not favorable, and it looks as if poor crops there may affect the demand for silver unfavorably.

Coal.—The Western coal market is in a somewhat better condition, so far as transportation is concerned. Coal is moving more freely, and receipts at leading points for consumption are very fair. The Lake trade is in about the same condition as last week, and shippers are getting hardly three-quarters of the coal they want.

The meeting of the United Mine Workers on July 17 continues to be the subject of general discussion in the trade. While many operators profess to have no apprehensions and do not believe that a general strike will be ordered, others fear that the convention may be carried away and commit the miners to action that may be regretted afterwards. At present the indications are against a strike; but it is, of course, impossible to predict the final action.

The seaboard bituminous trade continues in the same condition as last week. Prices are still high on account of the special demand. Some interruptions to traffic have been caused by storms and floods in Western Pennsylvania, but they are only local and

Beyond some rumors about starting mines, there is nothing new to report of the anthracite trade. The strike conditions are practically unchanged.

LABOR CONDITIONS IN THE TRANSVAAL MINES.

In our last issue we referred to the labor question as one of the most serious which the mining companies of the Transvaal will have to consider in the future. This impression is confirmed by the letter from our special correspondent, which is published on another page, and which gives a very fair idea of the difficulties which now exist. How much these will be intensified as mining operations are extended can readily be seen.

The normal supply of unskilled labor for the Transvaal is found, of course, in its large negro or Kaffir population. At first sight this would seem to be sufficient to meet all needs. So far as numbers are concerned this might be the case; but the Kaffir is not dependent on the mines alone for a living, nor has he the desire to accumulate money or to improve his condition which might make him a steady workman, if necessity did not. The Kaffir makes a good mine laborer, is fairly intelligent and obeys orders readily. His chief failing when at the mine, is a disposition to drink. But as a rule he does not come to the mines to stay; within reach is still the wide South African veldt where he can live with little or no labor. He labors in the mines only until he has money enough to buy two or three wives and a few cattle; and these will supply all his future needs. Sometimes he returns to the mines after an interval-more often he does not,

The measures which have been taken to secure the supply of negro labor for the mines are described by our correspondent. Possibly they are the best that could be devised under present circumstances; but they seem at this distance to be defective in certain points. The limitation of the wages to be paid is possible only with the class of labor dealt with; but even the negro has a certain amount of shrewdness, and too small a wage seems likely to keep away the

and enforced for the time being, but they will also have a tendency to keep men away.

In 1808, as we noted last week, there were 7,330,000 tons of ore handled, and in round numbers 89,000 Kaffirs were employed. If the output of ore is to be increased to 12,500,000 tons-as Mr. Hammond anticipates-there would be needed approximately 150,-000 negroes. To find these would be a difficult task; and a still harder one would be to keep up the number.

There is no doubt that when the war restrictions are fully removed, there will be a great influx of white men into the Transvaal. A large part of these will come in the expectation of better wages and better work than those of a common laborer; while a considerable number, probably, will be men who would be dear at any price. The mines cannot afford to pay for ordinary labor the wages which a white would expect in Africa, unless he were under pressure of extreme necessity. Moreover, a mixture of white and negro labor, if it were possible, would be anything but desirable. In fact, the white influx is likely to be more embarrassing to the mining companies than otherwise, even if it should operate to reduce the wages of skilled labor.

One solution is possible, which is suggested by our correspondent, and that is the adoption wherever possible of machines and labor-saving devices. Very little has been done in this way on the Witwatersrand heretofore, on account of the initial expense involved and the comparative cheapness of native labor. It is quite probable that a good deal will have to be done as operations are expanded. The solution of the labor question may be found, not in increasing the supply of men, but in reducing the number needed by the substitution of machinery for men.

THE EXPLOSION AT THE FERNIE COAL

One of the worst-if not the worst-mining accidents that ever happened in Canada occurred, as our readers will remember, at the Fernie Mine of the Crow's Nest Pass Coal Company on May 22 last. To recapitulate the facts briefly, Mine No. 2 of the company is on Coal Creek 5 miles from the town of Fernie, in British Columbia, employing about 400 men and having an output of nearly 1,000 tons a day. It works three shifts, two for coal-getting and one for repairs. The morning shift had safely finished work on May 22 and the afternoon shift, commencing at 3 o'clock, had continued until 7.30, when a tremendous blast came from the tunnel mouth of No. 2 and No. 3 mines, which are only 100 feet apart, sending out clouds of dust and debris, flinging timbers and coal across the creek, smashing the sides and roof of the surface store-rooms and blowing the roof off the fan-house. In addition, a column of dust rushed from the fan-house into the air to the height of 500 feet. There was no smoke and no flame. There were at this time in the two mines, which were connected, 152 men. The fan was saved by the blowing away of the roof, and, being unaffected, continued to revolve. Within a few minutes rescuers began to enter No. 3 tunnel and were able to assist 22 men, already in a death struggle with after-damp, to escape. These are all who were saved, for almost immediately the whole of the workings to the mouth of each tunnel were filled with after-damp and it was certain that every man in the mine was dead. From May 22 to date rescue work has continued. Only three or four bodies are still missing, and they, it is almost certain, lie buried beneath falls of rock in some of the roads.

The mines at Fernie were described very fully by our correspondent, Mr. William M. Brewer, in THE

men who are needed. Strict regulations can be made Engineering and Mining Journal of April 19, about a month before the accident. From that account it appears that, while the mines were at first opened and worked in a rather unsystematic way, under new management many improvements had been introduced, especially in the matter of ventilation. The quantity of air supplied by the fan emploved was estimated at 125,000 cubic feet per minute, which would seem to have been sufficient for the extent of the workings covered. The mine was considered a fiery one, so that the use of safety lamps exclusively was required, and the coal being soft, a great deal of dust was made in the workings. It was to the latter fact, so far as the testimony shows, that the explosion and its rapid spread throughout the workings, if not the accident itself, was largely due. In fact, it seems to have been conceded that it was a coal-dust rather than a gas explosion. Every effort was made by the company to combat this theory, which was laid down a few days after the accident by Mr. Wm. Blakemore, a former manager of the mine, in an expert report, but in the end the company's managers, the miners' committee and the Government experts confirmed the accuracy of his deductions, and the jury endorsed it in their findings.

> The investigation by the local coroner has now been completed, and the jury recently rendered the following verdict:

> "That we, the said jury, find the initial cause of the explosion being at a point in No. 2 Mine aforesaid, not clearly defined, and that said initial cause expanded from the said undefined point throughout the greater portion of No. 2 and No. 3 mines, coal dust being the conveying medium, and we find in consebeing the conveying medium, and we find in consequence that the inadequate method of watering and removing of the dust left the mine in such a condi-tion as to be dangerous, and thereby provided a medium whereby the initial cause was augmented and

That we, the said jury, recommend the Govern-

ment take such steps as to enforce:

"I. The installation of the most approved system of watering for allaying dust in coal mines;

"2. That a more thorough inspection be adopted

at these mines, throughout the old workings, and rooms contiguous to the air channel that are not being worked

"3. That the safest explosives and most approved safety lamps be hereafter used."

We have not yet received a full report of the testimony; but the abstracts indicate that while the company had provided for ventilation and taken certain precautions against gas, the coal-dust question had received little attention. Nothing had been done toward removing or watering the dust in the old workings, while only very slight and entirely inadequate attempts to water the newer part of the mine had been made. Indeed, no one seems to have considered that because the mine was a dry and dusty one any special precautions were needed. The jury's verdict also points at probable neglect of the condition of the old workings and the absence of careful inspection. The management of the Crow's Nest Pass Coal Company seems to be in general intelligent and progressive; but it failed in taking proper precautions against the chief danger threatening the mine, probably more from lack of experience than wilful neglect. The lesson it has received is a severe one, for the money loss to the company is said to be over \$500,000-to say nothing of the loss of life. It will probably be heeded in this case; and it is to be hoped that other colliery managers will also take

GERMAN IRON EXPORTS.-Exports of iron from Germany for the five months ending May 31 were, in metric tons:

Changes. 115,958 I. 71,567 I. 359,707

The increase in pig iron this year was largely in shipments to the United States.

MAKING PEAT BRIQUETTES BY ELECTRIC POWER.

The use of electric power in drying peat and manufacturing fuel briquettes is decidedly new. It is now carried out on a large scale at Stangfiorden, in Norway, where a large water-power is available for generating the electricity required. The works are described in a recent issue of the London Engineer:

The process in use at Stangfiorden differs from all earlier ones in the use of the electric current for carbonizing the dried peat in retorts of special design. It is the invention of P. Jebsen, of Dale, Norway, and the process is patented in Norway and in other countries. The process has been in actual operation at Stangfiorden since 1898, with favorable results. The plant at present installed deals with 100 metric tons of air-dried peat per day. The process yields a dense and compact mass after the heating in the retorts. The specific gravity of the carbonized fuel in the broken condition is about 0.30, and the theoretical calorific value about 7,250 thermal units. The fuel burns well and yields little soot and ash.

The power required for carrying out the Jebsen treatment at Stangfiorden is derived from five 80-kilowatt dynamos direct coupled to five turbines of equivalent—128 horsepower. The power generating installation was provided by Schuckert & Cie., of Nuremburg, Germany. The wet peat is brought to the factory direct from the bog by water, in lighters of about 100 tons capacity. The boats are discharged by aid of mechanical power, and the peat is submitted to the first drying and pressing operation. This is carried out in a 5 horsepower press which can turn out 2,500 pressed blocks of peat, each measuring 80 by 8 by 8 centemeters per hour. The average weight of dried peat in each of these blocks is 2 kilograms.

The briquettes of pressed and partially dried peat are next loaded into trolley shelf wagons specially designed for tunnel drying by an American company. Each wagon carries, when fully loaded, 140 of the wet briquettes arranged on 10 shelves. The trolley wagons are pushed, when loaded, into the cooler end of the drying tunnel. The air draft which passes through the tunnel is set in motion by fans electrically operated, and is heated by the waste gases from The air has a temperature of 90° to the reports. 100° C. at the top end of the tunnel where the wagons emerge, and one of 40° to 50° C. at the lower end where they enter. As the wagons pass up the tunnel, the peat is, therefore, submitted to a gradually increasing temperature. The drying plant at Stangfiorden comprises one hot air stove, three electric fans, two tunnels, and 102 shelf wagons; 100 tons of air-dried peat blocks can be produced per day. The wagons with their charges of dried peat are next taken on tram-rails direct into the retort house, and are emptied directly into the retorts.

The retorts are upright cylindrical vessels of iron, about 2 meters in height and 1 meter in diameter. Each retort has a removable cover, and a discharging hole below, and is in addition provided with gas exit pipes and a pressure gauge. The retorts are provided with spiral resistance coils of special construction, and the blocks of peat are built up in actual contact with these, until the retort is entirely filled with a pigeon-holed mass of peat, in the center of which the heating agent lies. The top cover of the retort is now clamped down, and the electric current connections were made. Losses by radiation are minimized by lining the retorts with asbestos. The peat yields three products when submitted to this electrical heating in closed retorts. The gaseous products pass away by openings in the retort cover, and after scrubbing are employed for heating the air used in the drying tunnels. The tarry liquid condensed in the gas pipes and in the scrubbers contains tar oils, ammonia and other compounds, and if the plant and technical skill are available, may be worked up for these products on the spot.

The peat fuel remaining in the retort after the carbonizing operation is completed is allowed to cool down to 130° C. before opening the retort, and is then discharged direct into wagons running beneath the retorts. The peat fuel produced at the Stang-

fiorden factory is shipped direct to Bergen, where it is said to meet with a ready sale. The average yield of 100 kilos. of the air-dried peat at Stangfiorden is as follows: Peat fuel, 33 per cent; peat tar, 4; tar water, 40; gaseous products, 23 per cent.

The by-products obtainable from the peat tar are gas-oil, creosote and paraffin; from the tar water they are methyl alcohol, sulphate of ammonia and acetate of lime.

It is said that negotiations are in progress for the introduction of the Jebsen process into Ireland, in connection with the development of one of the water-powers on the West Coast. Mr. B. Horsky, of Prague, Bohemia, is the European representative of the Jebsen process.

BAUXITE IN ITALY.

By G. AICHINO.

Until two years ago bauxite deposits were not known in Italy. They have been quoted as existing in Calabu, but it was a mistake in giving the name of locality of a specimen analyzed by H. Sainte Claire Deville. Deposits have recently been discovered in several parts of the central Apenine. The more important of them is, so far as known, at Lecce ne Marsi, on the slopes of Monte Turchio, the nearest railway station being Pescina, on the Roma-Sulmona line. This deposit is at least 250 acres in extent, and the ore is from 3 to 10 feet or more in thickness.

The bauxite of the Italian deposits is generally interbedded in a semi-crystalline or compact limestone of Urgonian (?) age. Sometimes (as, for instance, partially at Lecce ne Marsi) the ore is uncovered. Mr. Capetti, of the Geological Survey, who studied the geology of this region, speaks of the deposits as constituted by more or less extensive lenticular masses. They are considered by other geologists as forming true beds. I am not personally acquainted with the deposits.

The bauxite is a finely oolitic rock in which are disseminated abundant pisolites. It is more or less compact, sometimes earthy. Its color grades from brown red to reddish white.

I had the opportunity of analyzing some specimens of the ore of Lecce ne Marsi, all of the red variety. My analyses were made from a practical point of view. Prior to that Mr. Mattirolo had analyzed a specimen from another locality (Pietraroja), and this was the first published analysis of an Italian bauxite. The following are our results:

Al ² O ³	57.60	56.79	3 54.46	56.89	58.85
Fe ² O ³ Si O ²	2.70	26.20	30.63	25.98 4.06	18.62
Ci O ²	1.27	2.21	1.17	1.28	
Ca O Mg O	not det.	not det. not det.	not det.	not det.	7.91 0.30 0.37
Water at 110 Loss by ignit		11.95	11.78	12.17	32.40
Total	00.02	100.13	100.03	100.28	00.33

Nos. 1 to 4 are specimens of Lecce ne Marsi, analyzed by the writer; the analysis was made on the ore dried at 110° C.; No. 5 is of Pietraroja, analyzed by Mr. Mattirolo. All the analyses were made in the chemical laboratory of the Geological Survey.

It can be noted that this bauxite is very easily soluble in sulphuric acid diluted by an equal volume of water. All the iron is indicated as peroxide. A small portion of it is, very likely, present as protoxide.

Some of the deposits have been explored, but none of them is worked.

COAL CONSUMPTION IN RUSSIA.—The production and consumption of coal in Russia for two years past is given by *Glückauf* as below, in metric tons:

Production16,137,445 Imports 3,929,513	1902. 16,315,758 3,545,582	Changes. I. 178,313 D. 383,931
Total20,066,958 Exports13,497	19,861,340	D. 205,618 D. 2,162
Consumption20,053,461	19,850,005	D. 203,456

The consumption last year showed a decrease, which contrasts with rapid increases for several previous years; and which was due to the industrial depression prevailing through the year.

THE GOLD-BEARING IRON SANDS OF NEW ZEALAND.

The following official notice is published by the New Zealand Mines Record for May:

A bonus of £2,000 will be paid by the New Zealand Government to any person who, before January I, 1904, shall invent such appliance as will successfully save gold from black sands in New Zealand. The bonus will be paid on compliance with the following conditions:

I. The invention shall, in its main features, differ from all machinery and appliances at present in use for the saving of gold, whether coarse or fine.

2. It shall be readily transportable from place to place, and shall be capable of utilizing local water for all its requirements.

3. The invention must be capable of treating not less than 30 cubic yards an hour of black sand or any coarser material up to a diameter of 4 inches; and it must be capable of treating such material profitably where there is not more than a value, in gold, of 3 pence per cubic yard; not less than 80 per cent of the gold contained in the material to be recovered by the machine.

4. No bonus to be paid until the invention has been continuously worked for not less than six months, and it shall, during that period, have treated not less than 100,000 cubic yards of material, working three shifts a day.

5. The bonus will be paid on the certificate of an officer that not less than 20 persons other than the applicant for the bonus are successfully working the invention.

6. Any person who receives the bonus shall not be allowed to take out patent rights in New Zealand for his invention.

A NOVEL APPLICATION OF ELECTRIC-ITY .- The London Colliery Guardian says that at a colliery in the Dortmund District of Prussia it was required to dismount a horizontal arm of the pump rods; but this was found impossible, owing to the rusting of the bolts and cotters, while the part in question could not be cut through by hammer and chisel on account of the small space at disposal. It was therefore determined to effect the separation by means of the electric arc. The energy employed was obtained from a continuous-current dynamo, generating 320 amperes at 110 volts, which served for lighting, the negative pole being put in connection with the pump rod, and the positive with a carbon of 20 millimeters diameter, held in a well-insulated gas pipe. The latter was fitted with a rest, so that the carbon might be guided by hand; and, for preventing danger from fire, a bucket filled with sand was placed under the spot where the melting was to be effected, while a small hand-pump was also held in readiness. For protecting the men's eyes from the bright light, red and green glasses were provided, to be held in the hand. The work was carried through with a current of 320 amperes at 60 to 70 volts, the carbon point being held from 40 to 50 millimeters away from the point to be melted in such a manner that a vertical slot of 20 to 30 millimeters was formed, and then gradually deepened. The guiding of the carbon, which became more difficult as the depth increased, had to be effected in the upward direction, so that the molten iron might fall in drops. The work was performed by 6 men, who relieved one another every hour or half hour, in about 12 hours altogether, including a few interruptions. No inconvenience was experienced by the men during the operation; but afterwards all of them felt more or less severe pains in the face and hands, while those who did not always use the glasses also suffered in their eyes. The pains, however, lasted only a short time.

CYANIDE PLANTS IN NEW ZEALAND.—A recent issue of the New Zealand Mines Record gives a list of 26 cyanide plants existing at mines in New Zealand. Of these 25 are now in operation, only one being idle.

A NEW TREATMENT OF THE SLIME PROBLEM IN CYANIDING TALCOSE ORES.

BY MORRILL D. STACKPOLE

The installment of the 300-ton mill at Sunshine, Utah, which is now complete, is one of unusual interest, for it promises to be a simple but effective treatment of the slime problem.

Several years ago an ordinary leaching plant was erected, but on account of the presence of slimes and other difficulties, its operation was unsuccessful and the mine was shut down until taken hold of by George Moore, the patentee of the plant now being installed.

The ore to be treated is a mixture of talc and clay, with a small amount of limestone and chert. The ore when crushed to a quarter mesh contains 60 per cent slimes. This makes it impervious to solutions, and were it possible to get the solution to the innermost part of the ore, it would be impossible by ordinary methods of leaching and washing to replace it, no matter how shallow the tanks used. The method of introducing the solution at the bottom and decanting leaves these difficulties unsolved. Any metallurgist can appreciate the obstinacy of these sticky masses of mud, which, no matter how treated, would take almost a prohibitive length of time to precolate. Although experiments show that over 90 per cent of the values in the clay is soluble the ordinary methods only permit an extraction of

The idea of separating the slimes and sands and treating each separately was adopted, and how to do this most satisfactorily has been the problem which the management thinks it has now solved. Numerous devices consisting of elevators, conveyors and tanks have been patented to accomplish this separation, but as a rule they have been either crude, partial, or too complicated to admit of consideration. The plan finally adopted is simply the adaptation to the cyanide process of a machine designed by Mr. Moore for the treatment of furnace products with acid in copper leaching works. It consists of a hollow truncated cone revolving on a horizontal axis. This cone is of a length suited to the requirements of the process. It is closed at both ends, except for a small hole at each end, the hole in the small end being larger than that in the larger end. Inside the machine at the large end are a series of buckets set around the circumference of the cone. The product to be treated is introduced in the small end and the acid is fed in the large end, the spent acid being discharged at the small end. A difficulty in dissolving metals with acids has always been experienced in the fact that during the action the acid is continually being weakened and the most difficultly soluble particles remaining undissolved to the last are not attacked by the weakened solution and can only be dissolved by separating the solution from the material and giving it another treatment with fresh acid. This involves not only time and expense, but also waste of acid, as the last few percentages of acid will not be neutralized by the difficultly soluble particles of metal, and even large amounts of free acid run off with the waste liquor. By the use of this apparatus material going into the machine full of easily soluble metal entirely neutralizes the acid in the outflowing liquor, which as the material advances with the difficulty soluble portions undissolved, it is brought into immediate contact with fresh acid, which completely dissolves the last traces of metal.

Practically the same problem is presented in the cyanide treatment of these ores, with the additional one of separating the slimes from the sands.

Having thus given a general description of the application of this machine to the treatment of copper products, I present herewith a detailed description of the method to be employed at the Sunshine Mill.

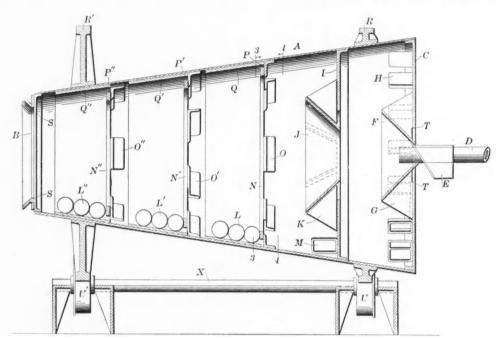
The ore crushed to a quarter mesh is delivered to the cone separator at the top of the leaching room. This separator is 10 feet long, 6 feet in diameter at one end, and 3 feet at the other, revolving on trunnions. In the center of the large end is a circular opening I foot in diameter, and at the opposite end

a corresponding opening 2 feet-in diameter. The interior of the cone is fitted with three rings projecting from its circumference; between these rings are placed a number of iron balls which prevent the slimes from attaching to and piling up on the sides or forming in balls. Two feet from the large end is a partition arranged similarly to the large end itself. The ore is introduced through the larger hole in the small end and passes through a bath of cyanide solution to the larger end of the machine, where a series of buckets pick up the sands free from slimes, taking them to the top of the cone, where they are inverted by the rotation of the cone and discharged on to a conical apron which conducts them out of the machine. In the meantime a standard cyanide solution is introduced through the pipe in the center of the conical apron at the large end of the cone. So we have the ore continually fed into the large opening, working its way by gravity to the opposite end, and being discharged. At the same time the cyanide solution is continuously fed into the large end and flows out of the small end,

The slimes are then pumped into pressure tanks and are forced by compressed air through the filter presses. Four filter presses are used. Each press makes thirty cakes 3 feet square and 3 inches thick, in all from 3 to $3\frac{1}{2}$ tons of slimes containing 15 to 20 per cent moisture.

The liquor runs from the press with the solution through percolating tanks to the extractor boxes. The cakes are washed and blown as dry as possible. The washing is effected by forcing with a small compressor from a closed cylinder a measured amount of water sufficient to displace the cyanide solution retained, so that the amount of solution always remains constant. The filter presses are worked in pairs. There are two filling and washing while the other two are being discharged. Two men attend to opening and discharging, while a third operates the pumps and valves for filtering and washing. The dry cakes are discharged from the press, dropped into cars below and conveyed to the dumps.

The coarse material after leaving the separator flows down inclined throughs into the percolation



MOORE CYANIDING PROCESS FOR TALCOSE ORES.

carrying all of the slimes with it. The discharge in the small end being larger than that in the large end, and the separator being horizontal, makes the lowest point of overflow always at the small end, thus causing a continuous flow in that direction. So the ore and the solution with slimes are continuously moving in opposite directions, and the hard sands entirely freed from slimes are continuously discharged from one end of the machine, and all the slimes and all deleterious soluble salts pass with the liquor out at the other end. (In the presence of a large amount of soluble cyanides water can be used instead of cyanide solution.) At the same time all particles of ore have by agitation come thoroughly into contact with the solution with thorough aeration. In fact, by making the separator sufficiently long, practically all of the gold can be dissolved from the slimes before leaving the machine.

The slimes and sands having been separated, we will follow now the course of the slimes. These flow with the solution down inclined troughs into agitation tanks below. The tanks are three in number, 10 feet in diameter and 13 feet high, arranged for three operations of one hour each. While one tank is filling for an hour the second is being agitated and the third forced through the filter presses.

Agitation is accomplished by a centrifugal sand pump which draws slimes and solutions out at the bottom of the agitation tanks and throws it through a 4-inch column into the top of a tank again, so that in one hour's operation the total bulk of slimes has been drawn out and thrown back several times and at the same time has received complete aeration.

tanks. Four of these are placed in a square, the separator being above the square, thus discharging with equal facility into each tank. The tanks are 19 feet in diameter and 13 feet high, each tank receiving material from the separator for 24 hours. This allows 72 hours for percolation, less the time employed in emptying the tanks. They can easily be discharged on account of their height, which is only limited by the height of the mill, as the coarse granular composition allows percolation to any height.

The gold in this ore passes rapidly into solution, being dependent only on facility for rapid contact. In case of slimes where contact is immediate, the gold goes into solution in a few minutes. By crushing the harder particles, fine extraction from them can be completed in a few hours.

The following experiments show results obtained from the Sunshine ore by crushing to various degrees of fineness through the different methods of leach.

Treatment of Cvanides.

			o Junio		
Assay heads.	Tailings.				Mesh.
\$9.10	\$0.50	94-5	0.2%	48 hrs.	10
9.10	0.40	95.6	0.2%	24 hrs.	10
9.10	0.80	91.3	0.2%	36 hrs.	10
5.20	0.10	86.5	0.2%		3/4
5.20	1.20	77	0.2%		1/4 1/4 1/4
5.20	1.00		0.2%	36 hrs.	3/4
12.80	1.60	87.5	0.1%	24 hrs.	
12.80	0.80	93.7	0.1%	48 hrs.	3/4
12.80	2.60				3/4
12.80	1.80				74 1/4 1/4 1/4
9.20	0.60	93.6			10
9.20	0.40	95.6			IO
9.20	0.40	95.6			10
9.20	0.80	91.3	0.1%	48 hrs.	10
	heads. \$9.10 9.10 9.10 5.20 5.20 5.20 12.80 12.80 12.80 9.20 9.20	Assay heads. Tailings. \$9.10 \$0.50 9.10 0.40 9.10 0.80 5.20 1.20 5.20 1.00 12.80 1.60 12.80 2.60 12.80 2.60 12.80 0.60 9.20 0.40	Assay heads. Tailings. Extractions \$9.10	Assay heads. Tailings. Per ct. Stgh. of Extraction. solution. \$9.10 \$0.50 \$94.5 0.2% 9.10 0.40 95.6 0.2% 95.6 0.2% 95.20 0.10 86.5 0.2% 5.20 1.20 77 0.2% 5.20 1.20 77 0.2% 12.80 1.60 87.5 0.1% 12.80 2.60 80 0.1% 12.80 1.80 86.5 0.1% 9.20 0.40 95.6 0.1% 9.20 0.40 95.6 0.1% 9.20 0.40 95.6 0.1% 9.20 0.40 95.6 0.1%	heads. Tailings. Extraction. solution. contact. \$9.10 \$0.50 94.5 0.2% 48 hrs. 9.10 0.40 95.6 0.2% 24 hrs. 9.10 0.80 91.3 0.2% 36 hrs. 5.20 0.10 86.5 0.2% 48 hrs. 5.20 1.20 77 0.2% 24 hrs. 5.20 1.00 80.8 0.2% 36 hrs. 12.80 1.60 87.5 0.1% 24 hrs. 12.80 0.80 93.7 0.1% 48 hrs. 12.80 1.80 80 0.1% 4 hrs. 9.20 0.60 93.6 0.1% 4 hrs. 9.20 0.40 95.6 0.1% 8 hrs. 9.20 0.40 95.6 0.1% 24 hrs.

1. Slimes were treated for one hour with 0.1 per

extraction 98.7 per cent.

2. Slimes were treated for one hour with 0.2 per cent. solution; heads showed \$8, tailings 20 cents; an extraction of 971/2 per cent.

The accompanying drawing shows the construction of the Moore separator.

ORE SHIPPING DOCKS ON THE LAKES .-The Cleveland Marine Journal, speaking of the ore docks at the Lake Superior ports and at Escanaba, gives a list of 23 docks, and says: "These docks vary greatly in height, particularly in height from water to bottom of pocket. The constant increase in depth of water in the channels connecting the lakes, the like increase in the depth of ships for ore traffic, have necessitated the changing of dock structures and an entire revision in former models. Old No. 3 dock of the Duluth, South Shore & Atlantic road at Marquette is the most notable example of antiquated construction, with a height of 23 feet to pocket, and 14-foot pockets. It is not now in commission. The 'Soo' road's dock at Gladstone is the lowest in use, less than 27 feet to pockets and but 47 feet to the deck. This dock can not handle the type of ore-carrying vessels that has come into vogue in the past eight or nine years. From it to the dock of the Great Northern at the head of Lake Superior, 40 feet to the bottom of pockets and 73 feet in extreme height to deck, marks a notable revolution in lake shipping interests.

"These various docks show an aggregate storage capacity of 865,046 gross tons of ore at one time, and have an aggregate shipping capacity for about 26,000,000 tons in a customary lake season. To them should be added the Algoma Central Railway Company's dock at Michipicoten, Canada, which, though it has no storage capacity, is able to ship from 600,-000 to 800,000 tons in a season, depending upon railroad service.'

BRITISH IRON AND STEEL EXPORTS .-Exports of iron and steel from Great Britain for the five months ending May 31 are valued by the Board of Trade returns as follows:

Iron and steel £10,354, Machinery 7,441, New ships 4,554	528 £11,147,128 I. £792,600 527 7,480,915 I. 39,288
Totals £22,350	

The total value of mining machinery exported this year was £227,722, against £232,201 for the corresponding period in 1901. Exports to South Africa (included in the total above) showed a large increase, being valued at £85,092, against £44,763 last

GERMAN IRON PRODUCTION.—The output of the German blast furnaces in April is reported by the Iron and Steel Union at 672,912 metric tons of pig iron, which is 8,437 tons less than in March, but 20,968 tons more than in April, 1901. For the four months ending April 30 the production of pig iron was in metric tons:

Foundry iron	1902. 528,633 403,140 122,628 1,553,882	Changes. I. 14,712 D. 102,428 D. 35,981 I. 88,021
Thomas (basic) pig1,405,601	1,553,662	1. 00,021
Totals2,643,959	2,608,283	D. 35,676

The production is at present showing some rerovery from the depression which marked the closing months of last year and the opening of the present

MANGANESE ORE IN THE CAUCASUS .-The deposits in the Tchiaturi District are being thoroughly explored, though recent examinations prove the area to be less productive than was at first anticipated. Consumption, on the other hand, has been impaired by the aggressive competition with manganese ore from Spain, Cuba and Brazil, especially in the United States markets. Consequently exports from Batum and Poti in 1901 amounted to only 279,963 tons, showing a heavy falling off as compared with the previous year.

cent solution; heads showed \$8, tailings 10 cents; THE U. S. GEOLOGICAL SURVEY IN ITS RELA-TION TO THE PRACTICAL MINER.

By S. F. EMMONS.

The value of Mr. Rickard's criticisms upon the work of the Survey in its relations to mining geology, as published in The Engineering and Mining Jour-NAL last week, depends very much on the point of view. His is that of the Western miner to whose energy and enterprise the immense and rapid development of our mineral wealth, as we are all willing to admit, is mainly due. From that point of view he is perhaps justified in saying that timeliness is the most essential element of a geological report, and that when a report is delayed beyond the point of practical utility to the miner in the special district treated, it fails to accomplish what was the chief reason for its preparation. That is, however, not the point of view of those who originally planned and have since had the direction of the mining work of the Geological Survey, and I have reason to believe that it does not correctly represent the views of some of the more broad minded and intelligent of our miners.

There are, of course, several different methods upon which this work might be carried on, and, among these, that was chosen which it was thought would accomplish results of most permanent value to the mining community as a whole.

The fundamental principle of the method of work adopted has been that its primary object is to endeavor to determine the general laws which govern the formation of ore deposits, the immediate aid that may be derived by any mine owner or group of mine owners in working their private property being of secondary consideration, though, of course, a result to be aimed at. Until these general laws are determined any attempt at prediction in any individual case is worse than useless; but their determination requires the most careful consideration and weighing of results. The time occupied in the actual field work of the survey of a mining district forms as a rule a very small proportion of the total involved in the preparation of a report. The rock and ore specimens gathered must be subjected to careful, detailed, chemical and microscopical examinations, the maps of underground workings must be reduced to a common scale and correlated accurately together, before the piecing together of the underground rock structure can be begun, and this is only a preliminary, but a very necessary one, to such deductions as may lead to the formulation of general

It must be borne in mind that what we designate our mining geology is only a very small part of the work of the Geological Survey, which was organized for the purpose of making a geological map of the three million square miles which form the original area of the United States and as a preliminary work has found it necessary to conduct a topographical survey of that area. To this area has since been added that of Alaska, and our insular possessions will doubtless be included in the near future,

Our government has been more generous in its pecuniary endowment of geological work than that of any other nation, but in spite of this generosity the zeal and energy of those engaged in gathering material and preparing reports is constantly outstripping the facilities provided for engraving and printing them, so that delays on this score are likely to increase rather than decrease as time goes on.

In carrying out the principle outlined above as governing the mining work of the Survey, inasmuch as it has manifestly been impossible to study all mining districts at once, those have been first chosen in which the extent of underground workings in actual operation and the peculiarities of geological structure promised to make us most intimately acquainted with all the varied phenomena of ore deposits, and hence to yield the most important scientific results. That these results should prove of immediate practical importance to those engaged in working the particular mines examined, while a most desirable object was considered of relatively secondary

importance and one to the accomplishment of which no jot of scientific accuracy should be sacrificed.

When mines have been opened to such a depth as to prove the most remunerative objects of study from a scientific point of view, they are likely to be dangerously near the zenith of their production, and the report on them, when it appears, may, as Mr. Rickard expresses it, be in the nature of an obituary to the owner of those particular mines. In the case of Silver Cliff and Ten Mile, the most important mines had been closed down before the original field study of the district was completed, and the waiting till their reopening should render an examination possible caused a delay of many years in the publication of the reports; for we are unable to draw any useful deductions from mines that are inaccessible, and do not feel justified in accepting the observations of another unless verified, in part at any rate, by our personal examinations.

In the case of Rico, the work was done as part of a general survey of the whole San Juan region, which has for some time been carried on under the direction of Mr. Cross. Until the extremely complicated areal geology of the surrounding mountains had been unraveled, it was useless to attempt to make a fundamental study of the ore deposits. It is to be regretted that by the time this was accomplished many of the mine workings were more or less inaccessible. But where only a handful of geologists are available to carry on such work, it is manifestly impossible for the Survey to have representatives at every mining district during the time of its maximum development.

It is not true, however, as Mr. Rickard seems to assume, that the reports that have appeared too late to be of use in the practical development of the district of which they treat, have failed of their purpose. Those of which he speaks most slightingly have been the most fruitful in establishing general principles, which are applicable to similar deposits the world over. This may not appear evident to the busy miner whose all-absorbing interest is to get the most out of his own particular mine in the shortest possible time. From our point of view, however, it is to the mining engineer rather than to the government geologist that he should look for aid. We stand between nature and the mining engineer, and our duty is to furnish him with the general laws that he is to apply intelligently to individual mines or deposits. If our work is unduly hurried, we may not be able to arrive at any general deductions, or those we think to arrive at may prove false, and then be worse than useless.

I am quite agreed with Mr. Rickard as to the importance of mutual co-operation between the mining engineer and the government geologist. More than fifteen years ago I urged upon the members of the American Institute of Mining Engineers that those who are in charge of mines keep some record of the phenomena coming under their daily observation, and from time to time publish papers thereon, using very much the same arguments that Mr. Rickard does in his paper. Especially is it important for us to have access to the maps of underground workings, but unfortunately all mine owners do not as yet realize of how much actual money value to their property is the keeping up of accurate underground surveys, and where this is not done the record of abandoned drifts is almost irrevocably lost.

I fear, however, that it will be many years yet before the means at our disposal will enable us to detail geologists to keep a continuous record of underground phenomena in all important mining districts, and until that time arrives we must be dependent upon the good will and intelligent co-operation of the mine owner and mine superintendent.

IRON IN SWEDEN .- During the first three months of 1902, the production of pig iron in Sweden amounted to 123,300 tons, as against 146,200 tons in the first three months of 1901; 113 furnaces being in blast, as against 132. There were exported 8,400 tons of pig iron, as against 9,200 tons last year.

THE CANADIAN MINING INSTITUTE.

In accordance with the policy of the Institute, inaugurated at the last annual general meeting, a successful start has been made with the organization of district branches of the Institute. These have been formed in Eastern Ontaria with headquarters in the city of Kingston and in the Eastern Townships, with Sherbrooke as a center. Other branches will be formed later in British Columbia, at the Sault, at Rat Portage, in the Province of Nova Scotia, and at other points. The membership of the Institute, which now includes close upon 400 active members and nearly 100 student members, has been considerably augmented by the acquisition of the two new sections.

Eastern Ontario Branch.—The meeting at Kingston was well attended by local mining men, and considerable interest was taken in the proceedings. Dr. W. L. Goodwin, director of the School of Mining, occupied the chair. A motion to the effect that "The Eastern Ontaria Section of the Institute be now formed" was then put to the meeting and adopted. The following gentlemen handed in their names for nomination to membership subject to the approval of the Council: Dr. W. F. Coy, H. W. Richardson, Geo. Smith, John Donnolly, G. O. Grover, J. A. Madill, A. M. Chisholm, Fred A. Folger, jr., Joseph Francklyn, R. E. Kent, all of Kingston; David Williams, Port Arthur; A. H. Brown, Deloro; Fred. Foxton, Sydenham; Thos. Caldwell, Lanark.

The following committee of management was then elected: Dr. W. L. Goodwin, Kingston, chairman; P. Kirkegaard, Deloro; Prof. Carr-Harris, Kingston; Prof. S. F. Fitzpatrick, Kingston; John Donnolly, Kingston, secretary.

Dr. Goodwin then read a paper on the subject of "The Occurrence of Mica in Eastern Ontario" which, after some interesting discussion, it was decided to take up again at the next meeting of the section.

The question of the establishment of the proposed new Department of Mines was also discussed and the local secretary was authorized to wire to the Minister of the Interior endorsing the proposals to establish such a department and urging its organization at the earliest possible opportunity.

At the meeting there was exhibited a very handsome series of phlogopite crystals from the Stoness-Kent Mine, and some very fine samples of molybdenite from the Chisholm Mine near Kingston.

The section adjourned to meet again at the call of the chairman.

Eastern Townships Branch.—The meeting of the Institute for the purpose of organizing a local Section to the Eastern Townships was held in Sherbrooke, Que. Mr. George R. Smith, general manager of the Bell's Asbestos Company, was called to the chair.

The chairman, in opening the meeting, referred to the influence and importance of the Institute, which had done much to promote the interests of the mining profession in Canada. A local branch of the Institute would give facilities for local mining men to meet together, and would doubtless be made an excellent medium for advancing the great mineral wealth that they knew existed in the Eastern Townships.

Mr. B. T. Bell, secretary of the Institute, explained that the main idea the council had in organizing these branches was to give greater opportunities for local mining men to meet together than were afforded by the annual meetings of the Institute. By the formation of such a branch in Sherbrooke he thought much could be accomplished on behalf of the mines and mineral wealth of the district.

Mr. S. W. Jenckes, Sherbrooke, moved "That the Eastern Townships Branch of the Canadian Mining Institute be now formed." Mr. James R. Pearson, Danville, seconded the motion. The chairman put the motion, which was carried unanimously.

The following gentlemen handed in their names for election as members subject to the approval of Council: James R. Pearson, Danville; H. J. Williams and J. A. Dresser, Richmond; James R. Woodward, Wm. Farrell, James MacKinnon, W. S. Dresser, Sherbrooke; P. L. G. Mackenzie, Richmond.

The following committee of management was elected: George R. Smith, chairman; H. J. Williams, Thetford Mines; S. L. Spafford, Capelton; John Blue, Eustis; James R. Pearson, Danville; B. Bennett, Thetford Mines; James S. Mitchell, Sherbrooke; A. S. Johnson, Thetford Mines; R. T. Hopper, Montreal; J. Dresser, Richmond. Mr. James R. Woodward, Sherbrooke, was elected secretary pro tem.

Mr. C. C. Hansen, Montreal, read a very interesting paper on the subject of "Power Drills." Mr. F. Stacey Shirley read a paper on "Electric Drills," in which he described the new Gardner electric ma-

An abstract was then read of the paper on the "Copper Bearing Rocks of the Eastern Township," presented by Mr. J. A. Dresser at the annual meeting of the Institute last March. This was discussed by Messrs. Adams, Smith, Bell, Woodward, Farwell and Obalski. The opinion was generally expressed that the copper resources of Quebec were much more extensive than has generally been supposed, and that important developments are possible. At the close of the discussion a special committee was appointed to consider what action can be taken towards developing the copper resources of the Province, a report to be made at the next meeting. The committee consists of Messrs. George R. Smith, Wm. Farwell, J. S. Mitchell, S. W. Jenckes, J. A. Dresser, C. C. Colby, A. N. Thompson, John Bene, S. L. Spafford, A. N. Thompson and J. P. Woodward.

BISMUTH PRODUCTION IN 1901*

BY JOSEPH STRUTHERS, PH.D.

The production of bismuth ore in the United States in 1901 amounted to 318.6 short tons, as compared with 220 short tons in 1900. Colorado supplied the entire output, Lake County contributing 253.6 tons, carrying from 4 to 10 per cent bismuth, and Ouray County 65 tons, which varied in bismuth contents from 6 to 12 per cent. The ore averaged from I to 2 ounces gold and from 5 to 6 ounces silver per ton, for which the producers were paid. The price for the busmuth content varied from \$8 to \$11 per unit. The demand for metallic bismuth is limited, and producers in this country are little inclined to report the details of annual production and market conditions. As nearly as can be ascertained, the value of the 318.6 tons was \$25,488, less deductions for transportation and treatment charges, or an average of \$80 per ton. The ore was purchased by the Leadville Sampler, at Leadville; the State Ore Sampling Works, at Denver; or was shipped direct to Johnson, Matthey & Company, Limited, England.

The world's supply of metallic bismuth is controlled by the combined interests of Johnson, Matthey & Company, Limited, and the Government of Saxony, who regulate absolutely the production and the prices of the metal and its ores. It is stated that the supply of this metal greatly exceeds the demand, and that this condition has necessitated a combination of interests in order to maintain the price at a figure which would be remunerative to mine owners. The schedule of prices for ore is based on the market price of metal, and with the latter at \$1.25 a pound the following prices were paid on delivery at the smelting works, all deductions for treatment having been made: Ten per cent ore, \$150 per ton; 15 per cent ore, \$250 per ton; 20 per cent ore, \$350 per ton; 30 per cent ore, \$550 per ton; 40 per cent ore, \$750 per ton; 50 per cent ore, \$1,000 per ton.

The imports of bismuth into the United States in 1901 were 165,182 pounds, valued at \$239,061, against 180,433 pounds, valued at \$246,597, in 1900. In addition to this there was a small importation of bismuth in medicinal preparations.

The monthly average wholesale prices per pound for the metal, f. o. b works, during 1901 were: January to March, \$2.25; April to June, \$2.05; July and August, \$2.02½; September, \$1.64; October to December, \$1.50.

*Extract from Mineral Resources of the United States, 1901. United States Geological Survey.

The occurrence of bismuth is widespread, and it is found in both the combined and the free state in many of the Western States. The principal bismuth minerals occurring in Colorado are bismuth carbonate, which is found in Lake, Larimer, Boulder, and Chaffee counties; native bismuth, in Summit, Jefferson, Boulder, and Larimer counties; bismuth tellurate and telluride in Boulder and Ouray counties; and sulpho-bismuthite in Park, Custer, Ouray, Hinsdale, Clear Creek, La Plata, Boulder, San Juan and Lake counties.

CALIFORNA OIL WELLS.

[SPECIAL CORRESPONDENCE.]

The following shows the condition of the producing oil districts in California as they existed in May:

	ducing.	Shut in.	Drilling.
Coalinga	30	.39	11
Santa Maria	3	4	4
Midway	2	13	9
Sunset	14	64	S
McKittrick	27	39	7
Kern River	241	320	20
Summerland Newhall, Santa Paula and	245	••	• • •
Ventura		24	15
Los Angeles	972		16
Fullerton and Brea Canyon	55	10	26
Whittier	64	* *	18
Puente	35	• •	4
Totals	,962	513	138

The approximate daily yield for April was 36,000 barrels. The State has now 1,962 producing wells and 513 capped and 138 drilling wells. The stocks on hand May 1 amounted to 2,780,000 barrels.

The Southern Pacific Railroal Company let contracts lately for eight new oil-storage tanks. Of the new tanks two will be placed in San Francisco, each of 55,000 barrels capacity. Others will be distributed as follows: Tracy, 55,000 barrels; Port Costa, 55,000; Alameda Point, 55,000; South Vallejo, 30,000; Roseville Junction, 20,000, and Sacramento, 30,000. The company will also distribute smaller tanks along its line. The company has ordered 250 new oil-tank cars, with a capacity of 13,000 gallons each.

AN IRON COMBINATION IN RUSSIA.-The London Engineer says: "Trusts as such have found but little favor so far in the eyes of the authorities in Russia. Nevertheless, 16 South Russian ironmasters wish to form themselves into a syndicate under the modest title of the Leading Company for Trade in Metallurgical Products. These ironmasters represent a total yearly output of 745,150 tons of various sorts of iron goods, and of 300,000 tons of cast iron. But there are two works, the Drushkoff and Novorossiisk, which have refused to join the syndicate. Their output is 166,111 tons of various kinds of iron work and 63,620 tons of cast iron, and this represents nearly 25 per cent of the total output of the firms forming the syndicate. Thus the refusal of the two firms mentioned to join the proposed syndicate has delayed its formation. Still, the 16 ironmasters forming the syndicate have not abandoned all hope of being able to win over to their side the two outstanding firms at a final conference. It is said that the chief cause of the refusal of these two ironmasters to join the syndicate has been removed, and that their refusal was based upon a disinclination to break off their relations with their old customers. In any case, M. de Witte, the Minister of Finance, will have the last word in the matter, for individual effort and private enterprise in Russia are dependent still upon the approval of the Czar's Ministers."

