

the production was concerned, were rather disappointing when large units were used and long runs made, as it was later found that the production per K.W. hour was low even at the best, for, as the length of the pig increased, the resistance of the carbide increased also. Carbide when cold is, for practical purposes, a non-conductor. It was necessary in the working of this furnace to pass a quantity of current through the pig of carbide in order to keep it liquid; and consequently the longer the pig, the greater the loss of energy, the production of marketable carbide falling as low as 6 lbs. per K.W. hour in plants operating this method, while in a more modern furnace design over 9 lbs. is possible under favorable conditions. This applies to an average quality giving approximately 1.75 cubic feet of gas per lb., and this is no doubt a very fair figure to give for the product on the market in the various countries now manufacturing or purchasing it, some going a little higher and others again less, but the present specifications call for a quality up to this standard.

Calcium carbide was one of the first of the electric furnace developments which gave great promise of becoming a very quick method of employing large units of hydro-electric energy. It therefore received a great deal of attention both in America and in Europe, and although Mr. Willson only discovered the process in May, 1892, by the end of 1894, or the early part of 1905, works were ready to start with a capacity of from 1000 H.P. up. From that time to the present its progress has been very rapid. The demand for the product for acetylene lighting purposes at times in the first few years exceeded the supply, and until extensions could be made there was a shortage. In some European countries where the patent laws are lax or non-existent, so many installations were put in for the manufacture of calcium carbide that in a short time some of them had to close down. To this fact the ferro-silicon industry no doubt owes much of its progress, as some carbide factories turned to this alloy as a profitable means of employing their surplus power.

In the production of calcium carbide, as well as in all electro-metallurgical processes generally, the raw materials are of the greatest importance, as the purity of the carbide is very much effected thereby; sulphur and phosphorus being particularly objectionable as they pass off with the acetylene. In the case of the phosphorus, it is dangerous, as explosions might be caused were