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We have received a copy of the following resolution, unanimously adopted at a meeting of the Council of the Institution of Mining and Metallurgy, held in London on Wednesday, May 22d, 1901:

"The Council of the Institution of Mining and Metallurgy desire to place on record an expression of their deepest regret at the death of their greatly esteemed colleague, the late R. P. Rothwell, who was elected an honorary member of the Institution and a member of council in 1895.

"They also wish to convey to the friends of the deceased gentleman an expression of their warmest sympathy with them in the great loss they, and the technical world generally, have sustained, by the death of one who took so great a part in the spread of scientific and technical knowledge for so many years."

From all appearances the people of the United States are to have another year of great prosperity. The uncertain factor early in the year was the probable result of the crops. By the Government and other crop reports it now appears that the uncertainty is in large part removed. We shall have again a large surplus for export, while the accounts from abroad indicate that most of the European nations will be compelled to buy. This means abundant money, large demand for iron, steel and other materials, and a new surplus for investment. The mineral industry, which does its full share toward maintaining the national prosperity, will also receive its full share of the benefits.

A statement was sent out by telegraph from Denver last week to the effect that the American Smelting and Refining Company had made arrangements to buy up all the reduction plants in the Cripple Creek District, thereby obtaining control practically of all the ore treatment for that district. We did not publish the dispatch nor comment on it then, as we had reason to doubt its correctness. Our Cripple Creek correspondent confirms this impression. It appears that there have been some negotiations for a consolidation of the outside reduction plants, though these have not reached a point where definite statements can be secured. The proposed consolidation, moreover, had no reference to the American Smelting and Refining Company, and no deal with that company is under consideration.

Australian advices report that the mines of the Broken Hill District have been seriously affected by the low prices of lead which now prevail in Europe and by the absence of current demand for lead and silver in China. The Broken Hill Proprietary Company continues to work as usual, the large scale on which its operations are conducted making it possible to run on a comparatively small margin. The smaller mines, however, are suffering, the price of lead having fallen to a point uncomfortably close to their cost of production; while silver has also been rather low in price. Moreover, nearly all the mines in the district have worked out the oxidized ores which could be treated at comparatively low cost, and are now dealing with the complex sulphide ores, which require more expensive plant and treatment. Unless there should be an improvement before long it is probable that several of the mines will close down for a time; and some of them have already reduced their working forces.

The Gokteik Viaduct in Burma, which has been constructed by American bridge-builders, and which has been the subject of discussion in the British Parliament, as noted elsewhere, has the distinction of being the largest structure of the kind in the world, and the highest, with one exception. It is 2,260 ft. long, and its extreme height above the foundations is 335 ft. The only viaduct exceeding it in height is at Loa, in Bolivia, on the Antofagasta Railroad, that structure being 336 1/2 ft. high; but it is only 800 ft. long. Moreover, the foundations of the Gokteik bridge rest upon a natural rock bridge, so that the track is no less than 835 ft. above the river which flows through the natural tunnel. A table published by "Engineering News" shows that the highest viaduct in the United States is that over the Pecos River in Texas, on the Southern Pacific Railroad, which is 321 ft. high and 2,180 ft. long; while close behind it is the Kinzua Viaduct on the Erie Railroad in Pennsylvania, which is 301 ft. high and 2,053 ft. long.

A late opening and the strike of the steamer engineers have combined to restrict Lake Superior traffic this year, as compared with last. The official reports show that from the opening up to June 1st the number of vessels passing through the Sault Ste. Marie Canal was 2,103, and the freight carried 2,248,045 net tons; while last year the freight total was 4,565,879 tons, or more than twice this year's movement. Doubtless the difference will be made up later in the season, but the start has not been a very good one.

Shipments of iron ore down this year have been only 1,172,532 tons, or considerably less than one-half of last year's, which by June 1st amounted to 2,733,525 tons. Shipments of coal up were 467,254 tons,

while the report a year ago showed 880,040 tons. The light shipments of iron ore have caused no embarrassment, as the opening of the season found large stocks on the lower lake docks, which were sufficient to supply current demand. The same may be said of coal stocks at the Lake Superior ports.

The past week has been full of rumors with regard to the steel companies remaining outside of the United States Steel Corporation. The companies chiefly concerned are the Bethlehem, the Cambria and the Pennsylvania, and the reports seem to be for the most part quite unreliable though it is almost impossible to obtain definite information concerning them. The Bethlehem stock has been reported bought up in the interest of the United States Corporation, though this again is freely denied. A consolidation of the Cambria and the Pennsylvania companies was at first reported and then denied; while the latest rumor is that a large interest in the Pennsylvania Steel Company has been purchased by the Pennsylvania Railroad Company. Whether there is any foundation for this, beyond the reasons which the last-named company may be presumed to have for controlling its own supply of steel, remains to be seen. It is quite as probable as the other reports. Most of them are started by people who are interested in speculating in the stocks of the companies; and the crop of rumors may be expected to grow.

We referred recently to the statement of the Robinson Gold Mining Company, and to the gold taken from the mine by the Government during the war. We have now received the reports of a number of the Witwatersrand mining companies, and their statements are all similar to those of the Robinson. They all report that there has been a surprisingly small amount of actual damage to mines and works; but that the mines operated by the Government were practically stripped of all the ore available, while no opening nor development work was done. Very few will be able to start up their mills and run them steadily until they have done a good deal of work underground. Under these circumstances no large production can be expected for several months, even if a general resumption of work is permitted.

There is nothing said in these reports of damages for the gold commandeered for the South African Republic. Indeed the report of the Claims Commission, recently submitted, does not encourage the submission of claims. The Commission is evidently disposed to regard the actions of the late Government as outside of its consideration entirely, and to discountenance any assumption that the new colonial organization can be held responsible.

A paper recently read before the Canadian Society of Civil Engineers by Professor Ernest G. Coker gives the result of some very interesting experiments made at the laboratory of McGill University in Montreal. Without going into details, the experiments seem to establish the fact that when iron or steel is subjected to tensional stress sufficient to cause a permanent stretch in the material the ductility is reduced and ultimately the elastic limit rises. As a first consequence, however, the elastic limit is very much lowered, in some cases to zero, but if the bar be left to itself the elastic limit ultimately rises to a higher value than before. In other words, a period of rest seems to have an important effect in permitting iron or steel to recover the strength temporarily lost by overstrain.

Another important point which seems to be shown by the series of experiments is that the process of recovery is materially aided by heating the metal. Even comparatively low temperatures, such as 100° C., or that of boiling water, effected a considerable change in overstrained metal, restoring its elasticity and raising the point of yielding. Conversely, very low temperatures retarded the recovery to a marked degree. These experiments are of much importance to engineers, practically as well as theoretically.

The discussion started in the British Parliament by Sir Alfred Hickman, formerly president of the British Iron Trade Association, in relation to Government purchases of American locomotives and bridges for India and elsewhere, has not been a very profitable one. Sir Alfred's statements were unsupported by any convincing evidence, and his charge that the British Government officials showed special favor to American manufacturers, at the expense of their own countrymen, is manifestly absurd. The fact seems to be that the American builders were ready to furnish the desired articles within a reasonable time and at a reasonable price, and the orders were given to them—as any good business man would do it. In the case of the Gokteik Viaduct in Burma, also, it appears that the British bridge-builders hesitated about undertaking the work at all, in view of the somewhat daring design of the engineers.

Some of Sir Alfred Hickman's supporters have been discussing the alleged shortcoming of the American locomotives now in use on the

Midland Railway in England and on some of the railroads in India. It is charged that they burn more fuel than English locomotives and are more costly to keep in repair. These assertions do not seem to be supported. The whole question of the relative merits of American and British locomotives was pretty thoroughly discussed some years ago by Messrs. Forney, Aspinall, Dredge, Soule and others; the conclusions being that while American locomotives of a given capacity burned more coal than British engines, they could also do more work. In other words, the capacity of both, when reduced to units of work, was practically equal. One result of the old discussion has been the gradual approximation of British locomotives to American types. This is a very significant fact, which should not be lost sight of in the argument.

THE PORT ROYAL MINE DISASTER.

Another terrible accident has been added to the history of coal mining in Pennsylvania. An explosion at the Port Royal Mine of the Pittsburg Coal and Coke Company, on June 10th, resulted in the death of nearly 20 men. Our news columns give the details so far as these can be obtained from press despatches. Next week we hope to give fuller particulars. However, it appears that an explosion of fire-damp took place, imprisoning six men. William Allison, the mine boss, and a party of 9 others, animated by that heroic spirit which sheds a luster over so many mine disasters, entered the workings to rescue the entombed men. A second explosion cut off the rescuers, and a second party of volunteers were unable to get into the burning workings owing to gas and smoke. There being no hope for the entombed men, the mine may be flooded.

The accident, if the press despatches are correct, was the result of carelessness. A fall of roof had choked an air passage, and a gang of laborers, cleaning up the debris, used open lamps. Perhaps the amount of air forced through the workings was sufficient to keep the mine free from danger under ordinary conditions, and as the same mines suffered from a disastrous fire 7 years ago it is fair to say that the ventilation should have been better than that of many other mines in the Pittsburg District. A fall of roof in an air passage is something difficult to prevent, even though the roof be frequently examined. Still, the blocking of one air-way should not have been allowed to endanger the whole mine. If the miners really worked with open lights, then some one took a frightful risk in permitting it. A fall of roof with the possible local escape of gas, and the accumulation of a dangerous percentage of fire-damp through the partial or complete stopping of the air current, were conditions to be met with all precautions. Very likely the man or men responsible for the disaster met death, but their fate and the unavailing heroism of the rescuers ought simply to impress mine officials anew with the need of unceasing vigilance. Any relaxation of strict precautions should be firmly punished, whether an accident results or not.

COPPER PRODUCTION IN THE UNITED STATES.

In the "Engineering and Mining Journal" for January 5th last we gave an estimate of the copper production of the United States for the year 1900. We have now the corrected figures of the producers, as collected for "The Mineral Industry," Volume IX. These figures we give in the following table, which shows the production of copper in the United States for two years past, in long tons, of 2,240 pounds:

	1899.	1900.	Changes.	Per ct.
Arizona	55,972	51,520	D. 4,452	7.9
California	10,677	13,232	I. 2,555	23.9
Colorado	4,739	3,494	D. 1,245	26.5
Michigan	69,574	64,387	D. 5,187	7.5
Montana	106,229	113,599	I. 7,370	7.0
Utah	4,156	8,261	I. 4,105	98.8
Eastern and Southern States.....	1,698	3,088	I. 1,390	81.8
Other States	2,227	5,596	I. 3,369	251.3
Copper in sulphate.....	4,245	5,051	I. 806	19.0
Totals	259,517	268,228	I. 8,711	3.4

The copper in sulphate includes only that in sulphate made as a by-product, the copper in which is not converted into metal; it does not include metallic copper used in making sulphate.

The rate of increase in production, which has varied for several years between 8 and 10 per cent., dropped last year to 3.4 per cent. Some changes shown in the table were not generally anticipated. Thus Arizona shows a decrease, notwithstanding the number of new mines; most of these producing only very small quantities. The increase in Montana production was not anticipated, in view of the situation in the Butte District, which seemed to interpose obstacles to an increased output. In Michigan a decrease was not unexpected, as nearly all the large mines have been working low-grade rock in large quantities; while none of the new mines are yet in a position to make a large output, though some of them promise well. In the districts of minor importance the changes were not very great in quantity, though large in proportion.

The following table shows the production, imports, exports and approximate consumption, also in long tons:

	1899.	1900.	Changes.	Per ct.
Production, as above.....	259,517	268,228	I. 8,711	3.4
Imports in all forms.....	42,218	46,342	I. 4,124	9.8
Total	301,735	314,570	I. 12,835	4.3
Exports	111,573	157,469	I. 45,896	41.1
Approximate consumption.....	190,162	157,101	D. 33,061	17.4

The exports do not include some Mexican copper which only passes through the United States in transit to a shipping port. In the above table we have not included stocks on hand, as it is very difficult to ascertain them correctly. So far as it is possible to estimate, however, there was not a very great difference between those on hand at the opening and close of the year 1900.

The market feature in this table is the very large increase in exports. In the year 1900 the exports were 58.7 per cent. of our total production, or 50.1 per cent. of the total supply; these figures comparing with 43.0 and 37.0 per cent., respectively, in 1899. This was due to the extraordinary demand for copper in Europe during a considerable part of the year, while a lighter demand was shown here, especially during the second half of the year.

The imports of copper reported were in various forms, chiefly matte, black copper, copper bullion and other material sent to this country to be refined. The imports were from Mexico and Canada largely, while some came from Chile also. There were some imports from Tasmania, the Mount Lyell Company in that island having arranged for the refining of its copper here. At one period during the year there were some shipments made from London for the same purpose. The superior facilities of our copper refining works are now generally recognized.

NEW PUBLICATIONS.

"Fergus County Argus. Pictorial Edition." Lewistown, Montana. "The Fergus County Argus." Illustrated.

The enterprise which has presented this handsome record of local progress deserves substantial recognition. The various industries and the resources of Fergus County in Montana—among which mining occupies a very prominent place—are here presented in attractive form, with a number of fine illustrations. It is not only good to look at, but well worth preserving.

"Transactions of the Institution of Mining and Metallurgy. Ninth Session—1899-1900." Volume VIII. Edited by Arthur C. Claudet and C. G. Warnford Lock. London, England; published by the Institution. Pages, 556; illustrated.

Careful supervision of the papers offered must have been exercised in preparing the present volume. Perhaps the best thing that can be said of it is that its contents are fully up to the high standard which the Institution of Mining and Metallurgy has set in its previous volumes. Besides the record of the proceedings there are 26 papers, covering a great variety of topics. The discussions on many of these papers also are of value, giving much information on the various questions considered.

"Transactions of the Australasian Institute of Mining Engineers. Volume VII." Edited by A. S. Kenyon, Secretary. Melbourne; Published by the Institute. Pages, 214; illustrated.

Like all the previous volumes issued by this society, the present volume contains some valuable and interesting papers. Among the subjects treated by members at the Melbourne meeting of 1900, the record of which is given in this volume, are Diamond Drill Boring in Victoria, by Stanley Hunter; Deep Alluvial Mining, by D. H. Browne; Timbering, by Robert James; Tellurium in Hauraki Ores, by F. B. Allen; Roasting Ore for Cyaniding, by E. Janitzky; Gold Dredging in New Zealand, by William Wylie; Underground Dams, by A. S. Kenyon; Mine Labor Problems, by T. Danvers Power; Copper Lodes of New Caledonia, by E. A. Weinberg; Treatment of the Sulpho-telluride Ores of Kalgoorlie, by L. W. Grayson; Timbering Wide Lodes, by J. R. Geoffrey. Nearly all of these papers are records of practical experience, and as such are of much value to the mining world.

"The Complete Cost-Keeper." By Horace Lucian Arnold. New York and London; the "Engineering Magazine" Press. Pages, 408. Price, \$5.

In this volume the author has compiled and presented a great deal of information about different systems of shop cost-keeping and factory accounting. The systems referred to are fully and clearly explained and their methods compared. Managers of manufacturing establishments will be enabled thus to study other methods besides those they have been accustomed to, and to understand clearly where improvements are possible and how they can be introduced. No one has, or can have, a system so complete that it cannot be improved; and no one can understand the defects or possibilities of a system properly, unless he can compare it with others. This book gives him opportunities for such comparison, which it would not be easy to find elsewhere. While intended for shops and factories mainly, there is much that would be useful to mine and mill managers also.

"The Geography of the Region about Devil's Lake and the Dalles of the Wisconsin." Bulletin No. 5, Wisconsin Geological and Natural History Survey. By Rollin D. Salisbury and Wallace W. Atwood. Madison, Wis.; State Printing Office. Pages, 152; illustrated.

This is an excellent monograph on a region which is very interesting

from a geological point of view. It is evidently the result of a careful study of the district, and presents the facts collected very clearly. It is divided into two parts, the first treating of the topography, with some notes on the surface geology; while the second presents a history of the topography. The first part is divided into three sections, relating respectively to plain surrounding the quartzite ridges of the region, the quartzite ridges, and the relation between those ridges and the sandstone of the plain. The second part consists of four chapters; the first of which is an outline of the history of the rock formations which show themselves at the surface; the second an outline of rain and river erosion; the third is on erosion and the development of striking scenic features; while the fourth relates to the glacial period and its effect on the local geology. The book is illustrated by a large number of sections and half-tone reproductions of photographs, most of them very good.

"The Kolar Gold-field, India." By Dr. Frederick H. Hatch. Being Part I, Volume XXXIII., of the "Memoires" of the Geological Survey of India. Calcutta, India; Government Printing Office. Pages, 84; with maps and illustrations.

The Kolar—or Colar, as it is sometimes spelled—Gold-field in the Mysore territory in India, while a comparatively small field, has grown steadily in production for several years past. There have been several failures in it, due to bad location, injudicious purchases of property or bad management; but the four or five companies which are working the greater part of the district, have been remarkably successful, and few gold mining companies can show better records or larger dividends. The Kolar is the only district in India which has a considerable gold production. It is in Mysore, a native State under British control, and is about 180 miles from Madras, with which it is connected by rail. The mines are worked by native labor, under English managers and their assistants.

The field is an interesting one and deserves the full description given by Dr. Hatch, whose previous book on the "Transvaal Gold Mines" showed his ability as a descriptive writer, and who is also a practical mining engineer. His examinations were made and his report written for the Indian Geological Survey, and his book is published as one of the memoirs of the Survey.

After a general introduction Dr. Hatch takes up in successive chapters the geology of the field; lode structure; mining practice; surface equipment; metallurgical practice; mine economics; gold production and dividends. The account of the chief geological features of the district is concise and interesting. Mining methods and milling practice are fully and carefully treated. The Kolar mines carry free gold for the most part, and a large part of the values is obtained by amalgamation in the mill, the tailings being treated by the cyanide process, which saves nearly all the values carried over from the plates.

The book is illustrated by maps, drawings and a number of half-tones from photographs. It gives the reader a very good idea of the mines themselves and the surrounding country. The statements of methods and results, of working costs and general practice are concise and interesting. As a monograph on the district it leaves but little to be desired. The machinery in use in the Kolar Gold-field is in large part of recent date; and most of it is of late and approved patterns. The milling work is on a large scale, two of the companies having mills of 120 stamps each. Mining practice has been somewhat modified by the conditions. Thus labor is abundant, and very low-priced, and it is cheaper in the end to employ labor than to install costly machinery. Thus we find much work done by hand labor, and less automatic handling of ore in mine and mill than in some other mining districts.

The book combines in convenient form much information about these mines. What has heretofore been published is not only somewhat imperfect but it is scattered and in different forms, where it is hard to find them.

BOOKS RECEIVED.

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

"Engineers' Club of St. Louis. Sixth Annual Bulletin, 1901." St. Louis, Mo.; published for the Club. Pages, 116.

"New Zealand Official Year-Book, 1900." Prepared by E. J. Von Daldelsen, Registrar-General. Wellington, N. Z.; Government Printer. Pages, 648; illustrated.

"The Michigan Engineer; Containing the Proceedings of the Michigan Engineering Society for 1901." F. Hodgman, Secretary. Climax, Mich.; published by the Society. Pages, 224; illustrated. Price, \$1.

"Statistical Resumé of the Empire of Japan, 34th Year of Meiji (1900)." Prepared and published by the Bureau of General Statistics of the Imperial Cabinet. Tokio, Japan, 1901. Pages, 150; with diagrams.

"Test of the Corliss Engine at the Saratoga Mine, Central City, Colorado." By Thomas L. Wilkinson. Denver, Colo.; published by the Colorado Scientific Society. Pamphlet pages 18; illustrated.

"Department of the Interior, Census Office. Population of the United States by States and Territories, Counties and Minor Civil Divisions." Prepared under the direction of William C. Hunt. Washington; Government Printing Office. Pages, 480.

"Tenth Annual Directory of the Scientific Alliance of New York, 1901." Including the resident active members of the New York Academy of Science, the Torrey Botanical Club, the New York Microscopical Society, the Linnaean Society of New York, the New York Mineralogical Club, the New York Section of the American Chemical Society, and the New York Entomological Society. New York; published for the Alliance. Pages, 56. Price, 25 cents.

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 Herbertz and Laughlin Furnaces.

Sir: In the "Engineering and Mining Journal," June 8th, page 727, we see a note from Mr. Henry Watson in relation to the Herbertz furnace, of Cologne, Germany. In this he seems to compare the Herbertz furnace to the Laughlin smelting furnace, or to imply that they are constructed on the same principles.

As manufacturers of the Laughlin smelting furnaces, we beg to state that the said furnaces are not constructed on the same principle as the Herbertz furnace, and that they should not be judged in any way by the claims made for the latter. We do not claim absurdities for our furnace, and therefore must decline to have them mentioned in connection with the Herbertz or any other similar furnaces.

We are satisfied to stand exclusively on the merits of our "Laughlin" smelters.

St. Louis, Mo., June 10, 1901.

Texas Iron Possibilities.

Sir: Since the discovery of oil in such large quantities near Beaumont in this State, the question of finding a market for the output of the oil-fields is being freely discussed, and among the many suggestions,

that the manufacturing interest of the State will undergo a complete revolution by the discovery and development of the oil-fields of eastern Texas. The possibilities of the State are now beyond the calculation of anyone.

In northeast Texas there is a deposit of a most excellent quality of iron ore, which has been but partially developed. Enough has been done to establish its quality and quantity. The ore is cheaply mined, and will average 50 per cent. metallic iron. In Llano County is found a very fine quality of ore, when mixed with the ores of the Jefferson District, in proportion of 1/3 Llano to 2/3 of this ore, a bessemer pig is made—a very fortunate combination in this age of steel. This combination will naturally attract in the very near future the attention of those interested in iron and steel manufactories. Especially will it do it when it becomes an undisputed fact that fuel can be had in the State as cheap as in any other section of the country. The enclosed geological report will give a more correct idea of this iron district than anything we may say.

The Jefferson Iron Company,
W. T. Atkins, Secretary.

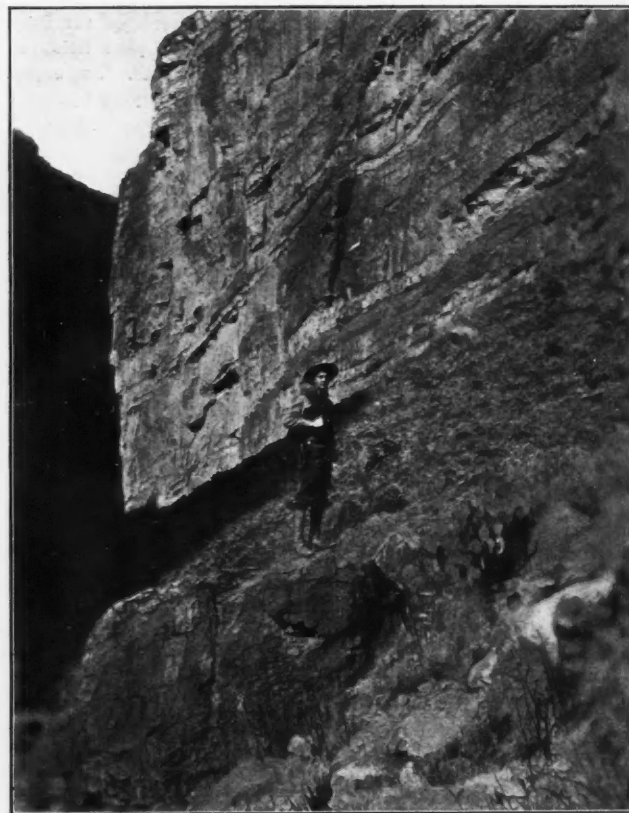
Jefferson, Tex., May 29, 1901.

COAL IN JAMAICA.—Reports from Kingston state that coal deposits have been discovered near that city on the Island of Jamaica which are believed to be quite extensive in area. Tests made show it to be of excellent quality. A company is being formed to develop the property.

NICKEL STEEL.—A further application of the peculiar thermal properties of the alloys of nickel and steel is described by M. C. E. Guil-



1.—GRAND CANON OF THE RIO GRANDE. GEOLOGICAL SECTION, 1,700 FT. THICK.



2.—CLIMBING IN GRAND CANON OF THE RIO GRANDE.

that of using it in smelting of iron ores has been proposed by some. Whether this is a wild assumption, we are not disposed to assert or question. Yet we admit that we have given the question no credence at all because it appeared to us to be beyond all good reason. Notwithstanding this skepticism on our part, we are aware that many of the apparent impossibilities of the past have been overcome by man's ingenuity and skill, that we are not disposed to deny anything. It may be a discovery has been made by which oil can be successfully used in place of charcoal and coke in the smelting of iron ores. If such is the fact, we have failed to note it. Such a discovery would, we admit, bring the ore-fields of Texas in strong competition with other ore properties of the South by the use of so cheap a fuel, thus bringing the cost account to a minimum, and perhaps to less than that of any other pig iron made in the South. Will you kindly advise us if such a discovery has been made, or if not, is such a proposition practicable and feasible? It is very apparent that the ore-fields of Texas will bring about an activity in establishing manufactories of all kinds throughout the State, hitherto not dreamed of by the most progressive person. Should, by the volume of oil found, the price be brought down to a point that it would be equal to coal at \$1.50 per ton at the factories, then the construction of factories of every kind in every portion of the State will be phenomenal. Enough iron industries may be developed to give a home market for all the pig iron produced, and the furnace capacities in the State will be greatly increased. In fact, such will be the impetus given the manufacturing interest of the State, but a small percentage of the raw material used be shipped out. It is an assured fact

laume in "Comptes Rendus." The secondary compensation error of a chronometer, discovered by Dent in 1833, is due to the fact that a chronometer adjusted for two fixed temperatures is not perfectly adjusted for any other temperature. In the present paper it is shown that by the use of a suitable nickel-steel alloy it is possible to compensate perfectly the variations of elasticity of the spring with a balance of the ordinary form.

MINING LAW IN BOLIVIA.—A recent paper by M. Maurice Froshot in the "Annales des Mines," gives a summary of Bolivian mining law, the chief provisions of which may be summed up as follows: Metal-bearing ores, whatever their origin or the nature of their deposit, whether occurring under ground or on the surface, are State property; and any person of any nationality enjoying civil rights can obtain one or more "pertenencias," or claims, each 100 meters square, for a single concession of known minerals, or only 30 "pertenencias" for minerals recently discovered, priority of application giving preferential right. The "pertenencia" is of indefinite depth, and the 100 meters' side of the square is measured in the direction indicated by the applicant. The concessions are perpetual, but subject to a royalty of 2 bolivianos (\$1) per hectare, and this amount is payable half-yearly in advance from the date of the concession, while claims on which no royalty has been paid for a year are regarded as abandoned. Miners work their claims freely, without being subjected to any technical restrictions; and they have a right to the water encountered in working, while mining plant is admitted free of duty.

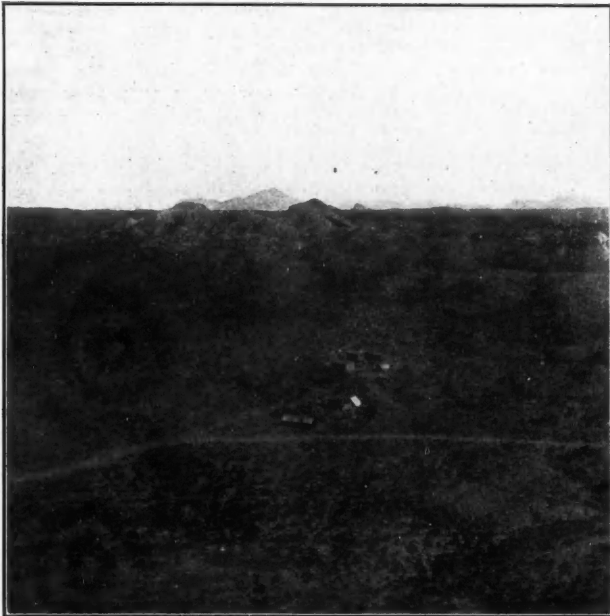
THE QUICKSILVER MINES OF BREWSTER COUNTY, TEXAS.

Written for the Engineering and Mining Journal by E. P. Spalding.

In the southwestern part of Brewster County, Texas, occurs what is destined to be, from present indications, one of the most important and productive deposits of cinnabar in the United States. The locality is within what is known as the "Big Bend County," a region that is naturally inhospitable and for many years was the rendezvous of cattle thieves and outlaws of all descriptions from both sides of the line. It lies about 10 miles northeasterly from the entrance to the Grand Canyon of the Rio Grande, and is reached by a good wagon road from

confined almost entirely to various varieties of cacti. Timber is conspicuous by its absence, that used for fuel being obtained along the banks of the Rio Grande; it is hauled some 12 or 15 miles and consists principally of mesquite and cottonwood. There are some indications of coal not far distant from the mines that may prove of value, and there are also some slight indications of oil at one place. Gold, silver and lead have been reported as occurring in a range of mountains lying about 25 or 30 miles to the east, known as Los Chisoa. As little or no work has been done on these several occurrences, there are no data available upon which to form an opinion as to their value or importance, if any.

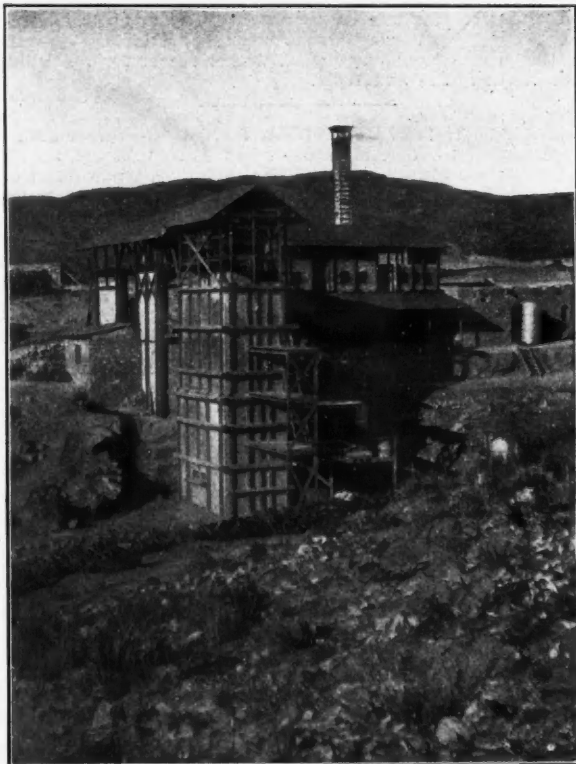
The country rock of the district is a cretaceous limestone which has



3.—VIEW ON THE QUICKSILVER BELT, LOOKING NORTH.



4.—MARFA & MARIPOSA PROPERTY, LOOKING SOUTHWEST.



5.—MARFA & MARIPOSA FURNACE.