SALT LAKES AS HEAT ACCUMULATORS.—Recent experiments made by Alexander Kaleczinski at the salt lakes near Szovata in Transylvania, show that the sun's heat absorbed by the brine in the lakes is largely retained. These lakes are at elevation of 1,600 feet above the sea, and have an average depth of 30 feet. While the surface temperature varied with that of the atmosphere, the salt water was found to be much warmer from 4 feet below the surface down. At a depth of 5 feet the salt water was 150° F. in September, and went down to a minimum of 80° F. in April.

LABOR CONDITIONS IN JOHANNESBURG. By T. Lane Carter.

After so great an event as the declaration of peace, a letter from this part of the world might prove of interest to the Journal's readers. For many days past, about the only topic of conversation on the mines, has been the probabilities of the Boers giving up the prolonged struggle. When the news was given out from the principal churches last Sunday night, there was a profound sigh of relief, even from those who were Boer partisans, that at last the day of peace had dawned. But the signing of parchment, the declaration of peace, does not settle the great difficulties that this country will soon have to face. The local press, as usual, over optimistic, banishes all the problems and declaims this to be "the grandest, richest, best land God's sun ever shone upon, with a future more glorious than ever a nation experienced, since the morning stars sang together," etc. In spite of this declaration, our troubles are not over, nor will they be for a long time to come.

Let us first speak of labor, as that is one of the most pressing problems of all. The kaffirs, known to the mining people here as "boys," have in the past been the rough laborers of the mining industry. Under the new regime, an all powerful organization, known as the Witwatersrand Native Association, has been formed to recruit for natives. All the mines contribute to the association, which obtains the native labor. When the kaffirs arrive, they have no choice as to which mine they are to work on, but are apportioned to the next mines on the list. There is a fixed scale of wages for the "boys," and no mine manager is allowed to give a kaffir more than the schedule wage, under a very heavy penalty. The wages agreed upon is certainly small compared to that in force in 1896, for now I shilling a day is the average pay, while in 1896 it was over 2 shillings per day.

The Native Labor Association has many critics, who predict that before the "boys" can be persuaded to come back in thousands, more money must be offered. They say that the present pay is too small and poor judgment has been shown in the distribution of the kaffir pay. For instance, an air drill runner's boy, who after some months becomes fairly expert, receives the same pay as a raw kaffir just from his home. It is believed to be a poor policy to place all the boys on the same footing. Some say that if the pay for efficient kaffirs was £2 5s. per month, so that the boys, who very much dislike to break into gold sovereigns, could put aside the two gold coins and spend the 5 shillings, there would be less discontent

When a gang of kaffirs comes to Johannesburg they are generally signed on for three to six months. I am sorry to say that a very large per cent return to their homes as soon as the time is up. The pessimists declare that these boys go back to their homes dissatisfied with the wage, and warn their brethren to stay clear of Johannesburg, where the wage is no higher than it is nearer home, and if in the future it is decided to raise the wage to over $\pounds 2$, it is freely predicted that difficulty will be experienced in getting the kaffirs to believe the statements.

Of course the rate of pay in no way affects the town people. There is just now an enormous demand and a very limited supply of kaffir labor in the city. In consequence the rate of pay has gone up a great deal, kaffirs receiving from £1 to £1 10s. per week. The kaffirs on the mines are naturally attracted by this high wage, and when their time is up on the mines, many go to work in the city instead of returning to their kraals. So one can see what a desperate time we are having on the mines.

The cool headed members of the community declare that the city requires 25,000 kaffirs, and when this number is exceeded the rate of pay in Johannesburg will become practically the same as it is on the mines.

Against the opinion that the present scale of pay is too low, I might mention an interesting fact. The Native Labor Association agreed to procure 500 boys for the town council, in order to enable

it to carry on the absolutely necessary sanitary work of the city. Although 2s. 6d. per day was offered the kaffirs to do this sanitary work, all of them preferred working on the mines for I shilling a day. Possibly the objectionable character of the work prevented them from accepting the much higher rate of pay.

There has been some friction between the independent contractors and the Native Labor Association. A few contractors managed to get a few boys and paid them whatever they liked. This has been stopped, and when working for the mines they are only allowed to give the blacks the same wage that the mere kaffirs receive.

I fear it is impossible to introduce the idea of working the kaffirs on the contract system. First, one is only allowed to pay them a fixed wage, no matter how much they do; and then, it is undesirable that the kaffir earn too much money. He is very quickly satisfied, and as soon as he can save enough money to buy himself one or two wives he will leave the mines forever, and go home to spend the rest of his life in idleness. This is one of the reasons why his wage is placed so low.

At present kaffir labor is very scarce, and everything is done to use the natives we have to the best



KAFFIR "BOYS" WITH SAMPLE-BAGS.

advantage. For this reason balanced planes are being used in flat stopes, to get the ore out, numerous air and percussion drills are being used, and in fact labor is being saved wherever it is possible.

On account of the scarcity of native labor some mines are working entire departments with white labor alone. There are quite a number of discharged soldiers and destitute Boers who are made use of in this way. These laborers are paid 5s. to 7s. 6d. per day, with rations. White laborers in many parts of the world do rough labor satisfactorily, but out here there is the color distinction, and a white man, no matter how hard up he is, despises to do what he calls "nigger work."

The fact that on some of the mines white men are doing "nigger work" makes the skilled laborers ask many questions that are hard to answer. Just now skilled labor is being paid at the same rate as before the war, probably the highest rate in the world. Most of the miners are on contract, and if they work hard and intelligently they draw handsome checks every month. Most of the miners see that it is probable that wages will come down if whites do the rough work, but they all seem to think it will last for a year or so, when they hope to have enough money to clear out.

Although it is probable that the pay for rock drill men will fall, I believe that miners will always be the highest paid artisans on the Rand, on account of the high mortality amongst them. Hundreds and hundreds of machine men have gone home to England to die of "miner's complaint," caused by the irritating siliceous dust in the mines. Those

men who have been in the tunnels and raises where the dust is worst, have suffered most. The fact of the slow danger does not diminish the number of applicants for rock drills on account of the high pay. A good deal of discussion is going on in scientific circles here, regarding the prevention of this high mortality, by the use of aspirators, dust settlers, etc.

How many people from different parts of the world do you suppose have signified their desire of coming to Johannesburg? Will you credit it, that 1,000,000 people have expressed the hope of coming to this place? This number might seem large, but I fear it is not far from correct; and shows what we are to expect when the place is thrown open to the world. What is this vast army going to do? I have shown that the bulk of the labor of the mines has been done by kaffirs. On a mine employing 3,000boys, between 300 and 400 white men are at work. The demand for white men is determined by the number of kaffirs obtainable, and increases slowly. In fact, could natives be obtained in sufficient numbers, they would be used more and more in place of rock drills, etc., and the number of white men working on a mine would grow less and less.

What, then, is to happen if a huge mass of unskilled labor flocks to this place, as will in all probability come about? One or two things, it sems to me. With thousands of white men, out of work, the mines will be forced to take them on as rough laborers, and they will gradually supplant the kaffirs as the laborers on the mines, with a wage perhaps a shade higher than in other parts of the world; or, the whites who arrive with nothing to do, will be pushed out upon the land and outside districts, leaving the kaffirs to the mines.

I need hardly say that the workers now here devoutly trust that the incoming whites will go to the land, so that the high wages on the mines might continue. They have insight enough to see that it will be impossible for the mines to pay the skilled man £1 per day, and the unskilled from 5s. to 7s. 6d. They think the rates will fall to what exists in the Western mining camps in America, about \$1.75 for laborers and \$3 to \$3.50 for skilled men.

The workmen here are devoutly hoping that martial law might continue for a long time, so that it will be impossible to have a mad rush for Johannesburg.

The present feeling of labor can be appropriately described as "nervous." They fear every innovation and are continually jumping at the conclusion that wages are going to be reduced. A good illustration of this is a strike that went on for some time at the Crown Reef Mine. The management placed up a notice that the piece work system would be introduced in the shops, and all the men stopped working. No amount of reasoning could persuade them that it was not the management's intention to bring down wages, but rather to get from each manafair day's work for a fair day's pay, and prevent loafing. Being British workmen, they declare the system to be one of the worst things introduced from America, and are afraid of it.

I was told that a manager of one of the largest gold mines here, where the men are accustomed to receive so much per shift, did not introduce the contract system in the mine for fear of a strike. For that mine it would be something new, and the men would declare it was being introduced to bring down wages.

It will be unfortunate if any serious misunderstandings between employer and employee comeabout, for the past has been singularly free from strikes and from the curse of a dictatorial miners' union and work has always been carried on harmoniously. "The easiest managed labor in the world," I heard a distinguished engineer pronounce themthe other day.

Some people here are taking too sanguine a view of the future of the Rand gold mining industry, it seems to me. Frequently in the daily papers some one writes describing the enormous strata of gold-bearing reef being left in the mines, too poor for the present conditions, but sure to be worked:

some day. These enthusiasts cry out against the prediction made by the celebrated American mining engineer, John Hays Hammond, who has said, I believe, that the cream of the industry will be gone in 33 years. Mr. Hammond is well informed and his prediction is safer than that made by some people here of 100 years and over. These enthusiasts also go into ecstasy over the other minerals of the country, but I fear it will be a very long time before South Africa can compete with the world, except in gold and diamonds.

Johannesburg, S. A., June 5, 1902.

THE ESPERANZA MINE, EL ORO, MEXICO.

The total extent of the underground workings in the Esperanza Mine is somewhat over 12 kilometers. The andesitic overflow or capping is about 300 feet thick, and the first level is run in from the shaft towards the vein at a depth of 354 feet from the surface. Each succeeding level is run in at distances of 100 feet below the first, down to the seventh level.

The main vein averages about 140 feet in width and is 2,600 feet in length. The zones of millable ores running the length of the vein are three—two of 5 feet each and one of 20 feet. The average grade from top of vein to bottom of fifth level is \$15 gold and 5 ounces silver. The large bodies of low-grade ores, averaging \$4 gold and 2 ounces silver, are left standing. The cross-cut from the shaft on the seventh level is now within 25 feet of the vein, and diamond drill holes run in ahead have proved the width and value of the vein to be unaltered at this depth.

The new 4-compartment shaft, situated to the north and in the center of the property, has reached the fourth level, and preparations are being made to run it down to the seventh level at an early date. When the two shafts shall have been connected on this latter level, together with the connection with the Mexico shafts to the north, a nearly continuous orebody of 300 feet in height and 2,600 feet in length will be added to the present ore reserves of the mine. There has lately been installed an Ingersoll-Sergeant

the north shaft, together with two Lidgerwood hoists, one with 14 by 18-inch cylinders, and the other with 18 by 24-inch cylinders. At the old shaft a direct acting flat-rope hoist with cylinders 18 by 24 inches has long been in operation.

At the mill two boilers of the 5 by 18-inch class have just been added, making six in all, which furnish an abundance of power for everything. this camp, nothing is heard about it on the outside. A steady progress is being made in all the mines, however, and this has practically demonstrated the value and permanency of the veins in spite of the prognostications to the contrary of would-be experts, whose only claim to distinction is that they depreciate or "throw down" any mine they are sent to examine and report upon, so as to be on the safe side.



1,400 STATION, SPECULATOR MINE, BUTTE, MONTANA.

STOPE 50 FEET WIDE, 1,000 LEVEL, SPECULATOR MINE, BUTTE, MONTANA

compressor of 3,600 cubic feet free air capacity per minute. A 300-kilowatt Westinghouse dynamo, to run pumps, lights and rock breakers, has just been put in operation, together with a large duplex pump, to be run by the same dynamo. This latter is placed on the seventh level and has a capacity of 500 gallons per minute with a 1,000-foot lift.

Six return tubular boilers, 8 by 18 feet, will soon be running at the old shaft and four of the same kind, but 5 by 18 feet, have already been put in at

The 120-stamp mill is running without interruption, crushing about 6,500 metric tons per month through a 40-mesh screen. The Sirio Mine, which was closed down last year, is reported to have been acquired by the Esperanza company, with the view of obtaining right to the numerous springs situated on that property. In effect, a pump has already been installed and a 4-inch pipe line laid over to the Esperanza, which is thus insured against a water famine.

As there is a complete absence of any "boom" in

UNDERGROUND IN THE SPECULATOR MINE AT BUTTE.

In our issue of June 21, page 862, we published a description of the Speculator Mine, one of the important independent copper mines in the Butte District in Montana. We have received two interesting photographs taken underground in this mine, which came too late for use with the article referred to, but are given herewith. The first view was taken on the 1,400-foot level, at present the deepest in the mine. It shows the station at the foot of the shaft. The second shows a stope 50 feet wide, on the 1,000-foot level. This photograph illustrates the system of timbering in use in the mine. Both are excellent specimens of underground photography.

MONTANA METAL PRODUCTION.

The report prepared for the Director of the Mint by the Assay Office at Helena gives the production of metals in Montana for the calendar year as fol-

	1900.	1901.	Changes.
Gold, ounces	229,114	232,331	I. 3,217
Silver,ounces	14,294,835	14,180,866	D. 113,969
Copper, pounds	245,998,365	228,031,503	D. 17,966,862
Lead, pounds.	16,044,751	11,504,892	D. 4,539,859

The decrease in the output of copper and silver was wholly in the Butte District. Outside of that district there was an increase in all the metals, with the exception of lead.

NEW COAL DISCOVERY IN ENGLAND.—It is stated that there has been an important discovery of coal near Rowley village in Staffordshire, England, where excavations have been going on for some years. The seam which has been struck is reported to be about 480 feet from the surface. It is calculated that there will be about 15 acres of first-class coal within the mining estate. The discovery, which has been made only after an expenditure of nearly \$100,000, has given the greatest satisfaction throughout the district.

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MINES AND METALLURGY BUILDING AT THE ST. LOUIS EXPOSITION.

The Mines and Metallurgy building forms part of the east wing of the fan-like general ground plan of the Exposition, and is the last building on the south side of the esplanade leading to the group of Government buildings, which are to stand on a higher level. It will have a rich background of hillside foliage toward the southeast. Considered as part of the general scheme, it plays a very unimportant role in the spectacular display of the fair, and for this reason no attempt has been made to force attention to it by such means as towers, domes, or similar architectural devices.

The outside dimensions are 525 by 570 feet. The building is divided into eight oblong parts almost

The walls of the building are set back from the facade 18 or 20 feet, forming a covered loggia which surrounds the entire building. The facade of the Mines and Metallurgy Building may be likened to a screen bearing the same relation to this structure as do the colonnades of the adjoining buildings to their structures. The base of this screen consists of sculptured panels illustrating in bold relief mining and metallurgical operations in symbolical representations, the background to the sculptured figures being of a rough golden colored glass which will be illuminated at night and show the figures in silhouette. The figures are more than life size. As a building for housing exposition exhibits it was argued that it should express externally as much friendly dignity as would be compatible with its ephemeral character, charge of experienced and competent men. The chief of the department is Prof. J. A. Holmes, State Geologist, of North Carolina, a man thoroughly familiar with all branches of the mining industry and who has represented his State at all the recent expositions with exhibits that have attracted every visitor. Dr. W. S. Ward, of Denver, has been appointed field commissioner. Dr. Ward is also an experienced mining man, highly educated, and familiar with exposition work, having been associated with the Mining Departments of the World's Columbian Exposition, at Chicago, and the Universal Exposition at Paris. Dr. David T. Day, of the United States Geological Survey, who has been connected with every important exposition since and including the Centennial, is hororary chief of the department. Mr.



MINES AND METALLURGY BUILDING, ST. LOUIS EXPOSITION.

equal in area. The division is accomplished with glass covered and ventilated arcades, from 30 to 50 feet wide, which makes it possible that each one of the eight divisions shall receive abundant light from every side and that no skylights shall be necessary directly over any of the exhibition spaces. At the intersection of the two principal arcades through the main axis a colonnaded rotunda is shown with an appropriate monument.

The ground floor will furnish an exhibition space of about 265,000 square feet, and about 150,000 square feet may be gained by the introduction of galleries. A sub-division of the exhibit space into numerous alcoves for each classification is suggested.

but that it undoubtedly should be novel, striking, and full of life.

The style of architecture which it represents has been a source of much speculation. Mr. Theo. C. Link, the architect of the building, suggests the name of "Secession" architecture, which, he says, means architectural liberty and emancipation with a strong plea for individuality. It is a breaking away from conventionality in design; it is more an architecture of feeling than of formula.

It is proposed to make the mines and metallurgy department of the Louisiana Purchase Exposition the most complete exhibition of its kind ever attempted, and to this end the work has been placed in Victor C. Heikes, also an experienced exposition man and a mining engineer, is chief clerk. The plans are for making a thorough systematic and educational display of mining and metallurgical methods and products.

THE TRANS-CAUCASUS RAILROAD.—
Work has been begun by the Russian Government on
the extension of the Trans-Caucasus Railroad from
Erivan to the frontier of Persia. The terminus will
be at Julfa, on the Aras River. Part of the road
will pass through a country said to be rich in manganese ore and other minerals.

A HALF-YEAR IN THE LEADVILLE DISTRICT, hill, including 15 shafts already opened up. The pumps of the company operating through the El Paso

By J. O. HEIMBERGER.

A review of the work done in the mines of the Leadville District for the first half of 1902 shows a very encouraging condition of affairs. The production was about 360,000 tons of all classes of ore. During January and February, owing to a poor sulphide market, the tonnage fell to about 50,000 tons a month, but it has gradually climbed up again and is now averaging 70,000 tons.

The two most important mining events so far have been the forming of a company to drain the Fryer Hill Mines, which work is well under way, and the big consolidation of the A. M. W., the Mahala and the A. Y. and Minnie mines. The most important future certainties are the immediate increase of capacity of the Arkansas Valley Smelter, the proposed introduction of electric power, the completion of the Ohio and Colorado Smelter at Salida and the new zinc smelter at Pueblo.

In the downtown section, while some propositions are in a comatose state, the general results have been satisfactory and the future outlook is good. The Home is shipping 200 tons a day and the Sixth Street a heavy tonnage for the steel works. The Coronado is leased to a strong company that will develop it and make heavy shipments from the iron bodies exposed. The Caribou is shipping over 100 tons daily and can increase its manganese output as soon as the market opens. The Northern, the Seeley and a number of smaller propositions are also developing under lease, while the Valentine, recently reorganized, expects to be working in the near future. It is also expected that Mr. Higgins will resume sinking on his new Homer shaft near the Boulevard and the Cloud City Company announces that it will continue operations.

In the vicinity of Carbonate Hill and Graham Park much headway has been made. The A. M. W. sulphide shoot is shown to be of great size; the recent purchase by Eastern men of the entire combination including the Mahala and the A. Y. & Minnie means that the low grade sulphide bodies of the combination will be developed to an extent never before attempted by small operators. The Small Hopes people, in addition to having a good share of their territory operated by lessees, all of whom are shipping on a small scale a fair grade of ore, have conducted operations steadily through the R. A. M. and have shown their sulphide shoot to be of great extent in the lower contacts. Although they had no market for a long time they are now shipping again from the sulphide ore bodies. The Rialto people did not do much this year owing to differences among the stockholders and a lack of funds, and finally closed down entirely a few weeks ago; but an effort is being made to have the leases transferred and to have new people open up the extension of the ore shoot of the Greenback supposed to be in this ground. The Nubian and the P. O. S. have shipped a good deal of ore during the year, while the same combination has developed considerable territory on its Morocco shaft in the downtown section, but has it closed down awaiting the securing of a lease from the city. The Evalyn people got into the sulphides but are sinking to get under the ore bodies. The Greenback has proved its shoot of iron sulphides to be large, and recently sent a shaft down a further depth in order to be able to mine more advantageously; this work resulted in opening up an entirely new shoot in the ground, and shows the Greenback to be one of the greatest mines on the slope. The Midas is still shipping regularly 200 tons of fine iron ore a day and has not yet found it necessary to go below the first contact, while its iron shoot is opened up in all directions. The Arnold Leasing Company and a number of other companies are carrying on prospecting work with very favorable indi-

One of the greatest strides forward was made by the Fryer Hill section, where 60 days ago the Fryer Hill Mines Company launched its enterprise which covers 150 acres of the best located territory on the

hill, including 15 shafts already opened up. The pumps of the company operating through the El Paso claim are handling 1,200 gallons of water per minute and in 60 days the mines will be drained and ready for the active development laid out for both the upper and lower levels. Work in the upper contacts of a number of properties has already been set under way. In addition to this work there are still dozens of lessees operating on the iron bodies of this locality on different parts of the hill and a good tonnage comes from that locality.

There are a number of lessees working over on Rock Hill and some shipments are made; there is some talk of a combination being formed to put down a deeper shaft. On Iron Hill a large amount of excellent work is under way while a good tonnage is also being made. The Iron Silver Mining Company is shipping 200 to 250 tons a day from its Moyer workings and is also doing development and prospecting work on its Stevens ground. The Yak company and its tributary workings are producing about 200 tons a day, and an important fact is that the tunnel is to be pushed into the Ibex ground, thus opening up the gold belt at a greater depth than ever before attempted. Great bodies of zinciferous ores have been opened up in different parts of the Iron Hill section. The Iron Mine and the A. Y. & Minnie have shipped a large tonnage of this material. A new mill is just being completed at the A. Y. & Minnie which will be of great assistance to the new combination in conducting the work planned for this great property. The Nayr Mining Company has completed its shaft to the lower contacts, has opened up large bodies of low grade sulphides, and is now carrying ahead important prospecting work at the 700-foot level. The Cora, the Montgomery and a number of other claims are in operation, all seeking for the extension of the Iron Hill shoots.

On Breece Hill, in Big and Little Evans' gulches, on Little Ellen Hill and over the rest of the gold belt the first half of the year has seen progress in the way of development. While there have been no new strikes of any great extent, the new work has proved very satisfactory and systematic development has opened up larger ore bodies than ever. In the Resurrection shafts the great sulphide shoots are shown to be of enormous extent and the same can be said of the New Monarch workings; these people will soon have their smelter in operation at Salida and will then ship 200 to 250 tons daily from their ore bodies, which have been extensively developed during the past six months. The Salida and Fortune companies have both started for the extension of these shoots and while no work is now being done, it is likely that before the close of the year both of these properties will be working to open up the sulphide bodies. The recent forming of an Eastern company to operate the Valley combination also promises well for that large acreage which has lain idle for several years. The Ibex people have gone ahead developing and have been shipping about 6,000 tons a month, but this has recently been increased since the company has made its new contract with the smelter. An important and valuable piece of work will be the extension of the Yak Tunnel into the Ibex territory giving them an opportunity to cut the ore bodies at a depth never before attempted. The Diamond Company has put its shaft into lower contacts and is drifting for ore. The Pennsylvania Company has been shipping a steady tonnage of about 1,500 tons a month from its lowgrade siliceous bodies; while some prospecting work with the diamond drill has been carried on for the sulphides nothing has been located as yet in the lower contacts. The Ballard has done nothing but a little prospecting work since the first of the year; there are large bodies of low grade ore in sight but the work has been delayed by legal difficulties

The Gold Basin Mining Company, the La Belle Company, the Antelope Company, the Big Six lessees, the Vinnie lease, the Chippewa, the Lillian lessees and a number of other smaller companies have been mining and making some shipments, and all are carrying ahead important work, while the Ohio, the Forest City, the Banker, and others have announced

their intention of seeking further for the gold belt ore-shoots in their territory.

In the outlying localities there is more work under way and with better results than for years past. There are many properties scattered along the outskirts of the producing sections where something is being done. The most important is the work in Sugar Loaf on the Dinero, the Bartlett, the Fanchon and other neighboring propositions. In Empire and Iowa gulches, Eastern capitalists are carrying on extensive work. In St. Kevin, after years of idleness, some two dozen different lessees are operating. In Alicante, Lake Park, Weston Pass, Horseshoe, Homestake, Big and Little English gulches and other outside localities prospectors as well as leasers are doing good work and are in many instances meeting with success and adding to the known mineralized area of the Leadville District.

AMERICAN COAL IN SWITZERLAND.

The United States Consul at Aarau, Switzerland, reports that there are excellent opportunities for American coal in that country. Switzerland hitherto has been almost wholly dependent on Germany for her coal. During the last year the German mining companies formed a combine and raised the price 2.50 francs (48.2 cents) a ton. The Swiss manufacturers had to accept these conditions. An English firm profited by the situation and shipped coal up the Rhine to northern Switzerland. As the cost of the English coal was 1.50 francs (28.9 cents) per ton less than the German coal, considerable orders went to England, but these orders were badly executed.

In the meantime, the American Consuls in Switzerland sent reports to the United States upon the state of affairs, and a United States concern promptly seized the opportunity and offered coal at a cheaper price than either the English or the Germans. American agents appeared on the spot and solicited orders. In the French ports of Havre and Rouen, ground was bought and storehouses were erected. Agreements have been entered into with the French and Swiss railway companies to secure cheaper freight rates for the transport of coal through France.

The impression seems to prevail that Americancoal will in the near future take the place of the German and English coal in Switzerland.

PETROLEUM IN CENTRAL ASIA.—According to London Engineering, the petroleum deposits in Tergana, the most easterly of the Russian Provinces in Central Asia, are at present attracting considerable attention. Petroleum seems to exist in almost all parts of the province, and it is in many places found together with a black asphalt-like substance, which is called "kirr," and which is already being somewhat extensively exploited for asphalting purposes. The richest deposits appear to be in the Andishan District, along the borders of the river Malu-Su, and in the Margelan District. The former have recently been examined and a number of borings carried out. The latter, known as the Tschinison deposits, are situated some 16 miles from the town of Margelan, and about 12 miles from the railway station of Vannowskoja, on the Central Asian Railway. These deposits have already been worked, in days long gone by, by the Chinese, it is surmised, but when the Russians took possession of the province, the petroleum industry was revived in a primitive manner, although the yield was somewhat important. The matter was again dropped, from want of capital and want of transport, but the building of the Samarkand-Andishan Railway gave a fresh impetus to exploitation, and a company has been formed with a capital of 250,000 roubles. The oil-carrying layers are located at a considerable depth, probably about 1,000 feet. Preparatory work for the construction of a pipe to the Vannowskoja Railway has already been commenced, and the building of large tanks is under contemplation. petroleum is likely to find a ready sale for the Central-Asian and the Orenburg-Taschkent railways.

DRY CRUSHING OF ORE.

(CONTINUED FROM PAGE 9.)

One of the most interesting parts of Mr. Argall's paper is that in which he outlines the design of a plant capable of crushing 400 tons per 24 hours of ordinary quartzose ore to pass a 26-mesh screen (No. 26 wire) and estimates the cost of its operation. Such a plant is best arranged in duplicate, 200 tons per day making a convenient unit, which will be capable of independent operation. For coarse crushing and sampling, a 12 by 20-inch breaker, reducing to 1.7 inch size is provided, giving an easy capacity of 25 tons per hour with ordinary ore; in case the ore comes mostly in lumps of 12 inches or more, however, two breakers should be used in series with a screen between them. Where talcose and very wet ores are to be sampled in quantity, a drier should be provided, as it is often impossible to crush and sample such ores in their wet state, and in bad cases they should be dried before going to the breakers.

Following the breaker or breakers, a 36 inch by 16 inch roll, at 35 revolutions per minute, will give about 600 cubic feet per hour through a 0.75-inch screen. For sampling purposes, the product of the 36-inch roll is passed over a Vezin sampler, and 25 per cent taken out for the sample, say 120 cubic feet per hour, which should be deflected to a 26 by 15 inch roll to be crushed to 3 mesh 10 wire, 0.1083 inch, or, in round numbers, 0.20 inch. At this size about 6 per cent is ample for a correct sample, but, to be quite safe, one-tenth or 12 cubic feet per hour may be cut out; if the ore does not contain over 5 per cent moisture, the sample, 21/2 per cent of the original, can be passed directly to a fine grinder, reducing it to 10 mesh 18 wire, 0.0525 inches, and again cut to onetenth = 1.2 cubic feet per hour, or 0.2 per cent of the original volume; if damp, the sample is then dried and ground, then passed over a small Vezin sampler, or riffled, as found most desirable, being finally finished in the manner previously described.

The Vezin sampler with the necessary operating gear costs about \$100. It requires a fall of about 6 feet. It can be installed together with one set of rolls, a sample grinder and a riffle sampler for \$500 to \$750.

Such a sampling works should easily handle 200 tons in 10 hours, provided the lots are of 50 to 100 tons each. Time is always lost in cleaning up between two separate lots of ore, and must be allowed for. Two such units will take care of the sampling of 400 tons per day of 10 hours with comparative ease. It is best to do all the sampling in the daytime. The methods of weighing the ore and determining its moisture contents at the works of the Metallic Extraction Company, were as follows: The ore was usually weighed on railroad track scales with self-registering beams; when the beam is balanced, a soft paper card is slipped into a slot and the lever pulled down, stamping the gross weight on the card. The car number, lot number and date are then written on the card, which is filed away until the car returns unloaded, when the same operation is repeated for the tare. The weighmaster enters the weights in his book and sends the card to the settlement clerk, who keeps it until the lot is settled for. The card helps to settle many disputes as well as prevent errors in reading the beam. The moisture sample is taken from the rejected portion of the ore passing the cutters, say three times for each car, taking equal quantities and placing them in a can. When the last is taken, the can is shaken to mix the ore and I pound is then weighed up in the presence of the seller, placed in a tray and put in a steam-heated drying closet and kept there, locked up, usually for 24 hours, when it is weighed again in the presence of the seller. In the case of talcose ores, which are difficult to put through the crushers without a preliminary drying, the moisture sample is best taken from the car immediately after weighing.

Each unit of the fine crushing plant will comprise one dryer, three elevators and four sets of 26 by 15 inch rolls, with the necessary screens, etc. The rolls are arranged in series, a reducing from 0.75 to 0.25 inch, b from 0.25 to 0.1085 inch, c and d from 0.1085

to 0.02 inch. Roll a, at 65 revolutions per minute, will give a finished product of 222 cubic feet per hour, of which 60 cubic feet should pass a 0.1085-inch hole (5mesh screen) and will, therefore, go directly to rolls c and d, leaving 162 cubic feet per hour for roll b. Roll b, at 90 revolutions per minute, will give 160 cubic feet per hour through a 5-mesh screen. Of the material reduced to 5-mesh size, 60 + 160 = 220cubic feet per hour, 75 cubic feet will already be pulverized to 0.02-inch size, so that rolls c and d will have to take care of 220-75 = 145 cubic feet per hour. These rolls at 110 revolutions per minute, with 0.25-inch choke feed, will each finish 75 cubic feet per hour under ordinary working conditions. The capacity of the four sets of rolls, reducing from 0.75 to 0.02 inch, will be, therefore, 220 cubic feet per hour = 9.5 tons (reckoning 87 pounds per cubic foot), which will correspond to 200 tons in about 21 hours, or at any rate easily in 22 hours. The power required will be as follows: Coarse crushing and sampling, 35 indicated horse-power; fine crushing, 50; friction of engine and shafting, 20; total, 105 indicated horse-power. The coarse crushing and sampling mill require 70 indicated horse-power while running, and a power plant large enough to allow for that must be provided for each unit; this part of the plant will run only half time, however, which gives an average of 35 indicated horse-power per 24 hours. In crushing 200 tons of ore to 0.02inch size in 24 hours, the work of I indicated horsepower is $400,000 \div [24 \times 105] = 158.73$ pounds per hour. In the fine crushing alone it is $400,000 \div [24 \times 50] = 333$ pounds per hour. These data are from actual results in practice. In comparing the efficiency of crushing plants, it is obviously necessary to reckon all the power required; not merely that for the crushing machines themselves, but also for their accessories such as screens, elevators, etc. It will be observed that Mr. Argall's figures are based on the total power requirement. Mr. Argall is also precise in reducing his results to pounds per hour, which is a definite statement, whereas, the expression of tons per day is not. In the latter case the reader is left in doubt as to whether the ton is of 2,000, 2,204.6 or 2.240 pounds, while the day may be anything-8, 10, 12. 20 or 24 hours.

The cost of crushing 400 tons of ore per day to 0.02-inch size in such a two-unit plant will be as follows: Coarse crushing and sampling-Labor, \$0.04325; waste and lubricants, \$0.00620; brooms and brushes, \$0.00060; tools, \$0.00210; sundries, \$0.00060; total operating expense, \$0.05275 per ton. The maintenance will come to \$0.05420, divided as follows: Labor, \$0.0232; fittings, \$0.0006; nails, bolts and screws, \$0.0010; timber, \$0.0015; iron and steel, \$0.0017; belts and lacing, \$0.0041; castings (pulleys, gear, etc.), \$0.0002; brass and babbitt, \$0.0003; elevator buckets and bolts, \$0.0018; chain and sprockets. \$0.0014; conveyors, \$0.0022; roll shells, \$0.0020; crusher repairs, \$0.0114; clutches, \$0.0008; sundry items, \$0.002. The total cost of maintenance and operation, not including power and general expense, is, therefore, 10.605 cents per ton. The labor in operation per shift of 10 hours is as follows: One-half time of foreman, \$2.50; 2 men at breakers, \$4; 2 men at samplers and conveyors, \$4; head sampler, \$3; assistant sampler, \$2; roustabout, \$1.80; total, \$17.30; $$17.30 \div 400 = 0.04325 . It is assumed that the ore is delivered to the breakers.

Fine Crushing.—The operating expense per ton of ore is as follows: Labor, \$0.07625; lubricants and waste, \$0.01510; tools, brushes and brooms, \$0.01300; coal for drying, \$0.02140; total, \$0.12575. The cost of maintenance is as follows: Labor, \$0.0446; nails and screws, \$0.0005; lumber, \$0.0004; brick and fireclay, \$0.0015; iron and steel, \$0.0118; belts and lacing, \$0.0243; pulleys and gears (castings), \$0.0102; babbitt and brasses, \$0.0623; screen cloth and perforated sheets, \$0.0206; elevator buckets and bolts. \$0.0088; chains and sprockets, \$0.0021; conveyors, \$0.0017; roll shells, \$0.0181; clutches and couplings, \$0.0006; sundry fittings, \$0.0025; total, \$0.15000. The grand total is therefore \$0.12575 for operation plus \$0.15000 for maintenance, or \$0.27575. The crew of the fine crushing department per shift of 8

hours is one man at the feeders and dryers, \$2; one man at the 8 sets of rolls, \$2.50; one man oiling and sweeping, \$2; one man attending to screens, \$2; total per shift, \$8.50. Three shifts at \$8.50, together with the wages of foreman at \$5, come to \$30.50, and $$30.50 \div 400 = 7.625$ cents per ton.

The total cost is, therefore, summarized as follows: Coarse crushing and sampling, 10.695 cents per ton; fine crushing, 27.575 cents; power (estimating \$72 per indicated horse-power per annum, the engine being non-condensing), 10.500 cents; total, 48.77 cents, or, say 50 cents in round numbers. This does not include general expense (administration, insurance, taxes, etc.), or any deduction for amortization.

It is interesting to compare the above figures with the data communicated by Mr. N. F. White as to the results at Mount Morgan, where fine crushing is done both by means of rolls and by ball mills, the installation of the latter for this purpose being perhaps the most complete and extensive that has yet been made. The Mount Morgan ore, which is soft and friable, containing about 10 per cent of hard quartz, is treated by the chlorination process. The first plant installed comprised a Blake breaker, a dryer, and four sets of Krom rolls, together with the necessary screens, elevators, etc. The success of this plant led to the installation of another one, consisting of two units, each equipped with a Krom breaker and four sets of Krom rolls, arranged in series. The dimensions of the rolls and the distance of their faces apart were as follows: No. 1, 26 by 15 inches, 3/8 inch; No. 2, 26 by 15 inches, 3-16 inch; No. 3, 30 by 16 inch, 1-16 inch; No. 4, 30 by 16 inches, close together. The ore was crushed to pass a 20-mesh brass wire screen, data not given, but with apertures probably of about 0.025 inch. The cost of crushing per ton of ore was as follows:

Operation.	Mill No. 1.	Mill No. 2.
Wages	25. 6.40d.	28. 6.20d.
Stores	2.8od.	3.90d.
Firewood	IS. 2.50d.	28. 0.50d.
Cartage	2.30d.	
Water	0.57d.	0.52d.
Electric light	1.43d.	0.59d.
General expense	1.18d.	0.57d.
Total Maintenance.	4s. 5.18d.	5s. o.28d.
Wages	3.52d.	5.20d
Stores	10.67d.	10.80d
Timber	0.22d.	o. 18d
Mechanics' work	6.28d.	5.21d
Total	IS. 8.60d.	18. 0.30d
Grand total	6s. 1.87d.	6s. 9.67d.

In the new mill the rolls were driven at 112 revolutions per minute. The wear of the tire steel was. 0.108 pound per ton of ore crushed. The capacity was 125 tons per day, and 100 indicated horse-power was required. (It is not stated in this paper whether the tons meant are of 2,240, or 2,000 pounds, but presumably they are the former.) Mr. Argall computes that the work done at Mount Morgan, in crushing to 0.025-inch size, is 116.66 lb. per indicated horsepower hour, as compared with 243.6 pounds per indicated horse-power hour in the plant (of practically the same equipment as to number of machines), which he has outlined, crushing to 0.025 inch, and presents these figures as a comparison between the latest Colorado practice with modern rolls and the Mount Morgan experience with less efficient machines. This assumes of course that the Mount Morgan ore is of about the same weight per cubic foot of finished product and of about the same crushing quality as the Colorado (Cripple Creek) ore. We think, however, that the data are lacking, not merely as to the character of the ore, but also as to the details of the Mount Morgan practice, to justify this deduction of more than double duty per indicated horse-power, inasmuch as the Krom rolls, although now greatly improved upon by others, are, nevertheless, a high class of machine. It is obvious that Mr. Argall recognizes the deficiency in data as to the Mt. Morgan practice and makes his computations rather for the purpose of illustrating the high efficiency of modern American roll crushing than as an absolute comparison of types of rolls.

In a year's run with the 8-roll mill at Mount Morgan, during which 45,844 tons of ore were crushed, the average cost of operation and maintenance, not including electric light, water supply, breaking and drying, and presumably no general expense was as follows: Screens—steel and brass wirecloth, 2.62d.; flannel and calico, 0.02d.; belting and sundries, 0.86d.; total, 3.50d.; rolls—new tires, 2.01d.; repairs, 1.21d.; belting and sundries, 0.87d.; waste, 0.17d.; oil and kerosene, 0.46d.; tallow, 0.75d.; total, 5.47d.; elevators—buckets, belting, etc., 1.87d.; sundries, 0.27d.; total, 2.14d.; wages, 2s. 11.25d.; grand total, 3s. 10.36d. The labor per shift of 8 hours was as follows: Two men at breakers, 1 man at the two dryers, 2 men at 'the 8 rolls, 1 man at screens, elevators, etc.; 1 overseer, 1 spare man and one-third of the superintendent's time.

When the sulphide ore was opened at Mount Morgan it was found that the wear and tear on the rolls increased excessively in crushing the much harder ore, while the output of the plant was reduced. This led to the installation of a plant of Krupp ball mills, at first experimentally with four No. 4 machines. Although the ore was crushed in these to pass a 35-mesh screen, the cost per ton was very much less than in the roll plant. In a year's run the four mills put through 23,788 tons of ore, and the working time having been 313 days, the average per mill per day was 19 tons. Each mill required about 10 indicated The success of this plant led to the horse-power. installation of another and larger one, comprising 16 No. 5 mills, arranged in groups of four, each group having its own breaker, revolving dryer and the necessary elevators, etc. This plant is used for the treatment of the low-grade oxidized ore of the mine, the same which had previously been crushed in the roll plant.

The comparative cost of crushing oxidized ore at Mount Morgan with rolls and ball mills, reducing the ore in each case to 0.025 inch, based on one year's work, amounting to 45,844 tons for the rolls and 130,776 tons for the Krupp ball mills, was as follows:

8	Kr	om Rolls.		11 Mills (o. 5).
Running expenses.	S.	d.	S.	d.
Wages	2	6.20	I	0.034
Stores	0	3.90	0	2.766
Firewood	2	0.50	0	9.538
Coal			0	3.817
General expenses	. 0	0.57	0	0.223
Electric light	0	0.59	0	0.332
Water supply	0	0.52	o	0.068
Cartage			0	0.235
Inclined tram			0	1.317
Total running expense	5	0.28	2	6.330
Maintenance (Repairs)-				
Wages	0	5.20	0	3.325
Stores	0	10.800	0	10.493
Cartage			0	0.038
Mechanics' work	0	5.210	0	2.906
Timber	0	0.180	0	0.015
Total expense of maintenance	1	9.39	1	4-777
Grand totals	6	9.67	3	11.107

The crew of the roll plant comprised 8 1-3 men per shift, as previously stated. That of the ball-mill plant consisted of 4 men at the breakers, 2 men at the dryers, 3 men at the mills, I man and I boy in the engine room, and 2 men in the boiler room, besides I man and a boy for general work, a total of 15 men per shift; but it will be observed that this includes the labor in the steam and power plant, which is not included in the statement as to the roll plant, though the cost of power is evidently included in the total of 6s. 9.67d. per ton. The No. 5 ball mills in this plant crush an average of about 23 tons per 24 hours, to pass a 20-mesh screen.

Previously in his paper, Mr. White stated that the plant of four No. 4 mills crushed 19 tons of sulphide ore per 24 hours to pass a 35-mesh screen. This relatively high performance is probably accountable to the greater specific gravity of the ore. The method of reckoning the product of crushing machines by the cubic feet, which is adopted by Mr. Argall, gives more accurate data and is never misleading. The character of the ore, of course, makes considerable difference in the duty of crushing machines. In crushing with rolls at Cyanide, Colo., the ores varied from hard jasper and chalcedony to soft andesites and porphyries, and included granite, phonolite and quartz rock. Granite proved to be the most easily cruched; quartz next; the softer ores were less satisfactory. Rolls crush exactly on the same principle as rock breakers, in which soft and tough ores give low capacity, while hard, brittle ores that break with a snap, seldom give low capacity, at least not with well built machines.

The power required by the plant of 16 mills was as follows: Sixteen ball mills at 13 indicated horsepower, 208; 4 breakers, 26; 4 dryers and elevators at 6 indicated horse-power, 24; line shaft, countershafting, etc., 14; friction of engine at 18 per cent of total of previous items, 49; total, 321. The capacity of the mill is 400 tons per 24 hours, and the work of I indicated horse-power is 116.29 pounds per hour as the maximum, but the average is 368 tons and the work of I indicated horsepower per hour 107.33 pounds. The power is developed by means of a triple expansion, horizontal engine of 24-inch stroke and cylinders of 15, 24 and 39 inches diameter. This engine is directly connected with the line shaft. The steam is supplied by 5 Babcock & Wilcox boilers, of 120 horse-power each, the steam pressure at the boilers being 150 pounds and at the engine 145 pounds. The consumption of coal is 2.58 pounds per indicated horse-power hour, which Mr. White considers very fair considering the quality of the coal and other unfavorable conditions.

The ball mill is now generally conceded to be an efficient fine pulverizer, and it has the advantage of combining in one apparatus, which is capable of receiving ore directly from the breakers and delivering it at the desired degree of fineness, the screening and elevating mechanism, which in a roll plant have to be provided independently. This must necessarily save considerable labor, besides affording some other advantages. On the other hand, the consumption of steel by wear of the various parts is undoubtedly very high in the ball mills. The following table shows the wear of the principal parts of a No. 5 Krupp mill in pounds of steel per ton of ore as reported by Mr. White:

Total loss of	Loss	in lbs. per	ton
Steel.	Plates.	Belts.	
Hunch plates89,000	.681		
D Bolts 4,035		.038	
E Bolts	***	.023	***
ing plates 2,814	.022		
G Bolts		.002	
plates18,900	.144		
Square-headed bolts 1,153	* * *	.009	
Steel balls94,752	***	***	.725
			-
Total wear of steel per ton crushed 1.644 lb	0.847	0.072	0.725

The plates become useless when worn down about two-thirds of their original weight. This would reduce the actual wear of metal in the mill from 0.847 to 0.565 pound per ton of ore, leaving an apparent actual consumption of steel carried off in the ore of 1.362 pounds per ton of ore crushed.

The following table shows the renewal of parts of 16 No. 5 ball mills in twelve months, during which time 130,776 long tons of ore were crushed to pass 20-mesh screens, with the cost per ton for renewals,

fore, that although the consumption of steel in the ball mills was 1.362 pounds per ton of ore crushed, against only 0.108 pounds of roll shells, the cost of maintaining the ball-mill plant was on the whole less than that of the roll plant. With respect to the operating expense, it should be remarked that IId. occurs in the item of fuel, which is chiefly due to the more economical power plant, while the boilers of the roll plant supply some steam for outside purposes. The fact that the quantity of ore crushed per indicated horse power per hour is substantially the same in both mills shows that the ball mills are not really entitled to the saving in cost of power which the Mount Morgan figures show. The advantage is chiefly in the item of labor in running expense, which is reduced 18d., or more than one-half. Mr. Argall calls attention to two other points, namely, that the roll plant was old, while its capacity was only about one-third that of the ball-mill plant. The former criticism is good; the latter not so good, inasmuch as the roll plant was substantially the same as what he outlines as a unit of maximum efficiency, wherefore the reduction in cost per ton by further increase in capacity would probably be not very important. The wages paid at Mt. Morgan were not stated by Mr. White, saving the single remark that the men attending the ball mills received 8s. per 8-hour shift, whence we may infer the rates are about the same as in Colorado. It appears, however, that a plant consisting of 2 breakers, 2 dryers and 8 rolls crushes only 125 tons at Mount Morgan, against 400 tons in Colorado. For the coarse crushing, the Mount Morgan plant has 2 men at the breakers per shift of 8 hours, while the Colorado plant has 2 men for a single shift of 10 hours. Each plant has 1 man per 8-hour shift at the dryers, I man at the screens, and 2 men at the rolls (in Colorado, I man "oiling and sweeping"). The elaborateness with which the sampling was done at the Colorado plant makes precise comparisons impossible, but it is clear that the practical results at Mount Morgan are inferior. To what extent this is due to difference in the character of the ore, to the lower efficiency of the crushing machinery, to the less perfect general design of the works, to the less economical systemization of the labor, etc., conclusions can hardly be drawn from the present data. In the case of the comparative results between the rolls and ball mills at Mount Morgan, however, the test is valuable inasmuch as the ore treated was identical, although all the conditions were not perhaps the same. Mr. Argall appreciates the advantages which ball mills may have to those requiring small units, but for large capacities, say from 60 tons per day upward, he considers that rolls are vastly superior.

