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The Elections and Mining.

We believe it was the distinguished actor Joseph Jefferson who said, "If I was to receive any proposal which was inviting to-day or the other fellow had been elected every time." Probably the delighful J. P. had his mark merely as a piece of merrin absurdity, but it might have been made with some seriousness so far as the mining industry is concerned. Perhaps no other calling in which men engage depends so little for its prosperity upon purely political conditions. The coal and steel men command their own market at all times and in all countries. They are universally negotiable, and are better than United States bonds or English Consols.

While, therefore, no government is too good for the mineral industries, and while they prosper most under stable, honest, and progressive rule, yet they prosper anyway if only Mother Earth so wills it in come to a majority to do with it all the messes that ever made a jest of republican forms of government.

Cheap Transportation of Coal.

The Chesapeake & Ohio Railway has continued its policy of causing the transportation of coal at pitifully small rates. The explanation is to be found in the fact that the coal is carried in enormous trains, for a long distance, with the general direction downward. Railroad managers thought it a great advantage when the Chesapeake & Ohio was able to show, in 1898-99, an average train-load of 425 tons; but the report just issued for the last fiscal year (1899-1900) better this record, disclosing the extraordinary figure of 488 tons.

This efficiency of management explains the cheap rates that have long characterized the coal traffic of this company. In the year just reported the average rate for the entire coal tonnage of the road was only 2.02 mills per ton-mile—fourth of a cent per ton-mile. In other words, the road was obliged to move five tons of coal over three miles to earn a half-cent per ton.

This is undoubtedly the lowest rate received by any railroad in the world for the transportation of any commodity, and only a few years ago the rate would have been deemed inconsistent with solvency. Under the conditions noted, however, the Chesapeake & Ohio can make money by hauling coal on this basis. Its coal and coke traffic last year amounted to 6,856,000 tons—nearly half its entire freight traffic.

The Anthracite Strike.

Monday, September 17, was the day set for the great strike of anthracite coal miners, and about 90,000 men obeyed the order of their union. Since then considerable accessions have been made to their ranks, and now it is thought that not far from 120,000 men, or four-fifths of the entire number engaged in anthracite mining in Pennsylvania, are on strike.

A good deal might be said on both sides of the various questions involved, since neither party to the controversy appears to have all the right and justice on its side. The point is essentially a matter of organizing, and therefore, that some way out of the trouble was not found consistent with the essential rights of both parties. It seems clear that a large body among the miners were opposed to the strike at heart, and many have been over the side of the operators and possibly have controlled the movement of the entire army of employees if slight concessions had been made. On the other hand, the operators have a single request to remember their experiences with unions in the past, and they undoubtedly thought it good business judgment to obtain utterly from any sort of recognition of the organization known as the United Mine Workers.

The strike is not receiving so much attention as its possible importance warrants, and the general impression has been that it will not long continue. Another week or two will probably determine the result, and if the strike leaders do not suddenly wind up the fight in time in stopping off at least the operations of the 29,000 miners still at work, they will hardly be able to hold back the large number of men now among the strikers who are anxious to work. The latest news of the week, however, is less encouraging from the point of view of the operators. Threats of violence are heard, and signs appear that a long and bitter struggle may develop.

The Price of Steel Rails.

Railroad managers in particular and steel and iron men in general have taken deep interest in the conference of manufacturers recently held in New York City to determine the price of steel rails for 1901. Although steel and iron values have been falling for several months, and have been at times in most departments more or less demoralized, the price of steel rails has been held rigidly at $35 a ton. Even the most important manufacturers have shown themselves willing to hold out in order to obtain concessions. The profits to rail makers have undoubtedly been prodigiously, as they have bought their raw material on a declining market, but have made no corresponding reduction in the price of the finished product.

The story is interesting, and has the further merit of promising piquant chapters in the future. During 1897-98 and even last year, when rails were bought and sold in an open market, and the price broke to $35 a ton, the manufacturers then formed one of the strongest and most successful organizations of the kind ever effected. From $15 the price advanced to $35, where it stood in November, 1899, and from which it has not moved since. The ability of the manufacturers to obtain and hold this 100 per cent advance is largely explained by the increased traffic and unprecedented prosperity of the railroads, which both enabled and forced them to buy large quantities of steel rails.

This demand has filled the mills with orders, which even now run months ahead, but here has been indicated before the price of $35 could not continue. The decision reached at the conference September 21 was to make the price for next year $35. This reduction, though one of nearly twenty-five per cent, will be regarded by the railroads as insufficient, since steel billets are readily obtainable at $17 a ton, and under normal conditions the quotations of billets and of rails are only a dollar or two apart. It seems probable, nevertheless, that this new price will stand for some months at least, since the need of the railroads has become urgent. Because of the high price they have bought as sparingly as possible for months, and the railroads now have orders all ready to be placed amounting to sixty or seventy million dollars. The settlement of the matter and the closing of these contracts will have a marked and beneficial effect upon the general iron and steel situation.

Pan-American Exposition.

The United States Geological Survey has been authorized to organize the Mining Department of the Pan-American Exposition, and has directed David T. Day to take charge of the work. Mr. Day is now in Paris attending the exposition there, and it is understood that he will so far as possible preserve intact for the Pan-American Exposition the magnificent exhibit of the United States at Paris.
Metal Mining in China.


Not because China now appears attractive as a field for mining enterprises or silver and lead mining is non-existent in China, but because the present grave crisis there may finally result in a general abandonment of modern ideas, a paper recently prepared by Herbert C. Hoover for the Institution of Mining and Metallurgy, The Geology of China, is especially timely. The provinces of Chi-li, Shantung, and Shensi are in the northern sections of China. He says:

Metal mining in these provinces and in China generally has been of small scale, output, and apparent insignificance of which has not been, as is popularly supposed, so much due to superstition and imperal disapproval, as to the inability of the Chinese to make any considerable profit by the industry. People have knowledge, and are tired of mining the numerous small mines and abandon mining in favor of other methods.

In Chi-li the minerals are dowed with dents of former ages, the region in which the inhabitants have no memory, and universally attributed to the ancient Romans. A bedrock tunnel, 3,000 feet long, driven under the city of Ching Chou-Kou, in Chi-li, was discovered in re-opening the mines some twenty-seven years ago, and some pottery fragments and coins were found there and said to be Roman.

The progressive policy of Viceroy Li Hung Chang, metal mining was started on Western methods and under European engineers. In 1884 gold mining began in Chi-li, in 1884 gold mines at Ping Tu, in Shantung, and in 1888 silver-lead mines in Kiu Shan Tu. Unfortunately all these ventures failed lamentably, and metal mining received a severe setback. Most of these mines continued working, however, partially by Chinese methods, after the foreigners had left; and the Chinese, profiting from the losses, received, have opened mines at several localities, using a curious mixture of foreign and native methods, but without much profit—to the owners, at least. The ores consist of gold from the mines of Chi-li, running under the city, are not found after 1888, and about 6,000 oz. in Shantung during the same period. The product of silver from legalized mining is about 1,000 oz. in Chi-li, and 1,890 in Shantung.

OLOGY OF THE MINERAL REGIONS.

The mountain systems of the two provinces present a complex of old igneous and metamorphic rocks, with a certain number of folded sediments of a much later period, the latter at least partially carboniferous, the whole traversed by later volcanics, offering a maze of structural problems not to be solved by reconnoissance surveys, Pomponi and Richthofen have endeavored to reduce the series to some system, but anything other than exhaustive surveys will always be unsatisfactory. Purposes of this paper we may adopt a very general classification based on the fossils of rocks of the three periods, (1) Autochthonous rocks and deposits, (2) interfolded but unassociated sedimental, (3) volcanoes and tuffs.

(1) This class would comprise the ancient Chinese Archean or Siurian system and the Synanian system and consists of granites, gneisses, schists, and slates, with enormous thicknesses of metamorphosed limestones and sandstones, as in Shantung. As observed by the authors and assisted by other geologists, the deposits are entirely confined to this series, and their geographic distribution marks the limit of metal possibilities.

(2) This class is that of involuntary, the sediments of a great thickness of conglomerate, sandstone, and limestone, which are folded to a remarkable degree, especially in the northern regions and Jurassic. These rocks are largely carboniferous, with a wide distribution through the provinces.

(3) These are the mountainous regions of Chi-li all contain some gold, and often do so in Shantung. Such deposits through the mountain ranges have been the main sources of China's gold product for centuries, and even at the present day large quantities of gold are produced in the neighborhood of the richer quartz districts wherever the natives can find suitable working. As previously noted, the structural changes of the ranges have made these deposits secure, practically beyond the reach of the bottom bedrock—except in one instance within this region, have probably never been lead in large quantities. The filled canyons or valleys are always the richest gold fields, and in the mountains, small output and apparent insignificance of the principal mines, such as the cases and canyons are all "filled" with gravel, presenting narrow alluvial valleys with a great depth of such a nature that the gravel, gravel, gravel, so that the village is often accessible to go more than fifteen or twenty feet deep in the bedrock to reach the principal mines. It is only by supposing that the village is the neighborhood of the valley that the bedrock could very be payable.

THE OCCURRENCE OF GOLD.

Gold occurs at innumerable places throughout the whole of the mountainous portions of Chi-li, and in only a few isolated districts of Shantung, copper districts were visited by the author and assistants, and the deposits were found as (1) quartz veins, (2) possible impregnations of limestone, (3) alluvial.