6.—CHARGING ORE INTO THE FURNACE.

Marfa, 95 miles, Alpine, 95 miles, and Marathon, 85 miles, all being stations on the Southern Pacific Railroad and good supply points. A bi-weekly mail and stage service is in operation to and from Marfa and there is also regular stage service from Marathon.*

The country is exceedingly dry, except during the two months of the rainy season, which usually comes in June and July. Vegetation is

*As there are no hotel accommodations a visitor to the mines must carry bedding and a tent, although the latter is not indispensable. Provisions are obtainable from the commissaries of the two principal mining companies at fair prices, or one can procure fair meals at a Mexican restaurant at reasonable prices.

been upheaved by igneous protrusions and intrusive dykes. The strata are cut in various directions by faulting planes and uplifted in monoclines dipping southwesterly. There are evidences on every side of the action of powerful currents of water, in the deep erosion of the stream beds or dry washes which, in places, have cut down through several hundred feet of hard limestone, and in the enormous denudation that has taken place in the past. The thickness of the strata as shown

in a section obtained in the Grand Canyon of the Rio Grande is 1,700 ft.

The main belt, in which the cinnabar occurs in workable paying quantities, is confined to certain well-defined limits, constituting a zone 6 miles long from east to west, by 2 miles wide from north to south, or 12 square miles. This belt or zone has been sufficiently prospected and opened up to prove beyond doubt the existence of large quantities of surface ore ranging from 0.5 to 5 per cent. quicksilver, while considerable quantities have been found of a tenor ranging as high as 18 per cent. Very high grade ore occurs in bunches and pockets, assaying from 40 to 78 per cent., while single pieces have been found assaying as high as 82 per cent. These pockets of high grade ore have been found with sufficient frequency and in large enough quantities to materially raise the average tenor of the large quantity of low grade surface material now being furnished.

The cinnabar found here, as a rule, is of the crystalline variety, having the characteristic color of pure cinnabar, which so easily distinguishes it from other ores. Quicksilver is also found in its native state filling cavities in the limestone and as globules in crevices of rocks impregnated with cinnabar. There is also found, in connection with both the native mercury and the cinnabar, a yellowish mineral which is thought to be an oxy-chloride of quicksilver.

As a rule the cinnabar is found impregnating a clay-like rock or marl, and the softer portions of the limestone and breccia along faulting lines and in calcite veins and stringers. It is also found in calcite and in silicious shales. I have discovered it in every class of rock found in the district, even as a coating on an eruptive basaltic rock. This would point to a very general distribution of the metal throughout this zone or belt.

The rich pockets found occur as replacements of the country rock and there are evidences, in places, that the mineral bearing solutions have come up through fissures and deposited their metallic contents at more or less distant points near the surface where conditions were favorable to concentration and deposition. Hence, the frequent recurrence of pockets and bunches of this rock ore on or near the surface giving one the impression, without an exceedingly close study of the matter, that it is a surface deposit rather than a deep-seated one. While there are reasons for supposing that the deposit is a deep-seated one, and that workable values will be found at considerable depth, there is much to be proven in this direction from the fact that the deepest working showing cinnabar in paying quantities is now only 65 ft. from the surface.

One of these pockets was discovered and opened during my visit. Its discovery was due to the acuteness and persistence of Mrs. Jennie Normand, the estimable wife of one of the owners and operators of the Marfa & Mariposa Company. In exploring a ravine which had been previously prospected by a Mexican without results, she discovered several nuggets of nearly pure cinnabar worn smooth and round. A close investigation followed by a half day's work by two men, resulted in the finding of a pocket from which was taken about 20 tons of ore assaying from 40 to 75 per cent., or about \$12,000 to \$15,000 in value. Besides this, there was taken from the surface several hundred tons of material averaging from 1 to 2 per cent. quicksilver.

The method of prospecting for pay ore is interesting. That it requires close and careful work is evidenced by the fact that the rich pocket just described was found within 2 ft. of the place formerly prospected by the Mexican without result. The tools necessary are a keg of water, a horn spoon and a pick. Samples of surface dirt are taken every few feet over the area selected and carefully horned, and when a point is found which shows satisfactory results in the horn, men are put to work digging, with the almost invariable result of finding pay ore in considerable quantities.

While there are isolated instances of the occurrence of cinnabar outside of the belt described, the work thus far done has not disclosed any paying quantities. At present the only company operating in the district is the Marfa & Mariposa Mining Company, which owns 2,300 acres out of the about 8,000 acres constituting the present known belt. This company has in operation a modern 10-ton Hüttner & Scott continuous furnace, with condensers sufficient for a 20-ton furnace. The ore is crushed to 1½-in. size by a 10 by 12-in. jaw crusher of the Blake type, delivering the crushed ore to a continuous belt elevator lifting it into a bin, having a capacity of about 100 tons. The crusher and elevator are operated by a belt-connected 12 H. P. gasoline engine. The ore is delivered to the furnace by a car of about 900 lbs. capacity operating over a tramway leading from the ore bin to the charging hopper on top of the furnace. A carload of ore is charged into the furnace once an hour, during the 24-hour day, and a half carload of spent ore is withdrawn from the bottom of the furnace every half hour. As the spent ore is withdrawn from the bottom the overlying ore moves down by gravity and fills the space previously occupied by the ore just withdrawn, thus allowing a continuous operation of the furnace and gradually bringing the ore down from the cooler to the hottest portion of the furnace, thereby effecting a complete extraction of the mercuric contents. It requires about 24 hours for a charge to go through the furnace. From 1¼ to 1½ cords of wood are used per 24 hours in the operation. The ore is very dry as it comes from the mines, and therefore does not require drying as is the case with California ores of this class.

The fumes and gases from the furnace pass up and out through a 16-in. sheet-iron pipe into the upper portion of the first condenser, or dust chamber, which is divided into two compartments by a brick partition open at the bottom. The fumes entering at the top of the first compartment take a downward course through this into the second compartment, upward through the second compartment and out through another iron pipe into the top of the second condenser. They then follow a similar course down and up through the six condensers, and finally reach the atmosphere through a long flue. In their progress through the condensers the fumes and gases are so cooled that the quicksilver is deposited by condensation on the walls of the several compartments through which they pass and from these the quicksilver flows through pipes into a trough leading to the storage tank, where it is bottled in the usual way for the market. No water is used in the condensers for cooling purposes owing to its scarcity, hence the unusually large con-

densing space. It has been found in working, however, that practically all the quicksilver is caught in the first three condensers, which are cleaned up once a week; the last three being cleaned up but once or twice a month. The process of cleaning up is conducted without affecting or delaying the operation of the furnace. The soot which is taken from the condensers during the process of cleaning up is worked on an inclined pan, and as much of the contained quicksilver extracted as possible; after which the soot is charged into the furnace in small quantities with the ore, thereby reducing the loss in operation to a minimum. It is estimated that the loss does not exceed 10 per cent., and is probably much less.

This company has done a large amount of prospecting, and considerable development work, and has produced, in the short time the furnace has been in operation (not exceeding five months), nearly 1,200 flasks of quicksilver, a decidedly satisfactory record for a 10-ton furnace. The present output of the furnace is about 300 flasks per month. The furnace capacity will probably be doubled during the coming fall and may be quadrupled, as the management is very progressive and has full faith in the value of and permanency of their ore bodies.

The Lindheimer & Dewees Company, which owns about 3,200 acres adjoining the Marfa & Mariposa property, is talking of erecting a 30-ton plant during the present year. This company has some very excellent ground; has taken out and retorted considerable very rich ore, and now has on its various dumps several thousand tons of furnace ore. At the present time it is doing no development work, preferring to await the erection of the furnace before taking out any more ore.

Besides the two companies mentioned there are several smaller companies and individual owners who are prospecting and developing. The results in most cases are satisfactory and the outlook hopeful. Still, like all mineral deposits, this one has its limits and will have its percentage of failures. As usual, the failures are largely due to a lack of knowledge in regard to the proper indications to follow, and a lack of good judgment in following them. As a rule, intelligent work in this field has produced results. At present there are about 100 men employed in the district, most of whom are Mexicans. Labor is cheap and plentiful and, as a rule, of good quality. Mexicans are paid \$1 to \$1.25 per day of 10 hours, boarding themselves. Americans, \$2 and \$2.50 per day. As most of this money is spent at the company's store at a good profit to the company the real cost of labor is very small.

The production from this district for the current year will probably reach a total of 3,000 to 3,500 flasks of quicksilver. This should be very greatly increased during 1902 if the improvements under contemplation are effected. That the district will be a factor of importance in quicksilver production for many years there can be no doubt.

In view of the enormous oil discoveries at Beaumont the important quicksilver developments in Brewster County; gold, silver, iron and other metals in different parts of the State; it would appear that Texas is making rapid strides toward a prominent position as a mineral producer. As most of this has been brought to view by "cowmen" who, while most worthy gentlemen, are better horse traders than miners, I believe that Texas would be a good winter resort for the wide-awake prospector of the North and West.

COAL MINING IN THE DUTCH EAST INDIES.—Under date of May 2d, 1901, Consul Hill, of Amsterdam, reports: "During the last six years the Ombilien coal mines in Sumatra have been worked on Government account, the production increasing from 108,000 tons in 1895 to 196,000 tons in 1900. The production price in 1895 was 3.10 florins (\$1.25); in 1899, 3.16 florins (\$1.27). In coal mining and railroad transport, the Government made a net profit of 381,000 florins (\$153,162). The railroad has been lately improved, and now affords regular transportation facilities for 360,000 tons per year. According to reports, large quantities of excellent coal have been found on the west coast of Atjeh."

PIG IRON PRODUCTION IN GERMANY.—The German Iron and Steel Union reports pig iron production in Germany in April at 651,944 metric tons, which is 20,651 tons less than in March, and 36,115 tons less than in April, 1900. For the four months ending April 30th the production was as follows, in metric tons:

	1900.		1901.		Changes.
	Tons.	Per ct.	Tons.	Per ct.	
Foundry iron.....	490,189	18.5	513,921	19.4	I. 23,732
Forge iron.....	521,577	19.7	505,568	19.1	D. 16,009
Bessemer pig.....	152,111	5.7	158,609	6.0	I. 6,498
Thomas (basic) pig.....	1,490,151	56.1	1,465,861	55.5	D. 24,290
Totals	2,654,028	100.0	2,643,959	100.0	D. 10,069

The decrease this year was 0.4 per cent. The loss in forge iron and basic pig was not made up by the increase in foundry iron and Bessemer pig.

PRUSSIAN STATE COLLIERIES.—German papers state that purchases of mining property made during the last few months, especially in the northern portion of the Ruhr coal-field and south of the Lippe, were on account of the Prussian State; and, so far as can be ascertained, the negotiations have been carried on in pursuance of instructions from Minister Brefeld, in order to obtain for the Government a considerable colliery interest, and with it an influential, if not preponderating, position in the Ruhr District. It appears that the Waltrop and Minster Achenbach Collieries have thus been acquired, and also the extensive mining rights of the late Geheimer Commerzienrath Vohwinkel, forming together a large and contiguous property for the purchase of which a sum of 25,000,000 marks (\$6,250,000) has been agreed upon. It is considered by those in a position to judge that, with well-directed working, this mine property may, in five years at the outside, be made to furnish the whole coal supply for the railways of the Rhenish-Westphalian District; and it is asserted that this step was taken by Herr Brefeld with the full concurrence of the Finance Minister, who intends to seize the earliest opportunity of bringing a measure before the Landtag for confirming the purchase.

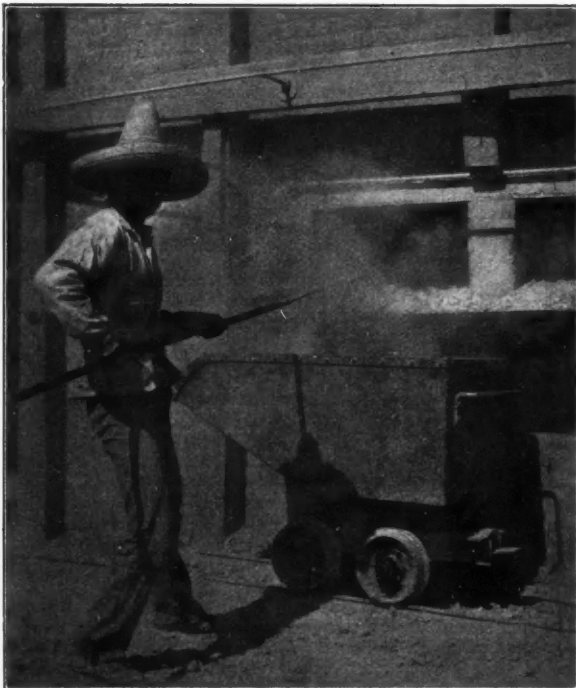
THE GOLOVIN BAY REGION OF NORTHWESTERN ALASKA.

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

While much has been written about Nome and its immediate vicinity, comparatively little has been said, and as a consequence very little is known, about the Golovin Bay Region, lying from 50 to 75 miles northeast of the former, notwithstanding the fact that mining operations have been carried on, principally around Council City, now called Golovin City, for the last three or four seasons.

Up to last season, however, with the possible exception of the Alaska Exploration Company, on Sweetcake Creek, about 5 or 6 miles from Council City, no operations on a large scale had been carried on. Last year, notwithstanding the lateness of spring, and the protracted dry season, and a consequent lack of water, mining operations assumed quite a respectable magnitude, which would have been much greater had it not been for the great storms which swept Nome and the rest of Northwestern Alaska last September. As a result of these, large quantities of shipping and other property in the Nome District were destroyed, while in the Golovin Bay Country so many sluice boxes, dams and other paraphernalia were destroyed that mining operations were brought to a complete standstill, and with but few exceptions were closed down for the balance of the season.

The Golovin Bay Region now comprises the Council City District and a portion of the Chinik District, which, in accordance with the provisions of the new Alaskan Code, were laid out or districted by A. H. Noyes, United States District Judge for Northwestern Alaska, on August 8th, 1900.



7.—DISCHARGING SPENT ORE FROM THE FURNACE.

The Council City District comprises what were formerly the Inland, Big Four, El Dorado, Discovery and Blake mining districts, besides a large extent of territory to the northeast of the district just named. It is drained by the Fish, Keuchablock, Fox, Bear, Neukluk and Casa de Paga rivers and their tributaries, and covers an area of 2,000 square miles, more or less. The only towns in the district are Golovin City and White Mountain, with numerous smaller settlements scattered in between. Golovin City is on the Neukluk River, 9 miles above the junction of the latter with the Fish River, and 40 miles above Chinik, on Golovin Bay, in the Chinik District. It is 80 miles from Nome City by the overland route, and 120 miles distant by water. The recording office of the district is located at this point, the present recorder being W. A. Ferguson, who took charge last September. Golovin City has a population of about 1,000. White Mountain, on the Fish River, is about 20 miles below Golovin City, and has a population of only 300 or 400. It marks the head of steam navigation on the Fish River for the greater portion of the year, and is consequently the main distributing and transfer point from steam to man-propelled boats for both passengers and freight destined for Golovin City and other points in the region. That is, goods unloaded at Chinik are transported in stern-wheelers to White Mountain and from there in flat-bottomed boats, canoes, etc., to Golovin City and other points. Freight from Nome City to Golovin City by this route last year averaged about 5c. per pound.

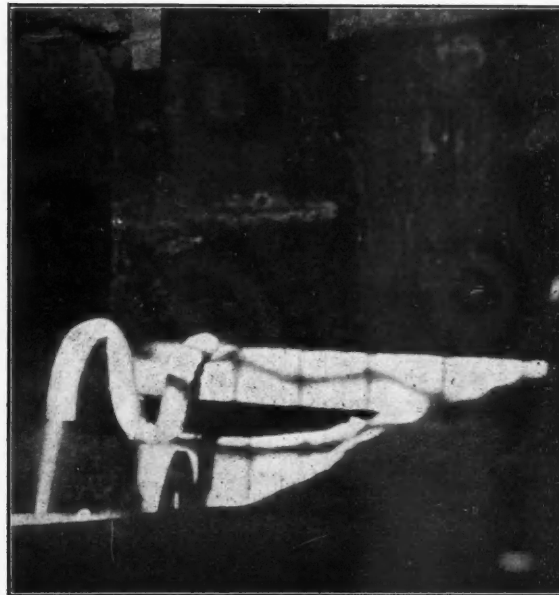
The characteristics of the region as regards formation, topography, etc., are similar to those of the Nome country, except that the general elevation is much higher than that of the latter. As regards formation, there is the same surface covering of tundra, with the underlying strata of gravel, boulders, mica schist, shales, limestone, etc. Bedrock, principally mica schist and shales, is variously found from 1½ ft. down. This, however, is held by many to be merely a false bedding, and the theory is advanced that true bedrock will be found at greater depth. Values in some cases are found from the surface

down, but generally a foot or two of stripping is required before pay is struck.

The principal mining operations carried on last year were on Melsing Creek in Discovery District, on Ophir, Sweetcake, California, Crooked, Elkhorn, Goldbottom, Warm, and other creeks in El Dorado District; on Dixon Creek in Big Four District, and on Goose, Quartz, Boulder, Banner, Spruce, Ruby and Willow creeks, and in Nugget Gulch in the Inland District, all within from 2 to 50 miles from Golovin City. Results on Melsing were not good, and it is doubtful if that creek will amount to much. On Ophir, extensive operations were carried on by the Pioneer Commercial Company; on Discovery Claim, by the Wild Goose Mining and Transportation Company (Chas. D. Lane), on claims 15 and 17, above Discovery, and by many others from No. 2 or 3 below, to No. 28 above Discovery. The Pioneer Company put in a gasoline pumping plant, while the Wild Goose Company installed a steam pumping plant on No. 15. On Sweetcake, the Alaska Exploration Company, except for a temporary shut-down occasioned by a lack of water, carried on its usual large operations. Besides these, extensive operations were carried on on the balance of the creeks mentioned, especially on Elkhorn, Dixon, Goose, Banner, Ruby and Willow. Notwithstanding the many obstacles encountered, results on the whole were good, the yield having averaged \$20, more or less, to the shovel per day. Some of the clean-ups on Ophir and Sweetcake ran from 30 to 40 lbs. A two days' run on the upper half of Claim No. 4, below Lower Discovery, on Ruby Creek, a tributary of the Casa de Paga River, last year returned \$400 with four men working the half claim.

Considerable prospecting and preliminary work for this season's operations were also done in the region last year, and it is very probable that, with favorable climatic and other conditions, mining operations will be greatly increased, and as a result the output of the district for this coming season will undoubtedly be very large.

Among the recently organized enterprises to operate in the Council City District the most notable is the Casa de Paga Placer Mining Com-



8.—QUICKSILVER DISCHARGING INTO STORAGE TANK.

pany of San Francisco, Cal., which has taken over and will work the following claims: M. H. R. and Ethel bench claims, on Ruby Creek; No. 3, on Mullen, a tributary of Klondike Creek; Nos. 7 and 7½, on Lightning Creek; Discovery Claim on the left fork of Klondike Creek; No. 4, on Powell (or Vere) Creek; No. 1, on the left fork of Cahill Creek; No. 6, on Ridgway Creek; No. 1, on Snow Gulch, a tributary of Ptarmigan Creek, and No. 3, on Squirrel Creek; all of the creeks named being tributaries of the Casa de Paga River, and the claims specified being within a radius of from 40 to 50 miles northwest from Golovin City.

Among the advantages of Golovin Bay over Nome may be mentioned: 1. A healthier climate. 2. A greater and a much better supply of water. 3. A greater and a much better natural fuel supply. The bushes are much larger than those in the Nome Region, while a belt of spruce from 10 to 15 miles wide extends from Golovin City to White Mountain, making wood for fuel and building purposes fairly cheap at and between those two points. As the headwaters are reached, however, fuel wood becomes very scarce, and it is doubtful whether there is enough left to supply this season's demands.

Gold dust from this region assays all the way from \$17 to \$19 or more per ounce, a lot from Ophir Creek, which the writer brought down last fall, having run \$18.62 to the ounce at the United States Assay Office at Seattle, Wash.

The Council City District now includes within its bounds the Omelak silver mine, situated on a branch of Green Creek, a tributary of the right fork of Fish River, in the extreme eastern end of the district. The ore from the Omelak is said to be rich, and it is unfortunate that petty squabbling among its owners should delay proper development of the mine. With the exception of the latter, and of a few outcroppings of copper-bearing rocks, no quartz ledges of any consequence have been located in the region up to the present time, and indications so far do not point to the existence of any of much value.

The Chinik District, with recording office at Chinik, comprises all

lands in and around Golovin Bay, and it extends eastward to Norton Sound. Notwithstanding the fact that the district is drained by numerous creeks and rivers, no mining operations have been carried on up to the present time, and as a consequence its mineral wealth is as yet an unknown quantity.

BY-PRODUCT COKE MAKING IN AMERICA.

Written for the Engineering and Mining Journal by William Gilbert Irwin.

In the summer of 1891 the Semet-Solvay by-product coking system was taken up in the United States by the Solvay Process Company. The erection of an experimental plant of 12 ovens of the Semet-Solvay type was at once begun at Syracuse, N. Y., and on January 1st, 1892, this experimental plant was put in operation. During that year extensive experiments at coking different American coking and semi-coking coals by that system and the utilization of the by-products of coke making were conducted with uniform success.

The first American coke manufacturing concern to adopt the new system was the Cambria Steel Company. In 1895 a plant of 50 of these ovens was installed for this company at Dunbar, in the heart of the Connellsville coking field, and since that time the plant has been in continuous successful operation; and an addition of 50 ovens is now being made to the plant. The excess gas from these ovens is utilized at the Dunbar furnaces of the company, and a considerable income is derived from the other by-products utilized at the plant. In 1896 the Sharon Steel Company installed a plant of 25 Semet-Solvay ovens at Sharon, Penn. Recently this company has completed a \$5,000,000 steel plant and several hundred of the new ovens will be added to the original coking plant. The original plant of 12 ovens of the Solvay Process Company at Syracuse was increased to 25 ovens in 1896, and by that time contracts for the installation of plants in different coking fields were received by the company.

In 1897 a plant of 60 Semet-Solvay ovens was built at Wheeling, W. Va., for the Riverside Iron Works, and the plant has been increased to 120 ovens and another addition of 120 ovens is to be made. The same years witnessed the installation of 120 Semet-Solvay ovens at Ensley, Ala., for the Tennessee Coal, Iron and Railroad Company, and the following year 10 ovens of the bee-hive system at Halifax, N. S., was changed to a modified type of the Semet-Solvay oven. A plant is now in course of erection at Detroit, Mich., and several big plants of this type are planned for the different Canadian coal-fields. Altogether the Semet-Solvay retort oven has had a successful career in America and many plants are likely to be put in operation during the next few years.

The American rights of the Otto-Hoffman system are controlled by the United States Coke and Gas Company of New York. The first plant of this system in America consisted of 60 ovens installed by the Cambria Steel Company at Johnstown, Pa., in 1896. For some time considerable difficulty was experienced in their operation, owing to a lack of knowledge of the coal coked and of the conditions peculiar to the operation of the new system. However, as time passed all causes for complaint were removed and the ovens have been in very successful operation for some years. An addition of 100 ovens of the Otto-Hoffman type has been made at this plant and a further addition of 120 ovens is now under way. In 1897 and 1898 a plant of 120 Otto-Hoffman ovens was installed by the Pittsburg Gas and Coke Company at Glassport, Pa. While the primary object of this company is the manufacture of fuel and illuminating gas, the coke produced in the new ovens at this plant is being used with much success in the furnaces and foundries of Pittsburg. The New England Gas and Coke Company is now operating a plant of 400 Otto-Hoffman ovens at Everett, Mass., and 800 ovens are to be added to this plant. A plant of 400 ovens of the same type has lately been installed by the Dominion Iron and Steel Company at Sydney, Cape Breton.

The installation of a plant of 30 Newton-Chambers retort ovens with apparatus for the recovery of by-products was made by the Latrobe Coal and Coke Company at Latrobe, Pa., in 1896. For some time the ovens were operated as by-product ovens, but were not so successful as had been hoped. They are now operated without regard to the recovery of by-products. Two years ago 56 bee-hive ovens at Pocahontas, Va., owned by the Southwest Virginia Improvement Company, were converted to a modified type of the Newton-Chambers by-product oven and since that time have been in successful operation. At Knoxville, Tenn., several ovens of a new type, known as the Keneval retort have been installed but this process is yet in its experimental stage. At Pittsburg Jones & Laughlins have installed a plant of 30 retort ovens of a new pattern, but as yet no attempts at by-product recovery have been made. The Slocum oven is a new American by-product type, as is the Fulton oven. The Hemingway process is also being experimented with.

The present prosperity has retarded the growth of the new coking systems. These new ideas are, however, certain to have a wide development in the United States sooner or later. American fuel users are rapidly coming to the idea of erecting coking plants close to their iron and steel manufacturing plants and the by-product ovens are best suited for this; and at the same time there is a decided economy in the utilization of excess gas at the industrial establishments.

PURIFYING ACETYLENE.—A new and simple way of using bleaching powder to purify acetylene, which obviates all the inconveniences incidental to its employment in the manner customary heretofore, has been suggested by Messrs. Rossel & Landriset. When the acetylene is generated in a carbide-to-water apparatus, the bleaching powder—chloride of lime—is put directly into the water of the generator in quantities ranging from 5 to 20 grams per kilogram of calcium carbide decomposed. The gas is afterwards led through a vessel of lime-water, which evidently may be part of the product of a previous carbide decomposition, in order to remove sulphuretted hydrogen if any escapes oxidation or absorption in the generating chamber.

NATIVE COPPER IN NEW ZEALAND.*

By W. H. Baker.

The Kawau Mine, on Kawau Island, was the first lode of copper ore that was worked in New Zealand, the operations dating from 1842. The lode was discovered in the southwest part of the island, and consisted of copper and iron pyrites, the surface portion being highly colored with carbonates and oxides of copper. It strikes about northeast, and at the surface dips at about 70°, while lower down it becomes almost vertical. This lode was opened up by a shaft sunk on the footwall side, and was worked by stoping. Owing to a question of ownership, this shaft occupies a unique position, having been started below high-water mark.

In consequence, the collar of the shaft had to be raised out of reach of the tide by means of a double box of planks, made watertight by means of puddled clay. This shaft was worked successfully for a number of years, but about 40 years ago operations were suspended, though at this time the reef was 15 ft. thick and averaged 16 per cent. of copper. On the shaft being abandoned the waves very soon broke away the raised collar and flooded the mine, and for many years the tide has washed over the mouth of the shaft for several hours every day. During the year 1900 it was decided to again open up the mine. The collar of the shaft was again built up, and the workings were pumped dry. It was then found that large masses of native copper were adhering to the sets of timber in the shaft and to the floorboards in the levels. These masses were generally found as excrescences growing from a nucleus, some being almost 1 ft. in diameter. I examined this copper both chemically and microscopically; when disclosed in the mine it had the peculiar red color of pure copper, but on exposing it to the air it quickly tarnished. Looking at it casually, it appears as small imperfect crystals arranged radially from a center, with numerous beautiful crystals branching from the main stems.

Examined under the microscope, it is seen to be composed of crystals of the isometric system, in which cubical and octahedral faces predominate, and the hemihedral forms also occur. In one instance I found that one branch was composed of twinned octahedra, giving the edge of the branch a very regularly serrated appearance. Examined chemically, I found that the crystals were pure copper, but were coated with compounds of manganese and iron. The tarnishing is undoubtedly due to these compounds, as if the crystals are well washed with boiled water and then dried they do not tarnish, but if allowed to dry as they are brought from the mine they very quickly lose their luster. The probable reason is that the iron and manganese salts, which I found present in small quantities in the mine-water, form a thin film on the crystals. On drying this thin film would quickly oxidize to FeO₂ and MnO₂, and these substances would give up part of their oxygen to the copper, which would thus become tarnished.

The explanation that one would naturally jump to with regard to these deposits is: 1. The iron and copper pyrites have oxidized, producing sulphuric acid and iron and copper sulphates. 2. That iron has been present in the form of nails and bolts, and this iron has replaced the copper in the soluble copper-sulphate, thus forming metallic copper. But I think the condition of the mine and deposit requires a more extended explanation than this. From the fact of the sea being in almost constant communication with the mine, it appeared that the sodium chloride of the sea water would have some influence on the solution of the copper from the pyrites, as it is highly probable that during the oxidation of the copper sulphide the sodium chloride would exercise a concurrent action, resulting in the formation of copper chloride and copper sulphate. To verify this I weighed out two equal parts of copper pyrites and partly oxidized them under exactly similar conditions, and while still oxidizing I plunged one into pure water, and the other into an equal volume of solution of common salt. In each case a blue solution of copper was obtained, but the salt solution was found to contain 5 per cent. more copper than the other.

From this solution the copper would be deposited by means of the action of the iron nails on the copper solution, and the following explanation may account for the crystals: As the mine-water was connected with the sea the solution of copper could never be very strong, as this solution and the sea-water would diffuse into each other, thus weakening the solution and at the same time keeping it at constant strength. This iron would then replace the copper, but this replacement would be so gradual that the atoms of copper would be enabled to arrange themselves symmetrically, thereby forming crystals.

But the amount of nails and bolts used in the mine was very small and the amount of copper formed greatly exceeds it, so that after the iron was all used up deposition of the copper must still have taken place.

This may be explained by considering the state of things in the mine. On the one hand we have the lode-matter, which is continually oxidizing, and on the other the metallic copper previously formed, and then are separated by a dilute solution of an electrolyte. These, then, are all the elements necessary for an electric current; they form, in fact, a large electric cell, in which the copper acts as the positive and the lode as the negative element. The deposition will be so gradual that, as before, the copper atoms will be symmetrically deposited and form constantly enlarging bunches of crystals.

RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

DUTY ON TUNGSTEN OR WOLFRAM ORE.—Wolfram or tungsten ore is a metallic mineral substance in a crude state, dutiable at the rate of 20 per cent. ad valorem under paragraph 183, act of 1897. It is not entitled to free entry under paragraph 614 as a crude mineral.—Appeal of Hempstead & Son from Collector of Customs at Philadelphia; United States Board of General Appraisers.

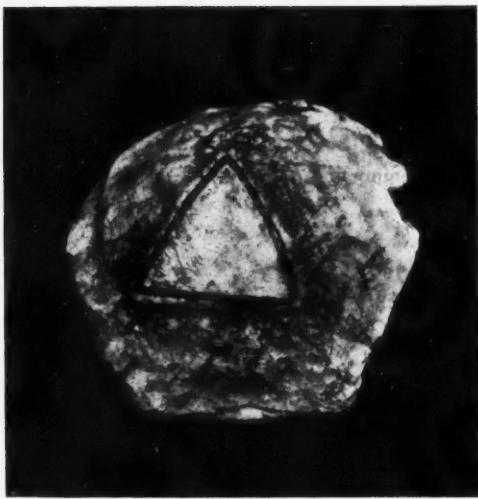
*Abstract of paper in London "Mining Journal."

