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The Stampede to Nome.

Dispatches from Puget Sound outlining points bear out all the prophecies of the transportation contractors concerning the rush to Cape Nome this spring. Thousands of eager gold hunters have already arrived for the new El Dorado, and thousands more impatiently await the first available dances. Every inch of space on all the regular lines has been engaged far ahead, and extra steamers, as well as sailing vessels, are being pressed into service.

We all know that Cape Nome cannot possibly find profitable room for all these advent explorers. Thousands of them are inevitably doomed to bitter disappointment, and hundreds of them will be forced into financial ruin. As a dispatch in our news columns shows, and as might have been anticipated without such a dispatch, even those fortunate few who get to Nome this summer ahead of the herd will find all the desirable places tenanted for miles around Nome City. Claims can be bought, of course, if one has the needed capital, but more than ordinary care must be used if the buyer would not compound himself in a tangle of lawsuits. Some way will doubtless be found in which the great gold crop of Nome can be harvested in an orderly manner; but the prospect is rather dull in all respects, and the future is void of hope to have no exact precedent in previous gold discoveries.

Fortunately, we shall soon know all about the new region. Up to this time the subject has been enveloped in a haze of rumor and tradition, and the truth has been hard to distinguish from idle reports. One authoritative document has just been published by the United States Geological Survey—the "Prospectus of the Cape Nome Gold Region." This report is made by Assistant Geologist Frank C. Shrader and Alfred H. Brooks, and embodies the results of their observations made in the region. Elsewhere in this issue we print extracts from the report.

Calumet and Hecla prosperity.

Everyone is looking for increased copper production as a consequence of the high price obtainable for the metal, and one's inclination is to look for this additional supply from new sources rather than old mines. In one conspicuous case, however, the enemies come from well-tried sources—the old, reliable Calumet and Hecla. Not much is said about it, but the developments at the new Oceola lode of the Calumet and Hecla are too conspicuous to be overlooked. The shafts are down, one of them more than 1,000 feet, many levels have been opened up for stoping, and a new mill, to contain six stamps of 600 tons capacity each, is in building.

The output of this shaft cannot yet be predicted with accuracy, but good judges look for a production of from twenty-five to thirty tons of copper a day. Whateve the precise figures may prove to be, the chances are that the Calumet and Hecla will do more than any other copper mine in the world, in the next few years, to meet the world-wide demand for the metal. If they do, there will be an increase in the output, but probably no other mine will swell its production so much as the Calumet.

The effect of this enlarged output on the dividend record of the Calumet and Hecla will, of course, depend on the price of copper in the next year or two. If no great decline should ensue, even the purely disbursements of the last two years—$40 and $70 respectively—may be eclipsed. Some stockholders have looked forward to $100 a year on each of their shares, and this is quite within the range of possibility. The highest price ever paid for Calumet stock is $95.

One thousand dollars a share was at one time freely predicted for it, and it is easy to imagine conditions under which this quotation would rule.

The Mineral Industries in the Export Trade.

The gratifying increase in our foreign trade, of which so much is heard nowadays, extends to almost all lines, but possibly the mineral industries are getting rather more than their due proportion of the good things from over the oceans.

Our imports and growing foreign business in iron and steel will occur to most readers first in this connection. For the first nine months of the fiscal year our exports of iron and steel amount to $70,000,000, but only 48.7 per cent of the year before, and 49.0 per cent before that. Even at high prices the foreign demand keeps up with surprising strength, and no material falling off in business yet appears.

In the domain of copper an equally interesting record has been made. Foreign buyers for a long time had held aloof, but they had to come to it in time, and now they are generously paying the high prices that the market demands. Our copper exports in the nine months under review amounted to 49,000,000 dollars, as compared with only 21,600,000 the year before, and 23,600,000 the year before that.

In the case of refined mineral oil the story is the same. Our exports in the nine months were valued at 51,000,000 dollars, as compared with 26,700,000 and 28,800,000 in the two preceding years.

Coal Production in 1899.

Edward W. Parker, statistician of the United States Geological Survey, estimates the production of coal in this country last year at 338,821,000 long tons. As compared with the output in 1898, this estimate shows an increase of over forty-three million long tons, or 13.5 per cent. Although newspaper observers have predicted a large reduction, these figures of Mr. Parker's exceed even the highest estimates heretofore made.

Pennsylvania, of course, holds the first place among the producing states, having 75,600,000 tons to her credit; Illinois is second, with 23,400,000; West Virginia third, with 18,800,000; and Ohio fourth, with 16,100,000. Arkansas, Georgia and Idaho were the only states that failed to share in the increased production.

For a number of years an enlarged output of coal has almost invariably been the precursor of a decline in prices, but this year coal production was accompanied by an advance in prices. This fortunate and most unusual combination made the total value of the coal product 269,400,000 dollars, or one-fifth more than its value in 1898.

Circulation Record Figures.

The Treasury statement for the month of April shows a further increase in the volume of money in circulation, and carries the per capita circulation to the highest point yet recorded—$25.68. As compared with a year ago, gold certificates have increased in amount nearly $145,000,000, and bank notes over $41,000,000. There have been decreases in some items, but the net change in the twelvemonth is an increase of nearly $127,000,000. These statistics will mean different things to different people—and fortunately they mean less to most people than they did four years ago.

DESSERT POSSIBILITIES.

It may not be as well to present the deserts of the Southwest are practically useless except for mining purposes. All the copper producers are looking for promise of increased utility as regards mineral products. Trustworthy advice recently at hand from Dr. A. A. Thomas, mining engineer, work in the mines about there. On both sides of the Colorado River are mining camps well worth the investigation of operators. The Mojave Desert is now accessible by railroad, and the chances hold out numerous opportunities to enterprising prospectors.
BAR-PLACERS. In the lower reaches of the Snake river, and of the other large streams, gold is reported to occur on the bars, also in apparently workable quantity. It is here much finer than in the creeks and gulches, but not as reduced as that at the beach. So far as we learned it is variously mingled with the gravels and the sand constituting the bars, and, like them, was deposited by the rivers and streams which brought the material down from the creeks and gulches. It was on the bars of Snake river that the Nome gold was first discovered.

BEACH-PLACERS. Normally in the beach-deposits there is fine gold, gold-sand, and some flake-gold. The particles are much rolled and flattened, and range in size from that of a small pin-head to dust or flour gold. With only the crude appliances for separation at hand during the past season little of the fine gold has as yet been saved. Small nuggets amounting to about $1,500 in value have been found, but are relatively rare.

The beach-gold, when separated, is bright in color, having much the appearance of fresh brass or gold filings, and is usually of uniform grain. It is of irregular shape, usually flattened with rounded surfaces, and bears evidence of the grinding action of the surf which reduced it to its present fine state.

This beach gold occurs in the beach-placers, a strip of comparatively fine gravels and sand, 100 to 150 yards wide, extending parallel to the shore between the frontal edge of the tundra and the water-line. In the Nome region it has been found in the beach from a point a mile east of the town westward for some ten or twelve miles. Beach deposits were also reported from other localities along the southern margin of theeward Peninsula.

The richest pay-streak of the beach-deposits usually lies on what is locally called “bed-rock.” This is a tenacious clay of varying consistency. It is normally blue in color, but is often stained yellow by iron, frequently contains some carbonaceous matter and some sandy matter. The clay varies in depth from a few inches at the edge of the tundra to six or eight feet near the water line. It seems to be a bed which dips gently toward the sea. It should be noted, however, that it was not definitely determined that this bed-rock is in all cases the same stratum of clay, for such clay-beds are likely to occur anywhere in the gravel.

The strata above the clay-beds consist of well stratified sandy sand, black sand, fine gravels and the gold. With the crude methods employed by many of the miners only the richest portion of the pay-streaks are worth working. This includes, in some instances, only the superfine of the upper surface of the clay-bed; in others, several inches of the overlapping gravels. The pay-streaks vary in width from a foot to several yards; can often be traced in more or less disconnected patches from near the tundra to low tide; and their longer axes seem to lie at right angles to the shoreline. This trend is probably attributable to the concentrating action of the waves and possibly to the tide when the gold was deposited. The gold has been found from the grass roots of the tundra to low tide. There is a strong probability that this deposit extends seaward, but as yet we have no decisive evidence on this point.

The richness of the beach-placers is very variable. Nearly all the beach-sand carries some colors, and we have seen as much as one dollar in the pan obtained from the pay-streaks in several localities. As above described, the richest pay-streaks of the beach lie on or close to the clay-beds. Another mode of occurrence is in the thin layers of yellow sand and black sand which occur interstratified along with the beach gravels. The position of such layers, which rarely exceed two in number in any given section, is usually toward the base of the section. The pay-dirt from the clay-sand layers consists chiefly of fine garnets and magnetites, with a few vitreous and rose-quartz grains.