The gold quartz veins occur imperceptibly through the thickly mineralized metamorphic limestone. There is no general direction or strike or area, except, that, although individual districts show a general strike of west north west, the superincumbent decomposition is universally, sharply inclined, the strike varying from one hundred to over 100 feet. There are two general classes of these veins—(a) normal fissure quartz veins, and (b) vein quartzes, the latter distinguished by two quite distinct types. First: Narrow veins, which are composed of a quartz of fibrous character, showing a large proportion of lead sulphides, and usually of high grade. Second: Wide veins of low grade and mainly white quartz, showing almost entirely sulphides, usually in large masses. Of the former the main reef at Ching Chou-Kou, being 1,500 feet wide at Chou Yang, in Chi-li, is a good example. Here the vein shows alluvial quartz, containing well-defined walls, and has been driven upon continuously for over 4,000 feet in length, and is nowhere completely extinguished. It shows two ore chutes aggregating over 1,000 feet long; the one is a bluish ribbed quartz, about sixty per cent free milling, and contains about ten per cent sulphides of lead, iron, and copper, and the other, about twenty per cent by native methods, aided by foreign pumps, 45,000 oz. of gold from 39,000 tons in the last six years. So far as observed, the eastern portion are of the second type, and they also occur north of the Great Wall, but not of the same extreme size. The principal districts in Shantung are a good example; here the vein crops out in narrow ledges, restricted to only a few feet to ninety feet in width. The ore occurs in undetermined chutes through the huge mass of quartz, which eventually precipitates in the pyrites. The ore is about forty per cent free milling, shows inclusions to twenty per cent of pyrites, and the general average of ore is of low grade.

Gush Vehan—These veins, so common in all quartz districts of Chi-li, would warrant but little discussion were it not that the peculiar economic conditions of labor, and the fact that the wider distribution was marked by the "ancients," renders these a source of considerable output, than by the present modern methods. These veins average through or to six inches in width, and are exceedingly erratic, occurring at the narrowest and most barren places. Such veins often occur isolated and at great distances from other deposits; at other times they occur in small masses of lead and gold content. Such occurrences were described by Ellis and worked at Je-Chow, in Shantung, but a careful examination fails to either corroborate this or the assays given of the ore values. Fully 8,000 men are employed to work these veins, in companies and at the charge is made up of about 250 pounds of roasted ore, 100 pounds of slags, from previous operations, and 75 pounds of roasting fuel. The lead and slag are drawn off separately, and the lead is usually roasted. These are then roasted with wood ash and a muffled covering of brick-mud. The muffle is covered with charcoal, and in turn protected by a brick lining and a mud and more lead added through a hole in the top. When the brick is cool, the wood ash is exhausted. The resulting silver is melted and the lead is reduced and the gold again recovered.

ECONOMIC CONDITIONS.

The fact that an unlimited amount of able-bodied labor can be obtained in China for 6d. per
day is often estimated in too favorable a light. To work in the sense of Western miners is an
unhealthy one, even where the mines themselves have been employed under foreign direction for
a number of years, the ratio of efficient to unproductive labor is, however, even at this rate
mining should be very cheap. The men are dour and are characterized by that strange hour
honesty which probably is no greater than other human beings under the same conditions.
Throughout the continent, it is available in distances not exceeding thirty miles, and with
improvements in the methods of security, the tools, dynamite, etc., must be imported from
foreign countries, and the almost impossible conditions of labor and government supervision
were not for the cheapness of labor. Although no other way could have been pursued, it is
decided, it is probable that working costs of gold mining under foreign administration should not exceed
the amount of gold to be paid for the privilege of working under them. In fact, it could be
readily possible to invest in new enterprises or to adequately keep up the works in use. The output from the hydraulic mines in 1892 was perhaps less than ten per cent. of the estimated output ten years earlier.

Finally it is a fact that hydraulic mining has been carried on in the Chico, Oroville, and North Fork districts.

The Caminiti Act

The Caminiti Act has been in force since 1892, and under which more than 800 miles of flume have been
constructed, permitting a large scale of operation. The flumes, however, are no longer used in the
construction of water supplies, mining plant, tunnels, and flumes, and more than two million dollars have been
invested in the construction of a single mine. Everything was upon an im-

MOORES FLAT DAM, BUILT OF LOGS AND BOARDS.

day nearly every water supply belonging to the larger mines, all of which draw their water from sources located at high altitudes in the Sierras. The uncertain status of hydraulic mining and the large outlay necessary to repair these water supplies has contributed in a large measure to their decline or only partial re-

April 1, 1900

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can be laid at one time without making it springy and deficient in compactness. Usually five or six feet of work is laid first and mine material allowed to accumulate until it covers the top of the top layer of brush, and then the dam is afterward added to, layer by layer, as accumulations collect in the basin, keeping the crest always above the highest water level of the mine. When used in water courses the total height for this kind of work is ordinarily not permitted to exceed twenty feet in one structure. The log crib structures consist of an upstream and a downstream wall of logs, varying from fourteen inches to three feet or more in thickness, usually not less than fifteen feet apart, connected by cross logs, the walls of the cross logs being spaced more than sixteen feet apart, all logs being of sufficient length to water tight and fastened at each crossing. The lower course is usually bolted strongly together. The downstream stream wall is vertical and the downstream stream wall is given a slight slant upstream, and the end logs of both walls are firmly joined into the sides of this creek. The cross logs are inclined slightly so that their downstream ends are two or three feet higher than the upstream ends. The log framework of such dams is commonly given a height of twelve to twenty feet and inspected before mining is allowed to begin. Their lower parts are filled with rock and gravel to weigh them down; deep and of sufficient degree with the degree of flood exposure and according to the total height to be finally given to the structure. About forty feet is commonly fixed as a limit of height for such dams, but plans for dams sixty and even eighty feet in height have been approved, the base being then correspondingly increased to twenty-four or thirty feet, and a complete filling with rock is made a requirement.

There are numerous combinations and modifications of these two styles of work in use.

An interesting type of debris dam consists of an upstream face, a downstream face, sloping brush work, gravel, and rock being sluiced in as a filling between the brush walls to form the body of the dam. The base is made sufficiently wide to permit the walls to be drawn in upon slopes of forty-five degrees or steeper, allowing for a crest width of about fourteen feet on either side of the base. The structure is formed by a shaft built with large, well-framed log sluice, communicating with a tunnel in bed rock, which passes under the dam, the sectional dimensions being sufficiently large to carry any flood likely to occur, and being protected by a prescribed embankment. The structure is passed under the dam and not pass over it. The shaft is built up gradually, and its top kept several feet below the level of the water on the dam, and detritus from the mine is allowed to collect in the tunnel while the tunnel is filled. A waste water is cut out about the dam, the tunnel is blocked at its lower end, and it and the shaft then sealed tight with gravel, after which all water passes out by the waste channel. A dam of this character, over ninety feet high, has been built, and consists of logs and a clay embankment, the filling gravel of the dam being selected material removed from the mine during the reg.

The cost of the dam structures is reduced by taking advantage of the fact that they are to stop solid matter and to hold back only a small depth of water, and the cost of impounding is further reduced by providing still less costly barriers above the principal works, the auxiliary barriers not being kept water-tight, but acting merely as strainers or arresters for cobbles and gravel, which are thus kept from entering and occupying space in the more expensive settling reservoirs. Thus a large percentage of the total bulk is stored at almost nominal cost.

Impounding Basin, Gopher Hill Mine, Plumas County, Cal.

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Effects of the Caminetti Act

Under the California Act hydraulic mining has been resumed only very slowly, partly owing to reasons already stated. The act has, however, enabled a great many small mines to operate without fear of legal interference, and it has, moreover, been beneficial to all hydraulic mining interests. Inasmuch as it has removed an inhibiting interdiction of the industry and provided a place thereof an expectate body entrusted with judicial powers to determine under what special conditions given mines may operate without causing damage, or in any manner preventing remonstrance with judicial powers to determine under what special conditions given mines may operate without causing damage to the public interest, including the navigation of the rivers of the larger accumulations of detritus from the bed of the Yuba River, and of the estuaries and confines the channels of that ancient stream. For this purpose appropriations amounting to $50,000,000 are available, of which sum one-half has been provided by the State of California and one-half by the Federal Government. A plan of treatment has been adopted by the Commission and recommended by the Chief of Engineers, and is now before Congress for final approval.

The report of the Commission has not yet been made public, but will probably be printed in the annual report of the California Hydraulic Mining Commission. The purpose of the project is to protect navigation and stop detritus already lodged in the tributaries of the Sacramento River, by making and treatment proposed for this purpose, if found effective in practical working, may show themselves capable of enlargement and extension so as to provide for storage of hydraulic gravel deposits not yet mined, which is also an object contemplated in the Caminetti Act. There is, therefore, the prospect of a resumption of hydraulic mining upon a more extended scale.

The practical results following the creation of the California Hydraulic Mining Commission in California have been appreciable from its creation in 1894. Each year has added to the gold production of the State in the regions where formerly placer mining was extinguished, that is, in the valleys of the Sacramento and San Joaquin Rivers, though only for the year 1897 and 1898 has the amount of the increase been appreciable. The result for the year 1899 has not yet been announced by the statistician of the Mint, but it is expected to show a production of $500,000 from debris mining alone. It is to be remembered that these results have been phenomenal in respect to the small amount of rainfall, being only about one-half the average precipitation.

In 1897, the product of gold resulting from the construction of dams was $93,619; in 1898 $571,881, an approximate estimate for the seven years since 1894 would probably give over $2,700,000 as the total saved by means of the debris dams.

For the coal used with the placer we are indebted to the Scientific American.

Asphaltum at Cl Elum

The discovery of an excellent deposit of asphaltum in the Cl Elum district is reported by Dickson and Price of Seattle. The base is found in a quicksand area reached by the Northern Pacific road. It is said to form a blanket deposit of about 200 feet thick ranging from a few inches to several feet in thickness.

William Packwood, better known as "Old Uncle Billy," a pioneer of Olympia, discovered the asphaltum in 1882, but did not know the nature of the deposit and gave it little attention beyond sending samples to an analyzer. A number of years afterwards he revisited the section, but was not satisfied with the samples and abandoned before locating it. Before his death, he made a rough sketch of the country from his memory of it. His son, Mr. Packwood, sketched it to his nephew, M. N. Barnett of Everett. Mr. Barnett consulted several capital interests and interested them in organizing a party to search for the deposit. Three unsuccessful expeditions were made, but finally last fall, Dickson and Price took up the work and after one failure to find the bed they last succeeded in locating it in June.
Air Compressor Explosions. Several Noteworthy Cases and Their Causes—How to Avoid the Danger of Ignition—Essential Characteristics of an Efficient Compressor.

By Alfred George White.