THE PAN-AMERICAN EXPOSITION AT BUFFALO.—II. THE NEVADA EXHIBIT.

Written for the Engineering and Mining Journal by Mrs. Harriet Connor Brown.

On an appropriation of only \$5,000, J. A. Yerington, manager of the Nevada Mineral Exhibit at the Pan-American Exposition, has arranged an admirable exhibit. Nevada has still varied treasures concealed that are destined to enrich those who dig them out. The exhibit here shown is the one displayed at the recent Paris Exposition with many important additions. Progress in the development of Nevada's resources is of late so marked and rapid that no exhibit is complete that does not include specimens of yesterday's discoveries. There are found specimens of gold and silver ore from the new strike at Tonapah, samples of the lignite recently found at Elko, and specimens of the silver strike in Esmeralda County.

The exhibit is enclosed in five large cases set up against the southern wall of the Mines Building. Above them are five mural paintings representative of familiar scenes in Nevada's mining camps. The central picture reproduces the well-known seal of the State, which shows a miner emerging from the mouth of a mine with a car of ore destined for the quartz mill opposite. A train of cars steaming across a high bridge in the background suggests that Nevada mines are in close touch with the busy world of commerce and the radiant sun rising over the mountain tops to illumine the scene is a symbol of the glorious day about to dawn on Nevada. The four other paintings portray a variety of subjects. One shows the underground workings of the Comstock Lode, another gives a view of the Carson River mills and the Virginia & Truckee Railroad, a third pictures the Pamlico Hill Gold Mine showing the method of mining used there, and the last gives



1.—SPECIMEN FROM EUREKA COUNTY, NEV.

a picturesque glimpse of the quarry whence diatomaceous earth is taken.

Dominating the exhibit in the central case stands a plaster figure of a typical Nevada miner. The work was modeled from a photograph of "Old Dick Kelly," originally from Ireland but more recently at home in the Silver Star District of Esmeralda County. As a local character Dick is justly celebrated, and Mr. Yerington thought him well fitted to represent the miner, a type respected in Nevada for his rough virtues. A rabbit at Dick's foot, in default of more characteristic sage brush, gives the one touch lacking to the reality of the figure.

The Comstock Lode has for years been the Nevada feature most prominently before the public. It has been well represented at all expositions since the Centennial of 1876, when \$75,000 was appropriated to run the model quartz mill alone. Those were Virginia City's palmy days, but though matters are very different now, the visitor to a Mines Building at any exposition is on the lookout for exhibits and illustrations from the Comstock Lode. They have them at the Pan-American.

The picture on the wall which shows the underground workings of the Comstock gives a view of a large vein with hanging and foot walls intact and illustrates the mode of extraction and timbering employed in the mine. To supplement this is a wooden model of the famous Deidesheimer method of square timbering which was initiated at the Comstock and has been introduced into mines in all parts of the world. The model on exhibition clearly shows how the timber is cut into equal lengths, the ends squared off to fit, so that it can be set into place in the mine without the use of hammer or nails, each part fitting exactly into another. It also shows the device of drilling holes in the planks of timber and then plugging them with wooden pegs with the idea of making the timber more elastic and hence better able to stand the immense pressure put upon it.

One of the curios of the exhibit is a block of compressed wood. It is black as coal, 1 ft. long by 1½ in. wide and 1¼ in. thick. Originally, it was a piece of 16 by 16-in. timber of common white pine. A dozen years' pressure underground has made it look like a piece of lignite. It is estimated that enough timber has been put into the Comstock Lode to rebuild San Francisco.

Another object in the Comstock collection with a story to it is Mr. Yerington's bean pole. It is a memento of the days of '75 when they were drifting through from the Consolidated Virginia & California Mine

to the Ophir Mine, which adjoins it. It was far below the surface and the heat was so excessive that the miners were only able to keep at their work for 10 or 15 minutes at a time. They were working with Burleigh drills and from the hole left in the earth by extraction of the ore, such heat and steam issued that the discomfort to the men was almost intolerable. One of them conceived the brilliant idea of making a pole to fit the hole. He hollowed out a stick of soft pine, filled the cavity with common white beans, and plugged up both ends. The bean pole did duty as a plug until the end of the season. The moisture caused the beans to swell and his pole had thus the requisite size and elasticity. After the occasion for the use had passed, the bean pole was forgotten until it was discovered by Mr. Yerington years after, on the window sill of an old carpenter shop of the Ophir Mine in Virginia City.

A presentation of the new problem of unwatering the Comstock Lode and the expected solution are included in the exhibit. Work on the mine below the Sutro Tunnel level has been retarded since 1885 on account of the water, which is now being lowered by the hydraulic elevator method, for which Mr. G. McM. Ross deserves the credit. Virginia City is situated below Mount Davidson, on the side of which is a reservoir for the water brought from Lake Marlette some 20 miles away. Mr. Ross has constructed a pipe line by which the water is conducted from the reservoir down into the mine. The pressure is so great, by reason of the height of this column of water, that the water in



2.—QUARRY IN DIATOMACEOUS EARTH DEPOSIT, SILEX, NEV.

the mine, on being pushed by it from the smaller pipe into a larger one and then crowded again into a smaller one, is forced up as far as the 1,650-ft. level, where the Sutro Tunnel carries it off. In this way the water has been lowered to the 2,150-ft. level, but it is thought that this method will be efficacious only to the depth of 2,500 ft. An elaborate and costly pump, in the Union Consolidated Mine, has recently been discarded on account of the expense of fuel. Means will have to be provided through electrical pumps to gradually raise the volume of water from the various levels between the 2,500-ft. level and the lower level to a depth of 3,150 ft., or 1,600 ft. below the Sutro Tunnel level.

A piece of aragonite in the exhibit that was taken from the Overman mine on the Comstock Lode is interesting in this connection. It was gradually formed out of the lime and other minerals in the water that had been conducted for 20 years through the water box from the 300 to 1,600-ft. level. A section of the aragonite and water box are shown together, one inside the other. Specimens of the different ores found in the Comstock Lode from the highest level to the lowest are exhibited. These with some photographs of the quartz mill at Virginia City complete the Comstock display.

Probably the most significant thing about Nevada's mining exhibit at this exposition is that it clearly demonstrates that there are other interests in the State now besides those connected with the Comstock Lode.

One of the most interesting features of Nevada's exhibit is a model of the Pamlico Gold Mine in Esmeralda County. It is made in a wooden framework, and is slightly conical to represent the shape of the mountain. The distance between the contour lines of the framework is, in each case, 1 in., which represents 100 ft. on the surface of the mountain. The veins are represented by white gauze, the different levels and tunnels by pieces of colored wood. A few breaks in the gauze indi-

cate where the vein has disappeared. This model, which was prepared by expert engineers, cost \$6,700, and is the only one in existence that shows the surface and also the workings of a mine with all its veins, tunnels and shafts. In order to keep a level contour line, the surveyors had to go around the mountain a great many times in the 18 months they spent making the model and surveys. With it for a guide, it can easily be determined at just what point to tunnel in order to strike a given drift or the vein from the surface.

The model of a gold stamp mill built by the Union Iron Works, of San Francisco, at a cost of \$2,500, is an exhibit that interests all who know anything about the reduction of gold ores. Arrangements have been made to take the electric current in the building and make the wheels of the mill go around so that visitors may have some idea of how the mill looks in operation, though the toy stamps cannot be expected to give them an idea of how it sounds. Sloping grizzly, hopper, stamp battery, copper plate and Frue vanner tables are all complete as in a real mill.

Besides specimens of gold ores from the Pamlico Mine, the exhibit shows numerous specimens of gold-bearing ores from other localities. Among them are base ores, including lead; gold in a setting of quartz, gold in calcite, placer gold, and gold wire have a place in the exhibit. Gold in manganese ore is shown from the Garfield District. Nuggets varying in size from the bigness of a thumb nail to that of a silver dollar and worth from \$25 to \$167 are worthy of special notice. The



3.—DIATOMACEOUS EARTH DEPOSIT, SILEX, NEV.

exhibit includes the photograph of a famous piece of ore from the Eureka Mining District. It shows a center of pure white quartz outlined by a gold triangle around which is a thin layer of black slate. Every mason in the country covets the specimen. The accompanying engraving, No. 1, is a photograph of this specimen.

Nevada silver is represented in various forms. It comes in the shape of silver chlorides and bromides, silver sulphurets, horn silver, ruby silver, and native silver wire. A piece of silver ore labeled "New Strike, Southern Klondike," is given a conspicuous place. It comes from a mine owned by T. J. Bell and George Court located in Esmeralda County, and it assays 10,876 oz. of silver to the ton. One of the daintiest silver specimens is a native silver tree about 3 in. high taken from the Comstock Lode. Trunk, branches, and leaves are almost as perfect an imitation of nature's articles as if wrought by a cunning silver-smith's hands.

A very fine collection of copper ores makes a bright spot in the exhibit. Among them are cuprite, malachite, azurite, borite, chalcopryite, copper matte, slag, native copper and sulphate of copper.

The iron collection includes numerous specimens of terrestrial iron meteorites. Iron pyrites are shown which carry 52½ per cent. sulphur and \$3 in gold to the ton. The slate is rich in magnetic iron and has a considerable quantity of hematite and marcasite also. Pieces of hübnerite or tungsten ore are shown in the collection alongside some crystals of antimony.

Among the specimens of lead ores are some handsome lumps of wulfenite or lead molybdate. Native lead ores, both auriferous and argentiferous, are well represented. A lump of galena weighing 150 pounds, is the pinnacle of the lead group.

Tin, it is claimed, has recently been discovered in Churchill County and the exhibit shows a few specimens. From that same county come specimens of nickel and cobalt from the National Nickel Company, of Cottonwood Canyon. Cinnabar from Steamboat Springs is shown in

its natural formation and as bottled quicksilver. A vein of arsenic ore has been discovered a few miles from Steamboat Springs. A few specimens of coal are of special interest because of the fact that four or five strikes of coal have recently been made in Nevada. Lignite from a strike near Elko is shown.

A curious product found in 1875 when the discoverer, Senator Shepherd, was looking for coal, is mineral soap, which is well represented here. Nevada has the only mine in the world of natural mineral soap. It is near the junction of Smith Creek and the south fork of the Humboldt River. A stratum of coal, ½ in. thick, lies 50 ft. below. The vein of soap appears in sandstone, is horizontal and parallel with the coal, and similar to it. Soft and of the texture of clay, it is easily dug out with a shovel. As it is smooth and free from grit, it makes a fine toilet soap.

One case in the exhibit is devoted to Nevada's chemical products. Carbonates and bicarbonates of soda, sal soda, glauber salts, and bottled soda water from Soda Lake all have an honored place. Rock salt 99 per cent. pure from Lincoln County is shown. Salt crystals are displayed, side by side, with the highest grade of prepared table salt. A recent discovery of alum in Esmeralda County is signaled by the presence of lumps of alum from that locality. A discovery of phosphate of lime in Humboldt County is well advertised in the exhibit. This phosphate of lime contains 7½ per cent. of phosphoric acid and has value as a fertilizer. An exhibit of nitrate of soda, which has been recently discovered near Lovelock, is also important.

Few of the exhibits fill Mr. Yerington with the pride that his borax mule train does. Nevada borax is made out of "cotton ball" dug from



4.—HAULING DOWN A CANON AT SILEX, NEV.

the Rhodes Marsh in Esmeralda County. The work is done by Indians. It is crushed and thrown into large tanks in which are suspended sheets of galvanized iron in a solution of boracic acid. The borax accumulates on the iron sheets and the salts sink. The industry is represented by a wagon and mules cut in borax to look like the borax loads that are hauled 20 miles across Death Valley.

Most of the people who visit Nevada's exhibit are interested in the specimens of diatomaceous earth from the great deposit at Silex, Esmeralda County. It is a curious formation, white and fine and soft and yet strangely stubborn under the application of all ordinary tools. It polishes a pick like a mirror, but takes the edge off in twenty minutes. It is blasted out with a low grade of dynamite and is broken with ship augurs rather than regular drills. Its utility in the manufacture of water filters, refractory bricks, asbestos paper, and silver polish is illustrated in the exhibit.

Nevada exhibits some fine asbestos. The fibers are not very long, but their tensile strength is remarkable. The State's resources in gypsum and plaster of paris are well shown. Mica from the Czarina Mine in Lincoln County also makes a good impression. Two of Nevada's products that received high honors at the Paris Exposition are marble and sulphur. The marbles show a great variety of color, including white, black, brown, blue and variegated specimens. The sky blue marble received a gold medal at Paris. A pyramid of native sulphur, dug out in massive chunks, makes one of the brightest spots in the exhibit. Most of it is yellow, is 99 per cent. pure, and comes from Humboldt County. It also received a gold medal at Paris. Specimens of pink, blue and white sulphur are also found in the exhibit.

Nevada is undoubtedly rich in gems, but they are as yet a mere by-product. Garnets, cornellians, and turquoises are included in the exhibit, and indicate what may be found there. Particularly beautiful are some specimens of turquoise from a new strike in Lincoln County.

The Nevada exhibit clearly shows that the State is making rapid strides in the development of its resources. The discouragement given silver mining may have been a blessing in disguise, if it has led to the discovery and development of other resources hitherto only half-suspected.

ABSTRACTS OF OFFICIAL REPORTS.

Alaska Mexican Gold Mining Company, Alaska.

This company operates one of the group of large mines on Douglas Island, Alaska. Its report is for the year ending December 31st, 1900. The total receipts for the year were \$315,626. The expenses for operating and construction were \$281,805, leaving a balance of \$33,821, which, added to \$49,975 brought forward from previous year, made a total of \$83,796. From this dividends amounting to \$72,000—8 per cent. on the stock issued—were paid, leaving a balance of \$11,796 at the close of the year.

Of the bullion saved, \$227,183—\$1.36 per ton—was free gold saved in the mill; \$81,900—\$26.07 per ton of sulphurets, or \$0.49 per ton of ore—was from the sulphurets; \$5,922 was in base bars. The mill of 120 stamps was in operation 351 days, 8 hours; of that time water was used 147 days, 22 hours, and steam 203 days, 10 hours. The total development work done during the year was: Drifting, 1,585 ft.; cross-cutting, 293 ft.; raises, 1,041 ft.; shaft sinking, 107 ft.; stations and chutes, 68 ft.; total, 3,094 ft. The ore reserve blocked out and available for mill at the close of the year was 283,851 tons.

We reproduce herewith the map included in the report, showing

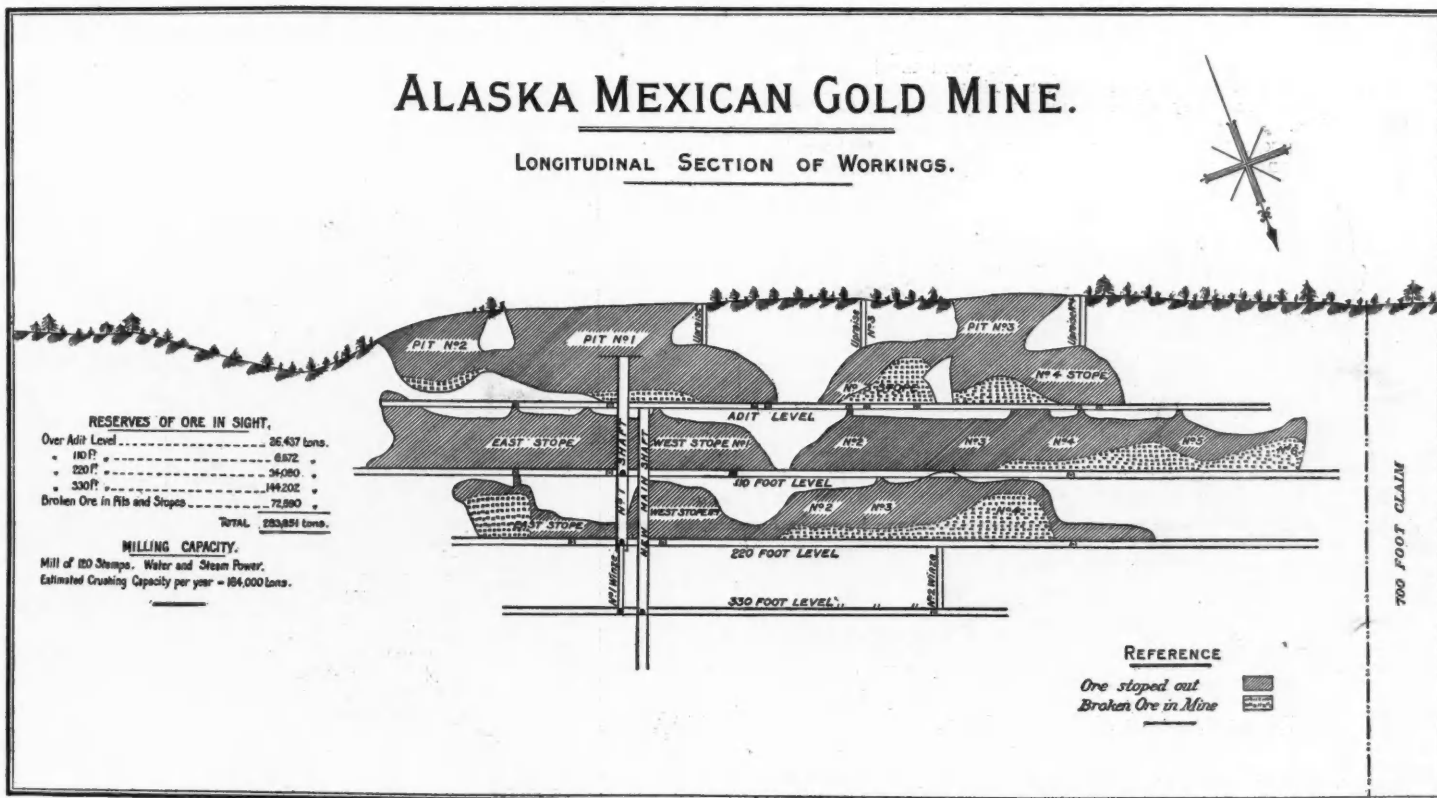
shaft. All of the ore from the mine is now hoisted through this shaft in self-dumping skips and delivered directly to the crusher at the mill."

St. David's Gold and Copper Mines, Limited, Wales.

This company some time ago acquired a property in Wales which had been worked intermittently and not very successfully, and proceeded to develop and work it systematically. It is the only gold mine now being operated in the United Kingdom. The report is for the year ending December 31st, 1900.

During the year 19,463 tons of ore were taken out and treated, producing 13,650 oz. gold bullion, which realized £50,848, and 267 tons of concentrates, of a value of £496. This made a total of £51,344 from the mine. By values, the product was equivalent to 12,089 oz. fine gold; the average being 0.62 oz.—or \$12.81—per ton of ore.

The directors' report says: "Included in these figures are 2,000 tons of ore, being the estimated quantity of ore crushed, producing 1,323 oz. bullion, and realizing £4,919 prior to starting the 30-stamp battery. The total expenses at the mine, including salaries, rock-getting, transport of ore, cost of milling, concentrating, stores, etc., have been £8,423, or calculated upon the basis of 19,463 tons of ore, the cost per ton of ore treated has been 8s. 7.75d.—\$2.075. The royalties payable to the



work done, ore reserves, etc. Such a map should form part of every report, where possible.

The operating account for the year in detail is as follows:

	Total.	Per ton.
Tons ore mined and worked.....	166,449	.....
Tons sulphurets saved.....	3,142	.....
Gold bullion sold.....	\$315,005	\$1.8925
Interest received.....	621	0.0037
Total receipts	\$315,626	\$1.8962
Mining ore.....	\$180,342	\$1.0834
Milling and concentrating.....	50,955	0.3061
Treating 3,142 tons sulphurets (\$8.16 per ton).....	25,649	0.1541
General expenses, Douglas Island.....	4,907	0.0295
San Francisco office.....	2,448	0.0147
London office.....	374	0.0023
Paris office.....	125	0.0008
Consulting engineer.....	1,197	0.0072
Bullion charges.....	2,156	0.0129
Total working costs	\$268,653	\$1.6140
New construction and machinery.....	13,152	0.0790
Total expenses	\$281,805	\$1.6930
Net earnings	\$33,821	\$0.2032

The superintendent's report says: "Of the total reserve tonnage 72,600 tons are now broken down in the stopes, an increase over last year's stock of 12,600 tons. Of the total amount of development work done in the mine during the year 45 per cent. has been done on the 330-ft. level. The West Drift is now well into the western ore shoot, having connected with the workings driven from the bottom of No. 2 winze. Raises and intermediates have been cut preparatory to opening up stopes in the ore in this section of the mine. The East Drift on this level is still in barren ground, but should soon reach the eastern ore shoot which yielded considerable ore in the upper levels. The main shaft has been sunk 107 ft., and now has a total depth of 412 ft. At the 330-ft. level a large station and a skip chute of 403 tons capacity have been cut out. A main cross-cut has been driven south 231 ft. to connect with the workings in the ledge at this level. A Fraser & Chalmers double-drum hoisting engine, of the same size and capacity as the one at the Ready Bullion Mine, has been installed at the main

Crown have amounted to £2,038, or the equivalent of 2s. 1d.—\$0.50—per ton of ore. The total net profits for the year amount to £39,730, and this added to the balance of the profit and loss account December 31st, 1899, of £12,867, makes a total of £52,597, inclusive of premium on shares £12,499. After deducting the two interim dividends, together the equivalent of 40 per cent., amounting to £24,000, there remains an available balance of £28,597. The directors recommend a declaration of a further and final dividend for the year 1900 of 20 per cent., which will absorb £12,000, leaving the sum of £16,597 to be carried forward.

"The 30-stamp battery, during the nine months ended December 31st last, has given complete satisfaction, and an additional 20 stamps have been erected. The recovery of sulphurets by the concentrating plant has been a great source of trouble and disappointment, the principal cause of which has been the practical impossibility of keeping separate the ores from the different portions of the mine, a large proportion of which contains a very small percentage of sulphurets, thus reducing the ore to a very low grade, a condition rendering a high percentage recovery almost impracticable. Your manager is hopeful that this condition of things will be materially improved by the arrangement he is making in the mine, which will enable him, when the new 20 stamps start work, to supply a portion of the battery with ore of a good percentage of sulphurets, and from this portion of the battery only will the tailings be conducted to the Frue vanners, thus obviating the necessity of treating a large quantity of ore poor in sulphurets. From that portion of the plant which has been worked during the last nine months, 10 per cent. depreciation has been written off, but it must not be supposed that your directors regard the life of the plant as being only 10 years, though they recommend this policy as providing for any possible mishaps.

"The sum of £7,793, representing development, the directors believe has been well expended, and has added considerably to the value of the mine. The upper portion, northeast, had had little or nothing done to it for 30 years past. The whole of these old workings have now been re-timbered, and large bodies of ore opened up. Tramways have been laid throughout, and a new reef discovered, and is being developed with satisfactory results, samples of the ore testing up to 1.25 oz. per ton. In the lower section of the mine numerous improvements have been made for the cheaper mining and transport of the ore; 1,500 ft.

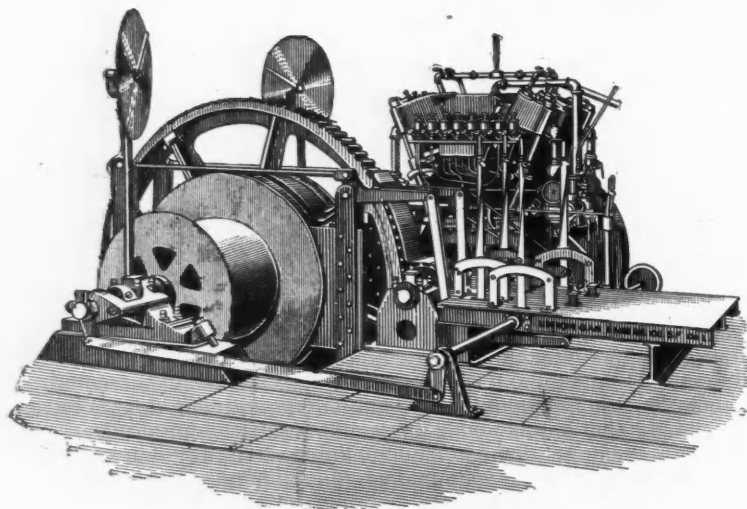
of headings (levels) have been driven along the reef in different parts of the mine, all well ahead of the stopes. A new raise is being put up from the main adit to connect levels 1, 2, 3, and those above it. The winze below the main adit has been sunk to a depth of 140 ft., and driven on the reef east and west, opening up bodies of ore. The main adit cross-cut has been driven 130 ft. with the intention of cutting the old Clogau copper lode, and will unwater the old Clogau Copper Mine. The Lech-Fraith property, adjoining the mine, has been purchased and paid for during the last year, and developments are in progress. A level, which will in future be known as the deep adit, some 180 ft. below the main adit, has been driven a distance of 420 ft. along the reef, with the intention of connecting this deep adit with the present workings in the St. David's Mine, thus not only opening up considerable bodies of ore, but, when completed, will provide a cheaper means of transporting the ore from the whole of the mine to the battery. Rails have been laid along this deep adit, a bridge built across the river, and a tramway nearly completed to the mill."

GAS ENGINES ON THE PACIFIC COAST.

Written for the Engineering and Mining Journal by G. P. Grimsley.

The Union Gas Engine Company of San Francisco has now been engaged in the manufacture of gas engines for the past 15 years, and the three floors of its large building are equipped with machinery especially designed for gas engine construction. These engines have been received with favor in many Western mines, especially in connection with mine hoists.

Gas engines possess the advantage of only using fuel at the actual time of working and of using the fuel in direct proportion to amount



LARGE GASOLINE HOISTING ENGINE.

of work done. Mine hoisting being work of a more or less intermittent character with reference to energy required, may be effected by gas engines with an economy of fuel. The absence of fire also makes them safe in underground work. For the past five years these engines have been built of vertical or marine type, those from 10 to 60 H. P. having two cylinders, while those over 60 H. P. are of the four-cylinder type. The double cylinder gives a working impulse on every revolution, thus hoisting the load without jerk.

This company has made one of the largest gas hoisting engines in the country, which is a four-cylinder double-drum hoist of 130 H. P., now in use on the 400-ft. level of the Yellow Aster Mine at Randsburg, Cal. The engine and hoist occupies a space 14 by 17 ft. and 6½ ft. high, with the levers all brought to one platform. The engine is set 800 ft. within the tunnel and connected with the distillate tank outside by a ½-inch supply pipe. In addition to this large hoist, the mine is using three Union hoists, two of 12 H. P. and one of 27 H. P. Near Daggett, Cal., the Pacific Coast Borax Company is using 8 Union gas engines, 5 of these driving hoists. All the Union hoisting engines are equipped with sensitive governors which are specially designed to graduate the charge and admit it to the cylinder in proportion to the load. This is accomplished by the use of two valves requiring only one-half the movement of an ordinary single valve governor.

All large engines are fitted with self-starters so that they start as readily as steam engines. It is claimed that the expense of running these engines on gasoline or distillate varies from 0.125 gallon per horse-power-hour in small engines to 0.1 gallon in larger sizes. Union gas engines for mine hoists are now in use on the Pacific Coast, in Mexico, Australia and New Zealand.

Gas and gasoline engines, on account of their compactness, ease of manipulation, and convenience of fuel storage, are especially adapted to yachts and launches. The demand for such boats for business and pleasure has led to a great development of this class of ship construction, and thereby has caused an increasing demand for a compact and serviceable gas engine. The Union Gas Engine Company is making a double cylinder marine engine with patent reversing gear and water jacketed exhaust passages with improved vaporizer and adjustable electrodes; and these are made in various sizes from 8 to 130 H. P. The New Zealand Government recently purchased a 50-H. P. marine engine through W. A. Ryan & Company, the New Zealand agents at Auckland.

The trial trip of this launch, 600 miles from Auckland to Wellington, was made with great success, and the Government later ordered two 85-H. P. Union engines, one for the Auckland Harbor Board tug, and the other for a Government schooner used for carrying supplies from New Zealand to Cook's Islands.

Many of the Union gas engines are now used in connection with electric light generators, the largest being a 350-H. P. engine for the San Francisco Gas and Electric Company, which was described in the "Engineering and Mining Journal," February 9th, 1901.

A NEW MINING TRANSIT.

The A. Lietz Company, manufacturer of surveying and scientific instruments at San Francisco, has been engaged in instrument work for the past ten years. The company has made a specialty of aluminum alloy instruments combining strength and lightness, and has recently made a mountain and mining transit which will be of interest to mining men on account of its very convenient size for mining and prospect work, weighing only 3 lbs. with a 4-in. horizontal plate.

In all of the Lietz high-grade instruments the tripod head is coupled to the transit by three jaws instead of the ordinary screw. These jaws fit into grooves of the base plate, and when this is turned one-third revolution to the right, it is held by a spring fitting into a socket in the tripod head, thus preventing any danger of disconnection, and enabling one to attach or detach the instrument rapidly and safely. The



THE LIETZ MINING TRANSIT.

four leveling screws are made of composition metal and have a deep rounded thread which gives smooth motion and durability. The screws fit into strong, star-shaped castings, giving steadiness to the instrument. Shifting plates afford means of setting the instrument over a given point after this is approximated by motion of the tripod legs, and this proves to be a valuable labor-saving device.

The axis or centers are carefully fitted and tested by special apparatus carefully designed by the manufacturer and this reduces the error from eccentricity to a minimum. While these are of extra length, they are so placed as to bring the limb and vernier plates near the tripod head. The graduated plate is made with clear straight lines of uniform width on a solid silver ring and can be read to minutes. The vernier consists of a small sliding scale movable upon a larger one, so graduated that n parts thereof will include either $n + 1$ or $n - 1$ parts of the larger scale. Each instrument has two glass-covered verniers with ground glass shades so arranged that one does not have to step aside to read them. The tangent screws combine simplicity with reliability, and the standards are of ordinary finish or cloth covered to protect them from the heat of the sun. One standard carries a full or half circle arc for observing vertical angles, and this is graduated to read to minutes on the periphery, thus admitting a reading of the vernier from the front. The other standard is equipped with an adjusting screw to regulate any inaccuracy in the motion of the telescope in the vertical plane.

The telescope is of best construction, using lenses of Jena glass and a four-lens erecting or inverting eye-piece, and equipped with a sunshade. The instrument is supported on a split leg tripod made of selected white ash and provided with sharp shoes. The hundred or more of these Lietz aluminum alloy instruments now in use have given satisfaction, and combine rigidity, lateral strength, and steadiness. They remain in adjustment under various atmospheric conditions and in various climates, being now in use in Siberia and tropical South America as well as in the mining fields of the United States.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

(We shall be pleased to receive specimens of ores and minerals, and to describe and classify them, as far as possible. We shall be pleased to receive descriptions of minerals, and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like, will be reproduced whenever possible. Specimens should be of moderate size, and should be sent prepaid. We cannot undertake to return them. If analyses are wanted, we will turn specimens over to a competent assayer, should our correspondent instruct us to do so, and send the necessary money.—Editor E. & M. J.)