It is to be hoped that other engineers who are engaged in crushing ore on a large scale will compile their results under different conditions with the same minuteness and careful analysis that Mr. Argall has done, and thus throw further light upon this import-

	Number used in one No. 5 Mill.	Number used in Twelve Months.	Unit.	Pr	rice.	Cost per ton, Pence.	Approxi- mate life, Months.
Steel balls		5264	each	5	0	2.412	**
Hunch plates		1000	66	45	0	4.130	7 1/2
Cheek plates	. 20	270	66	42	4	1.066	14
Scoop plates, perforated and grinding		80	44	80	0	0.587	18
Bolts D		1153	41	1	3	0.132	
Bolts E		1013	44	I	3	0.115	
Bolts G	. 40	214	**	I	3	0.024	
Bolts, square-headed	. 60	769		1	3	0.088	
Fore sieve plates, set of five		196	set	31	6	0.565	5 .
Brass wire gauze (set of 10), sq. ft		78761/4	*****	0	73/2	0.451	13/4
Flannel, lineal yards		644		I	I	0.062	
Bag leather (sides)		19		16	0	0.037	
Clout nails (packets)		183		0	5	0.007	
Glass lubricators		120	each	0	7	0.008	
Set screws		227	1b.	0	5	0.008	
Bolts, 11/2 in. x 3/8 in		269	66	0	3	0.006	
Bolts, 3 in. x 3/8 in		258	66	0	3	0.006	
Bolts, 3 in. x ½ in		295	81	0	3	0.007	
Washers		752	44	0	2	0.012	
Screen frames, pine	. 10	108				0.055	18

together with the approximate life of some of the parts:

A comparison of the results at Mount Morgan show operating expense per ton of ore of 30,330d. in the case of the ball mills versus 60,28 in the case of rolls; maintenance expense of 16,777d. versus 21,39d., a total of 47,107d. versus 81,67. It appears, there-

ant subject. To him is due, however, the thanks of the profession for presenting scientific data whereby the capacity of rolls for crushing any material to any degree of fineness can be computed with some degree of accuracy and not have to be left to guess work or the rule of thumb deductions from imperfect experience. r-

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RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

SPECIALLY REPORTED.

LIABILITY FOR MONEY ADVANCED FOR MINING COM-PANY.—The act of one stockholder of a mining company in furnishing money from his private means to another stockholder for the immediate relief of such company and to keep it "a going concern," is a sufficient consideration to support a promise to repay the same.—McKinney v. Armstrong (97 Illinois Appellate Court Reports, 208); Appellate Court of Illinois.

LIABILITY OF IRON COMPANY FOR TERM EMPLOY-MENT.—A discharged employee who claims a hiring by the year will not be precluded from recovering his wages accruing for the balance of the year by applying for and receiving a letter of recommendation from his employer, where he notifies such employer that he claims under a yearly contract, and intends to enforce it.—Wright v. Elk River Iron Company (89 Northwestern Reporter, 1,053); Supreme Court of Michigan.

SUFFICIENCY OF ALLEGATION OF NEGLIGENCE OF MINING COMPANY.—The complaint in an action by a miner for injuries from an explosion of dynamite, which alleges that the superintendent of the mining company was negligent in failing to warn such miner of the existence of dynamite at the place where he was working, is sufficient without also alleging that the superintendent had notice of the dynamite being at that place.—Robinson Mining Company v. Tolbert (31 Southern Reporter, 519); Supreme Court of Alabama.

EVIDENCE THAT JUSTIFIES FINDING AGAINST MINING COMPANY.—Where a miner was injured by the falling of rock from the roof of a mine, and it appeared that it was not propped or timbered, and that there had been a heavy fall of rock from the same place a month before and that small pieces fell therefrom occasionally, it justified a finding that the defect had existed for such a length of time that the company had constructive notice of its condition.—Cushman v. Carbondale Fuel Company (88 Northwestern Reporter, 817); Supreme Court of Iowa.

Proof of Long Existing Defect Justifies Finding of Neglect.—Where a trestle used to supply coal to locomotives had been constructed for nearly 12 years and some of the boards out of which the floor of it was made were half decayed, a jury will be justified in finding that such floor was rotten and dangerous, and had been so for a sufficient length of time for the proprietor in the exercise of reasonable care to learn of its dangerous condition and to have repaired it.—McLean County Coal Company v. Simpson, (97 Illinois Appellate Court Reports, 21); Appellate Court of Illinios.

SUFFICIENCY OF NOTICES OF PLACER MINING CLAIM.—A sufficient location of a placer mining claim is made by notices upon a stump in a creek, of a claim running 1,500 feet along the creek bottom and extending 300 feet each way from the center of the creek, adding that it is an extension of another claim named, a certain distance from the first falls on said creek. The location of a mining claim by an alien, and the rights following from same, are not void but voidable, and are therefore free from attack by any one other than the Government.—McKinley Creek Mining Company v. Alaska United Mining Company (22 Supreme Court Reporter, 84); Supreme Court of the United States.

Sufficient Description of Location of Quartz Vein.—A location certificate, reciting that the locators have located 600 linear feet along a quartz vein, by 300 feet on each side of the middle of the vein, and giving the name of the mine located, and the county and territory, and describing it as commencing at a stake situated 300 feet northwesterly

from a known mine, and stating that it is an extension of another known mine, and running thence along the vein in a southerly direction to a similar stake and notice, is a sufficient description, under section 2,324 Revised Statutes of the United States, and section 3,102 of the Laws of Idaho.—Morrison v. Regan (67 Pacific Reporter, 955); Supreme Court of Idaho.

WHEN SELLER OF COAL LAND WILL ONLY BE LIABLE FOR NOMINAL DAMAGES.—Where an owner of coal land gives a written option to another to purchase the land, and agrees to furnish a complete abstract of title, and the buyer shortly before the expiration of such option notifies the owner of his intention to take the land, and requests the abstract, and nothing further is done for 21/2 years, when a second request for an abstract is made, and the same is refused, and thereafter the owner sells to another party, and the evidence tends to show that in doing so he acted in good faith, on the assumption that the first party had abandoned his contract, the owner will be liable only to nominal damages, in an action against him for breech of contract.-Emeru v. Regester (17 Pennsylvania Superior Court Reporter, 482); Superior Court of Pennsylvania.

AMENDMENTS OF LOCATION CERTIFICATES.—Under the laws of Idaho a location certificate may be amended, and such amendment relates back to the original location, provided it does not interfere with the existing rights of others at the time the amendment is made. An agent or any one authorized to do so can make an amended or additional location of a mining claim without authority in writing. Descriptions in mining claims referring to natural objects and permanent monuments should be liberally construed, and a reference to a known mine as being so many feet distant will be a sufficient reference to such object or monument. Where it is shown that the location was made in good faith any reasonable construction of the language used in the notice in the description and reference to objects will be sufficient.-Morrison v. Regan (67 Pacific Reporter, 955); Supreme Court of Idaho.

LIABILITY OF MINING COMPANY FOR GAS IN MINE. -In an action for the death of a boy caused by the explosion of gas in a mine, a verdict against the company will be sustained on appeal where the evidence tended to show the presence of explosive gas in the mine at least four days prior to the accident, in dangerous quantities; that such gas had accumulated in a room within about 30 feet from the entry where the boy was killed, and where naked lights were used by the miners without objection on the part of the superintendent; and that a person who was not a certified fire boss had been employed as such by the mine foreman with the knowledge of the superintendent.-Kless v. Youghiougheny Mining Company (18 Pennsylvania Superior Court Reports, 551); Superior Court of Pennsylvania.

MERE MAKING OF RULES WILL NOT PROTECT MIN-ING COMPANY.—The mere making of a rule by a mining company that "every person accepting employment in the mine does so with full notice of the danger from falling roof and coal, is one of the usual risks of his service, and he will govern himself accordingly," and posting the same in the mine, with a notice that "all employees must read and understand the rule, which is required by law and made to secure their safety, and which every employee by remaining in the service of the company agrees to abide by and obey as a contract between him and the company," will not constitute a contract between the company and its employees to assume the danger of falls from the roof of the mine as one of the usual and ordinary risks and hazards of his employment. For an employer cannot by a contract with his employee, in consideration of the employment, exempt himself from liability for injuries sustained through the negligence of the employer.—Consolidated Coal Company v. Lundak (97 Illinois Appellate Court Reporter, 109); Illinois Appellate Court.

RISK THAT IS NOT ASSUMED BY MINER.—A mining employee, who, at his foreman's direction, engages in picking a hole in the side of an entry, near the roof, into which a cross-timber is to be inserted for the support of the roof, and who is injured by the fall of the roof during his work, is entitled to recover from the company, the risk not being one assumed by him, where the foreman knows that the roof is cracked, and fails to support it by temporary props, as should be done, and where the employee himself does not know and is not advised of the condition of such roof.—Wahlquist v. Maple Grove Coal and Mining Company (89 Northwestern Reporter, 98); Supreme Court of Iowa.

DUTY ON GROUND SULPHIDE OF ANTIMONY.—Ground sulphide of antimony is not entitled to free entry under paragraph 476, act of July 24, 1897. Grinding operates to take such merchandise out of the provisions of that paragraph, which is limited to sulphide of antimony in a crude state. Crude sulphide of antimony ore is that product produced by separating the sulphide of antimony from the gangue and slag. Such advanced antimony is dutiable under section 6 of said act as an unenumerated manufactured article.

—Appeal of Schieffelin & Co. from Collector of Customs at New York; Board of General Appraisers.

ABSTRACTS OF OFFICIAL REPORTS.

Compagnie du Boleo, Mexico.

This company operates extensive mines and smelting works at Santa Rosalia, in Lower California. Its report is for the year ending December 31, 1901. During that year the quantity of ore taken out was 275,635 tons, against 261,170 tons in the previous year. The production in fine copper was 10,956 metric tons, against 11,297 tons in 1900, showing a decrease of 341 tons. The average tenor of the ore in copper was 3.95 per cent, against 4.29 per cent in 1901.

In accordance with the programme which was laid out two years ago, the company has gradually developed the system of stoping out the pillars of ore left in the first exploitation. While advantage has been found in economy of working and in the better utilization of the deposits, on the other hand, the tenor of the ore was somewhat lower than it would otherwise have been. There has been practically no change in the condition of the mine, and the tonnage of ore in sight has been somewhat increased by exploration work. It is quite probable that the fall in the price of copper will make it advisable to modify the method somewhat, and to practice a certain selection of the ores, as was done when the mine was first opened. It would be imprudent, however, to go too far in this way, since this would sacrifice the future of the mine to the present, and would involve possibly the exhaustion of the richer ore which is needed to make the proper mixture for the smelters.

In the smelting works, the old buildings in which the company had gradually built up a number of units of small capacity, have been entirely demolished, and the material which could be used has been added to the stores. All the smelters are now of new model, having a capacity of 150 tons per day each. There are eight of these in service, while two others are under construction. Other improvements have been made and are still in progress, which will very much improve the methods of handling ore, fuel, etc., and of disposing of the furnace slags. There are still some of these improvements to be completed.

The company's railroad transported 490,470 tonsduring the year. The cost of maintaining the road

was somewhat increased by a heavy washout in September. The equipment was increased by 10 ore cars, 6 coke cars, 1 special car and 8 large eightwheeled platform cars, which were built in the shops at Santa Rosalia. The material handled at the port amounted to 104,722 tons, besides 7,235,000 feet of lumber. This was an increase of about 10,000 tons.

lumber. This was an increase of about 10,000 tons and 165,000 feet of lumber over 1900. The cost of

handling this freight was reduced, notwithstanding eight cargoes of coke were discharged into the stock heans.

The contract for the transportation of copper having expired, new agreements were made by which shipments of matte and bars are now made by rail from Guaymas to New Orleans, and are loaded at the last named port on steamers for Europe. In order to assist in the transportation from Santa Rosalia to Guaymas, the company purchased a sailing vessel of 357 tons register.

The improvement of the port was continued and the jetty has been extended to a length of 384 meters. It is intended to make this jetty 500 meters ih length. The stone is supplied from a quarry opened by the company. The sum of 375,000 francs has been set aside for the construction of buildings, chiefly houses for the working people. The water service of the port has also been improved and several reservoirs have been built on the Yaqui plateau with new pumps at Santa Aguede and at Santa Rita: A good deal still remains, however, to be done, to procure a sufficient and satisfactory supply of water for the company's employees, as well as for the machinery. One of the steps to be taken is the building of a new conduit from Santa Aqueda to Santa Rosalia. The number of workmen employed by the company at the close of the year, was 3,324. The highest number employed at any time during the year was 3,871, in July. The electric light service has been extended and arrangements have been made for pumping sea water in case of fire.

The company has purchased a tract of 11,920 hectares lying southwest from the mine, which will be used principally for the raising of cattle to supply food for the employees.

No decision has been reached as to working the mines at Inguaran. The exploration done so far has not resulted so well as was expected. There is an abundance of ore, but it is not sufficiently rich to be worked with profit under present conditions, especially in view of the high rates of transportation. The point to be decided, is whether the construction of a railroad will pay, and without the railroad it will be difficult to operate these mines.

The financial statement shows that there were paid for improvements and new machinery, 1.744,235 francs. Depreciation amounted to 208,844 francs. Charges for amortisation and reserve funds amounted to 1,191,925 francs. The total profits after deducting these charges amounted to 1,206,502 francs, showing a large reduction from the preceding year. This reduction was due, partly, to the lower tenor of the ore, and the smaller production of copper, partly to the higher cost of fuel and supplies, but chiefly to the fall in the price of copper and the consequent lower value of the stock remaining on hand at the end of the year. From these surplus earnings after paying the interest on bonds and other necessary charges, it is proposed to pay a dividend of 20 francs per share on the ordinary stock, and 15.58 francs per part of the founders' shares.

Some difficulties have been encountered during the year in maintaining the force of workmen at the mines. The chief reason for this is found in the general prosperity existing in Mexico, and the demand for labor elsewhere, and at many points where the conditions are more favorable than at this company's mines.

Mount Lyell Mining and Railway Company, Tasmania.

The directors' report of this company for the half-year ending March 31, 1902, says that operations at the mine has been systematically carried on, resulting in an output of 134,170 tons. The grade of ore produced has been well maintained, being somewhat higher in assay value than that mined during the previous half-year. Work of an exploratory nature has been carried on in the lower levels with a view of defining the trend and extent of the high grade ore proved in the upper working, and of ascertaining the position of the main pyritic body. In addition

to the above operations, considerable quantities of metal-bearing flux have been obtained from the company's South and Royal Tharsis properties, the former being the principal source of supply of this siliceous flux during the half-year.

At the reduction works during the half-year 136,-799 tons of pyritic ore have been treated, the metallic contents showing a slightly increased value over those for the preceding six months. In addition to the output from the mine, the furnaces have treated 32,411 tons of ore purchased from the North Mount Lyell, Lyell Tharsis and Mount Lyell Blocks companies, as well as 14,182 tons of metal-bearing fluxes from the company's South and Royal Tharsis flux mines. The total was 183,392 tons. The output of blister copper has been 5,163 tons, containing 5,108 tons of copper, 342,589 ounces of silver, and 10,652 ounces gold, being an increase of 103 tons of metallic copper, 28,274 ounces silver and 247 ounces gold over the previous period. The average result was 2.79 per cent copper, 1.87 oz. silver and 0.06 oz. gold per ton.

Since the close of the half-year the contract with the North Mount Lyell Company for the delivery of 50,000 tons of ore has terminated. The supplies of ore from the Lyell Tharsis and Lyell Blocks companies have been suspended during the greater part of the half-year, owing to the low prices for copper which have ruled during the period.

The profits from the company's railway during the period under review were £4,404, being £1,984 less than for the previous half-year, which may be attributed to the general depression in the district during the past twelve months.

The Tasmanian Government having reduced the freight rates on its Strahan-Zeehan line, it became necessary for the company, under the terms of the act, to submit its rates to arbitration with a view of determining whether such reduction should be applied to them. The award of the arbitrators was that it was not necessary for the company's rates to be reduced.

The output of the Port Kembla coke works has been maintained to meet smelting requirements, and several sales to outside sources were made from stocks on hand, the profit on these sales going to reduce the cost of the company's coke.

During the half-year advantage has been taken of the opportunity to acquire several leases in immediate proximity to the company's own property. The properties purchased were those owned by the Mount Lyell Reserve Copper and Gold Mines, and the Glen Lyell Copper Mining Company for the sums of £750 and £70 respectively. The former property offers favorable opportunities for exploration work, which has already been undertaken. The Glen Lyell leases were acquired with a view of consolidating the company's property.

The profit for the half-year amounted to £53,049 after writing off £3,814 for dividend and income taxes, £18,939 for depreciation on the company's plant, and of £5,404 for prospecting work. marked disparity between the profits of the previous half-year and those now submitted is entirely due to the very heavy fall which occurred in the copper market and the low prices which have ruled during the half-year. The average price ruling for G. M. B. copper during the half-year ended March 31 was £56 12s. 6d., as against £68 for the previous six During the half-year two dividends have been paid, 2s. 6d. per share on October 1, and 2s. 6d. per share and 1s. 6d. bonus on January 3, aggregating £89,375; the dividend paid on October 1 being derived from profits earned during the previous half-year. A further dividend of 1s. 6d. per share, amounting to £20,625, was declared during the halfyear, but was payable on April 2.

The cost of producing blister copper during the half-year was £1 is. 3.21d. per ton of ore treated; being 1.14d. less than in the preceding half-year. The costs per ton for the half-year under review were as follows, reduced to United States currency: Mining, \$0.5578; removal of overburden, \$0.5000; smelting operations, \$3.5234; converting operations, \$0.5230; total, \$5.1042 per ton.

BOOKS RECEIVED.

In sending books for notices, will publishers, for their own sake and for that of book buyers, give the retail prices. These notices do not supersede review in a subsequent issue of the Engineering and Mining Journal.

The Creswick Gold-field (Australia) and its Mining. By William Bradford. Ballarat, Victoria; E. E. Campbell. Pages, 62; illustrated. Price (in New York), 35 cents.

Subject Matter Index of Mining, Mechanical and Metallurgical Literature for the Year 1900. Prepared for the North of England Institute of Mining and Mechanical Engineers by M. Walton Brown, Secretary. Newcastle-upon-Tyne, England; published by the Institute. Pages, 222. Price (in New York), \$14.75.

Mineral Resources of the Province of Quebec, Canada. By J. Obalski, Inspector of Mines. Newcastle-upon-Tyne, England; reprinted from the Proceedings of the Institution of Mining Engineers. Pamphlet, 8 pages.

Register of Mines and Minerals of Inyo County, California. Prepared under direction of Lewis E. Aubury, State Mineralogist. San Francisco; published by the State Mining Bureau. Pamphlet, 14 pages; with map.

Bureau of Provincial Information, Bulletin No. 6. The Finances of British Columbia. By Hon. J. D. Prentice, Minister of Finance. Victoria, B. C.; Public Printer. Pages, 24.

Production of Antimony in 1901. By Joseph Struthers. Extract from Mineral Resources of the United States. Washington; Government Printer. Pamphlet, 10 pages.

Directory of American Cement Industries and Handbook for Cement Users. Second Edition, 1902. Edited by Charles Carroll Brown. Indianapolis and New York; the Municipal Engineering Company. Pages, 740. Price, \$5.

American Industrial Conditions and Competition.
Reports of the Commissioners Appointed by the
British Iron Trade Association to Inquire into the
Iron, Steel and Allied Industries of the United
States. Edited by J. Stephen Jeans, Secretary.
London, England; published by the British Iron
Trade Association. Pages, 590; illustrated.

BOOKS REVIEWED.

Twenty-fourth Annual Report of the Bureau of Statistics of Labor and Industry of New Jersey. William Stainsby, Chief of Bureau. Trenton, N. J.; State Printers. Pages, 516.

This report contains much information about the extensive and varied industries of New Jersey. Special attention is paid in it to labor statistics and labor conditions in the different trades. Strikes and labor troubles are also considered at length.

The Statistical Year Book of Canada for 1901. Seventeenth Year of Issue. Prepared and issued by the Department of Agriculture. Ottawa, Canada; Government Printing Bureau. Pages, 680.

This work contains, as usual, a large number of statistical tables, showing the progress of the Dominion of Canada in various lines, with comments and explanations in the text. It is a complete and convenient manual of the industries and commerce of the country.

Wilson's Hand-book of South African Mines, Etc. A Guide to the Kaffir Market. London, England; Fredc. C. Mathieson & Sons. Pages, 400. Price (in New York), \$1.75.

This is a convenient hand-book, containing a list of all the mining companies operating in British South Africa. It contains condensed accounts of the property owned, capitalization and dividends paid, with lists of directors and officers and such other information as can be given in a condensed form. The directory is prefaced by a few pages of general information and statistics of mining in the Transvaal and Rhodesia.

Transactions of the Association of Civil Engineers of Cornell University. Volume X. 1901-1902. Ithaca, N. Y.; published by the Association. Pages, 136; illustrated.

This volume contains a record of the proceedings of the Association, which is composed of students and graduates of the Engineering Department of Cornell University. There are a number of papers, principally on subjects relating to civil engineering and bridge construction, which will be found of interest in their special fields.

Tables for Obtaining Horizontal Distances and Differences of Level from Stadia Readings. Computed by Alfred Noble and William T. Casgrain. New York; Engineering News Publishing company. Pages, 28. Price, \$1.

This is a new set of tables for use in connection with stadia work. The tables give distances and heights, and are prefaced by some directions as to the use of the transit in stadia work, and some illustrations of the method of employing the tables.

Statistics of the Colony of New Zealand for 1900. Compiled in the Registrar-General's Office, Wellington, N. Z.; Government Printer. Pages, 556.

This is a complete and useful compendium of the statistics of the Colony of New Zealand, presenting a variety of informations as to its people, government, industries, trade and other matters. It has evidently been prepared and arranged with much

Topographical Record and Sketch Book for Use with Transit and Stadia. By Daniel Lawrence Turner. New York: Engineering News Publishing Company. Pages, 92. Price, \$0.75.

This is a sketch and record book which, the author says, he has found of a very convenient form in his own work and with students. In each two consecutive or facing pages, the left-hand page is ruled vertically and horizontally, and may be used for level and other notes. The right-hand page has concentric circle and radial rulings, upon which sketches are drawn. The concentric circles are 1/4 inch apart, corresponding conveniently to the ordinary scales used. The radial lines are 10° apart, the position of a point being easily interpolated to the nearest degree. The book is a very neat and convenient arrangement.

Report on the Kiandra Lead, New South Wales. By E. C. Andrews. Sydney, N. S. W.; Government Printer. Pages, 32; illustrated.

This is one of the detailed reports on different districts which the New South Wales Department of Mines prepares from time to time, with the object of assisting in the development of mining districts. The gold deposits of Kiandra were discovered in 1850, and quickly attracted about 15,000 persons to the locality; but the rich shallow alluvials were soon worked out, and the greater part of the population then departed. The deep Tertiary lead, from which the shallow gold deposits had been shed, was known to occur in close proximity to the first settlement, and its exposed edges, on the slopes of the hills, received some attention from the pioneer miners, and have been worked in a desultory manner by hydraulic sluicing almost ever since; but it is not practicable to work the central portions of the lead by that process, because of the thick overburden, consisting of beds of lignite and clay, and a capping of basalt, amounting to several hundred feet in the aggregate. Some parts of the deep lead have also been exploited by tunneling. It is evident, however, that a considerable amount of capital is required to systematically work these deposits, which are of great length and width, have a rather irregular bottom, and are troubled with a considerable quantity of water. With the object of attracting attention to this important but comparatively neglected goldfield, it was thought advisable to have a geological survey of it made, and the course of the lead defined. One of the results of

Mr. Andrews' work has been to show that there are two distinct Tertiary river deposits, which he has named respectively the "Kiandra Lead" and the "Round Mountain Lead."

Grundzüge der Siderologie. By Hanns Freiherr von Jüptner. Second part. Leipzig, Germany; Arthur Felix. Pages, 404; illustrated.

On the publication of the first volume of this excellent work, we referred to its great usefulness to all those interested in the important question of the internal structure of iron and steel, and the relation which the structure bears to the mechanical qualities of these metals. The second volume, now under review, deals with the constitution and properties of the iron alloys as affected by the thermal and mechanical treatment to which they are subjected. It is divided up into three books.

Part I reviews the researches of Roozeboom, Stansfield. Roberts-Austen and other eminent metallurgists on the separation of the several alloys by the cooling of the molten metal, and the influence the thermal treatment has on the constitution of the alloys. The cooling curves showing the points of separation of the entectics are given for all classes of iron and steel.

Part 2, which is devoted to the study of the physical properties of the alloys in their relation to the chemical composition, morphological structure and the thermal and mechanical treatment, opens with an extract from Prof. H. Wedding's discourse to the Vereins zur Beförderung des Generbfleisses emphasizing the necessity for absolute accuracy in analytical methods and advocating the adoption of a universal system. The effect of the several elements used in association with iron in steel manufacture on the iron, as regards the physical properties, is described at some length, each property being taken in turn. Part 3 discusses the relation between the constitution and the mechanical properties of the iron alloys.

Volume 2 of the "Grundzüge der Siderologie," is in every way up to the standard of the first. The difficult and manifold theories are set forth in plain straightforward language, and the results of the researches of the many experimenters are given in a comprehensive manner. The subject as a whole is ably dealt with, and if the third volume compares with the two already published, Herr von Jüptner will have done much to place this great subject on a sound footing by bringing together the opinions of the iron metallurgists : nd embodying them in his great work.

CORRESPONDENCE.

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

The Thunder Mountain District, Idaho

Sir: I have lately seen your Journal of May 24, containing my letter from Thunder Mountain. There is a little discrepancy in the date which I should like explained; the letter was written from near Thunder Mountain on May 7. I see my postoffice address was given at Mackay, but we afterwards changed our plans and came out by Salmon.

The same people who are booming a route as open, which will not be open for some time yet, published an article within 24 hours of reading my letter, saying that I did not go in the Dewey Mine, because no permit had been issued to any one of my name. Where did this reckless writer get his news so quick-ly from Thunder Mountain? There was no telephone or telegraph connection at that time, and it would take a good week to reach there and another to return.

The fact is that I took the samples myself, from within the tunnel, and gave them a fair test. I have no animus against the district and would be as glad to see it succeed as any one, but the facts at the time of my visit were as I have stated.

S. H. BROCKUNIER.

Reno. Nev., June 23, 1902,

The Geological Relations of the Potosi Limestone of Southern Missouri.

Sir: Your recent reproduction of Mr. Frank Nason's article on the "Geological Relations of the St. Joseph and Potosi Limestones" is a valuable contribution by a keen observer on a district that has received very little attention from able field geologists. It is a district in which the geological knowledge is largely like its technical or industrial development, or like Topsy, "it has growed," and very slowly and from a very humble origin. It is true that as a mining district it is almost entitled to veneration for an American field, as lead mining has been carried on continuously in the surface or shallow diggings on a small scale for about two centuries, making it one of the oldest mining camps in this country. But its modern development in the deeper disseminated lead ores only dates from their discovery in 1869, and real activity on a broad scale may be said to date back only ten years. In fact, capital is only just beginning to recognize its value and its bright future, as the heavy investments of Eastern capital that are now being made there is a very recent matter.

The old surface or shallow diggings were either confined to the mantle of surface clays, or to shallow work in the crevices or openings in the limestone, as working in the solid rock was rarely if ever attempted by the pioneer miners, or rather "diggers" as they were appropriately called. While occasional rich finds would make this clay digging temporarily quite remunerative, as a whole the yield was small and gave only very low wages on an average, so that capital was not attracted to the surface workings. They were worked by local labor, who were usually farmers during the farming season, and "gophered" for lead after the crops had been gathered. These shallow workings did not give much geological information, nor was any thorough study ever attracted to it, so that only very broad and even vague geological data was ever collected by the earlier State surveys.

As the deeper, disseminated lead deposits have slowly become better known, more attention has been given to the local geology, and the comparatively recent activity with its consequent innumerable diamond drill cores have greatly increased the available geological data that now awaits a broad, thorough master hand to evolve the geology of this very interesting and important district. When Mr. Arthur Winslow, as State geologist, was working on this district 1890-1894, there were few data available, and his studies were abruptly terminated by the besetting sin of most State geological work; so that his results have mainly the value of a reconnoissance. About the same time Dr. W. P. Jenney also worked over this field to some extent under the auspices of the United States Survey, but his main attention was devoted to the zinc fields in Southwestern Missouri, known as the Joplin District.

When Mr. Nason made his studies in 1901, he was handicapped by not only being confined to the limited area of his client's territory, but the local jealousies of competing corporations prevented him from securing the data and results of other older companies, a most unfortunate hiatus. Mr. Nason was the first to observe the very peculiar conglomerate that is well developed on the property he studied, which has since been called the "edgewise" conglomerate, as the flattened pebbles of limestone mostly stand on edge. This conglomerate bed he makes of still greater importance by using it as the dividing line between what is locally known as the "Potosi" and "Bonne Terre" limestones.1

For there is a vertical range of about 1,000 feet in thickness, varying from 800 to 1,200 feet, under what is known as the second sandstone, and resting on what is called the Third or La Motte Sandstone.

a 'This "Bonne Terre" has also been called the "St. Joseph," as it is in this formation that the St. Joseph lead mine occurs, but as this term is liable to be confused with a very different and much younger limestone that occurs about the city of St. Joseph, Mo., and as the St. Joseph Lead Company now has mines scattered all over St. Francis County, the term "Bonne Terre" is used, as it is so well and characteristically developed at the town of Bonne Terre, where the original St. Joseph Mine is still being worked.

This has been called the Third Magnesian limestone, and has been designated as Lower Silurian and also as Cambrain in age. It is the formation in which occur all the productive lead mines of Southeastern Missouri. This Third Magnesian limestone has been divided into two members of about equal thickness, the "Potosi" or the upper member, and the "Bonne Terre" or lower member. The dividing line between these two members has hitherto been drawn at the top of the shaly measures, from whence to the overlying second sandstone it is a well defined deep-sea magnesian limestone of light color that is rich in chert and quartz crystals in certain horizons. This old line Mr. Nason does away with and lowers it from 100 to 200 feet, so as to include in the Potosi a mixed series of shales, thin limestones, and limestone conglomerates, among which latter is the edgewise bed previously referred to.

While the proper place to draw this line may seem to be a purely scientific matter that should be discussed in a geological congress, since it is a repetition of all the problems of nature as to where to draw empirical lines, it is a very important matter to the local mining engineer. For thus far all the disseminated deposits have been confined to the lower or "Bonne Terre" division, while the pipe vein and stockwerke deposits occur in the upper or "Potosi" member. It is also of great importance in determining horizons and probable depths of drilling.

While the paleontologist may subsequently draw several lines through the Third Magnesian limestone series where the engineer and field geolgist now only draws one, after the fossils have been carefully studied, this old line of demarcation at the top of the shaly series seems to the writer to have been well founded and the one that should still be retained in the light of present knowledge in working out the local problems.

For lithologically it is sharp and clear, and can be readily and promptly drawn in the field, which is impossible with Mr. Nason's line, as shales and conglomerates extend to the base of the Bonne Terre. This lithological difference is of unusual importance when the detailed structure of the two members is considered. For the upper or Potosi member is evidently a deep-sea magnesian limestone, as it is free from shale beds or shaly layers; it is also free from organic matter, as it is white to light gray in color, and it is very rich in siliceous matter as chert or drusy quartz crystals (called "mineral blossom"), which towards the middle, and upper portions are very abundant-exceeding 30 per cent of the formation in some beds. The Potosi limestone is thick bedded, very often gnarly, and usually has such a marked individuality, aside from the absence of shale or the presence of siliceous matter, as to be readily distinguished from the Bonne Terre, even though it is usually free from siliceous matter in the lower portions.

The Bonne Terre limestone is also magnesian, though to a less marked degree; it occurs both as thick and thin beds, and while often dark colored from organic matter, it is also light colored to even pink. But it is always free from chert, quartz crystals or other forms of free quartz, it is always associated with intercolated shale-either as shale beds or shaly layers-and it is often oolitic. Towards the base the Bonne Terre limestone is always associated with green chlorite, frequently in large amounts, whereas the Potosi never is, and it always contains some ferrous carbonate towards the base that oxidizes or "sunbeams" to brown on exposure, which the Potosi does not. The Bonne Terre formation also weathers, in certain horizons, into the cavernous form so well known as "petrified wasps' nests"while the Potosi does not-and often shows sinkhole and open gash drainage on the surface, which are very rare in the Potosi.

The Bonne Terre limestone is a shallow sea or estuary limestone, as the intercolated shales are very irregular in their thickness, frequency, and color. For while they vary from 0.1 inch to 20 feet in thickness, they make up from 5 to 30 per cent of the formation, and while usually green, they are also blue to black in color.

Conglomerates occur in the lower portion of the Bonne Terre series, but are not as frequent nor as thick as in the upper 100 feet or so, where they form from 10 to 25 per cent of the formation. These conglomerates are always limestone pebbles in a calcareous paste, or matrix, and in the "edgewise" bed that made such an impression on Mr. Nason the pebbles generally stand on edge. These conglomerates emphasize the shallow character of the waters in the Bonne Terre period of formation, in marked distinction to the later deep submergence when the Potosi limestone was formed in deep quiet seas and at such a distance from the land that there were no currents to introduce conglomeratic material and no land washings to form shale beds. These upper or "mixed-beds" differ only in quantity and richness in conglomerates from the lower portion of the Bonne Terre, being similar and identical with the lower material conformable, and evidently formed under similar conditions. They are totally unlike in character, material and fossils with the immediately overlying Potosi limestone, yet Mr. Nason separates them from the similar deeper portion of the Bonne Terre, and calls them the basal member of the Potosi.

As the only definite line that can be drawn between the shallow-sea formed Bonne Terre and the deen-sea formed Potosi is when the sea-bottom became too deep and too distant from the land to receive land accumulations, and this means the disappearance of the shales. Hence the old line of demarcation that was drawn at the top of the shales seems to the writer to be the only logical and practicable position to separate this thick Third Magnesian limestone series into an upper or "Potosi" member, and a lower or Bonne Terre group. It has the further very eminent value of being a decisive line that can be readily drawn in the field.

As regards the evidence of fossils on this line being drawn at the top of the shales, it is even more favorable than the lithological evidence. For fossil remains are rich in the "mixed beds" or the upper portion of the Bonne Terre, as would naturally be expected when it is remembered that it is a shallow deposit of an estuary, gulf or shallow sea. They are less frequent lower down in the Bonne Terre, and in the basal portion where metamorphic action from chemical conditions have converted the shaly matter more or less completely into green chlorite, all fossil forms disappear except the lingulas, which with their highly resistant phosphatic shells have been able to survive the chemical action. As one rises above the shales into the Potosi limestone, the fossils disappear and none occur as far as the writer is aware in this great thickness of 300 to 600 feet of magnesian limestone, although the metamorphosed remains of the siliceous spicules of sponges, etc., are very abundant in the middle and upper portions of the Potosi as chert or quartz crystals-especially the latter.

As the fossils of the Bonne Terre series have not received thorough study as yet, it is premature to discuss its time equivalent, though Mr. Nason has provisionally placed it in the Cambrian. This time equivalent is not so essential to the technologist as there is no doubt it is very old-being at least in the base of the Lower Silurian if not older, so there is an ample time factor to permit the enormous concentration of lead that has occurred in the ore bodies of the Bonne Terre formation.

St. Louis, June 30, 1902.

H. A. WHEELER.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert, nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.

Baryta, or Barium Oxide.-Will you kindly give me the names of parties manufacturing baryta

(BaO), anhydrous or hydrated, of commercial purity?-H. A. H.

Answer.-Barium oxide was formerly imported, chiefly from Germany. It is now made by the United Barium Company, at Niagara Falls, N. Y.

Manganese Orc.-Would an ore containing 48 per cent manganese dioxide, 14 per cent ferric oxide, 8 per cent silica, alumina, lime and magnesia have any market value. Location, Eastern Pennsylvania. For what is such ore used.—I. E. T.

Answer.-Manganese ore is now used chiefly in making ferro-manganese as spiegeleisen, for use in making steel. Your ore is not high grade, but there is a considerable demand for manganese, and a deposit in Eastern Pennsylvania should be be of value, if it is of any extent. The customers for the ore are the large steel companies.

Witherite.-Please let me know the market price of witherite, prepared for the trade; also, please let me know if it has a ready sale.-J. C. S.

Answer.-The market price for witherite, or carbonate of barium, is quoted each week in THE EN-GINEERING AND MINING JOURNAL. Lump carbonate of barium from 80 to 90 per cent, is quoted at from \$25 to \$27.50 per short ton, delivered in New York. Lump 92 to 98 per cent is quoted at from \$26 to \$29. Powdered barium carbonate, from 80 to 90 per cent, is quoted at from 13/4 to 2 cents per pound. There has been a considerable inquiry for deposits of this material, and there seems to be a very good demand

Monazite.—Can you give me some particulars as to monazite? What is it used for? What is clean high-grade monazite worth? Who are the consumers? What is the annual consumption and the probable future demand?-L. N. W.

Answer.-Monazite is of value for the thorium and cerium oxides contained, which are used in making the incandescent mantles for the so-called Welsbach gas burners. The Welsbach Company is the chief or almost the only consumer. As there is practically only one buyer, it is impossible to ascertain or to give any market price. In such cases the buyer generally fixes prices and does not make them public. The production of monazite from North Carolina in 1900 was 908,000 pounds; in 1901 about the same. This may be taken to represent nearly the consumption. Formerly some was exported, but recently the European demand has been supplied chiefly from Brazil, where large deposits exist. As to the probable future demand, there can hardly be a great expansion, unless some new uses for the mineral are found.

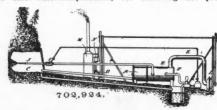
PATENTS RELATING TO MINING AND METAL-LURGY

UNITED STATES.

The following is a list of patents relating to mining and 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 Engineering and Mining Journal upon receipt of 25 cents.

Week Ending June 24, 1902.

02,924. APPARATUS FOR THAWING FROZEN GROUND.—George R. Clarke, Dawson, Canada. An apparatus for thawing frozen ground, comprising a furnace, a water-compartment into which pass the products of combustion from said furnace, an exhauster of said water-compartment, for removing the products

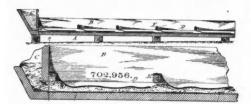


of combustion from the water-compartment after their passage through the water, means for drawing the water from said water-compartment and discharging it upon the frozen ground in the drift, and a pipe leading from the drift to the furnace, for supplying the latter with heated air.

702,943. ART OF TREATING ORES CONTAINING SILICA OR SILICATES.—Gustave Guiraud, Cripple

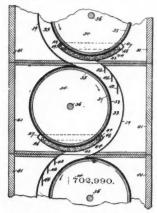
Creek, Colo., assignor to Robert McKnight, Philadelphia, Pa. The art of treating ores, which consists in roasting with free access of air and agitation, a charge containing the ore, silicon in an oxygen combination, and a haloid salt of an alkaline or alkaline-earth metal, the quantities being substantially those quantitatively requisite to form a stable silicate of the alkaline or alkaline-earth metal, and a haloid of the precious metal and continuing the heating of the ore until the haloid of the precious metal is volatilized and collecting the precious metal values as haloids or oxyhaloids

702,956. SLUICE-BOX.—Frederick M. Johnson, San Francisco, Cal., assignor to Rose Gold Reclamation Company, San Francisco, Cal., a corporation of Arizona. The combination with a separating-surface provided with means for holding and retaining precious material passing over it,



of one or more floating flexible sections of fibrous or textile material separated from said surface, so that the flow of material is caused to pass beneath it or them, such sections having a rough or open lower surface to retain material mechanically, but having a waterproof impenetrable upper surface.

702,990. ORE SEPARATOR.—Frank C. O'Brien, Chicago, Ill. In a separator of the class described, the combination with a closed passage or conduit, of a mercury-



coated cylinder forming a portion of the wall of said conduit, means for rotating said cylinder, and means for effecting the passage through said conduit of pulverized ore,

702,996. ALLOY.—Wladyslaw Pruszkowski, Schodnica, Austria-Hungary. A process of producing alloys containing two or more metals of the iron group, which consists in alloying one atomic weight of aluminum with two atomic weights of any two of said metals.

703,064. SUBSTANCE AND MANTLE FOR INCAN-DESCENT GAS-LIGHTS.—Louis Hicks, Englewood, N. J. A hood or frame for an incandescent gas-light, consisting substantially of oxide of thorium, a comparatively large percentage of oxide of lanthanum and a comparatively small percentage of oxide of cerium.

703,081. MACHINE FOR MOLDING ARTIFICIAL STONE.—Noyes F. Palmer, Brooklyn, N. Y. In a machine for molding artificial stone, the combination of a mold with a slotted supporting-plate, a core, means for clamping the core to the plate, and a perforated false bottom which embraces the core and covers the slot beyond the core.

703,084. ORE SEPARATOR,—Cyrus C. Platt, Portland, Oregon. Assignor of one half to Thomas Holland, Portland, Oregon. In an apparatus for separating metals from ore, gravel, loam and the like, a sluice adapted to be connected with a suitable source of water-supply and having a riffle comprising a board provided with openings, longitudinal zigzag walls interposed between the board and the bottom of the sluice and forming tortuous channels in communication with the openings in the board, means for retarding the flow of water through said channels, and a screen arranged upon the upper side of the board for causing the pulp to drag along the riffle and preventing large particles from entering the openings of the board.

703,151. COMPOSITION OF MATTER.—Theodore O. Pause, Atlanta, Ga., assignor of one-half to John S. Clarke, Atlanta, Ga. As a new article of manufacture, a plurality of layers or sheets of burlap, which have been treated to a solution of magnesium chloride, magnesite, and a mineral powder, a plastic compound applied to the backing and consisting of magnesium chloride, magnesite, and a mineral powder, and a final surfacing compound applied to the plastic compound.

703,170. PROCESS OF CASTING CHAINS.—Frederick Baldt, Sr., Chester, Pa. A process for casting chains, which consists in embedding a fusible pattern, for links and

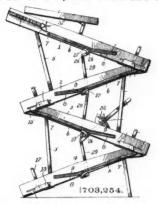
headers extending therefrom in a mold with the links interlocked and separated, next fusing said pattern of the links and headers and removing the fused material from the mold, whereby the links and headers are removed, and next pouring molten metal separately into the spaces formerly occupied by the fusible links and headers, whereby the links of the chain are disconnected when removed from the mold.

703,200. METHOD OF PREPARING ASBESTOS FOR USE AS AN INSULATION FOR METALLIC SURFACES.—John A. Heany, Philadelphia, Pa., assignor to the Teter-Heany Developing Company, Philadelphia, Pa., and Charleston, W. Va., a corporation of West Virginia. A method of preparing asbestos for use as an insulation for metallic surfaces, which consists in impregnating asbestos with sulphate of ammonia, boracic acid, sulphate of soda and chlorides of ammonia and soda in liquid form and picking the impregnated asbestos into fibrous or flakey form prior to application by adhesion to the metallic surface.

703,201. METHOD OF INSULATING METALLIC SUR-FACES WITH ASBESTOS.—John A. Heany, Philadelphia, Pa., assignor to the Teter-Heany Developing Company, Philadelphia, Pa., and Charleston, W. Va., a corporation of West Virginia. A method of insulating metallic surfaces with asbestos, which consists in first applying to the metallic surface a paste or cement, second, in embedding asbestos in fibrous or flakey form in said cement, and finally covering the asbestos with a solution of chemical or metallic salts combined with a gluey or albuminous substance containing lime.

703,222. ELEVATED-CABLE SYSTEM OF TRANSPOR-TATION.—Tony Alexander, Bismarck, Miss., assignor of one-half to Gideon Alexander, New Orleans, La. In an overhead-cable system of transportation, the combination of a cable and a series of supports therefor around which the cable is wound, the cable crossing and diverging from the upper side of said supports.

703,254. COAL-SEPARATOR.—William J. Hamilton, Carbondale, Pa., assignor to two-fifths to Thomas R. Hughes, Scranton, Pa. In a separator of the class described, a



series of chutes each having an adjustable bottom section, and means for simultaneously effecting an adjustment of all said sections.

703,267. MACHINE FOR CUTTING SLATE.—Charles R. Huston, Morgantown, W. Va. In a machine of the class described, a base, a knife, a gage, a carrier for the gage upon the base, bolts, one of which passes through the carrier, and the other of which passes through the carrier and gage, nuts on the bolts, and a clamp-plate having perforations to receive the bolts and adapted to bear against the gage, and one of the nuts serving to hold the carrier against longitudinal movement, and the other nut serving to prevent angular movement of the gage.

703,276. COAL AND GRAIN CAR.—Spencer Kellogg, Buffalo, N. Y. A car comprising a separately-mounted carrying receptacle or tank having a pendant ring or extension around its discharge-opening and rails supported therefrom, a closure or plate fitting against the lower edge of said ring or extension and having lateral racks upon its upper surface, and rolls or trucks upon its lower surface engaging with said rails, and an actuating rod or shaft provided with pinions gearing with said racks.

703,282. CRUDE-OIL BURNER.—John A. Landis, William A. Johnston, and Lee W. Bosley, Gainesville, Tex. A crude-oil burner comprising an outer casing, an escapeflue, a drip-pan in said casing and around which pan said flue passes, a drip-plate, to discharge into said drip-pan, means to feed oil to said drip-plate, and an air-inlet flue passing over and under said drip-plate and communicating with said escape-flue.