The attention of engineers in this and other countries has from time to time been drawn to the explosions which have occurred in air compressors and receivers. In some cases the cause has been ascertained and in others there is a strong suspicion that it has been due to an overcharge of volatile oil or the use of molten lead in making the split joint of the pipe referred to. The incidents have been so frequent that even the most careless engineer is likely to be in danger of being overcome by the smoke from the explosion, and to be ignorant of the causes of the explosion, which the author believes to be more frequent than is generally known. The following incident, which occurred in 1897, is of a nature which came under the author's notice, with a description of the precautions which, it is hoped, may help to stop or mitigate the evils which the author has already referred to in the subject.

EXPLOSION IN A COPPER MINE.

The air compressor was employed for the purpose of keeping the air supply to the working faces of the copper mine in a copper mine in Norway. The usual working pressure between fifty and sixty pounds. The safety valve of the receiver was loaded to blow off at the pressure. It had been in operation for seven years, and was of English make, with two horizontal air cylinders twenty-four inches in diameter and thirty inches long. The motor was supplied with a high-speed turbine on a horizontal shaft, the bearings were cooled with water, and the compressor driving shaft. On this shaft there were keyed a heavy cast-iron crank discs, which worked the air-cylinder pistons by means of connecting rods in the usual way. The intake valves were fitted with wire, four below in each cylinder, and the exhaust valves were one above in each cylinder. The cooling arrangements consisted of an open water jacket round each cylinder, the water supply being admitted near the top and discharged through an overflow pipe of three fourths inches bore on the bottom. The water supply was shut off at a point determined by the temperature of the water, and the air-cylinder was kept entirely free from water. The exhaust valves were provided with a pipe which led to the water supply, and the water was used for the purpose of cooling the pipes and receiver.

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Bituminous Coal Mining Operations-The Fable of Houillets—As to the First Use of Coke—A Shock for the Modern By-Product Plan

By Fred C. Keighley, Oliver, Pa.

Though there is every probability that both the Grecians and the Romans were aware of the properties of fossil fuel, there is no positive evidence that they ever mined it for fuel purposes. It is mentioned by ancient authors as Sthiarkos, meaning stone coal, and in our own days it is represented by the Italian word laranze. Thucydides, Aristotle's favorite pupil, states in his "Treatise on Stones" that coal had been found in Liguria and Etruria. The reason that coal was not mined in the earlier historical periods may be accounted for by the fact that the human race was living within the tropics, and there was not that need for fuel. Furthermore, there were no forests in the colder zones, and no doubt when the human race did migrate to the colder zones, the forests and peat bogs undoubtedly furnished ample supplies for their requirements until the climate changed. Foresters in the colder zones of the world, such as Italy, Greece, Egypt, and Asia Minor, the coal measures are of rare occurrence; so even if necessary supplies were available, the primitive individuals would have had no means of acquiring them. Coal is an example of a material that has been discovered, but not used since the time when it was first found. All discoveries, till the time of its use, have been made in the dark ages, when the people were unacquainted with the properties of the material.

It seems that coal was worked in Belgium during the thirteenth century; while coal mines were in existence in Flandern, near Liege, in Belgium. Coal was worked in France during the fourteenth century. There is a description of the working of coal mines in certain parts of Belgium in 1821 which I cannot refrain from repeating, as I certainly think it is of great French historical value. According to the great French historian of the time, Louis Simonin, from which I am indebted for all the valuable information in this paper.

The Story of Houillets

The chroniclers give it as follows: "Houillet, afarrier at Placevoix, was so poor as not to be able to earn enough for his wife, mother, and children. One day, being without work, he had al to the high road, and rode on horseback to his home, where he saw a man with a white beard entering his shop. They entered into conversation. Houillets told him about his troubles and that he was a disciple of Saint Blai, who worked in iron, blowing the bow for himself to save the expense of an assistant. Le Bas could, however, get some advantages if charcoal was not so dear, for it was that which ruined them. The good old man was moved even to tears. My friend," said he to the farrier, "go to the neighboring mountain, dig up the ground and you will find veins of black earth suitable for the forge." Sooner said than done. Houillets went to the spot pointed out, found the earth, and began throwing it into the fire. He then proceeded to forge a horseshoe, and the result was very satisfactory. You joy be ou would not keep the precious discovery to yourself, but communicated it to his neighbors, and even to the king. The latter, having heard this, ordered the place to be worked. It is still only the name of "Houillets" that is still cherished by all the miners of Liege, who, of an evening relate the story of the honest collier, or of the old collier, as they do in the valley of Houillets, the farther of Placevoix. The miners say it was an angel who revealed to him the spot where the coal was.

I have an old book in my possession, published in 1765, entitled "General View of the Agriculture in the county of Kent with Observations on the Varieties of its Inhabitants," by James Robertson, D. D., Minister at Callander, in the County of Perth, that I am going to quote from, as it contains a statement very singular, that although most of the counties in the South of Scotland contain coal, yet none have been discovered North of this county. The Ochil hills crossing the county, and the Ochil hills, with the coal mines, crossing the counties of Stirling and Dumbarton on the West, and those of Fife and Forfar on the East, seem to me to be the barrier that nature has placed between the southern and northern coal counties. From Blairingone (the field of hounds) which is the property of the Duke of Atholl and situated on the north side of the county, the west end of Strathmore, and part of Breadalbane, are supplied with this useful fuel, in addition to its natural sources.
The Anthracite Coal Strike.

The latest reports at hand as we go to press indicate that the strikers in the Pennsylvania anthracite fields are gaining ground with their content under the leadership of the United Mine Workers of America. The strike was ordered to be renewed on Monday, September 17. At the start it was a mutual disappointment—to the operators who had hoped the miners would stay away from the mines than they had expected would leave them, and to the promoters of the strike, whose prospects were so bright at the outset that they would be tied up from the beginning failed of very short duration. By this time, however, a number of strikers seems to have increased, while those who still persisted in working wavered and in some cases even returned to the ranks of the labor agitators.

The shut-down in the northern field known as the Lackawanna region was practically complete on the first day of the strike, but in the southern fields known as the Schuylkill and Lehigh regions, the miners were more reluctant to leave their work. The first estimate was that 30,000 men were out and this number has gradually grown to something like 120,000.

The operators made a determined effort to break the strike, and on Monday, September 24, hoped to see many of their idle colliers resume operations. However, the coal operators admit that their situation had become more serious, rather than otherwise. At that date there seemed to be no signs of a settlement in sight, and the leaders in the strike movement had gained new confidence and were more strongly determined that the tie-up would soon be complete. At Shenandoah, where the first serious outbreak of the strike was reported to have taken place, orders had been restored, but the operators of the attempt to force the miners back to work had failed absolutely. It was then predicted that all the coal companies and coal roads in the region will be without coal within a few days.

The points at issue in this big conflict as outlined by the companies appear to be in a consolidated form in the statement of grievances, issued by President Mitchell of the United Mine Workers of America on September 12. The basis is that while the wages of anthracite miners have been increasing for many years been less than $500 annually, the cost of the necessities of life has increased over twenty per cent, and that the increased cost of living which is not made good by a corresponding advance in wages amounts practically to a reduction of wages. It is claimed that every law of economics demand that a miner must make 2,000 pounds a ton, the anthracite coal miners are compelled to consider $2,000 to 6,000 pounds a ton, and that they are also charged heavily for imparities that may be sent out with the coal. The miners are obliged to purchase property, miners at the rate of $275 a ton, while it is asserted that the same property can be purchased for $160 a ton, at wholesale for $1 a ton. Another source of trouble is the company's store, where many miners are convinced by the statement made by the miners must also pay the company $1 a month for a doctor's fee whether they require his services or not. The miners declared that all efforts to secure a removal of these conditions have failed, saying that the coal companies and coal roads have uniformly declined to treat with them.

On the other hand, the operators, without awaiting a satisfactory and conclusive contract satisfactory, the operators are forced to request a reduction of labor; the operators are satisfied with their present arrangements, and believe that the strike is already the present time is the appearance of politicians. One operator has said that he had no idea that March as a strike in preparation, but that the present election is nearing its crisis. For these reasons it is stated they will not submit to the reduction of labor as the right of a labor union to demand a day's strike.

Amalgamated Scale Signed.

Finally, after many conferences and much controversy the representatives of the Anthrop & American Steel Workers reached a settlement on the morning of September 25. The agreement made it possible for the miners to continue their work the Amalgamated Association of Steel Workers, who had been idle since May, to return to work. It is believed that if the situation were left alone a single day's strike or lockout would have been inevitable.

The Amalgamated men wanted to continue to carry on the scale of last year which was reckoned on a basis of 30c a ton. The operators demanding a reduction to 25c a ton. The agreement was reached at a minimum basis of 25c. It will go into effect sixty days after the signing of the agreement, and if in the meantime the market price of the product in the market, the agreement as to lower prices was met by the Amalgamated miners with the assurance that the operators would follow the price as they did the output.

The new scale is in the nature of a compromise and is on a minimum basis of 25c. It will go into effect sixty days after the signing of the agreement, and if in the meantime the market price of the product in the market, the agreement will be advanced from the 25c basis. The Advisory board of the Amalgamated Association is charged with the duty of reporting on the prices paid by all the minerals operated by the two companies. This concession has for some time been anticipated, and in the course of the conferences the operators earnestly urged the Amalgamated committee to inspect their books at stated periods of sixty days.

One effect of the signing of the new agreement will be the realization of T. S. Schaffer, president of the Amalgamated Association. He had been assured of one of the conferences of being an obstacle in the way of an agreement. Notwithstanding his disappointment, it is said that the miners in general are well satisfied with the new scale. The operators likewise profess to be pleased.

The announcement of the yearly scale is usually made July, but this year the usual variations in the market, received everything unexpected, and it made it impossible for an agreement to be reached. As soon as the scale was signed, messages were hurried to the various mills affected and arrangements were immediately begun for the opening of the mills at the earliest possible moment.

The New Standard Concentrator.