TUNDRA-PLACERS. As has already been stated, the coastal plain or tundra is underlain by gravels similar in character to those of the gulches and the beach. There is every reason to believe that these gravels are gold-bearing, though they have as yet received but little attention from the prospectors. As we have already noted, “pay-dirt” has been found a few inches below the surface at the edge of the tundra near Nome. This is the only fact in regard to gold in the tundra which we could verify by personal observation.

Underneath the dense and spongy growth of moss and grass is a layer of dark brown or black sands, with occasional layers of silt. The pebbles are of the rock types which have been described, as well as of calccite and quartz. As in the case of the pebbles of the gulch gravels, these frequently show some mineralization.

The gold lying on the clay “bed-rock” is not evenly distributed, but occurs in more or less concentrated patches. The thickness of the pay-streak is a variant of the methods used in extraction.
The Art of Drilling.
Western Pennsylvania the World's Schoolmaster—Stationary Rigs Expensive—Expanding Uses of Portable Drilling Machines.

Modern ingenuity has made it possible to explore the crust of the earth to great depths at comparatively small expense. The earth is full of riches, in spots, and the advent of a cheap and ready means of locating the deposits of mineral wealth is a public benefit. By means of the drill, oil was discovered in Pennsylvania in 1855, and since that time more than 25,000 wells have been drilled in that vicinity, some of them almost a mile deep.

Under the stimulus of the vast wealth, in the shape of petroleum and gas, found in Western Pennsylvania, some of the most skilled mechanics of the world ever produced were drawn to that section. From the light, primitive wooden rods operated by hand power, the heavy cable tools operated by steam have been gradually evolved. Workmen educated there have gone to all parts of the world to operate, and it can be truthfully said that western Pennsylvania has schooled the world in the art of drilling.

As a rule, the deeper the wells to be drilled, the heavier the tools and machinery required to do the work. For wells over 1,500 or an hour or two. The engine used for drilling is also used for moving the machine itself from place to place.

These portable machines are made in several sizes and capacities and are used for many purposes. The larger sizes are, of course, used mostly for drilling oil and gas wells; the medium sizes for drilling for artesian water, and the smaller sizes for ordinary water wells. Recently these smaller sizes have been adapted to exploring for various minerals, such as lead, zinc, coal, and iron. They have also been successfully applied to prospecting for gravel—river bottoms and channels, lake beds, and the like. When used where there is water enough, the machine is loaded on a flat boat with all appliances and a six or eight-inch pipe is driven into the sand and gravel to any depth required. The materials are extracted from the inside of the pipe by specially designed tools which take up the area of the pipe with exactness and certainty. The materials taken up are assayed and the value of the ground determined to within two or three per cent. When the test has been made to bed-rock, the process used for driving the pipe is reversed, and the pipe is withdrawn and used over and over again. The presence of water, so far from being a hindrance to such operations, is rather an advantage.

A PORTABLE DRILLING MACHINE.

After the ground has been assayed, so to speak, and a dredge installed, a system of tests can be made for the purpose of mapping out the pay streaks of old channels or bars, thus saving the expense of moving material in which there is no pay. And in case cemented gravel or rocks of boulders are found, the machine may be used for inserting dynamite cartridges in such places as need it. The machines are so arranged that wood saws may be attached for cutting fuel, and if desired they can be used for sinking shafts; using

BENCH-PLACERS.

The bench-placers of the region have, as far as we know, received little or no attention from the prospectors. Some of the low benches near the creeks have been shown to yield gold, but the higher benches and terraces have been discarded, chiefly, it seems, because of the difficulties in obtaining water. As has been explained, these benches and terraces have a similar origin to that of the tundra-plain, and as their material has a similar source, they are likely to contain gold.

Whatever this gold is evidently concentrated to prove of commercial value is a question for the prospectors to settle. A good number of bench-claims have been staked; and it is to be hoped that the assessment work of this year will throw more light on this subject.

VEINS.

In a new region, like that of Nome, the prospector naturally turns first to the deposits which will yield immediate profits, and therefore veins or quartz mining receives but little attention. In the arctic region, moreover, prospecting for mineral veins is much impeded by the thick coating of moss which covers most of the surface of the country. We have, therefore, but little definite information in regard to mineral veins of the region.

In the discussion of the geology, we noted that the limestones and mica schists contain many quartz and calcite veins which are frequently mineralized. We observed both copper and iron pyrites in these veins, and we have it on good authority that gold-bearing quartz veins have been found in the region. The placer-gold, as we have noted frequently, has small grains of quartz attached to it. In the bench gravels, rounded fragments of ore are occasionally found, consisting chiefly of copper and iron pyrites. One of these (assayed by E. E. Burlingame of Denver, Colorado) yielded 0.12 ounces of gold, with a trace of silver in the leg.

As far as it goes, the evidence points to a derivation of the gold from the mineralized veins and country-rock above described. We wish to emphasize this, because of the popular idea that the Nome placer gold has been brought from great distances by the action of ice or through some convenient connivance of nature.
the tool hoist for taking out the materials excavated, and at the same time using the beams for operating a sinking pump. It is a credit to Ameri- can engineering skill that some of these testing outposts have been exported to New Zea- land, South America, China, and Siberia.

The accompanying illustration shows one of the machines in operation, testing placer ground near Brokenhead, Col. 2.

Some Deep Holes.

(Written for the Journal by a Low-Minded, Privileged

The deepest shaft in the world is the Red Jacket, of the Calumet and Hecla copper company. This hole makes a bate line for the center of the earth, and falls short of reaching it by only 3,600 miles. Finding the climate sufficiently tropical at a depth of 1,400 feet, the slingers of the Red Jacket shaft stopped there; and it is said that the company will not go lower as all the ore in that part of the property can be obtained from that level.

On only a mile away a shaft is going down into the heart of the earth that will wrest from the Calumet and Hecla the championship of the world in this respect. It is, on the face of it, a deep-felt science to undermine Red Jacket's fame. Number 5 shaft, at a depth of 3,600 feet, is being carried on by the underground methods. Begun five years ago, and due at the bottom next year, this hole in the ground will form the first section of an airline route to China. (Come to think of it, though, it will not be exactly an airline, will it?) Just how far the through cars will take travelers before they have to get out and walk has not yet been determined, but it will be more than 4,600 feet.

It is easier to bore a hole into 6,800 miles of rock than it is to carve out a big shaft through the same, and greater depths than those mentioned have been attained by mere wells. The deepest penetration of this kind in America occurs in the valley of the Monongahela River, not far from Pittsburgh, where an oil-driller, who believes in going deeply into his subject, has gone down 5,690 feet from the surface. He means to descend 6,000 feet, and slake his thirst for petroleum at that level.

As at there, however, as seems to be contemplated, the American reputation for superlative will suffer a setback, as there exists in Europe at least two borings deeper than 6,600 feet. In the coal fields of Upper Silesia, in the little town of Grabowa (to be pronounced in one syllable), the diamond drill has wormed its way down through fire and water to the record depth of 6,570 feet. Another drill, near Leipsic, got down 5,245 feet before it lost its breath. These two borings were sunk to gauge the thick- ness of the coal measures, and to ascertain whether other beds underlay those that were known. The work was done by the paternal German government at its own expense.

It has been proposed to operate gold mines in the Transvaal to a depth of 10,000 feet, with a very small increase in cost, bored down by a surface installation, while the remaining 4,600 feet would be provided for by another installation underground. As the temperature is estimated to increase one degree Fahrenheit for every 20 feet descent, there is an obvious limit to these ambitions.

BRITISH COLUMBIA COPPER.

J. F. Tischler, a director of this company, says that the mine is now ready for the second cross-cut of sixty-five feet. The ore continues to average 15 per cent copper, and fire and five per cent copper, and about $4 in gold. Material for the smelter has been shipped and will be in position before August.

Mining Prospects in the Philippines.

A Montana Volunteer, who was a practical miner before he became a soldier, and who re- ceived a grant of land in the arid region of the Philippines, has written to Helena friends an interesting letter about the mining possibilities of the Philippine Islands from Maunl, he says:

"At present there are in this city about 500 ex- soldiers, from Western states in America, nearly all experienced miners, anxiously awaiting the necessary permits from Washington to push into the rich placer mining country which lies in the north and west. This region is now withheld owing to the lack of definite information on the part of the government as to the exact location of the islands. These laws are now undergoing at Manila the usual delays. Spanish-American translators, whose task will, it is believed, be completed shortly. It is known, however, that the government will not demand any license or other formality is required to placer mine unless the output exceeds 2,000 tons a day. Portland projects are in the air. As soon as the law is passed we have reason to believe that placer mining will be started on a large scale. It is too early to say whether we shall soon have any field wide veins may be formed into any other land underground, provided no activity on the part of the government to hinder us. The richest known deposits in Luzon are found about seventy-five miles northeast of here, where the city of Baguio is located. Here are the most fertile veins and hydro- latic and mining and saw mills. This section is inhabited largely by Igorotes, who are not only friendly to Americans, but are averse to work. They are of the Fili- pins and Spaniards, not infrequently killing the laborers and taking their heads. They live quite comfortably on food purchased from the Igorot and from $2 to $4 a week.

