

ABOUT CHAINED LIGHTNING.

How the City of Mexico is Lighted with Electricity.

OPERATED UNDER DIFFICULTIES

The Brush Plant in Boston—An Important Electrical Question—Difficulties of Underground Wires—An Electrical Road.

W. J. Johnston, editor of the Electrical World, in writing upon the electrical industries of Mexico: Just imagine, if you can, the authorities of such a city as Cincinnati, New Orleans, or San Francisco, giving the exclusive right of running electric light wires through the streets to one company, and then stretch your imagination a little further and think of the company enjoying such exclusive privilege saying in answer to a request for an electric light in front of a business house, that its utmost capacity is only 118 lights, all of which are taken by the city, so that if you want an electric light in front of your store, you must either put on a private plant, or wait until some arrangement is made by which the company having the exclusive right of running wires through the city for electric lighting purposes can increase its plant sufficiently to furnish lights to the public.

That is precisely the condition of affairs to-day in the City of Mexico, the capital of the republic, and a city with a larger population than either Cincinnati, New Orleans, or San Francisco. So far as I was able to learn, the electric light was introduced into Mexico for the first time in 1877. The pioneer plant was brought from France in that year and was installed in a small cotton factory in the little village of San Angel, about seven miles from the City of Mexico. It was put in as an exhibition plant, with the expectation of getting the City of Mexico to adopt the same. Owing, however, to defects either in the management or the system the experiment proved a failure. The dynamo refused to work on the third night of the exhibition, and has never, they tell me, run since. It now languishes under a collection of old mill iron and cobwebs.

The Brush appears to have been the first American company that made an attempt to introduce the electric light system in Mexico. A representative of that company went down there about 1880, and two years later made an arrangement with the Mexican Gas Light company for the control of the Brush system throughout the Republic of Mexico.

The company that has the exclusive right of running electric light wires in the City of Mexico is an English one, known by the name of the Mexican Gas Light company. It has two sixty-light Brush machines, and supplies, as I intimated above, 118 lights—all of them to the city. Mr. B. Knight, the manager of the company, has a contract with the city for a considerably larger number of lights than are now running; that the finances of the city are so low that the company has been asked to carry out for the present the contract as it stands, and that to do this taxes the present capacity of the company to its utmost. The plant, says Mr. Knight, is to be extended to 600 lights of 2,000 candle power each, and to 100,000 candle power, 16,000 candle power each. "Just as soon," he adds, "as the city tells us to go ahead, we will at once put in the necessary apparatus, not only for the extra lights required by the city, but also for what will probably be needed by the public."

There are several curious things about the City of Mexico which will interest electricians. The altitude is so high—7,000 feet—that an arc dynamo that is ordinarily intended to run at a speed of a thousand revolutions will furnish one-third more current in the City of Mexico than it would in any other city. The brushes in the same relative position. The consequence of this has been that, through carelessness, a large number of armatures have been burned out in the City of Mexico.

The air in the City of Mexico also exerts a remarkable effect upon gas. The high altitude seems to make the gas sluggish, and it requires a much larger pipe than is required in any other city to carry the level of the sea. In fact, gas that would have an illuminating power of 100 at Vera Cruz, would under the same conditions have only an illuminating power of seventy at the City of Mexico.

I like to see circumstances of this kind taken advantage of and turned to practical account, and it looks to me as if this is an important point in favor of the incandescent light. Mr. Knight told me that it was the intention of his company to introduce incandescent lights and give customers the choice of either gas or electric lights, just as they preferred.

As stated in the last article, coal costs \$12 a ton in the City of Mexico, and gas is made from wood which costs \$14 a cord. The price of gas to the city is \$5.50 a thousand and to private customers \$7.50. There are three factories in Mexico lighted by the Brush system—two in the City of Mexico and one on the road to Vera Cruz. There are 45 1,300 candle power lights in one of these, 30 1,300 candle power lights in the second, and 16 3,000 candle power lights in the third. Vera Cruz has a plant of two 16 light Brush dynamos and supplies 32 lights.

Underground Electricity.