Economic developments of recent time past been working on a new patent concentrator, which they have at length perfected at Los Angeles. The unit of the New Standard Concentrator is not more than twenty-four inches in length, width, which requires less attention, has greater range of adjustment and requires of less amount of water. It is the highest running concentrator ever made, requiring less than one-quarter horse-power. The New Standard Concentrator has fewer working parts than any other ore concentrator. Our No. 2 machine has a capacity of fifteen to twenty tons per day of twenty-four hours, depending upon the per cent of concentrates in the ore. The weight of No. 2 machine crated is 1,000 pounds. Machines now in use are doing better work than has ever before been done by any ore concentrator. A careful examination of the merits of this machine will convince the mining public of its superiority in all points, thereby establishing a new standard.

Greene Consolidated Copper Co.

We have received an official report of the meeting of the stockholders of the Greene Consolidated Copper Co., held at 27 Washington St., New York City, on September 7. A letter was read from George S. Robbins, who had recently visited the mines of the company at La Canaan, Sonora, Mexico. Mr. Robbins says the property is about ten times as big as it looks on the company's map and he reports that rich ore is in evidence in many places. Extensions are being made on the smelter, and it will be some time before the smelter is ready to start. As soon as it is ready, however, the company will be ready for production. Messages were also read from Professor Robert J. Hill of the United States Geological Survey, who recently visited the property at the request of W. R. Logan, treasurer of the company. Professor Hill says that mining, smelting and transportation conditions are of the best, and that ore is abundant, available and lasting.

Houghton County's Growing Payroll.

A census of the mine workers of Houghton County, which has been taken by Capt. Josiah Hall, mine inspector for the county. The census will be reported to the County Board on October 6. It was generally anticipated that this census would show a falling off from the figures of one year ago, owing to the letting out of nearly 1,000 men by the Arcadian and decreases in forces by other new mines which have completed surface improvements that required many men. The figures are not completed, but will show a gain rather than a decrease.

Following is a table showing the number of men employed by the mines of Houghton County for a period of ten years, the figures for the present year being a close estimate.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>7,210</td>
</tr>
<tr>
<td>1891</td>
<td>7,700</td>
</tr>
<tr>
<td>1892</td>
<td>7,640</td>
</tr>
<tr>
<td>1893</td>
<td>7,905</td>
</tr>
<tr>
<td>1894</td>
<td>8,489</td>
</tr>
<tr>
<td>1895</td>
<td>7,420</td>
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<tr>
<td>1896</td>
<td>8,700</td>
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<tr>
<td>1897</td>
<td>8,725</td>
</tr>
<tr>
<td>1898</td>
<td>10,498</td>
</tr>
<tr>
<td>1899</td>
<td>13,000</td>
</tr>
<tr>
<td>1900</td>
<td>14,000</td>
</tr>
</tbody>
</table>

By these figures it will be seen that the number of mine employees in the county has practically doubled in five years. In addition to these figures, nearly 2,000 men are now employed in the mines of Keweenaw and Ontonagon counties, where barely 200 were working in 1895, giving at least five better men working in and around the mines and stamp mills of the Michigan copper district.
The American Mining Engineer.

Charles H. Pitches of Chicago has addressed the following letter to the editor of the Mining Journal of Canada, the contents of which has been reproduced in that publication over a question of bonus in the American mining engineers in South Africa:

"You recently gave space to a long anonymous article which was, I believe, tactless. To this a few sensible words of rejoinder seem in order. The present writer is of the opinion that the practice of the mining metallurgist in the United States, the many thousands of assayers, metallurgists, and engineers, known and unknown, who are equipped training schools and laboratories in which they are educated for the conduct of mining and metallurgical work, are not the unmindful and untrained of the men in the mine. The writer's correspondence, in his long article, offers to give no facts. No charges are made, and in the absence of general information, is invited to do so. He corresponds only one name—that of an inventor or process man, who is not a member of the American Institute, and whom we would not class among the trained metallurgists of American origin. He mentions one fact, that millions have gone to waste in tailing in South Africa, but he does not state the vastly greater value saved. The great saving due to the McArthur-Forrest process has never been claimed for American engineers, and the work they have done in South Africa has not been unprofitable. It has been profitable, saving labor, the management and control of large physical enterprises, and giving us a grasp of all the required background. The writer seems by his very one-sidedness unfit to appreciate our work. He reminds us of the criticism of the author of the chapter of this country, who seemed to the desert of the desert as a nucleus of perfecting a process which seems by his one-sidedness unfit to appreciate our work. He reminds us of the criticism of the author of the chapter of this country, who seemed to the wish of the desert of the desert as a nucleus of perfecting a process which was made, and the approval of this approval is not and cannot be adequate to the work which we have done.

"All that is asked is reasonable fairness, not narrow provincialism. For my part, I am strongly in favor of the work of the mining metallurgist, and I am prepared to defend him. I am not a member of the American Institute, and in the absence of general information, is invited to do so. He corresponds only one name—that of an inventor or process man, who is not a member of the American Institute, and whom we would not class among the trained metallurgists of American origin. He mentions one fact, that millions have gone to waste in tailing in South Africa, but he does not state the vastly greater value saved. The great saving due to the McArthur-Forrest process has never been claimed for American engineers, and the work they have done in South Africa has not been unprofitable. It has been profitable, saving labor, the management and control of large physical enterprises, and giving us a grasp of all the required background. The writer seems by his very one-sidedness unfit to appreciate our work. He reminds us of the criticism of the author of the chapter of this country, who seemed to the wish of the desert of the desert as a nucleus of perfecting a process which was made, and the approval of this approval is not and cannot be adequate to the work which we have done.

Accidents in Pennsylvania’s Anthracite Mines.

James E. Roderick, Chief of the Bureau of Mines for the state of Pennsylvania, has sent out his report for the year 1899. Embodied in the introduction are interesting figures regarding accidents and fatalities in the Anthracite region of Pennsylvania. Tables are presented, from a superficial glance at which the inference might be drawn that there is a great reduction in the number of lives lost and in the accidents. In the coal mines alone were the number of lives lost in 1899, and in the anthracite mines in the state, 161, or an average of 10.1 a year. In the second decade, embracing the period between 1880 and 1889, inclusive, 2,119 persons lost their lives through accidents, or an average of 111.1 a year. In the third decade, from 1890 to 1899 inclusive, 4,265 persons lost their lives and in and about the anthracite mines, an average of 42.6 a year. Thus, in the ten years during which the anthracite mine law has been in force in Pennsylvania, the number of lives lost have decreased from 1,61 to 10.1 a year, an average of 29.1 a year. In commenting upon these figures Mr. Roderick says:

"It is clear that by all means to be favored with the subject that the anthracite law of this state is not the only subject in the world, therefore, it is the opinion of the writer that this subject is not caused by any accident in the law, nothing more serious than this: the miners, as a class, are a most intelligent and hard-working body of men, and thoroughly practical. Probably some neglect is committed in the supervision of the work, and mine foremen and some of the colliers, the greatest criminals among the accidents can be truthfully traced to the neglect of the law as it is enforced. The writer claims that the mine law has been enforced in more than thirty countries, and he will endeavor to prove this assertion by figures."

Mr. Roderick substantiates his statement by showing that between the years 1870 and 1879, for every thousand persons employed 5,889 lost their lives. In the second period, for every thousand employed 2,309, and in the third period the number was 1,261 for every thousand employed. It is clear that the number of accidents and the cost of the mining of coal have greatly increased within the past ten years, owing to the great increase in the quantity of coal consumed and in the number of miners employed. In considering these facts, it is clear that the principal cause of the large number of accidents reported is the same as that which caused the decline and the neglect of non-English-speaking miners and laborers who have been employed in and about the mines in the past decade. Under the present conditions, he says, it is difficult if not impossible for the mining industry to be as safe as the coal industry. The mines are running daily and they have demonstrated that a very large part of the low-grade coal in the Black Hills can be successfully developed.

Within six weeks the 250-ton plant of the Spearfish Mining Company has been in operation for the first time. It will treat a 120-ton ore, valued at $6.50 per ton. The ores are very hard and have required considerable force to work them.

The Homestake Company expects to have the mammoth cyanide plant at Lead completed and ready for ore in thirty days. They will treat the cyanides of the stamp mill changes which carry about $1.50 per ton. The owners of the Wasp No. 2 mine and others in the Yellow creek district are building a forty-ton plant which will treat the great quantity of twelve-dollar ore in the camp.

The Detroit and Deadwood Co. of Detroit, Mich., has leased the St. Paul mine, which is now being worked on ore leased from the South Dakota company. The first run was completed last week. The company has placed an order on the company and custom ore. It is located on Annie Creek, south of Rapid City.

The Northwestern Gold and Silver Co. has a lease on the old cyanide plant at Deadwood, from which it is now being run from the Kicking Horse and Maggie mines in the Black Hills district, capacity, seventy-five tons a day.

Los Angeles to Salt Lake by Rail.

General Manager F. H. Fule of the Los Angeles Terminal Railway, who has purchased the Los Angeles Terminal Railway, "Work on the completion of the line will be in full swing within three months. We have abundant capital for the purpose, and will not be put to the necessity of issuing bonds to pay the cost of construction. This is simply a fulfillment of the plans in view ever since the terminal was organized, and has been delayed only largely on account of the delay in the improvement of San Pedro harbor. Surveyors are at work now on a line eastward from Los Angeles. Our first object point is San Bernadino, a distance of sixty miles, and there the line will reach Salt Lake City. We shall not build to any western extension of the Union Pacific or the Rio Grande, but will complete the line to Salt Lake City, where we can connect with all transcontinental lines having terminal surveys, which are already in operation. Hawgord, for many years with the engineering department of the railroad company, will go with all possible speed and the actual construction begin within three months."

Centennial-Eureka Affairs.