There is almost no reason to doubt that the placer mines of Luzon and Mindanao, as well as some of the richest in the world, easy of access and no hardships to be encountered in reaching them as soon as the auxiliary authorities will permit entry to them. Quartz mining is absolutely undeveloped in Luzon, but very rich gemstones, known near here, of white quartz carrying free milling have been brought in. The veins are not well defined, however, the tendency inclining toward pockets, from one of which amassing unusually high gold and copper was secured. The copper runs in a mixture with iron oxides carrying free gold and copper pyrite.

The native women hereabouts pan the alluvial sands with wooden boxes, frequently taking out from 36 to 50 dollars per day for about $14 an ounce. Last week an Igorot woman brought into Baguio, as a result of six weeks' work on the river, a bag containing 15 ounces, and two ex-soldiers, who mined in the same district for three months, netted over $5,000 in gold and copper, putting over $4,000 in the bank. Better than had not the soldiers compelled them to leave.

The rivers are lined with banks of black sand (magnetite iron), carrying fine gold. The gold is not flaky but small, nuggets ranging from the size of a pin head to three or four ounces in weight. Bedrock averages from six inches to twenty feet thick, and the reason why no systematic work has ever been done in these fields is because the Igorotes drive the Spanish government has not allowed the Chinese and Filipinos to pursue mining as a business, hence the whole field is new and unexplored.

Lead ore is also abundant and runs from twelve to sixteen percent copper, but has never been mined to any great extent. Copper runs from fifteen to eighty per cent. Little or no silver has been found although no systematic work has theretofore been done. Iron is found in abun- dent quantities near Manian, but the production thereof has been negligible. The Spanish government never encouraged mining. Angi- ying, yielding in this primitive manner, is mined in a primitive manner in this island as is also a good grade of marble, which is found in large quantities in both islands. The white marble is also abun- dant, especially in Cebu. Very rich gold deposits exist in the mountains of Mindanao.

The-ex California and Montana soldiers are unanimous in the belief that when opened up, the mining district will be found inviting and remunerative in the world, excepting even Nome and the Klondike.


By Prof. F. W. Taussig.

For the current quarter, the Quarterly Journal of Economists, the scholarly review issued by the Harvard University Department of Political Science, Taussig has prepared a comprehensive account of the progress of the iron industry in this country. An abstractive of his papers follows.

The iron industry of Great Britain was still the world's commanding producer of iron and steel, but from 1870 to 1890, the production of the United States doubled, and for three decades, the geometrical progression was maintained, for 1890 doubled 1870, and 1899 again doubled 1890. The iron industry of Great Britain held its own, but could not resist the growing rival. In 1890 the United States turned out over 9,000,000 tons of pig iron, for the first time passing Great Britain, and displacing that country as the leading producer. The depression which followed the crisis of 1890 caused a sharp decline in the American production, in the revival of activity after 1891, the figures again mounted, reaching 12 million tons from 13.5 in 1895.

The year 1900 will hardly show a repetition of the feats of the previous decades—the pace of the production of pig iron is not expected to be maintained—yet all present indications are that the close of the decade will see the United States behind by fifteen years. This enormous increase, however, has been by no means entirely distributed through the country. A revolution within the country has taken place which is part and parcel of the changed relations which will not be followed by the former years.

The Era of Anthracite Iron.

The first great impulse to the expansion of the iron and steel industry was the discovery of coal on a large scale came in the United States with the successful use of anthracite coal as fuel. From 1890 to 1890, the use of the industry and its growth was governed by this fuel. Hence Eastern Pennsylvania was the main producing district, the supplies of ore from that region were smelted with its anthracite coal, and Philadelphia was the central market. Proximity to the seaboard made foreign competition easy. Soon after the Civil War in his dominant position of charcoal iron was taken by the use of soft coal which had begun before 1800, became very rapidly greater, the use of anthracite began to decline, and the production of anthracite coal has now shrunk to insignificant dimensions. What demand there is for anthracite coal is met with a mixture of coke and hard coal, and even this means of reducing the ore has come to be of less importance as less important as it has been displaced as an iron-molding fuel. Coke has taken the place of anthracite and coke, and the supplies of bituminous coal available for coking are virtually limitless, and the processes of coke-making have been applied on a huge scale and with tireless energy.

Pittsburgh is situated in the heart of the region where coaling coal is plentiful. To this point the iron industry has converged, attracted first by cheap fuel and soon by other geographical advan- tages of the region—its easy access to the growing western country, and the added opportun- ity of securing superior quality of the best ore. Pennsylvania has remained the greatest iron producer since 1850, but since 1880 it has been western instead of eastern Pennsylvania which has secured to the state its bearing of the larger part of the production. Production has been no less affected by the distribution of the ore supply, and the effort of the men on the iron trade by the Bessemer process. The Bessemer process depends for the production of special kinds of ore and pig iron, such as are well-sighed free from sulphur, and especially from phosphorus. Variants of the process from this iron have been applied on a great scale, but the original Bessemer process has retained its importance in the production of good pig iron. Ores adapted to it have become doubly valuable, and the earth has been so replaced in the new deposits by the old, the new deposits of valuable iron ores of the Bessemer process. The Bessemer process depends for the production of special kinds of ore and pig iron, such as are well-sighed free from sulphur, and especially from phosphorus. Variants of the process from this iron have been applied on a great scale, but the original Bessemer process has retained its importance in the production of good pig iron. Ores adapted to it have become doubly valua-
some of the sources previously proved to be available, but the greater part of the eastern ores were not so, and, as in Great Britain, a distinct demand resulted.

FOUR IMMENSE ORE FIELDS.
The Lake Superior iron region suddenly sprang into consideration, there were abundant supplies of rich and properly constituted ore. These and the equally abundant coal of Pennsylvania were the iron made from them was converted into steel by the Bessemer process, which was more economical and paid for itself more quickly than any similar process. The Bessemer steel was then used in the manufacture of cars, locomotives, and various other iron and steel products. The Bessemer process was invented by Henry Bessemer in the 1850s.

A Slow Speed Roller Mill.
High speed roller mills have been heretofore, and are now by many considered, the only feasible device for crushing quartz and ore for the purpose of extracting the valuable products therefrom. The reason for this is plain: There have been no mills manufactured so cheap and constructed so light as to admit of running them slowly, even though they could do the amount of work that would be expected of them; or in all ore into the mill that you can, and sacrifice the close extraction, has been the chief objection to these rolling mills. This was necessary, for heavy and expensive machinery requires tremendous power and would not otherwise pay good interest on the money invested.

The Lane Slow Speed Roller Mill is now perfected and in successful operation. The weight of the mill, including foundation timbers and cog connections, is 9,750 pounds. The largest timber used is eight by eight inches, ten feet long. The heaviest castings are the three or shoes of the rolls, which weigh 1,500 pounds each.

The following letter from Messrs. Thomson & Boyle is self-explanatory:
We call your attention to extracts from the report of Mr. George H. Bradford, superintendent of the Slate Range Milling Co., whom we know to be reliable and trustworthy. From this and other reports, and after a careful examination of the merits of the Slow Speed Roller Mill, we have made the arrangements, as side agents, to manufacture and sell the same. We believe it to be the mill that miners and mine owners need, and that it is a mill that will assure a less percentage of gold in the tailings than any of the high-speed mills now in use.

We are making arrangements to build in Los Angeles, one of these mills, with a concentrator and cyclone plant. You will then be enabled to work and test your ores and determine the best mode of treatment. We will be pleased to have you send one-half of your ores to high speed mills and send us the other half and give the Thomson & Boyle Reduction Works a fair and impartial trial.

We manufacture an improved cyclone plant, and, if it is satisfactory, we will be pleased to correspond with you.

Respectfully yours,

Thomson & Boyle Co.

Mr. Bradford says in his report: Our mills complete ready for ore consumption are fractional and of a five-stamp plant. Our capacity at twelve revolutions per minute is 1,000 lbs. of ore crushed. A ten-ounce sample of the tailings gave the following screen test: 90.85 per cent passed through a forty-mesh screen, 1.07 per cent passed a sixty-five, 0.41 per cent passed an eighty-screen, and 7.57 per cent passed a one-hundred-screen. A mill that will crush 84 per cent of its product through an eighty-five-mesh screen, using a No. 10 mesh, is something new in milling. We are using a Willey concentrator. The tailings assayed 55 cents to $1.50 per ton. The screen test of the tailings shows this to be a most perfect size mill for concentration, such as cannot be obtained from any stamp mill, or high speed roller mill, that I have ever seen. Our concentrates are about $40 per ton. We only use about two-thirds the water required for a five-stamp battery. The ore alone with feeder takes four to five HP. The ores here are not hard, yet are by no means considered soft, being almost pure quartz. The gold is very fine. We milled some ore carrying about four per cent gold, also manganese, iron and copper pyrites, silver and a little fine gold, and caught 59 per cent of the gold in the battery. The tailings ran less than 1.