Pittsburg Commercial-Gazette: Before the legislative committee yesterday, S. A. Duhan, of the electric light company, gave testimony on the subject of underground wires. He said the electric light company had not experimented in this line very extensively in this city, but proposed during the present summer to lay a line of underground cables on Virginia street, and to place them in a trench, and over these wires they became dangerous when placed underground, as had been demonstrated in Philadelphia. The manufactured gas was apt to collect in the trenches or conduits, and in many instances where the wires had come in contact with each other sparks were emitted which caused disastrous explosions. Also, where the lines happened to cross the sewer pipes, the gas, as sewer gases, the latter became so charged with electricity as to cause the death of animals stepping on them.

He did not favor the idea of a large conduit in which the wires of the different telegraph, telephone and light companies would be placed, as the induction from the many wires, which even now overhead is a source of trouble, would be largely augmented and seriously interfere with the business, especially of the telephone companies.

He suggested that by way of experiment the city place all their own wires underground and give the system a trial before it undertook to compel the companies to incur an enormous expense for something which was at best a risk.

pronounced excellent by all who have tried it—and it was in brisk demand. A great many of the people who saw the motor running the churn have gone home to think that matter over seriously. It was a new idea to them.

Arc Lamp Electricity.

Boston Herald: "Does it not affect a watch to stand near a dynamo machine when it is in motion?" was asked of the night superintendent of the Brush station on Ferdinand street. "Oh, yes; very seriously."

"Because the works become charged with electricity. The steel absorbs a greater quantity of the fluid than the brass, and the resistant influence upon the latter metal by the former becomes so great that the wheels are held in check and the watch stops."

"Is it dangerous business to work about a dynamo?" "No; we haven't had an accident here since the station was established. The line is however frequently got a shock, but it is seldom they receive any serious injury."

"Can you tell when a lamp goes out on a given circuit?" "No, but if two or three should fail, those little dials upon that shelf over there would warn us of the fact."

"Are you troubled much with your lamps failing to burn?" "No, they are properly covered and the other mechanism carefully attended to, we have no difficulty. A lamp with ordinary care ought to run six months without repair. After that it should be thrown away and replaced."

"What power does it take to run a single lamp?" "We reckon one-horse power to each lamp."

"What is this amount of power worth?" "When we hired it we paid \$100 a year, but with our machinery it costs about \$15. Experts differ on this subject, however, some claiming that it costs nearer \$80 to develop a horse-power."

"How many lamps do you run on a circuit?" "About sixty."

"And how many circuits have you?" "Thirty-three running from this station."

"Of course the nearer your lamps are together the cheaper it is to run them, as you have so much less wire to look after."

"Yes, that is true. But what do you think of the two lamps the meter apart, as is the case on one of our circuits in the outskirts of the city? The profit on these illuminators can't be great when the cost of the wire and the attention necessary to keep it in repair are taken into consideration."

"Why don't you put your wires underground?" "That we will willingly do when some one will properly insulated cable. You see the nature of the electric current is to reach the earth, and if the insulation is not complete it jumps from the wire and its intensity for service beyond its cost is thereby reduced. Our company has spent \$10,000 in experimenting with underground cables, but all the results have been unsatisfactory. It would cost an enormous sum to bury our wires, but it would be a good investment even at that, because we would then escape the nuisance of continually repairing them, as is now the case, and also avoid the constant complaints of people whose buildings the wires are running. It is a popular belief that electric lighting wires endanger property from fire, and the moment one of them is run over a house for the first time the owner immediately declares war against the electric light."

"The record of fires caused by electric wires you will find to be very small. Many claim that the premium of their policies is increased when the wires are run in their buildings, but it seems to me ridiculously absurd for an insurance company to raise its rates under such circumstances, as mice nibbling at matches cause 100 fires to our city, yet we have not heard of the insurance taken into consideration when an insurance rate is given on a building."

"How many men do you employ here?" "The hundred and thirty, divided into three reliefs."

"What is the combined intensity of all your dynamos?" "Strong enough to instantly kill every person in the City of Boston, and they stand in line and take hold of the wires."

An Important Electrical Question. Philadelphia Times: How long is electric lighting to be supposed to be "on trial"? The question has occurred, no doubt, to every citizen, and the current proposition to remove the electric light from the streets, and to place them in new neighborhoods not soon likely to be reached by electricity, may bring it to an issue. We believe there will be no disposition to hurry matters, yet naturally the question will be decided at an early date. When shall the marvelous new invention be considered fully installed? To retain the gas lamps as an alternative to the electric light, or to place the electric light in the streets, is a question that should be considered. When gas superseded the street oil lamps, the early cumbersome apparatus was retained for a while, in expectation that some time would be needed through a complete gas failure. But, in the end, lamps and boxes had to go. The present situation is much the same as that one. There is not an exact parallel, since the gas mains will continue to run everywhere for the use of private consumers, and the street lamp attachments make a simpler system than the old lamps did, which stood for themselves alone. All the same, when the gas fails, and the electric light is not ready, should they continue to encumber the streets?