Officials of the Centennial-Eureka Mining Co. say that the property is in a better condition than ever before. For every one of the two tons that have been opened up, the latest estimate is that the ore in sight will show a net profit of $2.50 per ton. The company has not been in operation for a year, and the stock has been closed out, at the present rate of production. The talk of a consolidation with the United States Mining Co. is likely at the present time, and if such a combination should be decided upon by the shareholders, it is possible that the company will be issued with control sufficient stock to determine the price which would not benefit the Centennial-Eureka. This possibility has been brought against the Centennial-Eureka to recover damages for the alleged extraction of ore by the company, which is the Silver Queen on the Eureka Hill property, owned by the Centennial-Eureka and the latter company, which did not belong to it. Richard A. Parker, one of the company, has declared that the demand of the Eureka, says that the claim is absurd.

Under the Centennial-Eureka’s contract with the Smelting Company, the company is to have the right of first refusal for approximately about $4 a share annually. The contract is not
thought to be a specially advantageous one, and there has been talk of breaking the contract, although such a step is not likely to succeed.

Precious Metals

William L. Scroggs, writing of the precious metals in Colombia, says that the gold and silver mines of that country are far richer than those of California, and that there is only waiting labor, a stable government, sufficient capital, and accessible markets, to make the mining in Colombia one of the most productive countries, as well as one where the prices of the produce may be fixed by the supply and demand. The enterprise in the mines is almost incalculable, and there is a great amount of gold and silver still to be discovered. The longer the mines are operated the better will be the results. These discoveries will be fully realized by the great commercial powers of the United States, and the transportation, transportation. There are not more than 160 miles of regularly operated railway in the whole republic, even including the forty-seven miles across the isthmus. The entire transportation in the interior is by pack mules and packets, just as it was three centuries ago.

Sale of the Camp Bird

The latest report from Denver is that the property in the Camp Bird mine, Ow Byron, to the Alfred Bell Syndicate, London, will not be concluded. John Hays Hammond has contracted for the entire interest. Thomas F. Walsh, the owner, has, according to contract, sent a cable message to England declining to accept the offer of Messrs. McNab and raising the purchase price from $6,500,000 to $10,000,000.

A Strike at Stratton's Independence

Stratton's Independence, one of Colorado's most famous mining claims, is again on strike, because of a rebellion among the men against a new regulation calculated to stop the theft of valuable ore. The miners of the mine have been greatly troubled for a long time by persistent stealing, and believe that they have lost hundreds of dollars daily. Finally they issued an order compelling every workman to change every article of his clothing before leaving the mine. The men immediately rebelled against this regulation, and when it was announced laid down their tools. The management insists that the mine will remain idle until enough men apply for work to enable it to resume.

Advanced Wages in Washington

It was announced in Seattle recently that an advance of from eight to fifteen per cent in wages had been made, which will have an effect immediately. The advance affected nearly all the workmen at Coal Creek, Newcastle, Lawton, and other districts, and the coal miners and employers. Superintendent W. E. Pearce of the Pacific Co's coal department says that there was no special reason for the advance except that the company realized that wage scales had advanced recently, and that his company wished to maintain its reputation for fair treatment of its men. The miners had made no demand for the increase. Separate scales had to be provided for each mine because of varying conditions.

The Olympic Mining Co

We have received from the Olympic Mining Co of Seattle, Wash., a copy of an interesting letter addressed to the company by J. D. McIntyre, who has recently been exploring the company's holdings in the Ketchikan district. Mr. McIntyre was accompanied by the young man J. W. Ragan. They were sailing on the Tepheen from Ketchikan to Duncan Canal, Kuperskoff Island, when they sailed into a small harbor on the southwest side of Worwodski. Going ashore with pick and hammer to see what they could find they ran upon a large gold mine. Mr. McIntyre is of a confirmed color blind but moreover he is a confirmed color blind and in a great body of pure white ore about forty feet thick. The miners on the Tepheen, when they saw the ore, getting forty colors in the pan and making over $30 to the ton.
Construction and Development News.

It is reported that Baker City, Ore., is to have a new railroad and smelter.
A new iron ore mine is being erected at the international copper mines, Dorchester, N. T.

The Beaver Creek mining company, at Northport, Wash., is in contemplation.
Northport, Wash., will probably have another smelter and furnace.
For the present, the Frisco mine of Joplin, Mo., has closed down. The company may put in a mill.
The Virginia Coal, Coke & Iron Co. of Bristol, Va., is preparing plans for a furnace.

The company running the Nightingale claim at Cripple Creek, Colo., is making plans for a development work.

The company owned by the Rossland Gold Mining Co. at Eldora, Colo., are being developed by that company.

John W. McNicho of Owensboro, Ky., is president of the Owensboro-Joplin Mining Co., recently reported as chartered.

The Coal Hill Co. of Omaha, Neb., has taken control of the Burlington Block Coal Co., operating at Univille, Mo.
Drummond, Neary & Co., on the Kittle mine of Anacoda, Mont., are rapidly preparing to ship 100,000 tons of coal.

The Star mine of Gunnison, Colo., is to have a new shaft three feet in diameter be made to get it ready for winter use.
The Holow Mining Co. of St. Louis, Mo., has been purchased by the Wheeling Co., the new owners are to make the mine a large one.

Clearjack Mining Co. has been incorporated by W. O. Chesser, W. J. Bodinger, Benjam in F. Young, all of Kansas City, Mo.

The managers of the Amarillo mine at Waukegan, Ill., are under consideration by the American Steel & Wire Co. of New York.

The Charcoal & Machine co. of Knoxville, Tenn., has obtained a permit for the erection of a new furnace to be connected with its foundry building.

The Coal Mine Co. of Amarillo, Tex., has been incorporated with capital stock of $10,000, by H. W. Reed, manager of the Revenues, at Fairplay, Park county, Colo., has recently taken a lease of the lead and zinc mine which adjoins the Bachelor, and on which he proposes to run a tunnel of sufficient size to connect the two mines.

Dr. R. C. Weldon of Halifax, N. S., has been inspecting the Tete Jaune Cache mine near Vancouver, B. C., where he finds the work is well pleased with the prospects of the mine, and intends to continue development work.

The Wheeling Steam Coal Co. of Wheeling, W. Va., has been incorporated with capital stock of $25,000, by Johnson C. McKeeley, William N. Phillips, and Nehemiah A. Harring of Wheeling, and Charles B. Alexander of Parkersburg, for coal mining purposes.

The wagon road to the site of the new Gold Mining Co. at Breckenridge, Colo., has been completed. Work has started on the open cut leading to the mouth of the tunnel, and contracts for the mine timbers are letting.

The Universal Fuel Co. of Chicago has been testing the coal from the mines of the St. Louis & Big Muddy Coal Co. of Carterville, Illinois, Ill., to ascertain its coking qualities, and the results are satisfactory. Capt. Samuel T. Brush is general manager.

The road on the vein at the Knob Hill mine, Republic, Wash., is in good milling quarters from four to five feet in width. A new tunnel has been started at the mouth to cut the vein at a greater depth than the one which enters the shaft.

The shaft of the new mine of the Chicago, Wilmington & Vermillion Coal Co. near Virden, III., is now being driven. A vein of coal was found at a depth of 356 feet, and is seven and one-half feet thick. The company expects to commence shipping coal soon.

Fayerweather & Ladeau of 159 E. Houston St., New York City, are making preliminary examinations and developments of a three-foot vein of coal at Mt. Savage, Md., and expect it to be found in sufficient quantities, either to open the property or to lease it to parties who will work it.

The St. Paul Coal Co., recently incorporated at Ottumwa, Ia., by Glenn W. Tracer, James H. Cor rigan, and J. S. Bled, with capital of $300,000, has organized under the name of Chicago Coal Co. as president. The principal office will be in Chicago.

The company has a large acreage of coal land.

The Chisholm Iron Co. has been brought under two more plots in ore on its explorations near Hibbing, Minn. Analyses show that the ore is high in phosphorus. Articles of incorporation have been filed. The incorporators are Katherine H. Helling, John E. Mitchell of Winona, and M. F. Fay of Virginia.

A contract has been entered into between the Corinthus Gold Mining Co. and the United States Government, for the gold mining in the Corinthus mines, whereby the latter gets a perpetual right of way through the former's territory. For the right of way, the United States Government will pay the company the right to use its tunnel. When the new gold mining company has paid, they will equip it with an electric railway to carry ore from the Wild Horse and the Damien mines to the Central pumping station.

The American Iron & Steel Co., in its last bulletin recorded the erection of four new furnaces at South Chicago, by the Illinois Steel Co., one at Thomas, Ala., by the Pioneer Mining Co., one at South Chicago, by the La Follette Coal, Iron & Rail Co. In addition to the above the Carnegie Steel Co. is erecting two new furnaces at Pittsburgh, Pa.; the Buffalo Charcoal Iron Co. have about completing a new charcoal furnace at Buffalo; Joseph Wharton is building a new furnace at Port Orante, N. J., the Warwick Iron & Steel Co. is building a new furnace at Pottstown, Pa., the American Steel & Wire Co. is building a new furnace at Neville Island, near Pittsburgh, Pa., and is adding another stock to their Central furnaces, at Cleveland, Ohio; Jones & Laughlin, Ltd., are adding a new furnace to their mill plant at Pittsburgh, the National Steel Co. is erecting three new furnaces, one at New Castle, Pa., one at Middletown, Ohio, and one at East Middletown, Ohio, and is also building another stock to Mingo Junction to replace one of their old furnaces now in use in the Shenango iron and steel works, and is erecting a furnace at Sharon, Pa.; the Rome Iron Co. is erecting a furnace at Utica, N. Y.; the Ohio & Colum bus Iron & Steel Co. has about completing the erection of two furnaces at Columbus, Ohio; the Steel Co. is erecting a furnace at West Point, Mich.; the Johnstown Iron & Steel Co. is erecting a new furnace at Pittsburgh, Ill., and the Colorado Fuel & Iron Co. is erecting a new furnace at Pueblo, Colo.

New Mining Applications.

Applications for patents of mining claims have recently been entered in United States land offices.

Wm. O. Parker, Bridgeport,Mono county, Cal.; ruby placer and gold placer claims, Green Creek district, Mono county, Cal.

Anton Nelson, Fairplay, Colo.; Dyer and Edge more placers, Leadville, Park county, Colo.

A. M. Macken, Alma, Colo. Mabel, Lancashire Roy, Little Nina, Free Coinage, Gertie N. and Dis trict, Union district, Park county, Colo.