Summer Study of Mining.
The Columbia School of Mines has completed arrangements for its summer class in practical mining. Professor Robert E. Peale will conduct the class and the heavy mining at the ore mines in the Cripple Creek district of Colorado.

The class will leave New York early in June and return by way of a week's underground work in the mines, followed by two weeks in field geology and Dr. Hollick of the department of geology.

The larger metallurgical works in the Cripple Creek district will also be visited.
American Metal Mining.

Miners are Productive Workers in an Emphatic Sense—Our Valuable Crop of Metals—First and Most Usefully Distinctive Mineral Colors.

By A. F. Van Wagener, R. M.

Some one who has looked closely into the history of the mineral wealth of the earth will find that the several minerals have been largely developed by mining as an industry to a greater or less extent. In some cases the production has been vast, and in others it has been small. In general, the production has been for the benefit of the country, or for the manufacturers of the country, and for the benefit of the world.

First—The coal of the United States, as well as that of the coal of the United States, is the most rapidly increasing resource in the world. The coal of the United States is the most rapidly increasing resource in the world. The coal of the United States is the most rapidly increasing resource in the world.

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THE MINING AND METALLURGICAL JOURNAL. May 15, 1900.

Petroleum in California.

Failure at First—Structural Geology Must Be Studied—A Forest of Derricks Invades a Residential District—California Oil Different from Eastern.

By W. L. White.

The existence of petroleum in California has been known to miners of the mining districts for many years. The California Indians used the material in the form of soap, and various forms of soap are made largely from it. The soap is used for medicinal purposes, and is used by the Indians for the purpose of making their hair and scalp clean.

It is said that in 1855 or 1856, a group of prospectors, among them the California Indians, used the material in the form of soap, and various forms of soap are made largely from it. The soap is used for medicinal purposes, and is used by the Indians for the purpose of making their hair and scalp clean.

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The Gold and the Silver Product of California.

The Banner Counties—Net Decrease in Production Not Discouraging—Quartz, Hydraulic and Placer Proportion of Product.

By Chas. O. Yale, Statistician of San Francisco Mint.

The Report of the Superintendent of the United States Mint at San Francisco shows that the aggregate gold product of California last year was $15,320,000, and of silver (stated in commercial value) $9,150,505, which is still the banner gold-producing county ($2,715,000), as it has for some years. In the first place, the California county holds second place ($1,650,769), relegating Amador to the third position ($1,540,768), Calaveras to the fourth ($1,550,544), and Placer to the fifth with $1,400,000.

Comparing the totals of gold and silver with corresponding figures obtained from the same sources in the year 1894, we find the gold yield of the State was $70,547, and the silver yield an increase of $99,957, making a net decrease from previous year of $41,400. This is a very good showing in view of the dry season last year, when so many quartz mines had to hang up part or all of their stamps for a time, and when the water season for gravel mining was very short indeed. Considering these conditions, it is to be noted that the State nearly held its own in bullion product, it is seen that the mining industry is really progressing instead of declining in product.

Of the $15,320,000 combined gold and silver produced, $12,320,000 came from quartz mines, $1,128,564 from hydraulic, $1,915,950 from drift and $1,401,866 from placer mines. Included in the placer output is that derived from dreggers, river-bed and bar, gulch, ravine and ordinary placer work by Chinese labor. The quartz returns from quarries, mines, are included $452,744 gold and $310,325 silver, derived from copper mining and smelting operations in the City. California counties. Also included in quartz returns are $7,051 gold and $4,435 silver from silver-lead mines in Madera, Mono, Tulare, Yuma and Bernardino. Thirty counties of the state produced gold, and twenty of these returns some silver product. As nearly all the mines are gold properties, numbers of them make no return of silver, or reporting as only "mineral."
The Cheapest Transportation by Rail in the United States—Carrying a Tonnage Equal to that of Three Great Pacific Roads Combined Relatively to a Tonnage.

J. T. Odej, the well-known railroad manager, describes in the New York Evening Post some extraordinarily successful transportation results attained by the Steel Warehouse Company, from Lake Erie to Pittsburgh. Mr. Odej is the general manager of the company, which has been successful in moving large quantities of coal from the furnaces at Pittsburgh. A new steam shovel was completed last winter by which a ton of coal can be moved every forty to fifty seconds. The train of forty cars will be loaded with coal in two hours. A forty-ton car of coal can be unloaded and set in the cars in thirty-six seconds. Most of the switching at Connell is done by the helpers, who are on a cable running between the two sides of the coal, and the remainder is done by the other railroads of this country in the same direction.

It is generally believed that the Pittsburg, Bessemer and Lake Erie Railroad have not been content with cheapening railroad transportation of ore from the lake port to the works, but have also added along the largest object in view of reducing to themselves the cost of the ore from the whole distance from the mines in eastern Minnesota to Pittsburg, so as to enable them to defy competition with all other American steelpakers. To that larger end, they obtained control by the purchase of a number of deposits in the Minnesnow, from which they take ores with steam shovels at the lowest possible cost. They have also purchased a mine for $20 a ton, for the entire output from the mines to Duluth on Lake Superior. From Duluth to Connell, they have the ore shipped by their own vessels to their own. While the lake rate was only 60 cents a ton in 1898, and a ton coming in the spring. But their own fleet will be enlarged by the end of this year from three to fifteen vessels, with sufficient capacity to meet all requirements of the works of four and one-half million tons at a cost of not over 58 cents a ton.

The Mineral Wealth of Siberia.

Gold on the Pacific Shore—Rich and Varied Deposits Throughout the Country—Encouragement to Settlers by Nominal Rates of Fares.

An article in the New York Herald, by Wm. D. Johns, from Nome, describes the mining industry in Nome. It is noted that the country is much more accessible than it was a year ago, and that the mining industry is being encouraged by the government. The article states that the government has been encouraging settlers by nominal rates of fares to the region, and that the industry is being rapidly developed.

Nome News.

Stampellers and Grabbing Speculators—A Mild Winter—20,000-car Load—The Biggest Ocean Race on Record.

A dispatch from the New York Herald, by Wm. D. Johns, from Nome, describes the mining industry in Nome. It is noted that the country is much more accessible than it was a year ago, and that the mining industry is being encouraged by the government. The article states that the government has been encouraging settlers by nominal rates of fares to the region, and that the industry is being rapidly developed.

The Bullion Product of Alaska in 1899.
1899 were $5,692,012, and silver $228,9163; a total of $5,920,928, or $2,189,844 more than the average for the year 1898. Of this increase it is estimated that $2,400,000 came from the new placer camp at Cape Nome last winter. It is confirmed by the increase in the vicinity of the Yukon River and the change in the river mouth, and the rest of the increase from the quartz mines of the interior of the Territory. The placer campaign along the Yukon River gives evidence of only slightly increased yield for the year. In Southeastern Alaska quartz and tungsten tonnage have increased out of these quartz mines for 1899 was 2,594,176 out of which the Yukon contributed $10,000,000. Coal is the next item of importance, the production for the year 1899 showing an increase of $1,000,000 in value. The production of coal for 1899 was from 248,727 long, 977,205 nickel, $2,048,240 platinum, $85,877 silver, $1,931,741. Of the chief classes of minerals, the total production of the country, lead and silver are the only two that have been reduced off, and that notwithstanding more favorable prices. This is ascribed to local causes in British Columbia not dependent on the value of the deposits.

TAMARACK'S ANNUAL MEETING: The annual meeting of the Tamarack Mining Co. was held on Board on May 3. President Higdon reported on the condition of the mines, satisfying the stockholders that the property is in a most satisfactory condition. The race is running a little higher in fine copper than it did last year. The No. 5 shaft is 1,500 feet deep, and is expected to reach the Chulutuk lode before December. It is expected to be a very rich shaft.

Latest Mining Decisions. Specially prepared for THE MINING AND METALLURGICAL JOURNAL.

When two vessels register in different ports, the crew of the vessel entering the harbor may be established on the condition that the port of entry is the one that is most distant from the home port of the vessel. The court has ruled that this is a reasonable condition, and that the port of entry shall be the one that is most distant from the home port of the vessel. The court has also ruled that the port of entry shall be the one that is most distant from the home port of the vessel.

MINING IN BRITISH COLUMBIA: According to a recent report, an English company will, during the present year, dredge the Saskatchewan River, British Columbia, for gold. It is stated that an English mining engineer, Mr. F. B. Hob- sen, has arrived in Montreal from London en route for Edmonton. When he first made repre- sentations to the government authorities, the placer miners on the Saskatchewan, he was asked what the bad points were, and replied that in the opinion of the miners, to the fineness of the gold found in the sand might be prejudicial to the saving of paying quantities, but they had discovered a process by which gold could be recovered. The gold-holding gravel in the river bed averages a depth of about 25 feet. The plant used is called a New Zealand dredge, the cost of which is in the neighborhood of $5,000 to $6,000 per day. The dredging works will be operated during the summer in the St. Lawrence channel between Quebec and Montreal. Water is being used to separate the gold from the sand. It is estimated that from tests made in hundreds of places in the river the gravel will produce an average of 25 cents per ton; and that this amount of 2 tons can be handled for 2 cents per cubic yard. The handling of 5,000 yards is estimated to be a day's work.