703,289. PROCESS OF PRODUCING CAUSTIC.—Hugh K. Moore, Lynn, Mass., assignor to Moore Electrolytic Company, Portland, Me., and Boston, Mass., a corporation of Maine. A process of electrolyzing the chlorides, chlorates or sulphates of alkali metals consisting in bringing an aqueous solution thereof into contact with one face of a diaphragm of sufficient porosity to permit free flow of the solution; passing an electric current through said solution and diaphragm to an unsubmerged foraminous cathode in contact with the other face of the diaphragm; thereby converting the metal into hydrate by the water of the undecomposed percolated solution and confining the liberated

hydrogen gas in contact with the outer face of the cathode and thereby excluding atmospheric air, whereby the cathion solution flows by gravitation from said cathode without evaporation and without the carbonating of the hydrate.

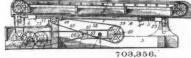
703,302. METHOD OF RAISING SHEETS OF STONE.—Alexander W. Pratt, North Jay, Me., assignor of one-half to Samuel H. Venable and William H. Venable, doing business under the firm name of Venable Brothers, Atlanta, Ga. A method of raising a sheet of stone consisting in drilling a hole to the depth necessary to receive the desired thickness of that sheet of stone to be raised; then initially starting a bed-seam in the rock by the explosion of a blasting charge, and subsequently extending the bed-seam by subjecting a strata or layer of the rock to fluid-pressure which is maintained in the initially-formed bed-seam, whereby said initial blast haloids or oxyhaloids, area affording great purchase for the subsequently effective fluid pressure.

703,309. OPEN-HEARTH STEEL-FURNACE.—Francis L. Saniter, Seaton-Carew, and John L. Smith, Eaglescliffe, England. In an open-hearth furnace for the manufacture of steel and characterized by a division of the hearth into compartments separated by dams, one or more channels or gutters in the dams.

703,322. COVER MECHANISM FOR PIT-FURNACES.— Francis H. Treat, Pittsburg, Pa. A pit-furnace cover, a supporting lever therefor, a cam device arranged to act upon the lever, and mechanism for moving the cover back and forth.

703,329. MAGNETIC SEPARATOR.—James C. Winder, East Point, Ga., assignor of one-half to Daniel C. Lyle, East Point, Ga. In a device of the class specified, the combination with the feed-board having on its upper face two slots arranged transversely of the natural flow of the material crossing the board, pole-pieces arranged in said slots with their working faces flush with that of the board, there being a plurality of sets of pole-pieces, each having oblique ends and the adjacent ends being arranged in such contiguity as to insure contact with said pieces of all of the material passing over the board, magnet-cores, side plates connected to the cores and to the pole-pieces, and core-windings connected in series.

703,356. DRY ORE CONCENTRATOR.—Robert E. Waugh and Eugene Waugh, Denver, Colo. The combination with a suitable stationary frame, of a vibratory apron-frame constructed to form an air-chamber, an endless traveling apron through which the air from the chamber passes, the apron



closing said chamber at the top, an auxiliary air-chamber arranged in suitable proximity to the main air-chamber, means for introducing air under pressure to the auxiliary chamber, and means for vibrating the apron-frame.

PROCESS OF HEATING METAL PARTS.—Robert Deissler, Treptow, near Berlin, Germany, assignor to Clarence B. Schultz, Berlin, Germany. A process of heating parts of metallic objects consisting in subjecting the same to the heat resulting from the chemical reaction taking place in an ignited mass of finely-divided aluminum and an oxygen or sulphur bearing compound.

CALCIUM CARBIDE FROM NON-ELECTRIC FURNACES .- London Engineering says: "Recent experiments on the heat of formation of calcium carbide once more direct our attention to the use of mixtures of air and oxygen in metallurgical furnaces. The unsatisfactory condition of the carbide industry has various causes, as electric furnaces are undoubtedly wasteful, and many attempts have been made to prepare the carbide in ordinary furnaces. The experiments with peat are not likely to prove successful. But Rothmund has shown that carbide can be formed at so low a temperature as 1620° C., and he further demonstrated that at 1560° finely powdered calcium carbide is split up again into lime and carbon by carbon monoxide gas. . . . But we return to the formation of carbide in furnaces burning air, artificially enriched with oxygen. Such air can be made in various ways, and is much less expensive than anything approaching a high percentage oxygen. Linde machines, it is stated, yield I cubic meter of a 50 per cent oxygen, or 8 cubic meters of a 35 per cent oxygen, per horsepower hour. If we feed metallurgical furnaces with such oxygen, we could attain much higher temperatures than we produce at present with the aid of powerful blowing engines. are quite aware that rich oxygen is not likely to become cheap, and that laboratory reactions of pure oxygen have not much importance for the practical metallurgist. But we might try oxygenized air."

PERSONAL.

Mr. W. S. Brown, of Fremont, Neb., recently inspected the Consolidated Mercur Mine in Utah.

Mr. J. A. Czizek recently returned to Salt Lake, Utah, from a 6 weeks' trip to Warren, Idaho.

Mr. W. H. Paul, a mining man of Central City, Colo., is making a business trip to Chicago, Ill.

Mr. B. L. Thane, of Berkeley, Cal., is to be super-intendent of the Ebner mines, Juneau, Alaska.

Mr. F. H. Minard has left Denver, Colo., to examine certain mines north of Revelstoke, B. C. Mr. Ross E. Browne has returned to San Francisco,

Cal., after a trip to Spokane and the Northwest.

Mr. Charles T. Arkins has returned to Denver, Colo., after a professional visit of 60 days to Mexico.

Mr. J. P. Polin is now assistant superintendent of the Grand Central Mine, Minas Prietas, Sonora,

Mr. Ben. B. Lawrence and Mr. Arthur Winslow passed through Denver a few days since on their way to Telluride, Colo.

Mr. William Braden, mining engineer of New York City, has just returned from a trip to Wyoming on professional business.

Mr. G. H. Greemnell, a mining engineer of Man-chester, Eng., is now visiting the United States. He is at present in Pittsburg, Pa.

Mr. George H. Dern, treasurer of the Consolidated Mercur Company, has been in Jersey City, N. J., to attend the annual meeting of the company.

Mr. Edgar Rickard sailed from Seattle, Wash., on June 28, on his way to Cape York, Alaska. He expects to be absent about 3 months.

Mr. W. E. Pasmore, of Idaho, Springs, Colo., has been appointed secretary of the State Mine Managers' Association, to succeed Dr. Coltman, resigned.

Prof. S. W. Beyer, of the Iowa Agricultural College, with a large class of geological students, is engaged in field study in Central Colorado.

Mr. S. F. Emmons, chief geologist of the United States Geological Survey, was in Denver on July 7. He is visiting Leadville; Silver Cliff and Ward, Colo.

Mr. T. H. Oxnam has resigned as general manager of the Palmarejo & Mexican Gold Fields, Limited, on account of ill-health and is now at Avalon, Cal.

Mr. Llew. Humphreys, mining engineer of Central City, Colo., has gone with Denver parties to Guada-loupe y Calyo, Mex., to examine mining properties.

Mr. Percey Sharpe, of Nogales, Ariz., is now general manager of the El Verde Grande Copper Company, Magdalena District, near Imuris, Sonora, Mex.

Mr. Percy L. Fearn was in Denver, Colo., last week, en route from Boise City, Idaho, to Prescott, Ariz. He expects to return to New York City at the end of

Mr. B. O. Kazaki, of Sappora, Japan, is now in the United States on behalf of the Hokkaido Government, studying American methods of hydraulic en-gineering principally.

Mr. G. H. Greenwell, nephew of Mr. Allan Greenwel, editor of the Colliery Guardian, is visiting the United States for the purpose of studying American methods of producing coal.

Mr. J. Jenkins, a member of the well-known firm of Parsons & Pettit, New York City, importers and dealers in brimstone and nitrate of soda, has gone to Richfield Springs, N. Y., for his health.

Mr. Frank Janney, of Salt Lake, Utah, will, it is said, be superintendent of Bamberger's De La Mar mines, possession of which is reported surrendered to the new purchasing syndicate.

Mr. Charles E. Hudson, of Salt Lake, Utah, passed through Houghton, Mich., last week on his way to Jersey City. N. J., to attend a meeting of the board of the Consolidated Mercur Mining Company.

Mr. Ernest Gayford, metallurgist of Salt Lake, Utah, has gone to North Carolina to take a position with the Colossus Gold Mining Company, of which Mr. Gill S. Peyton recently secured control.

Mr. M. H. Kauffman, formerly with the Helen Mining Company, Graham, N. M., has accepted the position of chief chemist for the American Smelting and Refining Company, at Durango, Colo.

Mr. Don H. Bacon, president of the Tennessee Coal, Iron and Railroad Company, during the past week visited the various properties of the company accompanied by the various department managers.

Messrs. C. W. Baldwin and F. I. Packard, the latter the cashier of the State National Bank of Chicago, Ill., are visiting in Central City, Colo., being interested in the New National Tunnel Mining Company.

returned to Denver, Colo., from mine examinations in Utah. He is now in Wyoming, goes thence to Oregon and will visit the Thunder Mountain District of Idaho. Mr. Hudson H. Nicholson, mining engineer, recently

Mr. Carl Heinrich Wolf, inventor of the Wolf safety mining lamp, has been decorated by the King of Prussia with the Order of the Red Eagle, on account of his great services in the field of safety

Mr. R. H. Terhune, of Salt Lake, Utah, has been engaged to take charge of the new 30-ton smelter being erected in Spruce Mining District, White Pine County, Nev., for the Black Forest Mining and Smelting Company

Mr. A. R. Bennie, recently of Cananea, Sonora, Mex., has been employed by the Shannon Copper Company, Clifton, Ariz., as superintendent of the smelting department, to take the place of Mr. P. O. Wells, resigned.

Governor Aycock has appointed Col. A. H. Boyden, Capt. E. B. C. Hambley and Capt. R. Eames, Jr., of Salisbury, as delegates from North Carolina to the coming sessions of the International Mining Congress in Butte, Mont.

Mr. Samuel Newhouse, of the Boston Consolidated and Cactus properties, has been visiting various Utah mining properties accompanied by Mr. A. B. Lewis, of the Majestic Company. He inspected the copper mines in Beaver County.

Prof. J. A. Holmes, State Geologist of North Carolina and Chief of the Department of Mines and Metallurgy at the Louisiana Purchase Exposition, was in New York City during the past week in the interests of the exposition.

Mr. H. B. Sturtevant, a mining engineer of St. Louis, Mo., who has recently been inspecting properties in Arizona for Chicago, Ill., men, has gone to Shasta County, Cal., for a short engagement in the interests of St. Louis investors.

Mr. H. Heffron has resigned the management of the Sierra Pinta Mining Company, Altar, Sonora, Mex., and has been succeeded by Mr. E. Holland, proprietor of the mines at Quitovac, 7 miles from Sierra Pinta. Mr. Heffron is to return to California.

Mr. E. Gybbon Spilsbury, of 45 Broadway, New York City, has returned from a four months' visit to Europe. It is understood that the friendly relations established between the Virginia-Carolina Chemical Company and the German Kali Syndicate were largely the result of Mr. Spilsbury's trip.

Mr. J. Taylor Boyd, for years superintendent for the Cornwall Ore Banks Company, Limited, has resigned and is now treasurer of the company, with offices at Lebanon, Pa. His place has been filled by Mr. J. B. Shilling, who has had charge of iron mines on the Mesabi Range, Minn., for a number of years.

Mr. Ralph Nichols, formerly superintendent of De La Mar's Nevada gold mines, has been in Salt Lake, Utah, on his return to Kalgoorlie, West Australia, where he is managing the Great Boulder Perseverance properties. Mr. M. J. Flynn, formerly of the Sacra-mento at Mercur, Utah, is Mr. Nichols' mine superproperties. intendent.

Mr. J. Stanley James, engineer of the Caucasus Cop-States, and will place contracts for equipment to be installed in a water power plant for working the company's mines. Mr. James is at present inspecting American mining methods in the West. While in New York City he will stay at the Waldorf-Astoria.

Mr. J. E. Spurr, of the United States Geological Survey, who was to have undertaken the work of surveying the Grand Encampment District of Wyooming during the present season, is now ill with typhoid fever. The work in the Grand Encampment District will be carried out by Mr. Arthur C. Spencer, who will be assisted by Mr. J. Volney Lewis, of Clemon College S. C. son College, S. C.

Prof. R. A. S. Redmayne, of the University of Birmingham, England, who has been making a short visit to some of the mining schools of this country and also to the copper regions of Lake Superior, passed through New York City last week on his repassed through New York City last week on his return to Birmingham to receive a well-earned degree. Prof. Redmayne was deeply impressed with the excellence of such institutions as Columbia University, the Massachusetts Institute of Technology, the Michigan School of Mines, etc. He was also struck with the welcome he received in each place visited and the willingness of mining companies to admit visitors and to furnish information. To this freedom of interceurse and exchange of ideas between visitors and to furnish information. To this account of intercourse and exchange of ideas between technical men he attributes much of the great programmer of the Thirted States in mining and metalgress made by the United States in mining and metal-lurgical industries during the last few years. Prof. Redmayne, in the organization of the new college of mining and metallurgy at the University of Bir-mingham, will make use of suggestions he got from

INDUSTRIAL NOTES.

The H. K. Porter Company, of Pittsburg, Pa., has just made a shipment of 4 locomotives to Balbao, Spain, for use on a coal road.

The Overlook Mining Company, of Boise, Idaho, has placed an order with the Allis-Chalmers Company for a 65-ton Chilean mill.

The Lorain Steel Company is about to make a fair sized shipment of rails for the Auckland electric traction system of Auckland, New Zealand.

The Rand Drill Company has established an office in the Commercial Club Building, Salt Lake, Utah, in charge of George W. Topliff, of New York City.

The Electrical Equipment Company, of Chicago, Ill., has been awarded the contract for an addition to the Whiting Electric Light Company's plant at

The Fred J. Rowland Mahinery Company, of Butte, Mont., has sold the Crooked River Mining and Milling Company, of Idaho, a 10-stamp gold mill, complete with vanners.

P. J. Qualey, of Kemmerer, Wyo., manager of the Kemmerer Coal Company, has placed an order with the Acme Mining Machine Company, of Salt Lake, Utah, for a Frisbe Lu Cop pulverizer.

The mills of the National Tube Company, in June, sent abroad through Eastern ports, 3,500 tons of iron pipe. Exports to Continental Europe were 2,193 tons, chiefly to Rotterdam. Australia took 395 tons and Mexico 282 tons.

The Link-Belt Engineering Company, of Nicetown, Philadelphia, Pa., has completed an addition to its drafting department. The company reports numerous inquiries recently for coal storage plants. All departments are working at full capacity.

The George V. Cresson Company, of Philadelphia, Pa., reports much work on hand, and all departments running at full capacity. Power transmission machinery is being shipped to all parts of the United States and to foreign countries.

The Brown Hoisting Machinery Company, of Cleveland, O., is steadily rebuilding its plant destroyed by fire in the fall of 1900, but it will be some months before all the new buildings are completed, handsome new office building is in use.

The Mexican Ore Company, of San Luis Potosi, Mex., has secured from the Government certain modifications of its concession, granted some years ago, which permit the company to increase the present works by a plant capable of reducing 200 tons of copper ore daily. The new plant must be ready within one year.

The American Steel and Wire Company sent abroad through Eastern ports in June nearly 7,000 abroad through Eastern ports in June hearly 1,000 tons of iron and wire nails, the wire shipments being over 5,000 tons, of which South American countries took 2,290 tons, Australia 1,028 tons, China and Japan 212 tons and South Africa 210 tons. China and Japan took 806 tons of wire nails, and Europe

The Chicago Pneumatic Tool Company, through its Pittsburg, Pa., office, has secured a contract to furnish the William B. Pollock Company, Youngstown, O., with a 1,600-ft. cross compound steam and compound air compressor of the Franklin type. The company is to supply the Standard Steel Car Company, of Butler, Pa., with 150 Boyer long stroke riveting hammers and 50 Boyer pneumatic hammers.

J. W. Peterson, who was formerly connected with the Chicago Sales Department of the Stanley Electric Manufacturing Company, and the Northern Electrical Manufacturing Company, has been elected vice-president and general manager of the Electrical Equipment Company, with offices in the Monadnock Block, Chicago, Ill. This company now has on hand several large contracts for complete light and power plants.

The American Blower Company, of New York City and Detroit, has obtained an order for the mechanical draft apparatus to be used by the United Railways of San Francisco. It consists of 2 320-in. full housed fans direct connected to 12 by 16 in. vertial engines. The power station will be the largest on the Pacific Coast. Charles C. Moore & Co., of San Francisco, are placing the orders.

The United States Pump and Supply Company has been incorporated under the laws of New Jersey. The companies to be taken in are said to be the Standard Pump Company, of Toledo, O., and the Bean-Chamberlin Manufacturing Company, of Hudson Mich. The new company proposes to erect a son, Mich. The new company proposes to erect a large plant in Toledo. The officers are: President, Roscoe Bean, of Hudson, Mich.; vice-president, D. J. Nyswander. Toledo; secretary, J. H. Close, Toledo; treasurer, George N. Pomeroy, Toledo.

The International Cement Company, of Pittsburg, Pa., incorporated last year with \$1,000,000 capital stock, has let contracts for the machinery to be used stock, has let contracts for the machinery to be used in a 1,000 bbl. plant in the Pittsburg district to make cement from blast furnace slag. The process employed is the invention of Dr. Otto V. uth, of Pittsburg. The company has a temporary organization with J. B. Graham, of Pittsburg, president; W. H. Johnston, Philadelphia, vice-president; F. A. Voltz, Philadelphia, treasurer, and Samuel G. Stafford, Pittsburg, secretary.

The Twentieth Century Portland Cement Company of Fenton, Mich., is buying its machinery equipment. The plant is to have a capacity of 1,000 bbls. daily, and is to use a wet process. The structure steel for the buildings is also about to be purchased, as well as 380 tons of 60-lb, steel rails for private raily and leads and leads as the works and leads as the works and leads as the rails for private raily converting the works and leads as the rails for the works are leaded to the rails for the works are leaded to the works and leads as the rails for the works are leaded to the works and leaded to the works and leaded to the works are leaded to the works and leaded to the works are leaded to the works and leaded to the works are leaded to the works and leaded to the works are leaded to the works are the w a private railroad connecting the works and lands with the main lines of the railroad. The company was incorporated with a capital of \$75,000, and recently obtained \$600,000 on mortgage for the erection of the plant. J. H. Logan, of Fenton, Mich., is general manager.

The Pittsburg Gage and Supply Company, of Pittsburg, Pa., says that the great demand for the White Star oil filter is shown by recent sales in every section of the country, including: Rockingham Country Light and Power Company, Portsmouth, N. H.; Nash-ville Electric Light Company, Nashville, Tenn.; Light and Power Company, Portsmouth, N. H.; Nash-ville Electric Light Company, Nashville, Tenn.; Hamburg Railway Company, Blaisdell, N. Y.; Su-perior Electric Light Company, Superior, Neb.; Kan-kakee Water Supply Company, Kankakee, Ill.; Car-negie Tube Company, Carnegie, Pa.; Silver King Min-ing Company, Park City, Utah; Seattle Electric Light Company, Seattle, Wash.

Light Company, Seattle, Wash.

The Pelton Water Wheel Company, of New York City and San Francisco has closed with the Bellevue Mining Company, of La Porte, Cal., a contract for a power plant and pipe line. The water wheels will generate 200 h. p., to drive an air compressor, a generator and a blower for ventilating the mine. Among some of the most recent orders under completion at the Pelton Company's works are mentioned: Salvador Mining Company, Rix Compressed Air and Drill Company, Pacific Portland Cement Company, Ledge Mining and Milling Company, Cumera Mining and Milling Company, Mitchell Mine, Clark Electric Company, Ouray Electric Light and Power Company and the Bishop Light and Power Company. These orders call for water wheels to operate all classes of mining and electrical machinery. chinery.

Among the many orders received lately by the Colorado Iron Works, of Denver, Colo., were the following: A 10-stamp wet crushing mill, stamps of 1,000 lbs. each for the Eureka Exploration Company, of Silverton, Colo., a 60-stamp cyanide plant, erected complete, for the Hidden Fortune Gold Mining and Silver Company, of Lead City, S. D.: a Nesmith Milling Company, of Lead City, S. D.; a Nesmith crude oil hot blast stove for the Mond Nickel Company, of Ontario; a reverberatory roasting furnace for the Metal Volatilization Company, of Denver; a silver-lead smelting plant with roasting furnace, etc., for Jose S. Diaz, of Guadelajara, Mex.; a 42-in. by 120-in. hot blast copper smelting plant with a U pipe attential collection of Monterey, Mex.

The Control California Flories is related to the Canana Control California Canana, of Monterey, Mex.

and Refining Company, of Monterey, Mex.

The Central California Electric Company recently purchased 2 1,000 k. w. Westinghouse alternating-current generators, to be direct connected to waterwheels and used for supplying power to Grass Valley, Nevada City, Sacramento and adjacent California towns. This is the third station to be installed by the company, 2 other stations having been in operation for a number of years. The Central California Electric Company's system is a part of that of the South Yuba Water Company, which controls 400 miles of main ditch line in the heart of the Sierra Nevada Mountains. Formerly the water was used for hydraulic mining, but this having been stopped on account of the filling up of the rivers with silt, the water is now sold to ranchers and fruit growers for irrigation purposes. Before being sold to the farmers, however, it is transmitted in pipes to stations at different points along the system where electric energy is produced and conducted 35 to 50 miles to adjacent cities.

TRADE CATALOGUES.

Circular No. 3, published by Webster, Camp & Lane, of Akron, O., describes that company's self-contained geared hoists. These hoists are made with one or two drums, and range in capacity from 18 to

The Iron-Clad Manufacturing Company, of New York City, issues a series of catalogues describing its products, which include brazing tanks, steel barrels, steel and iron shipping drums, gas tanks, powder cans, engineers' and mill supplies and enameled ware for all purposes.

A circular sent out by the H. Zering Manufacturing Company, of Cincinnati, O., describes the company's trucks, hand-barrows and scales. The trucks are made in a variety of patterns and sizes for use about mills, factories and warehouses. The barrows made with wooden or steel bodies and wheels.

The Joseph Dixon Crucible Company, of Jersey City, N. J., continues to send out for free distribu-tion leaflets and other printed matter calling atten-tion to the excellence of its well-known products, including graphite crucibles and retorts, pencils, lubricating graphite and graphited oils and greases, also silica graphite paint.

A series of finely printed and illustrated folio booklets sent out by the Phoenix Glass Company, with offices in Pittsburg, New York and Chicago, describes the company's products. Catalogue No. 11 gives the prices of a very large variety of globes, in plain and fancy glass for gas and electric lights. Catalogue No. 13 illustrates and gives the prices of glassware for incandescent gas-lamps.

The Municipal Engineering and Contracting Com-The Municipal Engineering and Contracting Company, of Chicago, Ill., has issued a 14-page pamphlet describing its portable gravity concrete mixer and its improved cube mixer. The pamphlet points out the good features of these devices and their low cost of operation. The cube mixer is built in three sizes, the largest having a capacity of a batch of 2 cu. yd. in 2 minutes' time, and the smallest having a capacity of ½ cu. yd. pacity of 1/2 cu. yd.

The C. W. Hunt Company, of West Brighton, Staten Island, N. Y., calls attention in a little circular to its storage battery electric locomotives for handling cars in manufacturing establishments, and for switching ordinary cars in and about mills and works. These locomotives are recommended for their simplicity, cheapness of operation, and general handle ness, being capable of running around curves of 12 ft. radius. The motors are iron-clad and the gearing is enclosed in an oil-tight case.

Catalogue No. 329, published by E. & T. Fairbanks Catalogue No. 329, published by E. & T. Fairbanks & Company, St. Johnsbury, Vt., describes the standard scales the company makes. These scales are made in the portable platform type or with permanent platforms for mines, mills, railroads and general use. The company also manufactures special scales for rolling mills, steel works, locomotive works, chemical works, blast furnaces and for weighing buckets on overhead tramways. The company ing buckets on overhead tramways. The company states that it will construct scales to indicate weights used in any part of the world, and that all platform scales, with iron weights, will be made to weigh to any two standards of weights desired.

The Superior gasoline motor is described in a 36-The Superior gasoline motor is described in a 36-page pamphlet sent out by the Lake Shore Engine Works, of Marquette, Mich. This motor is built in a variety of sizes and types. The single cylinder engines range from ½ to 6 h. p. The twin-cylinder from 6 to 30 h. p. and the triple-cylinder from 12 to 45 h. p. The company also makes a special 4-cylinder 32 h. p. engine for high speeds. The touch spark system of ignition is used in all the company's engines. The governor is suspended within the flywheel and is of the centrifugal type. A speed-controlling device permits of running at any desired trolling device permits of running at any desired speed. With engines above 18 h. p., a reversing gear of special design, which contains no spring, is

An unusually artistic catalogue is that sent out by the Sullivan Machinery Company, of Chicago, Ill., entitled, "Modern Methods of Producing Coal." Ill., entitled, "Modern Methods of Producing Coal." It is a pamphlet of 154 pages, neatly printed and containing some remarkably fine half-tone cuts. It describes the coal-mining machines manufactured by the Sullivan Company. These include the Sullivan pick machine, the Sullivan shearing machine, both of which are driven by compressed air, and the Sullivan electric chain machine. The last machine, though of comparatively recent introduction, is already making an enviable reputation for itself. Its construction is described at length. The pamphlet also gives tables showing relatively the cost of machine and hand mining; the bituminous production of the United States and the proportion mined by machines in each State, the approximate analyses and heating values of American coals and the average net prices for coal at the mines since 1886. The pamphlet in addition contains a description of the Sullivan straight-line air compressor, with dimensions of the straight-line air compressor, with dimensions of the different sizes, and gives tables showing the efficiency of air compressors at different altitudes, the cubic feet of free air required to run from 1 to 40 ma-chines, losses in pressure due to friction in pipes,

GENERAL MINING NEWS.

ALASKA.

CAPE NOME.

Pioneer Mining Company.-It is asserted that this Pioneer Mining Company.—It is asserted that this company, controlling 26 claims in the Nome District, will do a large amount of hydraulic work this year and will employ 400 men. The company is capitalized at \$5,000,000, and has headquarters at Seattle, Wash. The officers are: J. Lindeberg, president; E. O. Lindblom, vice-president; J. E. Chilberg, secretary, and E. Chilberg, treasurer.

ARIZONA.

GILA COUNTY.

Yo Tambien.—A small gasoline hoist has been installed at the tunnel level at a depth of 230 ft. _ne shaft is down 100 ft. below this level, and sinking is resumed. The company is figuring on the erection of a concentrating plant. L. M. Teale, of Globe, is

MOHAVE COUNTY.

(From Our Special Correspondent.)

F. W. Phillips is figuring on a new concentrator for his mines at Hackberry.

Homestake.—This mine, near Kingmau, is reported to have good ore in the cross-cut.

Keystone Group.—This group, at Mineral Park, is about to change hands. The Keystone, the principal vorking claim, has produced a large amount of shipping ore.

Occidental.-About 1,200 lbs. of ore from this mine, at White Hills, recently sold to the Halsey Sampling Works at Kingman, netted the lessees, it is said, over \$800 in gold and silver.

Oro Plato.—Water is being pumped out of this mine, in Todd Basin, near Chloride, and the first level reached. It is expected by August 1 the mine will be ready for sampling.

Pinkham.—There is a large tonnage of ore in the bins of this mine at Chloride waiting for the starting up of the new Vulcan smelter. The ore comes from a vein 25 ft. thick at the 100 ft. level.

Silver.—Ed. Williams has men at work on this mine, at Signal.

Sunrise.-George Cliquet has closed a contract with the owners of this mine in Chimehuevis District to sink 100 more ft. on the shaft and run the tunnel another 100 ft. H. K. Rosenberger is general manager.

Vulcan Smelter.—The gasoline pump for the well at this new smelter, at Chloride, is installed. The assay office is completed. T. H. Nelson is assayer.

PINAL COUNTY.

Troy Copper Company.—A special meeting of the stockholders will be held in Boston, Mass., Tuesday, July 15, for the following purposes: To see if the stockholders will vote to sell the property and assets of the company; to see if the stockholders will vote to discontinue the business of the company, and to surrender its charter and franchises, or act in any manner in relation thereto; to see if the stockholders will vote to place all or any assets of the company in trust for distribution or other purpose, or act in any manner in relation thereto. act in any manner in relation thereto.

CALIFORNIA.

Empire Consolidated Quicksilver Company .- At the Empire Consolidated Quickswer Company.—At the annual meeting in Jersey City, N. J., this week the old management was forced to retire, and a new board of directors was elected, as follows: James L., Board, R. A. Boggers, H. G. Atwater, A. L. Kempert, Eugene H. Wilson, J. P. Thomson, James L. Wilson. The company will be reorganized, and the plan is to reduce the capitalization from \$5,000,000, par value \$10 per share to \$2,000,000. \$10 per share, to \$2,000,000.

AMADOR COUNTY.

(From Our Special Correspondent.)

Imperial .- This mine near Sutter Creek has started. A 10 stamp mill is being hauled in from Ione.

Mahoney .- In this mine at Sutter Creek the ore is very low grade and work has stopped temporarily.

Zumwalt.—This mine, near Volcano, is to be opened by W. E. Adams, of Oakland, and several Stockton

BUTTE COUNTY.

(From Our Special Correspondent.)

Big Butte Gold Mining Company.—The gravel channel on the west fork of Butte Creek is to be worked by a company composed largely of San Jose men. M. J. Jordan, of San Jose, is secretary. A ditch 7 miles long is nearly completed through a very rough coun-The property has been undeveloped owing to lack of water.

Crystal Hill.—H. P. Sophey, of San Francisco, has men at work on this mine near Enterprise. The mill is now in good order.

Golden Trout .- At this mine, near Lumpkin, J. F. Waterhouse, manager, the old stamps will be taken out and the mill will be changed to 20 stamps. Electric power may be used.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

Big Six.—A 3-ft. vein of good ore has been uncoved in this mine at Jenny Lind by McAffee &

Ennis.—Work will shortly start at this mine, Wm. Hamilton, of Mokelumne Hill, superintendent. Development work is to begin on the Dolphin and many improvements are being made on the Blue Jay Mine.

J. Courtmarsh superintendent. A survey for an electric power line has been made from a station in Mokelumne Hill to the Blue Jay. Two air drills are to be used.

Gold Hill.—At this mine at Angels, C. Wolff super-intendent, all machinery is run by electricity.

Golden Eagle.—This mine at Jenny Lind is being prospected by San Francisco men who hold a bond. Machinery is being received by Superintendent Tolman.

Guiffra.—The shaft at this mine near Mokelumne Hill is down 100 ft. As soon as the first level is opened the mill is expected to start.

Parnell.—New machinery is to be put in this mine at Angels.

Salvator.—At this mine at Mokelumne Hill the mill will shortly be crushing ore.

Slate Creek .- In this mine at Jenny Lind good ore has been found.

Sultana.—This property consists of the old Fritz and Bovee mines, at Angels, Chas. H. Morgan superintendent. It is being thoroughly developed.

ELDORADO COUNTY.

(From Our Special Correspondent.)

Cambrian Mill and Mining Company.—At this copper mine near Lotus, Leonard Thomas general manager, a drain tunnel is being driven. The mill is to be at the mouth of the tunnel, and will be moved from its present site.

Horseshoe.—Superintendent Thos. F. Smith, of Placerville, states that more machinery will be necessary to sink the shaft.

Mount Pleasant.—This mine at Grizzly Flats, Wm. Brown superintendent, is now employing 35 men. Sinking in the main shaft continues. The 10-stamp mill is crushing good rock.

Pocahontas.—It is reported that this old mine at Eldorado will be thoroughly developed by San Francisco men who are about to buy it.

KERN COUNTY.

(From Our Special Correspondent.)

Consolidated Mining Company.—This company has been incorporated at Los Angeles to work the Wedge, Kinyon and 18 other claims at Randsburg. The officers are Los Angeles men. W. E. De Groot, president; E. T. Simpson, vice-president; T. S. Fuller, secretary; J. W. Off, treasurer. These with L. G. Parker, W. A. Barker and Mrs. E. A. Summers form the directorate. Development will be superintended by Percy H. McMahon, of Randsburg, already superintendent of several mines there.

Lightning Gravel Mining Company.—This corporation, organized at Bakersfield, is to use the Lightning gravel process, by which, it is claimed, cemented gravel and coated gold may be worked at a profit. H. L. Norton, of Bakersfield, represents the company.

LASSEN COUNTY.

(From Our Special Correspondent.)

Golden Eagle.—This mine at Hayden Hill is being developed by a company under the management of E. H. Benjamin, of San Francisco, secretary of the California Miners' Association. The mine had been in litigation for some time when the Sloss Bros. and Mr. Benjamin took hold. Since then some exceedingly rich ore has been found, and now a cyanide mill is to be erected.

NEVADA COUNTY.

(From Our Special Correspondent.)

Niagara.—This mine 4 miles from Grass Valley, E. B. Hawkins superintendent, is sinking a double compartment shaft. A new mill and hoist are in place. A tramway will connect mine and mill.

Pennsylvania.—This old mine at Nevada City is to be reopened under direction of David Richards and preliminary work has started. The mine has been full of water for about 20 years. By an explosion the mill and hoist were burned and the shaft ruined.

Union Blue.—At this gravel mine near North Bloomfield 4,000 ft. of tunnel are completed with over 1,000 ft. more to go to reach the gravel channel.

SAN BERNARDINO COUNTY.

(From Our Special Correspondent.)

San Bernardino Iron Mines.—There is to be litigation over these iron ore claims at Daggett. E. E. Lake, who owned them, transferred his title, and now brings suit, alleging that he sold for much less than value, owing to misrepresentations. Lake asks the court to declare the deed of transfer null and void. It is understood that the group of S claims was sold for \$200 and that the mines have since been bonded to a Los Angeles company for \$30,000.

SAN DIEGO COUNTY.

California King Gold Mines Company.—The suit of William A. Farish against this company, Stephen W.

Dorsey, John P. Jones and the Wells Fargo Company has been discontinued without cost to either party as against the other. Stephen W. Dorsey settled the claim out of court.

SAN LUIS OBISPO COUNTY.

(From Our Special Correspondent.)

Madrone.—Some rich specimens of cinnabar have been taken from this mine. Cambria is now the quick-silver center of the county.

SHASTA COUNTY.

(From our Special Correspondent.)

Platinum Discovery.—E. P. Conner has reported a find of ore near the Berg and Montgomery Mine west of Redding which carries some platinum. Platinum has been found in place near Coffee Creek, Trinity County, and near Independence, Inyo County. In neither case was there sufficient ore to pay to work for platinum alone.

Spread Eagle Group.—A gravity tram about 3½ miles long is to be built to the railroad by Alfred Onn, owner of these mines, at Copley.

Uncle Sam.—This mine at Kennett, formerly owned by the Sierra Buttes Gold Mining Company, has passed under bond to the Trinity Copper Company, of Kennett. The Uncle Sam is a gold quartz property.

SIERRA COUNTY.

(From Our Special Correspondent.)

Independence.—On this mine at Wolff Creek, Downieville, the 8-stamp mill and hoist works recently completed are working satisfactorily. The machinery is run by water power.

SISKIYOU COUNTY.

(From Our Special Correspondent.)

French Creek Company.—This company on Humbug Creek is now preparing to ship concentrates over the new wagon road to Yreka and thence to the smelters.

Quigley.—Wm. Quigley has some 300 ft. of wingdam built on the Klamath River near the Little Humbug road junction.

SOLANO COUNTY.

(From Our Special Correspondent.)

St. John's Quicksilver Mine.—The reduction works on this property 5 miles from Vallejo have been started up by Superintendent Alf Tregidgo. The mine was reopened by Mr. Tregidgo in May, 1899, and cleaned out and retimbered. The reduction works have been put in good order. The property was once very productive, but falling prices for mercury caused a shut down. The present price of quicksilver justifies the recent expenditures.

SONOMA COUNTY.

(From Our Special Correspondent.)

Cloverdale.—At this quicksilver mine a discovery of good ore has been made.

Sonoma Consolidated Quicksilver Mining Company.

—This new company has been organized by the following Santa Rosa men: Chas. Winters, S. S. Bogle, F. H. Newman, L. V. Hitchcock and E. C. Barham. The company has been formed to acquire quicksilver mines.

TRINITY COUNTY.

(From Our Special Correspondent.)

W. R. Beall, of Reading, and J. S. Childs, of San Francisco, are about to open a new quartz mine on Quimby Creek, near Denny. Al Templeton found the ledge while working on a "grubstake" for Mr. Beall. Immediate development is to be undertaken.

Brown Bear.—This mine, at Deadwood, Chas. Dobler, superintendent, has been for many years the most important quartz mine in the county. Over 70 men are employed. The lower tunnel is in 4,800 ft.

Lapham.—This mine, at Deadwood, is owned by the Deadwood Mining Company, of Pittsburg, Pa., with J. K. Fleming as manager. Developments are by 2 tunnels and a 100-ft, shaft.

Sweepstakes Mining Company.— Frank Hall, Crocker Building, San Francisco, one of the agents in the sale of the mine, says: "The present purchasers are all satisfied. They do not believe the story of the salting, and the tale that they have asked to have their money refunded is pure bosh. The truth of the whole matter is this: A number of mine owners in Weaverville are sore because we would not unload their valueless properties on the new syndicate. It is they who have been criticising and who have circulated the story of the alleged salting."

Trinity Gold Mining Company.—This reorganized company takes the place of the Chloride-Bailey Company, owning the Chloride-Bailey Mine near Dedrick. A 20-stamp mill is being built. Air compressors, pipes and a full cyanide outfit are being shipped in from the Redding station. Homer Wilson, Mills Building, San Francisco, is general manager of the company, which is composed largely of Spokane, Wash., men.

TUOLUMNE COUNTY.

(From Our Special Correspondent.)

Big Indian.—This mine, at Jamestown, has been bended to Wm. Forsyth, of Fresno. Engine, hoist, boiler, etc., have been ordered. Capt. W. A. Nevills is interested and will have charge. Twenty men are to be put to work.

Dutch.—This mine at Quartz has a 14-ft. ledge at the 1,200-level, some of it being high grade.

Keltz.- At this mine, at Sonora, 25 men are at work.

Oregon.—Wilson & Hoseey will erect a 5-stamp mill on this claim, near Groveland, and are building a new

Rawhide and App.—These two mines, at Jamestown, owned by W. A. Nevills, have their chlorination plants again in operation. The mines yield about 10 tons of sulphurets daily.

Republican Mining Company.—At this mine at Chinese Camp, B. Deleray, superintendent, a dam is being built across Woods Creek; a great deal of timber is used.

Yankee Hill Mining Company.—This company has started operations on the Smith Brothers Mine at Columbia.

COLORADO.

CLEAR CREEK COUNTY.

(From Our Special Correspondent.)

Cascade Electric Company.—Construction of the electric lines betwen Georgetown and Central City via Idaho Springs is under way. When completed light and power will be furnished to companies in both Clear Creek and Gilpin Counties. L. Hanchett, of Idaho Springs, is at the head of the undertaking.

John Owen Mining and Milling Company.—It is reported that this company, with offices in Boston and Buffalo and mines at Idaho Springs, has turned its mines over to W. E. Renshaw under option and lease, to be worked in connection with the Gem Mine controlled by Mr. Renshaw. The various holdings, it is also reported, are to be turned into another company to be organized in Pittsburg, Pa., with \$3,000,000 capital.

Kokomo-Pioneer Mining and Milling Company.—The Boston backers of this company operating mines and mills at Dumont have paid off attachments and, it is stated, will resume work. Matters are not yet straightened out, however.

FREMONT COUNTY.

Florence Elmo Mining Company.—An interest in the Geneva, Ohio, Florence, Little Mac, President, Eureka and Virginius mining claims, operated by this company, of Fremont, situated near Buena Vista, has been purchased by Major Morgan Northon, of Wheeling, W. Va., and S. Gable, of Pittsburg, Pa., for the reported price of \$15,000.

Rocky Mountain Smelting Company.—Stockholders have voted to lease the smelter at Florence to Charles J. Seeley, of Denver, for 10 years. A meeting of the board of directors will be held in a few weeks and the plant will be formally turned over to Mr. Seeley, who will add 3 lead furnaces to the present equipment and install other improvements. The smelter will be bonded for at least \$350,000, with a royalty of 8 per cent on the preferred stock and $2\frac{1}{2}$ per cent on the common stock, which amounts to 18,000 shares.

GILPIN COUNTY.

(From Our Special Correspondent.)

Mining Deeds.—K. Kossler to J. P. Richards % interest Democrat lode, Enterprise District; J. D. Scarborough to J. D. Allen, ½ interest Lottie G. lode, Pine District.

Gilpin Ore Shipments.—June's shipments of smelting and crude ores, mill tailings and concentrates from Black Hawk were the heaviest of any month in the history of the county, being 419 cars, or 8,380 tons, an increase of 1,646 tons over June, 1901. For the first 6 months of 1902 the ore shipments were 2,263 cars, or 42,504 tons, showing an increase of 465 cars, or 9,240 tons, a gain of 35 per cent for the same time in the previous year. Much of the increase is due to the success of the Golden Smelter.

Charter Oak.—St. Louis, Mo., parties own and operate this property in Russell Gulch, now in shape for active work. The shaft has been timbered to its depth of 430 ft., and preparations are under way for sinking about 200 ft. deeper. At 260 ft. some nice yellow and gray copper, black jack and lead ores are taken out. E. W. Davis, Central City, is superintendent.

Delmonico Mining Company.—This company has a 2 years' lease and bond on the Delmonico and Annex lodes in Illinois-Central District, and has 3 shifts at work sinking the Delmonico shaft to 1,300 ft., its present depth being 850 ft. There is a fair crevice to sink on, one streak assaying over \$300 per ton, the ore showing yellow copper and lead. The company has

its main office in the Equitable Building, Denver, and is figuring on installing electric drills.

Edinburgh Gold Mining and Milling Company.—This company has been incorporated with a capital stock of \$300,000 in \$1 shares, to operate the East Centennial and Eleventh Hour mines in Russell District. Developments are confined to the East Centennial shaft. Some excellent surface ores are being taken out at 70 ft. The property will be cut at a depth of nearly 1,400 ft. by close connections with the Newhouse Tunnel, and the company expects to carry on heavy developments. E. M. Messiter, Central City, is superintendent.

Grand Central Mining Company.—Manager McMasters has commenced shipments to the Golden Smelter, and developments are encouraging.

Nevada Consolidated Mining Company.—Denver and Eastern parties are interested in this large group of claims in Nevada District, and are unwatering the King shaft, which is 600 ft. deep. The property is credited with a production of over \$100,000. George C. Moore, Central City, is manager.

Stewart Gold Mining Company.—A run of 11 cords at the Gilpin Mill cleaned up 36 ozs. of gold, with 10 tons of tailings which sold for \$13.52 per ton, an average of 4 ozs. of gold per cord. New Englanders who are interested are figuring on erecting a 25-stamp mill at the property in Stewart Gulch, saving a 6-mile haul to the Black Hawk mills. J. A. Gilmour, Central City, is superintendent.

GUNNISON COUNTY.

Colorado Consolidated Mincs Company.—This Cripple Creek concern is erecting a 50-ton concentrating plant on the Cochetopa, about 20 miles southeast of Gunnison. The plant will be completed by fall. Besides employing a force on the mill, the company has men at work in the mine.

Tomichi Valley Smelting Company.—This company's smelter at Cosden, a few miles below White Pine, is in blast, after a shut down of several months. A shortage of ore caused the suspension.

LAKE COUNTY-LEADVILLE.

(From Our Special Correspondent.)

Leadville Ore Output.—The output of all ores for June was 70,000 tons, the greater portion being low grade iron and iron and lead sulphides. Over half of the tonnage came from 4 properties: The Ibex producing 8,000 tons; the A. M. W., 10,500; the Midas, 6,500; the Home, 6,000; the Moyer of the Iron-Silver combination, 8,000. The zinc tonnage was over 5,000 tons of crude material. The probabilities are that the New Monarch and the Greenback, neither of which is now producing, will be shipping heavily before July 31.

Arkansas Valley Smelter—This plant is being from

Arkansas Valley Smelter.—This plant is being further improved at an expense of several hundred thousand dollars. The plant is now handling 1,000 tons of ore daily, but with increased roasting capacity, etc., will be able to handle 1,300 tons a day.

Big Six Mining Company.—Different lessees are working and shipping siliceous ore.

Catalpa-Crescent.—The shaft has been sunk another 50 ft. and is down 450 ft., where a drift has opened up the third contact, showing an excellent iron ore. Twenty-five tons daily are shipped.

Corona.—Condon & Co. are to erect machinery.

Doris Mining Company.—An attempt is being made to raise money by selling stock to resume operations.

Gold Basin Mining Company.—This new shaft on the old Big Four property is showing remarkable gold values in a small vein. The last shipment returned 18 per cent copper and 60 ozs. gold.

Helen Gould.—Development continues on the copper vein.

Horseshoe Prince.—This combination has virgin territory adjoining the old Continental Chief group. A tunnel being run through the Horsheshoe Prince is in 550 ft., and another tunnel is started. In a new drift started towards the old workings a vein has been cut heavily impregnated with chlorides. It is a siliceous ore and assays 200 ozs. silver.

Lillian Mining Company.—This combination is operated by 12 sets of lessees. Some mineral is shipped, and occasional rich streaks of gold ore are encountered.

London.—Mrs. D. Sinnott and others are adversing on this mine, claiming that their old patents have been relocated. A dividend was recently paid of \$1.03. Interesting developments are looked for.

Midas.—The surface plant has been overhauled and shipments of 200 to 250 tons daily resumed from the iron shoot.

Mike & Starr.—Shipments of 30 tons daily are made to the Buena Vista Smelter. A large body of low grade copper sulphides is being developed.

New Monarch Mining Company.—A large force is blocking out sulphide bodies in the Lida, Winnie and

Monarch shafts. The siliceous and carbonate bodies of the upper levels are also being developed, and as soon as the Salida Smelter is completed the combination will ship 250 tons daily, one-third being siliceous and carbonate ores and the rest sulphides.

Penn Mining Company.—Large deposits of low grade siliceous ores are blocked out, but as smelter charges are heavy only 40 tons daily are shipped.

