



## CARBIDE LAMPS

Carbide lamps first appeared in the early 1890s. People used them as lamps on carriages. Because they were lightweight and produced a bright light, miners, farmers and hunters soon adopted them. The hey day of the carbide lamp lasted only about 20 years. Electric lamps and battery-powered flashlights soon replaced the carbide lamp.

Frederick Baldwin received the first US patent for an "Acetylene Gas Lamp" in 1900. The design of the carbide lamp consists of two chambers – an upper chamber holding water ( $H_2O$ ) and a lower chamber filled with calcium carbide ( $CaC_2$ ). Acetylene gas is produced when water from the upper chamber drips onto the calcium carbide in the base. The amount of water flowing into the lower base can be controlled, with more water producing more gas and a bigger flame when the lamp is lit. The acetylene gas is funneled to the burner where it is lit by a match or a built-in striker. Once the flame is lit, a reflector allows the operator to control the direction of the light.

The carbide lamp incorporated several improvements over the oil-wick lamp and the candle as a means for lighting in the mines. The lamp could easily be attached to a miner's cap. The lamp produced no carbon monoxide, consumed less oxygen, and provided 4 to 6 times more light. Its shortcomings included only a 4 hour burn time, which meant it had to be refilled halfway through a shift. In addition, the burner clogged easily and had to be cleaned several times during a shift.

The limitations of the carbide lamp slowed its adoption. It became very popular in 1918 at the end of the First World War. In the 1930s battery-powered electric lamps had replaced carbide lamps. Today they are mostly prized as collectors' items.