Chinese Temples and Altars. San Francisco Bulletin: In and near Canton are 125 temples. Every store-keeper has a picture of the gods of some other sage conspicuously placed on the rear wall of his store. To these home altars incense is daily burned. The temples are usually filthy; a crowd of fortune tellers, vendors, sellers of small wares and beggars infest the popular places. One of the temples has 500 life size genii, all in a sitting posture, and each with a different expression on his hands in a peculiar position. One wise man had whiskers and a decidedly European cast of countenance. Upon asking what God he was I was told that it was Marco Polo.

It was my first interview with Mark, and he seemed to be pleased at meeting me. At least a benign smile rested on his wooden face. Patience has its reward. Marco was accused of lying because he told the customs officer of Mexico, but now he is enrolled among the Buddhas and sits composedly among those 500 gilded idols. The god who holds up the moon was shown to me. The left arm is much longer than the other. There is also a temple, a Tartar temple I think, devoted to the five genii who come to the city on rams bearing gifts of grain to the city. The rams were turned to stone and are there, and the obstinate five rough-looking stones, about as large as a man's head showing that the rams were condemned when transformed. There is also a large bell here with a piece knocked out of the bottom. It was a tradition that whenever the bell should sound calamity would fall upon the city; and when the English and French besieged the city in 1857, one of their cannon balls struck the bell, broke off a piece and caused it to sound.

In sight of this temple is a tower built by the Mohammedans in the 11th century. The next object of interest was the Keweenaw, a large rock, about 200 feet in diameter and with a great amount of carving on it.

THE ROCK OF GIBRALTAR.

The Present Condition of the Famous Fortress.

ADDITIONS TO THE DEFENCES

Adequate Water Supply—Visitors and How they are Regulated—A Jolly Place for Jack Tara.

A correspondent of the San Francisco Chronicle, writing from Gibraltar, says: There is no port on the European station hailed with more delight by the crew of an American man-of-war than is Gibraltar. Let a hundred tars go over the side on liberty with a month's pay in their monk bags, and depend on it the Scotch Highlanders will soon be singing "Yankee Doodle" to the tune set by the jolliest crowd of tars that ever stepped ashore.

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Though Gibraltar has not been subjected to the attacks of vessels of war of modern times, it has withstood a siege before which no other fortress in the world could have held out. Since that famous siege of the last century everything has been done to make it impregnable, and this has been accomplished even a cursory glance suffices to show, and Jack will tell his messmates on some foreign station that "the old rock" is a jolly place, and a grand one for every new year, and now they have 1,887 guns in position.

The "rock" itself is not more than seven miles in circumference, and its elevation above the sea, at the highest point, does not exceed 1,400 feet. The town is situated on the western slope, for on all other sides the ascent is very precipitous. The isthmus which connects Gibraltar with the continent is more than a mile wide, and it is on this isthmus that the famous neutral ground is marked off by the two parallel rows of English and Spanish sentry boxes. And there is a never-ending stream of men greatly strengthened by the presence of remarkable natural caverns with which it is perforated. These caverns are all difficult of access. The largest, St. Michael's, is a mile long, and its entrance reaches from roof to floor. Its entrance is 1,000 feet above the level of the sea, and is connected with other caverns beneath of unknown extent. The presence of these natural caverns suggested the idea of the British of excavating and tunneling the "rock."

A system of galleries have been cut facing the harbor and the ground of the Gibraltar arsenal. Much of this work was carried on by prisoners. At intervals of twelve yards posts have been cut for guns, and some of the ordnance mounted is of very heavy caliber. The galleries are 100 feet in length, and several extend to a distance of two or three miles, being wide enough to admit of the ox-carts of the fort. On the western slope there are many of the "rock" and the "rock" is here that the infantry is drilled and exercised. The garrison consists of nearly 9,000 men, and it has always been the pride of the British army in London, to send out a great many Highlanders to Gibraltar, though they do not compose the full force. The garrison is one of the hardest drilled in the British service, and the men are drilled in the tactics of the army. The feeling of pride will allow only the flower of the British troops to hold Gibraltar. Report has it that General Grant considered this garrison the best body of men he ever saw during his tour around the world.