Price Shaft.—The property has resumed operations after an idleness of 7 years. It is located on the north side of Big Evans.

Ready Cash.—Al Wirth & Co., the lessees, have opened up a large siliceous body which the smelters can use. The stuff averages \$15 a ton.

Triumph.—New lessees headed by John Pale have started this gold belt property near the Ibex.

Yak Mining, Millling and Tunnel Company.—Two hundred tons of ore daily come from the different workings, while the work of driving into Ibex territory is well under way.

SAN MIGUEL COUNTY.

(From Our Special Correspondent.)

Blue Lake Mining Company.—This company, recently organized for the purpose of mining in Bridal Veil Basin, is erecting a boarding house and blacksmith shop. The company now employs but a small force. The home office is in Kansas City, Mo., and the officers are: Dr. C. E. Wilson, president; L. N. Brown, vice-president; R. E. Bruner, secretary; C. L. V. Hedrick, treasurer, all of Kansas City. W. W. Cramer, of Telluride, is general manager. A tunnel on the Lake View, the principal claim, is in over 100 ft. The veins are from 3½ to 5 ft. wide and have a 14-in streak of smelting ore. The values are said to be ½ to 1½ oz. gold; 150 oz. silver, and 30 per cent lead per ton.

Japan Tunnel.—This enterprise is breaking all records in tunnel driving in the San Juan country. The formation is diorite. During June the average distance per day was 9 ft. Next month the management says it will break the record held by the Newhouse tunnel at Idaho Springs. Walter Beam is manager.

Nellie.—This mine, in Bear Creek Basin, is employing a few men on preliminary development, as the mine is not in condition to permit the employment of a larger force. The manager, Cooper Anderson, of Telluride, expects to have everything in shape by August 1.

Ophir Consolidated Mining Company.—The compressor, recently purchased from the Meldrum Tunnel Company and installed at the Silver Bell Mine, has started, and machine drills are at work in the Silver Bell and Ida veins. The Ida is an extension of the Ida of the Butterfly-Terrible group. It was cut in the 6th level in the Silver Bell Mine about 6 weeks ago. The new addition to the mill will be equipped to treat the ore, while the old section of the mill will run on the Silver Bell and Butler ore, which is strictly a concentration proposition. The equipment of the new mill will consist of a head end sampler, a 16 by 22-in. jaw crusher, a belt conveyor, 30 1,050-lb. stamps, 6 12-ft. amalgamating plates, sizers and Frue vanners. The manager expects to have the mill running by September 1. W. S. Buckley, the manager, will soon move to Ophir, but the main office will remain in Telluride.

Tomboy Gold Mines Company.—The company has completed grading for its new mill site, and the foundation for the batteries is being constructed. The erection of the superstructure for the concentrating room has started. Development in the Argentine, Cincinnata and Columbia mines is being pushed, and when the mill is ready to start an immense amount of ore will be blocked out. John Herron, the manager, is in London, where he will spend the summer.

TELLER COUNTY-CRIPPLE CREEK.

(From Our Special Correspondent.)

Cripple Creek Ore Output for June.—During June there were shipped from the different mines and leases of the Cripple Creek District 56,870 tons of ore, with a gross value in gold of \$2,024,270. The production is again over the \$2,000,000 mark, though the several mines on Bull Hill and Battle Mountain were practically closed for 10 days, as a result of the accident to the compressor at the La Bella plant at Goldfield.

Doctor-Jack Pot Company.—Operations have ended on company account, because there is no more ore in sight, and the company has not enough money to sink to a new level. Since the company announced that it would cut the property up into blocks and lease there have been a very large number of applications received. These will be carefuly considered, and within a couple of weeks it is likely that a large number of men will be busy in the different levels. It is stated that after the lessees start work the development will be on a scale larger than anything yet done by the company itself.

Elkton Gold Mining Company.—It is understood that there will be no fight between the three factions

of the company. A compromise will enable the forthcoming meeting to be harmonious and allow such change of management as will be to the best interests of all concerned. President Bernard states that the water in the 8th level is under control.

Golden Cycle Company.—In the bottom level of the La Bella claim of this company, Stebbins and associates have opened an excellent shoot of ore, averaging 30 in, wide, with values between \$40 and \$50 in gold to the ton.

Hoosier.—This mine, on Tenderfoot Hill, has sent 2 cars of ore to the new Telluride plant at Colorado Springs. The ore is not especially low grade, but many lessees are eager to test the results of the process, as profits will be much greater if they can save in values.

Jack Pot Gold Mining Company.—At the annual meeting at the offices of the Woods Investment Company 850,000 out of 1,000,000 shares voted for the following directors: Warren Woods, H. E. Woods, F. M. Woods, J. M. Allen and S. L. Caldwell. The officers will not be elected until all the directors can get together.

Last Dollar.—A shipment of 7 cars of ore has been made from the Last Dollar on Bull Hill. The consignment was sent to the Pueblo smelters. The ore is coming from the bottom levels of the mine, where a very large amount of development work is now in progress. The company is expending the larger portion of its work in opening the mine, and taking out only a small amount of ore by stoping.

Lexington Company.—A big output is coming from the Clara D. of this company, where Kirk and associates have a lease on the main workings, and those in which the ore was first opened. There is not another mine on this part of Gold Hill making the production of the Lexington.

Little Puck Company.—One of the best showings on Squaw Mountain is now held by the Nevada Mining and Leasing Company, operating the Climax claim of the Little Puck Company. At a depth of 300 ft. it has developed an excellent shoot of ore, from which it is making regular shipments. The lessees are in good shape to go on with development.

Mary McKinney Gold Mining Company.—The directors at the regular meeting declared the usual quarterly dividend of 3c. per share. The dividend amounts to \$30,000, and will be paid on July 10. The company has been accustomed for 2 years to pay an extra 3c. dividend once during the year, but it is not believed that it will this year. The company, while exceedingly prosperous, is under unusually heavy expenses cutting a new level and buying new machinery. The mine is developed only to 500 ft., and even at this depth there is enough ore in sight to keep the company busy for over 2 years.

Mountain Boy Gold Mining Company.—Work has been resumed on the property on Raven Hill. The company is planning to sink a deep shaft and develop the vein opened. The company is in fairly good condition, and the money for development can be had.

Practical Gold Mining Company.—This company, operating the Trachyte, on Bull Hill, has started its new plant of machinery, consisting of an 80 h. p. boiler, a new hoist, and a 4-drill air compressor.

Roanoak.—The shaft house on Mineral Hill was destroyed by fire recently, the loss being about \$500. The property is owned by a Boston company, promoted by W. F. Burns, and was not operated.

IDAHO.

BLAINE COUNTY.

Rosetta.—There has been a complete change of management at this mine, on the South Boise and Big Smoky Divide. Major Fred R. Reed has been elected general manager, has assumed charge of the property, and has ordered work discontinued until he has planned operations.

CUSTER COUNTY.

(From Our Special Correspondent.)

White Knob Copper Company.—The mines, smelter and other enterprises at Mackey have been ordered closed indefinitely. The 300 employees, it is announced, have been paid off and discharged. Construction work on the smelter started last fall, and the plant is to have a capacity of 600 tons per day. It is estimated that fully \$1,000,000 have been spent on the enterprise.

IDAHO COUNTY.

Silver King.—Ambrose Stewart, manager of this mine, at Warren, and Fred S. Meyers, of Richmond, Va., an owner, are arranging for extensive work on the mine. The 10-stamp mill on the Iola, near Warren, has been purchased, and will be removed to the Silver King. A number of buildings will be built. The owners have sunk a 360-ft. shaft, and have a 6-ft. ledge of ore. A tunnel will be started to tap the ledge.

(From Our Special Correspondent.)

Thunder Mountain District .- All the trails are now open, and the boom is on.

Robert Bell, the Idaho geologist, has been here a month studying the district.

The Fairview, Belle of Thunder Mountain, Pittsburg and Tiger Companies are working from 6 to 20 men each, and preparing to work more as rapidly as camp accommodations can be prepared and supplies got in. The trails are all in bad shape, and the cost of packing in supplies is very high, 19c. per lb., or \$200 per ton. It is estimated that after a wagon road is completed the cost will not be less than \$100 per ton, owing to the rough country.

There are 3 towns started—Marble City, Roosevelt and Thunder Mountain City—with a combined popuand Thudder Mountain Chy—with a combined population of about 400. The hills are full of prospectors, and the district, 10 miles square, probably contains a floating population of 1,200. There was much sickness during May and June, principally mountain fever, due to exposure and overexertion.

The Dewey Mine has 1,500 ft. of underground development, and competent judges say 500,000 tons of pay ore exposed. The Fairview Group has a 200-ft. tunnel, and aside from these 2 properties there is not a 10-ft, hole in solid rock in the district. The new towns are not growing much. There are absolutely no hotel accommodations. Mail facilities have been abominable, private carriers charging 25c. a letter, but the new postmaster has arrived at Roosevelt, and a regular mail service from Boise is promised after July 6, when the general conditions of the camp are likely to improve.

Thunder Mountain Gold and Silver Mining and Milling Company.—Fred Irwin, former manager of the Black Jack and Sinker tunnel properties, has as-sumed charge of this company's properties, better known as the Dewey Mine. The mine is equipped with a 10-stamp mill, which will start about July 10. In the meantime preparations are being made to build a sawmill, and to start grading for the new 100-stamp mill already ordered. A representative of the Allis-Chalmers Company is expected here in a few days to design the foundation. The mill will be located 1½ miles below the mine, at the mouth of Mule Creek, and connected with the mine by an aerial tramway. The manager expects to have 200 men employed within 30 days.

Thomas Reed, who has developed the Dewey Mine so efficiently, has resigned, and gone to Indian Creek, 12 miles south of Thunder Mountain, to develop a large group of gold-bearing veins in which he is interested with W. H. Dewey.

SHOSONE COUNTY.

American Mining and Developing Company.-The machinery for this company's placer operations, near Pierce City, is being installed. J. B. Smith, of Chi-cago, Ill., is superintending the works.

Ozark.—This mine, at Pierce City, is being steadily developed. Good results are reported.

Wild Rose.—This mine, at Pierce City, is reported to have opened some high grade gold ore.

BLACKFORD COUNTY.

(From Our Special Correspondent.)

Oil Well Taxes.—The County Board of Review has raised the assessment of the Ohio Oil Mining Company from \$171,374 to \$300,000. All producing wells are assessed at \$600 and abandoned wells at \$100.

SULLIVAN COUNTY.

(From Our Special Correspondent.)

United Coal Company.-This company, of Sullivan, has been incorporated with a capital of \$100,000. The company will mine coal and manufacture coke. The directors are T. Thayer. ctors are: D. W. Henry, C. J. Sherman and Jno.

WASHINGTON COUNTY.

(From Our Special Correspondent.)

Zinc Ore Discovery.—A paying ledge of zinc ore is reported discovered in this county. State Geologist Blatchley has examined the find.

KANSAS.

BOURBON COUNTY.

(From Our Special Correspondent.)

(From Our Special Correspondent.)

Lanyon Zinc Company.—Judge Hook, of the United States Circuit Court, at Fort Scott, has granted the Edgar and Collinsville Zinc companies a perpetual injunction against this company, restraining it from operating its great gas smelters at Iola, as they have been operated since their construction, in 1898, on the charge that the method used in roasting the ore is an infringement on the patents of Horace E. Brown, owned by the Edgar and the Collinsville people. The suit has been pending for several years,

and if the injunction is sustained in the Supreme and if the injunction is sustained in the Supreme Court will mean a heavy loss to the Lanyon company. A temporary injunction was originally granted, but the Lanyons gave bond, and appealed. The temporary injunction was sustained, and the case everted to Judge Hook. The defendants have given bond for an appeal to the Supreme Court, and the case will be fought to the end. The suit is the most investment expension in the injudicial districts and the case of the end. important ever tried in this judicial district, and a number of intricate local propositions are involved. Henry Weymann, of Joplin, the president of the Collinsville Zinc Company, in discussing the matter, said: "Our company and the Edgar Zinc Company experimented for years on methods of separating the sulphur from the ore. Horace E. Brown, of Chicago, told us how sulphides were treated in Montana, and finally the two companies hit upon a method of applying the process to the desulphurization of zinc. The Edgar and Collinsville companies pur-chased Brown's rights, and have used the process

When the Iola smelters were built, 4 years ago, a man named Ropp put in a system of kilns very similar to the Brown. It was claimed in the litigation that the idea was original with Ropp.

KENTUCKY.

MARION COUNTY.

Marion Zinc Company.—This company's mines are near Marion. The chief stockholders are D. C. Griffitn, of Jersey City, N. J., and C. S. Knight, of Fort Wayne, Ind. The company is shipping carbonate zinc ore to Mineral Point, Wis., and is developing a lead and shorter mine. and fluorspar mine.

OWEN COUNTY.

Lcad Mining Corporation of America.—This company has installed a crusher and tables at its lead mines, and has begun milling the concentrates. A shaft is down 100 ft. following a fissure vein 35 in. wide. The company has begun sinking a second shaft.

LOUISIANA.

ACADIA PALISH.

(From Our Special Correspondent.)

Jennings Oil Company.—Well No. 2 came in on June 30. It gave much trouble on account of the strong gas pressure. The proven area is not enlarged to any extent, as the new gusher is close to the South-

ern Oil Company's wells.

The loading racks for rail shipments have been com pleted, and the first loaded cars were despatched

COPPER-HOUGHTON COUNTY.

(From Our Special Correspondent.)

Champion.—The product for June was 153 tons of mineral from the treatment of 225 tons of rock daily at one head of the Atlantic Mill.

Quincy.-James W. Shields, formerly assistant superintendent of the Tamarack-Oscola stamp mills, has been appointed superintendent of this company's mills at Mason, on Torch Lake, succeeding Cornelius Bedell, resigned. Work on the new coal dock and shed is completed.

COPPER-KEWEENAW COUNTY.

(From Our Special Correspondent.)

Allouez .- The work of unwatering the workings on the Allouez conglomerate lode is completed. The workings extend to the 18th level. Superintendent James Chynoweth will examine the workings and report on the advisability of resuming work.

Mohawk .- 'The new coal dock at Traverse Bay, the location of the stamp mill, is finished and is receiv-

(From Our Special Correspondent.)

Mass Consolidated.—The product for June was 160 tons, one-half of which was secured from mass and barrel copper. Only 12,000 tons of rock were treated during the month. Twenty-seven power drills are in

IRON-GOGEBIC RANGE.

Tilden .- A valuable find of ore is reported in this mine, at Bessemer, near the old cave on the west line of the property. The ore body is in what was supposed to be barren rock between the No. 5 shaft of the Colby and the No. 6 shaft of the Tilden. A new shaft house is being erected, and the ground will be thoroughly explored. oughly explored.

MINNESOTA.

(From Our Special Correspondent.)

Minnesota ore shipments for June were the largest for any month on record, 2,135,357 gross tons, 15,000 gross tons more than in July, 1901. The Duluth, Missabe and Northern Road shipped in June 801,000 tons. Last month's shipments were as follows for the three roads compared with last year:

Road.	June, 1902.	June, 1901.	To July, 1902	To July. 1901.
Duluth & Iron Range	781,890	861,170	2,034,985	1,367,069
Duluth, Miss. & North	.801,012	629,579	1,732,736	983,758
Eastern Railway	552,455	339,916	1,239,633	504,143
Totals	135,357	1,830,665	5,006,786	2,764,970

These figures show the efforts of upper lake managers for big shipments this year, and where the year's increase is coming from. Total lake shipments, all ports, for the season to July 1, were about 8,900,gross tons.

000 gross tons.

The ore roads are bringing down an immense amount of ore, and are increasing their equipment. The Eastern Railway of Minnesota is receiving 500 new 50-ton ore cars, which will give it facilities for a much needed increase, and the Duluth & Iron Range is considering an order for 600 to 700 of the 112,000-lb. cars such as it has already in use. Recently a load was pulled over this road of 29 50-ton cars and 56 30 ton wood cars, making 3 000 tons of live load. 56 30-ton wood cars, making 3,000 tons of live load, a larger load than has ever been hauled over this or any other ore line. The load against the locomotive was about 4,500 gross tons.

The new dock of the Duluth & Iron Range Road in service. It is one of the largest ore docks on the lakes.

Wheat freights are dropping, while ore freights remain where the United States Steel Corporation placed them at the opening of navigation, 75c. Wheat freights are now 1c. a bushel, equivalent to 37c. for ore, just half what is paid.

IRON-MESABI RANGE.

(From Our Special Correspondent.)

A second mine has been found on the Mississippi River Lumber Company's lands, west of Hibbing, in an exploration by G. G. Hartley. The lessees of these lands, Messrs. Kinney, Hawkins, Crosby and Pearce, are selling out all their interests.

The Fayal, Stevenson, Mahoning and Mountain Iron have each shipped 400,000 tons or more so far this

Ore has been found in the center of T 58 R 16, between Biwabik and McKinley.

Considerable of the ore being found in the north side of T 58, R 15, south of the Stevens and Donora, is not of good grade, and grows poorer with depth. The finds are not large so far.

It is stated that there are nearly 160 drills, either diamond or churn, in the western Mesabi, between Hibbing and the Mississippi River. Some of these are making good finds, but the most are not successful. About 15 to 20 drills are working east of Hibbing and west of Mountain Iron. A few are working beand west of Mountain Iron. A few are working be-tween Mountain Iron and Biwabik, and still less east of Biwabik. The bulk of the work now in progress is on the western part of the range. Messrs. Hawkins, Crosby & Kinney are using several drills in proving up a property near the Hawkins Mine, recently sold by them to the Deering Harvester Company. They have several million tons there. West from Hibbing the following explorations, among others, are under way: In section 36, T. 58, R. 21, A. F. Gross and others, with fair prospects; in section 12, T. 57, R. 21, the Elizabeth Iron Company claims 10,000,000 tons shown of all grades of ore; in section 16, T. 57. R. 21, A. F. Gross and others; in section 11, same town, other parties, but without ore yet; the Mesabi Chief, in section 23, T. 57, R. 22, by the Eastern Minnesota Railway, without results as yet. The company has an option on this State lease at \$45,000. In sections 23, 24 and ω_0 , same town, and in section 34, same 23, 24 and 20, same town, and in section 34, same town, several parties are working, some with fair results. In section 1, T. 56, R. 23, explorers are working. In sections 11, 12 and 14 drills are working, some for the Cleveland Cliffs Iron Company. The Eastern Minnesota has found ore on some of these lands, and holds the state leases. Around Snowball Lake, in sections 15, 16 and 20, same town, explorers are working. Ore is known to exist there in some quantity and in fair quality. A. F. Chisholm is working in sections 18, 19 and 20, where low grade ore was shown by the Donora Mining Company some time ago. Across the town line, in sections 12 and 13, T. 56, R. 24, all work at the Arcturus has stopped and the option Across the town line, in sections 12 and 13, T. 56, R. 24, all work at the Arcturus has stopped and the option abandoned, neither the quality or the quantity expected having been found. Drilling is under way on and near the Diamond Mine, section 15, T. 56, R. 24. In sections 21 and 22, same town, the Onondaga Iron Company is at work. In the southwest corner of the same town, in sections 35 and 36, several drills are working. Exploring is under way by numerous parties, owners and option holders in the immediate vicinity of Grand Rapids, in sections 1, 11, 15, 16 and 22, T. 55, R. 25, and the homesteaders in the vicinity have T. 55, R. 25, and the homesteaders in the vicinity have gone wild. Not so much ore has been found there yet, however. 'the Donora Mining Company is sinking a test shaft on the Holman forty, in section 21, T. 56, R. 24, and will buy if the land shows up well. C. A.

Congdon is exploring under Carson Lake, in section 10, T. 57, R. 21, and will have several drills there next winter. C. C. Prindle, of Minneapolis, has been exploring for some time in section 24, T. 57, R. 22, and has considerable ore shown there.

Adams.—The old Cloquet stockpile is to be shipped at once. Explorations in the Cloquet are showing a large and valuable mine. It became the property of the Lake Superior Consolidated Iron Mines under the Spruce Mine lease, and not much was thought of the property then.

Arcturus.—This land, in T. 56, R. 23, has been abandoned, after a payment of \$50,000 by the option holders, Messrs. P. L. Kimberley, of Sharon, Pa.; G. C. Howe and others, of Duluth. They were led to believe there were 15,000,000 to 18,000,000 tons of ore on the property, and that the free silica mixed with it could be removed successfully by washing. So unsatisfactory did the explorations prove that no attempt was made to test the washing possibility. They had an option to purchase the fee for \$750,000.

Deering Harvester Company.—At the Agnew a shaft is in ore, and considerable will be shipped this year. At the Hawkins a shaft is one level in ore, and about 100 ft. of drifting has been done. About 50,000 tons will be shipped this year, all from underground, if the railroad gets in in time. Stripping will continue all winter.

Explorations near Stevens.—Two small ore bodies have been found south of the Stevens on lands shown as out of the ore-bearing belt by the geological survey. These are the Meadow, 1,800,000 tons in section 3, T. 58, R. 15, and a new exploration conducted by Eaton, Fairchild and others in Section 4. The Union Steel Company has finished its work on the Donora lease in Section 28, T. 59, R. 15, just west of Stevens.

McKinley Townsite.—Ore has been found under this village. Pettit & Robinson own the mineral rights, but the Republic Iron and Steel Company hold them under lease. The ore is of fair grade, but not in great quantity. This will be the second Mesabi Range town to be moved because of ore under it.

Minnesota Iron Company.—This company's Glen Mine, adjoining Pillsbury, will be shipping in a week. About 30,000 tons will be moved this year. A shafthouse is now going up. Two shovels are stripping at the Burt. An electric haulage plant is in operation at the Rust.

Pickands, Mather & Company.—Contracts have been let to strip 500,000 yds. from the new Albany Mine at Hibbing. It lies close to surface, and has good ore. The Day 80 at Hibbing will not be opened yet.

Republic Iron and Steel Company.—At this company's Kinney Mine camps are under way and material for stripping is coming in. The overburden is from 20 to 45 ft. thick, and a large area will be stripped at once. A \$30,000 outfit has been bought by the contractor, including one 65-ton Bucyrus shovel. The contract now beginning will last about 4 years, and will uncover several million tons of fair grade ore.

Sheridan 40.—This land, lying close to McKinley, and known to contain some ore, has been optioned to Messrs. Maitland and Parmalee, who will sink a shaft.

Stevens.—I'wo large shovels are working day and night. Some 250,000 yards will be moved this year, and some ore may be shipped this fall. To avoid trouble from surface water a deep ditch has been to clear around the mine. The stream that ran through it has been dammed and diverted by heavy cribs. A storage reservoir has been built, and water is piped through the location. The reservoir is about 6,000 ft. from the mine. Tanks for shovels and locomotives are conveniently placed. The mine is 2 miles off the main Mesabi line of the Duluth & Iron Range road, and a branch has been built in from Colby. A very heavy snipment will be made in 1903. The surface is from 18 to 40 ft. deep, and, contrary to most open-pit mines, there will be a grade with loads out of the mine of .02 per cent.

Stevenson.—A third new shovel of 105 tons weight and 2 additional locomotives will soon be on hand. A shovel is stripping on the north bank of the mine, where there is considerable ore. Three shovels are now moving dirt.

Zenith Furnace Company.—This company has bought the lease of about 1,000,000 tons of lean bessener ore on lands adjoining the Williams Mine at Biwabik, and will open the lands. The Williams is the property of the company, and what ore can be got out will be mined. The company is rebuilding the Duluth blast furnace as rapidly as possible, and will be making pig soon. The furnace will make 225 tons daily, and has sold its product for a long time. It will use its own ore mixed with western Mesabi, and will probably have 100 per cent of Mesabi mixture.

MISSOURI.

HOWELL COUNTY.

(From Our Special Correspondent.)

Renfrow Zine Oxide Company.—The plant of this company, owned by W. C. Renfrow and D. F. Dwyer, of Joplin, has been sold to the New Jersey Zinc Company, one of the two independent zine oxide manufacturing plants in this State, the other being the Ozark Oxide Company, which recently erected a large plant in Joplin. The sale included a zinc carbonate mine, and the purchase price was about \$100,000. Governor Renfrow stated that it was difficult for an independent company to market its product in competition with the New Jersey Zinc Company, and that he accepted the first fair offer. Capt. D. F. Dwyer will continue as general manager and superintendent of the plant.

JASPER COUNTY.

(From Our Special Correspondent.)

Joplin Ore Market.—The top price for ore last week was \$38 per ton for the Carnegie ore from the Dinkelbehler lease. This ore assayed 65 per cent, and on the old 7 to 1 basis promulgated by the Missouri-Kansas Zinc Miners' Association ought to sell at \$40 per ton when spelter sells for \$5 per 100 lbs., as at present, but the producers are satisfied. Ore buyers are taking everything in sight, and all indications point to another raise in prices. Lead scored another advance of \$1 a ton, making the price \$48 per ton, or 50c, higher than in the same week in 1901. The advance was made to prevent buying by the Marke Lead Company of St. Louis and other outside concerns in this district. During the corresponding week last year the top price of zinc ore was \$27 per ton; the shipment of zinc was less than last week by 2,111,530 lbs., the value was less by \$56,235, but the lead shipment was greater by 28,444 lbs. For the corresponding 27 weeks of last year the sales of zinc ore were less by \$6,736,740 lbs., the value less by \$604,092, and the lead sales greater by 2,165,590 lbs. Following are the shipments from the various producing camps for the week ending July 5:

Joplin	Zinc, lbs.	Lead, lbs.	Value.
Claire Property	3,221,870	417,250	\$64,786
Galena-Empire	1,228,650	77,450	18,960
Carterville-Webb City	1,709,080	179,770	31,659
Aurora	899,890	35,600	13,009
Spurgeon	78,170	14,200	981
Oronego	407,890	4,290	5,983
Central City	54,240	1,710	760
Prosperity	144,950	9,240	2,686
Neck-Alba	399,240		6,987
Duenweg	762,830	9,940	12,386
Zincite	179,860		3,148
Carthage	331,670		5,638
Cave Springs	234,140	11,787	4,029
Carl Junction	54,900		961
Grarby	216,000	41,000	3,325
Wentworth	184,180		2,240
Sarcoxie-Reeds	44,120		709
Gillman (Arkansas)	41,500		623
Total 1	0.193.180	797 940	\$178 967

ST. FRANCOIS COUNTY.

St. Joseph Lead Company.—We are informed by an officer of this company that the published rumor that a sale of the company is in contemplation or under negotiation has no foundation in fact; that the property of the company is not for sale, and all rumors that it is are pure fiction,

(From Our Special Correspondent.)

Eastern parties are examining the Mine La Motte estate, the oldest mining property in Missouri, on a sale basis of \$1,000,000.

The war between the new Missouri Southern Railroad and the older Missouri River & Bon Terre Railroad about crossings in Flat River is temporarily suspended by injunctions. Grading is proceeding each side of the crossings.

Doe Run Lead Company.—The new No. 6 shaft, at a depth of about 450 ft., has opened a 6 ft. ore-body. Though sunk on the edge of Flat River, it has been little troubled by water.

Federal Lead Company.—This company has let a contract for a new shaft on its Leadington tract in Flat River, now being prospected with a diamond drill.

National Lead Company.—This company is treating over 1,200 tons of ore a day from its Nos. 2 and 3 shafts. Shaft No. 1 is being enlarged from 1 to 3 compartments, and a new shaft, No. 4, is about to be sunk near the east end of the tract.

MONTANA.

BROADWATER COUNTY.

(From Our Special Correspondent.)

Hard Cash.—This property, at Radersburg, operated by Allen Easterley, is shipping some high-grade gold ore. In a recent lot sent to Anaconda the first class ore averaged \$200 in gold, and the second class \$75. James Mayne, of Helena, is a one-half owner. On the Mayne interest Mr. Easterley holds a lease and bond.

Indian Creek Placers.—Smith & Co., who are operating these diggings, near Townsend, have deposited with the assay office at Helena a big bunch of amalgam, the result of the first clean up for this season.

Last Chance.—Easterley Brothers, of Radersburg, have been making regular shipments of gold ore to the Butte smelters. The last car averaged \$210 in gold.

CHOTEAU COUNTY.

August.—This mine in the Little Rocky District, 50 miles from Harlem on the Great Northern Railroad, is operated by Putnam & Zortman, who have leased temporarily the Mission Peak Mining Company's stamp mill. George H. Bretherton is in charge of the mill and Mr. Zortman is in charge of the work at the mine.

FLATHEAD COUNTY.

(From Our Special Correspondent.)

American Kootenai Company.—This company is putting in an electric power and lighting plant. Electric drills will be used. Some very rich ore has been exposed.

Brick & Brannigan.—This mine, at Cabinet, is making regular clean ups of from \$5,000 to \$6,000. A short time ago a rich clean up yielded \$15,000.

Cedar.—An Eastern syndicate has taken an option on this group, owned by John L. Scarlett. The ledge is supposed to be an extension of the Mother Lode.

Mother Lode.—This Cabinet property will soon begin work on a large scale. One of the largest bodies of free milling ore in Montana is reported exposed.

GRANITE COUNTY.

(From Our Special Correspondent.)

Dorothy Gold Mining Company.—It is announced that the property is to have a new mill of 200 tons capacity, said to be 40 stamps, which the management claims has been ordered. John Schneider, of Philipsburg, is superintendent.

Granite-Bimetallic Mining Company.—The new board of directors is as follows: Wilber F. Boyle, A. B. Ewing, Paul A. Fusz, J. P. Neyer, C. D. McClure, E. S. Orr, L. M. Rumsey, G. J. Pansey, W. C. Uhri and E. Whittaker.

JEFFERSON COUNTY.

(From Our Special Correspondent.)

Elkhorn.—A new shoot of silver ore has been opened on the 450-ft. level on the foot wall. Twelve inches of this ore streak are said to assay 200 to 800 oz., with 6 to 8 ft. of 60 oz. rock. From the 500-ft. level to the surface the foot wall side of the vein, 40 ft. wide, had never been explored. Another block of virgin ground extends from the 850 ft. level to the 1,450 level.

MADISON COUNTY.

Standard Mining Company.—The new mill, at Contact, which shut down recently, owing to a defective pipe line, is again in operation.

Toledo.—This mine has been sold by Levi Cartier to the Bismarck-Nugget Gulch Mining Company. The sale was made through F. B. Linderman. The mine is at Brandon, 3 miles from Sheridan. Besides the mine, which is equipped with hoisting machinery, the sale includes the smelter and concentrator. Superintendent Ring is preparing to resume work.

PARK COUNTY.

Crevasse Mountain Mining Company.—Sheriff Beley has sold at auction all the property, consisting of 4 patented mining claims in the Crevasse District, together with the mill and buildings. The sale was made by virtue of an execution issued out of the District Court in the case of E. T. Wilson, receiver of the First National Bank of Helena, and the Crevasse Mountain Company. The property was bid in by E. T. Wilson for the bank at \$13,700, the amount of the judgment.

East Helena Smelter.—In compliance with the urgent request of ex-Gov. S. T. Hauser, the American Smelting and Refining Company announced that it would re-open this plant on July 8, and give preference to old employes, without discrimination against those who have been on strike since May 1. Notice was posted at the plant to this effect, and the men are required to sign an agreement that they will continue to work at present wages for one year from May 1. Before this notice was posted Mr. Hauser had secured assurances from the men that they would accept the terms offered, thus abandoning the claim for the recognition of their union, which caused the strike. About 600 men are employed directly, besides a large number employed in quarrying limestone and mining iron ore for the smelter. Many mines will resume operations in consequence, and a large addition will be made to railroad crews employed in hauling ore.

POWELL COUNTY.

Lost Creek Coal Mining Company.—The directors of this company are John W. Black, of Anaconda; J.

A. Stromberg and F. D. Weller, of Butte. ital stock is \$500,000. The property owned is located on Lost Creek, about 3½ miles northwest of Ana-conda. Considerable development work has been done there, and a 12-ft. breast of coal is reported exposed.

(From Our Special Correspondent.)

George.-This property, in the lime belt at the head of Lost Creek, 12 miles from Anaconda, is to be reopened after several years of idleness. The ore is a lead-silver, with a shipping average of \$50 per

Lower Works of Anaconda Copper Mining Com-pany.—After several months of idleness this plant is again running in a moderate way, the presumptive object being to clean up the ore left in the bins at the time of the close down.

SILVER BOW COUNTY.

Raven.—John Berkin is preparing to sink the main shaft from the 400-ft, level to the 600, and probably to the 1,000-ft. New and heavy machinery is being installed. The west of Centerville. The property is in the silver belt,

Emma.—This mine, operated by the Butte Mining and Development Company, has reached a depth of 700 ft., and sinking is still in progress.

Farrell Smelter.—II. J. Horn, superintendent of the Northern Pacific Railway Company, has filed with the County Commissioners a petition for right of way for a span from the main line of the road for 7 blocks along Cherry avenue, to be used by a new smelter to be erected by Franklin Farrell and associates, who are developing copper claims in East Butte.

Pacific.-This mine, upon which a bond was taken up by the Butte Mine Exploration Company, has closed down temporarily.

NEVADA.

LINCOLN COUNTY.

De La Mar.—Simon Bamberger, of Salt Lake, states that he, with some New York City men, among whom are Marcus Stine, vice-president of the International Pump Company; Philip Lehman, of Lehman Brothers; Henry Morgenthau, of the Central Realty Bond and Trust Company; L. S. Frankenheimer, of Asiel & Co.; E. W. Nash, of the American Smelting and Refining Company; J. E. Heimerdinger, of the Colorado Fuel and Iron Company, and Martin A. Marks, of Cleveland, O., have purchased the De La Mar Mines, as well as the adjoining properties, known Mar Mines, as well as the adjoining properties, known as the April Mining Company, the Magnolia Mining Company, the Mono Mining Company, the Boston De La Mar Mining Company, and other adjoining claims, comprising about 1,600 acres of gold-bearing property.

WHITE PINE COUNTY.

New York & Nevada Copper Company.—This company has bonded and purchased from Kind & Jackson and Paul, Richardson & Holmes their conflicting interests in the old Keystone Mine and also the millsite adjoining.

NEW YORK.

WYOMING COUNTY.

Oatka Mining Company.—This New York City concern, capitalized at \$500,000, is sinking a test well on the Thayer farm, about 2 miles north of Wyoming station, on the Buffalo, Rochester & Pittsburg Railroad. The well is expected to cut 80 ft. of rock salt, and be 1,280 ft. deep. The company will mine rock salt.

NORTH CAROLINA.

DAVIDSON COUNTY.

(From Our Special Correspondent.)

Silver Valley.—This mine is being unwatered by New York parties under the management of J. R. Allen, formerly of Concord, N. C.

MONTGOMERY COUNTY.

(From Our Special Correspondent.)

A property adjoining the Russell Mine and a continuation of one of its veins is being opened and a 10-stamp mill erected by O. M. Allen, Jr., of Kalamazoo, Mich.

RANDOLPH COUNTY.

(From Our Special Correspondent.)

A new discovery made by Joseph Beck in the south-eastern part of the county is said to be a belt of gold

Sawyer.-This gold mine is being worked by Minnesota men.

ROWAN COUNTY.

(From Our Special Correspondent.)

Gold Hill.-These copper mines are working on the 600-ft. level. The 20-stamp mill is in full operation.

Rowan.—This copper mine, under the management of R. D. Curd, of Salisbury, continues to produce a good grade of copper-gold ore.

Union.—This copper mine is making extensive im-

provements in the mill under the direction of the new manager, John A. Traylor, formerly of Mexico.

OREGON.

GRANT COUNTY.

Badger.—A 70-ton concentrating plant is about completed on this mine, at Susanville. The ore carries gold, silver and lead. The shaft is down 500 ft. The owners recently secured a controlling interest in the Elk Creek Water Power Company. E. P. Kennedy is superintendent.

 $Taylor\ Brothers.$ —Walter King, of Ashland, recently bought this mine, on Hungary Creek, for \$5,000, and is to install a 5-stamp mill built by the Risdon Iron Works, of San Francisco. The ore is low grade, but free milling.

PENNSYLVANIA.

ANTHRACITE COAL.

Coal Miners' Strike .- There has been no material change in the situation at the mines. A few small mines are working, and a few more washeries are busy. The operators report an increasing number of men applying for work, but state that the time for resuming work has not arrived, as attempts to start mines would lead to rioting.

RITUMINOUS COAL.

Owing, it is said, to the mine laborers threatening to make trouble, Patrick Gilday, president of the United Mine Workers in the district about Altoona, has issued an order setting aside the recent order to restrict work to 4 days a week. It is reported, also, that the order was set aside because it was not obeyed as generally as officials of the United Mine Workers expected. Workers expected.

Beech Creek District.—Coal shipments in June were 496,162 short tons, making 2,862,083 tons since January 1. The movement of coke in June amounted to 20,061 tons, making 95,529 tons in the 6 months this year.

SOUTH DAKOTA.

LAWRENCE COUNTY.

(From Our Special Correspondent.)

Adler Creek Mining Company.—The bar from the second clean-up at the new cyanide plant on Yellow Creek is said to be 900 fine and to weigh 38 lbs., being the result of a 28 days' run. The company is cleaning up an old dump at the mine.

Bald Mountain District.—The Elkhorn Railroad has

put on 3 daily ore trains to handle the ore into Deadwood, where one handled it a year ago. The road is hauling in all over 500 tons a day to the Golden Reward Smelter at Deadwood, the National Smelter at Rapid City, and the Dakota and Imperial cyanide plants in Deadwood. The heaviest shippers are the Golden Reward, Horseshoe, Portland, Dakota and Imperial companies. A year ago the daily tonnage was not over 150 tons.

Bear Gulch District .- Conners Brothers, of Spearfish, have started a deep shaft on a group of claims, using a steam hoist. D. R. Thompson is in charge. using a steam hoist. D. R. Thompson is in charge. The Bear Gulch Mining Company has resumed work after several months' idleness, and is sinking a shaft. Owing to the continued rains placer mines have plenty of water. Many gulches are being worked that were never worked before.

Gold Run Tailings .- Omaha men are working a small cyanide plant at Pluma on tailings from the Homestake that have been accumulating for several

Hidden Fortune Mining Company.—The west cross-cut from the Baltic tunnel is said to show ore that averages better than \$4 the ton. The company has started work on the Bingham lode.

Portland Mining Company .- The cyanide plant at Gayville is running on 50 tons of ore daily, cleaning up every 2 weeks. The company has stopped shipping to Eastern plants.

PENNINGTON COUNTY.

(From Our Special Correspondent.)

Antimony Ore.—A deposit is being worked on Rapid Creek, near Silver City, and the ore shipped. It carries gold values. A. D. Arundel, of Hill City, owns the claim.

Cumberland Mining Company.—Rich ore has been encountered on the old J. R. property.

Gopher Mining Company.—The ledge is reported found, after a quest of more than a year. A. D. Arundel is superintendent. A shipment of \$32 ore Arundel is superintendent. A shipment of \$32 ore has been made to Denver. Minneapolis and St. Paul, Minn., men own the stock.

Holy Terror.—Rich ore has been found on the 700-ft, level. The drift is to catch the Keystone

Ida Florence.—A 12-ft, vein has been struck in a cross-cut from the 200-ft, shaft. It is said to assay from \$8 to \$14 the ton, free milling. James Sisk,

superintendent at Keystone, is thinking of building

TENNESSEE.

ANDERSON COUNTY.

Coal Creek Mine Explosion.—A dispatch states that the coroner's jury, which has investigated the cause of the Fraterville Mine explosion of May 9, has reached a verdict against the Coal Creek Company officials, owners of the mine, and against State Mine Inspector R. A. Shiftlett.

HARDIN COUNTY.

(From Our Special Correspondent.)

Sour Lake Springs Oil Wells.—Atlantic & Pacific well No. 3 came in on July 4, the well cleaning itself and throwing oil above the derrick. It seems equal to the other gushers. The field is not enlarged, as the well is close to those heretofore brought in. The Guffy Companys' No. 3 is a half mile east of the gushers, and should it prove a gusher operations will be greatly extended.

JEFFERSON COUNTY.

(From Our Special Correspondent.)

Beaumont Oil Field.—The shipments for June were very heavy, both by water and rail, aggregating 1,000,000 bbls. They were limited by a scarcity of cars. Water shipments will soon tax the pipe line capacity and storage tanks to the limit. No earthen tanks for storage were completed during June, but steel tankage for 230,000 bbls. was completed, and tankage for 450,000 bbls is under construction.

450,000 bbls. is under construction.

The pressure decreased rapidly during June, and many companies cannot obtain oil to fill contracts; the many companies cannot obtain oil to fill contracts; the demand for pumping equipment is enormous, and cannot be supplied promptly. The conditions on Spindletop have radically changed, leaving most companies unprepared. Only 23 wells are being drilled, but many rigs are at work cleaning out old wells and preparing for pumping. The increasing shipments and decreasing capacity of the wells warrant higher prices, and it is the opinion of many that the existing storage will never be filled, the oil in store having increased only about 500,000 bbls. in the last 3 months, the stored oil amounting to about 4.450,000 bbls.. while stored oil amounting to about 4,450,000 bbls the completed tankage amounts to 7,810,500 bbls.

Buffalo Driller Oil Company.—This company's pumping plant was totally destroyed by fire on July 3. Fortunately the fire did not spread to the derricks and tanks in the vicinity.

UTAH.

(From Our Special Correspondent.)

Ore and Bullion Settlements .- For the week ending July 5 Salt Lake banks report settlements on various sales as follows: Bullion, \$54,700; gold, silver, lead and copper ores, \$300,900; gold bars,

BEAVER COUNTY.

(From Our Special Correspondent.)

Annie Laurie.—This mine will add 20 miners. The output is advancing to 10,000 tons a month. Manager C. T. Rader will push the work. It is reported that London, Eng., parties have been bidding for the mine, but are unable to get suitable terms.

Beaver Copper and Gold Company.—Manager Frank Morehouse states that the shaft on the Lady Curzon has been re-timbered, and sinking will be resumed. A fair grade copper ore, carrying some gold and silver, is exposed. The company is prepared to continue work steadily.

Blue Acre Company.—Shaft-house, bunk-houses, blacksmith shop, etc., are under way. Work is to begin on Shaft No. 3, which will open advantageously some of the best claims.

BOX ELDER COUNTY.

(From Our Special Correspondent.)

Park Valley Shipments.—The Century reports 1 car concentrates for the week ending July 5.

JUAB COUNTY.

(From Our Special Correspondent.)

(From Our Special Correspondent.)

Tintic Shipments.—For the week ending July 5 consignments of ore were as follows: Ajax, 3 cars; Bullion-Beck, 2 cars; Carisa, 6 cars; Dragon Iron, 1 car; Eagle & Blue Bell, 2 cars; Gemini, 10 cars; Lower Mammoth, 2 cars; May Day, 5 cars concentrates; Sioux Utah, 2 cars ore; Uncle Sam, 5 cars ore; Yankee Consolidated, 6 cars; South Swansea, 5 cars; Mammoth, 1 car; Bonanza, 1 car; B. W. & H., 1 car;

Mammoth vs. Grand Central.—There is a story current that negotiations are on for settling this case out of court, but in all probability the settlement will be made by the Federal Court The last case brought by the Mammoth against the Grand Central in the District Court at Nephi has been removed to the Federal Court in Salt Lake.

Swansea.—This Silver City mine has suspended operations indefinitely, owing to the decline in the

silver market, the working charge made by the smelters and the tariff of the railways, in addition to the advance in the price of mining supplies of almost every description. It is stated that there are no less than 125,000 tons of ore exposed.

SALT LAKE COUNTY.

Germania Smelter.—The long tramway between the quarries on the north of Bingham and the loading station at the Oregon Short Line's switch is practically completed. A No. 6 Gates crusher will be used capable of reducing 500 tons of limerock daily, this to be passed over the 1,500-ft. tramway. Worked at full capacity the quarries will afford employment for 35 persons under Superintendent Tate.

United States Mining Company .- The 60-drill compressor will be ready for work early in August. The bins at the Rio Grande terminal of the tramway are completed, while one-half the towers for the tramway between the mines and the railway are in position.

(From Our Special Correspondent.)

Bingham Shipments.—During the week ending July 5 shipments were as follows: Petro, 1 car ore; United Bingham, 1 car ore; Sampson, 1 car ore; Phoenix, 1 car ore; Ben Butler, 5 cars concentrates; Columbia, 1 car ore; Grizzly & Lavinia, 1 car.

Bingham Ore Tariffs.—The freight rates on all ores Bingham Ore Tariffs.—The freight rates on all ores between Bingham and the Valley smelters have been reduced to 75c. per ton. This is a cut of 50c. per ton from the previous rate. The producers of low-grade ore will be greatly helped by this action of the Rio Grande Railroad.

Highland Boy vs. Petro.—The Highland Boy Company has filed its complaint against the Petro Mining Company, claiming apex rights in its own ground and the right to the ore bodies in dispute.

Ophir.-Local shareholders in this mine, at Stateline, have been surprised to learn from a circular sent out from the office at Detroit, Mich., that there was a mortgage on the property and plant to the extent of \$100,000. The circular also states that an assessment of 5c. a share is payable July 1, and if not paid the mortgage will be foreclosed.

Utah Consolidated.—The June output from the Highland Boy Smelter is given as 1,141,520 lbs. of copper bullion.

SUMMIT COUNTY.

(From Our Special Correspondent.)

Park City Shipments.—For the week ending July 5 shipments were as follows: Daly-West, 3,934,850 lbs. ore; Ontario, 984,370 lbs. ore; Silver King, 1,734,-250 lbs. ore; Silver King lease, 21,300 lbs. ore; Anchor, 216,150 lbs. ore.

McIntosh Sampler.—The excavation for the new sampler is about completed, and part of the material for the building is on the ground. The management states that work will be pushed.

TOOELE COUNTY.

(From Our Special Correspondent.)

Frisco Shipments.—The Horn Silver reports 4 cars of lead-silver ore sent to the Salt Lake samplers during the week ending July 5.

Stockton Shipments .- For the week ending July 5 the Ophir Hill reports 24 cars concentrates, and the Stockton 1 car ore.

