

SINALOA AND DURANGO.

Under the auspices of some of Boston's prominent bankers and business men, for the purpose of development of Mexico and securing the profitable advantages offered by the Mexican government in her concessions for the securing of the construction of lines of railway and telegraph, the Sinaloa and Durango Railroad Company, (Limited), has been organized under the general railroad act of Massachusetts, of which Mr. Thomas N. Hart is president, and Mr. S. W. Richardson, of the banking firm of Richardson, Hill & Company, is treasurer. The company, having secured one of the most valuable concessions made by the Mexican government, are now receiving subscriptions; and in the proposal an opportunity for investment is given which is not often offered upon such advantageous terms. For \$2,700 cash, payable as the same may be assessed by the board of directors, but not more than 20% in any one month, the company will deliver to the subscribers twenty shares of the capital stock at par, \$1,000 in income bonds and \$3,000 in first mortgage bonds. Subscriptions may be made in sums of \$2,700 or in multiples thereof. This company has secured the concession from the Federal government of the republic of Mexico, celebrated August 16, 1880, between Manuel Fernandez, Chief Clerk of the Department of Public Works, representing the Executive of the Union, and Senator Mariano Martinez de Castro, representing the government of the State of Sinaloa, authorizing the construction of a railroad and telegraph line in that State, between the Pacific coast of Altata and the city of Culiacan, with the privilege of extension into the State of Durango, to reach the city of the same name, or to any other point in the State where it can connect with the line of inter-oceanic or national railway which is to pass through that place. Under the grant and among the concessions to the company are exemption from all taxes and imposts, for a period of twenty years, on its property, including the capital employed in the construction of the road; exemption from all duties on all materials necessary for the construction and operation of the railroad, including locomotives and rolling stock, and for the necessary repairs of the same, for a period of twenty years; the right of way, seventy meters—278 ft.—in width, the entire length of the railway; the public domain, which the line may occupy in the extension fixed, and the lands necessary for stations, warehouses and other buildings, as well as for the water stations and other indispensable accessories of the road and its appurtenances, if the property of the nation, shall be given without compensation; the ore beds, also those of coal and salt. The marble and other mineral deposits encountered in the works and excavations made upon the line of the road and its branches, shall be the property of the company, without prejudice to the rights of others, provided it claims and works them subject in all respects to the mining laws; and also a subsidy of \$9,000 per kilometer, or at the rate of \$14,484 per mile, to be paid to the company by the general federal treasury. The estimated cost of constructing this railroad and telegraph line from Altata to Culiacan, a distance of forty miles, is \$500,000, and to either Corsala or Tamocula, as the surveys may determine, forty miles further, \$500,000 more. The area of the State of Sinaloa is 185,200 square leagues, and its population 162,587, equal to thirty-one inhabitants to each square league. This State, according to existing political division, contains the capital, Culiacan, which is the seat of the legislature, the Supreme Court, the governor and the federal authorities. It has nine districts, in the principal towns of which there are political prefects, 31 municipalities, 91 villages, 515 hamlets, four cities and nine towns. There are 114 mining districts, with 400 opened mines of silver, gold, copper and lead; fifty reduction works and nine deposits of salt; 1,229 haciendas, cattle ranches and cultivated farms. The States of Sinaloa and Durango are now producing between four and five millions of dollars of gold and silver per annum, and the

production is now on the increase. The American processes of reduction are almost exclusively in use, the mills being built in San Francisco. As a considerable part of the ore mined is rich, large quantities are carried on mule back to the coast and shipped to European ports in a raw state and also as concentrations.—*Economist*.

COPPER IN ARIZONA.