Empress Josephine Mine, in the name of the att orney, John E. Ashley, Villa Grove, Colo.; Bone part ledge, Saguache county, Colo.

San Isabel Mining Co., Crestone, Saguache county, Colo.; Virginia ledge, Saguache county, Colo.

John M. Kuhn and Christian F. Horn, Alma, Colo., and New York placer claims, Buckskin district, Park county, Colo.

Wm. F. Bailey, Boulder, Colo.; New Year, Thanksgiving and Christmas, Idaho lodes, Magnolia district, Boulder county, Colo.

L. R. Evans, Jamestown, Colo.; Bondholder lode, Milwaukee district, Boulder county, Colo.


W. L. Beach, Wall Street, Colo.; K. P. ledge, Sugar loaf district, Boulder county, Colo.

Edwin Williams, Boulder, Colo.; Golden Harp lode, Gold Hill district, Boulder county, Colo.

Samuel Hallet and E. R. Hoedt, Philadelphia, Pa., Marchioness Tunnel, Nocs, 1 and 2, Magnolia and Sugar Leaf districts, Boulder county, Colo.

Charles Cheney, Mule Carrying district, Nocs, 2, 3, 4 and 5 claims, Lake county, Colo.

John Millendorf, Leadville, Colo.; Golden and Coal lodes, Lake county, Colo.

John Hudson, Salt Lake City, Utah; Bunker Hill lode, P很长时间, Idaho, Colo.

Edward G. Stobler, Silverton, Colo.; Animas district, San Juan county, Colo.


Fred Roberts, by his attorney, Charles Campbell, Galena, Frisco, Animas district, Fremont, Union district, Summit county, Colo.

Sam Bowley, Galena, Colo.; Golden ledge, McHarnes district, Summit county, Colo.
CORRESPONDENCE

ARIZONA.

(From Our Special Correspondent.)

Tucson, August 17, 1900.

Tucson, aside from being the third oldest city in the United States, has always been and is now the center of a vast and wealthy mineral section of the territory of Arizona. There are within a radius of sixty miles more than one thousand square miles of well-established and thriving mining camps, in which the supplies of Tucson, with daily stage and mail connections.

At Mammoth, fifty-two miles north of here, on the San Pedro river, where the water rises in an abandoned volcanic basin, two mines, the Copa and the Mammoth, are being worked. The Copa is on the old road, and the Mammoth is on a branch road. The Copa is a large mine, with a production of two million dollars a year. The Mammoth is a smaller mine, but it is much more valuable. It produces a fine grade of copper ore.

In the town of Winslow, fifty miles west of here, on the edge of the Arizona Strip, there is a large copper mine, the Winslow, which is owned by the Winslow Mining Company. This company is one of the largest mining companies in Arizona. It has a production of over five million dollars a year. The mine is a large one, with a depth of over a thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The United Verde is another large copper mine, located in the Verde Valley, about fifty miles north of here. This mine is owned by the United Verde Consolidated Mining Company, and has a production of over ten million dollars a year. The mine is a deep one, with a depth of over two thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Queen is another large copper mine, located in the Mazatzal Mountains, about thirty miles west of here. This mine is owned by the Queen Mining Company, and has a production of over five million dollars a year. The mine is a deep one, with a depth of over a thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Miami is another large copper mine, located in the Miami Mountains, about twenty miles south of here. This mine is owned by the Miami Mining Company, and has a production of over five million dollars a year. The mine is a deep one, with a depth of over two thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Anthony is another large copper mine, located in the Anthony Mountains, about twenty miles east of here. This mine is owned by the Anthony Mining Company, and has a production of over ten million dollars a year. The mine is a deep one, with a depth of over two thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Santa Rita is another large copper mine, located in the Santa Rita Mountains, about thirty miles south of here. This mine is owned by the Santa Rita Mining Company, and has a production of over five million dollars a year. The mine is a deep one, with a depth of over a thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Pinal is another large copper mine, located in the Pinal Mountains, about twenty miles east of here. This mine is owned by the Pinal Mining Company, and has a production of over ten million dollars a year. The mine is a deep one, with a depth of over two thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Clifton is another large copper mine, located in the Clifton Mountains, about twenty miles west of here. This mine is owned by the Clifton Mining Company, and has a production of over five million dollars a year. The mine is a deep one, with a depth of over a thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Tombstone is another large copper mine, located in the Tombstone Mountains, about thirty miles south of here. This mine is owned by the Tombstone Mining Company, and has a production of over ten million dollars a year. The mine is a deep one, with a depth of over two thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Bisbee is another large copper mine, located in the Bisbee Mountains, about twenty miles west of here. This mine is owned by the Bisbee Mining Company, and has a production of over five million dollars a year. The mine is a deep one, with a depth of over a thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Superior is another large copper mine, located in the Superior Mountains, about twenty miles east of here. This mine is owned by the Superior Mining Company, and has a production of over ten million dollars a year. The mine is a deep one, with a depth of over two thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Chiricahua is another large copper mine, located in the Chiricahua Mountains, about thirty miles north of here. This mine is owned by the Chiricahua Mining Company, and has a production of over five million dollars a year. The mine is a deep one, with a depth of over a thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Cananea is another large copper mine, located in the Cananea Mountains, about twenty miles west of here. This mine is owned by the Cananea Mining Company, and has a production of over ten million dollars a year. The mine is a deep one, with a depth of over two thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

The Nacozari is another large copper mine, located in the Nacozari Mountains, about thirty miles east of here. This mine is owned by the Nacozari Mining Company, and has a production of over five million dollars a year. The mine is a deep one, with a depth of over a thousand feet. The ore is of high grade, and contains about 25 per cent copper. The mine is being worked by a modern mining method, and is producing a large quantity of concentrate.

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ARIZONA.

Work is being rapidly carried out on the completion of the Phoenix mine at Phoenix. The grinding and crushing machinery has been installed, and in a short time the company will be able to treat the ore more efficiently than it has ever done before.

An account of a strike made in the property of the Dos Cabezas Consolidated Mining Co., published in the Arizona Republic, states that the body of ore has been rapidly increasing and assays show it to be between 20 and 25 per cent copper, carrying 150 in copper and 25 in gold.

ARKANSAS.

The Independent Smelter Co. of Webb City, Ark., has opened an office in the Clark Dredge building in St. Louis. The Phoenix Zinc Mining Co. is one of the latest candidates for public favor. It is located in St. Francois County, and is said to be rich in zinc ore. The ore now mined is of a high grade. For the present the White river helps to solve the question of cheap transportation, and railroads are also being built in the section.

CALIFORNIA.

Russell & Maker, in the tunnel of the Great Western Mining Co., have started the mining of the Princess mine, Shasta county, have uncovered an eighty-foot seam of ore carrying gold to the value of from $1,500,000 to $2,000,000.

Stephen R. Thorpe has sold to the Green Consolidated Gold Mining Co. the Mount Vernon mine at South Fork, for $50,000. This mine has been worked for and is an old mine, having been in working in 1877 by Josiah Hall, and was considered a valuable property.

San Francisco parties have secured the bond on the Beverly, formerly the Virginia Consolidated Mining Co., at $25,000, and another at $30,000.

The owners of the Pacific Oak mine at Bolinas have incorporated a company to work the property. W. P. and G. S. Dowd and W. D. O. Cooper are the incorporators.

Prof. F. M. Anderson is now examining the mines of the Coffee Creek district of Shasta county, and appears to be favorably impressed with what he has found there. He was accompanied in his visit to the mines by H. S. Osborne of Los Angeles, Cal., who is also interested in the section.

D. A. Lamden has struck it rich in the Jav Bone district, near Groveland, Tuolumne county. He has an eighteen-inch ledge of assaying $70 to the ton. He is working the ore in an arrastra.

The Nameless mine in Marin county, on the Merced river, near Coulterville, has a force of men grading for a twenty-stamp mill.

Two three-and-a-half-foot Huntington mills, several gold washers, and a considerable other machinery is being placed on the Mocho-Java mine, near Redding, Shasta county.

The claim is that the Central California mines are worth $1,000,000, the par value of the shares being $1.

In the issue of November 1, in commenting upon the rates charged on the Needles, we stated with reference to the amount of sulphur allowed in the ore, "Twenty-five cents per ton per unit" will be charged, instead of "twenty-five cents per unit," as is the case.

At present twenty miners are employed at the Sh yawn mine in Tuolumne county, and the effort is being made to develop the property to the point where sufficient water is at hand to start the mill.

The San Francisco company is having some important work done to guard against delays, which are frequently occasioned by the breaking of ditches during the winter months. At an elevated point two miles east of the town, a dam is being constructed to impound water which will be connected with the works by a 500-foot pipeline.

Two hundred feet more in depth will be sunk on the shaft of the Ford mine, near San Andreas, Calaveras county, for the purpose of thoroughly testing the deposit.

The Green-Jumper mines near Sugar Pine, Tuolumne county, are running full blast, the new mill having been placed in operation. The body of ore is succeeded by an additional 1,600 feet.

The Capitola Hill Mining Co. of Leavenworth is the most active concern in the Hill Creek district in September.

Another large shipment of zinc has been sent from Leavenworth to New Orleans. It consists of 4,000 tons, and was bought by Jacobson & Co. of New York.

The Mab, as a separate mining concern, is now out of existence, and has been merged into the Silver Mound.

The operations at Silver Mound are progressing, and the company expects shipments will be made before the winter season.

The Miners and Leasing Co. has cut a vein in the Lucky mine, and the veins will be exposed. The vein is the same as opened in all the levels above where the vein has an average width of five feet, and at times has been exceedingly rich.

Frank Maynard, leaving on the Fauntleroy, received a return of 1,500 ounces of gold on his last shipment of twelve tons.

At a meeting of its stockholders, the Northern Mining Co., held September 6, the sale of the Six Points claim to Francis Hawley, as trustee, for $1,200,000, was ratified, and immediately afterward the directors declared a twelve-cent dividend, amounting to $150,000.