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The majority of the houses in the town are built with flat tops, which enable the inhabitants to secure a considerable amount of rain water. Tanks are built under the eaves, and are fitted with drains leading from the roofs. It is the water supply which has always proved of vital importance to Gibraltar, but the authorities have finally mastered the question, and the "rock" is now well provided with good water. The two large tanks, one containing 9,000 and the other 11,000 gallons, are kept constantly full with water supplied by the British navy.

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"HEADQUARTERS."

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77 feet on Farnam street east of Twentieth, on grade, well improved, \$10,000; \$15,000 cash.

44 feet on corner Nineteenth and Farnam, improvements will rent for \$250 per month, \$55,000; \$16,000 cash.

60 feet on Farnam east of Twenty-fourth street, 9 room house, all modern improvements, rents \$75 per month, \$16,500, one-half cash.

66x132, corner Twenty-fourth and Farnam, elegantly improved, \$35,000, only \$5,000 cash.

77 feet on Farnam just west of Twenty-eighth street, \$300 per front foot. Good business property. Stores adjoining.

66x132 on Dodge street between Eleventh and Twelfth, \$27,000. This is \$3,000 cheap, for nothing between Eleventh and Sixteenth streets on Dodge street can be had for less than \$500 a foot and upwards. This is to be taken at once or the price will be \$33,000 in a few days.

100 feet on southwest corner Eighteenth and Harney. Gilt-edge business property, \$41,500; \$15,000 cash.

44x66 corner on Tenth and Douglas, improved, \$24,000; \$6,000 cash.

25x150 near Williams street on Thirteenth street, paved. First-class business lot, two houses on it, stores all around and a fine block to be built nearly opposite, \$5,000; one-half cash. This a bargain and no mistake. This property will bring \$300 a foot before the year closes.

66x132 corner lot Sixteenth and Jones, \$40,000; \$17,500 cash. This is 133 feet on Sixteenth street.

132 feet square, corner Davenport and Sixteenth streets, \$30,000; one-third cash.

98x185, corner Eighteenth and Leavenworth, 185 feet on Leavenworth, \$46,000; \$16,000 cash, balance on long time.

75x132, corner Eighteenth and St. Mary's avenue, improvements, rents for \$110 per month, \$30,000; one-third cash.

22x132, between Douglas and Dodge, three story brick building, will rent for \$2,500 a year, \$22,000, one-half cash. This is good for permanent investment.

Choice lots of Sixteenth property, south of viaduct, at \$103 front foot. All about on grade—not the low bluff on west side of street. The time will soon be here when this will be fine business property for retail purposes, then you will buy it for \$300 or \$400 per foot.

W. I. saw her dancing like a sprite to the music of the band, in the muslin and lace of her ballroom attire. She grew up like a lily, tall and fair, and girlish coyness merged into maidenly coquetry. Her eyes were beauty flashed upon us amid the whirl of a Saratoga season. She wore white muslin still, with crimson roses at her waist, and the freshness of her complexion attracted every eye. The lovely form, adorned with a necklace of pearls, and a bracelet of diamonds, and a diamond ring on her finger, she looked like a goddess of the sea.

The laughter sounds less often on her rosy lips, and within the pensive eyes a strange seriousness seems to rest. "I have never seen her dancing like a sprite to the music of the band, in the muslin and lace of her ballroom attire. She grew up like a lily, tall and fair, and girlish coyness merged into maidenly coquetry. Her eyes were beauty flashed upon us amid the whirl of a Saratoga season. She wore white muslin still, with crimson roses at her waist, and the freshness of her complexion attracted every eye. The lovely form, adorned with a necklace of pearls, and a bracelet of diamonds, and a diamond ring on her finger, she looked like a goddess of the sea."

"We likened her to Vera in 'Moths,' and her blonde mamma to the Lady Dolly."

"The prince came. He was old and hardened by distrust and care. He had known Dolly these many years, but the child he had scarcely noticed until, like a great white pearl, she glided before him and caught the fancy of his wearied eye."

"She is restless," he said. "I can trust her, I think, because her eyes do not lie, nor has she yet learned the tricks of her world of winking. Dolly's daughter, whether she seems old to trust, but I will chance it," the old millionaire said, and into his crusty heart a new emotion crept."