355.—Magnetite Schist.—T. T.—The dark, fine-grained, magnetic specimen may be of sedimentary origin, though microscopic examination is required to decide the point. The rock is conveniently classified as a magnetite schist. Its value as an iron ore depends on the percentages of iron, sulphur, phosphorus, etc., present, but from appearances the rock is not high grade.

356.—Graphite.—W. V. M.—The sample is amorphous graphite of good quality. The value of the deposit depends on the size, location, etc., of the deposit; in other words, on the cost of preparing the material for market.

357.—Chlorite Schist.—C. D. W. C.—The soft greenish rock is a chlorite schist. We know of no commercial use for it. Its dark color would prevent it from being used for some of the purposes that talc is and it has not the lubricating qualities of mica powder.

358.—Ores from Montana.—O. P. Z.—The dark rock is of igneous origin, apparently a brecciated melaphyr. The light specimen is also of igneous origin, but has so thoroughly altered by oxidizing solutions that its determination requires analysis and microscopic examination.

359.—Ores from California.—H. D. E.—Both samples are undeterminable without analysis and hence we cannot estimate the probable value.

360.—Iron Ore.—W. A. D.—The specimen is an impure iron ore. The dark red ring is hematite; the fine bright crystals are apparently iron pyrite.

361.—Supposed Kaolin.—J. G. D.—The white mineral is not fine kaolin and a deposit of it 100 miles from a railroad would have no value. Best American kaolin is worth about \$9 per long ton, ex-dock, New York.

362.—Rhyolite.—N.—The light gray rock, colored reddish brown with iron oxide along joint planes, is apparently a rhyolite. The igneous rocks shade into each other by imperceptible gradations. Kemp, in his "Handbook of Rocks," a very useful volume for anyone wishing to study rocks without the use of a microscope, gives five textures for igneous rocks; glassy, felsitic, porphyritic, fragmental and granitoid. In general the glassy, felsitic and porphyritic groups constitute the surface flows or lavas, the dykes, and the laccolites. The lavas may include volcanic glasses, scorias, obsidian, pitchstone, rhyolite, trachyte, phonolite, andesite and basalt. A lava is an effusive volcanic rock, and in popular use the term is restricted to rocks of recent age. In the old formations, however, may be found rocks which from their stratigraphical relations were probably lava flows, but now are so completely altered as to resemble the igneous rocks formed at great depths. The word lava therefore has reference to the origin rather than to the composition or texture of a rock.

360.—Fluxing Ore.—L. B. C.—The ore contains a micaceous mineral and iron oxide. Analysis is necessary for exact determination of the micaceous mineral. The value of an ore as a flux depends on the composition of the ore treated. The sample might be of value as a fluxing material, but in the absence of more complete information than you send we cannot express an opinion. Consult a mining engineer or send full particulars concerning location of deposit, kind of ore to be smelted, etc.

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.—Editor E. & M. J.)

We find it necessary to call special attention to the rule that all questions must be accompanied by the names and addresses of the senders. The names will not be published, nor will they be given to anyone without the sender's consent. We do not answer any anonymous questions or contributions.

Mining Leases.—Can you give me information regarding leases usually made between owners and lessees of mineral property, especially gold and silver propositions? I wish to learn, if possible, what is the usual scale of royalty asked at points like the Cripple District.—H. S.

Answer.—It is impossible to give any general answer to this question. Leases on mineral property vary widely in their terms in different districts, and also in the same district. Terms are made in each case to suit the particular circumstances of the case, or the ideas of owners and lessees. In the Cripple Creek District, for instance, there is no general scale of royalties applicable, which would be regarded as a precedent in fixing terms. Conditions are so different in different mines—even adjoining ones—that no general rules could be applied.

Silver Shipments to the East.—In your edition of May 25th, page 677, you state that the silver exported went to London. Can you tell me approximately where London ships this silver, and also whether any United States ports ship any silver direct to China, Japan, Australia and India? My impression is that practically all of the silver from London goes to China, Japan, India and possibly Australia, but I do not understand why United States ports, especially San Francisco, could not ship silver direct to these ports without its passing through New York and London.—W. H. A.

Answer.—A large part of the silver shipped from London goes to the East—by which is meant China, Japan, British India, the Straits Settlements and the Dutch East Indies—but there are also considerable shipments made to European countries and to Africa. Australia is not a silver buyer; in fact, the silver from the Broken Hill District in New South Wales goes largely to China and India. If you will consult the "Engineering and Mining Journal," January 25th, 1901—article on "Commercial Movement of Silver"—you will see the distribution of the silver which passed through the London market last year.

There is no reason why silver cannot be shipped from the United States directly to the East, and in fact a good deal of the metal is so sent. In 1900 the total silver shipments to the East, as reported, were about 103,600,000 oz., of which about 24,200,000 oz. went from San Francisco. For four months up to the end of April this year—see "Engineering and Mining Journal," June 1st—the silver shipments from San Francisco were valued at \$1,301,036, which is an unusually small amount. The business is handled in London partly because that city still retains much of its former standing as the chief silver market of the world; and partly because Great Britain very largely controls the trade of the East, which takes the silver.

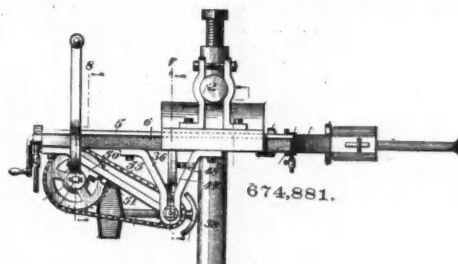
PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

The following is a list of the 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 Scientific Publishing Company upon receipt of 25 cents.

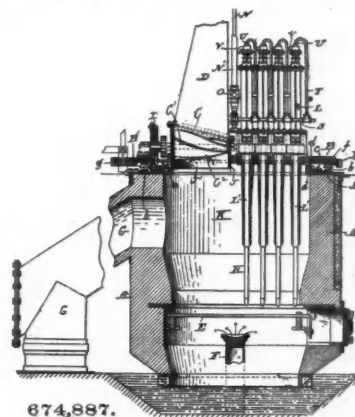
Week Ending May 28th, 1901.

- 674,855. PROCESS OF ROLLING SHEET METAL. Griffith Davies, Apollo, Pa. The method consists in heating the plate bar, reducing the same by rolling to approximate gage and then at the same heat passing the sheet in a circuitous path through the several passes formed by a plurality of plain-faced rolls.
- 674,872. MATERIAL APPLICABLE FOR VALVE-PACKING OR OTHER PURPOSES. Arthur Nixon, Manchester, England. A composition comprising black sulphide of antimony, asbestos powder and rubber dough in suitable proportions.
- 674,881. ROCK-DRILLING MACHINE. Martin Shuster, Greatfalls, Mont. The combination, with a frame or carriage and operating mechanism,



ism, of a drill-head, a striking pin movably connected to the drill-head, a rotating hammer, and means for moving the said striking pin into and out of the path of movement of the hammer.

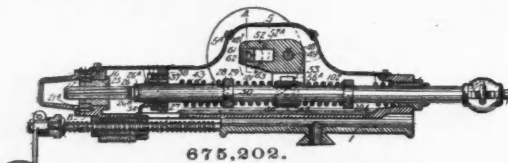
- 674,886; 674,887 and 674,888. GAS-PRODUCER. Johan O. E. Trotz, Worcester, Mass. In a gas producer having a stationary grate and rotary



cover, the coal chute and the receptacle at the bottom thereof mounted on said rotary cover, and having a cone-shaped interior.

- 674,917. DUMPING-CAGE. William G. Halbert, Westville, Ill. A dumping-cage comprising an upper cross-frame, a lower cross-frame, vertical shoe-bars connecting the lower cross-frame with the upper cross-frame and embracing the guides of the shaft, a tilting platform supported on the lower cross-frame, levers pivoted on the shoes on the sides thereof opposite the discharge end of the platform, such levers having hooked ends to engage the platform and also having laterally-extended trip-arms and stationary inclines to engage the trip arms of the levers and disengage the levers from the platform.
- 674,923. PROCESS OF SETTING DIAMONDS FOR INDUSTRIAL PURPOSES. Richard Krause, Breslau, Germany. A process for setting diamonds in hard metals for industrial and instrumental purposes, which consists in producing on the stone a thin shell or coating of

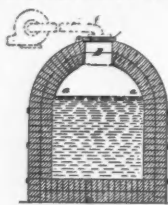
- metal by galvanoplastic process, then forming the body of the setting by casting hard metal around, and alloying it with the thin metallic shell previously formed.
- 674,927; 674,930; 674,931; 674,932; 674,933 and 674,934. **ELECTROLYTIC CELL AND ELECTRODE.** Max Mauran, Niagara Falls, N. Y., assignor, by mesne assignments, to Castner Electrolytic Alkali Company of Virginia. In combination with an electrode provided with a plurality of projections for terminal connection, a tortuous connector for said projections surrounding and soldered thereto.
- 674,936. **FURNACE FOR THE REDUCTION OF ZINC ORES.** Harrison B. Meech, Denver, Colo. A furnace comprising in series retorts arranged side by side, each retort having a solid bottom and an opening at two opposite ends thereof, a door closing each of said openings and means to open and close said doors, a flue between each of said retorts leading from a firebox to a point of exit, and a firebox between each retort, said fireboxes arranged to open alternately from opposite sides of said furnace.
- 375,007. **MACHINE FOR SPREADING LIQUID CEMENT.** Albert E. Johnson, Brockton, Mass. A tank adapted to hold the liquid to be spread, and a rotatably-mounted drum set within the tank and adapted to spread the liquid.
- 675,018. **METHOD OF MAKING ALKALINE MAGNESITE.** Emil Rueff, New York, N. Y. The process of producing alkaline magnesite containing an excess of chemically-bound water, which consists in acting upon magnesite in the presence of water with less carbon dioxide than is necessary to produce a normal carbonate, heating the mass at a temperature not higher than 160° F., drying the mass, and finally compressing it into the desired form.
- 675,035; 675,036 and 675,037. **CONCRETE-MIXING MACHINE.** Chester T. Drake, Chicago, Ill. The combination with a mounted mixer of a carrier adapted to deliver material to the mixer.
- 675,046. **EXCAVATOR.** Henry Lough, San Francisco, Cal. The combination in an excavator of a float, a tramway suspended therefrom, said tramway having its lower end curved in an approximately circular arc.
- 675,066. **MAGNETIC SEPARATOR.** Thomas A. Edison, Llewellyn Park, N. J. A magnetic separator having an oblong bar magnet wound over the length of the bar and arranged in a horizontal position so as to present a laterally-extended polar face, in combination with means arranged to feed the mixed magnetic and non-magnetic material directly to the polar face of the magnet, and means for automatically and separately receiving the magnetic and non-magnetic particles continuously separated by the magnetic action.
- 675,067. **APPARATUS FOR SCREENING PULVERIZED MATERIAL.** Thomas A. Edison, Llewellyn Park, N. J. Apparatus comprising a series of short, stationary, inclined screen sections, each formed of a thin plate slotted in the direction of the flow of the material, means for causing the material to flow by gravity successively over the screen sections, means for feeding material to the upper end of the upper screen section in a thin, wide stream, and means for checking the velocity of the particles after they have passed over each screen section except the last.
- 675,068. **MINER'S COMBINATION-TOOL.** Joseph J. Ellis, Denver, Colo., assignor of one-half to Thomas B. Atterbery, Boulder, Colo. A tool comprising two crossed members pivotally connected and provided with co-operating jaws located forward of the pivot, one of the jaws being reinforced at its forward extremity and grooved in the plane of the co-operating jaw to receive the fuse extremity, the opposite jaw being sharpened at its forward end to perform the fuse-splitting function.
- 675,120. **METHOD OF MANUFACTURING WROUGHT IRON.** Edwin D. Wassell, Pittsburg, Pa. The method consists in subjecting liquid pig or cast iron to currents of air until the metal partly loses its fluidity and forms a pasty mass, removing the impurities from the surface of the mass, then supplying oxide of iron upon said surface, and applying sufficient heat to melt the oxide, and finally agitating the pasty mass of iron and the layer of molten oxide thereon and thereby commingling the oxide and the iron for the further elimination of impurities from the iron, and finally balling the iron.
- 675,123. **HYDRAULIC MACHINE FOR EXTRACTING GOLD FROM SAND IN PLACE.** Grove S. Bartholomew, Los Angeles, Cal.; E. A. Beck, administrator of said Bartholomew, deceased. A hydraulic machine for extracting gold from sand in place, comprising a cup, means for handling the cup, means for discharging the water below the cup close to the bottom thereof, and means for discharging water into the cup above the bottom thereof.
- 675,124 and 675,125. **APPARATUS FOR EXCAVATING FROM RIVER BEDS.** Charles H. Brown, Port Huron, Mich., assignor of one-half to Stephen G. Martin and Abraham S. Martin, same place. The combination with a float, of a caisson, and a shield arranged adjacent to and movable independently of the caisson.
- 675,202. **ROCK-DRILLING MACHINE.** Lafayette Durkee, Denver, Colo. The combination with the supporting cylinder of a drill holder loosely mounted in said cylinder, a crank lever pivotally supported intermediate of its ends to said cylinder, a cross-head slidably



675,202.

mounted on the drill holder, a spiral spring on each side of said cross-head on said drill holder, a crank shaft rotatably mounted in said cylinder, a crank pin connected to the crank lever, and a motor.

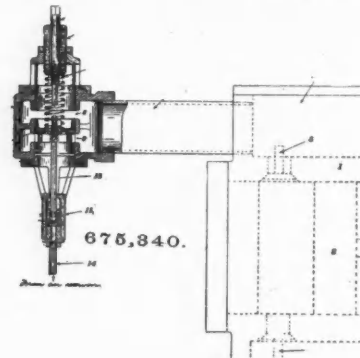
- 675,205. **PROCESS OF TREATING BLAST-FURNACE SLAG IN ITS MOLTEN STATE.** Alexander D. Elbers, Hoboken, N. J. The process consists in gathering and confining the molten slag in a kiln or other stationary receptacle having non-conducting walls for the retention of heat, and leaving an air space above the surface of the slag, said space having restricted communication with the atmosphere,



675,205.

and regulating the communication between the air of this space and the atmosphere, whereby the air above the slag in said space becomes intensely heated by radiation from the molten slag and the cooling of the charge is retarded while the slag is in a state of transition to the solid form.

- 675,156. **CONVEYOR.** Joseph C. Hoshor, Paterson, N. J., assignor to himself and Thomas E. Platt, same place. The combination with the endless chain of the conveyor and the rollers pivoted thereto, of gravity buckets and plates connected upon the respective ends of the buckets.
- 675,162. **MAGNETIC SEPARATOR.** Benjamin Noble, Detroit, Mich., assignor of one-half to John G. Dietz, same place. The combination of an iron cylinder, iron studs secured to and projecting radially from said cylinder and arranged to form a circumferential and longitudinal series of pairs, coils upon said studs connected in electric circuit to form magnets alternately of opposite polarity.
- 675,190. **PROCESS OF REDUCING METALS AND PRODUCING ALLOYS THEREOF.** Henry S. Blackmore, Mount Vernon, N. Y. The process consists in exposing a molten bath of inert chemical salts free from hydrogen containing metallic oxide at a temperature below its normal melting point, to the action of metallic carbide, the combined carbon of which is capable of reducing the oxide, thereby liberating the combined metal or metals.
- 675,215 and 675,329. **PROCESS AND APPARATUS FOR THE MANUFACTURE OF STEEL.** Thomas J. Heskett and Henry Jones, Adelaide, South Australia, assignors to said Thomas J. Heskett. Apparatus for utilizing the combustible gases together with the waste heat issuing from a Bessemer converter, consisting of a converter lined with fire-resisting material, a blast box, a number of small tuyere holes arranged to deliver the blast into the converter below the surface of the molten metal, a removable cover lined with fire-resisting material, a slag hole in the upper part of the said converter through which samples may be taken, and a short confined fireproof channel lined with fire-resisting material leading from the upper part of the converter to the bottom of the cupola.
- 675,245. **MEANS FOR CLEANING HOT-BLAST STOVES.** Edgar J. W. Richards and Thomas Lewis, Glengarnock, Scotland. In a hot-blast stove the combination with honeycomb filling divided into independent groups, a plurality of casings secured to one end of the filling, each casing having a passage connected with the filling, and valves in the passages for controlling the admission of air to the several passages.
- 675,264. **ORE PULVERIZER.** Albert C. Calkins, Los Angeles, Cal., assignor to Frederick W. Braun, same place. A crushing and grinding device, comprising a concave bed and an oscillating shoe or muller having its upper surface lowest in the middle and having in its middle an opening through the same to the space between the shoe and bed.
- 675,281. **HEATING AND ROASTING FURNACE.** Arthur W. Johnson, Tacoma, Wash. The combination with the roasting hearth and an ore-stirring device, of a support for the ore-stirring device.
- 675,319. **ROCK DRILL.** William S. Boyd, 3rd, Los Angeles, Cal. A rock drill comprising a cylinder formed with grooved legs, and a pendant bracket, a bed plate formed with arms, rails supported on the arms and providing tracks for the grooved legs of the cylinder, a feed screw working in the pendant bracket, turning in the arms of the bed plate, and having an operating hand wheel, a plug secured to the front end of the cylinder, a plug secured to the rear end of the cylinder, a drill shaft, mounted in the front plug, having a removable head, a spring for throwing the drill shaft rearward, a striker shaft mounted in the rear plug, having a removable head, a spring for throwing the striker shaft forward, a collar mounted on the striker shaft having radial arms, a driven bevel-gear wheel mounted on the rear plug having cams adapted to impinge against the radial arms for retracting the striker shaft, and a driving bevel-gear wheel journaled to the cylinder and meshing with the driven bevel-gear wheel.
- 675,340. **REGULATOR FOR AIR OR GAS COMPRESSORS.** William Prellwitz, Easton, Pa., assignor to the Ingersoll-Sargeant Drill Company, New York, N. Y. The combination with a valve for closing



or regulating the area of the inlet to the compressor, of a cylinder containing a piston upon which the pressure in the receiver to which the compressor delivers acts to close said valve, a spring for holding said valve open, and an adjustable stop for controlling the point of closure of said valve.

- 675,355. **TUNNELING DEVICE.** William S. McHarg, Chicago, Ill. The combination of an outer shield with a series of inner relatively small independent excavators filling the forward end of the shield, each excavator open in front and provided with a cutting-edge around such opening, and with a rear opening and a cover for such rear opening, so that when the excavators are in position and the covers in place, the forward end of the shield is entirely closed, and means for independently moving forward each excavator and the shield.

GREAT BRITAIN.

The following is a list of patent published by the British Patent Office on subject connected with mining and metallurgy.

Week Ending May 4th, 1901.

- 6,735 of 1900. **ALUMINUM WELDING.** W. C. Heraus, Hanan, Germany. A process for welding aluminum.
- 6,987 of 1900. **LIGHTING MINERS' LAMPS.** J. C. Best, Morley. Improved electric device for lighting miners' oil lamps without opening.
- 10,506 of 1900. **ROCK DRILL.** J. T. Wood and A. H. Wood, Morpeth. An improved form of twist drill for rock borers.
- 21,416 of 1900. **MAGNETIC SAND PREPARATION.** T. N. Muller, Saltburn. Method of preparing magnetic iron sand for use in steel furnaces.
- 1,368 of 1901. **CINDER CAR.** E. A. Weimer, Lebanon, Pa., U. S. A. Improved form of cinder car for conveying liquid cinder from blast furnaces.
- 3,582 of 1901. **TREATING TITANIFEROUS IRON ORES.** A. J. Rossi, J. McNaughton and W. D. Edmonds, New York. Method of concentrating titaniferous acid from iron ores.

PERSONAL.

Mr. J. E. Beveridge, who has been in Mexico, has returned to Salt Lake City.

Mr. M. E. Parenteau has returned to Chicago from an 8 weeks' visit to British Columbia.

Mr. Truman Schenck returned to Salt Lake from the Pacific Coast, where he has been since last fall.

Capt. Henry Stern, of New York, is in Utah inspecting mining property in which he is interested.

Mr. L. C. Huck, of Chicago, president of the Annie Laurie Company, is spending several weeks in Utah.

Mr. C. D. Crane, of Spokane, Wash., has returned to Grant's Pass, Ore., and intends to engage in mining.

Capt. William E. Parnell, Sr., and Mr. Ernest Bollman, of Calumet, Mich., have gone on an extended European tour.

Mr. Eugene Chilberg, manager for Linderberg & Lindbloom, mine owners of Nome, Alaska, has been in Stockton, Cal.

Mr. John M. Goldworthy succeeds Mr. L. M. Hardenberg as mining engineer at the Pewabic iron mine, Iron Mountain, Mich.

Mr. Fergus McCarthy has taken charge of the Republic Iron and Steel Company's extensive brown ore mines located at Goethite, Ala.

Mr. Will F. Siedentopf, secretary of the Jupiter Company, of Council Bluffs, Ia., has been in Utah inspecting the property of the company.

Mr. W. G. Palmer, of London, Eng., representative of the London Exploration and Development Company, recently spent a week in Utah.

Dr. T. C. Hopkins, professor of geology at Syracuse University, N. Y., will work on the geological survey of Indiana during the summer vacation.

Mr. Alfred C. Garde, chief engineer of the War Eagle and Center Star mines, Rossland, B. C., has been appointed manager of the Payne Mine at Sandon.

Mr. W. Mein, of San Francisco, it is stated, has been appointed manager of the Roodeport Durban Deep Gold Mining Company at Johannesburg, Transvaal.

Mr. A. C. McCallum and Capt. John Hallahan, merchants and mining men of Anaconda, Mont., are visiting the Ramore Mining Company's mines in Ferry County, Wash.

Mr. Culpeper Exum, treasurer and general manager of the Birmingham Fertilizer Company, has been installed as president of the Birmingham, Ala., Commercial Club.

Mr. Austin King, superintendent of mines for the H. C. Frick Coke Company, is at his home in Connellsville, Pa., from a Pittsburg hospital after an illness of some weeks.

Mr. Priestly Toulmin, who was recently general manager of the Sloss-Sheffield Steel and Iron Company, has been in Arkansas investigating manganese deposits.

Mr. F. E. House, general manager of the Bessemer & Lake Erie Railroad, has been elected president of the Duluth & Iron Range Railroad to succeed Mr. J. L. Greatsinger.

Mr. H. A. Frasch, managing director of the Nickel-Copper Company, of Hamilton, Ont., has been inspecting the works and properties of the company in the Sudbury District.

Mr. H. P. McIntosh, of Cleveland, secretary of the Canadian Copper Company, and Mr. R. McKey, of Toronto, recently visited the company's Vermillion Mine near Sudbury, Ont.

Mr. R. J. Long, general superintendent of the Hidalgo Mining Company, Parral, Mex., has been in Pittsburg, Pa. The company is principally composed of Pittsburg people.

Mr. A. J. Paterson, of Montreal, Que., Secretary of the Republic Consolidated Gold Mining Company and of the Republic Power and Cyaniding Company, is visiting Republic, Wash.

Mr. Hobart B. Ives, of New Haven, Conn., President of the Apollo Gold Mining Company, has been visiting the California Mine, of the Apollo Group, 9 miles east of Republic, Wash.

Captain R. R. Trezona, late superintendent of the Mass Consolidated Copper Mine in Ontonagon County, Mich., has been appointed superintendent of the Fayal Mine, at Eveleth, on the Mesabi Range, Minn.

Prof. Jacobus Henricus Van't Hoff, the great Dutch physical chemist, of the University of Berlin, is in this country. He recently visited Baltimore and was entertained by the faculty of Johns Hopkins University.

Mr. W. M. Brewer, British Columbia correspondent of the "Engineering and Mining Jour-

nal," has returned from his visit to New York, the Southern States and California, and is again looking over the British Columbia mining field.

Mr. Hartwig A. Cohen, after a several months' stay on the Pacific Coast, where he has been giving his attention to the affairs of Capt. J. R. De La Mar's Bully Hill Company, has returned to the office of the Consolidated Mercur Company in Salt Lake.

Dr. George W. Maynard, we are much pleased to hear, is now able to resume active work in his office, and will very shortly be strong enough to go into the field again. His return to work after eight months' enforced retirement, due to an accident, will be good news to his many friends.

Mr. G. M. Williams, of Wilkes Barre, Pa., has resigned as a State mine inspector, and has accepted the management of the Kingston Coal Company in place of the late Daniel Edwards. Mr. Williams will remain an inspector until his successor is appointed by the Governor.

Mr. Albion S. Howe, a well-known mining and civil engineer, who recently returned from New Zealand, sailed on June 6th on the "City of Peking" from San Francisco for Manila, P. I., accompanied by Messrs. J. C. McMullen, L. G. Young and S. Peterson. They are to report on the prospective improvement in Manila Harbor.

Mr. James Belden, recently assistant to the chairman of the board of directors of the Chicago & Eastern Illinois Railroad, has been appointed assistant to the chairman of the board of directors of the Tennessee Coal, Iron and Railroad Company. He will have his office in Birmingham, Ala., and will be immediately under Mr. Don H. Bacon.

Mr. Walter T. Page, manager of the American Smelting and Refining Company smelter at Omaha, Neb., has been appointed manager of the smelting plant at Argentine, Kan. He will divide his time between Kansas City and Omaha. The present manager of the Argentine Smelter, Mr. H. R. Simpson, will go south to manage the company's plants at El Paso, Aguas Calientes and Monterey.

We are informed that a person calling himself William P. Kibbee, or Kipler—the signature is very indistinct—has been collecting money in payment for subscriptions to the "Engineering and Mining Journal." No such person is known to this office or authorized in any way to take subscriptions or collect money for the "Journal," and our readers are warned against the man.

Governor Wells has appointed the following delegates from Utah to the International Mining Congress to be held at Boise, Ida.; John Dern, Thomas Kearns, Clarence E. Allen, Victor M. Clement, J. E. Bamberger, W. C. Higgins, J. W. Neill, W. J. Bogue, J. E. Talmage, L. E. Camomile, J. T. Jenkins, Angus M. Cannon, Sr., C. C. Goodwin, W. G. Filer, E. A. Wall, A. H. Tarbet, all of Salt Lake City; C. E. Loose, Lafayette Holbrook, Jesse Knight, of Provo; Andrew P. Mayberry, of Bingham; W. I. Snyder, D. C. McLaughlin, W. W. Armstrong, of Park City; F. J. Kiesel, Don Maguire, E. M. Allison, of Ogden; N. B. Dresser, of Mercur; S. C. Hazelton, of Murray; L. E. Riter, of Silver City, and Robert C. Lund, of St. George.

OBITUARY.

Mordecai Tyson, of Baltimore, Md., died suddenly at Atlantic City on June 6th in the 47th year of his age. For nearly 25 years he had been connected with the Baltimore Chrome Company, of which his uncle, Jesse Tyson, is president. He was during the past 7 years secretary of the company and also secretary of the Tyson Mining Company. He left a widow and 1 son.

Isaac Price, an Alabama mining operator, died recently at St. Vincent Hospital, in Birmingham, Ala. He left a wife, 2 married daughters and a son. Mr. Price opened and for years was in charge of extensive coal mines for the Sloss Iron and Steel Company and later went into the coal mining business for himself. He was a prominent figure in the industrial development of the State and his funeral was attended by mining operators from all over the Birmingham District.

Charles Hyde, a millionaire and one of the pioneers in the Pennsylvania oil industry, died at his home in Plainfield, N. J., June 12th. He was born at Eagle, N. Y., in February, 1822. Early in life he moved to Pennsylvania, where he founded the place called Hydettown. He was engaged in the lumber industry at the time that oil in great quantities was found there, and embarked in that business, laying the foundation for a large fortune. He later founded the private bank of Hyde & Sons, at Titusville. He removed to Plainfield in 1869 and owned large real estate interests in that city. He leaves a widow, 4 sons and a daughter.

SOCIETIES AND TECHNICAL SCHOOLS.

Engineers' Club of St. Louis.—At the meeting on June 5th, 24 members and 10 visitors were present. Messrs. Hans C. Hoensfeldt and Arthur Tappan North were elected to membership.

The subject of the evening was a paper by Mr. A. H. Blaisdell, entitled, "The Western River Steamboat." Mr. Blaisdell exhibited about 50 lantern slides prepared by himself from photographs of boats and drawings; and detailed some tests of steamboat performances, illustrated the path of the paddle wheel and its slip, gave examples of speed calculations and outlined the method of designing a steel hull, with calculations of stability, strength, etc.

The discussion was participated in by Messrs. Flad, Bryan and others.

The next meeting will be held September 18th, when Mr. J. A. Ockerson will present a paper entitled "The Mississippi River, Physical Characteristics and Methods of Improvement."

Michigan College of Mines.—The college has received from the present State legislature the largest appropriation in its history. This provides among other things for 2 greatly needed buildings. One will accommodate the Departments of Civil and Mining Engineering. It will provide mining and hydraulic laboratories and a drafting room, together with lecture and class rooms. The amount allotted for its construction and equipment is \$42,500. The other building will be devoted to the work of the departments of chemistry and metallurgy. The laboratories will be fitted in accordance with modern ideas of lighting, plumbing and ventilation. The amount of appropriation for this building is \$35,000. The appropriation furthermore provides for an addition to the present engineering building, which will take care of the needs of the course in blacksmithing. Provisions also made for extending the equipment of the Electrical Laboratory, and for enlarging the central heating plant to take care of the new buildings. Planning for the erection of these buildings has begun, and is being pushed as rapidly as possible. It is hoped that one or more of the buildings will be ready by the fall of 1902.

The college is in a prosperous condition, the number of students in attendance showing a decided gain over that of any former year. With the increased facilities for instruction which will be provided by the new buildings and equipment, the college has every reason to expect still wider success in the next few years.

Engineers' Club of Philadelphia.—At the meeting on June 1st 89 members and visitors were present.

Prof. Edgar Marburg opened a topical discussion upon "The Duty of the Engineer," by the presenting of a paper on the subject. He pointed out that the engineer should hold high professional ideals and make a conscientious effort to apply them to himself in all his professional relations. He should avoid degenerating into a narrow specialist by keeping in touch with the world of men and affairs.

Mr. L. Y. Schermerhorn discussed the duty of the engineer to his contractors and employers. The engineer owes to his employer the duty of furthering his interests, but this should not prevent him from recognizing the duty which he also owes to the contractor to furnish him with correct information upon all matters involved in the work.

