

TOPOLOBAMPO'S  
WONDERFUL FUEL AND ILLUMINATING GAS.

GUNSTON, FAIRFAX CO., VIRGINIA,

December 28th, 1898.

DEAR SIR,

While studying the resources of Sinaloa on the lands of the Colony last Winter, I was especially anxious about fuel and light.

No coal nor oil exists on the Colony lands. North and East of them are known coal deposits, which railroad facilities will no doubt soon supply, but for immediate use these are available only by distant and expensive transportation.

My attention was called to the giant cactus, known as "*Cereus Gigantius*" to the Botanists, an immense fluted plant with a woody nucleus, and whose thick outer rind is resinous like pitch pine. This plant abounds in the coast region of Sinaloa, often attaining the height of 25 feet. It is called by the natives the Pitahalla. It is the most impressive and beautiful of all the cactus tribe. It grows largest in the valleys, but thrives even on the steep mountain sides, drawing its substance largely from the atmosphere. The outer rind or bark, as it may be called, is often two inches in thickness. When freshly cut, it separates readily from the woody core, like the bark of the poplar or other deciduous trees. The woody center of the long straight limbs, is light and strong and valuable for rafters and

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many domestic purposes. The branches of the plant are often very numerous and from ten to fifteen feet in length. They may be cut away from the main stem without destroying it, the rich soil and favorable climate rapidly restoring another set of branches to restore those cut off. When the outer rind of this cactus is dry, it is found to be largely composed of resinous matter, from which a good quality of japan can be made for japanning tin, etc. It is compact and heavy, like very rich pitch pine. I found the native Mexicans using it for light in their camps, and for torch-wood in night-fishing. The Colonists use it on account of its great abundance. It is more for open fires, but for stove use it is too rich in pitch. The women complained, if compelled to use much of it, on account of the smoke and rapid accumulation of soot in the stove pipes, just as they would of pitch in Virginia. The trouble was they used it in too large pieces. Split in small fragments and carefully fed, a mere handful was found to produce as much heat as an armful of hard wood. I learned this much by observation of this plant as fuel, and it occurred to me that it might furnish fuel for gas furnaces, now so common in the East, in consequence of the discovery of natural gas. I learned that the late Herbert Patrick had burned some in a retort and secured some tar and a great outflow of gas, but without any means to calculate the proportions of products. I therefore prepared a rude but effective retort pipe and burner. I secured three pounds of the bark thoroughly dried and cut in small pieces. This I distilled at a high temperature, converting all the volatile contents of the bark into gas. As this came through the burner, I set it on fire. It burned with a clear flame, equal to ten ordinary gas burners, for one-and-a-quarter hour, besides there was some waste. The resultant product showed every evidence of good lighting as well as heating power. There remained in the retort, after distillation; 14 ounces of charcoal, soft and pure with the beautiful analine colors like the Peacock Anthracite



Coal. A few weeks' later I went to La Logia, and had a better retort constructed by Mr. Patrick, with some good gas pipe connections and a regular burner. We attached a condensing chamber, so as to save the tar and other bi-products of the distillation. With this apparatus, we were able to obtain a gas which passed through water, gave a pure white light vastly superior to ordinary City gas. The tar was of good quality. We had no means of testing the contents of the other liquid bi-products. We used the bark in various stages of desiccation in a series of experiments, which satisfied me that in this cactus you have the material for an ample supply of light and fuel.

All metallurgical processes are more and more to be conducted with fuel gas. The discovery of natural gas has shown its perfect adaptability to all needs of man, in mines, furnaces and for domestic use. But so abundant is this cactus and so easily available for gas, that I doubt if it were known that the natural gas existed a thousand feet below the surface, it would pay to bore for it, while this surface supply of fuel lasts. A thousand feet of fuel gas (or illuminating), can be made and put where it is wanted, with less outlay than is now done at Pittsburgh, and of better quality in all respects, free from much of the danger, and all the unpleasant anxiety of that article. I estimate that the present supply near Topolobampo, would be ample for fifty thousand people for 20 years to come. This supposes that furnaces for glass, iron, pottery and all the usual works of a city are added to the demand for light. This estimate I make with the full knowledge of the immense mineral wealth of the vast region, that will have its outlet at Topolobampo Harbor and make a vast demand for fuel. It is only necessary to construct suitable works to relieve the Colony of its dependence for light upon imported oil. Such works are quite inexpensive in making wood gas. Mineral coal contains many impurities, that must be separated from the gases to make them wholesome. This plant yields gas that may be breathed as it comes from the retort

without discomfort or injury, and in catarrhs or colds with much benefit.

In Prussia and some other European countries, much of the gas is made from wood, where resinous wood is cheap and abundant. The scarcity of wood alone prevents its more general use for that purpose.

There are, no doubt, other woods that may be used in connection with the Cereus Pitahalla, in Sinaloa. But this alone is an ample guarantee, if properly handled, that the Colonists will enjoy light and fuel gas at the lowest rates.

EDWARD DANIELS.\*

To Mr. ALBERT K. OWEN,  
New York.

*Geologist.*

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#### REMARKS.

To show the importance of this discovery to The Topolobampo Colony, it may be stated, that in the United States it requires about 1,680 lbs., and in England about 1,232 lbs. of coal to make one ton of steel, if the coal is used direct for fuel. But in England, it requires only about 448 lbs. of coal to make sufficient *Fuel Gas* to make a ton of superior steel, and the bi-products, ammonia, tar, etc., are extras saved when gas is used.

A. K. OWEN.