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THE MEETING OF CONGRESS.

Next Monday the 4th inst. the 56th Congress will convene in its first session. As it immediately precedes the Presidential election its proceedings will be watched with unusual interest.

Besides this, the questions that will come before it are such as the American people regard as of national importance. Its action will have an important influence on the Presidential election. It is in this session that each political party will apply its best strategy to gain advantages over its opponent.

The Philippines question will be absorbing, and upon which there is likely to be the most spirit and eloquence displayed. The principles which will be recognized in the government of the Archipelago will have an important bearing in future upon our institutions and political ethics. It will be the same in regard to Porto Rico, though conditions will require some modifications. There will also be disclosed the policy in regard to Cuba, towards which our attitude is unprecedented and enigmatical. In regard to all these islands we are dealing with populations very unlike any our government has ever attempted to manage. The problems are difficult, and their solution will not only have an important bearing upon the future of those countries, but upon the nation as an entirety.

There are several economic questions that press for solution. Trusts are the order of the day, and we hear so much about them that they will be employed to oppress the masses. Having control of the forces of production and distribution of commodities necessary to life, they possess the power to prescribe wages, prices of raw materials and of their own products. Therefore the great body of producers and the consumers are at their mercy. It is claimed that combinations and trusts can produce cheaper, and that is the defense of their formation, but while this may be true, the question is whether they lessen prices to consumers! Having the power to increase them at will, is there not just ground for apprehension that the selfishness of human nature, they will fix prices in disregard of the common welfare? Is the formation of trusts for the sole purpose of enabling them to control others?

The market question will surely be presented in various phases. The Controller of the Currency declares that two features will be pushed upon Congress, one being a declaration for the complete gold standard and the other that when the greenbacks and treasury notes are taken in by the government they shall not be accepted except for public taxes. These propositions suggest inquiry as to what the result will be.

What effect will a declaration for an absolute gold standard have upon the silver dollar and the silver certificates? Will it not be held that such a declaration restores to them the gold standard, the value being based upon the price of silver in the market? It must be remembered that the Secretary of the Treasury since 1891 has been imirical to silver, and that to disapprove it there have been strained, not indefensible, construction of statutes. The Secretary of the Treasury is among the extremest goldites, and it is certain that he will follow in the footsteps, and probably go farther than, and all his predecessors.

The effect of prohibiting the reissue of greenbacks and treasury notes except for gold will be their practical retirement, for it can easily be conceived, except under very peculiar circumstances, that any one will take his gold to the treasury to be exchanged for government paper. The banks desiring to open the way for putting out their own notes, will sort out the government notes and present them for redemption in gold, and in payment of custom duties and taxes they will find their way into the treasury, where they will be exchanged for gold brought to be exchanged for them.

The two propositions have the appearance of being devices for reducing our money volume of gold, bank notes and fractional gold coins. We shall have something to say of the action of Congress as development takes place.

GENESIS OF THE DIAMOND.

As extinct volcanoes are found in great numbers in the desert sections of the South Pacific, so the discovery of diamonds in commercial quantity is of importance to prospectors. A few single specimens of diamond of gem value have been found in the placer workings of Northern California, which makes the prospect still more probable, and in that connection the following is instructive:

The "dry diggings" of the Kimberly district in South Africa afford the unique locality in which the diamond has thus far been found in its original home, says Prof. W. H. Hobbs, in Appleton's Popular Science Monthly. For November, 1896, he is of the opinion that the knowledge of the genesis of the mineral has been derived from the study of this locality. The diamonds are found in "pans," in which is found the "blue ground," now recognized as the disintegrated matrix of the diamond. These "pans" are known to be the "pipes," or "peaks," or "necks," of former volcanoes, now deep buried by the forces of the atmosphere—in fact, worn down if not to their roots, at least to their stumps. The remains of the pipes, through which the lava reached the surface, are surrounded in part by a black slag, containing a large percentage of carbon, and this is believed to be the material out of which the diamonds have been formed. What appears to be modified fragments of the black slag is included with the "pipes." All afford evidence that portions of the shale have been broken from the parent beds by the force of the ascending current of lava—a common enough accomplishment to volcanic action. The black slag have been heated by the high temperature and the extreme hydrostatic pressure under which the mass must have been held. The most important feature is the disintegration of the carbon in the shale into diamond. This apparent explanation of the genesis of the diamond finds strong support in the ex-
periments of Moissian, who obtained artificial diamond by dissolving carbon in molten iron and immersing the mass in cold water until a firm surface crust had formed. The "chill" melting point, in allowing the solid core to solidify slowly. This it does with the development of enormous pressures, because the natural expansion of the iron on passing into the solid condition is less than that of the strong shell of "chilled" metal. The isolation of the diamond was accomplished by dissolving the iron in acid.

BULLETIN OF KANSAS MINERAL RESOURCES

The Annual Bulletin of the Mineral Resources of Kansas for 1898, by Emerson A. Ha-\worth, Professor of the Department of Physical Geology and Mineralogy and Chief Geologist of the University Geological Survey of Kansas, contains 127 pages and 22 illustrations. The first desirable point which meets the reader's eye is good wide margins, so that the reader has room on each page for private notes, which is a commendable feature in a statistical publication. The information contained in the bulletin is reprinted from another part of this issue. The history of the recent gold excitement in Russell, Ellis and Trego Counties is reviewed, and the negative result of the two hundred assayers and several geological reasons given, for the hopeless prospect of finding commercial amounts of gold in the Cretaceous shales of Kansas. Lead and zinc being the chief mineral products of the State, receive extended notice. Oil and gas sources, both present and prospective, are reviewed. Gypsum, building stones, clays, hydraulic cement, with the subjects already mentioned occupy the first 66 pages, and the remainder of the work is taken up with the ancient and modern history and different processes of the manufacture of salt by M. Z. Kirk. As salt is the third most important mineral product of the State, this excellent technical and statistical review of the present status of the industry is of more than local interest. Since the salt manufacturers and forms an object lesson which a good many cities can profit by copying, how such technical reports should be recorded and development of the production of the country and add value to an annual statistical report. As a rule it is not desirable to have State Geological and Statistical work done by University Staff Professors, on the principle that a man cannot serve two masters well or efficiently, but the excellent work of the University Geological Survey of Kansas is a very happy exception to that rule, as is evident from the high class and complete work produced, of which the present Bulletin forms the last issue.

FORMATION AND CONTROL OF TRUSTS.

Under this title, President Hadley has written for the November number of Scribner's one of the most thoughtful and philosophic articles that has yet appeared on the recent and continuing consolidation of industries. It is the movement that the movement has already spent itself, so far as it is based on the desire of promoters to load up the public at fancy prices with securities of little, but genuine economic reform underlies the phenomenon in its essential qualities, and consolidations will go on so far as they are based on real advantages in operating and distributing administration. Attempts to stop this natural evolution of industry will be as futile in the realm of manufacture as they have been heretofore in that of transportation. Their vast powers of good or evil to the public make it impossible for these enormous corporations real trustees in a sense not commonly realized. The wise exercise of this trust cannot be provided for by legislation, but must come from a widened conception of directors' responsibility to the public as well as to stockholders. As the movement of consolidation goes on, and the semi-public functions are more and more recognized and insisted upon, the difference between public and private business will diminish; and this difference is likely in the long run to become less. The substitution of state ownership of industrial enterprises will cease to be important.

This skeletonized statement of President Hadley's article shows the drift of his opinions. In most respects his essay is in line with the best thought on the subject. He makes a distinct departure, however, from the doctrine of many able economists, in believing that the consolidated business not only does not foster socialism, but actually tends to retard the nationalization of industry. His argument is forceful, and will doubtless receive much attention from students of the subject.

TRADE IN WEBER GASOLINE ENGINES.

One of the largest single orders ever given by a firm for gasoline engines was secured last month by the Weber Gasoline Engine Company of Kansas City, Kansas, Mo. The order calls for engines aggregating 450 horse power, subdivided in units of 50, 40 and 30 horse power engines. All are to be built for the Ray Mines Ltd. in Arizona. The corporation operates large copper mines and is incorporated for two and one-half million dollars. The order given to the Weber Company will mean an outlay of $50,000.

There are some very interesting features connected with this order and the district where the engines are to be delivered. The order was placed by leading manufacturers of gas and gasoline engines in the United States, England and Germany. English engine builders were especially keen after it, as the mining corporation is a strong English concern.

No. 2 distillate is perhaps the cheapest fuel known, and the engines will be operated by it at a cost of six tenths of a cent per hour for each horse power. They will be run twenty-four hours per day. The entire number of engines must be built and in operation at the mines by April 1, 1900. The mines are located eighty miles northeast of the mining company. At an expense of $5,000 has graded and made a roadway the entire distance. This will necessitate hauling the engines in wagons to the seat of future operations. The Weber Company will send a corps of machinists to set up the engines. Some idea of the mining company's operations may be formed from the fact that this company's plant constitutes but one-half of the power plant. The remaining half will be completed within one year.