Mr. John C. Trautwine, Jr., discussed the duty of the engineer to the public. The modern methods of combining various business enterprises under one management have entered the field of engineering, so that now a large proportion of the profession are employees either of the municipality or of giant corporations. The conditions are becoming more and more different from what they were when an engineer was an independent professional man.

Mr. William Copeland Furber discussed the unfortunate feeling of superiority which some engineers and architects hold in dealing with contractors.

A verbal discussion followed which was participated in by Messrs. James Christie, John Birkinbine, Arthur Falkenau, A. H. Holcombe, Max Livingston and others.

American Chemical Society, New York Section.—The last meeting of the season was held on June 7th. Dr. Charles A. Doremus occupied the chair and delivered his annual address on "The Development of an American School of Chemistry," in which he urged the advancement of chemical engineering by the development of originality and the assumption of greater responsibilities by chemists.

The secretary's report showed a net gain in membership of 60 during the year, and that 29 papers had been read at the 9 meetings held.

The election of officers for 1901-1902 resulted as follows:

Chairman—Prof. Marston T. Bogert, Columbia University.

Vice-chairman—Durand Woodman.
Secretary-treasurer—Prof. J. A. Mathews, Columbia University.

Executive Committee—P. C. McIlhiney, Prof. E. H. Miller, T. C. Stearns.
Delegates to the Scientific Alliance—Wm. McMurtrie, Prof. Marston, T. Bogert, H. C. Sherman.

Papers were read as follows:

M. T. Bogert and L. Boroschek—"Some Experiments with the Mononitro-orthophthalic Acids."
H. C. Sherman, J. L. Danziger, L. Kohnstamm—"On the Maumene Tests for Oils."

E. F. Kern—"On the Separation and Determination of Uranium."

The paper on the "Maumene Tests for Oils" stated that the common practice of diluting oils with petroleum to prevent too violent a reaction was found to give unsatisfactory results, the figures obtained from such mixtures being too high; as was also the case when the oil was dissolved in an equal weight of carbon bisulphid or chloroform. The necessity of taking account of the specific heats of the oils and diluents was noted. In order to avoid the necessity of diluting the oil and the resulting uncertainty in the interpretation of results, the use of a weaker acid was proposed. Sulphuric acid of about 87% can be added directly to all the common oils and the test can be carried out in exactly the same way for the drying as for the non-drying oils. Even when calculated as "specific temperature reaction" the results are somewhat influenced by the strength of the acid used, higher figures being obtained with the more concentrated acids. It was, therefore, recommended that the test be always made with acid of such strength as will give with water a rise of 33 deg. to 34 deg. C.

The courtesies of the society were extended to Prof. Van't Hoff, of the University of Berlin, and the chairman and Executive Committee were authorized to take such measures and make such preparations as might be required for entertaining Prof. Van't Hoff.

INDUSTRIAL NOTES.

The Baldwin Locomotive Works, of Philadelphia, Pa., is shipping 5 locomotives to Kobe for utilization on the Japanese Government railways.

The St. Clair Steel Company has purchased 35 acres of land at Blair Station, Pa., where the company is building an open-hearth plant. The contract for 3 furnaces has been let.

The Lidgerwood Manufacturing Company, of Brooklyn, N. Y., has secured an order for an electric hoisting equipment, which will be shipped to Sydney for use in New South Wales mines.

The Chicago Pneumatic Tool Company, of New York City, reports pending shipments of pneumatic tools to Freemantle, Australia, and Hongkong, China. The tools will be chiefly used in boiler shops.

The Harrow Spring Company, of Kalamazoo, Mich., has contracted with Wm. B. Scaife & Sons, Pittsburg, Pa., for a number of steel frame structures. The main building will be 290 ft. long by 90 ft. wide and 3½ ft. high.

The Ludlow-Saylor Wire Company, of St. Louis, Mo., has filed with the recorder of St. Louis an application for the increase of the capital stock of the company from \$100,000, its present authorized capital, to \$300,000. The assets of the company are \$42,500 and the liabilities are \$95,672.

The general offices and the engineering department of the Stanley Electric Manufacturing Company at Pittsfield, Mass., have moved into commodious quarters at the new works. Several of the other departments are also installed there and by the end of June the new works will probably be completely occupied.

The Risdon Iron Works, of San Francisco, Cal., has during the last 2 months secured contracts for 6 heavy \$50,000 dredges as follows: In Butte County, Cal., Boston and Oroville, one; Leggett & Wilcox, one; John Hays Hammond and F. W. Bradley, one; in Siskiyou County, Scott River Company, one; in Yuba County, Two Bear River Exploration Company, one.

The W. W. Whitehead Company, of Davenport, Ia., reports Corliss engine sales as follows: To Dere & Mansur Company, of Moline, Ill., 22 by 42 by 48 tandem compound condensing; to Chicago Brick Company, 24 by 48 condensing; to Le Roi Mining Company, Rossland, B. C., 16 by 42; Northport Mining and Smelting Company, Northport, Wash., 16 by 36; Western Tube Company, Kewanee, Ill., 28 by 48; Parkersburg Iron and Steel Company, Pittsburg, Pa., 28 by 60, and to South Halsted Street Iron Works, Chicago, 18 by 42.

Messrs. Charles H. Besly & Company, of Chicago, Ill., have recently made shipments of complete shop equipments to points in Illinois, Indiana, Ohio, Wisconsin and Minnesota and have just received an order from the Rock Island Arsenal for several hundred viseam cutters, reamers and other small tools. The firm is extremely busy in its tap and die department

at its factory, Beloit, Wis., and is working overtime to fill orders, there being an unusual demand for "Helmet" temper taps. The company also states that it has never sold as many Gardner grinders as at the present time, and shipments are being made daily to all parts of the world. The new 300-page illustrated catalogue will be mailed free to any address upon application.

On October 15th, 1900, the suit of the Robins Conveying Belt Company of New York against Exeter Machine Works was argued before Judge Wheeler of the United States Circuit Court for the Southern District of New York. The Robins Company complained that the Exeter Machine Works had advertised and in 2 instances had sold belt conveyor apparatus which infringed 2 patents, the property of the Robins Company. On November 15th, 1900, Judge Wheeler issued an interlocutory decree establishing the validity of the patents in question and an injunction restraining the Exeter Machine Works from infringing or in any way advertising the apparatus covered by these patents. An accounting was ordered before Special Master John M. Shields. His report dated March 6th, 1901, awarded damages to the Robins Conveying Belt Company which have since been paid.

TRADE CATALOGUES.

The Weinman Machine Works, of Columbus, O., manufacturers of pumping machinery for mines and industrial plants, have just issued a fine new catalogue descriptive of these pumps. To those interested the company will mail a catalogue on application.

Catalogue No. 4, issued by Fraser & Chalmers, of Chicago and London, is entitled "Gold and Silver Milling." In its 320 pages may be found detailed descriptions of the "Comet" and Dodge crushers, "Challenge" ore feeders, also of battery and mining screens, stamp batteries and parts, including the Bleton self-tightening cam, 2-stamp and prospecting mills, steam stamps, sizers, and a detailed account, with directions for working of the Frue vanner. The pamphlet also tells of wet and dry crushing silver mills, pan amalgamation plants, chlorination plants, cyanide plants, roasting and smelting furnaces, etc. The pamphlet contains valuable information about sources of loss in extracting gold and silver, and discusses the classes of ores to which the different processes are best adapted. It is a handy manual for all men interested in precious metal mining.

A very handsome pamphlet describing some recently adopted methods for handling coal cheaply has been issued by the Robins Conveying Belt Company, of New York City. The pamphlet shows how Robins belts look in actual operation and how they may be installed. The company states that the fundamental principle of the belt conveyor is the perfect separation of the conveying parts from the running parts. Consequently there is no jamming and clogging with no joints, bolts or other connections to break or wear out. The peculiar features of the Robins conveyor, the belt, idlers, take-up blocks, pillow blocks, grease cups and distributing trippers, the pamphlet describes in detail. Some fine illustrations show the Robins belts at work at anthracite washeries handling culm; at the New England Gas and Coke Company's plant at Everett, Mass., elevating coke; at the shipping pier of the Dominion Coal Company, Louisburg, C. B., conveying coal from the cars to pockets, and at coal storage docks, power houses and boiler houses.

MACHINERY AND SUPPLIES WANTED.

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

We also offer our services to foreign correspondents who desire to purchase American goods of any kind, and shall be pleased to furnish them information, catalogues, etc.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, and have no pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

Mineral Oil Exports.—In May the United States exported 11,887,546 gals. crude oil, 1,137,983 gals. naphthas, 76,230,843 gals. illuminating, 6,896,905 gals. lubricating and paraffin, and 1,333,299 gals. residuum; total, 97,486,567 gals., against 84,141,957 gals. in May, 1900, showing an increase of 13,344,610 gals. this year. In the 5 months ended May 31st, 1901, the exports aggregated 409,247,786 gals., or 42,252,473 gals. more than the corresponding period last year. This increase is due principally to the heavier movement in illuminating oil.

Western Federation of Miners.—The annual convention was held in Denver, Colo. The con-

vention practically closed its work by the election of the following officers on June 5th: President, Edward Boyce, Butte, Mont.; vice-president, James Wilkes, Nelson, B. C.; secretary-treasurer, W. D. Haywood, Silver City, Idaho; executive board, John C. Williams, Grass Valley, Cal.; John Kelly, Burke, Idaho; Philip Borden, Butte, Mont.; Thomas Sullivan, Leadville, Colo. Members for the district comprising the Dakotas and the district comprising British Columbia, Alaska and the Klondike to be selected later.

Some very lurid resolutions containing references to the Coeur d'Alenes, the courts, United States troops, etc., were adopted and there was the usual amount of loose talk.

Denver was made permanent headquarters of the federation. One of the plans of the federation is to erect a building in Denver for the federation.

ALASKA.

Douglas Island.

Alaska-Treadwell.—The May report shows the largest yield of gold in a long time. One of the mills of 240 stamps ran only 21½ days, while the other of 300 stamps ran 28 days. The quantity of ore crushed by both mills was 55,443 tons, yielding \$63,650. There were 1,122 tons of sulphurets saved of a value of \$34,830. The total receipts for the month were \$106,930. This is the largest monthly output in some time. The ore shows an average of \$1.95 per ton. The gross expenses for the month were \$47,816. While the water supply holds good the bullion yield will continue large.

Juneau District.

(From Our Special Correspondent.)

The spring has been unusually backward and a great deal of snow still lies on the mountain slopes; but little distant from tidewater. This has not interfered with working developed properties, but has seriously retarded construction and the opening of new prospects.

The Treadwell properties are all going on as usual, the entire 880 stamps dropping with plenty of water. A marked improvement in the values of rock encountered in the lower levels of the Treadwell is of great prospective importance.

The affairs of the various "Nowell" companies are still in a chaotic state and the properties are all shut down. Experts have just completed an examination of the Berner's Bay properties and it is rumored that their reports have been favorable and that a sale is certain. The sale of Berner's Bay would give the Nowells another chance with the Sheep Creek and Basin properties.

At Snettisham development work is being pushed on the Minnehaha ledge. The 20-stamp mill is complete and stamps will be dropping by July 4th. Work on the ore bins and rock crusher has delayed matters. The mill is located on the vein and at tidewater.

Wm. M. Ebner is about to increase from 15 to 40 the stamps on his properties in Gold Creek Valley back of Juneau. He has a large body of ore blocked out and good water power. The new stamps will be in use by the end of summer.

At Wyndham Bay the new 10-stamp mill is already crushing ore, with plenty of high grade rock in sight.

Frank Cook, one of the old-time prospectors, has been for the past 4 years slowly developing his property at Snettisham and now on the completion by himself and partner of some 5,000 ft. of drift and tunnel has raised \$10,000 locally by the sale of an interest in the mine and will immediately erect a 5-stamp mill and build a 3-mile road to the beach. This is the first prospect developed entirely by local men and local capital without outside assistance. The stream which cuts the ledge yields by panning beautiful crystals of gold, a very unusual occurrence.

CALIFORNIA.

California Petroleum Miners' Association.—The annual election was held in San Francisco June 4th and the following were elected directors for the ensuing year: Gen. J. M. Gleaves, A. R. Briggs, M. H. De Young, Dr. C. T. Deane, E. A. Denicke, E. P. Heald, J. D. Spreckels, Henry Crocker, Geo. X. Wendling, O. A. Lane and W. B. Simmons.

(From Our Special Correspondent.)

California State Mining Bureau.—State Mineralogist Lewis E. Aubury has instructed Chas. S. Long, who has been appointed an assistant in the field, to proceed at once to the counties of Mariposa, Tuolumne, Amador, Calaveras, El Dorado and Placer to examine the copper deposits of those counties and make a report of same to him, which will be incorporated in the forthcoming bulletin, "Copper Mining in California." Mr. J. H. Tibbetts has also been instructed to visit the counties of Humboldt, Mendocino, Lake and Sonoma, and will immediately leave for those counties, where he will proceed to gather the necessary information on copper for the Bulletin. Mr. P. C. DuBois will at once proceed to Nevada, Modoc, Lassen, Plumas, Butte, Tehama, Sierra and Yuba counties to perform the same work. Other assistants who have been appointed will be assigned to dif-

ferent portions of the field where copper is known to exist, and fully investigate all deposits. It is expected that this Bulletin will be of great benefit to prospectors, and also to the capitalist who desires exact information, and is seeking for an investment.

Mr. Aubury also contemplates issuing a special Bulletin (as soon as opportunity offers and he has the means at his command) on the "Fuel Values of California Oil," which will incorporate the advantages to be gained by its use, and the methods at present in vogue in different parts of the world, thus giving to those contemplating its use as a fuel the most economic methods to be applied.

Many important Bulletins, the editions of which are exhausted, but are still in constant demand, will be reprinted and issued in a short time. Among these might be mentioned Bulletin No. 2, "Methods of Mine Timbering"; No. 5, "Cyanide Process"; No. 6, "Gold Mill Practice in California"; No. 9, "Mine Drainage, Pumps, etc." The above will necessitate the printing of special editions, but owing to the long continued demand for them Mr. Aubury has ordered their publication as soon as possible.

In the Department for Determination of Minerals at the Bureau increased activity is observable in the interest being taken in the possibilities of mineral production in California. During the past week the average amount of minerals sent in for determination as to their economic value has increased from 7 daily to 11 daily. One specimen of interest was a copper blende from Mendocino County, carrying a large percentage of zinc.

Butte County.

(From Our Special Correspondent.)

Banner.—It is reported that this property, 5 miles northwest of Oroville, has been sold to Lynch & Kook, of Cherokee, who, it is understood, will close down the mine and dispose of the improvements. The English company which had control found it impossible to work at a profit. There is a 40-stamp mill on the property, with electrical, water and steam power plants, complete machine shops and barns, offices, etc.

Calaveras County.

(From Our Special Correspondent.)

Hermes.—The shaft on this property west of San Andreas is down 700 ft. and a 7-ft. vein of \$10 rock is said to have been developed. The mine is well equipped with a 10-stamp mill and other machinery.

Lightner.—The 40-stamp mill operated by electricity is crushing fair-grade ore and 107 men are employed. The May dividend amounted to \$10,255. The mine is located at Angels.

Oriole.—This company near Angels has appointed William Miller superintendent and the work of installing a mill will be pushed. Electricity is to take the place of steam for hoisting. A rich strike is reported in both the north and south drifts at the 400-ft. level. The ore is said to be very high grade.

Poorman.—This mine, 1½ miles east of Glencoe, is being thoroughly equipped. A large force of men is employed and work will soon begin on a heavy scale.

Union Copper.—The smelter on this property at Copperopolis has been destroyed by fire. The property was recently purchased by a son of Hetty Green, of New York City.

Inyo County.

(From Our Special Correspondent.)

O Be Joyful.—It is reported that this group of mines near Ballarat, in the Panamint District, has been sold to Mrs. E. B. Flint, of Los Angeles, for \$80,000.

Kern County.

(From Our Special Correspondent.)

The Sunset Railroad will be completed by the end of July. The grading is now 8 miles from Gosford, where the road branches off from the McKittrick Division of the Southern Pacific, and the rails are laid for 4 miles.

Butte Lode Mining and Milling Company.—Sixty-four tons of ore from the mines of this company at Randsburg, milled at the Red Dog Mill, yielded \$5,500 in bullion, most of the ore averaging over \$100 per ton. The company has an up-to-date hoisting plant.

King Solomon.—This group of mines, comprising the King Solomon, Hector, Magpie, Kootenai and Desert Queen, has been bonded to L. R. Garrett of Los Angeles, for one year. Work is to be carried on continuously and at the end of 4 months the first payment of \$1,000 is to be made. Percy McMahon is superintendent.

King Solomon Mining Company.—This company has started work at the eastern base of Mount Breckenridge, 4 miles south of Havilah, in a low range of hills. Men are grading a road 1½ miles from the stage road to the camp, and a 10-stamp mill is to be erected, the machinery and lumber for which have already been ordered. The company also owns the old Haight Mine, about 4 miles east of Havilah.

Merton Mining Company.—This company's shaft, 2 miles south of Randsburg, is down 400

ft. and is still sinking. A contract will be awarded soon for a 10-stamp mill. This company has completed plans for a 9-mile pipe line from Cuddaback Lake to its holdings near Randsburg. The company will put in a pump at the lake and will supply a number of mines as well as their new mill.

Occidental Water Company.—This company, which is laying a pipe line to Sunset to supply that district with water, has begun suit against C. Cohn and the Sunrise Oil and Mining Company to condemn right of way for the line. The company has almost completed the line, and if this suit is settled will be able to furnish water inside of a few weeks. The water rate is now very high, some of the companies having to pay \$500 a month.

San Joaquin Oil and Development Company.—This company's well No. 16 is called the greatest gusher in the Kern River fields. The well spouted at least 2,000 bbls. a day. The company now has 6 producing wells.

Yellow Aster Mining Company.—At the regular meeting of the stockholders the following officers were re-elected: John Singleton, president; Austin Burcham, vice-president, and Rose L. Burcham, secretary.

Mendocino County.

(From Our Special Correspondent.)

Copper Queen.—This promising copper property near Yorktown is reported to have been bonded to an English syndicate for \$150,000. It is said that a small smelter will be erected at once.

Nevada County.

(From Our Special Correspondent.)

Frank.—At this gravel mine in the Blue Tent District the new hoisting plant recently installed has started up and the working force has been increased.

Sacramento County.

(From Our Special Correspondent.)

Hardscrabble.—This old mine on Plump Ranch, near Blue Ravine, is to be opened up by several Oakland men. Paul Gray is superintendent.

Shasta County.

(From Our Special Correspondent.)

Balakala Mining Company.—This company has purchased from Ellis, Murray & Willett, a group of 32 claims located in the Flat Creek Mining District. Price \$4,000.

Berg & Montgomery.—Some rich rock is being shipped to the smelter from this claim in the Centerville District. The claim has produced considerable money.

Siskiyou County.

Downs Consolidated Gold Mining Company.—This company has been organized with a capital stock of \$300,000. It is the intention of the management to open up the quartz claim near the Klamath River, several miles south of the Oregon State line. Some very rich ore has been taken from this property.

Trinity County.

(From Our Special Correspondent.)

Sweepstake.—The survey party is now on the ground and probably will be engaged several months surveying the ditch to bring water to this mine. The company has placed an order for several thousand feet of iron pipe.

Zoellner.—This mine near Lewiston is being developed by tunnels on the 8-ft. ledge, which assays well in free gold. A Merrill roller mill has been ordered and will be installed in about 30 days. There are 3 other ledges on the property which will be developed immediately.

Tuolumne County.

(From Our Special Correspondent.)

Confidence.—The main shaft on this group of mines about 16 miles east of Sonora, is down over 800 ft. The vein is from 2 to 25 ft. wide, carrying free gold and high grade sulphurets. The property comprises the Independence, Confidence, Rough-boy and Little Jesse claims. Stopping is going on south from the Independence and north from the Confidence. The plant consists of a 20-stamp mill and concentrators and a Gates canvas plant. N. Carmichael is superintendent. The buildings are lighted by electricity.

Densmore.—The work on this property is progressing rapidly under the superintendency of L. R. Poundstone. The principal ore shoot is 6 ft. wide and 400 ft. long.

Kelley.—This claim at Columbia has been bonded to an Eastern syndicate for \$20,000. The veins are 30 and 48 in. wide respectively. Five shafts have been sunk, the deepest being 75 ft. The ore is high grade.

COLORADO.

Clear Creek County.

(From Our Special Correspondent.)

Crockett Mining Company.—A cross-cut is projected from the deeper workings to reach the ore-body found in the Stanley one year ago.

Gem Extension.—An option has been given on

this property and those adjoining with a view of forming a consolidation. This is the big vein cut in the Newhouse Tunnel one year ago, but work on which has been suspended because of a dispute as to the ownership at the great depth. The Gem, the Freighters' Friend and the Franklin-Silver Age are in the deal. It is said the capitalization will be \$2,000,000 if the deal is consummated.

Gum Tree Gold Mining and Milling Company.—The shaft at this mine, near Idaho Springs, has been unwatered and a new air compressor installed. Sinking of the shaft is to be resumed. John Owen is manager.

Empire Tunnel and Gold Mining Company.—This company has just put in a pipe line at Empire to drive machinery at the tunnel. The water is taken from the middle branch of Clear Creek.

Idaho Springs Milling, Mining and Reduction Company.—This company has just organized to erect a 100-ton concentrating plant at Idaho Springs. Construction has started.

Mendota.—This property at Silver Plume has reverted to the old estate and leasers are taking blocks of ground. Chicago people had an option and lease, but failed to meet their bills.

Monarch Tunnel, Mining, Transportation, Power and Development Company.—This company owns the Freeland Mine and also a group of over 200 claims, half of which are being patented. Manager McClelland was recently in Boston, where arrangements were completed for driving the tunnel. It is reported that Hendrie & Bolthoff, of Denver, are to have the contract for the machinery. The tunnel starts on Clear Creek, 3 miles west of Idaho Springs, and will be driven south 2 miles.

Murray.—H. C. Chase, of Boston, has started unwatering the shaft of this mine at Lawson. In the early days it was a heavy producer of silver ore, but has been idle for 10 years.

Shafter Mining Company.—Gardiner electric drills were recently put in this mine at Idaho Springs. Drifting to the east has encountered a body of mill ore 4 ft. wide and running over \$12 a ton. It is adapted to concentration, but the smelters at Denver are now buying this grade of ore and it nets about \$4 a ton. Contracts are being made with other mines to handle at a larger profit, and the Shafter will doubtless get the same rate.

Gilpin County.

(From Our Special Correspondent.)

Gilpin Ore Shipments.—For May the shipments of smelting and crude ores, concentrates and tailings from the Black Hawk depot of the Colorado & Southern Railroad figured up 319 cars or 5,894 tons.

Alps.—A 4-H. P. gasoline engine has been installed in the 800-ft. level for running a fan. J. Williams, Nevada, is manager.

Concrete.—Daily shipments average 3 cords or 25 tons, all milling ore, from the 1,200 and 1,300-ft. levels. S. V. Newell, Central City, is manager.

Crown Point & Virginia.—A 12-H. P. Witte gasoline engine has been installed for running the fan. Daily shipments average 40 to 50 tons of concentrating ores to the Silver Age Mill at Idaho Springs. W. H. Knowles, Idaho Springs, is manager.

Defiance.—A 12-H. P. Witte gasoline hoist has been installed for New Orleans parties. The shaft is to be sunk deeper at once. W. A. Robinson, Russell Gulch, is superintendent.

Eldorado.—Chicago men have taken a lease and bond on this property, are retimbering the 200-ft. shaft and are going to sink, and install machinery. William Shull, Russell Gulch, is manager.

Gilpin & Boston Mining and Milling Company.—President E. S. Moulton, of Boston, Mass., is looking after the property and it is given out that the shaft now down 430 ft. is to be sunk 400 ft. deeper and that negotiations are about completed for the erection of a concentrator at Golden to treat the ores. W. B. Ballantyne, Central City, is manager.

Hawley-Gardner.—Cripple Creek parties are reported to have taken a lease and bond of \$25,000 on this property. The shaft is 663 ft. deep.

Lombard.—The 15-stamp mill at Yankee, also owned by Dr. Abe Ashbaugh, of Central City, has started up and will be run on ores from the property of the same name.

Rollins Gold and Silver Mining Company.—The property in Independent and South Boulder Districts near Perigo, consisting of 28 lode claims, 3 tunnels, the new 30-stamp mill, 6 mill sites, 6 placer claims and some agricultural ground, was sold June 1st at sheriff's sale to J. E. Lightbourn for \$100,339 to satisfy judgments held by Thos. H. Potter, Frank Brainerd, S. H. Charles and Mary E. Warner, to the amount of \$89,261 and costs. A portion of the property is now being worked by the Tonawanda Leasing and Mining Company, and some by Jenkins & Company.

Lake County—Leadville.

(From Our Special Correspondent.)

A. M. W. Group.—About 10,000 tons from the A. M. W. mines and 6,000 tons from the Midas was the output for May. There is a steady increase from the sulphide workings of the Wolfstone territory, while over 100 tons a day of zinc concentrates averaging 48 to 50% are shipped to foreign markets.

Black Prince.—Local lessees have secured a 4-years' lease on the south half of this claim on Breece Hill. The new company is known as the La Belle Gold Mining Company and is to be incorporated at 250,000 shares. The old levels will be prospected and the shaft sunk to the lower contacts.

Caribou.—This mine, formerly the Bison, is one of the downtown mines which shows an immense iron shoot. In order to handle the tonnage from the ore blocked out a railroad switch is now being completed and the mine will produce steadily 200 tons a day.

Chippewa Mining Company.—This new Breece Hill producer has begun regular shipments of ore averaging \$25 from the 325-ft. level where in the bottom of a winze is a 4-ft. body of silicious ore. The shaft is to be sunk 100 ft. at once.

Fortune.—Lessees are shipping 25 tons a day of fine oxidized lead ore from the 620-ft. workings, which averages 1 oz. gold to the ton.

Gold Basin Mining Company.—This company has found its new shaft on the Big Four Claim troubled with quicksand and an entirely new shaft will be started further up-hill.

Homestake.—Geo. F. Campion has secured a 4-years' lease on this famous old property in Homestake District. Mrs. Catherine Archer, of Philadelphia, owns the mine.

Leasing Streets and Alleys.—Since the courts announced the probability of the city owning the mineral rights to streets and alleys, several propositions have been made looking toward leasing such ground. F. X. Hogan, of the Carbonate National Bank, has asked for the right to lease all the ground not now leased to mining companies and the mayor and aldermen have taken the matter under advisement.

Leadville Bismuth Production.—The Ballard and Penn mines are shipping steadily small quantities of bismuth ore, some going to St. Louis and a part to London. This will be the heaviest production of bismuth ore ever recorded in the State.

Mahala.—This property has been idle for some time and in the hands of a receiver. The District judge has ordered the receiver to advertise for lessees and the mine will be worked.

Matchless.—This property was sold some months ago to meet a judgment. Mrs. Tabor, widow of the ex-senator who owned it, has been vainly endeavoring to redeem, but she could not raise the funds until J. S. Stratton, whom Tabor once befriended, offered to loan her the money. She accepted and \$15,000 has been paid the Ransome Leasing Company, holders of the judgment. The mine reverts to Mrs. Tabor July 4th. She has secured the services of Jack Walsh as manager and will resume operations. After working on ore bodies opened in the upper levels, Mrs. Tabor intends sinking to the lower contacts. This will be the first time the lower ore horizon of that part of Fryer Hill has been explored.

New Leadville Home Mining Company.—The regular monthly dividend was declared June 20th. The monthly report shows that new ore bodies have been opened up in the Penrose ground. The output for May was in the neighborhood of 11,000 tons.

Niles Augusta.—Lessees are carrying on exploration work at the 225-ft. level, where a short time ago some marvelously rich silver ore was encountered. The new work is in virgin territory.

Northern.—About 500 tons a month of iron ore is shipped from the upper level. The 580 ft. shaft is to be sunk deeper at once.

Penn Mining Company.—About 100 tons of good grade ore are shipped daily from Nos. 1 and 3 shafts. A new strike of oxidized silicious ore has just been made at the 140-ft. level of No. 3 in virgin ground. It gives an average of 1½ oz. gold to the ton.

Resurrection Gold Mining Company.—A strike has been made in No. 1 shaft of 30 ft. of sulphide ore. The company is preparing for a heavy tonnage.

Small Hopes Mining Company.—In addition to producing 150 tons a day from its Marian workings, the company has just sub-leased blocks of ground north of the Emmet to Harris & Company; a block on the 800-ft. level of the Emmet to Frisbie & Company; part of the Gonobrod Claim to Wallace Colby and the Denman Shaft on the Forest City to Dr. McKee et al.

Weston Pass Section.—The Ruby, Cincinnati and Colin Campbell claims, all of which have made a good showing in the past from a lead ore shoot, are to start up this week, and pros-

pecting will be pushed. Some very fine ore was shipped last year from the Ruby.

Pitkin County.

Argentium-Juniata.—The report of this Aspen Company for the quarter ending March 31st states that the ore in the upper level is exhausted, and operations have resulted in a loss of \$50,000. The directors have borrowed \$40,000. All the ore produced at present comes from a shoot opened in May, and has already netted the company about \$25,000. Further development is expected to liquidate the indebtedness and return a profit. The report of the general manager shows 950 ft. of development work accomplished during the 3 months, about 750 ft. of which was done in the 8th and 10th levels. Net returns from ore shipped amount to \$34,361, the average value for the lease ores being \$9.92 per ton, of the concentrates \$46.11 and of the regular \$9.02. Net royalties from the two leases, \$4,503.

The cost of operating the joint Mollie Gibson-Argentium-Juniata mill was \$1.38½ per ton.

Summit County.

(From Our Special Correspondent.)

Boston Gold Copper Smelting Company.—This company, which is running about 300 tons of \$8 to \$12 ore daily through its two pyritic furnaces at Leadville, has purchased a large interest in the Robinson Mine at Robinson, besides the Washington, Hercules and other property. Plans are completed for the erection of 3 pyritic furnaces with a capacity of 600 tons per day. The Leadville plant will also have that capacity in a month or so, when the No. 1 furnace is completed. It is estimated that the old Robinson Mine alone can furnish 200 tons of \$8 ore daily. A short distance from the smelter site is limestone, whence the necessary flux for both plants will be obtained. D. T. Parker is the superintendent, with headquarters at Leadville. The Robinson plant will handle ore from the vicinity of Breckenridge and Dillon and from some points in Park County, and materially aid in the development of mines in tributary mining camps.

Teller County—Cripple Creek.

(From Our Special Correspondent.)

Rumored Mill Combine.—It is rumored that a combination has been formed including the Colorado, Philadelphia and Standard mills at Colorado City, controlled by the Tutt-Penrose people; the plant of the Union Gold Extraction Company at Florence, controlled by J. T. Milliken and associates and the Metallic Extraction Company's plant at Florence, controlled by W. K. Gillett and associates of Denver. The rumors have not been verified. It is thought that the trust is being formed either for fighting or for selling out to the smelter combine. There has been considerable competition between the mills and smelters in treating the low-grade ores.