A correspondent of the *Bulletin*, writing recently from Tucson, has the following: The copper interests of the Territory are attracting great attention at present, and good copper mines and prospects are eagerly sought after by our resident capitalists as well as by strangers in our gates. The famous Copper Queen mine of Bisbee, the representative copper mine of the Territory, which bears the same relation to copper mines that the Contention mine of Tombstone bears to the silver mines, has paid its fortunate owners, Messrs. W. H. Martin & Co., of San Francisco, the well known seawall contractors, the handsome dividend of \$100,000 per month for the past four months. A recent careful examination of the mine made by John R. James of Tucson, a recognized authority on copper, shows that \$1,925,000 are in sight, estimating copper at 19 cents per pound. The original cost of this mine was \$30,000. A furnace was erected at a cost of \$11,000, making the total cost of mine and plant fall inside of \$50,000. The success of the Copper Queen has stimulated the development of copper properties in other sections of the Territory, and scarcely a day passes without reports of new strikes and big finds of this most valuable metal. The latest transfer of copper properties was made recently, to Mr. Christopher and other California capitalists, by O. A. Hyatt and others of the Apache, Midas and St. Nicholas mines, lying on the easterly slope of the Santa Catalina mountains, and situated about 55 miles from Tucson. The mines have an elevation of about 7,500 ft., and the vein lies between limestone and porphyry, the limestone being the overlying formation. The ores are found in the shape of carbonates and sulphurets, the carbonates predominating. The average assays show 30% in copper, and about \$20 in silver per ton. On the Apache location a cross-cut has now penetrated the vein for 15 ft. in ore of the above description, and the hanging wall of the vein has not yet been encountered. The ledge has been uncovered on the surface for 60 ft., and has been traced the whole length of the claim, 1,500 ft. Some specimens of copper ore taken from the cut, assay as high as 70%. The Midas and St. Nicholas claims are extensions of the Apache, and show the same characteristics. Charcoal is abundant, and can be furnished for 15 cents per bushel. Water rights have been secured, and the cost of smelting should not exceed \$10 per ton. As 30% copper ore is worth about \$60 per ton, there is a large margin of profit in smelting the ores on the ground. Yellow pine abounds, and this variety of timber makes the best charcoal known to the smelter. The climate is good all the year round. A good road can be constructed from the railroad tracks to the mines at an expense not to exceed \$3,000. The ores are free smelting, and there seems to be no reason why the successes of Bisbee should not be repeated at an early day in the Santa Catalinas.

There seems to be a disposition in some quarters to discourage copper mining in Arizona and mysterious hints are thrown out and circulated here in Tucson by certain Boston gentlemen to the effect, that the Calumet and Hecla mine of the Lake Superior region can produce enough copper to supply the demand in the United States. Of course, it is perfectly natural that said company should desire to retain the vast monopoly it has enjoyed for years, and which has enabled it to pay \$18,000,000 in dividends, but the claim of its friends and stockholders that it can supply the American market is preposterous and without foundation. The consumption of copper in the United States amounts to about 25,000 tons per annum, and

the consumption is increasing, owing to the new and various uses to which the metal is applied. The Calumet and Hecla produces about 600 tons a month, not one-third of the annual demand. Besides its ores, it averages only three per cent in copper, and has to pass through the process of crushing, concentrating and smelting before ready for market. In our Arizona mines where carbonates abound, the rudest kind of furnace is sufficient to work the ores and convert them into marketable copper. With the construction of the Guaymas railroad our producers will be able to ship from Guaymas direct to foreign ports, and will compete successfully with Chili in supplying the English demands which amounts to about 40,000 tons per annum. The future of the Arizona copper mines is bright and full of promise, and now that avenues of transportation are open by which products can reach tide-water, we ought to be able to under-sell every other copper country.

Value of Mineral Springs.

The following is an extract from a letter from W. P. Jervis, Conservator of the Royal Industrial Museum at Turin, Italy, and author of several works on the mineral resources and mineral springs of Italy, to the State Mineralogist of California:

"I have received your interesting reports, circulars, programmes, etc., by which I learned with pleasure that a mining bureau had been established in California which will in time be one of the economic triumphs of the United States, and of the rich State which has hitherto labored under the disadvantage of being without any scientific headquarters. I hope you will permit me to have the pleasure of presenting the third volume of my work—'I Tesori Sotterranei Dell Italia.'

"In reading carefully your excellent programme, I shall be happy to aid you as far as lies in my feeble power; meanwhile, if you approve of it, I will make you a good lithological collection, consisting of several hundred Italian rocks, with the principal minerals and ores contained in them, arranged stratigraphically, for nomenclature and consultation—such a series I made several years ago for the British museum.

"For many years I have devoted myself to the study of the mineralogy of Italy and its mineral springs, which I consider to be one of the greatest mineral riches of the country, as they attract thousands of persons annually, by whom immense sums of money are spent, besides the incalculable number of cures effected in many severe disorders.

"There are 1600 mineral springs in Italy. California has many still neglected. Has any one ever thought that they may turn out to be more valuable than gold mines, if the waters were properly analyzed under your able instructions, and if capitalists would erect proper bathing establishments or 'spas,' to be placed in the hands of skillful medical men, as in France and in Italy and Germany?

"The mineral springs of Vichy alone bring in yearly some one and a half millions of francs by the sole sale of the products, to say nothing of the incalculable amounts gained by the hotel keepers and the shops of Vichy. The same may be said of the waters of Aquí, Monte Catina, Albano, Porretta, and others in Italy on a lesser scale."

MULBERRY TREES.—Mrs. J. O. Whitney, Chairman of the Committee on Trees of the California Silk Culture Association, makes the following request: "Persons having mulberry trees in any portion of the State of California will confer a favor by sending us their address, as well as the number of trees they are raising and the names of the different varieties." California Silk Culture Association, care of lock box 1,229, San Francisco, California.