The contract expressly states the engines must be installed and in operation by April 1st, and to do this in the five months' time the Weber Company will operate its factory day and night. Another order for a 30 horse power engine was completed and shipped Oct. 25th to the Norwegian Copper Works. This order was secured through the London agent of the Weber Company and will be operated in a corner of the world of which little is known by the great majority of the people. The shipping directions which accompanied the order may have been sent to the average American will hardly dare to attempt to pronounce them. Here they are: Norwegian Copper Works, Birtavarre in Kasfjord, Lyngenfjord Island, Norway, which is the most northern point of the world places the island of North of the Northern coast of Norway and near the 70th parallel. It is farther North than Ireland and almost as far North as the town of Northern point of Alaska. Into this remote place a specially constructed gasoline engine bearing the name of the Weber Gas & Gasoline Engine Co., Kansas City, U. S. A., is to be operated for running the blowers for the furnaces of the Norwegian Copper Works. Another shipment will shortly be made to the Isthmus of Panama, where quite a number of Weber engines are in successful use. To get back home again, a 50 horse power Weber engine has just been installed by J. G. Peppard, the wholesale seed merchant, who has been using Weber Engines for the past nine years.

The Company's doing is in a flourishing condition and from every quarter of the globe orders are being received.

We desire information concerning the Burnett Mining Co., which in 1885 issued stock on which Edward Pierpont's name appeared as President. Any reader of the JOURNAL who can inform us whether the company is still in existence, or if so, what is its situation, will confer a great favor.

William Pigot, a mining expert from Seattle, passed through Los Angeles last week, on an inspection of the iron mines or deposits just east of San Ysidro, about 200 miles down the Lower California Coast from San Diego. These deposits are said to be of the highest grade, and General Webb, and are known to be very extensive and of very high grade. Mr. Pigot represents wealthy capitalists of the Puget Sound country who may become interested in the property. His report of his investigations will undoubtedly be favorable to the property, although when seen he declined to make public any opinion on the property, saying that was reserved for the owners.

Announcement is made of the organization of the New York Air Compressor Company, under the laws of the State of New Jersey. The capital stock of the company is $100,000, and a complete foundry and machine shop plant has been purchased on the line of the New York & Greenwood Lake Railroad, at Arlington, N. J. The New York Office of the Company are at 120 Liberty Street. Contracts have already been let for a full modern equipment of tools.

It is intended to manufacture a complete line of air compressing machinery at this new plant.

The Officers of the Company are: J. W. Dunley, President; Alexander Mackay, Vice-President; W. F. Pressinger, Secretary and Treasurer.

MINING IN SONORA.

EV. J. B. SOUTHWORTH.

The opening up of the riches of the State of Sonora is traveling with gigantic steps and very soon this will be one of the principal sources of wealth as the improvement in agriculture and its production and the growing development of its mines are placing it in the

vanguard of the other states forming the Mexican Confederation.

Mining in the last few years has taken a great increment and we are now commencing to see foreign capital embarked in the development of this great industry which is one of the principal elements of life in this region. Any one who has a slight knowledge of the forward steps that mining has taken lately will understand that this industry is the one which of Sonora became known, the mines, Sierritas, Verde, Aqua and Colorada being then discovered and worked by the Jesuit missionaries who established at that time the Real Aigame, as the nearest point to water for the treatment of the ores which they took out in large quantities from said mines, until the persistent molestation of the Indians compelled them to abandon the district. Afterward, in 1790, miners from Aigame and Las of Minas Prietas under the denominations of San Juan, Delfina, Amparo, Florencia and Creston, and for years under the protection of the house of Ortiz Bros., Hermosillo worked them with more or less good fortune, until he sold the first four locations for $150,000 to a rich North American company, which immediately began to work them systematically, establishing large reduction works at a cost of more than $300,000, and in a short time took

has taken the most important place, and it is also the one most susceptible to prosperity, as it brings foreign capital belonging almost always to companies and syndicates more or less wealthy; and also because of the innumerable quantity of mines being discovered daily and benefitting, all shows us that this

Placitas exploited for eight or ten years with good results the mines of Prietas, Verde, and others; but some of them becoming flooded and others abandoned, they remained at the mercy of the chloriders who many years worked them after their own fashion without greater advantage.

The importance of these mines is revealed solely by observing the magnitude of the out many millions of dollars until 1891, when the interior works were destroyed by fire and the company, being aware that the value of the ore had decreased, was content to nominally preserve its property in said mines without undertaking any new work upon them such as was necessary to put them in paying condition. Subsequently they were purchased by the Creston-Colorada Mining Co. In, 1886,
The past productions of these mines have been very great, it having been estimated that the gross production has amounted in round numbers to $2,225,000. The country rock in which the several veins of the mines named are found, is a hornblende diorite reposing upon which, where not eroded and capping the higher hills is a quartztic rock, which close examination may prove to be a silicificated porphyry. Generally accompanying the veins either on one side or the other are dykes of a rock provisionally termed quartz porphyry.

The ore is principally quartz and carries varying amounts of pyrite, Chalcopyrite and galena. The value of the ores in gold and silver, the proportion of each metal varying greatly shows, about sixty five per cent of the value in gold and thirty five per cent of the value in silver.

The surface equipment of these mines are excellent and improvements are constantly being made.

The Creston Colorado Company was composed of the above named Gentlemen Messrs. Chamberlain & Price, but in 1892 both partners died and the property was run by the two estates until April 1893 when the present Company was formed of which E. R. Perkins of Cleveland, Ohio, is president, the stockholders all living in Cleveland.

Work was commenced on the Colorado claim to develop it, and at the same time the construction of the Colorado mill was commenced, and the work was pushed rapidly forward to an early completion. This mill has run continuously since that time. In 1894 valuable ore was discovered in the Colorado, which was shipped to Pueblo, Colorado.

Some time in 1894 development work was
begun on the Creston and a new shaft has been sunk to a depth of 1250 feet. The hoisting works at this mine were equipped with a capacity of hoisting ore 3,500 feet, and a new tramway has been erected between the Creston mine and the Colorado mill which has a capacity of 500 tons in twenty-four hours, the ore being transferred about three-fourths of a mile. Connected with this company is a large roasting and cyanide plant with a capacity of 100 tons daily for treating the Creston tailings, and the cyanide plant for treating tailings of the Colorado mine.

A new shaft is now being sunk on the Colorado mine to connect with the old workings, and there is sufficient ore in the mines to rush the mill for some time to come. Sixty cords of wood are consumed daily, in making steam for motive power and to run the stamp mill with a capacity of 150 tons per day.

In conclusion we might state that the ore deposits found in this district are certainly among the richest and most productive of any in the state and perhaps in the Republic of Mexico.

GREAT COPPER REFINERY.

The Anaconda Company's great refinery at Anaconda lies immediately below the upper works, with perhaps a short quarter of a mile between. Here it is that the copper product is subjected to the last process necessary to fit it for the market. When it leaves the refinery it is practically pure, and is the electrolytic copper of commerce.

That the reader may get the entire treatment in a general way, it may be stated that the ore is received at the works, a week's work is to concentrate it by crushing and working off the poorer parts so as to reduce the quantity and raise the grade. Then these concentrates are sent to the smelter, where they are first roasted, in order to get rid of a portion of the sulphur they contain, and then melted in the matte furnaces where portions of the other impurities are worked off in slag, the product being a matte containing 50 per cent. copper. This matte is sent to the converter, where it is melted again mainly by a combustion of the sulphur it contains and the oxygen of the atmosphere. The iron and other metallic impurities are first drawn off in slag and then a strong current of air is thrown on and the sulphur blown away in fumes. The residue is metallic copper, perhaps 98 per cent fine. This is run into large plates called anodes and sent to the refinery.

The refining is done through the agency of sulphuric acid and electricity. The establishment is provided with 1,400 refining tanks. These are filled with a solution of sulphuric acid. From crossbars thin strips of copper are hung. These are called cathodes, because they act as the negative pole of the current. In the same tank, alternating with the cathodes, are hung the anodes or positive plates from the converter, the distance between them being about six inches. A current of electricity is turned on passing first through the anodes and thence through the solution to the cathodes. The sulphuric acid unites with the copper of the anodes, forming a sulphate of copper in solution; then the current of electricity carries the copper over to the cathode strips, where it is re-deposited practically pure, the gold, silver and anything else contained, being precipitated to the bottom of the tanks and the values separately saved.

This plant is the largest of the kind in the world. It is divided into two parts known as the old and the new. The old part contains 600 tanks and the new portion 500. In the old part the machinery is more primitive than that of the new. When a tank load is ready to come out it is hoisted, all the plates at once by two men with a hand tackle. The anode plates immersed in a single tank weigh from 6000 to 7000 pounds. In the refining process they are reduced to about 800 or 1000 lbs., about 5,500 lbs. upon an average having been carried over to the cathodes. This requires about 25 days. The new portion, which is 250 feet by 300, is equipped with three immense traveling cranes, two being each 80 feet in length and one 90 feet. These move the entire length of the building over the tanks carrying the anode plates to the tanks in which they are to be placed for refining, and taking out the refined cathodes when ready. The capacity of the refinery is about 125 tons of refined copper daily, and it is now being run nearly up to that figure. In the refinery proper there are about 100 men employed.