Doctor-Jack Pot.—The Morning Glory shaft is now dry and the drift at the 700-ft. level to connect with the Doctor vein is started. It will probably take 90 days to reach the ore. The Doctor-Jack Pot now works through the Morning Glory shaft.

Gold Exploration Company.—C. C. Chapin, promoter of this company, which is working the Ophelia Tunnel, and several of the stockholders arrived in Cripple Creek from Chicago on June 6th. Several days will be spent examining the tunnel. Work has been resumed; it is understood that the tunnel will be driven for its objective point, the 1,200-ft. level of the Victor Mine.

Granite.—Work has been resumed. It is reported that from 200 to 300 men will be employed. The property is owned by the Moffat Syndicate and is one of its few interests here. It lies between the Ajax and Portland.

Mabel M.—Electric drills are now in operation. The mine has been producing from 10 to 12 tons of ore per day, and, it is thought, will soon be a dividend payer.

Modoc Mining and Milling Company.—The directors met in Pueblo on June 6th inst. and declared the regular monthly dividend of \$5,000. It is said that the company has sufficient funds on hand to pay for the new shaft and a year's dividends beside.

Portland Gold Mining Company.—The Portland Mine has resumed work with practically a full force. President Burns superintended the opening of the mine and delivered a short address to the men. The settlement was practically a victory for the miner's union. Rumors are still rife of a sale of the property in spite of the fact that they cannot be verified.

Sedan Gold Mining Company.—The proving up of the apex is about finished and the suit can now be called at any time. The vein has been opened from the prospect shaft on the north end and stoped to the surface. Those interested in Galena Hill hope soon to see the suit ended and mining resumed.

Solitaire Gold Mining Company.—At a meeting of the directors in Colorado Springs on June 7th, W. S. Nichols, president of the Mary McKinney, was elected president, and J. W.

Pring a director, vice-president and general manager. The board of directors is now H. H. Barbee, J. W. Pring, W. S. Nichols, T. McDonald and A. B. Risk. Beside a lease on the Cripple Creek-Columbia, the company owns the Solitaire and Comstock Lodes on Raven Hill, and considerable property on Carbonate Hill, including the Elkhorn Mine.

Touraine Gold Mining Company.—The affairs of this company have just ended by the payment of a dividend of \$8,619 and the calling in of certificates, this amount along with the \$77,000 paid last year makes a total of \$85,816.75 derived from the sale of its property to W. S. Stratton.

IDAHO.

Boise County.

Twin Sisters.—This mine, near Centerville, is being equipped with a 5-stamp mill. It is owned by Pittsburg, Pa., parties, James Hutchinson of the Trade Dollar Company being general manager. Development has been going on for 3 years under the superintendency of Edward F. Elaine, and has reached a vertical depth of 250 ft.

Shoshone County.

Patrick Clark vs. Buffalo Hump Mining Company and the Empire State-Idaho Mining and Development Company; Patrick Clark, of Spokane, and a group of associates have brought suit against Charles Sweeney, F. R. Culbertson and others.

Clark and associates charge Sweeney and Culbertson with defrauding them of 2 rich mining claims in the Coeur d'Alenes. They sue for the recovery of these claims, for a receivership thereof, for an injunction restraining defendants from extracting ore from the disputed ground and for an accounting for ore already extracted. The disputed claims adjoin the Tiger-Poorman Mine at Burke. Clark and the other complainants allege that Sweeney and Culbertson unlawfully explored the disputed ground by means of diamond drills, operated at a depth of 1,600 ft.; that they located a great ore shute, broke into it, extracted ore and then bought the claims for \$4,000 on the alleged false representation that the ground was of little value.

Washington County.

Weiser Smelter.—The work of excavating has begun and a large force of men and teams are grading and preparing for the 1½ miles of branch railway and side tracks. The plans call for a large plant; first preparations are to be made for reduction of 100 tons of ore daily. The capacity is to be increased as necessity arises. It is to be a regulation water jacket furnace, capable of reducing all kinds of ore. The first stack installed will probably be to handle the copper ores from the Seven Devils. The smelter will be located exactly 10 miles from Weiser.

MICHIGAN.

Copper—Houghton County.

Quincy Mining Company.—At the annual meeting the following Board of Directors were elected: Thomas H. Mason, Charles J. Devereux, Isaac H. Meserue, Cleveland H. Dodge, Walter P. Bliss, Wm. R. Todd and Thos. R. Dunstan.

(From Our Special Correspondent.)

Arcadian.—The drill hole on the St. Mary's is now down 450 ft. The 2 shafts on the Mesnard epidote are each down 300 ft. No. 1 shaft is shipping 3 cars of rock per day; 6 drills are used. No. 2 shaft, 1,800 ft. to the south, ships 4 cars of rock per day and 7 drills are used. The lode in both shafts is 9 ft. wide. Eighty-six men are employed on this branch of the mine, 72 of whom work underground.

Atlantic.—It is expected that exploration for the location of the Baltic lode on Section 16 will begin soon.

Baltic.—The output for May was 130 tons of mineral. Many surface improvements are under way. Work will begin on a coal trestle to hold 5,000 tons of coal.

Calumet & Hecla.—This company has placed an order with the E. P. Allis Company, of Milwaukee, Wis., for a twin vertical steep compound engine with cylinders 17 by 48 in. and 40 by 48 in.

Franklin.—The north shaft at the Junior is down 1,000 ft. It is opened on the Allouez conglomerate.

Isle Royale.—It is said that the rock runs slightly over 1% copper.

Quincy.—No 8 shaft on the Mesnard epidote is now about 1,000 ft. deep. It has been connected at each level with a winze 100 ft. north to improve the air circulation. One drill is used in shaft, 1 in winze and 1 in drifting; 3 cars of rock are sent to the mill each day and 32 men are employed.

Rhode Island.—The equipment for the machine shops from Manning, Maxwell & Moore, of Chicago, is in place. It consists of an 18 by 12-in. lathe, 24-in. crank shaper, 1½-in. National bolt cutter and a 24-in. sliding head drill press. Sinking is continued to No. 2 shaft. When a depth of 600 ft. has been reached a cross-cut

will be run to the east for the Allouez conglomerate.

Copper—Keweenaw County.
(From Our Special Correspondent.)

Mohawk.—Work will start soon on new rock and shaft houses at Nos. 1 and 2, each equipped with crushers. An addition to No. 4 shaft house will be built and a steam hammer will be put in No. 3.

Copper—Ontonagon County.
(From Our Special Correspondent.)

Belt Consolidated.—This property has been optioned to Reginald C. Pryor, of Houghton, who has overhauled the air compressor and will start a small force exploring.

Iron—Marquette Range.

Champion.—What is called the most important discovery of ore on the range for some years has just been made at Champion, near the old Parson's Mine, the place of the original discovery of the Champion Mine. The ore is magnetic and very high grade, running a trifle over 70% iron. The vein outcrops within 6 ft. of the surface. According to Superintendent Walter Fitch, a shaft will be sunk immediately, and drifting started. The Champion is the deepest iron mine in the United States, the No. 5 shaft being down 1,900 ft. The company intends to explore all its lands, comprising 15,000 acres. The North Mine is showing up well.

MINNESOTA.

(From Our Special Correspondent.)

There was a shortage of shipments to June 1st of about 1,050,000 gross tons, the total being less than 800,000 tons for the season. The United States Steel Corporation is understood to have chartered about 4,500,000 tons of outside room at from 75 to 80c. a ton. Shipments are now very heavy.

The Eastern Minnesota Railway has bought of A. M. Miller for \$250,000 3,200 acres of undeveloped lands, most of which are along the ore formation in T. 59, R. 17, T. 58, R. 18, and T. 59 R. 18. The lands in the first-named towns are all in the south tier of sections and surround the tracts owned by John M. Thomas, the Duluth furnace man. Those in T. 58, R. 18, may be largely outside the probable ore zone. This road has now some 60,000 acres of land along the Mesabi either owned directly or under option for exploration. It has 6 diamond drills besides several under contract and is finding considerable ore. It is not the policy of the road to mine ore, but to control tonnage, and it is using its lands to bring traffic from outside concerns.

Minnesota Iron Company.—At the annual meeting T. F. Cole was elected president and numerous minor changes were made.

Iron—Mesabi Range.

(From Our Special Correspondent.)

A deposit of ore, said to be large, is reported found in section 3, T. 58, R. 15, on lands owned by D. T. Adams and E. M. Fowler. It is under lease to Adams and McInnis. Three holes are in ore, one of them to a depth of about 110 ft. There is about 40 ft. of surface.

Messrs. Kinney, Hawkins, Stevenson and Crosby have made a large find of ore in section 30, T. 56, R. 22. They think it is a bessemer property. The fee is in E. M. Fowler.

Explorations are starting on the Sibley & Bearer lands in the w 1/2 of the n e 1/4 of section 22, T. 58 R. 20. One drill is at work and a second will be started.

American Mining Company.—This company's Sauntry Mine is shipping heavily, far more than any time in its history. Two shovels are loading and 2 are stripping. The mine will be making a tremendous output soon.

Biwabik Mining Company.—This company is now shipping about 4,000 tons a day, and will not produce over 500,000 tons during the year, against 926,000 last year. One shovel is in ore. The company is fitting up pumps in the Cincinnati shaft and will pump the mine from there.

Colonial Iron Company.—Contracts have been let for stripping the Hale and Kanawha Mines. At the Hale there were 85 ft. of water pumped out. The Kanawha is shipping its stockpile but no ore is being hoisted at present; about 200 men will be employed at the 2 mines all summer.

Duluth.—This mine has sunk a second shaft and is equipped for large operations. As soon as the stocked ore, 25,000 tons, is out of the way hoisting will start. The old shaft will be abandoned for the summer. Some 100 men are employed.

Pickands, Mather & Company.—The Elba Mine is shipping from stock. The company has taken an option on land in section 15, T. 58, R. 19, offering 25c. a ton royalty and to explore each 40.

Roberts Mining Company.—This mine is sinking a second shaft. About 1,400 tons are being shipped daily from shaft and stock.

Sweeney.—This exploration was not taken by the United States Steel for the Union Steel Com-

pany, of Pittsburg, has the tract, and will organize a mining corporation to handle the land, together with other tracts recently secured on the range. This tract will be mined by steam shovel, as it contains a considerable body of ore with an average of but 11 ft. of surface over the ore. Several holes have been found 65 or over of merchantable ore. It covers a portion of the center of the s w of section 3, T. 57, R. A. 21. The lease is for this 40 and that adjoining in section 4.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—Buyers were slow early last week to make offers on big lots of the finest grade ores, and some sold at \$27 per ton, but the refusal of heavy producers to sell 60% ore at that price brought the price up to \$27.50, at which figures the output of the King Jack on the ground of the United Zinc Company, in Chitwood Hollow, sold as well as some large lots from other mines. There were heavy sales from \$27 per ton down to \$14 per ton for the silicate at Aurora. Lead was steady all the week at \$23.50 per 1,000 lbs.

During the corresponding week last year the best grade of zinc ore sold for \$30 per ton and lead at \$21 per 1,000 lbs. The sales were less than last week by 99,190 lbs. of lead and 1,661,210 lbs. of zinc, and the value was less by \$9,358. For the first 23 weeks last year the sales were less by 2,290,750 lbs. of lead and 9,036,960 lbs. of zinc, but the value was greater by \$523,567. Compared with the previous week the lead sales were less by 337,210 lbs., the zinc sales greater by 1,344,340 lbs., and the value greater by \$11,556.

Following is the turn-in by camps of the Joplin District for the week ending June 8th:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	3,654,320	321,370	\$58,220
Galena-Empire	1,311,120	237,730	20,565
Cartersville	2,182,560	419,010	33,750
Webb City	461,530	22,520	5,601
Oronogo	524,450	60,630	7,999
Aurora	750,740	34,930	9,076
Zincite	357,010	49,490	4,463
Duenweg	283,140	54,990	4,510
Granby	340,000	47,000	4,104
Carl Junction	235,040	53,570	3,056
Spurgeon	161,160	.....	3,056
Neck City	201,730	.....	2,283
Carthage	191,330	.....	2,487
Cave Springs	164,030	13,450	2,281
Stotts City	85,860	.....	1,116
Sherwood	48,060	.....	625
Springfield	38,000	.....	494
Total	10,990,140	1,264,700	\$164,289
Total 23 weeks	234,070,900	29,369,490	\$3,492,236
Zinc value for week, \$132,601; lead, \$31,688; zinc value 23 weeks, \$2,827,392; lead, \$664,844.			

MONTANA.

Beaverhead County.

(From Our Special Correspondent.)

Wake Up Jim.—This Lyon City property belonging to Geo. Tong and the Largey Estate, is to be worked under lease and bond by people identified with the Greenwood Mining and Milling Company. The ore will be put through that company's concentrator and the tailings will be treated by the pneumatic cyanide process.

Broadwater County.

(From Our Special Correspondent.)

Alameda and Dexter.—J. M. Ralls has sold an interest in these properties to Butte men, who will develop them for copper.

Jubilee Placer.—The English owners of these diggings have leased the ground to local men, who are working a giant, taking a pipe head from Crow Creek.

Keystone.—William Jewell, of Radersburg, bought this property at the recent sale held by the administrator of the Charles Wells Estate.

Carbon County.

Work has been resumed at Senator W. A. Clark's coal mines at Bridger, which were closed for several weeks because of a strike. After the suspension the Miners' Union dissolved and surrendered its charter, most of the members leaving Bridger. The new men have gone to work at 75c. per ton, instead of \$1, as formerly paid.

Jefferson County.

(From Our Special Correspondent.)

Blue Bird.—A body of shipping ore was found in the new shaft about 40 ft. from the surface by Jenkins Brothers, who have a lease and bond for \$30,000. This property is 4 miles west of Wilkes and is owned by David Mathews.

Penn Yan.—A new ore body is being opened on the west end of this property by Edwards Brothers, who are working under a bond and lease. At 30 ft. from surface they encountered 4 ft. of oxidized ore, which samples \$42.50 per ton.

Lewis & Clarke County.

(From Our Special Correspondent.)

Buckeye.—The administrator of the real estate has sold this property, 9 miles above Rimini. The price is said to be \$30,000, which includes the concentrator.

Winscott.—This property, 3 miles south of

Helena, has been sold by the Winscott Brothers to John A. Rowand. A 10-stamp mill has been pounding away for 10 years on ore which is simply quarried, it being a large body of low-grade free milling rock. It is understood that Mr. Rowand will increase the mill to at least 40 stamps.

Silver Bow County.

Reports of copper veins in the hills just east of Butte has caused some local excitement and hundreds of claims have been made.

Franklin Farrell, of Ansonia, Conn., has recently bought several hundred acres. The Anaconda, Boston & Montana, Butte & Boston, Heinze and Clark companies are reported scrambling for ground.

George H. Corey, of New York City, has been taking testimony regarding the Delaware Surety Company, a corporation which offered to go on the \$350,000 bond demanded by the Montana courts of the Heinzes. The Boston & Montana objected to the bond and its council presented testimony to show that the Delaware Company was not a proper concern to go on the bond.

Amalgamated Copper Company.—The suit of C. O. Geer against this company was called before Vice-Chancellor Stevens at Newark, N. J., June 10th. The hearing was adjourned to June 13th. Mr. Taylor, representing the plaintiffs, asked for a week or longer on account of the illness of Mr. McGee, his associate counsel.

The proceedings brought in the Supreme Court of Massachusetts by the C. H. Venner Company against Messrs. Kidder, Peabody & Company and John MacGinnis and others, also against the same banking firm and the resident directors of the Boston & Montana Copper Company, asking for temporary injunctions to prevent the carrying out of the proposed plan of exchange of Montana stock deposited with Kidder, Peabody & Company for Amalgamated Copper stock, were argued before Judge Knowlton in Boston on June 11th, and in each case the prayer was refused.

Montana & Great Northern Railway Company.—This company has been organized by James N. Hill, son of J. J. Hill; M. D. Grover, head counsel for the Great Northern; G. T. Ross, superintendent of the Montana Central, and other Great Northern people. The capital is \$10,000,000, and the principal office is at Great Falls. The articles of incorporation state that a line of railroad will be built from Jennings, on the main line of the Great Northern, north into British Columbia, from Kalispell southwest to a junction with the Northern Pacific, and from Chester north to a point near Sweetgrass Hills.

Parrot Mining Company.—Owing to the injunction against the company, brought by Daniel Lamm and John MacGinnis, election of officers had to go over until July 2d, when it is expected the affairs of the company will be settled, at least so far as the injunction goes.

Snow Bird.—Judge Clancy has decided that the Anaconda Company is not entitled to an injunction in the suit brought to restrain F. August Heinze from mining in this claim. In handing down his decision the judge stated that the suit was without merit, as the title to the ore bodies in question had been decided in the decision of the Pennsylvania suit tried before him more than a year ago. The Snow Bird lies between and connects the Pennsylvania and Rarus properties. The Anaconda Company owns it, and Heinze makes use of it to work the Pennsylvania through the Rarus.

NEVADA.

Storey County—Comstock Lode.

Crown Point Mining Company.—At the annual meeting in San Francisco the following directors were unanimously elected: C. L. McCoy, Thomas Anderson, James Newlands, Jr., J. P. Martin and A. F. Coffin. C. L. McCoy was elected president, Thomas Anderson vice-president, James Newlands, Sr., secretary and W. E. Sharon superintendent. As soon as the new electric hoisting plant at the Belcher shaft is in regular operation exploratory work will be resumed in the Crown Point Mine.

Segregated Belcher & Mides Consolidated Mining Company.—The stock represented at the annual meeting in San Francisco was 70,400 shares of 89,710 shares outstanding, 10,290 being in the company's treasury. Directors elected for the ensuing year were: Thomas Anderson, Herman Zadig, J. P. Martin, James Newlands, Jr., and George Searle. Thomas Anderson was elected president, Herman Zadig vice-president, E. B. Holmes secretary and W. E. Sharon superintendent. No work was done in the mine during the past fiscal year.

PENNSYLVANIA.

Anthracite Coal.

Governor Stone has signed the Garner mine inspectors' bill, which provides for the election of mine inspectors and increases the number from 8 to 16. It is said that the corporations will test the constitutionality of the act on constitutional grounds, as the law states that before a citizen can be a candidate for mine inspector he must pass an examination and receive a mark of not less than 90%.

Jermyn.—These mines at Pittston are idle today, by a general strike. One thousand miners are affected. The men demand semi-monthly pay and the company refused the strikers' demands.

Luke Fidler.—The fire which broke out in No. 4 slope of this colliery at Shamokin on June 8th ignited several large bodies of gas, causing the flames to spread so rapidly that the fire is now beyond control. The officials had all the mules hoisted from the shaft and Coal Run Creek was turned into the slope. It will be several months before the shaft can resume. One thousand men and boys are idle. Several boys were burned and injured while fighting the fire.

Bituminous Coal.

Port Royal.—At No. 2 shaft of the Pittsburg Coal and Coke Company at Port Royal an explosion of fire damp on the evening of June 10th entombed or instantly killed 5 men who were cleaning up an airway which was obstructed by a fall of roof, due to a squeeze. A searching party, composed of William McCune, superintendent of the Pittsburg Coal Company's mines at Port Royal, and a stockholder in the company, and nine others, including Superintendent William Allison, went down shaft No. 2. Nothing was heard of them, and in an hour another rescuing force, led by James Bailey and William Williams, went down. They groped their way about 200 ft. when two explosions were heard in rapid succession. The shaft lamps in the hands of Bailey and Williams were blown 50 ft. away and thrown violently to the ground. Both hurried back to the shaft and were drawn up. The following morning another party went in, composed of Mine Inspector Bernard Callahan, Superintendent John Reese, Fire Boss William McFee, Fire Boss Daniel McCullough, Fire Boss Peter McLindon and Pit Boss Robert McKinney. They recovered the body of one victim. Another explosion occurred and though none of the men in the second party were killed, Inspector Callahan and Fire Boss McFee were dangerously burned. All hope for the entombed men is abandoned.

It is rumored that the men clearing up the airway used naked lamps. According to a Pittsburg paper the mine has been considered dangerous on account of the poor appliances for forcing air into the shaft. There have been many discussions about improvements in this direction, but nothing had been done. There was a similar explosion in the mine 7 years ago by which one man was killed.

The mine runs under the Youghiogheny River and has 2 shafts about 200 ft. deep.

SOUTH DAKOTA.

Lawrence County.

(From Our Special Correspondent.)

Belt Development Company.—This company is down 200 ft. in its shaft south of Leod.

Cleopatra Mining Company.—At the annual meeting at Aberdeen, the following directors were elected: J. M. Lawson, Aberdeen; R. A. Mather, Groton; R. B. Hughes, Spearfish; R. L. Walter, Huron; George J. Jenkins, all of South Dakota. The officers are: J. M. Lawson, president; R. A. Mather, vice-president; R. B. Hughes, secretary, treasurer and general manager. The company controls a block of ground on Squaw Creek, and is treating about 50 tons of ore daily in a cyanide plant.

Hidden Fortune Company.—An order has been placed with Frazer & Chalmers, Chicago, for a large stamp mill and cyanide plant, to be erected at Belle Fourche, where 80 acres of ground have been purchased for a mill-site. The stamps are to weigh 1,250 lbs. each. At the ground north of Lead, a tunnel has been started near the mouth of Poorman Gulch. It will be about 3,000 ft. long and 8 by 10 ft. The machinery for the hoist will soon arrive.

Iron Hill Company.—This company has elected the following directors: Martin Chapman, Henry Harwood, Lead; John Baggaley and John Mauss, Deadwood, and H. T. Cooper, of White-wood. The officers are: President, Martin Chapman; vice-president, H. T. Cooper; secretary and general manager, John Baggaley.

St. Elmo Company.—At the annual meeting in Deadwood, directors were elected as follows: D. M. Gillette, G. V. Ayers and R. H. Graves, Deadwood; J. C. McDonald, Custer and Charles Marsh, Omaha. Officers elected are: President, D. M. Gillette; vice-president, J. C. McDonald; secretary, G. V. Ayers; treasurer, R. H. Graves. It is the intention of the company to work again the St. Elmo Mine, east of Oreville.

Pennington County

(From an Occasional Correspondent.)

Hildebrand Mill.—This stamp mill and cyanide annex has been leased by Central City parties and it will start up soon.

Globe Mining Company.—This company has been organized to erect a cyanide plant to work ore near Lead. Geo. Glover, of Lead; C. M. Woodbridge, Omaha; F. H. Woodbridge, Alliance, Neb.; W. F. Dutton, Red Oak, Ia., are

the principals. The company is capitalized at 1,000,000 shares, par value \$1.

National Mining and Smelting Company.—This company says it will begin immediately the erection of a large smelter. Rapid City business men have offered a mill site and water right as a bonus. The company has resumed work at the Bullion Mine in Bear Butte District. Both the Burlington and the Fremont, Elkhorn & Missouri Valley railway companies are building narrow gauge railroads from Deadwood into the camp. The roads will pass through Two Bit, Strawberry and down Bear Butte Creek to Galena. The Elkhorn Company has the contract for hauling the ore from the Bullion.

Oro Fino.—This old mine in Strawberry Gulch may be opened by the Golden Reward Company. The mine has galena ore, which can be used at the smelter.

Spearfish Company.—The cyanide plant of this company at Ragged Top is now treating 125 tons of ore daily, an increase of 25 tons. The last clean-up was about 252 oz.

TEXAS.

Llano County.

Iron Mountain.—This deposit of iron ore 12 miles northwest of Llano and 9 miles north of the Llano River was sold recently by R. H. Downman, of New Orleans, to Kruse & Travers, of Chicago. The outcroppings of black magnetic ore from Iron Mountain are said to be of fine quality. It overlies the footwall of the vein. The ore outcropping protrudes above the surrounding land 10 ft. and is about 22 ft. wide and 150 ft. long.

UTAH.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—During the week ending June 8th there were shipped from the Tintic district 60 cars of ore, 2 cars of concentrates and 1 bar of bullion, apportioned as follows: Centennial-Eureka, 13 cars; Bullion-Beck, 9 cars; Gemini, 16 cars; Boss Tweed, 1 car; Carissa, 4 cars; Tesora, 3 cars; Mammoth, 9 cars; Lower Mammoth, 5 cars; Mammoth Mill, 2 cars concentrates and 1 bar of bullion.

Boss Tweed.—The control has passed into the hands of the Snyder-Kimberly syndicate. A new board was elected. The lease now in force with Wm. Gundry may be cancelled and a large force put on development work.

Piute County.

(From Our Special Correspondent.)

Annie Laurie Mining Company.—This company has marketed through John C. Griffith, of Salt Lake, 3 bars of silver-gold bullion, which netted about \$13,000. The new water power plant for generating electricity for the mill is in use, almost doubling the capacity. More cyanide tanks are to be added.

Salt Lake County.

(From Our Special Correspondent.)

Bingham Consolidated.—President Corwin has been held with reference to the deal involving the Dalton & Lark and adjoining properties. P. L. Kimberley, of Sharon, Pa., has also been in Salt Lake and has been elected a director in the new company. It is said that upon Mr. Kimberley's arrival in Boston the formal transfer of the Dalton & Lark properties will be made and new stock in the Bingham Consolidated issued.

Summit County.

(From Our Special Correspondent.)

Park City Shipments.—During the week ending June 8th there were marketed through the Mackintosh Sampler 3,910,200 lbs. of ore and concentrates, distributed as follows: From the Silver King, 679,310 lbs. concentrates and 359,880 lbs. crude ore; from the Ontario, 945,380 lbs. crude; from the Quincy, 759,070 lbs. crude ore; from the Daly-West, 464,290 lbs. crude ore and 490,760 lbs. concentrates; from the Anchor, 211,510 lbs. concentrates.

WASHINGTON.

Ferry County—Republic.

(From Our Special Correspondent.)

Ben Hur.—Ore is still being stoped on the south pay shoot, above the 230-ft. level. The first shipment to the Republic Mill ran about 1 oz. of gold and 7 oz. silver to the ton. The charge for treatment was about 1/2 the market value, exclusive of mining and haulage. Another lot of 100 tons has been run through the mill from the first-class ore dump, but returns have not been received. A third lot of ore is being sent to the mill from the second-class dump.

Black Tail.—After shipping two lots of ore to the mill, it was resolved to close down to await railroad transportation to the smelters. Samples show that the ore runs 7 oz. silver to 1 of gold.

California.—The 3-ft. streak of ore on the 300-ft. level is of average quality. Ore shipments are discontinued and ore is piled awaiting cheap railroad transportation rates.

FOREIGN MINING NEWS.

AFRICA.

Transvaal.

The Chamber of Mines of Johannesburg cables that the gold output for May, since the mines started working again on the Witwatersrand, amounted to 7,478 oz. of fine gold. The Chamber adds that the declarations of the output will always be made in ounces of fine gold.

Geldenhuis Deep, Limited.—This company informs us that a dispatch has been received from the head office at Johannesburg, to the following effect: "Commenced crushing May 28th; 30 stamps running; will be increased to 50 in the course of a few days, as soon as necessary labor received."

MEXICO.

Chihuahua.

San Pedro.—This mine at Parral was recently sold by W. C. Beckman and Alvino Garcia to H. Parker, the consideration being \$50,000. The mine is located in Minas Nuevas District, and has been laying idle for a number of years. Machinery has been ordered and the work is to start at once.

NEW ZEALAND.

The Mines Department reports exports and approximate production of gold and silver as below, for March and the three months ending March 31st, in ounces:

	Gold.		Silver.	
	1900.	1901.	1900.	1901.
March	39,165	40,002	29,224	35,208
Three months.....	95,923	115,299	72,682	107,103

The increase in gold this year was 19,376 oz., or 20.2%. Nearly all the mining districts showed gains this year. The silver comes chiefly from the Hauraki District.

COAL TRADE REVIEW.

New York.

June 14.

Anthracite.

The hard coal trade is showing surprising strength, though as has been noted in this column, the real test of the plans formulated this year will not come until late in July or in August. At present demand is holding up well and production is liberal. The official estimate of the output for May is 4,674,707 tons as compared with 3,685,013 tons for April and 3,884,000 tons for May, 1900, showing an increase of 1,117,007 tons. It is altogether likely that as demand falls off the companies will stock up to get the full advantage of higher prices in the fall. There is nothing to show that there will be any weakness of prices; in fact, it is as certain as any trade outlook can be that discounts will be rigidly maintained.

Trade in the Lake Superior country is quiet. Arrivals at the head of the Lakes have not been heavy, though coal is now arriving at a normal rate. Buyers at upper lake points are not ordering much, evidently not understanding that the present selling plan is in firmer hands than former plans. They will understand later. In Chicago territory coal users are not buying much, but dealers are filling their yards. But very little coal is accumulating on the docks, the movement to country yards being heavy. At lower lake points consumers are buying much more actively than is usual at this season. The freight rate from Buffalo to the head of Lake Superior is down to 35c. and may go lower, while the Chicago rate of 40c. is likely to be cut. At seaboard points demand continues good and deliveries are slow. The June prices for free-burning white ash coal f. o. b. New York Harbor ports are: Broken, \$3.70; egg, \$3.95; nut and stove, \$4.20.

Bituminous.

The Atlantic seaboard soft coal trade is just about as dull as it has been for the past few weeks and the anticipated improvement does not seem likely to materialize as soon as expected. Labor troubles in certain of the consuming territories are affecting consumption more strongly. The railroads by their prompt action on coal lying any length of time in cars at tidewater are compelling producers to restrict outputs.

In the far East there are now fewer vessels unloading and arrivals are not heavy, the movement of coal to this territory being mostly on contracts, though there is some coal wanted for immediate needs. Along the Sound the machinists' strike continues to restrict consumption. Trade at Long Island ports is fair. All rail trade is also of fair volume, though labor troubles affect demand.

Transportation from mines to tidewater shipping ports is pretty prompt, cars coming through nearly on schedule. Car supply at the collieries is regulated by the despatch each shipper shows in providing vessel tonnage at tidewater.

In the coastwise vessel market large vessels are in better supply, while small craft are rather scarce. Vessel rates from Philadelphia are, if anything, a little lower.

Birmingham, Ala. June 10.

(From Our Special Correspondent.)