CANDA'S MINERAL OUTPUT: According to a report of the Geological Survey, the mineral output of Canada for the year 1900 is placed at $77,600,000. Of this sum, gold is the largest factor, the production for 1900, of which the Yukon contributed $10,000,000. Coal is the next item of importance, the production for the year 1900 showing an increase of $1,000,000 in value. The production of coal for 1899 was from 248,727 long, 977,205 nickel, $2,048,240 platinum, $85,877 silver, $1,931,741. Of the chief classes of minerals, the total production of the country, lead and silver are the only two that have been reduced off, and that notwithstanding more favorable prices. This is ascribed to local causes in British Columbia not dependent on the value of the deposits.

Chinese Gold Discoveries. Information relative to the gold discoveries in China was received at the State Department in Washington from the United States Consul General at Shanghai. It is stated that the Chinese government has placed its services at the disposal of the United States Consular Service in China to assist in the discovery of new gold mines. The Chinese government has also promised to supply the necessary machinery and labor for the exploration of new gold fields. The Consul General at Shanghai has been instructed to make a careful survey of the country and to report on the prospects of gold mining in various parts of China. The Chinese government has also promised to supply the necessary machinery and labor for the exploration of new gold fields. The Consul General at Shanghai has been instructed to make a careful survey of the country and to report on the prospects of gold mining in various parts of China.

Link-Belt Electric Patents Sold. The Link-Belt Machinery Co. of Chicago sent to its patrons on May 1 the following letter announcing the sale of its electric mining machinery to the Goodman Mfg. Co.: The enormous increase in our regular lines of machinery is very encouraging to us, and we are confident that it will carry us through for the past twenty years, and the greatly increased orders for our electric mining machinery, together exceeding the entire capacity of our plant, has made it advisable for us to retire from the manufacture of electrical machinery, and we beg to announce that we have to-day sold to the Goodman Mfg. Co., of Chicago, stock and good-will of that part of our business as the Electrical Mining Machinery Department. All the unfilled contracts and orders for supplies now held by us have been transferred to the Goodman Mfg. Co., and the latter has all the necessary facilities and ability to complete all such contracts and orders.

The new Company, with Mr. E. E. Goodman as general manager, and Mr. F. W. Davis as secretary and general manager of the electrical mining machinery and specialties so long made by us, and we bespeak for them the same continued patronage of the users of this class of machinery so long enjoyed by us. The Link-Belt Machinery Co. has been operated by R. A. Farrar, President.

The Goodman Mfg. Co., which thus assumes the business of the Link-Belt Co., has its offices at 324 St. and Stewart Ave., Chicago. The officers are Frank B. Whipple, president; Elmer A. Perry, vice-president; Herbert E. Goodman, general manager; Charles E. Strawbridge, secretary, and Charles E. Davis, superintendent. In announcing its purchase of the Link-Belt Co.'s patents and stock of electrical mining machinery, the new company says that the entire force of the department has been taken over, and that it is now working at full capacity, and the shop facilities improved, so that we are unusually well prepared to complete all contracts for electric mining machinery. The machinery is now being manufactured by the Link-Belt Mfg. Co. and is now ready for immediate shipment. The new company is now ready to execute without delay all orders for electrical mining machinery.
TRADE NEWS.

A Leyner Rock Drill has been sold by the Edward P. Allis Co. of Milwaukee to the propri- etor of the pair and interior Crystal Falls, Mich. The Montana Ore Purchasing Co. has moved its New York office from 109 Broadway to the building of the National Bank of Commerce, No. 31 Nassau St.

The Compania Minera de Penola of Mapatui, Minas Gerais, Brazil, has placed an order for two furnaces, silo and other equipment with Edward P. Allis Co. of Milwaukee for three large engines and generators, one hoisting engine, two heating and cooking plant, an electric locomotive and appliances.

The Linderwood Mfg. Co., New York, has taken a $12,000 contract for three auxiliary engines, one hoisting engine and generating group at Armstrong, Whitworth & Co.'s Walker Shipyards, Newcastle-on-Tyne. The Linderwood Co. is also making an electric hoist for mining use in Japan.

The Lufkin Rule Co. of Saginaw, Mich., manufacturer so many kinds of measuring tape that an engineer or surveyor would have to be fastidious in order not to find in the collection exactly what he wanted. In one respect, however, all these varied styles of tapes have their rigid exactitude and reliability under all conditions.

For many purposes woven tapes are sufficiently durable and flexible to serve as a superior line of these. Mining engineers, however, and various readers of general interest, must have an extreme and accurate measure of measurement, and where this is the case the only best of steel tapes, of each length desired, some of the Lufkin steel tapes are finely adapted to engineering field work, one of these measures is about fifty feet long, and about five ounces complete, and can be conveniently carried in the vest pocket.

It is an interesting fact that, whereas at one time all the steel and metallic tapes used in this country were made in England, the Lufkin Rule Co. shipped their product regularly to the British Isles.

One of the handsomest, most copiously and aptly illustrated, and generally satisfactory trade publications that we have seen is "Catalogue No. 49," issued by the Murray Iron Works Co., Burlington, Iowa. Organized in 1870, this enterprise has been growing year by year, ever since, until to-day the plant comprises a foundry, two machine shops, and a boiler shop, said to be in each case the largest works of its kind in the state. Boilers and engines, complete steam engines, and handling machinery, portable, and mining engines, ice and refrigerating machines—these are the general lines manufactured, and it is said that the products have been designed with special reference to the needs of mining. The mining machinery manufacturer had problems anticipated and solved in the Murray machinery.

Hydraulic power, compressed air, electricity, and other modern applications have been freely adopted by the Murray Iron Works, and keep down the cost of production. The four great departments of the plant supplement each other, and are worked harmoniously and economically together so that the combined product is brought to market at minimum cost.

Purchasers can always be depended upon to inform the sellers of any feature of his goods that displeases them, but they are not always ready to let him know when they are pleased. The numerous letters that we have received from a Dubuque Packing Co., from its customers furnishes a conspicuous exception to this general rule. The Dubuque Packing Co. has given us a little packet containing more than eighty letters from users of Dubuque packing and other general testers containing good service rendered by the packing. Several well-known mining companies are using the packing American and are glad to let us know that they are. We are glad to learn that the Dubuque Packing Co., the Boston and Montana, the Quincy and the Smuggler. Instances are reported where the packing has given years of continuous service without renewal or attention. The office of the Packers is at 520-22 Liberty St., New York City.

The International Correspondence Schools of Scranton, Pa., announce two courses of instruction intended especially for students of mining and those entering the metal trades, one of which furnishes instruction in modern methods of metal mining, prospecting, and managing one or mines. The other is the metal prospectors' course which qualifies the student to take the assay of ores and to prospect for silver and other ores. These departments are conducted by Henry M. Lane, a successful teacher of civil engineering, and Frank H. Luchten, an experienced assayer and metallurgist.

The Gates Iron Works of Chicago is enjoying rather more than its share of the good times. For two years or more the average daily output of its plant has been running night and day, and for some time ahead at least, equal activity is assured. The export trade has for a long time been a marked feature of their trade business, and present conditions appear to be making more rapidly than ever.

Although the Gates Iron Works is commonly thought of in connection with mining machinery, some of its products are widely used in other lines. The Gates Rock and Ore Breaker, for example, sold more freely in 1908 than ever before—a fact due in part to the extensive use of the breakers by railroads for ballasting work. The Company has just issued its general catalogue, a well-bound volume of 238 pages, and the information it contains is presented in a most interesting manner, made especially attractive by the illustrations. Among the special pieces of machinery are the famous Gates rock crusher and ore breaker, the Gates revolving screens, elevators and mining cars, the Dodge and Blakeslee crushing rolls and the Bradley Chiluss mills. In other sections are taken the hundreds of other innovations, including the Treadman steam stamp mill, the Horn one-compartment all iron jig, the Gates弟弟, the Horn改进ed No. 1 and revolving sand pumps. Other features of the catalogue are the descriptions of cyanide plants and many classes of interest to persons concerned with the metallurgical side of the industry.

Construction and Development News.

J. P. Boyd of Shabbeev, Tenn., is in the market for a water wheel.

W. A. Miller of Keiser, Va., will soon purchase an 8-H.P. gasoline engine.

F. H. Heald of Randsburg, Cal., wants a steam hoist, cars and track for a coal mine.

The estate of A. S. Van Mickel, Hazleton, Pa., is about to remodel its coal breaker.