This great refinery has what may be justly termed the finest engine and boiler plant in the state of Montana. The engines grouped in one line are five in number. The largest is what is known as a Harris-Corliss. It is of 1,000 horse-power, with a combination fly and belt wheel 20 feet in diameter with a eight-foot face upon which the belting travels. As a rule this great engine runs steadily, but it is now temporarily stopped while a new separate steam connection is being made. There are also two 500 horse-power triple expansion Union Iron Works engines and three Westinghouse engines, each of 450 horse-power, making a total of about 1,150 horse-power.

In the same great department are nine dynamos, of which seven are in regular use, with two held in reserve. It is estimated that the machinery in this single room has cost more than a quarter of a million dollars.

The boiler plant is on the same magnificent scale. It consists of ten sets of Heine water tube boilers and four sets of Elephant boilers from the Union Iron works of San Francisco, Cal. These range from 250 to 350 horse-power to the set, the total being in the neighborhood of 4,000 horse-power, making it also the greatest boiler plant in the state of Montana.

The four sets of Elephant boilers have a separate iron stack for each set, but the ten Heines are all connected by flues with the great brick stack outside the building. This stack is about twenty feet square at the base, rising to a height of 130 feet from the ground, and brought to a circle at a height of about thirty feet from the ground. A new auxiliary eight-inch steam pipe connects the large engine direct with the boilers. These works are under the superintendency of F. Wilkinson.
MINERAL RESOURCES OF KANSAS.

BY PROF. EAMUS HAYWOOD.

The year 1898 was an unusually prosperous year for almost all mining enterprises within the State. The output of zinc was the greatest in value ever known in the State. The output of lead ore fell far short of that of preceding years. But the continued value of the two was greater than that of any other year in the history of lead and zinc mining in Kansas. The zinc smelting business was unusually successful, due principally to the extended application of natural gas as a fuel in smelting, an amount of spelter produced for 1898, great as it was, is much smaller than that which will probably be produced during 1899, as a number of smelting establishments began operations early in 1899.

During the year the two lead smelting furnaces at Galena were in successful operation more than half the time, so that we again have our Kansas lead ore principally smelted in Kansas territory. This is the first time that such has been accomplished for a long period of years, and is therefore gratifying to all our public spirited citizens.

The operations of the Argentine Smelting and Refining Company were very successful throughout the year, particularly in their gold-winning department, where the business transacted exceeded five million dollars. There was considerable decrease in the amount of silver refined. The copper and zinc production of the refinery were entirely changed into blue vitriol and white vitriol, instead of being marketed in the metallic form. In 1897, the lead at this factory was likewise largely changed into litharge, but in 1898 no litharge was manufactured.

There was great activity in the coal industry during 1898. The total output of Kansas mines aggregated 3,850,000 tons, over half a million tons in excess of the output of 1894, which year had the heaviest production. The price of coal, however, was but little more than in previous years, averaging for the entire state and for all kinds of coal a value at the mines of $1.08 per ton, giving a total value of considerably over $4,000,000, which is larger than the aggregate value of any preceding year excepting 1894, when coal had an average value of $1.35 per ton. An interesting feature of the coal mining, however, was that there has been a general decrease of production in all localities outside of Cherokee and Crawford Counties, with a correspondingly great increase in these two Counties.

The oil refinery at Neodesha consumed the total output of petroleum for the year. There is such a relation between the refining company and the Forest Oil Company (the principal producing company) that no more oil is produced than the refinery desires to handle. The production was considerably greater than any of the preceding years, but probably not nearly so great as it could have been made had the refinery demanded more.

The production of natural gas during the year was much greater than that of any preceding year, due principally to the large demand for it as fuel in zinc smelting. The zinc smelters use it without measuring the amount they consume, and it is therefore difficult to make a reliable estimate of the value of the gas produced. That consumed by the smelting works was estimated upon the amount of spelter produced at the gas furnaces, by allowing three and one-half tons of coal slack to the ton of ore, and using the value for the slack as given in the coal mining district. There may be serious objections to this mode of estimating the value, but it is the best method known.

The output of salt reached over 1,800,000 barrels, which is considerably larger than that produced during the preceding year, the nearest approach to these figures being in 1892. The value of the salt is unprecedentedly low, averaging for the year twenty-seven cents per barrel, making an aggregate value of nearly half a million dollars. To this amount the cooperage should be added, to express the correct idea of the magnitude of the salt industry. The change of price, from twenty-five cents per barrel, the salt industry reached a total of nearly a million dollars. It is a curious fact that the value of the salt in the barrel was but two cents greater than the value of the barrel.

The gypsum and gypsum-cement industry was not as active during the year 1898 as in preceding years, neither was the value per ton as great. The Acme Cement Company at Whitewater, from its Missouri plants, was in general less active than in preceding years. The new mills at Mulvane, now in successful operation, were not completed until about the first of January, 1899, so that their output does not affect the returns for 1898.

The hydraulic cement industry is still confined entirely to Fort Scott, where the two factories did a business about the same as in 1897, producing 160,000 barrels, with an average value of thirty-eight cents per barrel.

It is difficult, almost impossible, to gather reliable figures on the stone industry of the State. The large stone companies respond very promptly in general to letters of inquiry regarding their output. But there are so many small quarries, the locations of which are not known to the writer, that it is difficult to form any idea of the total amount of building material as a whole, or make a more accurate estimate.

The writer would esteem it a great favor if every quarryman in the State, who may have a chance to read this article, would send him his name and address, so that a correct directory of the stone quarries of the State may be compiled.

The year just past has been a prosperous one for the manufacturers of the various kinds of brick, particularly for those made of limestone, which is now used extensively in street paving, the second greatest increase being in common building brick. With the increased demand for various kinds of building material already manifest, and the probable for the brick industry, confidents expect that the brick industry in a short time will reach a magnitude very gratifying to all our citizens.

TABLE SHOWING VALUE OF EACH OF THE PRODUCTS OF KANSAS FOR 1898 AND SINCE INDUSTRY BEGAN.

<table>
<thead>
<tr>
<th>PRODUCTS</th>
<th>VALUES FOR 1898</th>
<th>TOTALS BY DIVISIONS FOR 1898</th>
<th>GRAND TOTAL OF PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Metallic Products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>$4,193,159.70</td>
<td>$5,085,641.41</td>
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</tr>
<tr>
<td>Salt</td>
<td>485,454.23</td>
<td>4,725,855.17</td>
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</tr>
<tr>
<td>Clay Goods</td>
<td>389,630.00</td>
<td>1,820,934.00</td>
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<tr>
<td>Gypsum</td>
<td>122,652.00</td>
<td>1,810,050.00</td>
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</tr>
<tr>
<td>Potash</td>
<td>180,000.00</td>
<td>3,057,226.00</td>
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</tr>
<tr>
<td>Stone (Sandstone)</td>
<td>25,000.00</td>
<td>675,972.00</td>
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</tr>
<tr>
<td>Natural Gas</td>
<td>188,846.00</td>
<td>792,246.00</td>
<td></td>
</tr>
<tr>
<td>Oil Refined</td>
<td>175,000.00</td>
<td>358,504.93</td>
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</tr>
<tr>
<td>Hydraulic Cement</td>
<td>63,800.00</td>
<td>661,466.00</td>
<td></td>
</tr>
<tr>
<td>Lime, (estimated)</td>
<td>65,000.00</td>
<td>1,315,000.00</td>
<td></td>
</tr>
<tr>
<td>Sand, (estimated)</td>
<td>50,000.00</td>
<td>400,000.00</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$5,984,541.69</strong></td>
<td><strong>$39,286,277.52</strong></td>
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</tr>
<tr>
<td>Metallic Products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc Ore, $1,994,230, yielding metallic Zinc</td>
<td>$3,622,768.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead Ore, $2,576,000, yielding metallic lead</td>
<td>461,494.84</td>
<td>4,266,227.52</td>
<td></td>
</tr>
<tr>
<td>Smelting Products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc Smelting</td>
<td>$3,048,715.57</td>
<td>10,226,659.21</td>
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<tr>
<td>Lead Smelting</td>
<td>170,270.01</td>
<td>29,668,342.03</td>
<td></td>
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<tr>
<td>Argentine Smelting</td>
<td>12,420,810.97</td>
<td>127,401,938.67</td>
<td></td>
</tr>
<tr>
<td><strong>Total Output</strong></td>
<td><strong>$6,739,803.55</strong></td>
<td><strong>$26,556,742.76</strong></td>
<td></td>
</tr>
</tbody>
</table>

*From Annual Bulletin of the University Geological Survey of Kansas.

ELECTRIC TRANSMISSION AND ELECTRIC DRILLS FOR MINES.

BY F. H. HILDE, M. E., FORT ARTHUR, OREG.