There is marked dulness in the coal market. Some of the mines are only getting in three days a week work, while in many four and five days are considered remarkably good. These conditions do not promise to improve for several weeks to come. The miners in Walker, Marion and Winston counties, forming a sub-district of the United Mine Workers of America, held their convention in Jasper, during the past week. Two conferences were held with the operators, but no agreement could be arrived at. The miners demanded a flat basis, from 50 to 65c. per ton, according to the conditions of the coal. They further demanded that 8 hours shall constitute a day's work and that the companies shall pay off twice a month. The operators offered the miners the same contract they now have. It was decided to hold another convention the first Monday after the Alabama District No. 20, United Mine Workers of America, had made a contract with operators in other parts of the State. The operators' association of Alabama will meet in Birmingham this week to discuss the situation preceding the convention of the miners of the State organization which has been called to meet in Birmingham on the 17th inst. It is understood that the miners will ask for an advance of 5c. on the minimum price in the present scale. They will further ask for eight hours to constitute a day's work, and for semi-monthly pay days. The operators will ask a reduction on the present scale.

Chicago, June 11.

(From Our Special Correspondent.)

Anthracite Coal.—Anthracite shippers are inclined to the opinion that the demand for anthracite coal has improved somewhat during the past week, the inquiry from out of town having resulted in business. The city trade is quiet as yet, but certainly more coal is being disposed of from week to week. The prevailing circular with its lessened discount and the fact that as each month goes a decrease in the discount is made is doubtless tending to make trade. Anthracite coal prices are: for grate, \$5.75; egg, stove and chestnut, \$6.

Bituminous Coal.—Sales drag along in a weary kind of way, there being no apparent improvement. For the time being the demand is almost wholly for actual present requirements, but shippers in general are looking forward to a continuation of the prosperity among manufacturers and railroads and hope that as the summer advances many large concerns will jump in and buy. Prices are very unsteady and the consumer continues to buy his coal almost at his own price.

Cleveland, O. June 11.

(From Our Special Correspondent.)

A peculiar situation obtains in lake shipping circles which is simply swarming the docks of the coal shippers with tonnage and is consequently having a weakening effect upon the lake rates. The vessel men who accepted 80c. a ton for the movement of ore down the lakes are compelled to carry coal up to pay a proper dividend upon the capital invested in the boats. This is supplying the coal trade with more tonnage, as about all owners have more or less contract ore this season. Then the condition of the lower lake docks makes it imperative that something be done to relieve the stress upon them, hence all owners have resorted to coal carrying. The coal shipper is getting about all of the boats that he wants. The result of this rivalry for cargoes has been that the coal shippers have succeeded in beating down the Lake Superior rate to 35c. a ton. The supply of boats for ports at the head of Lake Superior was so out of proportion to the number of cargoes to be moved that it was not a difficult task to break the rate. Lake Michigan presents an entirely different aspect. Boats are very scarce for those ports, due most likely to the light movement of grain and the absence of any amount of ore from Escanaba. The conditions on Lake Superior, to which must be added the fact that a great many ships are going to Lake Michigan for their regular cargoes, insures a good brisk movement of coal. No figures are made on the amount already forwarded, but many shippers announce that their movement to date is ahead of that of last year.

Pittsburg, June 12.

(From Our Special Correspondent.)

Coal.—There have been no developments in this industry of any consequence during the week except that the United Mine Workers have decided to force the New York & Cleveland Gas Coal Company in line for the district wage scale. This company was taken over by the Pittsburg Coal Company, the railroad coal combination, but has been operated by the former management. This concern paid and still pays 10c. a ton less than the Pittsburg scale of prices. President W. P. DeArmit, who has just retired, contended that this was the proper rate, as he paid his men cash, while other operators paid in store orders. It is proposed now to organize the men and secure for them the same price as is paid by the Pittsburg Coal

Company. About 1,200 men are employed at the three mines. The rivers have receded and the next rise is, of course, uncertain. All the coal loaded has been shipped, about 4,000,000 bus. having been sent to southern ports during the week.

Connellsville Coke.—There was a heavy falling off in production last week. The total output was 201,849 tons. This was a slump of 28,906 tons compared with the previous week. Prices are also said to dropping and while \$2 is quoted for furnace and \$2.50 for foundry, it is believed that a much lower rate may prevail after July 1st. Of the 21,447 ovens in the region 19,796 are active and 1,651 are idle. The shipments for the week aggregated 9,721 cars, distributed as follows: To Pittsburg and river tipples, 3,098; to points west of Pittsburg, 4,765; to points east of Connellsville, 1,858 cars. This was a decrease of 405 cars compared with the previous week.

San Francisco, June 8.

(From Our Special Correspondent.)

Coal receipts at San Francisco by water in May were 125,211 short tons. The statement does not include receipts from California mines, nor those from Wyoming and Utah mines by rail. For the five months ending May 31st the receipts were:

	1900.	1901.	Changes.
Eastern U. S.	2,789	4,221	I. 1,432
Washington	276,471	307,108	I. 30,637
Oregon	17,935	17,030	D. 905
Total U. S.	297,195	328,359	I. 31,164
British Columbia	225,519	218,288	D. 7,231
Australia	42,125	49,040	I. 6,915
Japan	3,600	.....	D. 3,600
Great Britain	33,632	5,039	D. 28,593
Total, foreign	304,876	272,367	D. 32,509
Total	602,071	600,726	D. 1,345

The June circular of J. W. Harrison says: "It is very manifest that the fuel consumption this year is materially greater than last, when we compute the fuel oil that is being used by some of our largest factories, railroad companies, etc., which formerly utilized coal only. Prices are well sustained, and values are now named exclusively by our Coast colliery proprietors, where formerly Australian and English products were the principal factors in establishing quotations for several years past. It is probable that the Australian list may be swelled considerably within the next 3 months, for coal delivery here the latter part of the year. This is almost assured, as wheat tonnage must reach here from the Colonies, and coal is the only available article to carry. The oil position is bettering itself somewhat, and must continue to do so, as management is drifting into commercial hands, where it will be intelligently manipulated. Fuel oil values will be advanced, and producers will willingly pay 25% more for it than the present ruling prices."

Shanghai, China, May 15.

(Special Report of Wheelock & Co.)

Coal.—Very little business done. Sydney Wollongong is firmer, as little is coming forward. Arrivals of all kinds of coal during the fortnight aggregated 18,759 tons. We quote, per ton, as follows: Welsh Cardiff, 20.50 taels (\$13.74); Australian Wollongong, 12.50 taels nominal (\$8.38), and other sorts, 6@7 taels (\$4.02@4.69); Chinese Kaiping, Linsui lump, 8 taels (\$5.36), and unmixed, 7 taels (\$4.69); Tongshan No. 9 lump, 10 taels (\$6.70); dust, 6 taels (\$4.02), and mixed, 7.50 taels (\$5.03).

Kerosene Oil.—Market has declined considerably. Arrivals for the fortnight aggregated 330,000 cases. Stocks are 685,000 cases American, 633,000 cases Russian and 137,000 cases Sumatra; total, 1,455,000 cases. Quotations, per case, are as follows: American Devoes, 1.67½ taels (\$1.12); Russian, Anchor and Crescent Chopps, 1.55 taels (\$1.04); Ram Chops, 1.53½ taels (\$1.03), and bulk oil, in 2 tins, 1.45 taels (97c.), and loose, 1.10 taels (74c.); Sumatra, Langkat, 2 tins, 1.45 taels (97c.) and loose, 1.10 taels (74c.).

Foreign Coal Trade, June 14.

Export business here is quiet. Some South American trade is being done, but very little for European account.

No Mediterranean charters were reported this week. South American business is good and charters to Rio Janeiro are noted at 15s. (\$3.60) from Virginia, and 16s. 8d. (\$4) from Baltimore. These rates are lower than a few weeks ago.

From Germany reports are very unfavorable. Metallurgical plants are taking less fuel, and all the district syndicates have been obliged to reduce shipments. The French coal trade is also very quiet. The labor troubles are settled for the time, but operators fear a renewal of the difficulties.

Messrs. Hull, Blyth & Company, of London and Cardiff, report under date of June 1st that the market remains firm at last week's quotations. Quotations are: Best Welsh steam coal, \$4.56@4.68; seconds, \$4.32; thirds, \$4.08; dry coals, \$3.96; best Monmouthshire, \$4.08@4.20; seconds, \$3.72@3.84; best small steam coal, \$2.28; seconds, \$2.04; other sorts, \$1.68.

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, and are for cash in 30 days, less 2½% discounts.

Freight rates continue firm with a slight upward tendency. Some rates quoted are, from Cardiff: Marseilles, \$2; Genoa, \$1.98; Naples, \$1.98; Port Said, \$2.10; Singapore, \$3.36; Las Palmas, \$1.80; St. Vincent, \$1.98; Rio Janeiro, \$3.36; Buenos Aires, \$3.24.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 774.)

New York, June 14.

Heavy Chemicals.—Demand for caustic soda and alkali continues good, and some sales of the former are noted for 1902 delivery on basis of quotations below. Sal soda is quiet. Large trading in chlorate of soda at 9½@9¼c. per lb. is reported.

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York	In New York.
Alkali, 58% " 48%	77½@85 85@90	.....	85@87½
Caustic Soda, high test....	\$1.85@1.90	.....	1.95@1.87½
" " " " " " powd., 60%	.....	2.75	.....
" " " " " " 70@74%	.....	2.85	.....
" " " " " " 98%	.....	3.25	3.75@4.00
Sai Soda ..	50	60	67½
" conc. 1.25@1.50	.....	.....	1.75
Bicarb. Soda, " extra	1.07@1.10	.....	1.37½@3.00
" " " " " " 3.25@3.50	.....	.....	.....
Bleach Pir., Eng. prime,	.....	.....	2.00@2.10
other brnds.	.....	.....	1.80@1.90
Chl. Pot. Cryst " " " "	.....	8.25@8.27½	9.50@9.75
" " " " " " " "	.....	8.37½@8.62½	9.75@10.00

Arsenic.—Consumers are well supplied, hence the market is easier. Foreign powdered white arsenic is quoted on spot at \$3.75 per 100 lbs., while domestic can be ordered for shipment at \$3.50. Abroad makers are quoting f. o. b. Garston, Eng., £16 per ton, or \$3.57 per 100 lbs., showing that the sales made in New York leave little profit for first hands. Red arsenic is also very quiet, at 7@7¼c. per lb.

Acids.—Oxalic weakened to \$5.50 per 100 lbs. to arrive. Sulphuric finds a large sale with soda-water people. Blue vitriol exports are better, on contract, while new orders are few.

Quotations as below are for large lots delivered in New York and vicinity, per 100 lbs. unless otherwise specified.

Acetic, No. 3	\$1.62½	Nitric, 36°	\$3.87½
Blue Vitriol,	4.25@4.50	Nitric, 38°	4.12½
Aqua Fortis, 36°	3.62½	Nitric, 40°	4.37
Aqua Fortis, 38°	3.87½	Nitric, 42°	4.75
Aqua Fortis, 40°	4.12½	Oxalic	5.50@5.75
Aqua Fortis, 42°	4.50	Sulphuric, 66°	1.20
Muriatic, 18°	1.20	Sulphuric, 68°	1.00
Muriatic, 20°	1.35	" bulk 50° ton	14.00
Muriatic, 22°	1.50		

Zinc Dust.—Little demand just now. Prices are lower on basis of 6c. per lb. in wholesale lots. A few export parcels are noted for Europe.

Brimstone.—Importers have taken up all the available vessel room for this month on the basis of 7s. (\$1.68) to Atlantic ports. Abroad the Syndicate has been busy buying up the brimstone offered by the producers not in the combination, with the result that prices are higher, and will likely continue strong for some time. Imports this week were 5,000 tons. On spot best unmixed seconds sold at \$22½@22¼ per ton, while shipments are held at \$22@22¼, and some sellers even anticipate \$22½.

Pyrites.—Acid makers are consuming more pyrites, owing to the improved demand for their goods. Prices are practically unchanged.

We quote per ton as follows: Mineral City, Va., lump ore, \$4.90 per long ton, and fines \$4.20. Charlemont, Mass., lump, \$5, and fines, \$4.75. Spanish pyrites, 12c. per unit delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46@51% of sulphur; American, from 42@44%.

Sulphate of Ammonia.—Market is sagging owing to smaller demand and freer offerings. Gas liquor on spot sold at \$2.75 per 100 lbs., while shipments are obtainable at \$2.72½.

Nitrate of Soda.—Quiet. The "Cumbal" arrived with 14,387 bags. Spot is quoted \$1.85@1.87½ per 100 lbs. and futures \$1.92½@1.95, according to position.

Abroad there has been some speculative buying at 6s. 4½d. per qtl. (\$1.53) for prompt shipment, which is equivalent to 9s. (\$2.16) per cwt. delivered in Europe, or 10d. (20c.) more than last year. These prices are the highest in many years. Deliveries in Europe in the four months ended April 30th were fully 7% larger than last year. On the other hand, imports were 16% heavier than 1900. The Anglo-Chilian Nitrate and Railway Company has declared a dividend of 14s. on its preference shares. A dividend of 5s. per share has also been declared by the Santa Rita Nitrate Company from net profits in operating last year.

Concerning the Chilean market Messrs. Jackson Brothers, of Valparaiso, write us under date of May 4th that nitrate of soda has been in

brisk demand throughout the fortnight at gradually advancing prices. Early deliveries have been scarce and commanded as high rates as for forward, principally on account of the lower freights ruling for near shipments as compared with season loadings. May-June deliveries of 95% started at 6s. and have reached 6s. 2½d. steamer terms, up to 6s. 3½d. being paid for September-November shipments. For 96% there has also been some inquiry, a few transactions taking place in May-December at 6s. 2d. @ 6s. 4d. alongside. The sales reported amount to 1,340,000 qtls., but the total business done cannot be far short of some 500,000 qtls. more. The improvement reported in this article is due to, without taking into account the low freights ruling, the enormous deliveries effected in European markets during the past month; these are advised as having superseded last year's, from January to April, by over 50,000 tons. The exports for April were 1,025,000 qtls., making a total for the present year of 8,093,000 qtls. as against 8,132,000 qtls. during the same period of 1900. We quote 95% May-June, 6s. 2d., July-August, 6s. 3d., September-December, 6s. 3½d., and 96% May-December, 6s. 3½d., all ordinary terms sellers. The price of 6s. 2d. with an all round freight of 21s. 3d. stands in 7s. 11½d. per cwt. net cost and freight without purchasing commission.

Phosphates.—Consumptive demand is still limited, notwithstanding low prices. Comparing present c. i. f. quotations on American phosphates with the same week last year, we note a decrease of \$1.95 per ton in Florida high grade rock, \$1.31 in land pebble, and 60c. in Peace River, while Tennessee rock slumped about \$1 a ton. This depreciation in c. i. f. prices is partly due to the lower freight rates this year and partly also to the keen competition for Continental business.

Some sales of high-grade Florida rock for 1902 delivery are reported in Germany at 7¼d. per unit (\$11.50 per long ton). This is about \$1 per ton less than was booked last year for 1901 delivery. Land pebble phosphates show an appreciable increase in both domestic and foreign shipments while the Peace River people are satisfying a better home consumption. Recently charters were booked from Tampa to Glasgow, Scotland, at 16s. 6d. (\$4) this month's sailing, and to St. Louis du Rhone at 19s. (\$4.56) July. In Tennessee the exports of rock from Pensacola in May are reported at 8,589 tons, making 63,143 tons for the five months, and showing a falling off from last year. The Mt. Pleasant District shows much activity, its daily shipments being between 40 and 50 car-loads of merchantable rock, which is more than last year at this time. Some companies report a scarcity of laborers.

South Carolina miners show an increased production, as their old stocks have been pretty well worked off, though the foreign trade is only moderate, owing to competition with the Algerian stuff.

In foreign phosphates trade is sympathetically quiet, and prices are easy. In fact, Algerian 63@73% rock is selling at 90c. per ton less than last year, and 58@63% is \$1.58 less. Tunis phosphates are also lower. We quote as follows:

Phosphates.	Per Ton F. o. b.	C. i. f. Un'd Kingdom or European Ports.	
		Unit.	Long ton.
*Fla. hard rock (77@80%)	\$6.50@7.00	6¾@7d	\$10.53@10.92
*Fla. land pebble (68@73%)	3.85@4.00	6 @6¼d	8.40@8.58
*Fla. Peace River, 58@63%	2.50@2.75	6 @6¼d	7.20@7.35
†Tenn. rock 78% export.	3.25@3.50	6¼@6¾d	10.14@10.53
†Tenn. 78% domestic.	3.00	.....	.....
†Tenn. 75%	2.75	.....	.....
†Tenn. 70@72%	2.00@2.25	.....	.....
†So. Car. rock, crude....	2.50@2.75	.....	.....
†So. Car. rock, dried....	3.25	5¼@5¾d	6.90@7.21
Algerian, rock.... (63@70%)	.....	5¾@6¼d	7.70@8.38
Algerian, rock.... (58@63%)	.....	5¼@5¾d	6.30@6.90
Tunis, Gafsa.....	.....	5¼@5¾d	6.30@6.90

* Fernandina, † Mt Pleasant. † At mines. § On vessels, Ashley River.

IRON MARKET REVIEW.

NEW YORK, June 14, 1901.

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending		From	
	June 15, 1900	June 14, 1901.	Jan., '00.	Jan., '01
	F'ces.	Tons.	F'ces.	Tons.
An'racite & Coke.	269	291,425	232	307,375
Charcoal.	23	6,025	22	7,575
Totals..	292	297,450	254	314,950

The reports from the furnaces indicate that the stacks in blast on June 1st had a total weekly capacity of 314,950 tons of pig iron. This is at the rate of 16,377,400 tons a year, and indicates the largest output on record. Notwithstanding this enormous production the unsold stocks reported showed a decrease of over 30,000 tons during May. They are given at 407,700 tons, which is less by 151,900 tons than the quantity reported on January 1st.

Not much change in the market generally is reported. It is understood that large contracts for bessemer pig are on the point of being closed in Pittsburgh, and that large orders for forge and foundry irons are also pending.

Sales of stock and transfers of interests are the topics of discussion in the market at present. The current reports are referred to in another column. It is apparent that the United States Steel Corporation is not to have everything.

Birmingham, Ala. June 10.

(From Our Special Correspondent.)

The dullness in the pig iron market continues. The shipments on old orders are yet quite satisfactory, good quantities of pig iron leaving this district. During the past week there was no feature worthy of much comment in the market.

An examination of the sales books of the two larger manufacturing concerns of the district during the past week showed that iron was selling at an average of about \$10 per ton. As a consequence, the mining wages were reduced in some instances and in others retained the figure that prevailed during the month of May. Nos. 3 and 4 foundry and gray forge are being sold best just now.

The following quotations are given: No. 1 foundry, \$11.50@12; No. 2 foundry, \$10.75@11; No. 3 foundry, \$10.25@10.75; No. 4 foundry, \$10 @ \$10.25; gray forge, \$9.50@10; No. 1 soft, \$11.50 @ \$12; No. 2 soft, \$10.75@11.

The demand for finished iron and steel is still remarkable and as a consequence all the rolling mills and the steel plant are producing large quantities of their respective products and the same is being shipped almost as quickly as it is being produced. At the steel plant at Ensley there is much activity. The plant of the Tennessee Coal, Iron and Railroad Company is producing a good quantity of steel and yet is hardly meeting the demand.

It is reported that the plant of the Alabama Steel and Wire Company at Ensley, owned by Chicago parties, will be turned over to the Tennessee Coal, Iron and Railroad Company. This plant uses steel from the Ensley mills.

The Southern Iron Committee's reports for the month of May show total shipments of pig iron from Alabama and Tennessee of 130,000 tons, an increase over last year of 5,000 tons. From the Birmingham District alone, 75,000 tons. Only 158 tons were exported, as against 18,000 tons last May. Pipe shipments were over 15,000 tons from the Southern field; an increase of 9,000 tons, the Birmingham District furnishing 8,000 tons, an increase of 7,000 tons. Exports were 165 tons. Steel billets shipped amounted to 6,200 tons.

Buffalo. June 12.

(Special Report of Rogers, Brown & Co.)

A review of the pig iron market in this vicinity during the past week shows a noticeable increase in the number of sales and inquiries for all grades of foundry iron. In addition to this progressive tendency among foundry buyers there seems to be a general feeling that more settled trade conditions will continue to prevail, which gives to melters of iron an added degree of confidence. The manufacturers of agricultural implements, one of the large interests among consumers, are watching with interest the crop reports from the far West, and if conditions in that direction continue as favorable as now indicated by reports received it will tend to still further increase the confidence of those interested in that line of manufacture. Shipments on existing pig iron contracts continue at a rapid rate and furnaces are decidedly active. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$15.50; No. 2, \$15; Southern soft, No. 1, \$16; No. 2, \$15.50; Lake Superior charcoal, \$17.50; coke malleable, \$15.

Cleveland, O. June 11.

(From Our Special Correspondent.)

Iron Ore.—The movement of iron ore has now started with a vigor that is refreshing to the trade. The delays so far have cut the shipments from Lake Superior down from 2,700,000 to 1,700,000 tons, as shown in the reports of the commerce through the canals at Sault Ste. Marie, but the shippers have been making up for lost time since, with the result that having chartered all vessels on the market they have congested the lower lake docks, causing a serious blockade all along the south shore of Lake Erie. Even this has not stopped the cry for tonnage, as shippers are bidding freely for all boats offered. The rates have not changed in any respect, 80c. being paid from the head of the lakes, 70c. from Marquette and 60c. from Escanaba. The only season chartering done this week has been on material to be delivered prior to October 15th, upon which the rate made was 75c.

Pig Iron.—In all grades the sales for immediate delivery have been very light, being confined to car-load lots, and the prices invariably remaining as they have been. The market is quoted now as follows: Foundry No. 1, \$14.50, and No. 2, \$14, at Valley furnace. Basic, \$15

and bessemer \$15@15.25. Not many sales of the foundry grades have been made for delivery after July 1st and the inquiry is very light. The market has heard of an inquiry for a large block of basic iron, but the order has not been placed. The price demanded by the producers is \$15, although it is believed that this might be shaded a little. Bessemer sales for delivery during the second half of the year are not much talked of. The furnacemen are trying to keep the prices up to \$15.50 if possible, but may have to break them to even \$15.

Finished Material.—Indications are for a considerable demand for plates later on in the year and especially for ship plate. The American Ship Building Company has orders now for 4 new steel steamers and 10 others are coming shortly, besides inquiries as to prices from other owners, which indicate that another building boom is about to be started. The car and bridge orders show indications of being heavy later on. This has aroused hope for the business during the second half of the year. The price remains at 1.70. About all of the big structural material orders have been closed for by this time and there only remains the odds and ends with small orders coming in now and then. Small sized angles are hard to obtain, the capacity of the mills being taken up by previous orders. Price is steady at 1.70c. The demand for billets is increasing and the supply is no better than it has been, resulting in a strengthening of the market. The price has not changed from \$24. The rail market is quiet, with a few sales now and then at the new price of \$28, but the business is not brisk. Shipments on former orders are very heavy.

Old Irons.—The demand for scrap seems to have reached the ebb now. The sales that are made are very small and even these are few. The dealers are trying to hold on to old prices, while consumers demand that the prices be cut down. The result has been a temporary deadlock and no business. It would be impossible to quote a scale of prices that would represent the trade.

Philadelphia. June 13.

(From Our Special Correspondent.)

Pig Iron.—So far as actual pig iron business is concerned there is very little to report. Not a single broker or agent could be found to-day who said iron was cheaper. A visit to some large consumers for facts on this point did not produce any. There is, of course, more or less talk about weakening prices, but the situation in the Shenango Valley as regards bessemer and basic controls here. Buyers are in a position to wait and see and they are all doing so. Forge iron will probably sell well because very few mill people have much and all have plenty of work on hand and in sight. There is great activity in the foundries and in concerns that turn out hardware supplies. To-day's quotations are given at \$16 for No. 1 X foundry; \$15.50 for No. 2 X foundry; \$15 for No. 2 plain; \$14.50 for Standard forge; \$14 for ordinary; \$14.50 for basic.

Billets.—More business has been quietly done this week in billets than has been acknowledged, both sides evidently being pledged to secrecy as to quantity and price. Early deliveries command \$27 easily.

Bars.—No competition is cropping out and the mills that in former years always started competition, not over a half dozen in number, are at present satisfied. The run of small orders is remarkably good and prices are given around 1.60c. for iron and 1.70c. for steel, though large contracts could be placed below this.

Sheets.—The sheet people still report new business coming along. The midsummer suspension will be the shortest possible. There is some fluctuation in prices where a buyer covers various kinds and in this way concessions are sometimes hidden. No. 10 is 2½c.; No. 28 is 3.8c.

Pipes and Tubes.—Tubing and piping are very active. There is a rumor of a new plant of great capacity going up. Managers are figuring to-day on requirements running into thousands of tons and say their only difficulty will be to shape deliveries to suit their customers.

Merchant Steel.—The organization of another crucible steel company, capitalization \$1,000,000, is the best object-lesson as to trade conditions. These new plants will make steel at prices below the present cost. Reports show that merchant steel consumption is growing. Slight concessions were accorded on recent orders, but only deliveries are at top prices.

Plates.—Plate capacity in Eastern Pennsylvania will be increased in a few months. The big appropriation of the New York Central of \$1,500,000 for bridge renewals is simply an indication on a large scale of what is going on on a small scale everywhere. Plate quotations are very firm and the only business transacted within the past few days was in small orders, all of which went through at manufacturers' prices. The machinists' strike is still curtailing shop output in some places, but proprietors do not take it very seriously.

Structural Material.—So many changes have

been made and new men have come to the front that large buying interests are taking a closer observation of the situation. Structural capacity is all sold well ahead and market quotations for quick delivery on small lots are above those quoted.

Steel Rails.—It transpires that another batch of orders are about to be presented to cover trackage for which money has been quite recently secured through New York houses. It is not very clear where these enterprises are to get their rails. A 14,000-ton London order was let slip without a single American bid. The trolley road people are once more asking for best full quotations.

Old Rails.—Old iron rails are worth \$20 and old steel \$16.

Pittsburg. June 12. (From Our Special Correspondent.)

The iron and steel markets are more quiet this week than last and there have been few local sales. Not more than 1,500 tons of bessemer pig iron have been sold for delivery in Pittsburg during the week. The minimum price was \$15.25, Valley furnaces. The Colorado Fuel and Iron Company was able to secure a lower rate when it placed a contract for 50,000 tons for delivery during the second half of the year. Half of this was given to the Columbus Iron and Steel Company and the other half went to Valley furnaces. The price for this iron is \$15. This, it is believed, will fix the price for the last half of the year, but if conditions improve there may be an advance. The United States Steel Corporation is in the market for bessemer pig iron and will within a few days put in an order for about 250,000 tons for delivery between July 1st and December 31st. The Valley furnacemen are looking for this order, as business for some reason has fallen off during the past few weeks. Bessemer steel billets are selling above the pool price and are extremely scarce for prompt shipment. There is but little doing in foundry or gray forge, but prices are firm. In finished lines there has been but little change and no new business of any consequence has been placed during the week. The mills are all busy, however, on old contracts. The plate market continues quiet and the mills are fast disposing of the tonnage taken early this year. The sheet market remains unchanged as to prices, but the demand is as strong as it has been for several months.

The national officers of the Amalgamated Association of Iron, Steel and Tin Workers returned on Monday from the twenty-sixth annual convention held in Milwaukee. They anticipate no trouble, they say, in arranging the different wage scales, but at the conferences to be held with the manufacturers there may be some disputes. The bar iron scale is fixed at a base of \$5 a ton when bar iron is selling at 1c. The sheet and tin plate scale remain practically unchanged except as to the foot notes. The conference with the Republic Iron and Steel Company will be held at Cleveland on Tuesday, June 18th.

Pig Iron.—The local sales of bessemer pig iron this week amounted to about 1,500 tons in small lots at \$15.25@15.50. Few sales of gray forge were made and the price was \$14@14.25. Foundry iron sales did not exceed 1,500 tons, but prices are firm at \$14.50.

Steel.—The market is strong and prices are firm. About 2,000 tons of bessemer steel billets were sold this week at \$24.75, which is above the pool price. The plate pool made no changes in prices at its meeting in New York last week except in lighter gauges, which were advanced slightly. Tank plate prices remain at 1.60c. There is not much doing in steel bars and the price is 1.40c.

Sheets.—The American Sheet Steel Company is closing a very unusual tonnage. There has been some new business during the week, but the prices are unchanged, No. 28 gauge being quoted at 3.30@3.35c. and galvanized sheets at 70 and 5% off.

Ferro-manganese.—There has been no change in prices this week and the leading producer continues to quote \$58.50 for 80% domestic.

New York. June 14.

Pig Iron.—Demand has fallen off somewhat of late and prices are no stronger. We quote as follows: Northern irons, tidewater delivery: No. 1 X foundry, \$15.65@16; No. 2 X, \$15@15.25; No. 2, plain, \$14.65@15; gray forge, \$14.15@14.50. For Southern irons on dock, New York, No. 1 foundry, \$15.25@15.75; No. 2, \$14.75@15; No. 3, \$14@14.25; No. 4, \$13.25@13.75; No. 1 soft, \$15.25@15.75; No. 2, \$14.75@15.

Bar Iron and Steel.—The market shows little change. We quote common bars at 1.48c. for large lots on dock; refined bars, 1.58c.; soft steel bars, 1.65c.

Plates.—Buying now is in small lots. We quote for large lots at tidewater: Tank, 1/4-in. and heavier, 1.83c.; flange, 1.88c.; marine, 2.03c.; universals, 1.83c.

Steel Rails and Rail Fastenings.—New orders continue scarce and demand is slack. Stand-

ard sections are quoted at \$28 at Eastern mills; light rails at \$28@30 according to weight. Spikes are 1.80c.; splice bars, 1.45c.; bolts, 2.40@2.50c.

Structural Material.—The market is a bit quieter than it has been. We quote for large lots at tidewater as follows: Beams, 1.75c.; channels, 1.75c.; tees, 1.80c.; angles, 1.75c.

METAL MARKET.

New York. June 14.

Gold and Silver.

Gold and Silver Exports and Imports At all United States ports in April and year.

Table with columns: Metal, April 1900, April 1901, Year 1900, Year 1901. Rows include GOLD Exports, Imports, Excess SILVER Exports, Imports, Excess.

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 June 13th, 1901, and for years from January 1st, 1901, 1900, 1899 and 1898.

Table with columns: Period, Gold Exports, Imports, Silver Exports, Imports, Total Excess, Exp. or Imp. Rows for Week, 1901, 1900, 1899, 1898.

Imports and exports of gold were in small parcels, from and to different ports. The silver exported went chiefly to London; that imported came from Mexico and the West Indies.

The United States Assay Office in New York reports the total receipts of silver at 51,000 oz. for the week. This makes a total of 1,573,000 oz. from January 1st.

Average Prices of Silver per oz. Troy.

Table with columns: Month, 1901 (Lond'n Pence, N. Y. Cents), 1900 (Lond'n Pence, N. Y. Cents), 1899 (Lond'n Pence, N. Y. Cents). Rows for months Jan-Dec and Year.

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

Average Prices of Metals per lb., New York.