A second of ore has been taken out of the Jeff Davis, at Colorado Springs, and will average not less than three ounces in ten tons of the same ore from a rich vein at the seventy-five-foot level.

A large amount of water has been encountered at the seventy-five-foot level of the Jefferson, Colorado Springs, interrupting the sinking of the shaft.

If understood, that the Starkville coal mine at Trinidad is putting out great amounts of coal. It is one of the best coal mines west of Pennsylvania.

A strike of more than ordinary importance is reported from the Green hills district, of Park county. The strike was made in the Mayflower mine, and consists of rich tellurides carrying silver.

The Strong mine at Cripple Creek has completed a shaft 100 feet below the old shaft, which is about half a mile south of the R. A. M. mine.

The articles of incorporation of the Leadville Mining Stock Brokers Association have recently been filed with the secretary of state. The object of the association is to facilitate the easy transaction of business in dealing in mining stocks; to regulate commissions, regulate and make general quotations which are to be based on the lowest responsible selling price; to stimulate the growth for dealing in mining stocks, and guard the dealing public against fake schemes and worthless stocks.

A plant of machinery consisting of a 40-HP. building, two 35-ton furnaces, and considerableness machinery is being placed on the Smuggler mine, Silver Plume, by Mr. Catter Plums are under way for the building of all the machinery, and the Union smelter at Leadville, comprising furnaces, the work will be completed in the early part of the year, and the furnaces will be purchased and replaced by machinery to double the size of those now in use.

At the Arkansas Valley smelter at Leadville large condensing chambers are being constructed and a smoke stack is being built.

It is thought that the Steel mill at Leadville is developing in a way that will greatly encourage those who are interested in developing property in the vicinity. At a depth of 400 feet, where the shaft first struck the contact, a vein of iron was reached, and the operators are expecting to find ore at any time.

A serious cave-in occurred in the Bassick mine at Quebridge, near Placerville, which will stop the work there for a while. The shaft is now at the 400-foot level, and the cave-in was in the 500-foot level, where the timbering and ganging were very good. Although there were several men at work at the time, only one man was injured. The size of those now in use.

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Efforts are being made to make the La Plata district a profitable one by aid of the cyanide treatment. The height of the grade ores will continue to go to the smelters.

The A. M. W. Co., which succeeded in accomplishing the task of unwatering, enlarging and remilling the old Wolfdome at Boulder, Colorado, is now making rapid progress. The Maple Street shaft at Boulder is now down 200 feet and a quantity of water, too great to be handled, has been cut off. There is a scarcity of miners at Georgetown.

COLORADO.

The R. A. M. mine at Leadville caught fire early in September, and is in the process of being mined in the district. The probable loss will be about $40,000.

A high grade carbonatic ore has been found on the 250-foot level of the DeLuna shaft, which is about half a mile south of the R. A. M. mine.

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The Standard Mining Co. of Wallace is putting in a new compressor. The foundation is completed and some of the machinery is on the ground. The ore is on the Hill, owing the Golden Star mine, is building a substantial ten-stamp mill, a two-story office building, a boarding house, bunkhouse and other necessary buildings.

Rich gold specimens from the 200-foot shaft of the Buffalo only point toward the possible development of a rich deposit among the residents of that vicinity. A remarkable gold strike has been made at Silver City, New Mexico, an iron, the city, the near the War Eagle hotel, by a prospector. The ore is a quartz that will go over $7 per

The development of the Boston &Seven Devils Consolidated mining property is opening a new factor.

A shaft is being sunk on the Peak with ore in the old mine that is being graded for new and heavy machinery.
MINNESOTA.

The great rain storm at McKinley early in September caused great damage to the mines and railroads in the mining region. The third time in six weeks, which will reduce the season's output by many thousands tons.

MISSOURI.

A unique display will be made at the St. Louis exposition this fall by enterprising owners of productive lead and zinc mines in Jasper county. Their plans to build a mammoth cave with the ore specimens, have it lighted with electricity and make this display a possible. Each specimen will bear a label, on which will be given the name of the mine whence it was taken and all necessary information likely to be wanted by the thousands of visitors who will find such an exhibit of special interest and value.

MONTANA.

The Colusa-Parr property is working out more ore than ever, and the other Clark properties are keeping up their record. It has been necessary to increase the smelting capacity of the Butte Reduction works.

OREGON.

A new mine is being opened up at Cow Creek. This mine is owned by a San Francisco company, and promises to be one of the best paying in the district.

PENNSYLVANIA.

The Pittsburg railroads are preparing to take care of a vast increase in the local shipments of coal. In order to do this they will have to be at least thirty additional train crews and no less than 3,000 new cars and four new locomotives.

The Pittsburg & Buffalo Coal Co.'s plant at Canonsburg is ready to operate. James Jones & Bros., formerly connected with the River mines, and the principal operators in the Moonogee district, are ready to operate. James Jones & Bros., formerly connected with the River mines, and the principal operators in the Moonogee district, are ready to operate.

RHODESIA.

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The furnaces at the Granby smelter at Granby are still in operation.

WEST VIRGINIA.

The increased demand for coal around the section of the field has caused a considerable increase in the output of the various companies. The demand will be for the South, where the output of the various companies. The demand will be for the South, where the output of the various companies. The demand will be for the South, where the output of the various companies.

UTAH.

The properties of the Grand Gorge Mining Co. are to be provided with a new mill. At the present time the company has to make its ore over 100 miles to the railroad.

The Star Consolidated Co. of Tintic has recently marketed three carloads of gold-bearing ore, which it expects to market $1,200. They will follow this up with more sales.

The Central-Kerrick of Tintic came forward recently to purchase the entire stock of the time

The last of the month for the roasting plant at the Faraday mine in the ground and will be placed in position as soon as possible. With the roaster in operation the management will begin a thorough survey of the high-grade sulphides, some of which have shown $170 a ton in gold.

WASHINGTON.

Many of the miners in the district of Columbia are working for $12 a month.

The Bishop is to be succeeded by a new Bishop, who will take office on January 1.

The American Mining & Investment Co. of Spokane is preparing to run a long tramway from the Cutler district to Grand Forks.

After a shutdown of nearly seven months, the Centre Star Mining Co., of the Elsa mine, has resumed business.

The American Mining & Investment Co. of Spokane is preparing to run a long tramway from the Cutler district to Grand Forks.

The report from Nelson that a big strike in copper has been made on the Copper Bullion.

The city of Seattle has arrived at Seattle from Skagway with $70,000 in Kondoffite, consigned to the honor of Mary Chapman.

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CLAREMONT.

All the steel plate mills in the Cleveland section have taken orders which will tax the capacity of the mills for the remainder of the year, and another ton can be sold for delivery before January 1. The cause of the delay in that during the recent decline in the steel market orders were placed for the construction of nineteen new steel frame steamers, and the orders cannot be filled until the latter have been placed for plates and the orders were sufficient to take up the entire capacity of the mills for the balance of the year.

AS TO THE TRANS-SIBERIAN RAILS: President Villon of the Trans-Siberian Co. declares that the reported failure of the Trans-Siberian Railroad is due to poor engineering and not to any want of transportation facilities. He says that whatever break-downs may have occurred during the recent rush in the transportation of goods and arms, that these are due to faulty construction of road beds and not to the character of the rails supplied by his company.

CANADA.

It is expected that the shipments will soon be completed for the consolidation of the Inverness and New Union Railway Co. with the Broadcave & Co. The object is to form a powerful consolidation that will be an influential factor in developing the export of coal from Nova Scotia.

The Cobalt Mining Co. of Cobalt, Ontario, has received an order to supply 10,000 tons of iron ore to be shipped by the Kingston & Pembroke Railway, and the Grand Trunk.

The concern which is to build the smelter at Kingston is incorporated. It is called the Cataraca Mining & Development Co. Senator MacLaren, James M. P. MacLaren, Senator McMillan, Charles L. Meyer and Edwin S. Leetham are the incorporators.

IRON AND STEEL.

PITTSBURGH DEALS: The Republic Iron & Steel Co. and the American Steel & Iron Co. have completed an arrangement for which the latter is to withdraw from the merchant bar trade, while the former continues its sheet production.

STEEL RAIL: From one point of view a piece of work recently taken by the Pennsylvania Steel Co. is of notable interest. It is for the erection of the steel pier for the Norfolk & Western Co. is about to provide for the Hampton Roads specially for the coal export trade, thus showing that that business is regarded as certain enough to justify outlay for special furnaces, as well as for the completion of the works.

CROWLEY'S LARGE ORDERS: All the steel plate mills in the Cleveland section have taken orders which will tax the capacity of the mills for the remainder of the year, and another ton can be sold for delivery before January 1. The cause of the delay in that during the recent decline in the steel market orders were placed for the construction of nineteen new steel frame steamers, and the orders cannot be filled until the latter have been placed for plates and the orders were sufficient to take up the entire capacity of the mills for the balance of the year.
The work was in the hands of natives whose education in engineering matters has been sadly neglected.

The OUTLOOK ABDUCT: Vice-president Bow- norn of the Iron Council of Great Britain, returned from a five-months' trip to Eu- rope where he went to promote the export trade from America. He said that demand for American iron and steel in Europe is as strong as ever and that the export business for the future looks promising. This is due mainly to the low prices. Exports are harnessed now by excessive railroad rates to the coast and by the absence of trade. The iron and steel industry is independent of the railroads.

GRATIFYING FOREIGN ORDERS: The Bal- dwin-Lima-Hamilton Company has taken orders for twenty-two heavy freight locomotives for use on the New York, Ontario and Western railroad. It has also taken an order for six locomotives for the Rio Tinto Mining Co. of Spain. This is a Brit- ish construction which is engaged in mining ore. During the past two years the firm has shipped to Belgium six locomotives for the Budapest Railway. Six more are ready to be shipped. The first American-made locomotives to be used in Ireland were shipped about two weeks ago. They are the two engines of the English type which are intended for use on the Border & South Coast Railway.