When we see that in the neighborhood of a number of our mines the fuel supply for motive power is or is nearing to become, a question of grave concern, and that this is heightened through the burning up of valuable timber by careless and unwise men, or through accidental igniting of the dry brush by the sparks of the locomotives, or even through lightning in the coming of thunderstorms, then we are very vividly reminded to look for another medium that can drive the apparatus in our mines. Now, what can improve us more quickly than the countless numbers of our creeks and rivers, whose roaring and thundering have become to many of us, who roved around this country so often and familiar music, and which will fill us with many a bright night into the arms of Morpheus. How often has that little dream god shown us those wild rushing waters harnessed into useful occupations, and how long will it be ere these dreams materialize and we shall

*Paper read before the Canadian Mining Institute September 1899.
have every one of these at present useless spending powers utilized for the benefit of one or another of our industries? But before I proceed with this subject I take this opportunity of warning our people of this vandali-e destruction of the forest by fire, or we shall experience the consequence, that in a few years most of the little creeks and rivers, and with them the fish and waterfowl, will be entirely swept up, and we will be deprived of the present very convenient way of travel, and the cheap medium for power. One who has known this country for years has seen with regret the diminishing supply of running water for watercourses. Even Lake Superior is lower by nearly twenty-four inches since I first knew it, and this is principally caused by the burning off of the forest.

I mentioned above that we have numerous falls in our country from which we could derive motive power, and I do not exaggerate when I say that I know of nearly a hundred in the districts of Rainy River and Thunder Bay, some of considerable size and beauty. Many of them are right in our gold mining region of proximity, and we could extract even more again far off, but many so conveniently situated that they would not cause a great outlay of capital in transmitting the electric current produced to the mine. We know that there is not a single year since improved machines and a better insulation are at our disposal. Even as early as 1851, at the time of the Frankfort electric exhibition in the power transmission of 110 miles in length proved a success, for the loss was only 26 per cent, although different pressures from 65 to 28, conductors reduced, and now we transmit distances of 500 miles and losses of only 10 to 15 per cent. Distance has to be considered only, when the consumption of power in a mine is small and is within easy reach of cheap communication. The question will arise then if it would not be more economical and convenient to use a different motive power, perhaps with a gasoline, or better yet, refined or crude petroleum, for instance with a Diesel motor.

The advantages of long-distance transmissions are specially noticeable when high voltages are used in large industries, or for distribution of power among a greater number of mines, situated in close proximity, or for a mine far off from the sources of fuel. But as I said above, it is very questionable if it will be always advantageous for a single mine to go to the great expense of establishing water power and transmitting it from afar to the working. This has to be determined in each instance by closely figuring all the different conditions. We have, therefore, to consider transmission for greater distances, and such for electricity generated at the mine.

Now let us suppose, for instance, that we needed a large amount of horsepower for different machines, and wish to sell our surplus power, which we have extra capacity, or should this power from a rather distant waterfall. We take also for granted that utilization of this water power, the distance is not considerable, and we wish the current to do different work. In this case the only acceptable machine for us would be the alternating dynamo, because the direct current machine has a limited transmission of only about 2,000 volts, and this current cannot be divided in the manner we wish. This is different with the polyphase current, which can easily be transformed into direct current of any strength which we might desire, or changed into as many motors as its pressure will permit. I come now to discuss the problem of electric power and electricity by some other medium than water and directly at the mine. The building of dams, the laying of pipes, and the erecting of a power house, while the other installations near a waterfall for the transmission of electricity over a long, costly wire, is rather an expensive thing, and not every one in the fortunate position to indulge in such expensive enterprises. We conclude, therefore, to buy a gas or petroleum motor, which offers the most convenient and economic way to solve that problem. Also in this case, the dynamo is a polyphase current machine, is coupled directly to the primary motor, and the generated electricity transmitted to the transformer and thence to the electric motors. Different types of percussion drill of Siemens & Halske. The motor is here separated from the drill, and is connected with it by a flexible shaft of about 25 feet. This arrangement is the invention of inventors to construct a more compact solid machine, but at the same time a more simple mechanism. The axis of the piston could be placed near the one with which it is fastened, and the upright position secured, and a shaking when in operation avoided. But to give the drill a still more steady working a central wheel was fastened on the crank shaft of the machine whose inertia would hinder the power transmitting mechanism, especially the teeth of the cog wheels, from clattering against each other. But every arrangement is connected with the machine—the piston rod for the drill steel is hollow throughout, therefore it is not necessary to change the position of the machine, and this is a new bit which can be done from the hind end by releasing the key with which it is fastened in its place. Further, the feed of the steel is on these machines, either by hand or by power, but always according to the hardness of the material to be drilled. A jamming of the bit in the hole, which is with most percussion drills a very common occurrence, happens very rarely, for the return pull of the piston is so strong that on account of this and the powerful concussion the columns or stretcher bars had to be constructed especially strong, and instead of the common tripod, a quadripod, if you will permit me to give the four-legged stand that name, had to be provided for this percussion drill.

In regard to the consumption of power, this machine excels in economy over every percussion drill so far invented or in the market. A drill working with full capacity will use from 2 to 3 kilowatts, but when in operation will need ten horse power of a steam or water engine, if the length of the transmission of power is not too great, and 12 or 15 kilowatts of power, if there is a hole in the hardest rock from 1 1/2 to 2 1/2 ins. wide and from 2 ins. to 12 ins. deep in one minute; for instance, in very hard granite 3 ins. to 4 ins. in diameter, and 4 1/2 to 12 ins. deep, percussion cap, steam or air driven, which could show such results combined with such economy. To make a comparison, only the largest size of air drill might be able to drill a hole of the same depth and in the same
above mentioned, but would need six to eight times the power of one of the smaller electric drills. The vertical depth drilled with this machine is 6½ feet, and the depth bored without changing bits is 16 ins., with about 400 revolutions. The weight of the machine is about 240 pounds, and to raise and lower it on the stretcher bars with ease a small block and tackle is used. Bolted on to the periphery drill the firm of Siemens & Halske manufacture also a "Rotary drill." This machine, which is used for boring in rocks and fossils of a softer nature, is of smaller size and lighter in weight than the former. No fly-wheel is necessary for this drill, because the drill barrel has only to follow the rotation of the flexible shaft and the forward feed of the inner mechanism, which is automatic and self-regulating according to the hardness of the metal to be drilled. The consumption of energy is with this machine as with the former, about 806 watts—i hp, and will bore in rock salt a hole 9½ ins. wide by 12 to 16 ins. deep, or in salt, clay, gypsum or obsolete iron ore, etc., 8 to 10 ins. wide and about 13 ins. deep. With two bore barrels the machine can bore a hole over 6 ft. Its weight is not more than 70 lbs., and breakage or parts showing wear or tear can be easily repaired and new ones. The construction of the stretcher bar or column can be said to be a very handy apparatus. I have to say now a few words about the flexible shaft which connects the drill with the motor. This shaft consists of two parts: the outer flexible tube is made of a steel wire spiral and surrounded with leather; while the inner, the real power transmitting part, is a very flexible apparatus made of a number of right and left wound conical steel wire spirals, provided on both ends with massive steel pins and couplings, with which they rest smoothly against the outer protecting tube, and connect firmly with the motor and machine. The whole shaft is very solidly made, so that a rough handling in the workings will not injure it very easily.

Now, when we consider with what ease all the different parts connected with these drills can be taken from place to place, and compare it with the necessity of the difficulty which exists in carrying the air or steam along in a mine, we understand readily the saving of time, and also the saving of expenses, especially when we compare the much greater efficiency of these electric drills with those of steam or air.

Development work on the Midnight and its present results have been watched with much eagerness by the local public, as it was known that it would make the fifth large paying mine in the camp, and very materially add to the existing force of miners.

The work of getting the new 100 ton concentrator in place at the Merrimac Mine is progressing nicely, and the final number of men are well-stocked with the prospect of its completion. Work in the drifts, from the 400 foot level of the main shaft is being done with day and night forces, and the ore bodies are coming full, and well rounded out. In one drift from the 400 level, the ore measures eight feet in thickness, and the drift is being driven through it without any sign of waste on any side. The two other drifts are also in good bodies of high grade ore, but not nearly so large as the first. The mine and new mill are now employing sixty-five men.

The Tennessee Mine is now the largest and richest body of ore it has ever been the good fortune of that great property to be in. Streaks and nuggets of pure silver cross and follow the 400 foot ore. With the work in and much of it will mill many thousand ounces to the ton. Additional facilities have recently been made for the reduction of ore, and new ore bodies of a larger size, and one story high and composed of adobes. The shelving and counters for the retaining of ores will be quite elaborate, and will show off the rich specie of the ore they will contain to great advantage. It is expected to keep on exhibition ores from all parts of the county; no camp, no matter how small, but is expected to contribute its quota of specimens of gold, silver, and iron. Much has been succeeded by Mr. A. M. MacDuffe as secretary of the exchange and display of ores, who will always be found at his post, ready to give any help in the reception, and impart the information they desire about the mines and ores of Mohave County.

CALIFORNIA.

The Manvel Gold Fields.

(From Our Special Correspondent.)

MANVEL, CAL., Nov. 23, 1899.