The Hawkeye Mining Co. of Cokusah, I. T., wants a 40-H.P. boiler and an 80-H.P. engine.

The Fingerville Mfg. Co. of Fingerville, S. C., is in the market for engines and boilers.

W. H. Aston of Bridgeport, Texas, is in the market for a complete outfit for coal mining.

The Jamison Coal Co. of Greenbush, Pa., is about to install a 600-H.P. plant for its coke ovens.

W. D. McDonald, S. C., will soon buy a 1,000-H.P., cross-condensing engine.

Ernest Favor of Searles P. O., Cal., owner of a mine at Slate Range, will soon put in a two-stamp mill.

B. F. Folks & Co. of Suffolk, Va., will purchase two gasoline tanks with a capacity of from 190 to 290 gallons.

M. B. Johnson of Chilohide, Ariz., is raising capital to develop the Gladstone group of mines near Chilohide. K. B. Rains of the Mayflower mine, Randsburg, Cal., is likely to put in a mill and cyanide plant.

The Carbon Coal & Coke Co. of Mammoth, W. Va., is about to purchase an electric generating plant for mining work.

The Tennessee Coal & Iron Railroad Co. will soon purchase coke oven driers for its Birmingham plant.

John A. Brewer of Pocahontas, Va., is said to have discovered large deposits on his property and is likely to develop.

J. S. Laveritt of Talladega, Ala., has discovered a large deposit of iron on his property and is likely to undertake development.

George Taylor of Manchester, Minn., is interested in the development of an ore dressing and pavilion machinery for the mine.

The Springfield Commercial Co. of Springfield, Tenn., is in the market for conveying apparatus for loading and unloading cars.

Forty-nine acres of coal lands have been purchased by the Consolidation Coal Co. of Cumberland, Md., and will be developed.

B. R. Hutchcraft of Bartoeburg, Ky., is one of the shareholders in the Consolidation Coal Co., which will develop 400 acres of coal land.

The Laurel Creek Coal Co. of Quinonmont, W. Va., in the market for a set of rollers for sheet metal.

John G. Duncan of Knoxville, Tenn., desires prices on a second-hand vertical mining pump with capacity of from 5,000 to 10,000 gallons daily.

A new mill will be erected on the Gold Hill mine of the Smith Flit, El. The engine and boilers are now on their way to the mine.


Elizabethtown, N. M., has been chosen as the location for the Golden Queen Mining Co., recently incorporated under the laws of Colorado.

The Tietzican group of mines at Bingham, Utah, will be developed by Col. Shaugnessy, its new owner. New pumping and hoisting apparatus will be installed.

There is a talk of doubling the capacity of the thirty-stamp mill at the Yellow Aster mines in Randsburg, Cal. Durum, Mosers and Singleton are the owners.

The Colorado-Georgia Smelting and Gold Mining Co. of Randsburg, Cal., whose president, has organized to erect a 60,000 gold smelter at Guinevere, Ga.

The Broken Hill Coal & Co. is about to increase the working capacity of its mines, at Waits, Ala. The number of its coke ovens will also be increased.

A. H. Hiatt and B. F. Haynes of Sonora, Tomahawk county, Cal., intend to erect a concentrating plant on their Victoria mining claim. A two-stamp mill has just been placed in operation.

G. B. Markle & Co. of Jeddito, Pa., expect to build a stamp mill one of the largest in the anthracite region. The old workings of their colliery which have already been used for many years, will be reopened and renumbered and new workings will be opened in the western end of the basement. Mr. Markle, who has been at Jeddito for the erection of a large machine shop.

Thompoo & Boyle of Los Angeles, Cal., intend putting up a plant for the reduction and testing of ores and samples. The plant will be composed of a Lano slow-speed roller mill and cyanide plant and will concentrate the gold and concentrating machinery. Nothing has been done toward securing estimates on the concentrating machinery.

PERSONAL.

President Augustus of the Calumet and Hecla has been in Houghton, Mich., inspecting that famous mine.

A. C. Fordon, for three years chemist of the Manfield mine at Crystal Falls, Mich., has accepted a position with the Oliver Mining Co. at Virginia, Minn. Mr. Fordon has been travelling through Southern California in the interests of his company.

G. W. Mainer of New York is now on the west coast of Vancouver Island, B. C., organizing development work on the John Bull group of mineral claims on the Alberni cauld.

General Thomas Dennis, for thirty years mining captain at the Franklin mine in Houghton, Mich., has been appointed superintendent of the Rhode Island. Mr. Dennis is a native of Townshend, Vt.

Wm. I. McPhail has relinquished his position as manager of the State Ore Sizing Works at Idaho Springs, Coto, to become assayer and chemist for the Southern Smelting Co. of Oakland, Ga.

AMONG THE ENGINEERS.

Law E. Aubry, the Los Angeles mining engineer engaged in the sale of land on several mineral properties, and purposes working them on a large scale.

Leon M. Hall, consulting engineer on the electrical machinery construction for the Comstock
CORRESPONDENCE

MICHIGAN.

(From Our Special Correspondent.)

On the 4th the Arcadian mine began lowering the old shaft on the nuggested look. The shaft is on the property bought a year ago or so of the St. Mary’s Canal Co., and is about 200 feet deep.

The Postal Telegraph Co. will be doing business in the copper district very soon. It has secured access to Houghton over the Long Distance line of the Endicott & Morehouse Co., and will have connections in all the prominent towns of the copper district, Hihiboro, the Western Union has enjoyed a monopoly of the territory.

On May 1 a strike was threatened on the Oceola Consolidated, where 1,000 men are employed. The miners demand a minimum of $60.00 a month for men working on company account, and a five-day week. The present miners have been four months on the job, and the demand was temporarily granted, pending the return of the strikers. The strike will be held in abeyance for settlement.

The U.S. Bureau of Mines is a sample of fifty tons of mohawkite from the Mohawk mine will soon be smelted by the Oxford Co, or some other Eastern concern. The smelter will be arranged in the manner of the arsenic, amounting in weight to fifty tons in fifty mohawkite. This large amount of the deadly poison which has caused the death of gas of mohawkite has been known to cause serious accidents. The constantly varying width of the mohawkite fuses is always a source of comment and conjecture. The vein has reached twenty-eight inches, and has also narrowed down to five inches. The shaft has been traced to the surface from the point where first encountered for a distance of 105 feet and about 200 feet on the dip of the ore. Recent developments are encouraging, giving rise to the hope that the vein will hold true and extend. The vein will be opened thoroughly.

In the Baltic mine, twenty miles south of the Mohawk, a new shaft was discovered a few weeks ago, showing arsenic of copper and nickel closely resembling mohawkite. To a certain extent, the arsenic is a more Scott, but it may develop into something more extensive. It is naturally of great interest among mining men and scientists, and is of great value in corroborating the opinion that the occurrence of the fuso vein in the Mohawk is something more than a mere freak of nature.

The coal famine which threatened to hamper seriously the copper mining interests hereabout has at last been broken with the opening of late navigation and the arrival of numerous cargoes of coal.

MISSOURI.

(From Our Special Correspondent.)
Joplin, Mo., May 7, 1900.

Sales for the week ending May 5 were $26,000 less than the sales for the preceding week, and $100,000 less than the sales for the preceding week, while with a comparison of the preceding week with the week ending May 11, the sales were dripping at the nine-acre rate and an increase in lead of 243 tons. This spring the increased product of lead was $100,000 instead of the $10,000 that is the case this year.

The price of lead is stationary at $154 a ton and zinc is $25 a ton, making a lead much more profitable article than a zinc. The price of zinc is $15 a ton, less, another item in favor of lead.

The actions of the zinc ore buyers seem to demonstrate that they are looking for quantities of zinc. The production of zinc has been little changed, and several of those who get out high grade ore have declined to sell in the past week, feeling confident that sooner or later a higher price is coming, probably before the end of June.

A notable feature in the Joplin list of producers is the appearance of the Leonard sand with a record high of 1,600 and 1,500 pounds of lead. This property was for some time under contract to an English company, but it now appears again in the list of producers.

The total production figures for the week for the district are: Lead, $408,144; $140,410; Zinc, $76,740; Copper, $12,870; Silver, $10,000; Gold, $2,000; Total, $408,144; $140,410; $76,740; $12,870; $10,000; $2,000; Total, $575,120.

WASHINGTON.

(From Our Special Correspondent.)
Seattle, Wash., May 7, 1900.

Seattle is now the half-way house for the hundreds of mining men who expect to make their fortunes out of the Cape Nome mines this summer. Men and machinery are arriving here daily on their way to the north. It is estimated that mining machinery worth not less than $5,000,000 is now on its way to Nome. One company has shipped six miles of copper wire, ten miles of electrical equipment for a line from Nome to the company’s mines near Nome. This shipment will be valuable to Nome, as the investment of this company alone will not be less than $200,000. Its holdings comprise several gold and silver properties.

