President's Address,

oil from bituminous shales commenced, preparation was made to utilize the gum bed. A steam boiler and retorts were sent up, and a pit was sunk in the stiff clay to collect surface water for the boilers. Instead of water petroleum flowed into the excavation, was barrelled and shipped. Just then news ende of the discovery of rock oil at Titusville, Pa., by a man who was boring for water, and thus the Canadian oil wells were started at Enniskillen about 1861. The retorts were never used.

The late Sir Charles Siemens maintained that gas will be the fuel of the future, and that this was the only solution of the smoke question for London. Since his death the use of natural gas has solved it for Pittsburg. Taking the cest of producing gas for all England, it was shown a few years ago that the value of the by-products exceeded the cost of coal and labor, and that if all the works were pooled, more Americano, the whole charge for gas was available for dividends. Where natural gas does not come to the relief of our towns, the question for our engineers will be how far gas fuel can be laid on economically from central stations, which will much depend upon a market for the by products. Electric lighting will doubtless turn the attention of the gas companies to this problem.

A French engineer, Mr. Chalon, has published in Le Génie Civil, the results of some experiments in blasting without tamping. He plugged the hole with a handful of wet clay, and the effect with black powder was extraordinary. The mean of five experiments was 13 cubic yards of rock removed per pound of powder used, whereas in the same quarry under the ordinary system only $7\frac{1}{2}$ cubic yards per pound of powder was removed. He says that with hard tamping, the powder has not time to burn completely, as much as 20 per cent. of the charge being blown out. In his experiments the air chamber between the elay and powder permitted the latter to become thoroughly ignited, and the developed gas to expand. He proved that the force of projection of the tamping was diminished—by inserting a wooden plug in the clay and measuring the shorter distance to which it was thrown.

ELECTRICAL ENGINEERING.

The practical application of electricity in Canada for lighting and locomotion is very recent, dating since 1882, and in fact its whole development as a commercial question is confined to the last ten years. The Avenu de l'Opéra, in Paris, was lighted in 1878 on the Jablokoff system, each light requiring $2\frac{1}{2}$ horse-power. It was regarded as a luxu v then, and the lights were extingui-hel at midnight. The same

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