EDITOR JOURNAL:—In continuation of my investigation work, as published in the JOURNAL of October 1, 1899, I have obtained additional facts as follows:

This new gold-producing field lies on the eastern slope of New York Peak of the Providence Mountains. This peak is about five miles distant from Manvel Station on the California Eastern Railroad. The field is therefore about five miles square, so far as known yet, but it is believed will extend considerably wider and will yet be found further North and South. At present the prospecting is confined to the area named. This makes the old New York and the Silver City limits the North limits of prospecting. In this field, along the base of the highest mountains, occurs the quartz, feldspars, veins, bulges or blowouts, in which is the quartz, with the base ores of gold, mostly, as sulpho-tellurides, and in the accompanying feldspars the gold is combined with the metals aluminum and iron double base, and does not pan. The whole region is not a passing or hornig proposition, and one has to be down in California for prospectors and locators herefore. The lower park or flat field of old white or grey granite, in which are an abundance of small black hornblende crystals, has been by volcanic action ripped and torn very much, generally East to West or Southeast to North-west, or vice versa. In these rents occurs the gold, as intrusive passes over veins, with many bulging or strong chutes of ore coming through to the surface, exposing much ore. Opening of these mines discloses ore chutes, a quartz body in long channels filled with sulpho-tellurides, pyrites and occasionally some free gold. These rich quartz chutes blend away in either direction into the quartz felspar that fills most of the veins. Many of these veins are three-quarters of a mile long. And there are many of the veins that put off laterals that connect with the side or parallel veins. In this respect I see that there are indications of the granite field and drifting is liable to cut many veins that do not or have not come through to the surface. That a vast field, its area is almost infinite. It is not all located as yet, but there have been located many claims, and considerable exploration work has been done in the past two months, and quite a number of mill test samples have been made from five to thirty pounds. The values shown thereby is given below. (No tin reported.)

<table>
<thead>
<tr>
<th>Claims</th>
<th>Gold</th>
<th>Silver</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>$47.64</td>
<td>$47.64</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>$29.30</td>
<td>$29.30</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>$38.45</td>
<td>$38.45</td>
<td></td>
</tr>
<tr>
<td>Full Moon</td>
<td>$4.50</td>
<td>4.50</td>
<td></td>
</tr>
<tr>
<td>Polka Dot.</td>
<td>$5.52</td>
<td>$5.52</td>
<td></td>
</tr>
<tr>
<td>Homeward Bound</td>
<td>$1.42</td>
<td>$1.42</td>
<td></td>
</tr>
</tbody>
</table>

Near the summit of the North end of New York Peak is found the Homeward Bound claim and group of locations. Here I found the ores as sulphides, assays showing iron, lead, silver, copper, and greatest values in gold. On the Homeward Bound claim a tunnel has been recently driven, three hundred feet long. There is a crosscut all in ore of 20 feet. The tunnel has gained a depth of about 200 feet, the last 50 feet being in solid ore. In two places the drift is hanging, and the remainder of the 20 feet is a low grade ore body. A strip of pohphry lies with the ore. This claim is located on a contact of marnitized calcium, lime, and granite. Six hundred feet depth will be obtained by this tunnel, and on the West slope of the mountain one can run in that will be 1000 feet depth. There are about fifty tons of assorted ore on the dump, and a dump full of low grade ore. The mine is making about 150 gallons of water per hour. Five men are employed. There is an abundance of ore in the tunnel, that deep enough is one half mile away and will be brought to within 200 yards of the mine. On examination of the assays of this mine's ore, I find all shows values referred to as "average," the high value is $10 per ton; the high values were gold two oz., silver fourteen oz., lead five per cent.

In the Southwest of the Homeward Bound Mines the Silver King and Queen Mines, new discoveries. A crew of men are at work on a fine grade of ore showing copper, gold and silver, with a ledge about twenty-five feet in width, maybe more. These men are driv-
ing a tunnel on ore into the mountain, and for every foot driven they gain about 1½ feet. There is plenty of water and wood. The road is one mile below them yet, but can and will be built to the mines.

The Sherman mine, a carbonate of lead rich pitchblende, is being worked. The mine is located in the North field, North of the Keystone Canyon.

This Keystone Canyon drains the eastern slope of the abrupt and high New York Peak. The creek, the Sherman, crosses the road which is a main line from the town of Manvel, and spreads out into a park of several thousand acres of old grey or white granite, full of veins of quartz and feldspar ores. The rim of this hill is nearly circular open on the Southeast side, through which the great stone drifts and flood waters find their way to the plains below, surface verdure washed away. The real new gold field, as strictly a gold ore, is within the rim of this park. It should be called New York Peak, and the pass north of it, Manvel Pass, on the south side of it, over the mountain is the Canyon of New York and the old New York Mines.

These properties as groups are reopened with a force of ten men, taking out and shipping ore, shipping and freight per. It is high grade, from $80 to $180 per ton reported. Here is water, and it is five miles west of south of Manvel, and probably two miles wide. Being property, that lie to the Northwest on the Peak.

I find in here a vast field not exploited, prospected or opened, and mineral indications, float, everywhere I go, indices of gold ore. New York Peak, is that small ore which falls under an exclusive gold ore. The veins run into and over the eroded rim of the park, and, on examination, I find this eroded crusts and reefs, which have been folded upwards, and some tilted over, great depths of thickness of these fields of grey or white granite, with black hornblende crystals. These folds or foldings, cracked and filled thousands of rents or fissures from below. This infilling matter all shows and gives nearly a clear gold button every assay. It is strictly a gold field, and these ores, some free and mostly a sulpho-telluride. The center of this park is nearly level, with gradual slope to the East and Southeast, and looks like, as it is on the surface, old granites. But this is not the right matrix and the gold in them. I predict here, as at Cripple Creek, that, on exploration and density, tellurides and chloritic minerals will be encountered, very rich in gold. These evidences are already found in the workings of the Old Shoes Mine. About six tons of these gold ores are on the dump when the assessment exploitation was made, a ten-foot shaft, a rim of at least thirty-six inches of quartz, filled with sulpho-tellurides. This ore looks like it had in it the metal Tin, so many of these copper minerals. I understand assays are being now made to determine the tin and platinum values.

The New York Park gold field only wants exploration, and the reefs at Cripple Creek, to make it a humerous equipment to the smelters and leaching plants.

Horners and panners keep away from this new gold field. The ores will not pan or horn at all. But even from that the lead is subjected to the fire assay, made by competent assayers, shows a big button of nearly pure gold, just as it did at Cripple Creek.

The area is, I think, bound groups of infinitesimal balls of gold, just as the gold looks and acts on cupel when tellurium was in the ore when assayed. It is but three miles to the railroad station, and freight to the smelters on ore are very reasonable, and the grade of ore will pay to mine, ship, and smelt. The California Eastern Railroad Company has a survey for railroad extension to the field and on up to the New York Mines at 1½ per cent grade, 4 from Manvel. Six miles of road-bed to cost about $25,000 per mile.

The thing to do is to get funds, and come with an outfit to sink at least 200 feet, drift, and core. Come prepared so to do, or stay away, if you want to make money at mining of ore. Infillers or miners can make some money, of course.

GILDING COPPER MINE.

SALT LAKE CITY, UTAH, Nov. 25, 1899. EDITOR JOURNAL.—Chloride Point did consider business this week at reduced figures. It should be a good investment at present prices, as energetic prospecting for present prices is a thing, a real thing, a thing for present prospecting. Dally West dropped off a little for no particular reason. Dalton & Lark was more active this week and should sell at better terms. Bronson Mines has been with some good ore uncovered in the lower levels. Daisy was much lower this week, although a great deal of stock changed hands. The decline was on the report of an assessment being levied to pay off the indebtedness, which was not confirmed up to the present writing. Duxter has done considerable business this week at higher figures. Good reports have been heard from the mine.

Four Aces was weak, selling below 10 cents. Geyser-Marion inactive. Grand Central was somewhat lower with very little business done. It is reported that they will pass their December dividend. Galena was dull. Horn Silver is improving. Ingot was very active this week at lower figures. Nothing of importance heard from the Buns.

Joe Bowers did some business this week at former prices. Stock seems to be held very strongly. Joe Bowers Extension—considerable business. Figures.

All the old officers were re-elected at the recent stockholders meeting. Disagreement seems to have been practically settled and energetic work is expected from now on.

Le Reine is looking much better. The recent strike of copper and silver ore has widened out, and the character of ore has improved greatly. Prices are the same, but no stock is being offered. Lower Mammoth was a little stronger in the fore part of the week, but declined a little towards the close. There have been no new developments reported this week.

Mammoth was somewhat dull and sold lower. Mercure was quiet. There is very little stock coming out. Northern Light did some business at lower figures. Large shipment of ore is not yet arrived. Reported strike of the past month has not been verified. Ontario was quiet.

Overland's Boston stockholders have been here the last of the week, and no changes in the increasing of the plant. They expect to be able to handle 500 tons per day after the enlargement of the same. Petro did some business at former figures. Dividends have not been discontinued until the opening up of the roads in the spring.

Swanse was somewhat stronger. South

Swanse was quite active during the week. They made a shipment of several cars of high grade ore. Sacramento very active and much stronger. There were many Eastern orders in for the stock of late. Star Consolidated did some business at lower figures. Silver King is quiet. Sunbeam was stronger and did considerable business this week.

Tetto is inactive. Yankee Consolidated did considerable business during the week. The ship closed. The small amount of reporting from the mines are that the ore extracted this week is higher grade and better prices expected.

F. J. CONWAY.

Miscellaneous Mining News.

ALASKA.

A new district is being opened at Cape York, 120 miles from Cape Nome. It is reported only second in importance to the latter district, with rich beach diggings, good pay on the numerous creeks flowing into the ocean, and with the farther advantage of a good harbor and safe anchorage. There are 200 miners in the camp at present, all well housed and provisioned for a year. They are an industrious people, to commence work by the middle of May or the first of June.

