

Frozen Acetylene.

H. W. COLE.

Did you hear the passing of the linkman in London Town, and his hourly cry through the night "All's well"? You may not, perchance have seen him, for his torch has burned out long since, and he and his cry, with the things of yesterday, have passed on forever into the fields of oblivion; fainter and more faint his call comes back to us.

Not only in London Town did the linkman and watchman carry light, and the protection which it gives for the belated, but even in Philadelphia, Boston and New York within the century, that citizen who ventured abroad alone on the streets after nightfall had no little hardihood, for the danger of the street from mud-hole and mire was supplemented by the skulking thief and footpad. With the advent of street lamps the change began, for light has done more to mend conditions than perhaps even the police. This is so well known now that when a locality in any of the large cities becomes notorious as a dangerous one after night, the addition of a few lamp-posts is made in that neighbourhood, and its reputation soon changes.

Do you ask why it was that a century ago London, Philadelphia, Boston and New York had not their streets well lighted, for assuredly each of these cities had wealthy and public spirited citizens at that time? The dreams of yesterday are the commonplace of to-day, and comforts which a century, aye, half a century ago, were not to be had for a king's ransom, are to-day within that circle which embraces those things generally recognized as essentials to present habits of life.

Any town or village can have to-day at a cost well within its reach a street and house lighting system of such perfection as doubtless never dreamed of by our great grand-fathers of a hundred years ago even in their most illumined moments. While coal gas and electricity have brought relief to the cities in street and house lighting, it has been acetylene gas which has changed the lighting conditions in many towns and villages throughout the world. This gas is particularly suited for such places on account of the low cost of plant necessary to make the gas, the simplicity of the plant itself and the further fact that it does not require the attention of an engineer or skilled mechanic to run it.

In most cases acetylene is generated from calcium carbide within a short distance of the point at which it is used; but in two towns in Ontario, Maxville and Avonmore, a different system has been adopted. These are the first two towns in the world to be lighted by "frozen acetylene"—a product known only within the last year in a commercial way.

"Frozen acetylene" or "acetylene ice" as it is some-

times called, is the discovery of Mr. E. A. LeSueur, a Canadian chemist of more than national reputation. Through refrigeration ordinary acetylene gas is turned into an article which looks very much like lump camphor, and which is equally safe to handle. A can of this material was subjected to the most trying tests to ascertain if it could be exploded by detonation or shock of any kind, but without effect. It was then thrown into a very hot fire, but beyond the burning of the gas as it evolved from the acetylene ice, no effect was produced. Taking the can out of the fire it was submerged in a tank of water, when the burning gas was extinguished and the ice remaining in the can was quite unchanged in appearance in any way.

The ice melts or gassifies slowly as it comes in contact with a higher temperature, and it is this property which makes it valuable. By putting it in receptacles which are insulated by non-conductors of heat, this material can be kept for quite a time without any appreciable gassification taking place; and in this way it is shipped from the factory to the point where it is to be used. There the receptacle is connected to the piping or street mains with a union, and as the gas evolves it passes off into the pipes.

The process of refrigeration eliminates all foreign elements there may be in the gas, so that the product is practically objectively pure acetylene. The light from this gas is unusually clear and brilliant, and burns without carbonizing the burners in the slightest degree, while the diffusive properties being very great make it very well adapted for street use.

The installation at Maxville was completed some seven months ago, while the Avonmore installation was finished shortly after the first of the year. In both places gas has been on continuously since first starting, and satisfaction has been decided and general. Private dwellings, churches, stores and hotels are lighted besides the streets. One central gas house at Maxville and another at Avonmore furnish the gas through about a mile of mains in each place. Street lamps are lighted by annual contract, but all other service is on a meter basis, the nett price of gas to the consumer being \$1.50 per hundred feet. This is equivalent to about \$1.25 per thousand feet on coal gas, owing to the fact that an acetylene burner consuming only half a foot of gas an hour gives a light of considerable more candle power than a coal gas burner running five cubic feet per hour.

The experimental and development work in connection with frozen acetylene has been carried on entirely by the General Illuminating Co. of Ottawa, who put in both the Maxville and Avonmore installations, and now light these places.

The beauty and effectiveness of the street and house lights in both the towns mentioned are commented on by everyone; and almost without exception travellers go out of their way to declare these two are the best lighted towns in Ontario, if not in the Dominion.