Honerine .- Work on the new 7,000-ft. tunnel to drain the mineral zone at Stockton has begun, under the direction of Superintendent Raddatz. The tunnel is intended to reach the ore bodies of the Honerine in the next 12 months.

Northern Light .- According to the latest reports from this property, while no great strike is noted, the general conditions of the mine are more satisfactory.

West Dip .- This old abandoned camp is in a fair way to resume activity by the success in handling slimes attained by George Moore, of the Sunshine Company. Repeated samplings of the properties in the West Dip have shown a fair average of value.

VIRGINIA.

DICKINSON COUNTY.

Crane's Nest Coal and Coke Company .- This comor Crane's Nest Coat and Coke Company.—Inis company will soon erect a large coke and mining plant on Crane's Nest Creek. A contract has been let to build 500 coke ovens and work has started. Three hundred miners houses are being erected. Two hundred hands are now at work. hands are now at work.

FOREIGN MINING NEWS.

AFRICA.

NATAL.

The Mines Department reports the production of coal in Natal for the month of April at 50.875 tons, against 41,718 tons in April, 1901; an increase of 9.157 tons. There were 17 collieries in operation, employing 191 white men. 1.919 negroes and 1,712 East Indians. There were 2.900 tons of coal exported during the month and 19,983 tons sold to steamers at the port of Durban.

TRANSVAAT.

Langlaagte Deep, Limited.—This company makes a report for the period from the resumption of work on January 6, 1902, to April 30. In the mine 142 ft. of drifts are noted, developing 6,000 tons of ore. The rock raised and taken from surface dumps was 42,962 rock raised and taken from surface dumps was 42,962 tons, of which 7,417 tons, or 17.3 per cent, were sorted out as waste. In the mill the total ore crushed was 36,295 tons, with 65 stamps. The average duty per stamp per day was 5.17 tons. There were treated in the cyanide plant 28,336 tons of tailings and concentrates, and in the slimes plant 7,063 tons of slimes. The yield in fine gold was: From mill, 8,138 oz.; tailings, 4,622 oz.; slimes, 325 oz.; total, 13,085 oz., or 0.36 oz. per ton. The total earnings were £41,965; net profit, £12,660. The average earnings per ton, reduced to United States currency, were \$7.22. The costs were: Mining, \$3.56; milling, \$0.59; cyaniding, \$0.71; general expenses, \$0.69; total, \$5.55; leaving a \$0.71; general expenses, \$0.69; total, \$5.55; leaving a net profit of \$1.67 per ton.

AUSTRALIA.

NEW SOUTH WALES.

Broken Hill Proprietary Company.—This company reports the output from its refinery for the four weeks ending June 18 at 343,857 oz. silver, 4,469 tons lead and 29 tons hard (antimonial) lead.

CANADA.

NOVA SCOTIA-CAPE BRETON.

NOVA SCOTIA—CAPE BRETON.

Tominion Coal Company.—This company's shipments of coal in June were 290,049 tons, or 4,000 tons in excess of any previous month's record. For the four months of the fiscal year, from March 1 to June 30. the total shipments were 908,564 tons, against 756,035 tons for the corresponding period in 1901; an increase of 152,529 tons, or 20.2 per cent this year. Shipments for June were 23,579 tons greater than the output. The shipments in June, 1901, were 269,000 tons. 000 tons.

CHIHUAHUA.

(From Our Special Correspondent.)

San Miguel .- A strike of a 5-ft. vein carrying values of \$300 per ton is reported in this mine, at Cusihuiriachic, belonging to the Helena Mining Company.

DURANGO.

(From Our Special Correspondent,)

Compania Restauradora de Guanacevi.—Twenty new stamps have recently been put in and a 5-mile narrow-gauge railway built between the mill and the mine. A strike of ore running 300 oz. silver to the ton is reported in one of the company's mines.

GUANAJUATO.

Guanajuato Power and Electric Company.—Robert McT. Doble, of San Francisco, Cal., who is acting as consulting engineer for this company, which concern is to build a large water-power plant on the Duora River for furnishing electric power to mines in Guadalajara and to supply power for light and traction in various Mexican cities, is in New York City to close contracts for equipment.

SONORA.

Sonora Copper Company.—Papers have been served upon Axel W. Hallenborg, of New York City, promoter of this company and of the Puertecito Copper Company, summoning him to answer within 20 days the complaint in an action brought by Christopher W. Hardacre, a stockholder in the Sonora Copper Company, which alleges that Hallenborg accepted \$500 for 100 shares of the stock after many misrepresenta-tions, and that the plaintiff has not received and can-not obtain any return from his investment.

The prospectus of the Sonora Company states that the property is situated in the Cananea Mountains, and consists of mining claims equal to 1,979 acres. The plaintiff avers that the Sonora Company never owned any mining property such as described, and that all the statements concerning it are false.

NEW ZEALAND.

The Mines Department reports the total exports of gold and silver from the Colony for April and the four months ending April 30 as below, in crude ounces:

34,114 51,638 151,217 185,229

The increase in gold this year was 3,916 oz., or 2.8 per cent; in silver, 34,012 oz., or 22.5 per cent. The gold bullion exported this year was equal to 127,480 oz. fine gold, or \$2,635,008.

SOUTH AMERICA.

BRITISH GUIANA.

Diamonds .- The Georgetown Chronicle reports sevor the Mines Department. These include 5,061 stones from Bartica, by the Massaruni Diamond Mining Company; 630 from the Massaruni District, by the Marshall Diamond Syndicate; 95 from the same district by the Enachu & Kupari Diamond Mining Company: All these stones were of ordinary size. The Chronicle further says: "A big haul has been made in the Massaruni recently on Messrs. Armeny, Fogel & Legatt's claims. The gold officer at Bartica has been notified of the find of 1,021 diamonds."

Gold.—The Mines Department reports the gold produced in May, on which royalty was paid, at 9,332 oz., against 10,021 oz. in May, 1901; a decrease of 689 oz., or 6.9 per cent, this year.

MINING STOCKS.

(Complete quotations are given on pages 68 and 69.)

New York.

The market is sluggish; few professional traders support it, and the public is indifferent. Amalgamated rine market is suggist, lew protessional traders support it, and the public is indifferent. Amalgamated Copper weakened to \$63, while Anaconda was invisible two days. On curb United, of Montana, gained to \$35½, but selling was small. Tennessee improved somewhat, rising to \$17½. White Knob, of Idaho, was uninteresting at \$20@\$19, and Union, of North Carolina, at \$37½@3½. Montreal & Boston, of British Columbia, was quiet at \$2½@\$2½. British Columbia came forward on odd sales at \$8½@\$7½. Greene, of Mexico, is quoted at \$27½@\$27. Standard Consolidated, of California, re-appeared at \$3.25. A sale of Empire Quicksilver preferred is noted at \$1¾. Alice, of Montana, holds at 48c. In the Colorado section comparatively little is doing. Portland, of Cripple Creek, is steady at \$1.75, while Isabella hovers around \$28, and Elkton at 53c. Iron Silver, of Leadville, sold again at \$5c., and Breece at 65c.

Breece at 65c.

Boston.

(From Our Special Correspondent.)

(From Our Special Correspondent.)

Copper shares are dead, yet with all the dulness few stocks come out. There is a fair market for the better class of stocks, however. The uncertain and disappointing position of the metal has left speculation at a low ebb. There is no question, however, that Boston is long of money and ready to embark upon an active bull campaign in its specialties when the time is opportune.

United States Oil was a feature for a short time, advancing \$2 to \$17, but it fell back to \$15.50 tonight. The company intends to expend about \$300,000 in equipping and developing the new coal property. Surveys for a railroad, 12 miles in length, have been arranged. The company is producing about 1,000 bbls. of oil per day, and has about \$135,000

1,000 bbls. of oil per day, and has about \$135,000 cash on hand.

cash on hand.

Continued mutterings are heard of an assessment on Mass mining stock, but nothing definite has been planned as yet, although the company will need more money later to carry out the developments planned. The stock has been heavy at \$18@\$18.50. Adventure has been steady at \$23@\$23.75. The talk that Standard Oil or Amalgamated interests are looking for control of Tamarack, Osceola and Isle Royale may be true but they are also looking for the Columnt & control of Tamarack, Osceola and Isle Royale may be true, but they are also looking for the Calumet & Heela. It would be much easier to get the first named trio, but difficult in the latter case. There has not been a sale of Tamarack for over a week, but Osceola sold at \$60 and Isle Royale at \$13. Calumet sold at \$570@\$580 per share. Daly-West took a \$7.75 jump to \$56 on the announcement of an increase in the monthly dividend from 40 to 60c. American Zinc & Smelting spurted \$2.75 to \$11.75 on the higher price of zinc ore. Copper Range Con-American Zinc & Smelting spurted \$2.75 to \$11.75 on the higher price of zinc ore. Copper Range Consolidated has settled \$1.50 to \$53.50 on limited transactions. Old Dominion has receded fractionally to \$19.25. Expert McVichie is expected to make a detailed report to the management next week. It is understood to be of a favorable character. The June production is said to have been \$20,000 lbs. United States Mining is quiet around \$19. It is said that the smelter may be ready for operation by Sentemthe smelter may be ready for operation by Septem-

ber 1.

Dominion Coal sold at \$136.75@\$136. The June shipments of coal were the largest the company ever made, being 290,049 tons, and the shipments exceeded the output by 23,579 tons. Stories are now being told of the money made by Canadian interests on the short side of Dominion Iron and Steel from \$72\$ down to \$52\$, where all reports were bullish. It is said that there is a very large short interest in Amalgamated amounting to several hundred thousand shares. United Copper, Heinze's flotation, is expected to be listed in this market very shortly.

expected to be listed in this market very shortly.

Colorado Springs. July 4.

(From Our Special Correspondent.)

(From Our Special Correspondent.)

The market has generally declined during the week chiefly on account of the two days' holiday. Business is being held over until next week. Portland was quoted frequently at \$1.75@\$1.85, but with little trading. Vindicator was one of the strong stocks selling at 92 and closing strong at 93½c. bid. The regular quarterly dividend will be declared within a few days and will be in all probability at the rate of 3c. a share; at the time of the last quarterly dividend an extra one of 2c. was declared.

Elkton sold down steadily from 621/2 to 551/4c. El Elkton sold down steadily from 62½ to 55½c. El l'aso declined slightly during the week, selling off from 52½ to 51c. in sympathy with Elkton. There have been no new developments at the mine during the week, nor are any likely to be reported until deep mining is resumed after September 1 with the new equipment. Isabella weakened from 28½ to 27c., the loss being attributable to the softness of the market generally

Salt Lake City. July 5.

(From Our Special Correspondent.)

Prices ruling during the week have been a shade lower than those of last week. Fewer sales have been recorded, but in some instances a higher price. The feature of the week has been Daly-West. Those on the Exchange, who some months ago began shorting this stock, have ever since been attempting to ever much the ground the strength of Thursday. cover, and the scramble that took place on Thursday succeeded in pushing the price to \$50.10 per share. Some 2,077 shares were transferred on the Exchange

Some 2,077 shares were transferred on the Exchange at prices varying from \$47.75 to \$50.10.
Daly-Judge has advanced to \$7 per share, and many prophesy a much higher price; 125 shares exchanged hands at \$6.70@\$7. Daly advanced to \$2.05 per share on 300 shares. Of the producers of Tintic Grand Central leads at \$3.01½ per share, with sales of 100, while the Lower Mammoth shows 900 at \$1.25 @\$1.24, and May Day ruled a shade lower, 1934c. for 6,200 shares.

6,200 shares.

South Swansea resumed activity, marketing 6,600 shares at 33½@33½c., while Uncle Sam sold 3,000 shares at 26½@31½c. Yankee Consolidated remains quiet at \$1.15@\$1.13; 600 shares sold. California marketed 11,400 shares at 14@12¾c. Sacramento scored an advance of 2c. per share, 2,200 being sold at 28@26¾c. The Exchange closed for the holiday, adojurning until Monday.

San Francisco.

(From Our Special Correspondent.)

Only three business days were left this week, the Exchange adjourning on Wednesday afternoon until next Monday. In the half-week business was very quiet, though there was no special drop in prices. Consolidated California & Virginia sold at \$1.35; Ophir, \$1.30@\$1.35; Mexican, 48@49c.; Best & Belcher, 25@27c.; Sierra Nevada, 26c.; Potosi, 19@20c.

On the Oil Exchange business was very dull. Apparently both buyers and sellers anticipated the holiday, or rather extended it over the whole week. The only demand was for Reed Crude, which brought 32c.; while Junction was quoted at 22c. on small transactions

The monthly record of sales on the Producers' Oil schange this year is as follows:

Shares.	Value.
January 187,854	\$81,633
February 288,562	76,447
March 214,293	109,364
April 442,231	239,938
May 213,483	185,594
June 110,435	54,140
Totals 1 456 858	747 116

The business in June was the lightest reported for any month this year, being less than one-fourth of that transacted in April.

COAL TRADE REVIEW.

New York. July 11.

ANTHRACITE.

The operators have evidently decided that the time for attempting to resume work at certain mines has for attempting to resume work at certain mines has not arrived, inasmuch as their policy of inaction has restricted rioting and bloodshed, and is causing a steady gain in the number of men who are asking to be taken back. The present outlook is that the strike will disintegrate gradually. The talk of the operators starving the miners into submission is very largely nonsense. The operators know that the strike order was unpopular, that nothing but a certain loy-alty to their union and the fear of violence or social obloquy are holding the men out, and that in the absence of any real general grievance the rank and file will not remain idle long enough to suffer from hunger. The chances are that some of the leaders as in the case of the steel strike last year, will be as in the case of the steel strike last year, will be making impossible claims weeks after some of the mines are working full forces. Certain small mines that supply local trade solely are preparing to start work, and one, the Oxford, at Scranton, is in operation. People in the coal mining towns want coal, and any attempt to interfere with these mines will likely arouse a powerful anti-strike sentiment. On the other hand, if these small mines run, the miners at the large operations will hardly care to remain idle. Trade continues very light at all points. In the

Trade continues very light at all points. In the Northwest what coal was on the docks at the head of the lakes when the strike was declared is being slowly cleaned up. In Chicago territory the week has shown no new developments. A considerable tonnage is yet on hand, but dealers are not seeking business, and are turning down inquiries; only favored customers are allowed to place orders. Business is chiefly confined to small orders of a few hundred tons

and less. Along the lower lakes there is probably coal enough available to last in a way until fall. At Atlantic seaboard points falling prices for bituminous makes the market easier, though little anthracite is changing hands. Gas and oil are being used for domestic purposes as never before, while bituminous has the call for steam production. But for the activity of the health department officials at New York the an-thracite market would be much quieter. Supplies at Boston are thought to be sufficient for some weeks

BITUMINOUS.

The Atlantic seaboard soft coal trade is in an easier condition. Consumers are receiving their monthly quotas called for on contracts better than a few weeks ago. The railroads are giving quick, though irregular, transportation from the mines to the shippring ports, and are getting a great deal of service out of the available car supply. The demurrage circular recently issued is effecting prompt discharges at tidewater, and no doubt tends to lower prices on speculative coal by forcing speculators to get rid of the tonnage at shipping ports promptly. The nominal speculative price is now \$4 for Clearfield grades, f. o. speculative price is now \$4 for Clearfield grades, f. o. b. New York Harbor shipping ports, but it is generally believed that any speculator having coal that has been standing at tidewater until the four days' limit is about up will take \$3.75 if offered.

At the mines the labor situation is improving. At most workings the men continue to return to work slowly. This is particularly true of the Pocahontas

The good supply of vessels for coastwise business has helped speculation considerably, as they have been able to charter vessels of almost any desired size, and freight rates are going down. Quite a number of vessels that have been at the loading ports have gone back light, where return cargoes of ice, stone, etc., were available.

A good supply of coal is arriving at ports beyond tape Cod. Some of it is speculative, but much has been shipped on contract orders. Along Long Island Sound consumers are calling for a great quantity of coal, but the supply arriving about satisfies wants. It is believed that more coal is being used in this territory than in former years, in spite of the good supply of water for plants partly dependent on water power. Consumers at New York Harbor points are fairly well off. Those having contracts are cared for, those buying speculative coal can get good supplies if wanning to pay the price. All-rail consumers are having an insufficient supply, and are trying to get coal.

Transportation from the mines to tidewater is up o schedule, though irregular. Car supply is fairly to schedule, though irregular. Car supply is fairly up to producers' demands. In the coastwise vessel market vessels are in plentiful supply; rates are weak, market vessels are in plentiful supply; rates are weak, and for large craft and quick loading the figures given below can be scaled. We quote current rates from Philadelphia as follows: Providence, New Bedford and Long Island Sound, 60@65c.; Boston and Salem, 70@75c.; Wareham, Portland and Portsmouth, 75c.; Lynn, 80@85c.; Newburyport and Bangor, 85 @90c.; Saco, 90c. and towages; Bath, 75@80c.; Gardiner, 80c. and towages. Rates from the further lower ports are 10c higher. ports are 10c. higher.

Birmingham.

(From Our Special Correspondent.)

Mines in Walker County are at work, except the Pocahontas, Gamble, Brown and McDonald mines. In Jefferson County only the New Castle and Wood-In Jefferson County only the New Castle and Woodward Iron Company mines and those in which the State convicts labor, produced coal during the past week. The trouble will be settled this week, from all indications, and work will be resumed. If there should be a longer suspension than one week, the difference in production is not going to be felt to any extent, as new mines being opened will more than make up for the loss during the suspension. In all, 11,000 men at the mines were idle during the past week. Of this number about three-fifths are coal digreers

Cleveland.

Coke is not plentiful and is bringing a good price. Coke from the Virginias is coming into the State. All the coke ovens in the State are in full operation and are making a larger amount of coke than ever before. The Buek & Lacey Company, at Trussville, where there is a furnace, is building 100 coke ovens, 50 of which are nearly finished now. Other ovens are being constructed in the district. That the demands for coke will be met in the fall or winter, is the opinion of many of those interested.

Cleveland. July 9.

(From Our Special Correspondent.)

The coal trade is passing through other vicissitudes The coal trade is passing through other vicissitudes just now that are testing the patience of the shippers with the railroads. Last week all of the shippers reported that their coal supply had fallen short again. The railroads did not give a very clear excuse, but placed the blame on the shortage of cars. Toward the latter part of the week they promised better things, and while they fulfilled that promise in part shippers are still far short of their usual needs. A good many

of the docks have been doing only about half duty therefore, and a good portion of the boats that otherwise would have engaged in the coal trade have been going to the head of the lakes light. The shipment, therefore, has been short of the actual requirements.

Chicago.

(From Our Special Correspondent.)

Wholesale dealers report very satisfactory trade in bituminous coals, the lag of last week having quickened into brisk demand for all grades obtainable. The action of the railroads in pouring coal from Illinois and Indiana mines into Chicago, anticipating the possibilities of the future extension of strike conditions, has had the effect of assuring users there will be coal of some sort to be had in Chicago for several months at least. Trade is most brisk in the higher-grade coals, the few smokeless grades being in especial demand. Hocking is selling well at the July prices-\$3.10 for Chicago and \$2.90 for the country, in carloads; smokeless Pocahontas is quoted as last week, loads; smokeless Pocahontas is quoted as last week, lump and egg, \$3.50; nut, \$3.25; run-of-mine, \$3.10. Other bituminous coals continue: West Virginia, \$3.15; Youghiogheny, \$3.20; Indiana block, \$2.45; Indiana semi-block, \$2.10; Clinton lump, \$1.90; Indiana lump, \$1.85; Northern Illinois run-of-mine, \$1.80; Southern Illinois run-of-mine, \$2. Black-smith's coal is a little more plentiful, but still in setting descend of \$2.25. active demand at \$3.35.

The anthracite stocks are geting low, but there is no scrambling, and wholesalers are supplying their customers to a limited extent, having filled orders that were on hand at the beginning of the strike. as yet no uneasiness over the anthracite situation among dealers or consumers.

Pittsburg. July 9.

(From Our Special Correspondent.)

Coal.-An advance in the price of coal has been decided upon by the principal coal companies in this district, but the amount will not be made public for a few days. A meeting of a number of independent coal companies and representatives of the combines was held during the week, at which it was agreed to was held during the week, at which it was agreed to maintain the fixed price established two years ago. The increase will probably be 10c. a ton. The present prices are: \$1.45 for 1½-in.; \$1.35 for ¾-in, and \$1.25 for run-of-mine. These prices are f. o. b. at mine. So far 17,000,000 bushels of coal have been sent out on this rise, and more will go. Of this amount the independent companies sent 3,000,000 bushels and the rest was sent by the Monongahela River Consolidated Coal and Coke Company. The combine expects to send fully 5,000,000 bushels more combine expects to send fully 5,000,000 bushels more

Conncllsville Coke.-Prices are unusually firm. Connellsville Coke.—Prices are unusually firm. For furnace \$3@\$3.50 a ton is quoted. Some is still being delivered on contracts based on the price fixed at the opening of the year, which is \$2.25 a ton. The Courier in its last issue gives the production for the previous week at 249,164 tons. The shipments for the week were 12,432 cars, distributed as follows: To Pittsburg and river tipples, 4,091 cars; to points west of Pittsburg, 5,702 cars; to points east of Connellsville, 2,639 cars. 2,639 cars.

San Francisco.

(Special Report of J. W. Harrison.)

Since the Sierra sailed there have been the following deliveries of Australian coal: Louis, 1,299 tons; Rufus E. Wood, 2,106 tons; Battle Abbey, 2,300 tons; total, 5,696 tons. The amount of Colonial coal tonage already chartered for this market will foot up about 94,000 tons. Of this amount there are fully 12 vessels due this month, with a carrying capacity of plant 25,000 tons. about 35,000 tons, hence there is plenty of Australian arout 55,000 tons, hence there is pienty of Australian grades in sight for all our immediate requirements. A large amount of Colonial coal is being utilized for household purposes because the character is adapted for that purpose, and because of the low prices ruling. for that purpose, and because of the low prices ruling. Freights from Australia show no improvement, and from present appearances will remain so the balance of this year, as there is very little outward business offering for sailing vessels from Australian ports. Nearly all the exports of Australian products are shipped by steam. Notwithstanding the low prices quoted here for foreign and domestic steam coals, they are unable to compete with fuel oil as a steam producer. New oil discoveries are being made weekly, throughout the State, so that the question of permanency has become an established fact. Low prices for fuel oil still prevail. There seems to be no unity manency has become an established fact. Low prices for fuel oil still prevail. There seems to be no unity among producers, and each vender makes his own tariff for his own product.

tariff for his own product.

Prices.—Our special correspondent reports yard prices to dealers at San Francisco for Pacific Coast coals as follows: Roslyn, \$6.50; Wellington, \$8; Seattle, \$6.50; Southfield, \$8; Coos Bay, \$6.50; Bryant, \$6.50; White Ash, \$5. Rocky Mountain coals are quoted as follows: Castle Gate, \$8.50; Clear Creek, \$8.50; Rock Springs, \$8.50; Sunnyside, \$8.50; Colorado anthracite, \$14. Cargo lots of Eastern and foreign coals are as follows: Welland, \$7.50; Bryanbo, \$7.50; Cannel, \$11; Welch anthracite, \$14; Cumberland, \$12; Pennsylvania anthracite, \$14 Cumberland, \$12; Pennsylvania anthracite, \$14.

Foreign Coal Trade.

Export trade continues quiet, and no new business

is looked for until the present period of high prices has passed. No new charters for coal vessels are noted.

Exports of coal from Baltimore in June aggregated 16,961 tons, which is the smallest quantity reported in years. Coke shipments were 3,000 tons to ported in years. Tampico, Mex.

Exports of fuel from Germany for the five months ending May 31 were, in metric tons:

1901.	1902.		Changes.
Coal	01 5,925,080	I.	35,079
Brown coal (lignite) 8,3	81 7,614	D.	767
Coke 898,9	84 749,568	D,	149,416
Totals	66 6,682,262	D.	115,104

The larger exports were to Austria, Holland, Belgium and Switzerland.

Imports of fuel into Germany for the 5 months ending May 31 are reported as below, in metric tons:

19	901.	1902.	C	hanges.
Coa	2,280	2,283,141	I.	50,861
Brown coal (lignite)3,30	14,226	3,125,354	D.	178,872
Coke 17	77,393	150,132	D.	27,261
Tetals	13,899	5,558,627	D.	155,272

Of the total coal this year 2,807 tons were from the United States, against only 43 tons last year. Messrs. Hull, Blyth & Co., of London and Cardiff, report under date of June 28 that in the Cardiff coal market business is greatly interrupted owing to the holidays. Prices remain steady for all descriptions, as follows: Best Welsh steam coal, \$4.08@\$4.14; sec-

as follows: Best Weish steam coal, \$4.08@\$4.14; seconds, \$3.90; thirds, \$3.60; dry coals, \$3.60; best Monmouthshire, \$3.48@\$3.60; seconds, \$3.30; best small steam coal, \$2.16; seconds, \$2.04; other sorts, \$1.80. The above prices for Cardiff coals are all f. o. b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f. o. b. Newport, exclusive of wharfage, but inclusive of export duty, and are for

wharfage, but inclusive of export duty, and are for cash in 30 days, less 2½ per cent discount.

Owing to the holidays during this week, chartering has been almost at a standstill. Rates of freight are unaltered, as follows: Marseilles, \$1.40; Genoa, \$1.38; Naples, \$1.38; Singapore, \$2.64; Las Palmas, \$1.50; St. Vincent, \$1.74; Rio de Janeiro, \$3.00; Santos, \$3.36; Buenos Aires, \$3.24.

IRON TRADE REVIEW.

New York. July 10

Some signs of summer dulness are beginning to develop and there is less said about the pressure of new orders. At the same time most mills continue very busy. In structural material, plates, bars, merchant busy. In structural material, plates, bars, merchant steel and other lines the capacity is taken up for the rest of the year and well into next. In sheets and wire, however, there is evident weakness, and some disposition to make concessions in order to keep mills going. This is due to the large increase in capacity in those lines. In rails large orders are noted, and the mills now have contracts for some 1,000,000 tons for 1903 delivery.

Owing to various causes, especially the operation of

new basic plants, steel is now in very fair supply, and billets are obtainable pretty nearly as wanted.

Foreign material is now in good supply, and it is even reported that some steel has been offered for re-sale by parties who had bought in anticipation of

The strike of the Alabama coal miners and the shortage of coke at some Eastern furnaces are again limiting the supply of foundry iron, which is urgently needed. Bessemer and basic pig iron are not affected and are in fair supply.

July 9. Birmingham.

(From Our Special Correspondent.)

The suspension of work at the coal mines in Alabama had considerable effect on the pig iron production in this State and consequently on the shipments. There are no less than five furnaces with curtailed outputs, fires banked and practically out of blast. The supply of fuel was good, but there was not an over abundance of coke. There are indications that before the end of the week the miners will have returned to work. Furnaces which were affected by the suspension of work at the coal mines in this State were as follows: Tutweiler Coal and Coke Company, one furnace at Vanderbilt; Tennessee Coal, Iron and Railroad Company, one furnace at Ensley and one at Alice (in the city); Sloss-Sheffield Steel and Iron Company, one furnace at Sheffield and one at North Birmingham; Buek & Lacey Company, one furnace at Trussville; Republic Iron and Steel Company, one furnace at Thomas. Preparations have been made to stop others if the strike is not settled within the next few days.

All of the iron which is in the yards—and there is very little of it—is being moved off, the furnacemen doing all in their power to keep up with contracts. The rolling mills were not affected by the troubles experienced in the district and the wheels have been keeping in steady motion all along. The suspension of work at the coal mines in Ala-

Good prices are still in vogue for pig iron. No. 1 foundry is quoted at \$16.50 per ton, while the smaller foundry is quoted at \$16.50 per ton, while the smaller concerns have been getting \$2 advance right along. The Woodward Iron Company lost no time whatsoever during the past week, having signed a temperary scale with its miners. Other companies were able to keep going with a limited supply of coal and coke on hand. During the past week the Tennessee Coal, Iron and Railroad Company sold coke to the Republic Iron and Steel Company, so that the latter could keep two furnesses in black while fires were could keep two furnaces in blast while fires were banked in the third.

banked in the third.

The following quotations are given: No. 1 foundry, \$16.50; No. 2 foundry, \$16; No. 3 foundry, \$15.50; No. 4 foundry, \$15; gray forge, \$14; No. 1 soft, \$16.50; No. 2 soft, \$16.

Machine shops and foundries have been doing steady work; some labor troubles are anticipated in these circles. The Machinists' Union has made demands on the proprietors of the various establishments in this district, nine hours at 35c. per hour for a day being one of them. At one of the larger foundries and machine shops men who are not memfoundries and machine shops men who are not members of the Union have been given positions. At the cast iron pipe factories in this district there is much activity noted and considerable stocks of pig iron are on hand.

see on hand.

Scrap iron is still in demand. The smaller industries using pig iron and steel in their daily operation are doing quite well, though none of them have any great amount of iron on hand.

A statement has been made that Messrs. Schulers,

large stockholders in the Alabama Steel and Wire Company, are about to locate the site on which the furnaces will be erected. Another rumor is to the effect that T. T. Hillman, a large investor, has purchased the Oxmoor furnaces from the Tennessee Coal, Iron and Railroad Company. One of the Oxmoor furnaces has been dismantled and the other has been out of blast for several years. Mr. Hillman is reported as intending to repair them and place them in companies on

Buffalo.

(Special Report of Rogers, Brown & Co.)

Inquiries for pig iron to be delivered during the first quarter and half of next year seem to be gradually increasing, and an active interest in supplies for 1903 is very evident. Orders aggregating a good-sized tonnage have already been booked. It is interesting to note there has been no speculating, but simply legitimate purchases to cover actual requirements made necessary by contracts which have already simply legitimate purchases to cover actual requirements made necessary by contracts which have already been negotiated for the finished products. Excepting an occasional lot of foreign iron there is scarcely anything available at present for shipment during the balance of this year. Now and then, however, furnaces find they can take on a little more tonnage, and these offerings generally find a ready market at premium prices. Unsettled conditions continue to prevait in the coal-fields tributary to this district. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$23.50; No. 2, \$22.50; Southern soft No. 1, \$23.50@ 24.50; No. 2, \$22.50@\$23.50. 24.50; No. 2, \$22.50@\$23.50.

Chicago.

(From Our Special Correspondent.)

An advance of 50c. a ton on Northern iron in the last week shows the effect of curtailment of the supply of Southern through shutting down of the coke ovens southern through shatting down of the coke ovens that supply Southern furnaces. Prices of Northern are now for No. 1, \$22.50@\$23; No. 2, \$22@\$22.50 No. 3, \$21.50@\$22. The supply of Southern is so curtailed that few sales are being made; prices of Southern are probably practically the same as Northern. Quotations continue \$21.65@\$22.35, for No. 2, with 50c. more for No. 1 and 50c. less for No. 3. Southern has the advantage over Northern of not being altogether sold out for the last quarter of 1902, while Northern is entirely for delivery in the first four months of 1903—except a few occasional spot deliveries due to accidental conditions. Lake Superior eries due to accidental conditions. Lake Superior charcoal, when obtainable, brings \$25.

Coke is still scarce and confined, for foundry pur-

poses, to West Virginia, Connellsville being out of the market. The price remains \$6@\$6.50.

Cleveland.

(From Our Special Correspondent.)

(From Our Special Correspondent.)

Iron Ore.—The boats carrying ore have been bunched at the unloading ports for the last 5 or 6 days, but the docks have done such good work in cleaning them up that the delays to vessels promise to be ended by the latter part of the week. The movement of material is very heavy. The receipts at lower lake ports during the month of June were 3,751,696 gross tons, an increase over the same month last year of 377,863 tons. The shipments to July 1 were 8,899,833 gross tons, an increase over the shipment 8,899,833 gross tons, an increase over the shipment of the same period last year of 3,926,225 tons. The indications are that last year's record will not only be equaled, but will be surpassed by perhaps 3,000,000 tons. The rates of carriage are the same as they have been: 75c. from Duluth, 65c. from Marquette and 55c. from Escanaba.

Pig Iron.—The demand for pig iron has not eased up in any degree, while the supply has lessened. There is a threatened shortage of coke that may cause some of the furnaces in the valleys to bank before the week is over. With foundry almost off of the market prices are stiff at \$22, Valley furnace, for No. 2 foundry, and sales at that price are still made for 1903 delivery. There is no bessemer for sale, and no basic. No prices are quoted.

Finished Material.—The mills producing plates report that most of their capacity for the first quarter of next year has been entirely sold up already at the prevailing price of 1.70c. The announcement was not looked for, but is accounted for by the sudden placing of several ship orders and other contracts demanding large quantities of plates. Some mills have been offering small quantities of large plates for the latter part of the third and for fourth quarter delivery. These are being eagerly taken. The price does not change on this new business, the mills being disposed to adhere to the rigid policy of conservatism. Structural sales continue to be very heavy for the first half of next year's delivery, and most of the available material will soon be sold up. The price has been continued at 1.70c., despite the scarcity of material. In sheets there are continued evidences of an overproduction, as some of the smaller mills deport that most of their capacity for the first quarter an overproduction, as some of the smaller mills de-siring orders have gone below the market quotations, and have been accepting business at a very greatly reduced figure. The prices hold as yet at 2.50c. for No. 10 and 3.50c. for No. 27 as basis. Rail sales continue very heavy, and the tonnage is increasing rapidly. The price is steady at \$28. Bar prices are farm, bar steel being in big demand with the supply short. Bessemer steel bars are bringing 1.60c., and open-hearth steel bars 1.70c. at Pittsburg. Most of the bar iron mills are shut down for repairs, and there is not much call for that material, prices holding at

Philadelphia. July 10.

(From Our Special Correspondent.)

Pia Iron.-It is surprising how many buyers are around who want iron for autumn delivery. All quotations are higher. Premiums are paid on everything. Pressure is being brought by some mill interests to get contracts for forge iron arranged. The fuel situation is becoming simply distressing. Arrangements were definitely closed yesterday for about 15,000 tons of English and Scotch pig. Foundry No. 1 and No. 2X are very scarce, and \$25@\$24, respectively, may be quoted. Standard gray forge is sold far ahead, and is nominally \$21.

Billets.—Prices are nominal. Engagements for for-eign material have been made, but cables state prices are higher in consequence of American demand. Foreign are \$31@\$32; American, \$35.

Bars .- Our mills are under severe pressure to meet old orders and take care of incoming work. The fuel question makes managers cautious. Refined bars are nominally 2@2.10c. Steel bars about the same, though small transactions take place above these figures.

Sheets.—The slacking up in business is not the fault of buyers. Manufacturers are holding to outside fig-

Skelp .- Offers of business are of a character to assure manufacturers they need have no fear of steady occupation. Prices are at the top notch.

Boiler Tubes .- All capacity is sold up, and there is

no evidence of declining requirements.

Merchant Steel.—The shadings reported from other centers has no existence here. Prices continue high and steady, with maximum consumption.

Plates.—The managers have caught up a little, and are now in better shape to take care of fall business, but prices are firm. The outlook here is for a very active autumn demand. Small lots, 2.15c.; ¼-in., 2.10c.; universals, 2.05@2.10c.; flange, 2.15c.; firebox, 2.30c.

Structural Material.-Foreign is 2.40@2.80c. Buys are looking out for accommodation abroad. Every thing is much oversold.

Old Rails.-Old steel rails can be had at \$21, and old iron rails at \$26.

Scrap.—Holders and hunters of scrap are looking out for the future, and are ignoring the requests of small customers for present or near-by delivery. Heavy steel scrap, \$21@\$22; choice railroad, \$23.50@\$25; machinery cast, \$18@\$19; low phosphorous scrap, \$28; No. 2, light forge scrap, \$19.

Pittsburg. July 9.

(From Our Special Correspondent.)

The feature of the iron and steel market this week is the placing of the steel rail order for next year by the Pennsylvania Railroad Company. It is the largest purchase ever made, and calls for 207,000 tons. The allotment is as follows: United States Steel Corpora-tion, 110,000 tons; Cambria Steel Company, 38,500 tons; Pennsylvania Steel Company, 38,500 tons, and Lackawanna Iron and Steel Company, 20,000 tons. The order is much larger than last year, and clearly shows the great needs of the big corporation in the

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matter of new tracks and of relaying portions of its lines with heavier rails. The company has under con-templation several branches on different divisions of the system which include improvements in the Pittsburg District. The entire cost of this rail order at the established price of \$28 a ton is \$5,796,000. With contracts which must hold over the rail mills now have for 1903 more than 1,000,000 tons of orders. The probable production of the year is estimated at 3,000,-000 tons. It is now generally conceded that the output of the rail mills for next year will not reach the de-mand. The reasonable price put on rails by producers despite the fact that raw material is higher than it

despite the fact that raw material is higher than it was a year ago has resulted in the placing of estimates by the railroad companies ahead of time.

There has been but little opportunity for heavy buying in any line, as manufacturers are almost fully sold up for this year. Some large purchases of foundry iron have been made for delivery into 1903. The production is less than in May, and there will be a continued search; due to the troubles among the cal continued scarcity, due to the troubles among the coal miners in different States and the big strike of the anthracite coal miners. The Connellsville and adjacent regions are unable to suppy the deficiency. As a result pig iron prices are irregular. It is reported, but not confirmed, that a sale of 10,000 tons for de-livery in the fourth quarter was made at \$21.75, Valley furnaces. The producers are about six weeks behind, and are making but little progress toward catching up. Basic iron is in limited supply at the Valley furnaces. A sale is noted this week of 1,000 tons of Virginia basic at about \$20.50, Pittsburg, for December delivery. Forge iron is firm at \$21 for any delivery this year. Foundry iron for second half delivery cannot be quoted, as it is oversold. Many of the large foundry interests are converting for at least a part of their requirements for the first quarter or half of next year. The general tendency of prices of pig iron and finished material has been upwards, while crude steel inished material has been upwards, while crude steel and scrap are somewhat lower. The pig iron production this year has been seriously interfered with by labor troubles, and it is now doubtful if any of the furnaces will catch up in deliveries.

No mill was closed the first of this month on account of scales of the Amalgamated Association of Iron, Steel and Tin Workers not having been signed.

Iron, Steel and Tin Workers not having been signed. For the first time in the history of the organization the mills have kept in continuous operation without the full scale having been signed. A number of mills are closed, however, in some cases for repairs and because the men desire a vacation. All of the plants of the Republic Iron and Steel Company have been shut down since July 1, and will be closed for two weeks. The American Sheet Steel Company has suspended operations at about 100 of its mills for two nended operations at about 100 of its mills for two weeks, all of the mills in the Kiskeminetas Valley and some in Ohio being down. sheet mills also are closed. A number of independent

Pig Iron.-For prompt delivery \$22, Valley, could easily be obtained for bessemer iron. For extended delivery the quoted prices range from \$21 to \$21.75. Gray forge can be had for the third and fourth quarter at \$20.75 to \$21.25, Pittsburg. There is no actual quotation for foundry No. 2 for this year, but for the first half of 1903, \$21.50 to \$22, Pittsburg, is

Steel .- While there have been no sales of any consequence, bessemer steel billets are quoted and can be had at \$32@\$33, and open hearth sheet bars are held at \$33. There is a big demand for steel plates. The American Shipbuilding Company, which has taken contracts for six vessels, is in the market for 20,000 tons, deliveries to begin at once and to be completed by next February.

Sheets .- The sheet market continues very unsatisfactory and prices are weaker. The American Sheet Steel Company is holding strictly to its price of 3c. for No. 28 gauge in small lots and 3.10c. in car-load lots, but the independent mills are shading these prices, Galvanized sheets are, if anything, weaker than black sheets. Heavy gauge sheets continue in good demand. No. 28 is still quoted at 4½c. in car-load lots.

Ferro-Manganese.—There is no change in the situation, sales of domestic being limited. The price of the English product remains at \$52 to \$55 and German

New York.

Pig Iron.—Prices are now determined by needs of each individual buyer. The demand is greater than the available supply, and there are reports of sales the available supply, and there are reports of saics of No. 1X at Northern furnaces for \$26 per ton. somial quotations for tidewater delivery are: No.1X foundry, \$-_@\$23.50; No. 2X, \$21@\$22; No. 2 plain, \$21. For Southern iron on dock, New York, No. 1 foundry, \$22@\$23; No. 2, \$21@\$22; No. 3, \$20@\$21, \$21.50.50; No. 2. These quotations are for delivery up to 1903.

Bar Iron and Steel.—Local demand continues active. We quote on large lots on dock: Refined bars, 1.95@2.05c.; common, 1.85@1.95c.; soft steel bars, Small lots for prompt delivery are considerably higher.

Plates.—Demand continues strong. We quote for tidewater delivery in car-loads: Tank, ¼-in. and heav-

ier, 2.05@2.15c.; flange, 2.10@2.20c.; marine, 2.20@ 2.40c.; universal, 2@2.10c.

Steel Rails.—Orders amounting to 175,000 tons are reported placed by the Pennsylvania Railroad, Standard sections are quoted at \$28 for 1903 delivery; light rails \$30@\$35, according to weight.

Structural Material.—New contracts for important local work next year continue to be placed, and the total tonnage will be heavy. We quote for forward delivery on large lots at tidewater as follows: Beams, 2@2.30c.; tees, 2@2.25c.; angles, 2@2.25c.

Cartagena, Spain.

(Special Report of Barrington & Holt.)

Iron and Manganiferous Ores.—Shipments since last report have been one cargo, 1,930 tons, to Maryport; one cargo dry ore, 3,000 tons, to Philadelphia. Total shipments to date, 151,680 tons. The demand for all classes of iron ore has been active, and sev-eral contracts are reported having been made at 3d. per ton better price than paid early in the month. The improvement in price, however, is somewhat counteracted by the fall in exchange. Among the new States running into 1903. Although the shipments during the past week have been few, the mines are actively employed and heavy shipments are anticipated. pated.

Quotations are per ton, f. o. b. shipping port: Ordinary 50 per cent iron ore, 6s. 6d.@6s. 9d.; special low phosphorus ore, 50 per cent iron, 7s.@7s. 6d.; special ore, 50 per cent iron, 3 per cent manganese, 6 cial ore, 50 per cent iron, 3 per cent manganese, 6 per cent silicon, 8s. 6d.; specular ore, 58 per cent iron, 9s.; magnetic ore, 60 per cent iron, 5 per cent silicon, 11s. 6d. for lumps and 9s. 6d. for smalls. For manganiferous ores quotations are: No. 1, 20 per cent iron and 20 per cent manganese, 14s. 3d.; No. 1 B, 25 iron and 17 manganese, 11s. 3d.; No. 2, 30 iron and 15 manganese, 10s. 3d.; No. 3, 35 iron and 12 manganese, 18 fd. All gradge of manganiferous ores are rated at 9s. 6d. All grades of manganiferous ores are rated at 11 per cent silicon and under 0.03 phosphorus.

CHEMICALS AND MINERALS.

New York.

Heavy Chemicals .- Warmer weather has quieted this market. Business is principally in forward contracts at practically unchanged prices.

Domestic chemicals, we quote, per 100 lbs., f. o. b.

Domestic chemicals, we quote, per 100 lbs., f. o. b. works, as follows: High-test alkali, in bags, 80@85c. for prompt shipment, and 75@77½c. for forward; caustic soda, high-test, \$1.90@\$1.95 for early delivery, and \$1.85@\$1.87½ for futures; bicarb soda, ordinary, 95c., and extra, \$3; sal soda, 65c.; chlorate of potash, \$7.75: bleaching powder, off-test, \$1.35; best grades mostly under contract. For foreign goods we quote per 100 lbs. in New York: Alkali high-test, 90@92½c.; caustic soda, high-test, \$2.25; sal soda, 67½@70c.; chlorate of potash, \$10¼@10¾; bleaching powder, prime brands, Liverpool, \$1.75; Continental, \$1.37½@\$1.65.

Acids.—Sulphuric and muriatic acids are in better equest. Other acids are quiet. Prices are unchanged.

Quotations per 100 lbs., are as below, unless otherwise specified, for large lots in carboys or bulk (in tank cars), delivered in New York and vicinity.

Blue Vitriol\$4.5	0@4.621	Oxalic, com'1\$4.60	@ 5.00
Muriatic, 18 deg.	1.50	Sulphuric, 50 deg.,	_
Muriatic, 20 deg.	1.6214	bulk, ton13.50	@15.50
Muriatic, 22 deg.	1.75	Sulphuric, 60 deg.	1.00
Nitric, 36 deg	4.00	Sulphuric, 60 deg.,	
Nitric, 38 deg	4.25	bulk18.00	@20.00
Nitrie, 40 deg	4.50	Sulphuric, 66 deg.	1.20
Nitric, 42 deg	4.871/4	Sulphuric, 66 deg.,	
		halls 01 00	

Brimstone.-The trade is interested in the specula-Brimstone.—The trade is interested in the speculation of a large importer, who sold short, some say 25,000 tons, at lower prices than were generally quoted. In order to cover, the importer has opened negotiations with the Sicilian Sulphur Trust with the view of getting a 4s. rebate. At present spot best unmixed second are nominal at \$23.25 per ton, and white processing the second are second with the second are second with the second are second as the second as the second are second as the second are second as the second are second as the second a shipments \$22@\$22.25, while thirds are about \$2

less.

The average prices of brimstone as quoted by importers at New York during June were \$23.03 per ton for spot best unmixed seconds, and \$22.40 for best October last. In the 6 months ending June 30, 1902, the average price of spot best unmixed seconds was \$23.64, and shipments, \$22.79, while best thirds were quoted at \$2@\$21/2 less than seconds. In the corresponding period last year spot best unmixed seconds averaged \$22.68 per ton, and shipments \$21.55, while best thirds were \$2 less than seconds. Thus it will be seen that prices in 1902 have advanced nearly 5 per cent.

Exports of brimstone from Sicily in May amounted to 37,089 tons, making 231,611 tons in the 5 months this year, showing a decrease of 23,581 tons as compared with the same period last year. Stocks at Sicilian ports on June 1 were 262,272 tons, as against 172,509 tons last year, showing an increase of 89,763 tons, or 52 per cent. The decreased exports and heavy stocks are the result of high prices, which have

curtailed the consumption of brimstone, since pyrites are much cheaper.