Private individuals and companies are not the only ones who are engaged in the mining and shipping business. The Government is making a goodly sum to purchase transports and establish military posts and make the necessary surveys of harbors and rivers. Washington seems to be fully aware of what is going on up there, and is making every effort, it would seem, to safeguard the interests of the miners and to place at their disposal all the information it can secure for their guidance. Some of the big transports used by the War Department to carry troops back and forth between San Francisco and Manila have been released and are now doing duty in the Cape Nome service. These ships have a large freight capacity and are capable of carrying 1,000 passengers each. Besides these boats, there are a number of steamers making the round trip to Nome, many of which have sold all their first-class accommodations at a high rate. The volume of business has been so great that the government has had to deal with unscrupulous and overzealous shipping men to the south end of the Klondike rush, and the authorities have been obliged to exercise unusual vigilance in their inspection.

The Cape Nome mines have been授与ed to the citizens of Washington. At first the claims in the state look like they will not be of much use, as the gold and silver are not yet in this Klondike rush, and the authorities have been obliged to exercise unusual vigilance in their inspection. The Cape Nome mine effect an excellent fit upon the citizens of Washington. At first the mines in the state looked like they would not be of much use, as the gold and silver are not yet in this Klondike rush, and the authorities have been obliged to exercise unusual vigilance in their inspection.
ARIZONA.

The erection of a smelter for base metals has begun at the United Globe Smelter at Globe. The company hopes to begin work with the new smelter within a month.

The excitement caused by the discovery of rich gold-bearing quartz near Jerome has subsided to some extent. The discovery of the new property has not, however, brought about any change in the situation at Jerome, and the point of discovery kept many prospectors from the district. Work is now being done on the new property.

Bent and Sampson say that in the Contential in Arizona there are the largest veins of wolfram ore in Arizona.

It has been found that the big cement tanks in the Chino Valley part of the old placer will run $460 to the ton. The cement is soft and easily crushed. The owners are expecting a plant to work it without the use of water.

CALIFORNIA.

The big copper mines at Campo Seco, in Calaveras county, are showing up splendidly at present. A solid wall of metal has been struck. According to the reports, the ore is also being taken out, the total operating expenses, and the copper is expected to be profitable.

The Nevada Consolidated Company has suspended operations for the time being, but development continues.

The new company has another producing mine coming into prominence in the Victoria, near Sonora. Rich rock going $25 to the ton in free gold has been found near this property. The shaft is down fifty feet, showing an eighth foot vein two-stamp mill has just been put up, which will be running in a few days. The stamps weigh 1,000 pounds each.

Oro F. M. Jones and Francisco have secured the contract for the pumping plant and pipe line from the newly discovered mine to the Yellow Aster at the Randsburg, in Kern county. The plant is to cost $5,000. The completion of the works and the necessary buildings will bring the cost up to something like $15,000. Work now contracted for and other contemplated work will involve an expenditure of not less than $125,000. The development at the mines with the ore block opened, fully warrants this and more if there is plenty of water can be secured, a tale old well, which they thoroughly tested, says the Randsburg Miner, showing the importance of the pumping plant.

The water question in Randsburg is not as serious as the other water districts farther to the south, for all the water that can be found outside of the town is in the valley and with the well 400 feet deep there is probably an inexhaustible supply to be had in the town. Running at this rate is nearly completed. It is 100 feet long and twenty feet wide, and a load of solid mud and foundation blasted out in the hillside. It will be cemeted, both bottom and sides, in the most thorough manner.

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COLORADO.

Idaho Springs is taking up new strike in the Newhouse Tunnel and calling it one of the richest discoveries ever made in the district. The vein is estimated to be about thirty feet of pay ore. The Newhouse Tunnel management has undertaken to drill for 500 feet on the vein on its property. The ore is rich in gold and copper, with some silver and gold values, and averages over 100 pounds to the ton. The smelting ore are found which run as high as $75. This is the deepest strike in the entire district. The vein has been worked for several miles. It has been shown to have a depth of over 8,000 feet.

Southeast of Salida is the new camp of Torreil, where a strike is reported at a depth of 300 feet in the Ophir mine. A shaft running from $40 to $100 a ton are shown in the assays of the pay-slag. The vein is perpendicular, resembling that of the Gold Elmo.

Ninety feet down in a shaft in the Greenhorn district of Colorado, a cave has been discovered. The roof and walls of the cavern are studded with copper flames, and material resembling slag of copper. On the floor are boulders strong in copper and copper glance.

Cripple Creek's output for April was $1,466,000, a decrease of $750,000 as compared with March. This loss is accounted for by the closing of the Isabella and several other big mines. The average monthly output for the first four months of 1900 is $2,648,247, or about $2 per cent advance over 1899. This record for the non-productive season foretells a total of $10,000,000 for this year against $2,000,000 last year. The dividends for the four months exceed $2,000,000.

MINNESOTA.

Three new iron companies were formed at Duluth last week, two by the Rockefeller and one by the Monarch, and to handle the bog iron mines bought by those companies. These two companies are of the largest extent, not less than $3,000,000 in land purchases in the past year. The mines of the Vermillion range, all belonging to the Federal Steel and Carnegie Companies, are shipping their daily output of about 6,000 tons. At the five mines on this range there are nearly 80,000 tons of stock on the surface, the result of winter mining. The Chapin mine at Iron Mountain, Minn., with 1,600 tons a day, by the Monarch, and the total from the Iron River region will be much larger than ever before. The American Mining Company at the Marquette and Willig will take a good deal of large grade ores from these companies for their furnace from the company for the iron steel and wire combinations.

The mines of this company are so far more active than ever before and show no signs of a reduction of force or a curtailment of output.

Because of the success of a plan to fix a low lake freight rate that has been adopted by the Rockefeller interests last winter, rates are likely to drop considerably in those districts where in this scheme will be higher than the current rates.

There are 2,000,000 tons more than can be used and the prospect of new working in the change to fall back on the grain and other lines. The result will be to force the silver grade rate, which is now 1-1/2 cents a pound, because so much tonnage taken on was supplied into the ore traffic. This will, in turn, force the coal, iron, and other rates up, to the disadvantage of the lower grade products. Rockefeller will be paying more for boats than those who made no season charters.

MONTANA.

Development work is progressing rapidly in the northeastern district in the Butte and Silver Bow counties. Captain O. A. Palmer is in the section representing Eastern Montana. The copper belt is located on the Big Black foot river, seventy miles north of Helena and can be traced on the map as a line about a hundred miles in length. It has a slate foot wall and a granite foot wall. Assay work has been done on the silver, and copper is believed to exist in the district. The area is about forty square miles and the area of the district is about 100 square miles. The mine is in the Butte that the recent decision of the Supreme Court, passing upon various injunctions concerning the Shoshonean and Transway mining companies in the Butte district. The Montana Ore Purchasing Co., is regarded by the Henne company as the favored company.

The strike on the Great Northern which threatened the Boston & Montana smelting operations was called off. The railroads claim that it had never intended to reduce wages by the new schedule, and that practically all the depots have been vacated. The men have returned to work, and for one month there will be a sufficient amount of their earnings under the old and new schedules. At the end of that time, the men will be permitted to select the schedule they prefer.

SOUTH DAKOTA.

Dr. Herman Reinhold of Cooper has given a contract to Cooper for mining and delivery of 500 tons of spodumene from the Kita mine in Pennington county, east of Hill City. Two years ago Dr. Reinhold found that the spodumene contained enough lithium to give it considerable commercial value in the manufacture of lithium for medicinal purposes. Last year a quantity of the spodumene was shipped to Germany to be made into lithium. Twelve tons are worth about $10 a ton on the cars at Cooper.

News comes from Deadwood that the shipment of ore to Europe is likely to be a feature of the mining business in the Black Hills. There is a large iron district on the boundary of the Butte and Madison counties, in the center of the district is being Iron Mountain, Minn., and the Colorado district is in the southern counties from the richest section of the district, and is likely to build a spur to the mine. The Iron Mountain Mining Company, which is a corporation to operate on Iron Mountain, is now shipping iron ore to Omaha and Denver, where it is used for a fix at the smelters. The ore carries an average of $10 a ton on the cars at Deadwood. A cyanide plant will be built this summer which will enable the company to handle 500 tons of ore daily. The ore costs about $12 to the ton on gold.

UTAH.

Dissards miners seldom attain the appalling proportions of the terrible explosion at May 1 at the Ophir mine in the San Rafael Mountains, Utah. The loss of nearly 300 lives is the frightful story of the explosion. While the day shift of 104 miners was at work an explosion blew men and machinery a distance of 200 feet into the air. The explosion was due to a gases in the mine, which was caused by the explosion of a dynamite charge. The bodies of the miners were recovered and brought to the surface, where they were identified. The work at the Ophir mine was suspended for some time, but has since been resumed. The bodies were identified by the at the mine, the flames generating vol-
umes of deadly gases which overcame those who could not make the jump. Discovery of the bodies was made unusually difficult by the gas and debris, and for some time considerable danger was feared. Nearly all of the miners were Americans and Welshmen who operated with the Union Iron and Steel Company, and a majority of them had wives and children.