ARIZONA.

The Morenci Copper Company has commenced operations on its property a short distance from Morenci, says the Bisbee Copper Era. The timber for the shaft, which is 125 feet deep, was ordered some time ago, and as soon as it arrives work will be commenced at once to timber. The property of the Morenci Copper Company embraces four claims, among them being the Micawber Mine, which has now a large amount of ore on the dumps, and is one of the most valuable properties in this district. The average of 20 samples taken from the surface to the bottom of the shaft gave a value of $14.50 gold, 14 ounces silver and 6 cent copper per ton. Eight samples taken from the surface to the bottom of the shaft gave a value of $12 gold, 11 ounces silver and 9½ cent copper per ton. Two average samples taken from the dumps gave respectively $5 gold, 8½ ounces silver and 5 per cent copper, and $16 gold, three ounces silver and 2 per cent copper per ton. The vein has been cut across at the depth of 50 feet. A sample taken from the entire width assayed $14.75 gold, 2½ ounces silver and 2½ per cent copper per ton.

CALIFORNIA.

AMADOR COUNTY.

The grading of the sixty-amp mill at the Orovina mine is practically completed, and barring unforeseen delays, the mill will be finished by July next. Enough gold-bearing rock is already on the dump to keep the mill going for at least thirty days. The new shaft & winch 2012 feet, and may be put down seventy feet deeper by the time the mill is ready for operation. Should there be any unusual delay in the construction of the shaft & winch, the mine may be sunk two or three levels deeper. The old shaft is being cleaned out and repaired, 360 feet of which is already in good condition. Last week a 6000-pound
pump was placed in the old shaft, and is now in operation. Everything that is being done is in and about this extensive plant is first-class in every particular.

BUTTE COUNTY.

The Lost Treasure Mine, near Inskip, was the scene of a big clean-up a short time ago. This is the pocket ledge about 10 inches wide and is owned by Mr. A. D. Larzeler. In one day early in the present month Mr. Larzeler panned out about $400 besides securing many samples of quartz, showing free gold to the estimated value of $50.

CALVARRAS COUNTY.

The Morgan Mine, four miles south of Angel's Camp on Carson Hill, has been one of the richest mines in California, and is believed to be so still, but it has been closed by litigation since 1859. The chief contestants are William Irvine and the estate of the late Senator James G. Far. An idea of the magnitude of this legal battle may be gained by the fact that Mr. Irvine had at one time no less than 45 suits pending for this property. There is a large mine in the State that has yielded so much gold at about 100 feet. Up to the time of the discovery of this mine the breeders had no knowledge of gold in quartz, and before mining began on the quartz they were astonished. One piece of native gold was taken weighing $44,000, and within a foot of that spot $4,000,000 was taken out.

EL DORADO COUNTY

Attorney J. P. Snyder, acting for the creditors of the Greek Mine Company, brought an action against that Company and others to foreclose a mortgage of $4,000 given by the corporation to John J. Snyder, now deceased, in trust for the creditors of the Company and as security for the payment of their claims. The properties covered by the mortgage are the various mines and other property owned by said Company, near El Dorado in El Dorado County. The amount of claim aggregate about $4000.

INYO COUNTY.

News from Inyo County is that Los Angeles parties, represented by H. H. Douglas, have secured a bond on the Reward Mine and Mill, situated about ten miles southwest of Independence, and one mile from the Carson and Colorado Railway. There are about 100,000 tons of tailings at the mines, which are now being worked with satisfactory results.

KERN COUNTY.

The Kinyon mill near Randsburg has again been started again. They have recently made a contract with the water company which runs until March next, at one-fifth of a cent per gallon.

The deal on the Big Butte near Randsburg is off, Captain Collins declining to take the property. It is understood that the uncertainty in regard to water had much to do with the failure of the transaction.

It is reported that a Colorado company has purchased several claims near the coal mines paying $8000 cash for them. The claims are on the south slope of Black Mountain and about four miles west of the coal mines, near which the town of Carlock was formerly situated. Mr. M. L. Wicks of Los Angeles engineered the deal.

LOS ANGELES COUNTY.

A new Company, termed the Little Georgia Mining Company, has been incorporated in Los Angeles, and with Los Angeles capital. The purpose is to develop some mining claims in the northeastern portion of Los Angeles County and on the Colorado river, in San Bernardino County.

MONO COUNTY.

The Arnot Par Value mines in Mono County have been turning out good ore and the little mill has been kept running day and night preparatory to closing down when winter gets a hold at its altitude, the company not being prepared with comfortable quarters for a heavy winter. A large number of extensions have been taken up by Superintendent Glines. John Hays and Frank Page, Mr. Glines having a half interest in seven locations, and the others being about the same, the entire ledge being seemingly as good as the original locations, the Arnot and Par Value.

PLACER COUNTY.

A car and shipment of iron for track has arrived at Blue Canyon for the Golden West and cigar company. Development work will soon commence. The mine is located on the North Fork of the American River, near Blue Canyon, and is the property of Reuben H. Lloyd of San Francisco. The mine has a total of about 6000 feet of tunnels on the ledge. A new tunnel will be started 200 feet lower than the old tunnel and at a point 32 feet above high water mark. J. E. Knapp of Blue Canyon will superintend the development work.

The leasers of a portion of the Mayflower channel have just opened up a quantity of gravel that looks very promising. Superintendent George McAulay is getting things in readiness to work the old McCall pit, owned by the Mayflower Company, by the hydraulic process. A permit has been granted by the United States Debris Commission. The company has ten men engaged in the work of clearing the ditch, repairing the reservoir and laying pipe. A contract to build a dam has been let to Kaiser & Rassoll of Forest Hill.

RIVERSIDE COUNTY.

The Hillside Mine, situated Southwest of Perris, promises to become a bonanza. O. E. Reynolds and R. S. Waller are the owners. The shaft is down 250 feet and some very rich ore has been struck. On the dump there are about thirty tons of gold-bearing ore, and as none has as yet been assayed, it is difficult to estimate the yield, although it is believed that it will run high. The owners have worked the mine for some time, and although nothing very extensive was found, still the men stuck to it, believing that something remunerative would be found to repay them for the time they had worked.

SAN BERNARDINO COUNTY.

The Copper World property, about 35 miles from Blake, is proving to be a very rich bonanza, and the camp is growing. A carload of ore is being shipped regularly every three or four days, and the output will be increased as the mines are further developed.

SAN DIEGO COUNTY.

The Roberts gold mine at Escondido has been renamed Capt. John Ried, from the East. The bond is for 60 days, at the end of which time Captain Ried agrees to pay $5,000 for the property if the mine is satisfactory. The arrangement practically amounts to a sale. Captain Ried has begun sinking a shaft which will be 50 feet deep. He is now down 35 feet and the ore is showing up well.

The Llewellyn Iron Works Co. of Los Angeles secured the contract for the installation of the cyanide plant to be placed at the Golden Cross Mines at Hedges. The plant will have a capacity of 300 tons per day. There has been some opposition to the erection of this plant, and it remains to be seen as to whether or not it will be a success when it is completed.

Although there is an indebtedness of $12,000 to the Free Gold Mining Company from the Free Gold Mining Company, which is now the owner of the mines, the Golden Cross Company will be barred from taking any part in the property until the amount still due James Spiers and others shall have been paid. This amount is about $35,000. The original indebtedness of the Free Gold Mining Company to James Spiers and others was about $754,000, but more than $350,000 has already been paid as a result of the litigation, the greater part going to the attorneys. A claim for 275,000 attorneys’ fees was recently filed in the United States Court in Los Angeles.

Work on the tailings at the Stonewall Mine, Cuyamaca, by the same process is progressing vigorously. Outsiders believe that Frame & Shin, the owners of the plant, are netting at least $100 a day. As the work has been going on for a year and will continue for another year, the profits of this enterprise will be considerable.

SHASTA COUNTY.

The sale of the Mammoth Mine near Kennet is virtually consummated. The property is the bonder, asked by wire from Hallifax, Nova Scotia, for terms by which a payment of $50,000 could be made Jan. 1 and the remaining $50,000 on April 1st was granted. The result was the virtual sale of the mine on the terms asked. The purchasers are Nova Scotia and English capitalists. Headed by W. H. Boak of Hallifax. Mr. Boak is an East Indian merchant and ship owner. As soon as he confers with his London partners, steps will be taken towards the plan of operations on the property. The same people have a bond on the Balakala property, and also hold a bond on the Lowdon-Friday group. What Mr. Lowdon’s figures are do not concern the public, but A. J. W. Maclure, R. M. Bannister, Anton Jaggel and Joseph Kahny are to receive $4000 for the Mammoth in two payments to be concluded April 1. The Mammoth Mines are located West of Kennet and are quite often referred to as the Jackson group.

SIERRA COUNTY.

At the Magnolia mine, which is situated between Goodway Bar and Forest City, there are eight men employed under the management of E. E. Brown. The tunnel which is being run to tap the channel is now in about 200 feet and the work of pushing the tunnel ahead is rapidly progressing.
COLORADO.