BRITISH IRON AND STEEL MARKET: In spite of the rise in coal and pig iron, the sale of new steel-making iron is steady. Iron makers have within a few weeks reduced their production. They are not likely to do so by American competition. Yet they obtained little or no business by the reduc- tion in prices from the new consumption. Steel was not in demand, and the demand was withheld because they say they can buy, or expect to buy, cheaper from American and German makers. Steel plates were brought from America to Glasgow for transhipment there to the East as freight. This is cheaper than the price of the local makers. Tubemakers import American strips very much cheaper than they could make them here by hand, and yet through the steel trade. Hardly a steamer coming from America but some iron or steel on board.

Another point observable in this connection is the invasion of Great Britain by American steel plates for the shafting of ships.

CARNEGIE CHANGES: It seems that the re- cent denial of Carnegie's offer of $30 million to the State, State extensive changes in the personnel of the staff were about to take place was given out for business purposes. These changes were considered necessary. It is announced that at a meeting of the Board of Di- rectors held on September 16, the following changes were made: Mr. W. H. G. Blum was appointed to succeed him in both positions. W. C. McCausland, cashier for Carnegie, Philips Co., and McCausland was appointed treasurer of the company. A. McCune was appointed as cashier to fill the vacancy caused by Mr. McCausland's promotion. The resignation of George Me- drew as a purchasing agent of the Carnegie Steel Co. was accepted, but his successor was not ap- pointed. C. E. Locke has succeeded George H. Whittman as sales agent of the company.

COAL AND COKE

SEVEN MONTHS OF EXPORTS: Reports to Bradstreet's show that exports of coal from England for the seven months of 1900 were 4,691,755 tons, valued at $121,071,610, an increase over the first seven months of 1899 of $64,497,020, or 101.7 per cent. The increase has been due to improvements in transportation. The year has been noted for the large shipments of colliery coal to the United States.

CHINA'S ANTITHESIS: Before the Boxers began their dreadful work in China it was expected that the country as known as the Peking Syndicate, would soon greatly enlarge the output of the mines near Tse- Chou, in the neighborhood of 300 miles southwest of Tientsin and 500 miles from Shanghai. Noh Fields Drake, who read an account of these developments before the American Institute of Mining Engineers, believes that the aver- age productivity of the coal bed at Tse-Chou is about twenty-three feet; at one time a thickness of thirty-six feet was disclosed, and at two others the strata fell from seven- teen to twenty-three feet. All the coal in this field is anthracite, uniformly low in sulphur and low in volatile matter, and suitable for power purposes. Exports are harnessed now by excessive railroad rates to the coast and by the absence of trade. The iron and steel industry is independent of the railroads.

THE Coalfields of Nova Scotia: CAFE BRUNTON: The coalfields of Cape Breton comprise four large areas—(1) on the east coast and west of Sydney Harbor; (2) north of Sydney Harbor, between Margaree Harbor and Port Hood, including impor- tant mines at Broad Cove; (3) a basin between the town of Sydney and the harbor of Rich- mond, on the north shore of Sydney harbor, and (4) a tract of land in Richmond county, near the mouth of River In- vera. The area is traversed by a network of railroads, and the industry is well developed.

The land area occupied by coal-bearing rocks in the Sydney coalfield has been estimated at 20,000 acres, while an immense submarine area contains large seams of coal in workable condition, and as coal is still being discovered and rest everywhere on the millstone girt, except where brought by a fault against a mountain of Laurentian gneiss near Campbeltown at the western end of the coalfield.

The coal measures have been folded into sub- ordinate basins, and the coal seams of the surface under the most favorable conditions for their extraction and shipment. The whole coast is deeply indented by bays and channels approximately coinciding with the axes of these folds, according to the sea cliffs numerous nat- ural exposures of the coal seams and accompany- ing strata and constituting excellent harbors, one of which, Sydney Harbour, is situated toward the cen- ter of the district, is one of the finest in the world. The few months when the northerly harbors are closed or obstructed by ice a railway carries coal from the collieries east of Sydney Harbor to the fine winter port of Louis- burg.

The cliffs are generally from thirty to 100 feet high. There are many coves. A large rolling char- acter, the highest altitudes seldom exceeding 250 feet, is characteristic of the district. The country is highly favorable geographical position, point to this district as probably the most important in the Dominion for the supply of fuel to the nu- merous steamers navigating the Atlantic.

Taking the average of all sections, the total number of seams in the productive measures is twenty-four, of which six are three feet or up- ward in thickness, and the total average thick- ness of coal may be stated at forty-six feet. The similarity and persistency of the seams over great areas is very characteristic of local varia- tions are frequent. There is, therefore, no great uncertainty in regard to the equability of the seams. Although various seams of the same general dip at a very low angle and are little affected by faults and disturbances.

The coal is of the soft, or bituminous variety with comparatively little diversity in the quality of the different bed. The American coal is exceedingly well adapted for steam and domestic purposes, while that of some of them is especially applicable to the production of gas. Much of it will compare very favorably with the best Eng- lish coal. As a fuel for domestic purposes, the coal is characterized by a greater proportion of combustion, and a smaller proportion of ash; and the coal is a greater amount of sulphur: although experiments made on a small scale at Perron prove that some of the coal is suitable for iron smelting as that made from a mixture of Arcadia, Drummond and Springhill coals.

Underclays, charged with roots and innumerable roots, partly containing beds of carbonaceous shale, and their roof shales are for the most part rich in iron. The productive coal contains also beds of argil- laceous and arenaceous shale, usually grey; sand- stone and sandstone, often associated with shale, are underlaid in descending order by the millstone, carboniferous limestone and conglomerate.

This is the most westerly of the coal districts of the province, and lies, for the most part, ad- jacent to Chignecto Bay, the outlet of which is into which the upper part of the Bay of Fundy is divided. The coal measures consist of three divisions, the Cumberland basin, run eastward into the land for about eighteen miles, and outcrop again before the sea is reached. The next division is carried on systematically and with unusual success, until it has reached a width of about nine miles, these mines, no explosive is used in getting the coal. The ventilation is provided for by blow- ing in water into the mines.

The general composition of the coal of this district is as follows:

| Moisture | 1.46 |
| Wood combustible matter | 1.21 |
| Fixed carbon | 82.65 |
| Ash | 9.89 |

They are very extensively used as a locomotive coal and for coke and domestic purposes.*

THE METAL MARKETS

General Review and Forecast of Trade Conditions

Silver Steady—Copper Firm—Complete Collapse of Tin—Lead Unchanged, Spelter Quiet—Iron and Steel Adjusting Themselves to Present Conditions—Coal Hinging on Strike Prospects—Coke Improving.

Silver has shown less strength in the local market and has even shown a marked decline in the early part of the week. A firm tone characterizes the market, however, and the de- mand continues good. Large offers on the part of consumers still favor the bull side and they have bought largely for export delivery.

Exports of commercial bars and commercial rails to New York were 62% per ounce, and for Mexican dol- lars 49%.

COKE STILL UNTIDYING.

Consumers of copper seem to have accepted high prices as a fairly permanent feature of the copper situation, and they do not grumble now nearly so much as formerly over the 19c. standard of quotations. "The only argument against the coal, said Lowell, "is to put on your old coal," and in the same way the only re- sources of copper buyers in the case of copper is to curtail consumption—or to purchase mines.

Exports of copper from England for the eight months of the year amounted to 111,106 tons as compared with 75,600 last year. Copper production in the same eight months of last year, on the contrary, was 228,800 in 1900. This increase is hardly propor- tional to the expanding needs of consumers. It indicates, therefore, that the production of the United States actually fell 60 per cent from the same period last year.

Our current quotation for Lake copper is 19½c. at 19c., with Electrolytic an eighth lower.

MINE METALS.

Tin has often fluctuated up-and-down by its meteoric flights of price, but it quite ousted itself last week, and is now 14 per cent above the level of 18 months ago it was deemed by some buyers a fair purchase at 14c. The collapse here is explained by the vio-
MINING STOCK QUOTATIONS IN VARIOUS MARKETS

BOSTON

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NEW INCORPORATIONS

COLORADO

1. CAMERON MOUNTAIN MINING & LEASING CO., Canon City: $15,000; J. G. Johnson.

VENTURE CORPORATION, London, England; mining operations in Western Australia and elsewhere; $75,000; W. B. Boon.

THOMAS & HENSHAW CO., Denver; $10,000; J. J. Thomas.

GOLD KING CONSOLIDATED MINES CO., Waterville, Me; $6,000; M. Galler.

ARDMORE MOUNTAIN MINING & MILLING CO., New York City; $1,000,000; F. C. Kaye.

BEAR MOUNTAIN MINING & DEVELOPING CO., Silverton, Colo; $5,000; A. W. Johnson.

SHOESHOE MILLING & MINING CO., Pueblo; $500; A. J. Monahan.

LEADVILLE MINING STOCK ASSOCIATION, Leadville; deal in stocks and mining properties; C. H. Saunders.

NATIONAL TUNNEL MINING & MILLING CO., Denver; $1,000,000; C. H. Palmer, Boston, Mass.

DENVER FILMORE OZ. CO., Los Angeles; $100,000; E. B. Cone.

CORNELL MINING & MILLING CO., Dover; $50,000; H. Y. Cornell.

WYOMING CRUSH COAL & TRANSPORTATION CO., Cripple Creek; mining and shipping coal; $25,000; L. A. Bennett.

DOWN TOWN MINING CO., Leadville; $1,000,000; J. A. Ewing.

ILLINOIS

BIRD IRON CO., Chicago; $50,000; R. R. Braden.

GRAND COTTON MINING & DEVELOPMENT CO., Chicago; $150,000; N. W. Blunt.

DZARK RANGE ZINC CO., Chicago; $100,000; J. O. C. Smith.

IOWA

UNION IRON CO., Cedar Rapids; $10,000; F. A. Scan.

MAINE

ROYAL MINING CO., Barwick; $50,000; W. F. Beverley, New Bedford, Mass.

MINNESOTA

CHISHOLM IRON CO., Dubuque; $50,000; M. L. Fay, Virginia.

MISSOURI

EURUKA EXPLORE MINING CO., St. Louis; prospecting for gold, silver, etc.; $10,000; E. S. Barren.

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(Continued on page 16.)
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