The wrecked mine was the largest in the State, and has been the subject of much discussion and working. Its product is of excellent quality, and finds its market along the Rio Grande, in the West, South Dakota, Montana, Idaho and Nevada.

It is probable that the exact cause of the explosion will be known in a few days, but it is certain that the workmen on the mine were in danger of being killed by the blast. The fire is considered an important one, and it will produce much interest in this comparatively new district.

J. H. Howley of New York has secured claims in the Deep Creek country on which he will begin development work in the near future.

CANADA.

The financial statement of the Granby Consolidated Mining and Smelting Co. of Grand Forks for the year ending Dec. 31, 1910, shows that the assets amount to $1,041,416. The principal items are as follows: Smelter construction, $138,375; railway construction, $48,367; ore shafts, $35,820; Carbon lode, $26,305; Phoenix property, $31,214; mining equipment, $29,080; smelting and refining equipment, $25,227; mines and mineral claims, $495,738; treasury stock, unissued, $500,000; Phoenix property, $22,500; marketable securities, $90,000 in 25-cent shares, which are now selling on the market at a premium of $100 per cent.

The company has acquired important properties in the Grand Forks district, and the company is now mining a large quantity of ore at the sixty-sixth level of the Union mine. The company has also acquired the United States Smelting and Refining Co., and the property is now in the hands of the management of the Granby Consolidated Mining and Smelting Co.

The company has a large number of shareholders, and the stock is widely held. The company has paid dividends on its stock at the rate of five per cent.

The new company has a large mining property, consisting of four mining claims, located in the Grand Forks district. The company has also acquired the United States Smelting and Refining Co., and the property is now in the hands of the management of the Granby Consolidated Mining and Smelting Co.

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NEW INCORPORATIONS

SURE BROTHER OIL CO., Los Angeles; $100,000; W. F. Fitzgerald.
MUSTANG OIL CO., Visalia; $225,000; J. W. Witkowski.
UNION JACO OIL CO., Los Angeles; $1,000,000; A. L. Griffith.
CROWN KING OIL CO., Los Angeles; $500,000; H. H. Broderick.
WHITE SWINE MINES CO., San Francisco; $1,250,000; S. Balliet, Trieste.
REYNOLDS OIL CO., San Francisco; Develop and improve oil lands; $200,000; J. W. Briscoe, Moloco.
KIRKWOOD GOLD MINING CO., Jackson, Cal.; $1,000,000.
MORNINGSIDE OIL CO., Los Angeles; $500,000; J. H. Haas.
STAR WAXO MINING & MILLING CO., Corona; $250,000; H. C. Foster.
LONDON AMERICAN OIL CO., San Francisco; $750,000; W. H. Maclot.
TOMMY OIL CO., Exeter; $230,000; T. W. Newman.
ORANGE CENTER OIL CO., Lindsey; $250,000; M. J. Wingrove.
WESTERN GOLD MINING CO., San Francisco; $3,500,000; W. H. Ziegler.
PROMONT GOLD MINING CO., San Francisco; $1,000,000; T. J. Ryan.
COLUMBIA GOLD MINING CO., San Francisco; $100,000; L. Owrzyki.
CLARK MILLING & MINING CO., San Francisco; $100,000; W. J. O. Coleman.
LONSTAR OIL CO., Bakersfield; $500,000; J. B. Rust.
SUPERIOR OIL CO., Bakersfield; $500,000; R. S. Aslan.
SOLOMON RIVER MINING CO., Stockton; $100,000; R. H. Bogle.
INTERNATIONAL MINING & DEVELOPMENT CO. OF THE UNITED STATES & MEXICO; $1,000,000; T. Ellis, Jr., Almaden, Cal. C.
CARIBOU OIL CO., Bakersfield; $500,000; C. A. Confield, Coalinga.
DOHERTY OIL CO., Bakersfield; $500,000; C. A. Confield, Coalinga.
CHANCELLOR OIL CO., Bakersfield; deal in mineral oil; $500,000; C. A. Confield, Coalinga.
TADPOLE CONSOLIDATED GOLD MINING CO., Sacramento; $500,000; F. Eckhart.
MADEIRA WRIGHT & GRAVE MINING CO., San Francisco; $500,000; J. F. Forderer, Almaden.
ELAINE OIL CO., Oakland; $200,000; J. Haschker.
SANTA CLARA OIL CO., Stockton; $10,000; F. Galtier.
LADY BRYAN DEVELOPMENT CO., Hanford; $100,000; R. D. McGinnis.
GRAYSON OIL & LAND CO., Modesto; $250,000; J. Johnson.
BAY SHORES & BORATE CO., Bakersfield; mine for borates; etc.; $10,000; D. B. Joseph.
FOX RIVER EXPLORATION & MINING CO., Stockton; $50,000; B. H. Clark.
COLORADO MINERS CO-OPERATIVE SAMPLING &ORE CO., Cripple Creek; $50,000; E. M. Lemont.
SURVEYORS CAFE NOIRE MINING & MILLING CO., Stockton; $1,250,000; W. Harris.
NEW LEADVILLE MINING CO., Leadville; 1,000,000 shares.
MECCA GOLD MINING CO., Buena Vista, N. Y.; $4,000; E. C. Lindmann.
OCEAN BAY BONDING, LEASING &MINING CO., Cripple Creek; $75,000; A. L. Hutter.
HILL HOUSE MINING & MILLING CO., Denver; $500,000; F. A. Smith.
OLIVE BAY OIL, Florence; oil business; $500,000; H. J. Brown.
IOWA,
JOHANNA GOLD MINING CO., Council Bluffs; $25,000; C. F. Palmer.

DIVIDENDS DECARED

At the next monthly meeting of the Quincy Mining Co. the directors are expected to make the semi-annual regular dividend of 12 cents and extraordinary dividends according to circumstances from time to time. Last year the company earned $135,69 a share and paid the same dividends.

The Montana Ore Puring in the company has declared a regularly quarterly dividend of $1 a share, payable May 12. The Boston & Montana Consolidated Copper & Silver Mining Co. has declared a regular quarterly dividend of $3 a share, payable May 12. The Delaware & Kingstown Railway Co. has declared a dividend of 50 cents a share, payable May 10. The City of Denver, which is the only company in the state that is regularly paying dividends, has declared a dividend of 50 cents a share, payable April 10. The Standard Oil Co. has declared a dividend of 50 cents a share, payable April 10. The Central Lead Co. of Missouri announces a dividend of 50 cents a share, payable May 10. The total dividend is $5,000.

THE METAL MARKETS

Silver: For a few days the bullion market displayed unruffled activity and strength. Special orders appeared in London, presumably for the English Mint, and some Continental buying was alreadys seen. A 7 1/2 cent increase in the New York price was noted, but no further advance in copper has occurred since our last issue, and in fact a slight change of sentiment is noticeable among traders, who are beginning to feel that business is not as unprofitable as they much debate as to prices. Buyers feel less anxious that they did a year ago, and it is certain that they cannot require concessions in the face of the strong foreign demand. Sellers, on the other hand, seem to have had enough alone, and pocket amply the huge profits involved in current quotations. About 11c. may still be regarded as the price for Lake.

MINOR METALS: The lead market has been disillusioned, with quotations inclining 4.40 to 4.45, the closing price. Spelter has been decidedly weak, notwithstanding heavy absorption of the metal for 4.47 to 4.55, may be deemed the ruling price. Tin at one time developed a slight advance to 50s., but the demand was shortlived, and the price sagged off to 53s. for spot.

IRON AND STEEL: Numberless theories have been expounded at wearisome length to account for the present situation in the iron market, but, sated down to essentials, the facts in the case are few and easy to understand. Prices will not go up indefinitely because two powerful restraining forces are constantly at work to depress them — (a) the eagerness of producers to take advantage of the market and to trade large sales; (b) the increasing reluctance of buyers to pay the higher prices, every addition to the sources of supply working to lower prices. No startling reductions will be necessary, but some concessions must be made by buyers to keep the enormous machinery of production active and employed. There is an abundance of business in sight the world over that can be purchased at prices, indeed, that would have been deemed abnormally high only a short time ago. Every concession in price will bring into the market new buyers, and there will be orders enough to round.

COAL AND COKE: General conditions continue encouraging, and indications are that dullness only continues to be transitory. The Anthracite market continues quiet, but the Chicago Valley & Kingston Railway Co. has changed the situation in a Damoclean manner, but it is the result of the fight between the coal interests and the railroads.

BITUMINOUS COAL is in better supply than it has been for some time, and sales of this coal have been in the usual course under such conditions. The best grades are now obtainable for distinctly lower prices than they have been for some time. Only a short time ago we were quoting COKE at 20c. a ton, but the present dollar lower. The output at Connellsville continues very large.
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