Leadville is certainly in for another boom, possibly the most important since the first great excitement. The successful outcome of the task of unwatering the downtown district, followed by the strike in the Bon Air and the Penrose mines, gives assurance of sufficient values yet remaining in that district to interest capital in that region. Besides the home company there are operating in the downtown district the Northern Mining Company, producing eighty tons daily of carbonates; the Newell shaft, which is developing; the Colorado, mining twenty-five tons daily; the Midas, developing; the Shipping twenty tons daily; the Weldon, sixty tons; the Nubian, developing; the Bohn, fifty tons.

Cripple Creek is a whirl of excitement with new strikes, new deals and a great stock speculation. The ore output still swamps all reduction works. The Uncle Sam, a fraction of 2.17 acres, has been sold for $67,300, and the Blanche Gold Mining Company, with a capital stock of $1,500,000, will operate the property.

Ballard Mine on Breece hill in Lake County is making the development in the ore bodies carrying high values in gold. The mine is shipping twenty to thirty tons per day of ore that runs from four to five ounces in gold. There is a dump large quantities of milling gold that will average half an ounce in gold.

IDAHO.

The Seven Devils country of Idaho is progressing with great rapidity. The Boston and Seven Devils Copper Company is developing the Decorah, South Pecock and other mines. In the Decorah they are running a tunnel, which is now in about 250 feet, and they expect to tap the ledge any day. On the South Pecock they are sinking a double compartment shaft. This shaft is now down 150 feet, all the way through good ore, some of which assays 65 per cent in pure copper. This shaft sinking will be prosecuted during the winter, and it is expected the shaft will be excited in the early Spring reach a depth of 500 feet or more.

Other companies are doing satisfactory work on their copper properties.

MICHIGAN.

The recent drop of 15 cents a pound in the selling price of Lake copper means a lessening of the annual profits of the Calumet and Hecla Mine to the amount of about $5,350,000. The loss is not a serious one, for the Calumet and Hecla, even with its profits thus grievedly curtailed, will remain the most profitable mine in the world, earning profits each year seven per cent in the copper sold, or seventeen cents, means a profit of more than 100 per cent. Copper at fifteen cents is high, and there seems every reason to believe that what price will be obtained for several years to come. The high price of the past twelve months has been caused by demand and not through cornering of production. Pig iron, steel, and copper selling at approximately twice the price of last year, and there is no talk of a corner in any of those metals. It is possible to greatly increase the tonnage of pig iron of this country, as well as of most of the other ferro-alloy preparations, although iron from copper, for there are many idle or abandoned mines which can be reopened in a few weeks, or months, but the finding of new sources of copper will not come for a long time. The development of a copper mine from grass roots requires two to five years. The Arcadian, which had the advantage of a group of old mines, already a small scale had succeeded in making copper in eighteen months after work was resumed, while the Baltic opened from grass roots, there being merely a nineteen-ton shaft on the property when the present management took hold two years ago, got to stamping in eighteen months, but it will require fully another year to get the Baltic into shape to feed those stamps, and it will require five or ten years thereafter for the mine to get its full growth.

MINNESOTA.

A continuation in the drop in iron ore freights to $1.25 has brought out a large tonnage of ore for movement this fall. One large buyer that was not expected to start up until the year has all decided to ship 30,000 tons this season. It is Santry, an enormous property of the American Wire Trust. The indications are that, if the weather remains fair a few days more, shipments of the year will crowd 16,500,000 gross tons, fully a million more than the expectations of the most sanguine.

The Rockefeller Company has resumed work at its Hull and Rust Mines, Mesaba Range, and will employ 500 men there. Sellers, of the same group, has doubled its force of men for the winter months. The Biwabik mines will work all winter. Chandler, Vermillion range, has shipped 750,000 tons, and will close in one week. Minnesota, on the same range, has shipped 450,000 tons, and will get out 60,000 more. Pioneer, Zenith and Savoy have stopped shipments, and Zenith is closed down for the present.

The National Steel Company is at work at Chapin with the idea of increasing the already enormous output of this great mine another year.

MISSOURI.

The James tract of 240 acres at Leilih, seven miles west of Joplin, is sold to C. W. Richart, representing the Avondale Mining Company of Indiana, Ohio and Massachusetts men organized under the laws of Missouri with a capital of $200,000. The purchase price was $75,000. The land has been a great producer in the past and the company will put in a big pumicing plant and do extensive development work.

The Cowan & Webb lots on the Boston-Springfield ground in Gordoun Hollow, southwest of Joplin, were sold this week to C. E. Demarest of Kansas City for $18,000.

The Club Mining Company, operating four lots on the ground of the Continental Zinc and Lead Company just west of Joplin, has sold its property to Edwin H. Moeller of Boston, for $52,500.

The "Little Boss" Mine at Granby, owned by Superintendent John Kingston of the Granby Company, was sold to principals Wm. Pierce, for $7,500.

Four-fifths of the Oregon Mine at Granby was sold last week for $2,400.

MONTANA.

The outcome of the suit brought by MacCallum & Clauiter against the Gold Coin Mining & Milling Company, to recover $4,100 for goods furnished the company, is that Deputy Sheriff J. J. Welsh left Anaconda, last week to attach the mines.

This is the second action brought against the company recently, as it was only a week or so prior to the suit brought by the Butte Hardware Company, to recover $750, and attached a quantity of wood.

The Gold Coin Mining and Milling Company's place is situated about 15 miles west of Anaconda, and was worked during the summer of 1898 with a force of 60 men. It consists of a free gold milling proposition, with a 30-stamp mill. The mine is well developed, and has been worked with a considerable force since resuming operations in June of this year.

The Montana Ore Purchasing Company has won its suit against the Butte & Boston for the condemnation of a lot of ground to be used by it as a tailing dump near the M. O. P. smelter and concentrator. Judge Clancy decided in the case in the Butte & Boston's favor, having had it under advisement for several months. The condemnation was strongly opposed by the Butte & Boston Company on several grounds, chiefly for the alleged reason that the company needed the ground itself for the same purpose.

The area of ground involved comprises about 60 acres.

NEVADA.

The Dexter Mine at Tuscarora, Nevada, is sending in good reports of the operations being carried on there. The ore body is showing up in better condition now than for some time past, and if matters continue to brighten as they have the past few weeks, we can expect the mine to take its place as a steady producer again soon.

Syl. Light and Tom Donahue are taking out very rich ore in Aurora, Esmeralda Co.

George A. Green of Nine Mile has purchased the Silver Hill Mine in Aurora, Esmeralda County.

The mines at Ruby Hill, Eureka County, are shipping large quantities of ore. About 60 men are employed.

Lee Brothers & Farrington are building an arrastra in Huntovo Valley, Esmeralda Co.

One of the largest reduction plants that is tributary to the Southern California field has been placed in successful operation at Searchlight, a few miles east of the Inyo County line, near Vanderbilt.

The properties bearing silver, gold and copper to a remarkable degree are controlled by a Boston syndicate. The mines have been opened to such an extent that the demands of a reduction plant became great. This work last week was completed and placed in operation, daily consuming tons of ore.

E. T. Colman, who is favorably known among Los Angeles mining men, is the manager of the properties.

OREGON.

In a thirty hours' run with a No. 4 Bryan Mill $12,000 was saved at the Golconda Mine at Sumpter. Eighty five per cent of the gold was saved on the plates. On the 200-foot
level they have 12 feet of pay ore carrying free gold and tellurides. This mine has a double compartment shaft fitted with a steam hoist. Rich ore is found at a depth of 390 feet.

The pay streak in the Clipper mine, one of the Deer Lodge group at the head of Rock Creek, Clg., owned by Twin Springs Mining Co. is 12 feet wide.

The Sherman group of mines on Elkhorn Mountain, near Baker City, is being developed. The crosscut is to be extended 300 feet further, which will open up two more new veins.

The Couger Cyanide plant at Granite, Oregon, on the Deer Lodge D.&T., and ore handling will probably begin then. The plant has a capacity of 250 tons per twenty-four hours.

The Searles Mines at Cornucopia have been bonded for $700,000 to a Montreal syndicate. A large cash payment, $40,000, has been made; that is, the owners receive $25,000, and the sum of $15,000 has been placed in bank to carry development forward to the end of the term of the bond, or until the final payment is made on the contract in the spring of next year.

The Little Giant Mining Company of Liverpools, England, which purchased some dredging ground on Powder River near Sump- ter, has purchased a dredge for $50,000 and purposes working the gravel for the gold known to exist in the ground at this point.

**SOUTHDAKOTA**

The Homestead Mining Company has commenced the erection of an electric cyanide plant near the stamp mills, in which it is proposed to treat the several thousand tons of tailings. Experiments during the past few months have shown that this process will take out all of the gold values in the tailings. The plant will employ about fifty men.

Ore is being hauled to the Golden Reward Smelter from one of the Hardin Mines, in the Two Bit District. This camp had a gold boom two years ago, which brought five Chinese companies to the front. They started to sink five separate shafts and the Original Hardin, which was the deepest and opened a wide shoot of pyritic ore of fair grade. The companies all closed down a year ago. The Original Hardin, Chicag & Two Bit, and Hercules will all be opened up again this year for a steady run. It is believed that the Two Bit District is underlaid with rich shoots of ore on the quartzite level.