Pyrites .- The Pennsylvania Salt Manufacturing Company received 3,900 tons Spanish pyrites at York this week. Present ocean freight from Huelva, Spain, is 10s.@1vs. 3d. to Southern Atlantic ports, and 10s. 3d.@10s. 6d. to Northern ports, depending

and 10s. 3d.@10s. 6d. to Northern ports, depending on time of shipment. Prices of foreign pyrites are firm, and some sellers quote 13@13½c. per unit for 50 per cent ore. Domestic pyrites are quiet. Quotations are f. o. b. Mineral City, Va.; Lump ore, \$5 per ton, and fines, 10c. per unit; Charlemont, Mass., lump, \$5, and fines, \$4.75. Spanish pyrites 12½@13½c. per unit, New York and other Atlantic cents. ports. Spanish pyrites contain 46 to 51 per cent of sulphur; American, from 42 to 44 per cent.

Sulphate of Ammonia.—Featureless. Spot gas liquor (24@25 per cent) is quoted at \$3.10 per 100 lbs., and shipments at \$2.971/2@\$3.

Nitrate of Soda.—Quiet. The steamer Cuzco arrived with 27,000 bags, while the Capac is due July 14 at Baltimore with 28,500 bags, and the Borderer on July 12 at Charleston with 28,500 bags. Spot and July arrivals are held at \$2 per 100 bs., with sales at this figure. Futures are nominal and quiet at \$1.90 (\$\$1,92\forall \text{, according to position.} The steamer Val.

@\$1.92½, according to position. The steamer Valencia sailed from Chile on July 4 with 38,000 bags.

In June the average prices of nitrate of soda in New York were \$2.03 per 100 lbs. for spot and \$1.93 for futures. In the 6 months this year the averages were \$2.18 for spot and \$2.02 for futures, showing a substantial advance over last year.

The statistical position of nitrate of soda in the 6

months ending June 30 is shown below in long tons, comparison being made with the corresponding period

Chile:	1901.	1902.	C	hanges.
Preduction	608,330	625,000	I.	16,670
Exports	556,056	605,000	I.	48,944
Stocks, June 30	.318,162	310,530	D.	7,632
Exports to	442,421	495,684	I.	53,263
Deliveries	.896,600	754,320	D.	142,280
Stocks, June 30	92,436	145,672	I.	53,236
Exports to	118,496	110,584	D.	7,912
Deliveries		109,987	D.	97
Stocks and afloat, June 30	64,896	60,121	D.	4,775

Calculating on the above figures, which are only approximate, the consumption this year shows a material falling off as compared with 1901, due partly to the continued high prices.

Phosphates.—The market is seasonably quiet, as comparatively little is being done either for domestic of foreign consumption.

The shipments of Florida high-grade phosphate rock in the 5 months ending May 31 are reported by Messrs. Auchincloss Brothers at 167,048 long tons, against 164,080 tons last year, and 174,210 tons in 1900. The increase this year of 2,968 tons was credited to exports to United Kingdom and Mediterranean ports. There have been no domestic shipments this year, nor

Exports of high-grade Florida phosphates from Savannah in June were 15,408 tons, making 83,759 tons in the 6 months this year, against 77,574 tons in the same period last year, showing an increase of 6,185

We quote prices below:

	Per ton	C. 1. f. Un. Kingdom or European Ports.			
Phosphates.	F. o. b.	Unit.	Long ton.		
Fla. hard rock (78@80%).\$6	50@\$7.00	64@6%d.	\$9.75@10.53		
*Fla. land peb. (68@73%)		4% @5d.	6.65@ 7.00		
	2.25@2.50	4% 64.5d.	5.70@ 6.00		
Tenn., (78@80%) export 3	3.25@3.50	51/2@6d.	8.58@ 9.36		
Tenn., 78% domestic 3					
Tenn., 75% domestic 2	2.75@3.00				
Tenn., 73@74% domestic	2.40				
Tenn., 70@72% domestic 2	2.10@2.25	******	*********		
tSo. Car. land rock	3.25	41/2@5d.	5.67@ 6.30		
tSo. Car. river rock 2	2.75@3.00				
Algerian (63@68%)		5% @6%d.	7.48@ 8.45		
Algerian (58@63%)		54@6d.	6.30@ 7.20		
Algerian (53@58%)		5 @544.	5.50@ 5.78		

tMt. Pleasant. 10n vessels, Ashley River.

METAL MARKET.

New York. July 10.

GOLD AND SILVER.

Cald and Cilmer Percete and Im-

	901	u	and /	SHACE	Tabo	rea	SETT		upore	"
	At	all	Unite	d States	Ports	in	May	and	Year.	
-										

	3	Year.			
Metal	1901.	1902.	1901.	1902.	
Gold: Exports Imports	\$10,101,177 1,772,934	\$1,968,407),641,044	\$24,146,382 12,667,226	\$20,135,754 9,204,551	
Fxcess. Silver:	E. \$8,328,343	E. \$327,363	E. \$11,479,156	E. \$19,931,20	
Exports Imports		\$3,782 305 2,087,548	\$23,865,097 13,200,829	\$19,284,558 10,548,278	
Frees	E 81 640 754	E \$1 694 757	E. \$10,664,268	E. \$8,736,28	

These figures include the exports and imports at all United States ports, and are furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York. For the week ending July 10, and for years from January 1, 1902, 1901, and 1900.

Period.	Gol	ld.	Silver.			Total Excess	
renou.	Exports.	Imports.	Exports.	Imports.		ports or nports.	
Week 1902 1901	\$979 16,5°4,786 25,745,294 20,585,292			2,055,851	E.	\$303,450 28,715,021 40,070,441 38,199,391	

The gold exported this week went to South rica, and the silver, chiefly to London. Imports from Central and South America, and the Imports West Indies.

Financial Notes of the Week.

Crop conditions are still a little uncertain, but general business continues good, especially for this time of year. Money in New York is less easy, owing to the heavy demand from the West for currency, and withdrawals of funds from the banks. Gold exports had been looked for this week, but free offerings of bills were made, which brought the rate of exchange below the export point.

The statement of the New York banks, including the 63 banks represented in the Clearing House, for the week ending July 5, gives the following totals, comparison being made with the corresponding weeks of 1901 and 1900:

1900.	1901.	1902.
Loans and discounts\$802,889,900	\$889,466,900	\$910,883,200
Deposits 881,848,800	965,285,100	958,647,500
Circulation 23,191,800	30,578,800	31,683,800
Specie 165,313,900	169,864,100	173,116,800
Legal tenders \$70,737,500	76,668,700	76,629,800
Total reserve\$236,051,400	\$246,532,800	\$249,746,600
Legal requirements 220,462,200	241,321,275	239,661,875
Balance surplus \$15,589,200	\$5,211,525	\$10,084.875

Changes for the week this year were increases of \$17,011,400 in loans and discounts, \$2,818,100 in deposits and \$227,800 in circulation; decreases of \$517,700 in specie, \$1,671,400 in legal tenders and \$2,893,-635 in surplus reserve.

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 date last year:

19	901.	1902.			
Gold.	Silver.	Gold.	Silver.		
N. Y. Ass'd \$169,864,100		\$173,116,800	******		
England 187,952,885		188,350,040	*****		
France 491,071,030	\$223,884,465	512,992,800	\$224,847,720		
Germany 159,450,000	68,335,000	180,865,000	66,890,000		
Spain 70,015,000	85,350,000	70,815,000	98,445,000		
Netherlands . 30,686,000	28,684,000	24,250,000	34,086,000		
Belgium 14,655,000	7,330,000	15,650,000	7,825,000		
Italy 75,605,000	9,776,000	80,775,000	10,505,500		
Russia 358,020,000	37,910,000	375,230,000	44,475,000		

The returns of the Associated Banks of New York are of date July 5 and the others July 3, as reported by the Commercial and Financial Chronicle cable. The New York banks do not report silver separately, but specie carried is chiefly gold. The Bank of England reports gold only.

The silver market has advanced this week, owing to a French Mint order, and closes firm on small supply for prompt deliveries. Forward deliveries are under spot prices.

The United States Assay Office in New York reports receipts of 57,000 oz. silver for the week.

Indian exchange continues steady, and all the Council bills offered in London were taken at 15s. 9d. per rupee. A small amount of silver is reported taken for Indian account. Accounts from that country are very unfavorable, however, owing to the probable failure of the rains.

The Treasury Department statement of the money in the United States on July 1 is as follows:

	Totals.	In Treasury. In	n Circulation.
Gold coin (incl. bul-			
lion in Treasury) \$1	.188,573,584	\$252,191,123	\$629,271,532
Gold certificates		*****	307,110,929
Silver dollars	539,987,093	24,715,132	68,621,718
Silver certificates			446,650,243
Subsidiary silver	96,856,985	14,042,045	82,814,940
Treasury notes of 1890.	30,000,000	137,555	29,862,445
U. S. notes	346,681,016	10,415,161	336,265,855
Currency certificates		******	*****
National bank notes	356,672,091	10,740,341	345,931,750

Total\$2,558,770,769 \$312,241,357 \$2,246,529,412 Population of the United States July 1, 1902, estimated at 79.117.000; circulation per capita, \$28.40. For redemption of outstanding certificates an exact equivalent in amount of the appropriate kinds of money is held in the treasury, and is not included in the account of money held as assets of the Govern-ment. This statement of money held in the treasury as assets of the Government does not include deposits of public money in National bank depositaries to the

credit of the Treasurer of the United States, and amounting to \$119,814,695. The total amount in circulation shows a decrease of \$7,886,563 from June 1; but an increase of \$69,263,132 as compared with July

Prices of Foreign Coins.

Mexican dollars Peruvian soles and Chilean pesos.	\$0.425% .3834	\$0.44 .42
Victoria sovereigns	4.86	4.88
Twenty francs	3.86	3.88
Twenty marks	4.77	4.85
Spanish 25 pesetas	4.78	4.82

OTHER METALS.

Daily Prices of Metals in New York.

		-Sil	ver-	_	Coppe	r			Spe	lter
July	Sterling E change	N. Y.	London Pence.	Lake Cts. per 1b,	Electro- lytic per lb.	London £ per ton.	'rin, cts.	Lead cts. per lb.	N.Y. cts. per lb.	st. L. cts.
4			24 16			533%				
5	4.8734	521/8	241/4	12 @1216	1134 @12		28	4.05 @4.10	5.15	4.95
7	4.8794	521/2	241/4	12 @ 12!6	11%	53%	28	4.05	5.15	4.95
8	4.8734	525%	2434	117/8	@1134 @1138	53	28	4.05 @4.10	5.15	4.95
9	4.87%	52%	24%	117/8 @ 12	1134 @ 1136		281/6		5.15	4.95
10	4.875%	5354	24 16	11% @ i2	1134 @ 11%	531/8	2814	4.05 @4.10	5.20	5.00

London quotations are per long ton, (2,240 ibs.) standard copper, which is now the equivalent of the former g. m. b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c lower than these figures.

Copper.-The market is dull. Consumers are covered for the time being, and at the moment are not laying in supplies for the future. On the other hand, producers are well sold, and there is not much pressure to effect sales. Some transactions have taken place at slightly lower prices, and we quote Lake copper at 11%@12c.; electrolytic in cakes, wirebars and ingots at 11%@11%c., in cathodes at 11½@11%c.;

casting copper at 11%c., in cathodes at 11%2@11%c.; casting copper at 11%c.

The London market, which closed last Thursday at £53 2s. 6d., opened 5s. higher on Monday. On Tuesday, however, it went down to £53, on Wednesday to £52 15s. On Thursday the closing quotations are cabled as £53 2s. 6d. for spot, £53 7s. 6d. for three

Refined and manufactured sorts we quote: English tough, £57@£57 10s.; best selected, £57 10s.@£58 10s.; strong sheets, £68; India sheets, £67; yellow metal, 61/4d.

Exports of copper from New York and Baltimore in the week ending July 9 are reported by our special correspondent as follows: Great Britain, 654 tons; Germany, 215; Holland, 460; Austria, 340; Belgium, 98; France, 50; Italy, 50; total, 1,867 tons. Imports were 275 tons copper and 2,780 tons ore, the latter being from Tilt Cove.

The imports and exports of foreign copper in Germany for the 5 months ending May 31 are reported as below, in metric tons:

												1901		1902.	Ch	anges.
Imports					 				 			.27,344	1	33,971	I.	6,627
Exports														3,748		
Balan	ce													30,223	I.	

These figures include scrap and old copper as well as fine copper, and copper in ores. The increase in imports was chiefly from the United States.

imports was chiefly from the United States.

Tin.—Business was interrupted the end of last week by the holiday. This week a fair business was done at advancing prices. Consumers, generally, are not well supplied, and are taking more interest than for some time past. We quote spot at 28½c., July at 28½c., August 28½c.

The London market, which closed last Thursday at £126 5s, for spot, £124 for three months, opened on Monday at £125 15s. for spot, £123 15s. for three months. It ruled the same on Tuesday, on Wednesday advance to £127 15s. for spot, £125 10s. for three months. months.

Lead .- The market remains unchanged, and we Lead.—The market remains unchanged, and we quote 3.97½@4.05c. St. Louis, 4.05@4.10c. New York. The foreign market is higher, Spanish lead being quoted at £11 5s.@£11 6s. 3d., English lead 5s. higher. Cables report a large business doing at the advance.

St. Louis Lead Market .- The John Wahl Commission Company telegraphs us as follows: Lead is uninteresting. Missouri metal still sells at $3.97 \frac{1}{2}c.$, while desilverized lead brings 4.05c.

Spanish Lead Market .- Messrs. Barrington & Holt Spanish Lead Market.—Messrs. Barrington & Holt write from Cartagena, Spain, under date of June 22, as follows: The price for silver during the week has been 13 reales per oz. Exchange on London has gone up 17 centimes, making it 34.40 pesetas to £1. The local quotation for pig lead on wharf has been 62.50 reales per quintal, which on above exchange is equal to £10 3s. 5d. per ton of 2,240 lbs. f. o. b. Cartagena. Exports of pig lead have been 410.880 kgs. to Newcastle; 67,000 kgs. to Marseilles; total, 477,880

kgs. Other exports were 976 kgs. silver bars to Marseilles.

Spelter.--The market continues strong and advancing, and a large business has been done at about 4.95@5c. St. Louis, 5.15@5.20c. New York.

The London market has scored a large advance,

good ordinaries being quoted at £19 2s. 6d., specials 5s. higher.

St. Louis Spelter Market .- The John Wahl Commission Company telegraphs us as follows: Spelter continues scarce and very strong, prices ranging from 4.90@4.95c., according to brand and delivery.

Silesian Spelter Market .- Herr Paul Speier reports Silesian Spelter Market.—Herr Paul Speier reports from Breslau, under date of June 27, that the demand for spelter has been better, owing to the large business done by the galvanizers chiefly. Exports have increased, and prices are somewhat firmer, current quotations being 18.25@18.75 marks per 50 kgs., f. o. b. cars at Breslau. This is equivalent to 3.99c, per pound. Imports and exports in Germany for the 5 months ending May 31 were as follows, in metric tops: tons:

Im	ports	Expe	orts
1901.	1902.	1901.	1902.
Spelter	18,572	30,671	58,525
Zinc sheets 245	109	10,384	14,391
Zinc scrap 656	665	1,023	1,443
Zinc white 3,008	2,834	10,618	16,468
Lithophone 1	29	4,938	6,365
Zinc ores	51.251	31.480	43,333

The large gain in exports was chiefly due to heavy shipments of spelter to Great Britain.

Antimony.—We quote Cookson's at 9%c.; Hallett's 81/4c.; Hungarian, Italian, Japanese and United States Star at 8c.

Nickel.—The price continues firm at 50@60c. per lb., according to size and terms of order.

Platinum.—Consumption continues good. Ingot platinum in large lots brings \$19 per oz. in New York. Chemical ware (crucible and dishes), best hammered metal from store in large quantities, is worth 76c. per gram.

Quicksilver.—The New York price continues \$48 per flask for large orders, with a slightly higher figure for small lots. In San Francisco prices have varied slightly, and the quotation is \$45.50@\$46.50 per flask for domestic orders. Special rates—about \$3.50 lower—are made on export business. The London lower—are made on export business. The London price remains £8 15s. per flask, with the same figure quoted from second hands.

Quicksilver receipts at San Francisco in June are reported by our special correspondent at 1,536 flasks, against 1,373 in June, 1901. The total for the 6 months ending June 30 was 10,307 flasks, against 10,095 in the corresponding period last year. These figures cover only actual receipts, and do not include shipments from mines direct to consumers. Exports water were 230 flasks in June and 2,375 flasks for the 6 months of this year.

Minor Metals and Alloys .- Wholesale prices, f. o. b. works, are as follows:

Aluminum. Per lb.	1
No. 1, 99% ingots33@37e.	Ferro-Tun
No. 2, 90% ingots31@34c.	Magnesiu
Rolled sheets 4c up	Manganes
Alum-bronze20@23c.	Mangan'e
Nickel-alum33@39c.	Mangan'e
Bismuth \$1.50	Molybden
Chromium, pure (N.Y.)80c.	Phosphoru
Copper, red oxide 50c.	American
Ferro-Molyb'um (50%) \$1.25	Sodium 1
Ferro-Titanium (10%) 90c.	Tungsten
Ferro-Titanium (20@25%,	

Per lb.
ngsten (37%)... 28c.
num ... \$2.75
se, pure (N.Y.)... 60c.
e Cop. (20% Min) 38c.
num (Best)... \$1.82
rus ... 50c.
n ... 70e. metal. (Best)

Variations in price depend chiefly on the size of

LATE NEWS.

A terrific explosion of fire damp occurred shortly after noon on July 10 at the rolling mill mine of the Cambria Steel Company, under Westmont Hill, near Johnstown, Pa. The last accounts received place the total number of casualties at 125. The mine has the total number of casualties at 125. The mine has been operated for nearly 50 years, its output is nearly 3,000 tons daily, and it has miles of underground workings, but this is the first serious accident in its history. The explosion occurred at what is known as the "Sixth West of the South Main Heading," nearly 2 miles from the main entrance. It is thought to have been caused by a careless miner using a neared lawn in a begding known to be gassy. naked lamp in a heading known to be gassy.

Average Prices of Metals per lb., New York.

	Т	in.	Les	d.	Spelter.		
Month.	1902.	1901.	1902.	1901.	1902	1901	
January 2	3.54	26.51	4,000	4,350	4.27	4.12	
February 2	4.07	26.68	4.075	4.350	4.15	4.01	
March 2	6.32	26.03	4.075	4.350	4.28	3.91	
April 2	7.77	25.93	4.075	4.350	4.37	3.98	
	9.85	27.12	4.075	4.350	4.47	4.04	
June2	9.36	28.60	4.075	4.350	4.96	3.99	
July		27.85		4.350		3.90	
August		26.78		4,350		3.99	
		25.31		4.350		4.08	
October		26.62		4,350		4.23	
November		26.67		4.350		4.29	
December		24.36		4.153	***	4.31	
Year		26.54		4.334	***	4.06	

Average Prices of Copper.

		Nev		London				
	Elec	trolytic.	I	ake.	Standard.			
Month	1902.	1901.	1902.	1901.	1902.	1901.		
January	11.053	16.25	11.322	16.77	48.43	71.78		
February	12,173	16.38	12,378	16.90	55.16	71.17		
March	11.882	16.42	12.188	16.94	53.39	69.54		
April	11.618	16.43	11.986	16.94	52.79	69.61		
May		16.41	12.226	16.94	54.03	69.60		
June	12.110	16.38	12.360	16.90	53.93	68.83		
July		16.31		16.61		67.00		
August		16.25		16.50		66.34		
September		16.25		16.54		65.97		
October		16.25		16.60		64.11		
November		16.224		16.33		64.51		
December		13.845		14.36	****	52.34		
Year		16.117		16.53		66.79		

New York prices are in cents, per pound; London prices in pounds sterling, per long ton of 2,240 lbs., standard copper. The prices for electrolytic copper are for cakes, ingots or wire bars; prices of cathodes are usually 0.25 cent lower.

Avera	age Pric	es of S	Silver, p	er oun	ce Troy		
	19	02.	18	01.	1900.		
Month.	London. Pence.	N. Y. Cents.	London. Pence.	N. Y. Cents.	London. Pence.	Y. Y.	
January	25.62	55.56	28.97	62.82	27.30	59.30	
February	25.41	55.09	28.13	61.06	27.40	59.76	
March	25.00	54.23	27.04	60.63	27.59	59.81	
April	24.34	52.72	27.30	59.29	27.41	59.59	
May		51.31	27.43	59.64	27.56	59.90	
June		52.36	27.42	59.57	27.81	60.42	
July			26.96	58,46	28.23	61.25	
August			26.94	58.37	28.13	61.14	
September		****	26.95	58.26	28.85	62.63	
October			26.62	57.59	29.58	63.83	
November			26.12	56,64	29.66	64.04	
December			25.46	55.10	29.68	64.14	
Year			27.11	58.95	28.27	61.33	

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

DIVIDENDS. -

	<u>—</u> I	ate		dend	
Name of Company.	Date	3.	Per Share.	Total.	Total to Date.
§American Cement, Pa	July	21	.30	\$60,000	\$380,000
†Alaska-Treadwell	.July	28	.371/2	75,000	5,045,000
American Cement, extra	July	21	.10	20,000	
*Bartolome, Mex	.July	30	1.28	2,558	51,268
*Bunker Hill & Sull	July	5	.03	9,000	1.397,000
†Central Coal & Coke, com.			1.50	22,500	112,500
†Central C. & C., pf			1.25	18,750	675,000
*Central Lead, Mo			.50	5,000	300,000
Colo. Fuel & Iron, pf			4.00	80,000	1,480,000
	-				
†Poe Run Lead, Mo				15,000	522,072
*Empire-State, Idaho	-		.05	25,277	1,435,277
Federal Chem., pf	.July	2	1.50	22,500	67,500
*Gold Coin, Colo	.July	25	.03	30,000	1,170,000
*Gwin, Cal	June	17	.15	15,000	361,500
*Helena, Oregon	.July	25	.001/2	6,500	163,000
*Home Oil, Cal	.July	20	.071/2	7,500	412,500
*Homestake, S. Dak	July	25	.25	52,500	11,388,750
Homestake, S. Dak., extra.				52,500	
†Iewa, Colo	July	15	.01	16,667	253,502
Mary McKinney, Colo				30,000	
*Monongabela C'l & C'ke, pf.			1.75	347,165	2,082,990
*Penoles, Mex				53,275	1,725,763
Philadelphia Gas, com			.75	231,407	2,259,800
†Pittsburg Coal, pf				560,000	5,838,169
*Frovidencia, Mex				5,100	
*Sta Maria de la Paz, Mex.				15,345	1,802,841
Susquehanna I. & S., pf			.15	45,000	672,500
Texas & Pacific Coal				30,000	
†United Zinc, com			.05	3,749	11,247 82,556
†United Zinc, pf				7,499 5,084,952	29,443,261
tU. S. Steel Corp. comS				,130,497	45,013,798
†U. S. Steel Corp. pf †Va. Car Chem., pf				240,000	5,820,000
*Monthly. †Quarterly.			emi-anni		-,,

ASSESSMENTS.

Name of Company.	Loca- tion. No.	Delinq.	Sale.	Amt.
Andes	Nev. 56	June 18	July 15	.05
Angandale	Utah	July 15	Aug. 7	.001/2
Baker Divide	Cal	June 24	July 15	.12
Ben Butler	Utah 9	July 23	Aug. 16	.01
Best & Belcher		June 28	July 23	.15
Caledonia		July 9	July 30	.15
Challenge		July 8	July 30	.05
Chollar		July 24	Aug. 14	.05
Confidence		July 21	Aug. 8	.20
Con. Golden Trout		July 17		.051/4
Crown Point			Aug. 12	
		July 22		.05
Diamond Creek				.011/2
Elise		June 14	July 15	.001/2
Emerald	Utah	July 15	Aug. 7	.001/2
Humboldt	Utah 2	Aug. 11	Sept. 3	.00 1-10
Larkin	Cal. 13	July 19	Aug. 11	.02
Mexican	Nev. 71	July 16	Aug. 6	.10
Monte Cristo		June 26	July 14	.01
National Con		July 15	Aug. 18	.05
New Montezuma		July 15		1.02
Old Indian	Utah. 2	July 8	Aug. 11	.001/8
Petroleum Center Oil		July 16		.05
Pioneer		July 10	July 28	.01
Potosi		July 31	Aug. 31	.05
Reward		June 30	July 21	.02
R. G. W		July 12 June 28		.001/2
Skylark Copper		June 30	July 17	.001/2
Snowflake		July 9	July 15	.01
Star	litah 23	June 30	July 26	.01
Union Con			Aug. 6	.10
United Sunbeam			July 19	.10
Utah-Wyo. Oil	Wyo. 1	July 8	July 28	.001/4
Willietta		Aug. 4	Sept. 2	.01

STOCK QUOTATIONS.

NEW YORK.

Company and	par	Jul	y 3.	*Ju	ly 4.	Ju	ly 5.	Ju	ly 7.	Jul	y 8.	Jul	y 9.	Sales
Location.	val	H.	L.	Н.	L.	Н.	L.	H.	L.	H.	L.	H.	L.	Distor
Alice, Mont	25							. 48						10
Almo, Colo	i											.04		
Amalgamated c., Mont	100	65.75	64.25					65 25	64.50	65.13	64.13	64.38	63.00	33,83
*Anaconda c., Mont	25											1061/8	100.	1,30
Anacanda Gold, Colo.														
Best & Belcher, Nev	3											. 15		20
Breece, Colo										.65				10
Brunswick, g., Cal		.07										.08	.07	3,50
Comstock T., s., Nev.,	100							.06		.03				3,00
Comstock Bonds, Nev.	100							.06						1,00
Con. Cal. & Va., g.s. Nev	250	1.45								1.40				50
Creede & C. C., Colo	1							.05						1,30
Elkton, g., Colo	1	55	54							.53		.53	.52	1,50
Greene Con., c., Mex.,	10	28, 25	28.00					27.88		27.38	27.00	27 13	27.00	2,53
Iron Silver, Colo	20									. \$5		.85		40
Isabella, g., Colo	1									.29	28.			1,00
Jack Pot, g., Colo	1													
Justice, Nev	1											-08		30
Little Chief, s. l., Colo	1											.12		20
Mexican, s., Nev	3													
Mine Securities, U. S.	100	7.13						7.25	6.50	7.25	6.50	7.13		20
MollieGibson,g.s.Colo	5		.13											1.00
Ontario, s. l., Utah	100													
Ophir, s., Nev												1.30		10
Pharmacist, g., Colo	1													
Portland, g., Colo	3													20
Potosi, g. s., Nev	3							35		. 20				54
Quicksilver, Cal	100													
Quicksilver pf., Cal														
Sierra Nevada	3		1											40
Small Hopes, Colo	90			*****								.50		10
Standard Con., g., Cal	10													70
Tenn. c., Tenn			15.50						16.13	17.75	10 75	18 88	16.75	40.34
Union, c., N. C	10								3.75	3.88	3 63	3.88	3.75	1.80
White Knob, g. s., Ida	103		18.00						19 00	19.00	0.00	19.25	18.25	86
Work, g., Colo		.03								100			20,00	00
		A.M.		******						00				

*Per cent.

Coal, Iron and Industrial Stocks.

			,	 -	 							
Am. Agr. Chem., U.S		29	25	 Line	 	29	25	29	25	29	25	
Am. Agr. Chem. pf, U.S.	100	88		 	 	88		88		88		
Am. Sm. & Ref., U.S	100	473%	4634	 	 	4754	47	4684	4614	4614	431/8	
Am. Sm. & Ref. pf, U.S.	100	977%	11752	 	 	98	9716	9238	9112	98	51730	4.74
Col. Fuel # I., Colo	100	9456	9334	 	 	95%	54	945%	9638	92	8914	13,330
Col. & H. C. & I., Colo.	100			 	 							
Crucible Steel, U. S	100	2114	211/8	 	 	211/8	21	21		21		1,770
Crucible Steel, pf, U.S.	100	85%	8519	 	 	8504	8516	86	85%	85%		747
Int'l S. Pump, U.S	100			 	 	53				5314		115
Int'l S. Pump pf, U.S.		*** *		 	 	93						100
Mong. R. Coal, Pa	100	12%		 	 			12%	*****			300
Mong. R. Coal pf, Pa.	100			 	 	4018		401/8		401/8		183
National Lead, U.S	100	2134		 	 	2136		2114	211/8			1,800
National Lead of, U.S.	100	*** *		 	 							
Phila Nat. Gas	100	4858	48%	 	 	48%		49	4816	4914		3,479
Phila Nat. Gas, pf	100	48%		 	 	*****		49		*** *		1,163
Pittsburg Coal, Pa	100	****		 	 	47		285%	*****	2516	254	595
Pittsburg Coal pf, Pa	100	911/2	9134	 	 			92	91%	9134	9116	497
Republic I & S., U.S	100	1736	17	 	 	1736	1754	173%	1714	1738	37	3,610
Republic I.4S., pf, U.S.	100	731/6			 	731/2		731/2		7312	7314	1,015
Sloss-Shef S. a I., Ala.	100	33	32 -	 	 	33	321/2			34	33	100
Sloss-ShefS. & I.pf, Ala.	100	8212	8136	 	 	82	811/2	82	8136			100
Standard Oil, U.S	100	659	659	 	 	673	670	675	673	680	675	281
Tenu. C. I. & R. R., Ala.		63	6254	 	 	64	6216		6316	631/8		4.200
U. S. Cast I. Pipe, U.S.	100					1234		1334				110
U.S.C. I. Pipe, pf, U.S.	100	43%	4336	 	 	44		44		44		570
U. S. Red. & Ref., Coic.	100		38	 	 				*****	38		100
U.S.Red.&Ref.pf,Colo			62	 	 							
U.S.Steel Corp., U.S	100		381/4	 	 	3876			37%	3×1/8		51,670
U.S.Steel Corp.pf, U.S.	100		9116	 	 				89%	9014		31,760
VaCar Chem., U.S	10)	681/6	68	 	 	685%	681/6	68	67%	88r6	67%	2,200
VaCar Chem. pf, U.S.	130			 	 					129		100
W'house Elect., Pa	50	208		 	 					208		200
W'house Elect.,pf,Pa.	50			 	 			213		213		200

Total sales, 218,669 shares. †Ex-dividend

BOSTON, MASS.*

Name of	par	Shares	Jul	у 3.	*Ju	ly 4.	Jul	y 5.	July	7 7.	Jul	y 8.	Jul	у 9.	Sales.
Company.	val	listed.	H.	L.		L.	Н.	L.	H.	L.	H.	L.	H.	L.	Dates.
Adventure Con., c	\$25	100,000	23.63						23.75	23.00			23.50	23.25	36
Aetna	5	100,030 80,000	.40										.40		40
illouez	25	80,000	2 50						2.50						29
malgamated, c	100	1.538.879	65.33	64.00		li care			65.13	64.50	85.00	64.13	65.00	63.00	4.00
m. Z. L. & Sm		60,000	12 25	11 00	*				13 75	13 25	13.50		13 00		2.15
naconda, c		1,200,000	20.00	22				***	40.10	20.20	40.30		10,00		-, -,
readian, c		150,000			*****						A 25			****	
rnold, c		60,000			*****		****				2.70			*****	
tlantic, c		40,000			****				****		98 110	****	35 00		20
Bingham Con., g. s		40,000 150,000	39 50						29 00		29 00	*****	21 50	****	21
Bonanza Dev		300,000	02,00		*** *	****	****	** **	32.00	****	02,00	*****	31.00	****	41
Cal. & Hecla, c		100,000	****	* * * * *	* * * * *		** **					0.4	*****	****	
Centennial, c	25	90,000	10.00	10 60	****				20 70	10 50	10 50	10 Ac	10 00	*****	38
	5	30,000	19.20	10,00				****	18.75	18,00	18.00	17.70	18.00		- 36 - 04
on. Mercur, g		1,000,000	2, 13	2.00					2.13	2.08	2.20	2.13	2.06	-1.12	5,24
Copper Range Con		285,000	00,00	54.00	*****				54.88	54.50	54,63	54.00	53.50	03.25	
Daly-West., g. s	20	180,000													1,66
Dominion Coal	100	150,000							135.	13216	11436		133%	1321/2	41
Dominion Coal, pf		30,000		** **											
Dominion I & S	100	30,000 100,000	52 88	52,50					52.50	52.00					12
Elm River		100.000	2 75			1			1		30	3 25			22
ranklin, c		100,000 385,000									11 00		11.00	10.50	28
Juanajuato Con	5	385,000	3.63	3,50					3.63	3.50	3.50	3.25	3.25		1.44
sle Royale Con., c	25	150,000 100,000	13.00												10
fass Con., c	25	100,000	18.58	18 25					18.75		18.50	18.00	18 25	18.00	1 1.63
Jayflower, c		100,000							20, 10		2 00		20,20		7
dichigan, c		100,000 100,000 130,000	1; 50								11 25				20
Johawk, c		130,000	43 00	42 00				****			19 00		49 00	41 00	45
Mont. Coal & Coke		200,000	30.00	24.00	*****						84.00		20,00	41.00	-
Mont'l & Boston, c		570,000		*** *									9 95		10
National		100,000			****						*****		4.49	****	10
N. E. Gas & Coke		100,030	9 00	9 50	****	****			9 70	9 05	9 00	** **	0,00	9 60	0 11
New Idria		100 000	3.00	0,90				*****	3.50	3.20	3.63	****	3,88	3,50	2,11
		100,000	****						8,50	0 4	*****				10
Old Colony, c		100,000 150,000 96,150		*****			****		2,50	2.20	00 00		*0 FO		
Old Dominion, c		150,000	00 00	****						*** ***	20 00	****	19,59	****	8
Osceola, c		96,130	00.00	20 20			****	****	60,00	99.90	60,00		14 11		21
Parrot, s. c			****		****				28.00	*****	28,00		28,00		4
Phoenix Con., c		100,000		****				** **	15 .5						
Quincy, c		100,000 100,000							1.33					** **	
Rhode Island, c	25	100,000	2.40								2.00				57
Santa Fe, g. c	. 10	250,000 186 296	1.88	1.75					1.75				1.88		6,10
Shannon, c	16	186 299	13 50	12,50							13.00	12.75			63
amarack, c		60,000													
Cecumseh, c	25														
Cennessee		:75.000				1			1		16 25				
rimountain, c		100,000		1							20,00				
rinity, c		160,000	12 00	11 75									11 75		6:
Inited States, g	25	100,000 160,000 250,000	20 00	19 38							19 75	19 50	19 50	19 00	1.3
. S. Oil		100,000	17.00	16 25					16 99	18 95	16 75	18 00	18 50	15 50	2.8
Itah Con., g		300,000	20,00	EU. 20				****	20 93	20 00	20 00	A17.00	20,00	13 90	2,0
ictoria, c			6 00		****				20.20	20.00	E 75		E 75	*****	
		100,000	0,0		** **						0.70		0. 10		10
Vashington, c		60,000	2 35	****											
Vinona, c		100,000	0.28	5.00					427.42				22 22	122225	1
Wolverine, c		60,000	an. 00	00.00				****	96,00		99 63		56,00	00.63	30
Wyandot, c	25	100 000	1.63						Lever	*****	1.63		1 50		1 7

* Official Quotations Boston Stock Exchange. *Holiday. Total sales, 37,300 shares. †Ex-dividend.

PHILADELPHIA, PA. §

Name and Location		July 3.		*July 4.		Jul	July 5. Ju		y 7.	July 8.		July 9.		Sale
of Company.	val	H.	L.	Н.	L.	H.	L.	Н.	L.	Н.	L.	Н.	L.	Sale
Am. Alkali, Mich								7.63		.56	.50	. 56		500
Cambria (ron, Pa Cambria Steel, Pa Susq. I. & S Pa	50 50 10		25.13			*****		47 75 26,13 2 88	25.50	47.75 26.25 2.75	25.75		25.50	12,09 3,93

\$Reported by Townsend, Whelen & Co., 306 Walnut St., Philadelphia, Pa. Total sales 17,938 shares. †Ex-privileges. †Holiday,

STOCK QUOTATIONS.

						PRINGS, COLO.*			~	47.	LONDON		June 25.
Name of Company.	par		ne 30,	July		July 2. July 3.		July 5. Sales	Name and Country of Company	Author- ized	T. COT.	Last dividend.	Quotations.
Acacia. Alamo. Am. Con. Am. Con. Am. Con. Am. Con. Am. Con. Anscentum Jun Battle Mt. Con Ben Hur. Blue Bell. Butterdly Terrible C. K. & N. Columbine-Victor Creed & Cr., Con. C. C. Con. Dante. Dr. Jack Pot. Elkton Con. El Paso Fanny Rawlings Findley. Gold Dellar Con. Gold Collar Con. Gold Rece. Gold Sov'n Hart. Ida May. Isabella. Jack Pot. Last Dollar. Lexington. Little Puck. Matos. Mol. Gibson. Morning Star. Nellie V. New Haven. Fappoose. Pharmacist. Phunacle Pharmacist. Phunacle Pointer Forogress Sunset Eclipse Uncle Salpse Uncle S	**************************************	H. 09 03% 02% 02% 06% 077 14% 02% 02% 06% 02% 06% 06% 06% 06% 077 14% 06% 02% 02% 06% 02% 02% 06% 02% 02% 06% 02% 06% 02% 06% 06% 02% 06% 06% 06% 06% 06% 06% 06% 06% 06% 06	L. O7 s O3 s	H. 09 03 03 04 02 02 04 18 02 04 04 05 06 07 13 01 06 03 06 07 13 01 05	L. 07 03\4 0134 0134 0134 0134 0134 0594 04 06 0794 09 1014 5614 5614 5614 5614 6634 6034 0034	H. L. H. L. 10 09 0759 0334 034 034 034 0224 0136 0234 0224 0136 0246 02 02 02 (44 0796 05 07 05 06 06 07 05 06 06 08 0346 0256 054 0346 0256 0254 0346 0256 0254 0346 0256 0254 0346 0256 0356 0346 0356 0356 0346 0356 0556 07 0556 0556 0556 0536 0556 0556 0556 0536 0556 0556 0556 0536 0556 0556 0556	H. L.	H. L. Sales H. L. Sales 69 0.75\(\) 0.3\(\) 18,000 02\(\) 0.3\(\) 18,000 02\(\) 0.3\(\) 18,000 02\(\) 0.5\(\) 1.5\(\) 0.5 04 0.7\(\) 0.5 17 15 2,000 05 2,000 06 0.5\(\) 6,500 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 08\(\) 0.5 11.7\(\) 0.5 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.05 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.3 13\(\) 0.00 13\(\) 1.000 13\(\) 1.	Anaconda, c. s., Montana. Copiapo, c., Chile. De Lamar, g. s., idaho. Enterprise, g., British Col. El Uro, g Mexico. Frontino & Bolivia, g., Colombia, Hall Mg, & Sm., c. s., British Col. Le Roi, No. 2, g., British Col. Le Roi, No. 2, g., British Col. Montana, g. s., Montana. Stratton's Independence, Colorado. St. John del Rev., g., Brazil Utah Con., g. (High. Boy, Utah. Linares, l., Spain. Mason & Barry, c., sul., Port'g'l. Rio Tinto, g., Spain. Mason & Barry, c., sul., Port'g'l. Rio Tinto, pref., Spain. Tharsis, c., Spain. Australia and New Zealand: Assoc. Gold Mines, W Australia. Br'ken Bill Pr'p., S. N. S. Wales. Great Bo'd'r Pr'p., W. Australia. Lake View Cons. g. W. Australia. Lake View Cons. g. W. Australia. Mt. Morgan, g., Queensland. Waihi, g., New Zealand. Mundydroog, g., Colar Fields. Nundydroog, g., Colar Fields. Nundydroog, g., Colar Fields. Nundydroog, g., Colar Fields. Nundydroog, g., Colar Fields. Ooregum, g., Colar Fields. Princip Ref. g., Princip R	ized Capital. £ 6,000,000 89,000 89,000 225,000 140,000 120,000 120,000 120,000 120,000 120,000 120,000 120,000 120,000 120,000 120,000 120,000 125,000 125,000 1250,000	Par value. £. s. d. 5 0 0 0 1 0 0 0	Amt. Date 8. d. 2 0 May, 1902 2 6 Dec., 1901 3 0 May, 1902 1 6 June, 1902 3 0 July, 1901 5 0 Nov., 1818 5 0 May, 1902 6 April, 1899 6d April, 1902 5 0 Dec., 1901 1 0 Mar., 1902 7 0 March, 1901 13 0 May, 1902 2 6 May, 1902 2 6 May, 1902 2 6 May, 1902 2 10 May, 1902 2 7 0 March, 1901 3 0 Jan., 1902 5 0 Oct., 1901 1 0 July, 1902 5 0 Aug., 1901 1 0 July, 1902 5 0 Aug., 1901 1 0 July, 1902 2 6 Mar, 1902 2 6 Mar, 1902 2 6 May, 1902 3 0 May, 1902 1 3 July, 1902 1 3 July, 1902 1 3 July, 1902 1 9 May, 1902 1 19 May, 1902	## Quotations. Suyers. Sellers
						(By Telegraph.)	0111 54105 210,	III SHULOS,	Geldenhuis Est., g. Transvaal. Henry Nourse, g., Transvaal. Jagersfontein, d., Orange F. S	125,000 1,000,000	1 0 0 5 0 0	10 0 June, 1899 6 0 Dec., 1900	9 10 0 9 15 26 15 0 27 5
Name of Company.		par	-	ly 3.	*July		y 7. July 8		Joh'n'b'g Con. Invest., S. Africa Jubilee, g., Transvaal Langleagte Est. g. Transvaal	2,750,000 50,000 470,000	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 0 Nov., 1899 5 0 July, 1899 3 0 Aug., 1899	3 10 0 3 11 7 0 0 7 5 4 3 9 4 6
Acacia. Alamo Anaconda. Battle Mountain Pripple Creek Con Doctor Jack Pot Elkton, Con. Panny Rawlings Jold Dollar Con Jolden Fleece. Sabella.		1 1 1 1 1 1 1 1 1 1 1		.12 ¹ 9 .10 .03% .10% .55 .05% .03%		L. H. L. H.	.03¼ .03⅓ .17 .10 .12 .06 .06¾ .10¼ .10⅓ .54 .05⅓ .07 .04 .04⅓ .10 .18	L. H. L. 08 09 07\(\frac{1}{6}\) 03\(\frac{1}{6}\) 03\(\frac{1}{6}\) 03\(\frac{1}{6}\) 03\(\frac{1}{6}\) 03\(\frac{1}{6}\) 03\(\frac{1}{6}\) 03\(\frac{1}{6}\) 00\(\frac{1}{6}\) 00\(\frac{1}6\) 00\(\frac{1}{6}\) 00\(\frac{1}6\) 00\(\frac{1}6\) 00\(\frac{1}6\) 00\(\frac{1}6\) 00\(\fr	John's g Con. Invest, S. Africa. Jubilee, g., Transvaal. Langlaagte Est. g., Transvaal. May Con. g., Transvaal. Meyer & Charlton, g., Transvaal. Meyer & Charlton, g., Transvaal. Namaqua, c., Cape Colony. Primrose (New), g., Transvaal. Rand Mines, g., S. Africa. Robinson, g., Transvaal. Sheba, g., Transvaal. Wolhuter, g., Transvaal.		1 0 0 1 0 0 2 0 0 1 0 0 5 0 5 0 0 1 0 0 4 0 0	3 0 July 1902 3 0 July 1902 3 0 Feb., 1902 6 0 June, 1899 15 0 June, 1899 16 0 Dec., 1901 5 0 Feb., 1902 2 0 Jan., 1899	4 17 6 5 2 5 17 6 6 2 3 5 0 3 10 4 12 6 4 15 12 3 9 12 5 11 11 3 11 13 1 7 6 1 8 5 13 6 5 16
ack Potast Dollar Mollie Gibson Moon Anchor harmacist Portland.	******	. 1 . 1 . 1 . 1 . 1	.11 .75 .134 .15 .0334 1.85	.09% .50 .13 .10 .035% 1.76		10 60 13 15 03%	.09¼ .11 .51 .60 .12¾ .12¾ .12¼ .10 .15 .03¾ .03¼ .01¼ .178 .1.37 .1.37	09% .11 .0094 50 .60 .40 12 .14 .11% .10 .15 .03 86 .0356 .03 1.90 1.80		F	PARIS.		June 19.
*Holiday		-							Name of Company. Count	ry. P	roduct.	Stock. value, d	atest Prices. Opening Closing
					MEX	ICO.		June 28.	Acieries de Creusot France	Stee	l mfrs:	27,000,000 2,000 8	Fr. Fr. Fr. 5.00 1,790.00 1,750.0 0.00 2,520.00 2,490.0
Name of Company	Sha	res. d	Last iv'd	Bid.	Ask.	Name of Company.	Shares. Last div'd	Bid. Ask.	" la Marine . France . Anzin	Stee. Coal	per	20,000,000 500 6 20,000,000 500 6 32 500 17	3,035.00 3,055.0 5,00 1,340.00 1,346.0 0,00 5,340.00 5,375.0 6,00 1,310.00 1,230.0
Ourango: Ca. Min. de Penoles Angustias, Pozos Uananjuato: Cinco Senores y An., aviada.	2	,500 \$,400	5.00	\$4,150 83	\$4,400 87	Mexico: Alacran La Esperanza (El Oro) Socovon de S. Fern Michoacan:	2,400 3,000 \$10.00 2,500	\$45 \$55 780 789 20 30	Champ d'Or. Courrieres. Dombrowa. Dynamite Centrale. Escombrera-Bleyberg. Fraser. Brit. Col	Coal		600,000 300 8	3.75 37.00 36.5 0.00 2,475.00 2,570.6 5.00 960.00 960.0 9.00 570.00 580.0 0.00 740.00 735.0 6.00 6.00
inco Senores y An., aviada. Providencia, SanJuan		400	10.00	300	310	Luz de Borda, avi- ador Luz de Borda, avi-	3,000	49 51	HuanchacaBolivia	Zinc	and Lead.	16,300,000 500 2	5,00 111,50 109,5 5,00 345,00 350,0 2,50 325,00 330,0
de la Luzuerrero:	8	,000		195	205 50	ada	1,000	15 18 70 85	Malfidano. Italy Metaux, Cle. Fran. de France. Mokta-el-Hadid. Algeria. Napthe Baku. Russia.	Iron		10,012,000 000 0	2.50 487.00 485.0 5.00 831.00 847.0
idalgo : Amistad y Concordia. Carmen, aviada	9	,600		30 250	61 300	El Barreno, aviador. Sta. Maria de la Pa	2,400 15.00	34 36	Napthe Baku	nia Nick	el	10,000,000 250 2	434.50 517.50 517.50 20,725.00 10,600, 0,00 460,00 460,0
Ca. Real del Monte El Encino, aviador Fuadalupe Fresnillo	1	,554 ,120		450 40	550	Santa Fe	2,500	75 86 220 240	Rebecca Colo'do.	U. S., Gold	, etc	5,000,000 25	5.00 1,050.00 1,060.0 1.50 1.5 6.00 280.00 278.0
y Annexas	. 1	,000 ,536 ,768		220 545 360	300 360	San Carlos y Annexas Sta. Maria de Gaud. Miscellaneous :	2,500 10.00	220 230 325 330	Salines de l'Est. France. Salines du Midi. "Vielle Montagne. Belgium.	Zine		500 4	0.00 905.00 905. 0.00 550.00 580.
Taravillas y An., avi- ador Taravillas el Lobo	. 1	,680 ,000		290 200	295 250	Bartolome de Medina Guadalupe Hacienda La Luz Hac. (Pa-	10,000 2.00						
Palma y An., avi- ador	1	,800 .		9	12	La Reina (Chibua-	3,750	80 85 2,500 3,500	SALT LAKE CITY.*		_ -	TORONTO	O, ONT. July 7.
aviador	9	,600 .	0.50	9 65½	10 66½	hua) Naica (Chihuahua) Natividad (Oaxaca ayiador	100	4,500 5,000	Name of Company Shares. Par Val High.	-		Name of Company. pa	
anto Tomas Apostol aviador	. 5	,130 -		5		aviador National (Oaxaca aviador San Francisco Hac	1,800 4.00 6,000 2.00	400 500	Ajax	.12% i	5,660 Olive	tario :	1 .06
aviada an Rafael y An.,		,200	12.00	640	650 295	Morelos		50 70	Carisa 500,000 I .25 Century 150,000 I .32 Con. Mercur 1,000,000 5 1,993	.24% .29% 1.99	1.700 Caril	ooo McKinney	1 .25 .:0
aviada. Solodad, aviada. Sorpressa, aviada		960	10.00	285 270 180					Daly	2.03 6 75 47.75	195 10000	view	1 .07% 06 3,4 1 .07 .05 1 .25 .18 1 .24 .17 6,6
ST. L	oui	S, 1		July	7.		NE, WASH	.* July 3.	Grand Central 250,000 1 3.01% L. Mammoth 150,000 1 1.12 Mammoth 400,000 25 1.25%	1.04	2.200 Ram	bler-Cariboo	1 .221/6 .15 1,6
	Shar	es.	Par Val.	Bid.	Ask.	Name of Company.	Par Val. H.	L. Sales.	May Day 400,000 .25 1934 Sacramento 1.000,000 5 .28	.18	2,200 Repu	Eagle Con.	1 .09% .07°4 5,0 1 .15 .07 1 15 .12% 7,0
Am - Nettie, Colo	56 15 15 16 50 50 10 1,000 300	,000 ,000 ,000 ,000 ,000 ,000	10 100 100 100 10 10 100 100 100	\$0.75 3.00 64.75 83.00 130 00 12.00 19.00 2.00 18.00	88 60 135.00 13 00 20.00 135.00 2.20	Plack Tail Lone Pine-Surp. Con Princess Maud Quilp. Rambler Cariboo	1 02% 1 35 1 81% 1 09% 1 24 1 18	.07½ 15,885 1134 7,000 .0596 5 000 .02 5,000 .30½ 4,000 81	Star Con.	1.03 19 .20 .2614 1.13	3,000 Winn 160 Can. 100 3,600	e Beat. nipeg velop. Co	1 033-z 32% 1 05 0334 1 043-6 035-6

CHEMICALS, MINERALS, RARE EARTHS, ETC. CURRENT WHOLESALE PRICES.