Table with columns: Month, COPPER, TIN, LEAD, SPELTET. Rows for months Jan-Dec and Year.

The prices given in the table for copper are the averages for electrolytic copper. The average price for Lake copper for the year 1900 was 16.52c.; for the month of January, 1901, it was 16.77c.; for February, 16.90c.; for March, 16.94c.; for April, 16.94c.; for May, 16.94c.

Prices of Foreign Coins.

Table with columns: Bid, Asked. Rows for Mexican dollars, Peruvian soles, Victoria sovereigns, Twenty francs, Spanish marks, Spanish 25 pesetas.

Financial Notes of the Week.

The speculative markets are still quiet, but steadier than they have been later. General

trade is still good, but the dull season is nearly here, and we may look for quiet times. The special feature of the week is the publication of the Government crop reports, showing every indication of large crops of grain and cotton for the year. At the same time European accounts are unfavorable for large returns there; so that there is every indication that the demand for export will be large, with plenty to supply it.

The silver market has been very steady and

Imports and Exports of Metals.

Large table with columns: Port, Week, June 13, Year 1901 (Expts, Impts, Expt, Impts). Rows for New York (N. Y. Metal Exchange), Baltimore (Special Correspondence), Philadelphia.

Total United States.

Table with columns: Articles, April (Expts, Impts), Year 1901 (Expts, Impts). Rows for Antimony, Copper, Iron, Lead, Manganese, Nickel, Quicksilver, Steel, Tin, Zinc.

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, 1/4c. a lb. Lead, 1 1/2c. a lb. on lead in ores; 2 1/2c. a lb. on pigs, bars, etc.; 2 1/2c. on sheet, pipe and manufactured forms. Nickel, 6c. a lb. Quicksilver, 7c. a lb. Spelter or zinc, 1 1/2c. a lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

there is no especial feature in the situation. The East has been a steady purchaser but at its own price.

The statement of the United States Treasury on Wednesday, June 12th, shows balances in excess of outstanding certificates as below, compared with the corresponding day last week:

Table with columns: June 5, June 12, Changes. Rows: Gold, Silver, Legal tenders, Treas. notes, etc., and Totals.

Treasury deposits with national banks amounted to \$102,372,515, showing a decrease of \$546,743, as compared with the corresponding day last week.

The statement of the New York banks—including the 63 banks represented on the Clearing House—for the week ending June 8th give the following total, comparison being made with the corresponding week in 1900 and 1899:

Table with columns: 1899, 1900, 1901. Rows: Loans and discounts, Deposits, Circulation, Reserve, Specie, Legal tenders, Total reserve, Legal requirements, Balance, surplus.

Changes for the week, this year, were increases of \$21,284,400 in loans and discounts, and \$19,720,600 in deposits; decreases of \$160,200 in circulation, \$2,160,300 in specie, \$821,100 in legal tenders, and \$7,911,550 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:

Table with columns: 1900, 1901. Rows: Banks, N.Y. Ass d., England, France, Germany, Spain, Neth Ids, Belgium, Italy, Russia.

The returns of the Associated Banks of New York are of date June 8th, and the others are of date June 6th, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold. The Bank of England reports gold only.

Exports of specie by water from San Francisco for the five months ending May 31st included \$1,300 in gold bars and \$652,131 in gold coin, a total of \$653,431 gold. The silver was valued at \$1,947,350, made up as follows: United States silver coin, \$146,581; Mexican dollars, \$406,710; South American coin, \$5,765; silver bars, \$1,388,294. There was a remarkable falling off in Mexican dollars, the shipments for the corresponding period last year having been \$2,336,614. The destinations of the total shipments for the five months were as follows:

Table with columns: 1900, 1901, Changes. Rows: China, Japan, India, Pacific islands, Central America, Mexico, Total foreign, Honolulu, New York, Total domestic, Totals.

The falling off in exports this year was mainly in silver for China; that in domestic shipments was in gold coin sent to New York.

Shipments of silver from London to the East for the year up to May 30th, 1901, are reported by Messrs. Pixley & Abell's circular as follows:

Table with columns: 1900, 1901, Changes. Rows: India, China, The Straits, Totals.

Arrivals for the week, this year, were £113,000 in bar silver from New York, and £11,000 from Chile; total, £124,000. Shipments were £49,000 in bar silver to Bombay and £17,500 to Calcutta; total, £66,500.

Indian exchange has been quiet and Council bills have been in fair demand in London at 15.91d. per rupee. Some shipments of gold bars to India are reported, and there has been also some buying of silver for Indian account.

Other Metals.

Daily Prices of Metals in New York.

Table with columns: Silver, Copper, Spelter. Rows: June, Sterling Exchange, Fine oz. Cts., London, Pence, Lake, cts. # lb., Electrolytic # lb., London # ton, Tin, cts. # lb., Lea. cts. # lb., N. Y. cts. # lb., St. L. cts. # lb.

London quotations are per long ton (2,240 lbs.) 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 unchanged. Consumption in this country continues very good, and in Europe it appears to be improving. There is a good demand, principally for early shipments, and some of the refiners are reported to be in arrears with their deliveries. Quotations are unchanged at 16 3/4@17c. for Lake; 16.35@16.45c. for electrolytic in cakes, wirebars and ingots, 16.10@16.20c. in cathodes; casting copper at 16.25@16.35c.

The London market for standard copper has remained about stationary. It closed last week at £69 3d. for spot, £69 15s. for three months, and the closing quotations are cabled as £69 3s. 9d. for spot and 10s. higher for three months.

Refined and manufactured sorts we quote: English tough, £73 15s. @ £74 5s.; best selected, £75 @ £75 10s.; strong sheets, £84 @ £84 5s.; India sheets, £80 @ £81; yellow metal, 7d.

Tin.—The market has fluctuated considerably in sympathy with the London quotations. What business was done has been more or less of a speculative nature. The statistical position of the article remains very good, and a steady market it is believed would bring out large orders on the part of consumers. We quote at the close spot tin at 28 3/4c., futures at 28c.

The London market, which closed last week at £131 10s. for spot, £127 10s. for three months, opened on Monday £1 lower for spot, and £2 lower for three months. On Tuesday it was 5s. lower for both deliveries. On Wednesday it went up to £131 17s. 6d. for spot, £126 12s. 6d. for three months, but on Thursday was down again to £130 10s. for spot, £126 for three months. It closes at £129 15s. for spot, £125 2s. 6d. for three months.

The production of Banca and Billiton tin for the year ending April 30th is reported from Holland as in the table below, the figures being in long tons:

Table with columns: 1899-1900, 1900-1901, Changes. Rows: Banca, Billiton, Totals.

The increase in Banca was 9%, and the decrease in Billiton 5.9% this year.

Spelter.—The market is quiet. Consumers generally have covered their wants, and production is increasing. The foreign market is below the export point. Prices have declined somewhat, and we quote St. Louis at 3.77 1/2 @ 3.80c., New York at 4c.

The foreign market is slightly lower, good ordinaries being quoted at £17 7s. 6d., specials 5s. higher.

Silesian Spelter Market.—Herr Paul Speier writes from Breslau, under date of June 2d, that the market has been quiet. The point of special interest just now is the proposed union of zinc producers, the terms of which are under discussion. Light imports from the United States have aided in maintaining prices. Quotations are 35.50@36 marks per 100 kgs. for good ordinary spelter, f. o. b. cars, Breslau. This is equivalent to 3.88c. per lb. Imports and exports in Germany for the four months ending April 30th are reported as follows, in metric tons:

Table with columns: Imports, Exports. Rows: Spelter, Sheets, Scrap zinc, Zinc-white, Lithopone, Zinc ore.

The ore receipts were from Austria-Hungary, Spain, Australia, Algeria and Sweden. The principal exports of spelter were to Austria-Hungary, Russia, Great Britain, Italy and Sweden.

Lead.—The market continues unchanged. Consumption is very good. We quote St. Louis at 4.27 1/2 @ 4.32 1/2 c., New York 4.32 1/2 @ 4.37 1/2 c. at 4.27 1/2 @ 4.32 1/2 c., New York 4.32 1/2 @ 4.37 1/2 c.

The London market has been quiet, and the closing quotations are cabled as £12 3s. 9d. @

£12 6s. 3d. for Spanish lead, £12 6s. 3d. @ £12 8s. 9d. for English lead.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is firm, but prices are unchanged. Desilverized metal is 4.32 1/2 c.; soft Missouri lead is 4.30c., and chemical lead is wanted at 4.32 1/2 c., but is obtainable only in limited quantities.

Antimony.—There is no change. We quote Cookson's at 10@10 1/4 c.; Hallett's at 8 3/4 c.; Hungarian, Japanese, Italian and U. S. Star at 8 1/2 c.

Nickel.—The price continues firm at 50@60c. per lb., according to size and terms of orders.

Platinum.—Consumption continues good and prices are strong. Ingot platinum in large lots now commands \$20.50 per ounce in New York. In London prices are about on a parity with the New York rate.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 80c. per gram.

Quicksilver.—While the nominal quotation is still \$51 in New York, the metal can be had for \$48.75 @ \$50 per flask in large quantities, with a slightly higher rate named for small orders. San Francisco prices are \$46 @ \$47 per flask for domestic orders and \$42 @ \$43 for export. The London price continues nominally £9 2s. 6d. per flask.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

Table with columns: Per lb., Per lb. Rows: Aluminum, No. 1, 98% ingots, No. 2, 90% ingots, Rolled sheets, Alum-bronze, Nickel-alum, Bismuth, Chromium (over 99%), Copper red oxide, Ferro-Molyb'dum (50%), Ferro-Titanium (10%), Ferro-Titanium (2%), Ferro tungsten (3%), Magnesium, Manganese (over 99%), Mangan's Cop (20% Mn), Mangan's Cop (30% Mn), Molyb'denum (Best), Phosphorus, American, Tungsten (Best).

Variations in prices depend chiefly on the size of the order.

LATE NEWS.

In the hearing on the Amalgamated Copper suits in New Jersey on June 13th it was announced that H. H. Rogers, Wm. G. Rockefeller and A. C. Burrage had resigned from the directorate of the Amalgamated Copper Company. The following have been chosen to fill their places: George F. Baker, Frederick Cromwell and Walter G. Oakman. No further information as to the resignations was obtainable. It was believed in some quarters that the resignations were made with a view to avoiding fresh litigation. It has for a long time been assumed that the three resigning directors are large holders of Butte & Boston stock, and it is urged in view of the suits recently brought to prevent the transfer of the stock of that company to the Amalgamated Copper Company that the deal might be further hindered on the ground that these parties were selling property to themselves.

(From Our Special Correspondent.)

Colorado Springs, Colo., June 9th, 1901.—The mining stock market during the past week has been somewhat of a sensitive nature, ready to advance or decline on slight causes. There were a number of good advances during the week and a number of declines. A fair advance was made in Portland, it going from \$2.92 to \$3.11, afterward declining to \$3.03 bid and \$3.08 asked. Doctor-Jack Pot advanced during the early part of the week to 8 1/2 c., but afterward declined. Mollie Gibson also scored quite an advance. Gold Knob also scored an advance. Isabella was quite active without much change in price. Eclipse and Pointer scored declines during the week. A rumored apex suit with the Ophir Company was probably responsible for the decline of the former. The conditions in the district are looking very favorable and it looks as though an upward movement in the stock market might be the result. The Portland Mine has started work again with practically the same force as before and the Granite has also put on a number of men. A variety of rumors are floating around looking to the sale of the Portland to outside capital. A number of dividends have recently been paid and it is understood that new dividend payers will soon be added to the list.

By Telegraph.

(From Our Special Correspondent.)

Leadville, Colo., June 13th, 1901.—Sensational dispatches sent out to-day state that the Resurrection Mine here has been sold to London people for \$4,500,000. These rumors have been circulated before but have so far proved incorrect. Manager Carnahan is in Leadville and states that the report is without foundation. The presence here of Eben Smith, one of the owners, and John Hays Hammond, doubtless started the report. The parties concerned, however, stoutly deny all knowledge of any sale.

SLATE TRADE REVIEW.

New York.

June 14.

The list of prices per square for No. 1 slate standard brand f. o. b. at quarries in car-load lots, is given below:

Size, inches	Monson or Br'n-ville.	Bangor.	Bangor Ribbon.	Alb'n. or Jackson Bangor.	Chap'n Keyne	Peach Bottom.	Sea Gr'n.	Unfad'g Green.	Red
24 x 14	6.50	3.50	3.00	3.00		5.10	3.00		
24 x 12	6.60	3.50	3.00	3.00	3.80	5.25	3.00	3.75	
22 x 12	6.60	3.50	3.25	3.00		5.25	3.00	3.75	
22 x 11	6.50	3.75	3.25	3.00	4.00	5.25	3.00	4.00	
20 x 12	6.90	3.75		3.00		5.25	3.00	3.75	
20 x 11	6.80			3.25		5.25	3.00		
20 x 10	6.80	4.25	3.50	3.25	4.00	5.35	3.00	4.25	10.50
18 x 12	6.80	3.75		3.00		5.25	3.00	3.50	
18 x 11	7.00					5.00	3.00	3.75	
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	3.00	4.00	10.50
16 x 9	7.00	4.50	3.50	3.25	4.00	5.35	3.00	4.25	10.50
16 x 12	6.80	3.75		3.00		5.00	2.90	3.50	
16 x 10	7.00	4.00	3.50	3.25	4.00	5.25	2.90	4.00	10.50
16 x 9	7.00	4.25		3.25	4.00	5.35	2.90	4.25	10.50
16 x 8	7.00	4.50	3.50	3.25	4.25	5.35	2.90	4.25	10.50
14 x 10	6.60	3.75	3.25	3.00		5.25	2.70	3.75	10.50
14 x 9	6.50						2.70	3.75	10.50
14 x 8	6.60	3.75	3.25	3.00	4.00	5.10	2.70	4.25	10.50
14 x 7	6.40	3.75	3.25	3.00	3.75	5.10	2.50	4.25	10.50
12 x 10	5.75						2.50	3.25	
12 x 9	5.60						2.50	3.25	
12 x 8	5.50	3.50		2.85		4.85	2.50	3.50	9.00
12 x 7	5.00	3.25		2.85	3.25	4.85	2.00	3.50	9.00
12 x 6	4.80	3.25		2.85	3.25	4.75	2.00	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof.

Demand is increasing, but dealers find it difficult to secure the necessary slate from quarries who report a shortage of certain sizes of roofing. Prices are pretty well maintained.

Aboard the situation in the Welsh district is practically unchanged. American exporters are receiving some fair-sized orders from Great Britain and the Continent. Ocean freight rates are easy, facilitating quicker dispatch of orders in hand.

MINING STOCKS.

Complete quotations will be found on page 770 771 and 772 of mining stocks listed and dealt in at:

Boston.	Salt Lake.	Montreal.
Colo. Springs.	San Francisco.	London.
Denver.	Spokane.	Mexico.
New York.	St. Louis.	Paris.
Philadelphia.	Toronto.	

New York.

June 14.

The several suits pending over the proposed copper consolidation have tended to restrict trading and prices are lower. Amalgamated fell from \$123½ to \$120¼, and Anaconda from \$49½ to \$47, but at the close both are again higher. On the curb Tennessee Copper made sales at \$22@22½, and Union at \$6½@5½.

A sale of 161 shares of Homestake, of South Dakota, is noted at \$95, or \$5 less than the last sale in April.

Ontario Silver, of Utah, gained ¼ at \$8¼, and the first sale of Daly in a long time is reported at \$1.30. Moulton, of Montana, was firmer at 35c.

Quicksilver (California) shares continue in demand; common brought \$4¼@4 and the preferred \$10½@9½. Brunswick Gold is uninteresting at 18c.

Cripple Creek, Colo., shares have gained strength since Portland resumed work. This stock rose to \$3.05. Elkton is also higher at \$1.70. Isabella, in passing its quarterly dividend, has weakened to 60c. Mollie Gibson gained to 43c., and Brece, of Leadville, to \$1.65.

Another 10c. dividend on Consolidated California & Virginia of the Comstock Lode was a surprise; the stock sold at \$2.45@2.50. Ophir brought \$1.05.

Colorado Fuel and Iron stock made a sharp advance of 15½ points to \$115 on Wednesday, owing to rumors of prospective affiliation with the United States Steel Corporation. Later, however, there was a drop to \$106½, as this deal was still problematical.

At the annual meeting of the Consolidated Stock and Petroleum Exchange the old officers and directors were re-elected. During the past year 100 new members entered the Exchange.

Auction sales were \$2,000 first mortgage 6% bonds Indiana Natural and Illuminating Gas Company at \$54½, 775 shares United States Pe-

troleum Company at \$2 for lot and 25 shares Standard Oil Company at \$785 per share.

Boston.

June 12.

(From Our Special Correspondent.)

The market has been rather dull this week and prices have suffered to some extent. The chief interest has been in the various suits begun to enjoin the purchase of Boston & Montana and Butte & Boston stock by the Amalgamated Company.

There were predictions that a decision in the Amalgamated suits would be followed by an active market; but the decision of yesterday apparently had no such effect. Trading to-day was light, and prices not at all strong.

It seems quite likely that a narrow market will continue for some time. In two weeks now the summer holiday season will fairly begin, and there is not time for any considerable upward movement. Conditions generally do not favor it, though the "big men" may possibly decide to give us an exhibition of what they can do.

The suits brought in Massachusetts were heard yesterday, and after the arguments had been concluded, Judge Knowlton gave his decision, which covers both the Maginnis & Foster and the Ferris cases. In his finding Judge Knowlton said that he was governed by the following reasons: The Montana law cited by the plaintiffs relative to the exchange of the property of one corporation to that of another applies merely to the actual transfer of property and not to that of stock or bonds. The proposition that the defendants intended to form a trust could not be maintained, and there was no evidence that the directors of the Boston & Montana Company acted in an official capacity in advising the sale or transfer of stock. The actual legal position of the directors of this company was that of stockholders only. There is nothing in the Montana law, he said, which deals with the sale of stock upon the best terms possible by a stockholder of a corporation. There is a provision in the law which would be operative in case any illegal act is contemplated, but there is no evidence that any such action would result in this case. Upon the question as to the purpose or intention of the defendants to form a trust or monopoly, Judge Knowlton said that there was no evidence that the participants in these sales of stock had actual knowledge of the intention of the Amalgamated Company to create such a trust or monopoly, and in default of this, there is no provision in the law which would prevent a stockholder obtaining all that he could for his stock. The conduct or purpose of the Amalgamated Company with respect to future plans was not material in this case. If they do anything illegal after this time, they would be subject to the laws of the State in which the act was committed. In conclusion he said that there was nothing in either case that would warrant him in delaying the consummation of the sale or transfer of stock to Kidder, Peabody & Company, nor was there any act apparent subject to injunction by the court.

The Adventure Consolidated Mining Company has made a call for \$6 more on the capital stock, \$3 being payable July 15th, and the remaining \$3 December 10th. The money is required to continue work on the mine. As \$8 per share had previously been paid on this stock, the new call will make a total of \$14 paid up.

In the case of Barnes vs. the Federal Trust Company and the directors of the Bingham Copper and Gold Mining Company, in which the plaintiff asked that the trust company be enjoined from delivering the stock now in its possession to the Bingham Consolidated Mining and Smelting Company, and which was argued before Judge Mason, a decision has been made to the effect that the trust company be enjoined from delivering to the Bingham Consolidated Mining and Smelting Company the 100 shares of the old company belonging to the plaintiff, Barnes, but to deal with the other depositors of stock in accordance with terms of the agreement. This removes the obstacles to the reorganization of the Bingham Company.

The Boston Stock Exchange has taken from the unlisted sheet and placed on the regular list 175,000 out of 200,000 shares of the Tennessee Copper Company. The company now has a present capacity of 700 tons of copper ore per day. The financial statement shows a total expenditure of \$780,920 on the property and in expenses, and a balance on hand of \$263,261.

The Boston Stock Exchange has placed on the list 90,000 shares of the 100,000 shares of capital stock of the American Gold Dredging Company, 10,000 shares remaining in the treasury. The par value is \$5. The financial statement as of April 30th, 1901, shows cash on deposit \$70,000, and no indebtedness of any kind. Officers are: President, Calvin O. Austin; treasurer, Wm. F. Moller; directors, Calvin O. Austin, Clarence A. Hight, Edward R. Andrews, E. C. Ramsdell and J. D. Upton. The main office of the company is 4 Post Office Square, Boston. The Federal Trust Company is transfer agent and the Massachusetts National Bank is registrar.

Salt Lake City.

June 8.

(From Our Special Correspondent.)

The past week on the Stock Exchange has been exceptionally good. There were 281,000 shares sold representing a total value of \$345,000. Ajax, May Day, Yankee, Daly West and Lower Mammoth are the favorites. Yankee, which closed last Saturday at \$3.22, closed to-day at \$4.65. Where it will end no man can say, but as stated by your correspondent heretofore, it is within the means of those in control to do almost as they choose with this stock—sending it to \$10 if they like.

The Iron Mountain Copper Company was recently organized by Salt Lake men for the purpose of developing the Indiana, Illinois, Oregon, Texas and Ohio mining claims and 5 other leased claims adjoining. The capital stock is fixed at \$50,000, in 10c. shares, and the financial office will be in Salt Lake. Duncan J. Frew is president; Ezra Thompson, vice-president; William Houchen, of Cedar City, secretary and treasurer, and Henry K. Neill a director.

Managing Director A. F. Holden, of the United States Mining Company, has returned to Salt Lake and states that plans for the smelter for this and the Centennial-Eureka Company are practically completed, and that bids are being received. The plant is to have a capacity of 800 tons of ore a day and may be erected on the company's site at Bingham Junction, adjoining that of the Bingham Company on the south.

San Francisco.

June 8.

(From Our Special Correspondent.)

The week has been tolerably quiet, the only incidents being a dividend from Consolidated California, and an unexpected little spurt in Overman, which has been rather a neglected stock. The unusual interest was due to a report that the Shaw-Douglas-Bannan party—who lately secured Gould & Curry—are after this stock.

The directors of the Consolidated California & Virginia yesterday declared a dividend of 10c. a share, payable June 14th. This is the second dividend declared this year.

Some quotations noted are: Consolidated California & Virginia, \$2.35; Ophir, 95c.; Caledonia, 50c.; Overman, 28c.; Sierra Nevada, 23c.

The sales on regular call at the San Francisco Stock Exchange for the year to date compare as follows:

	1900.	1901.
January, shares	164,400	312,385
February	112,000	132,555
March	252,750	152,250
April	121,500	150,625
May	171,015	151,020
Total	821,645	928,835

The total increase this year has been 107,180 shares, or 13.1%. Over one-third of the business thus far this year was in the month of January.

On the Producers' Oil Exchange business was quiet. Prices showed little change, but the tendency was to lower values. Some quotations noted are: San Joaquin Oil and Development, \$3.50; Peerless, \$6.75@7; Home, \$3.15; Sterling, \$1.05; Twenty-eight, \$1; Blue Goose, \$1; Sovereign, 21c.; Lion, 12c.

On the San Francisco Oil Exchange business was quiet. Dealings were chiefly in low-priced stocks, though a few shares of Hanford sold at \$90 each. Monarch of Arizona was quoted at 30c.; Lion, 13c.; Petroleum Center, 4c. The heaviest sales were of the last-named stock.

London.

May 28.

(From Our Special Correspondent.)

The mining stock market has been very short of business this week. Nobody is inclined to do any speculation and no new issues are being placed before the public. Holiday spirit has been uppermost, and the beautiful spring weather has tempted business men to prolong their Whitsuntide holidays considerably. We hear hardly anything of South Africans and West Australians; in fact, the markets are practically non-existent. West Africans are the only section where any business is being done, and a good deal of speculative buying seems to be taking place. I do not find, however, that there is any open market for the shares, for if an outsider offers shares for sale the quotations at once are found to be quite fictitious. It is likely therefore that buyers will have to hold on indefinitely and no doubt in most cases they will realize nothing but loss.

The report for 1900 of the Mikado Gold Mining Company shows that this mine is one of the best managed in the Lake of the Woods District of Canada. Developments prior to this time showed that with more capital for economical plant the mine might be placed on a paying footing, and a year ago some £20,000 of new capital was subscribed for this purpose. It is too soon to judge of the results of this new move, for work had to be stopped during the installation of the new machinery, and income expenditure for 1900 just about balanced after all expenses and allowance for depreciation had been provided for. There seems to be plenty of ore in sight, though it is of comparatively low grade. The most recent

developments in parts of the mine are not so encouraging as might be desired, so that it is considered advisable to hold the large balance in hand which was carried forward from the previous year.

owing to the success of the new loan. It is understood that a considerable part of the money raised by this loan will be spent on new railroads and rolling stock, which means large Government orders for material.

The copper market continues strong, a fact chiefly due to your operators and to the large consumption of the metal on your side of the water. At the same time there is reason to believe that European consumption this year will be larger than was anticipated a few months ago.

The Boleo Company will pay a dividend of 176 fr. for the past year. This is about 7.2% on the present selling price of the stock.

Satisfaction is felt here that the Chinese business is gradually working itself out toward a conclusion. We are not especially proud of the position of France there, and will be well pleased to see the affair closed.

Paris. May 26. (From Our Special Correspondent.)

Owing to the issue of the Russian loan and to other affairs of general interest, public attention has been drawn away from mining stocks and the market has been quiet.

The expected Russian loan has been brought out at last. The bonds bear 4% interest and are not redeemable nor convertible before 1915. The issue price is 98 1/2% of the par value, to be reduced to 98% if payment is made in full at once, instead of by installments.

There has been a sensible reaction in the market for the Transvaal gold stocks, and values are somewhat depressed. The general conditions have affected this section also, but the special influence is the apparently total failure of Lord Kitchener's attempts to end the war.

The metallurgical shares show a little improvement, but are still irregular, and it cannot be said that the present situation is strong, so far as the steel trade is concerned.

ANNUAL MEETINGS.

Table with columns: Name of Co., Location, Date, Place of Meeting. Lists meetings for various companies like Best & Belcher, Bunker Hill & S., Cambria Steel, etc.

* Special meeting.

DIVIDENDS.

Table with columns: NAME OF COMPANY, Latest Dividend (Date, Per share, Total), Total to date. Lists dividends for companies like Cambria Steel, Central Lead, etc.

ASSESSMENTS.

Table with columns: NAME OF COMPANY, Location, No, Delinq., Sale, Amt. Lists assessments for companies like Alta, Belcher, Blue Goose, etc.

STOCK QUOTATIONS.

Table titled 'NEW YORK' with columns for company names, locations, and stock prices for various dates from June 7 to June 13.

SAN FRANCISCO, CAL.

Table with columns: NAME OF COMPANY, Location, Par value, and stock prices for June 6, 7, 8, 10, 11, 12.

CALIFORNIA OIL STOCKS.

Table with columns: Name of Company, No. shares, Par Val., and stock prices for May 25, 27, 28, 29, May 30, June 1.

COAL AND INDUSTRIAL STOCKS.

Table with columns for company names, locations, and stock prices for various dates from June 7 to June 13.

ST. LOUIS, MO.

Table with columns: NAME, Location, Share capital, Par val., and stock prices for June 11.

* On Pittsburg, Pa. Exchange. Total sales, 664,854. † Ex-Dividend

* From our special correspondent.

STOCK QUOTATIONS.

BOSTON, MASS.

Table of stock quotations for Boston, Mass. listing companies like Adventure Con., Alhambra, Amal. Copper, etc., with columns for share values and prices.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo. listing companies like Acacia, Alamo, Am. Con., etc., with columns for share values and prices.

Official quotations Boston Stock Exchange. Total sales, 64,702 shares. *Assessment paid.

PHILADELPHIA, PA.

Table of stock quotations for Philadelphia, Pa. listing companies like Am. Alkali, Am. Cement, Bethlehem Iron, etc.

Total shares sold, 52,535. *Reported by Townsend, Whelan & Co., 309 Walnut St., Philadelphia.

SALT LAKE CITY, UTAH.

Table of stock quotations for Salt Lake City, Utah. Listing stocks like Ajax, Albion, Alice, Anchor, etc.

Colorado Springs Mining Stock Exchange. Total sales, 350,637 shares.

MONTREAL, CANADA.

Table of stock quotations for Montreal, Canada. Listing companies like Big Three, California, Can. Gold Fields, etc.

Montreal Stock Exchange. Total sales, 11,430 shares.

TORONTO, ONT.

Table of stock quotations for Toronto, Ont. Listing companies like Ontario, Golden Star, Ham Reef, etc.

Total 1 shares sold, 42,500.

MEXICO.

May 30.

Table of stock quotations for Mexico. Listing companies like Hidalgo, Real del Monte, San Francisco Hc., etc.

STOCK QUOTATIONS.

LONDON.

May 31.

Table of stock quotations for London, listing companies like American, Alaska Goldfields, and others with columns for Country, Authorized Capital, Par Value, Last Dividend, and Quotations.

DENVER, COLO.

Table of stock quotations for Denver, Colorado, listing companies like Acacia, Alamo, and Anacosta with columns for Par Value, Quotations, and Sales.

Official Quotations Denver Stock Exchange. Total sales, 102,563 shares.

SPOKANE, WASH.

Week June 7.

Table of stock quotations for Spokane, Washington, listing companies like Crystal, Deer Trail, and Evening Star with columns for Par Value, Quotations, and Sales.

PARIS.

May 23.

Table of stock quotations for Paris, listing companies like Acieries de Creusot, Firminy, and others with columns for Country, Product, Capital Stock, Par Value, Latest Divs., and Prices.

DIVIDENDS.

COAL, IRON, OIL, AND INDUSTRIAL COMPANIES.

Large table of dividends for coal, iron, oil, and industrial companies, listing Name and Location of Company, Shares, Dividends (Paid, Total to Date, Latest), and other financial details.

This table is corrected up to May 1st. Correspondents are requested to forward changes or additions.

DIVIDENDS. GOLD, SILVER, COPPER, ZINC, LEAD AND QUICKSILVER COMPANIES.

Table with columns: Number, Name and Location of Company, Authorized Capital Stock, Shares (Issued, Par Val), Dividends (Paid, 1901, Total to Date, Latest Date, Latest Amt.), Number, Name and Location of Company, Authorized Capital Stock, Shares (Issued, Par Val), Dividends (Paid, 1901, Total to Date, Latest Date, Latest Amt.).

This table is corrected up to June 1st. Correspondents are requested to forward changes or additions.

CHEMICALS, MINERALS, RARE ELEMENTS, ETC.—CURRENT WHOLESALE PRICES.

Table listing various chemicals, minerals, and rare elements with their current wholesale prices. The table is organized into columns for different categories such as Abrasives, Cadmium, Calcium, Manganese, Silver, and various acids and salts. Each entry includes the material name, its measurement unit (e.g., lb., sh. ton, gal.), and its price per unit.

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. This table is revised up to May 23rd. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Reviews.