

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 came 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 cost 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

The deepest well which has been bored is one near Pittsburgh, Pa., where a depth of 4,618 feet has been reached; there is another of 4,300 feet, two of 3,500 feet, and one over 3,000 feet in the U.S.

In Europe there are six wells over 3,000 feet in depth, the deepest one is 4,515 feet at Schluddeback; the diameter for the first 189 feet is 11 inches, for the next 416 feet 9 inches, at 4,000 feet the bore is 2 inches.

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 luxury then, and the lights were extinguished at midnight. The same