Carborundum, f.o.b. Niagara		1						Walnut and Calana Con Man	- Del-
	ast. Mea	s. Price.	Oxide, Am. hyd. cryst	ust. Me	as. Price \$0.0234	Graphite—Am. f.o.b. Provi-	as. Price	Metallic, brownsh. ton	s. Pric \$ 19.0
Falls, Powd., F. FF. FFF		\$0.08	Sulphate (Blanc Fixe)		.02	dence, R. I., lumpsh. ton	\$8.00	Red	16.0
Grains		.10			.065	Pulverized "	30.00		9.25@10.0
Corundum, N. C	66	.07@.10	Barytes—	ah ton	9.00		.0114@.011%		21.25@25.
Chester, Mass	**	.041/4@.05	Am. Crude, No. 1		8.00	Best pulverized	.011/4@.02	Dutch, washed lb.	.04
Barry's Bay, Ont		.0716@.0914	Crude, No. 3		7.75	Ceylon, common pulv	.023/4@.031/2		014@.01
Crushed Steel, f.o.b. Pitts-		051	German, gray		14.50	DOSE PULLEDUL	.011/4	Orange mineral, Am " Foreign, as to make "	.07¾@.0 .08¼@.11
burg		.051/2	Snow white	. 46	17.00			Paris green, pure, bulk	.00/409.11
Emery. Turkish flour, in kegs. Grains, in kegs		.05@.0516	Bauxite-Ga. or Ala. mines :			Fertilizer	7.00	Red lead, American	.05%@.
Naxos flour, in kegs		.031/2	First grade		5.50	Rocklg. ton	4.00	Foreign	.03%@.0
Grains, in kegs		.05@.051/2	Second grade	. 46	4.75		14.00@16.00		47 @.47
Chester flour, in kegs			Bismuth-Subnitrate	. lb.	1.40	Infusiorial Earth—Ground.		White lead, Am., dry lb	.041/4@.04
Grains, in kegs	66	.05@.051/2	Subcarbonate	. 66	1.65	American, best	20.00		$05\frac{1}{2}$.05
Peekskill, f.o.b. Easton, Pa.,			Bitumen-"B"	. 66	.031/6	French	37.50		.071/4@.091
flour, in kegs		.011/2	"A"		.05	German	40.00		04%@.049
Grains, in kegs		.021/2	Bone Ash		.021/4@.021/4		2.45	American, red seal	.069
Crude, ex-ship N. Y.: Ab-		90 50/2 20 00	Borax	. 66	.071/4@.071/6		.05	Foreign, red seal, dry	.0534@.08
bott (Turkey) Kuluk (Turkey)		22.00@24.00	Bromine		.40	Nitrate, com'l	.011/4		.06160.06
Naxos (Greek) h. gr		.26.00	Cadmium—Metallic		1.40	True	.04	Potash-	
Garnet, as per quality			Sulphate	.100 lbs.	2.00@2.50	Oxide, pure copperas col "	.05@.10	Caustic, ordinary "	.04%@.0
Pumice Stone, Am. powd	lb.	.013@.02	Calcium-Acetate, gray		1.30	Purple-brown	.02	Elect. (90%)	.061
Italian, powdered	66	.011/6	" brown		.90	Contract de la contra	.01@.011/2	Potassium-	.007
Lump, per quality		.04@.40	Carbide, ton lots f.o.b. Niagara			Scale	.01@03	Bicarbonate cryst	.089
Rottenstone, ground		021/2@.041/2	Falls, N. Y or Jersey City		WE 00	Kaolin-(See Clay. China.)		Powdered cr gran	.03
Lump. per quality		.06@.20	N. J		75.00	and your thoraction of the control of	000		.081/4@.08!
Rouge, per quality Steel Emery. f.o.b. Pittsburg		.10@.30	Chloride,			Lead—Acetate, white	.073/4@.08	Scotch " .	.0816@.0
proof nanory, 1.0.0. Fittsburg		.04		500		Nitrate, com'l	.061/4		.031/8@.031
Acids-			Cement—	22.	1 8004 80	" gran	.081/4	Chromate "	.8
Boracic, crystals		.1034@.11	Portland, Am., 400 lbs		1.70@1.90 1.65@2.25		.80	Cyanide (98@99%)	.2
Powdered		.111/4@.111/6	"Rosendale," 300 lbs		1.65@2.25	Finishing	.90	Kainitlg. ton	9.0
Carbonic, liquid gas		.121/6	Slag cement, imported			Magnesite-Greece.	,50	Manure salt, 20%	.6
Chromic, crude		.20	Ceresine-		1.00	Crude (95%)lg. ton	8 E0/27 00	Double Manure salt, 48@53%. Muriate, 80@85%	1.8
Hydrofluoric, 36%		.05	Orange and Yellow	. lb.	.12			95%	1.8
60%		.11	White		.131/2		170.00	Permanganate lb.	.0914@.1
Sulphurous, liquid anhy			Chalk-Lump, bulk				175.00	Prussiate. yellow	.1356@.1
			Ppt. per quality		.033/4@.06		21000	Red	.3
Alcohol—Grain		2.41	Chlorine-Liquid		.30	Carbonate, light, fine pd lb.	.05	Sulphate, 90%100 lbs.	2.1
Refined wood, 95@97%		.60@.65	Water		.10	Blocks "	.07@.03		2.1
Purified		1.20@1.50	Chrome Ore-		.10	Chloride, com'l "	.013/4	Sylvinit unit	.393
Alum-Lump		7000	(50% ch.) ex-ship N. Y	le ton	24.75	Fused	.20	Quartz-(See Silica).	
Ground		1.80	Sand. f.o.b. Baltimore	-	33.00	Miliato	.60	Salt-N. Y. com. finesh. ton	2.0
Powdered		3.00	Bricks. f.o.b. Pittsburg		175.00	Sulphate100 lbs	75@.95		1.5
Chrome, com'l		2.75@3.00	Clay, China-Am. com., ex-			Manganese-Powdered.	041 (0 041 (Saltpetre—Crude100 lbs.	
Aluminum—			dock, N. Y.		8.00	70@75% binoxide lb.	.011/4@.011/6	Refined "	4.25@4.623
Nitrate	lb.	1.50	Am. best, ex-dock, N. Y	-	9.00	Crude, pow'd. 75@85% binoxide	.0114D.0214	Silica—Best foreignlg. ton	
Oxide, com'l, common		061/6	English, common		12.00	85@90% binoxide	.021/4@.031/4	Ground quartz, ordsh. ton	
Best		.20	Best grade		17.00	90@95% binoxide "	.031/4@.051/4		12.00@13.0
Pure	- 66	.80	Fire Clay, ordinary			Carbonate "	.16@.20	Lump quartz "	2.50@4.0
Hydrated			Itest		6.00	CHIOLICO	.04	Glass sand	2.7
Sulphate, pure		1.50@2.00	Slip Clay		5.00	Ore, 50%, Foreign unit	.20@.21	Nitrate	3
Com'l		1.15@1.25	The state of the s		.08		.30	Oxide	.85@1.1
Ammonia-			Cobalt—Carbonate		1.75	The second secon		Sodium-	
Aqua, 16°	lb.	.03	Nitrate			Mercury-Bichloride lb. Mica-N. Y. gr'nd, coarse "	77	Bichromate	.063
180		.031/4	Gray		2.28@2.40		.03@.04 .04@.05	Hyposulphite, Am100 ibs.	1.60@1.6
20°		.0334	Smalt, blue ordinary		.06		.30	German	1.70@1.9
26°		.051/2	Best	46	20		.80	Phosphate	098
Ammonium-			Compone						, (her)
			CODDCCHS	.100 lbs	30@.35	3x4 in "	1.50	Prussiate	.11@.111
	46	0.01 /	Copperas			4x4 in	1.50 2.00	Shicate, conc).
Carbonate, lump		.0814	Copper—Carbonate	. lb.	.18@.19	4x4 in		Shicate, conc	75@,829
Carbonate, lump	66	.09	Copper—Carbonate	. lb.	.18@.19 .25	4x4 in	2.00 3.00	Sinicate, conc	.0 75@,821 .013
Carbonate, lump	66		Copper—Carbonate	. lb.	.18@.19	4x4 in	2,00 3.00 19.00	Shicate, cone	75@,821 .013 .023
Carbonate, lump Powdered Muriate, grain		.055%	Copper—Carbonate	. lb.	.18@.19 .25 .35	4x4 in	2,00 3.00 19.00 25.00	Suicate, conc. Com'l. Sulphate, com'l. Sulphide. Sulphite crystals. Sulphur—Roll. Flour.	75@,821 .013 .023 1.8
Carbonate, lump	66	.09 .05% .084	Copper—Carbonate. Chloride	. lb.	.18@.19 .25 .35 .19	4x4 in	2,00 3.00 19.00	Shicate, cone. "Com" "Sulphate, com" "Bulphate, com" "Bulphate, com" "Bulphate or "Bulphate or "Bulphate or "Bulphate or "Bulphate" "Bulphate or "Bulphate" "Bulphate or "Bulphate" "Bulphate or "Bul	.0 .0 .0 .013 .023 1.8 1.9 2.1
Carbonate, lump	66	.09 .05% .08¼ .12	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite. Explosives—	. 1b.	.18@.19 .25 .35 .35 .19	4x4 in	2.00 3.00 19.00 25.00 32.00 40.00	Suicate, conc	.0 .0 .0 .0 .01 .02 1.8 1.9 2.1 13.7 10.2
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure.		.055% .0854 .0814 .12 .09	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A.	. 1b.	.18@.19 .25 .35 .19 .061/ ₆ keg 2.65	4x4 in	2.00 3.00 19.00 25.00 32.00	Shicate, cone. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphide. Sulphur—Roll. Flour. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. 100 ibs.	.0 .0 .0 .0 .013 .025 1.8 1.9 2.1 13.7 10.2
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass		.09 .05% .084 .12 .09 .12	Copper—Carbonate. Chloride Nitrate, crystals Oxide, com'l Cryolite Explosives— Blasting powder, A Blasting powder, B	. 1b.	.18@.19 .25 .35 .19 .061/ ₆ keg 2.65 1.40	4x4 in	2.00 3.00 19.00 25.00 32.00 40.00 1.00	Shicate, cone. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphur—Roll. Flour. Flour. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian. best. Tar—Regular. bbl.	.0 75@,824 .013 .024 1.8 1.9 2.1 13.7 10.2 1.2 1.624
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump.		.05 .05% .084 .12 .09 .12 .30@.40	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A.	. 1b	.18@.19 .25 .35 .19 .061/ ₆ keg 2.65	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinary sh. ton Selected. " Rock, ordinary " Selected. " Nickel—Oxide, No. 1 lb. No. 2. " Sulphate "	2,00 3,00 19,00 25,00 32,00 40,00 1,00	Shicate, cone. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphide. Sulphide. Sulphide. Flour. Flowers, sublimed. Tale—N. C., 1st grade. sh. ton N. Y., Fibrous, best. Tench, best. Taleman. Taleman. Taleman. Sulphide. Sulphide. Sulphide. Sulphide. Sulphide. Sulphide. Sulphide. Sulphide. Tock is grade. Sulphide. Taleman. Sulphide. Sulphide	.0 75@,824 .013 .024 1.8 1.9 2.1 13.7 10.2 1.2 1.624 1.624
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary.	66	.09 .05% .084 .12 .09 .12	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R. R. powder.	. 1b	.18@.19 .25 .35 .19 .061/4 keg 2.65 1.40	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinary sh. ton Selected. " Rock, ordinary " Selected. " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate " Olls—Black, reduced 29 gr.:	2,00 3,00 19,00 25,00 32,00 40,00 1,00	Shicate, conc. "Com" " " " " " " " " "	10.2 1.2 1.623 1.8 4.2 .183
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95%.	66	.09 .055% .0844 .12 .09 .12 .30@.40 .054@.06 .0534@.0734	Copper—Carbonate. Chloride Nitrate, crystals Oxide, com'l Cryolite Explosives— Blasting powder, A Blasting powder, B "Rackarock," A "Rackarock," B Judson R. R. powder Dvnamlte (20% nitro-glycer	1b	.18@.19 .25 .35 .19 .061/ ₆ keg 2.65 1.40 .25 .18	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinary	2,00 3,00 19,00 25,00 32,00 40,00 1,00 ,60 ,20@,21	Shicate, cone. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphide. Sulphide. Sulphide. Flour. Flour. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian best. Tar—Regular Oil barrels. Tin—Crystals. Dxide.	.0 75@,821 .011 .023 1.8 1.9 2.1 13.7 10.2 1.2 1.623 1.8 4.2 .181
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99%		.094 .0554 .0874 .12 .09 .12 .30@.40 .0534@.0734 .0934	Copper—Carbonate. Chloride . Nitrate, crystals . Oxide, com'l . Cryolite . Explosives— Blasting powder, A . Blasting powder, B . "Rackarock," A . "Rackarock," B . Judson R.R. powder . Dvnamite (20% nitro-glycer ine) .	. 1b. 1	.18@.19 .25 .35 .19 .061/2 keg 2.65 1.40 .25 .18 .10	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate " Oil»—Black, reduced 29 gr.: 25@30, cold test. gal. 15, cold test. " Zero. "	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .60 .20@.21 .0994@.1314 .1094@.1134 .1134@.1234	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide Sulphur—Roll. Sulphur—Roll. Flowers, sublimed. Tale—N. C., 1st grade French, best Italian. best Tar—Regular Oil barrels Tin—Crystals Uranium—Oxide "Sulphur—Roll 100 lbs	.0 75@,821 .013 .023 1.8 1.9 2.1 13.7 10.2 1.623 1.82 1.82 1.83 4.2 2.25@3.0
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray.		.094 .05% .084 .12 .09 .12 .30@.40 .05%@.0734 .05%@.0734	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R.R. powder. Dvnamite (20% nitro-glycer ine). (30% nitro-glycerine)	. 25 lb. l	.18@.19 .25 .35 .19 .063/ ₆ keg 2.65 1.40 .25 .18 .10	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinary sh. ton Selected " Rock, ordinary " Selected " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate " 526/30, cold test gal. 15, cold test " Zero " Summer "	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .09¼@.13¼ .19¼@.13¼ .09¼@.09¼	Shicate, cone. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphide. Sulphur—Roll. Flour. Flour. Flowers, sublimed. Tale—N. C., 1st grade. Sh. ton N. Y., Fibrous, best. French, best. 100 lbs. Italian. best. Tar—Regular. Oil barrels. Tin—Crystals. Oxide. Uranium—Oxide. Zine—Metallic, ch. pure. "Carbonate, ppt.	.0 75@.82j 1.8 1.9 2.1.1 13.7 10.2.2 1.623 1.63 1.64 4.2 2.25@3.0 .07@.097
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99%		.094 .0554 .0874 .12 .09 .12 .30@.40 .0534@.0734 .0934	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine).	. 25 lb. 1	.18@.19 .25 .35 .19 .061/ ₂ keg 2.65 1.40 .25 .18 .10	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate " Olla—Black, reduced 29 gr.: 25@30, cold test. gal. 15, cold test. " Zero. " Summer " Cylinder, dark steam ref. "	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .094@.134 .104@.134 .1134@.1234 .094@.094 .0834@.1034	Slicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Flour. Flowers, sublimed. Tale—N. C., 1st grade. French, best. French, best. Italian best. Tar—Regular. Oil barrels. Tin—Crystals. Di. Oxide. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l.	.0 75@,82} .03 .02} .1.8 1.9 2.1. 18.7 10.2 1.82 1.82 1.82 .1.83 .07@,097
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray.	66	.094 .05% .084 .12 .09 .12 .30@.40 .05%@.0734 .05%@.0734	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine).	. 1b. 1	.18@.19 .25 .35 .19 .061/ ₆ keg 2.65 1.40 .25 .18 .10	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinary	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .60 .20@.21 .094@.104 .104@.114 .114@.124 .094@.004 .094@.103 .1114@.1554	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulpha	.0 75@.82! 0.013 .023 1.8 1.9 2.1 13.7 10.2 1.6 2.3 1.6 2.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l.	66	.09 .05% .08% .12 .09 .12 .30@.40 .05%@.06 .05%@.07% .09% .12 .07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (50% nitro-glycerine). (60% nitro-glycerine).	. 25 lb. 1	.18@.19 .25 .35 .19 .063/e keg 2.65 1.40 .25 .18 .10	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate " Oil»—Black, reduced 29 gr.: 25@30, cold test gal. 15, cold test " Zero. " Summer. " Cylinder, dark steam ref. " Dark, filtered. " Light filtered. "	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .094@.104 .1134@.1234 .0934@.094 .0834@.103 .1114@.1534 .1434@.1734	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulpha	.0 75@.82! 0.013 .023 1.8 1.9 2.1 13.7 10.2 1.6 2.3 1.6 2.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White. Red.	66	.09 .0554 .0814 .12 .09 .12 .30@.40 .054@.06 .0534@.0734 .0914 .07 .07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R.R. powder. Dynamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine).	. 25 lb. l	.18@.19 .25 .35 .19 .061/ ₆ keg 2.65 1.40 .25 .18 .10	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate " 6ils—Black, reduced 29 gr.: 25@30, cold test. " Zero. " Summer. " Cylinder, dark steam ref. " Dark, filtered. " Light filtered. " Extra cold test. "	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .094@.134 .1134@.1234 .094@.094 .094@.1034 .114@.1534	Slicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphide. Sulphide crystals. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. Sh. ton N. Y., Fibrous, best. French, best. Italian best. Italian best. Tar—Regular. Oil barrels. Tin—Crystals. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. granular. Dust. Sulphate.	.0 75@.824 .013 .022 1.8 1.9 2.1 13.7 10.2 1.8 4.2 2.25@3.0 .07@.093 .044\colored .043 .044\colored .043 .025\colored .023
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l white, 99% Sulphuret com'l. Arsenie—White. Red.		.09 .0554 .0814 .12 .09 .12 .30@.40 .054@.06 .0534@.0734 .0914 .07 .12 .07 .16 .03@.034@.07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (40% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (60% nitro-glycerine).		.18@.19 .25 .35 .19 .061/2 keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .161/2 .18 .21	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate " Olla—Black, reduced 29 gr.: 25@30, cold test gal. 15, cold test " Zero " Zummer " Cylinder, dark steam ref. " Dark, filtered. " Light filtered. " Light filtered. " Extra cold test. " Gasoline, 86°@90°. "	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .0934@.1034 .1034@.1134 .1134@.1234 .0934@.1034 .1134@.1534 .1434@.1734 .1434@.1734	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. Sh. ton N. Y., Fibrous, best. French, best. Italian best. Italian best. Tar—Regular. Oil barrels. Tin—Crystals. Ib. Oxide. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, pt. Chloride solution, com'l. Sulphate.	.0 75@.824 .013 .022 1.8 1.9 2.1 13.7 10.2 1.8 4.2 2.25@3.0 .07@.093 .044\colored .043 .044\colored .043 .025\colored .023
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Sulphuret com'l. Arsenie—White Red. Asphaltum— Ventura, Cal.		.09 .0554 .0814 .12 .09 .12 .30@.40 .0554@.0734 .0954@.0734 .0964 .0634@.07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (50% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (75% nitro-glycerine). Glycerine for nitro (32 2-10) Be.)		.18@.19 .25 .35 .19 .061/2 keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .161/2 .18 .21	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate Olls—Black, reduced 29 gr.: 25@30, cold test gal. 15, cold test gal. Zero " Zero " Zummer " Cylinder, dark steam ref. " Dark, flitered " Light filtered " Extra cold test " Gasoline, 86°@90° " Naphtha, crude, 68°@72° bbl.	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .60 .20@.21 .094@.104 .104@.1134 .114@.1234 .094@.004 .114@.1534 .144@.1734 .2134@.2634 .14@.19	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. Sh. ton N. Y., Fibrous, best. French, best. Italian best. Italian best. Tar—Regular. Oil barrels. Tin—Crystals. Oil barrels. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. Sulphate. THE RARE EARTH:	.0 75@.82! .02] 1.6 1.9 2.1 13.7 10.2 1.6 4.2 2.25@3.0 .07@.097 .041-2@.044 .041-2@.044 .041-2@.042
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l white, 99% Sulphuret com'l. Arsenie—White. Red.		.09 .05% .08% .12 .09 .12 .30@.40 .05%20.07% .05%20.07% .12 .07 .16 .06%20.09% .06%20.07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (75% nitro-glycerine). (80% nitro-glycerine). (90% nitro-glycerine). (90% nitro-glycerine).	. 25 lb. 1	.18@.19 .25 .35 .19 .061/2 keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .161/2 .18 .21 .123/2@.13	4x4 in	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .0934@.1034 .1034@.1134 .1134@.1234 .0934@.1034 .1134@.1534 .1434@.1734 .1434@.1734	Slicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphide crystals. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian best. Italian best. Tar—Regular. Oli barrels. Tin—Crystals. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. granular. Dust. THE RARE EARTH: Cust. Mea	.0 75@.821 .011 .021 1.8 1.9 2.1 13.7 10.2 1.6 4.2 .03 .07 .09 .09 .01 .01 .01 .02 .03 .03 .03 .03 .03 .03 .03 .03
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White. Red. Asphaltum— Ventura, Cal. Cuban.		.09 .0554 .0814 .12 .09 .12 .30@.40 .0534@.0734 .0534@.0734 .0914 .07 .16 .0800314 .0834@.07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycer ine). (30% nitro-glycerine). (40% nitro-glycerine). (50% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (75% nitro-glycerine). Glycerine for nitro (32 2-10° Be.) Feldspar—Ground Fiint Pebbles—Danish, Besi	. 1b	.18@.19 .25 .35 .19 .063/e keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .163/e .18 .21 .123/e@.13 8.00@9.00 n 14.75	4x4 in. "6x6 in. "Mineral Wool— Slag, ordinary	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .09¾@.13¼ .11¾@.12¾ .11¾@.12¾ .11¼@.15¾ .11¼@.15¾ .11¼@.25¾ .11¼@.25¾ .11¼@.25¾ .11¼@.21¾ .11¼@.21¾ .11¼@.21¾ .11½@.21¾ .11½@.21¾ .11½@.21¾	Slicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphide. Sulphide. Sulphide. Sulphur—Roll. Flowr. Flowers, sublimed. Talc—N. C., 1st grade. Sh. ton N. Y., Fibrous, best. French, best. Italian. best. Italian. best. Tar—Regular. Oli barrels. Tin—Crystals. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, oom'l. Sulphate. THE RARE EARTH. Cust. Mea	.0 75@.821 .011 .021 1.8 1.9 2.1 13.7 10.2 1.6 4.2 .03 .07 .09 .09 .01 .01 .01 .02 .03 .03 .03 .03 .03 .03 .03 .03
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White Red. Asphaltum— Ventura, Cal. Cuban. Egyptian, crude.		.09 .0554 .0814 .12 .09 .12 .30@.40 .0554@.0734 .0944 .07 .12 .07 .16 .08@.0834 .0834@.07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R.R. powder. Dvnamite (20% nitro-glycerine). (40% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (75% nitro-glycerine). Glycerine for nitro (32 2-10 Be.) Feldspar—Ground. Flint Pebbles—Danish, Best	. 1b	.18@.19 .25 .35 .19 .061/2 keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .161/2 .18 .21 .123/2@.13	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinary	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .0934@.1314 .1134@.1234 .0934@.0934 .0834@.1034 .1134@.1734 .1434@.1734 .1434@.1734 .144@.1734 .144@.1734 .144@.1734 .144@.1734	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. Sh. ton N. Y., Fibrous, best. French, best. Italian best. Italian best. Tar—Regular. Oil barrels. Tin—Crystals. Ib. Oxide. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. Sulphate. THE RARE EARTH. Cust. Mea Boron—Nitrate. Ib. Calcium—Tungstate (Schee-	. (
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arenie—White Red. Asphaltum— Ventura, Cal. Cuban. Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic.	sh. ton	.094 .05½ .08¼ .12 .09 .12 .30@.40 .05½@.06 .05½@.07 .16 .060.08¼ .063¼@.07 .16 .063¼@.07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," B. Judson R. R. powder. Dynamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). Glycerine for nitro (32 2-10 Be.) Feldspar—Ground Filint Pebbles—Danish, Best French, Best. Fluorspar—		.18@.19 .25 .35 .19 .063/c keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .164/c .18 .21 .123/c .18 .20 .11.75	4x4 in. "6x6 in. "" Mineral Wool— Slag, ordinary	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .60 .20@.21 .094@.104 .104@.1134 .114@.1234 .094@.094 .114@.1534 .144@.1734 .2134@.2634 .14@.19 .12 .656@.67 .69	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Sulphur—Roll. Flowr. Sulphur—Roll. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian best. Italian best. Tar—Regular. Oil barrels. Tin—Crystals. Ib. Oxide. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. Sulphate. THE RARE EARTH: Cust. Mea Boron—Nitrate. Ib. Calcium—Tungstate (Schee-	75@.822 75@.822 1.010 .001 .001 1.1 1.1 1.1 1.1 1.1 1.1
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White Red. Asphaltum— Ventura, Cal. Cuban. Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic. Gilsonite, Utah, ordinary.	sh. ton	.094 .05½ .08¼ .12 .09 .12 .30@.40 .05½@.06 .05½@.07¼ .12 .07 .16 .0634@.07 .0634@.07 .0634@.07 .0634@.07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (40% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). Glycerine for nitro (32 2-10 Be.) Feldspar—Ground Flint Pebbles—Danish, Best French, Best. Fluorspar— Am. lump, 1st grade.		.18@.19 .25 .35 .19 .063/2 keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .163/4 .18 .21 .123/6@.13 .8 .00@9.00 .00 .14.75 .11.75	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1. lb. No. 2. " Sulphate " Olls—Black, reduced 29 gr.: 25@30, cold test. gal. 15, cold test. " Zero. " Summer " Oylinder, dark steam ref. " Dark, filtered. " Light filtered. " Light filtered. " Sextra cold test. " Gasoline, 86°@90°. " Naphtha, crude, 68°@72° bbl. "Stove" gal. Linseed, domestic raw " Boiled " Calcutta, raw " Dzokertte lb. Paints and Colors—	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .60 .20@.21 .094@.104 .104@.1134 .114@.1234 .094@.094 .114@.1534 .144@.1734 .2134@.2634 .14@.19 .12 .656@.67 .69	Slicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphide crystals. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian best. Italian best. Tar—Regular. Oll barrels. Tin—Crystals. Uranium—Oxide. "" Carbonate, ppt. Chloride solution, com'l. Sulphate. "" THE RARE EARTH: Cust. Mea Boron—Nitrate. Ib. Calcium—Tungstate (Scheelite).	
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arenie—White Red. Asphaltum— Ventura, Cal. Cuban. Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic.	sh. ton	.09 .05% .0814 .12 .30@.40 .05% .05% .05% .07 .16 .09 .12 .30 .09 .12 .30 .09 .12 .30 .09 .12 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (50% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). Glycerine for nitro (32 2-10 Be.) Feldspar—Ground Fiint Pebbles—Danish, Best French, Best. Fluorspar— Am. hump, ist grade. 2d grade.	. 25 lb. l	.18@.19 .25 .35 .19 .063/e keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .163/e .18 .21 .123/e@.13 8.00@9.00 DR 14.75 11.75 11.75	4x4 in	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .60 .20@.21 .0994@.1014 .1014@.1114 .0914@.0914 .0834@.1034 .114@.1534 .144@.1734 .114@.1534 .146.19 .055 .12 .65@.67 .69 .85 .1114	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Flour. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian best. Tar—Regular. Oil barrels. Tin—Crystals. Ib. Oxide. Uranium—Oxide. Zinc—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. Sulphate. THE RARE EARTH: Cust. Mea Boron—Nitrate. Ib. Calcium—Tungstate (Scheelite). Cerium—Nitrate. Cerium—Nitrate. Cerbum—Nitrate. Cerbum—Nitrat	
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White. Red. Aaphaltum— Ventura, Cal. Cuban. Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic. Gilsonite, Utah, ordinary. Select.	sh. ton	.094 .0814 .12 .09 .12 .30@.40 .0514@.06 .0534@.0734 .0914 .07 .16 .082.0314 .0834@.07	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R.R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine).		.18@.19 .25 .35 .19 .063/e keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .163/e .18 .21 .123/e@.13 n 8.00@9.00 n 14.75 11.75 n \$14.40 13.90 13.40	4x4 in.	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .20@.21 .09¾@.13¼ .11¾@.15¾ .09¾@.10¾ .11¼@.15¾ .11¼@.15¾ .11¼@.26¾ .11¼@.26% .11¼@.26% .11¼@.26% .11¼@.26% .11¼ .11½ .11½ .11½ .11½ .11½ .11½ .11½	Slicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphide. Sulphide. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian. best. Italian. best. Tar—Regular. Oil barrels. Tin—Crystals. Ib. Oxide. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. granular. Dust. THE RARE EARTH: Cust. Mea Boron—Nitrate. Licelium—Tungstate (Scheelite). Cerium—Nitrate. Ciucinum—Nitrate. Ciucinum—Nitrate. Glucinum—Nitrate. Glucinum—Nitrate.	
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White Red. Aaphaltum— Ventura, Cal Cuban. Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic. Gilsonite, Utah, ordinary. Select. Barium—	sh. ton	.09 .055/4 .081/4 .12 .09 .12 .30@.40 .055/4@.06 .055/4@.07 .16 .03@.031/4 .069/4@.07 .030.031/4 .065/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06 .055/4@.06	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). Glycerine for nitro (32 2-10 Be.) Feldspar—Ground Fiint Pebbles—Danish, Best French, Best. Fluorspar— Am. lump, 1st grade. 2d grade. Gravel and crushed, 1st gr. 2d grade.		.18@.19 .25 .35 .19 .063\circ keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .16\circ .18@.13 .14 .15 .16\circ .18 .11 .15 .16\circ .18 .11 .11 .15 .16\circ .18 .11 .11 .15 .16\circ .18 .11 .11 .15 .18\circ .18 .18 .11 .18 .18 .18 .18 .18 .18 .18	4x4 in.	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .80 .20@.21 .0934@.1344 .1134@.1234 .0934@.0934 .0834@.1034 .1144@.1734 .2134@.2834 .144@.1794 .856.67 .69 .85 .1114 .05 .16 .1034	Slicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate com'l. Sulphate com'l. Sulphur—Roll. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. Sh. ton N. Y., Fibrous, best. French, best. Italian. best. Tar—Regular. Oll barrels. Sulpharels. Doxide. Sine—Metallic, ch. pure. Carbonate, ppt. Carbonate, ppt. Carbonate, ppt. Sulphate. THE RARE EARTH: Cust. Mea Boron—Nitrate. Boldymium—Nitrate. Sulphate. Cerium—Nitrate. Celucium—Nitrate. Scheenite. Chlenium—Nitrate. Scheenite. Celucium—Nitrate. Scheenite. Celucium—Nitrate. Scheenite.	
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White. Red. Asphaltum— Ventura, Cal. Cuban Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic. Gilsonite, Utah, ordinary. Select. Barium— Carb. Lump, 80@90%.	sh. ton	.09 .0554 .0814 .12 .30@.40 .0546@.06 .0534@.0734 .0946 .07 .16 .06@.0834 .0634@.07 .0146@.0846 .0554@.06 .0554@.06 .0554@.06 .0554@.06 .0554@.06 .0554@.06 .0554@.06 .0554@.06	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," A. "Rackarock," B. Judson R.R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine).		.18@.19 .25 .35 .19 .063/e keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .16// .18 .21 .12%@.13 a 8.00@9.00 a 14.75 11.75 a \$14.40 13.90 13.40 12.40 17.90	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1 lb. No. 2 " Sulphate Olls—Black, reduced 29 gr.: 25@30, cold test gal. 15, cold test " Zero " Summer " Cylinder, dark steam ref. " Dark, filtered. " Light filtered. " Light filtered. " Summer " Gasoline, 86°@90°. " Naphtha, crude, 68°@72° bbl. "Stove" gal. Linseed, domestic raw " Boiled " Calcutta, raw " Calcutta, raw " Box Calcutta, raw " Calcutta, raw " Darks and Color— Chrome green, common " Yellow, common " Yellow, common " Best "	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .80 .20@.21 .0934@.1034 .1034@.1134 .1134@.1234 .1434@.1734 .144@.1534 .144@.1534 .144@.1534 .144@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1414@.1534 .1514@.1514 .1514@.1514	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Sulphur—Roll. Flour. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian best. Italian best. Italian best. Sulpharera. Sulpharera. Sulpharera. Sulpharera. Sulpharera. Tin—Crystals. Ib. Oxide. Uranium—Oxide. Zine—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. Sulphate. THE RARE EARTH. Cust. Mea Boron—Nitrate. Ib. Calcium—Tungstate (Scheelite). Cerium—Nitrate. Sulphate. Erbium—Nitrate. Erbium—Nitrate. Lanthanum—Nitrate. Lanthanum—Nitrate. Lanthanum—Nitrate. Lanthanum—Nitrate. Lanthanum—Nitrate. Co.	
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White. Red. Asphaltum— Ventura, Cal. Cuban. Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic. Glisonite, Utah, ordinary. Select. Barium— Carb. Lump, 80@90%.	sh. ton	.09 .05% .0814 .12 .09 .12 .30@.40 .05% .05% .05% .07 .14 .09% .12 .07 .16 .06% .05% .06% .05% .06% .06% .06% .06% .06% .06% .06% .06	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). (60% nitro-glycerine). Glycerine for nitro (32 2-10% Be.) Feldspar—Ground Flint Pebbles—Danish, Best French, Best. Fluorspar— Am. lump, ist grade. 2d grade. Gravel and crushed, 1st gr. 2d grade. Ground. list grade.	. 25 lb. l	.18@.19 .25 .35 .19 .063/e keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .163/e .18 .21 .123/e@.13 .8 .00@9.00 .00 .14.75 .11.75 .13.40 .13.40 .12.40 .17.90 .16.50	4x4 in. 6x6 in. Mineral Wool— Slag, ordinary. Selected. Rock, ordinary. Selected. Nickel—Oxide, No. 1. No. 2. Sulphate Olls—Black, reduced 29 gr.: 25@30, cold test. Zero. Summer. Cylinder, dark steam ref. Dark, flitered. Light flitered. Extra cold test. Gasoline, 86@90°. Naphtha, crude, 68°@72°. Boiled. Stove". gal. Linseed, domestic raw. Boiled. Calcutta, raw. Coleutta, raw.	2.00 3.00 19.00 25.00 32.00 32.00 40.00 1.00 .60 .20@.21 .09¾@.10¼ .11¾@.12¾ .09¾@.09¾ .11¼@.15¾ .11¼@.25¾ .14@.26¾ .11¼@.26¾ .11½@.26¾ .11½@.26¾ .11½@.26¾ .11½@.26¾ .11½@.26¾ .11½@.26¾ .11½@.26¾ .11½@.26¾ .11½ .85	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian. best. Italian. best. Tar—Regular. Oll barrels. Tin—Crystals. Ib. Oxide. Uranium—Oxide. Zinc—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. Sulphate. THE RARE EARTH: Cust. Mea Boron—Nitrate. Ib. Calcium—Tungstate (Scheelite). Cerium—Nitrate. Cerium—Nitrate. Ciucinum—Nitrate. Glucinum—Nitrate. Glucinum—Nitrate. Lanthanum—Nitrate. Lithium—Nitrate. Oz. Strontium—Nitrate. Oz. Strontium—Nitrate. Oz. Strontium—Nitrate. Oz. Strontium—Nitrate. Oz. Strontium—Nitrate. Oz.	
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White Red. Aaphaltum— Ventura, Cal Cuban. Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic. Gilsonite, Utah, ordinary. Select. Barium— Carb. Lump, 80@90%. Powdered, 80@90%.	.sh. ton	.09 .05½ .08½ .12 .09 .12 .30@.40 .05½@.06 .05½@.07¼ .12 .07 .16 .03@.03½ .05½@.07 .16 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine) (40% nitro-glycerine) (60% nitro-glycerine) (60% nitro-glycerine) (75% nitro-glycerine) (60% nitro-glycerine) (75% nitro-glycerine) Glycerine for nitro (32 2-10' Be.) Feldspar—Ground Flint Pebbles—Danish, Best French, Best. Fluorspar— Am. lump, 1st grade 2d grade. Gravel and crushed, 1st gr. 2d grade. Gravel and crushed, 1st gr. 2d grade. Ground, 1st grade 2d grade.		.18@.19 .25 .35 .19 .063/e keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .16// .18 .21 .12%@.13 a 8.00@9.00 a 14.75 11.75 a \$14.40 13.90 13.40 12.40 17.90	4x4 in. 6x6 in. Mineral Wool— Slag, ordinary. Selected. Rock, ordinary. Selected. Nickel—Oxide, No. 1. No. 2. Sulphate. 6ils—Black, reduced 29 gr.: 25@30, cold test Zero. Summer. Cylinder, dark steam ref. Dark, filtered. Light filtered. Light filtered. Extra cold test Gasoline, 86°@90°. Naphtha, crude, 68°@72°. bbl Stove " Boiled. Calcutta, raw. Boile	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .00 .20@.21 .0994@.1314 .1134@.1234 .0934@.1034 .1144@.1734 .2134@.2634 .144@.1734 .2134@.2654 .141 .104 .856.67 .69 .85 .1114 .05 .16 .1034 .25 .0414	Slicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Sulphur—Roll. Flour. Flowers, sublimed. Tale—N. C., 1st grade. Sh. ton N. Y., Fibrous, best. French, best. Stitalian. best. Stital	.00 75@.82 75@.82 75@.82 1.8 1.9 2.1 1.8 1.9 2.1 1.8 1.9 1.8 4.2 2.56@3.0 0.07@.099 6.02 5. S. S. 1.9 1.04\1,04\1,04\1,04\1,04\1,04\1,04\1,04\1,
Carbonate, lump. Powdered. Muriate, grain. Lump. Nitrate, white, pure (99%). Phosphate, com'l. Pure. Antimony—Glass Needle, lump. Powdered, ordinary. Oxide, com'l white, 95% Com'l white, 99% Com'l gray. Sulphuret com'l. Arsenie—White. Red. Asphaltum— Ventura, Cal. Cuban. Egyptian, crude. Trinidad, refined. San Valentino (Italian). Seyssel (French), mastic. Glisonite, Utah, ordinary. Select. Barium— Carb. Lump, 80@90%.	sh. ton	.09 .05½ .08½ .12 .09 .12 .30@.40 .05½@.06 .05½@.07¼ .12 .07 .16 .03@.03½ .05½@.07 .16 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06 .05½@.06	Copper—Carbonate. Chloride. Nitrate, crystals. Oxide, com'l. Cryolite Explosives— Blasting powder, A. Blasting powder, B. "Rackarock," B. Judson R. R. powder. Dvnamite (20% nitro-glycerine). (30% nitro-glycerine). (40% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (60% nitro-glycerine). (75% nitro-glycerine). Glycerine for nitro (32 2-10' Be.) Feldspar—Ground Filint Pebbles—Danish, Best French, Best. Finorspar— Am. lump, 1st grade. 2d grade. Gravel and crushed, 1st gr. 2d grade. Ground, 1st grade. 2d grade. Foreign, lump. Ground.		.18@.19 .25 .35 .19 .063\circ keg 2.65 1.40 .25 .18 .10 .13 .14 .15 .16\circ .18\delta .10 .13 .14 .15 .16\delta .18 .21 .12\delta .13 .14 .15 .18\delta .11 .15 .16\delta .18 .21 .12\delta .13 .12\delta .13 .12\delta .13 .13 .14 .15 .15 .16 .16 .16 .16 .17 .19 .17 .17 .17 .18 .18 .18 .19 .19 .19 .19 .19 .19 .19 .19 .19 .19	4x4 in. " 6x6 in. " Mineral Wool— Slag, ordinarysh. ton Selected. " Rock, ordinary. " Selected. " Nickel—Oxide, No. 1 lb. No. 2. " Sulphate " Olls—Black, reduced 29 gr.: 25@30, cold test gal. 15, cold test " Zero. " Summer " Cylinder, dark steam ref. " Dark, filtered. " Light filtered. " Light filtered. " Sammer. " Gasoline, 86°@90°. " Naphtha, crude, 68°@72° bbl. " Stove" gal. Linseed, domestic raw " Boiled " Calcutta,	2.00 3.00 19.00 25.00 32.00 40.00 1.00 .80 .20@.21 .0994@.1014 .1034@.1134 .0934@.0934 .0834@.1034 .1134@.1534 .1434@.1734 .2134@.2634 .140.19 .656.67 .69 .85 .1114 .05 .16 .1044 .05 .0434@.0514	Shicate, conc. Com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate, com'l. Sulphate. Sulphur—Roll. Sulphur—Roll. Flowr. Flowers, sublimed. Tale—N. C., 1st grade. N. Y., Fibrous, best. French, best. Italian. best. Italian. best. Tar—Regular. Oll barrels. Tin—Crystals. Ib. Oxide. Uranium—Oxide. Zinc—Metallic, ch. pure. Carbonate, ppt. Chloride solution, com'l. Sulphate. THE RARE EARTH: Cust. Mea Boron—Nitrate. Ib. Calcium—Tungstate (Scheelite). Cerium—Nitrate. Cerium—Nitrate. Ciucinum—Nitrate. Glucinum—Nitrate. Glucinum—Nitrate. Lanthanum—Nitrate. Lithium—Nitrate. Oz. Strontium—Nitrate. Oz. Strontium—Nitrate. Oz. Strontium—Nitrate. Oz. Strontium—Nitrate. Oz. Strontium—Nitrate. Oz.	.0 75@.821 .011 .011 .011 .012 1.8 1.9 1.2 1.1 1.2 1.2 1.3 1.4 4.2 2.25@3.6 .07@.09 .024 .024 .024 .024 .023 .024 .025