**UTAH**

"Colorado talent has again invaded Tintic and is now in possession of the Watts group of eight locations, for which it has bound itself to pay $30,000 on or before the expiration of a year," says Mr. F. L. Giroux, representing the purchasing crowd in which is included some of the wealthiest mining men in Colorado. The group, which is owned by the Watts Mining Company, organized a short time ago and capitalized for $50,000, is located about 2,500 feet north of the Bullion Beck and adjoins the Dagmar Company's ground, of which the lease is undertaken by Mr. Giroux and his associates. They have agreed to demand promptly. The group is located in a distance of 400 feet, again. The tunnel is already in nicely mineralized matter from which assays are obtained, showing gold, silver and lead. Judge T. S. Watts is President.

The sale of all the properties of the Centennial-Eureka Mining Company at Eureka, to the United States Mining Company, a Boston corporation formed for the purpose of securing these properties in bankruptcy, has been consummated. The Centennial-Eureka Company has to the present time distributed among its stockholders $2,120,000 in dividends. The price paid for the properties is stated to be $800,000 being at the rate of $53 per share for the 30,000 shares.

During the past few days increased activity has been noticed in the local stock market and the outlook for heavy business this fall and winter is much brighter than it was two weeks ago.

State Line, in Iron County, is seemingly prolific in important strikes of late, word being received from this rich gold and silver camp last week that in the workings of the Gold Hill ground a stringer of ore had been uncovered which was composed of gold, silver, copper and native silver. The finds were made in a fine body of milling ore of encouraging value.

Very encouraging reports have been received of ore from the Silver Shield mine in Upper Bingham, adjoining the holdings of the United States Mining Company. The new body of foreign stamps in this promising mine is now in operation, and three shafts are employed in ore extraction. A shipment of good ore from the Silver Shield is promised on the first of next month.

**WASHINGTON**

The Bonanza Company, in the old Colville Valley, is now among the dividend payers of Washington, having declared a dividend payable on November 20, amounting to $2,500.

In Palmer Mountain District, the Gold Hill group, consisting of forty claims, has been sold to Pittsburgh people, for $100,000 in development. This winter, Republic Mining Company, Wash., pays another dividend, which makes $350,000 paid in all. Plans are out for the new mill. Ore will be shipped to the smelter while the new mill is under construction. The old mill will be thirty-five years old, it was eighty miles.

The building for the new 100-ton mill at Mt. Lion is complete, awaiting installation of machinery, which is arriving daily.

The machinery recently ordered for the Princess Maud Mine, consisting of compressor plant is arriving. The roads being bad shape has delayed its delivery.

The new shaft in the Gopher is down fifty feet, and they are sinking at the rate of 3 feet per day. It is proposed to continue sinking until the 200-foot level is reached when they expect to cut the ledge.

In the Tom Thumb Mine, a good strike is recorded on the 150-foot level, the ore assaying $100 a ton.

In Miller River District, surveys are being made for an electric line from the Cleopatra Mine to the Great Northern. This road will be constructed for the purpose of transporting the ores of the whole district. At present this district is made accessible by corduroy roads constructed by King County and royalty mine owners, but the new electric line will make the mining regions where there was but one before.

**FOREIGN MINING NEWS**

**BRITISH COLUMBIA**

Rosslandin shipments of ore for the year to date 105,224 tons. Last year, for the same period, the total shipments came to 120,000 tons. Le Roi has shipped nearly 80,000 tons this year; War Eagle, 50,000; Center Star, 10,000, and Iron Mask about 5,000.

The Giant Ledge has been cross-cut on surface and is 17 feet wide. A compressor plant will be installed. The shaft will be an incline, following the ore on the hanging wall. The ore contains good values in gold, silver and copper. They expect to have 1,000 tons on the dump by January 1st ready for shipment.

The Humming Bird, in Boundary, has been employing three shifts the past six weeks. The ore body is from thirty inches to six feet wide. Ready for shipment are 400 tons that will make 400 tons of smelter ore. On the west coast of Vancouver Island, there is a good deal of development work under way on properties owned by Americans, particularly on the head of Bedwell Sound along Bear River. A wharf has been constructed on salt water, and a trail, large enough for wagon or tramway has been constructed from the harbor to the shore.

The Canadian Pacific Navigation Company now makes this a regular port of call. It is said that the mines are sufficiently developed to permit the shipment of 100 tons monthly. When the tramway is installed, this can be easily quadrupled.

At Seachtown, on Barclay Sound, the Wisconsin men owning the Searchart iron and copper mines are actively engaged in developing the properties, and they have developed the fact that the mines are more valuable for copper than for iron. They regard this as an advantage of reason of having purchasers ready to take the property at a good round price, provided a large deposit of Bessemer iron was shown. This property was at the time held at $6,000, and was under consideration by representatives of the Japanese Government at that price.

**MEXICO**

Over twenty million dollars' worth of silver ores have been reduced to bullion in the Guadalupe Reduction Works since their inauguration in 1883.

The San Fernando copper mines, Lower California, have been sold to Denver capitalists for $175,000.

Not far from the Sierra Pintada placers, to which there has been a great rush last summer, some Americans have discovered quartz claims rich in copper and gold. Of the 2,000 people who were in the camp last summer, only about one hundred now remain.

The Cedros Island gold mines are now controlled by Thomas R. Lombard, of New York City, who has completed the purchase of $1 per cent of the stock. He proposes to work the latter throughout. The cyanide process will be employed, and a plant erected for the treatment of the ore.

Manager L. A. Wright, of La Republica Mining and Agua Dulce Canyon, Lower California, reports that the property is showing better than the first assays promised. The company now developing La Republica is one of the best. Mr. Wright states every indication that the property will become of
The lessee of mining property is not the agent of the miner, but simply has a qualified interest in the property, which entitles him to the use of some portion of the benefit. The case of Harris et al. vs. Abell et al., 52 Pac. Rep. (Colo.) 612.

The office of a proviso is to limit, rather than to enlarge; and the proviso in Section 5 of the Mining Law of 1872 (Sess. Laws, 1873, p. 203) that the section shall not apply to owners of mines who lease the same in small blocks, does not enlarge the section by making it apply to all owners who do not so lease their lands. Wilkins et al. vs. Abell et al., 56 Pac. Rep. (Colo.) 612.

Where the locator of a lode claim lodges his certificate with the proper officer for record within three months from discovery, and the officer notifies him that it will be recorded, he has done all that is required of him by Mills' Ann. Stat. § 3150 (Gen. St. 1883, § 2390), requiring that he shall record his claim in the office of the County Recorder by a location certificate within that time. Shepard vs. Murphy, 56 Pac. Rep. (Colo.) 588.

The Mechanics' Lien Act, as amended (Sess. Laws 1895, p. 202, § 8), providing for a lien against mining property in favor of those who do work or furnish material for the development of mines, applies only where such work or material is furnished under a contract made with the owner of the property, or one acting by his authority as agent or contractor, and not where the contract was made by and for the benefit of a lessee. Wilkins et al. vs. Abell et al., 58 Pac. Rep. (Colo.) 612.

A notice of lien for labor performed on certain mining claims and a smelter, filed under Section 1357, Rev. St. 1898, should properly state the amount of lien claimed upon each piece of property, upon which labor was performed, so far as the claimant is able to state it; yet whether the amount claimed in the lien is the just sum due must be left for the determination of the trial court, and where it appears that the labor was performed by the day it is not necessary to include it in the lien. Garner vs. Van Patten, 58 Pac. Rep. (Utah) 684.

The Steel and Wire Trust is buying more mines and has recently added several on the Menominee range. It has sold 700,000 tons of vessel room for 1900 to the Carnegie Steel Company.


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DENVER, COLO.
## Incorporating Mines Paying Dividends

**Names of Mines**

<table>
<thead>
<tr>
<th>Location</th>
<th>Total Amount Paid in Dollars</th>
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**Value of Shares**

- California: 500.00
- Nevada: 100.00
- Oregon: 75.00
- Arizona: 50.00
- Utah: 25.00
- Colorado: 10.00
- New Mexico: 5.00
- Idaho: 2.50
- Wyoming: 1.00

**Yield**

- California: 10%
- Nevada: 10%
- Oregon: 5%
- Arizona: 5%
- Utah: 2.5%
- Colorado: 1%
- New Mexico: 1%
- Idaho: 1%
- Wyoming: 1%

**Dividend Payable**

- California: 10%
- Nevada: 10%
- Oregon: 5%
- Arizona: 5%
- Utah: 2.5%
- Colorado: 1%
- New Mexico: 1%
- Idaho: 1%
- Wyoming: 1%

**Type of Mines**

- California: Gold, Silver, Copper, Lead, and Smelting
- Nevada: Silver, Gold, Copper, and Lead
- Oregon: Silver, Gold, and Copper
- Arizona: Silver and Copper
- Utah: Silver, Gold, and Copper
- Colorado: Silver, Gold, and Copper
- New Mexico: Silver, Gold, and Copper
- Idaho: Silver, Gold, and Copper
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- Arizona: $500.00
- Utah: $250.00
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**Management**

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- G. Gold
- L. Lead
- C. Copper
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