

New Plymouth's Industries - No. 15:

50 Million Feet of Gas For a City's Use

YOU may not be one of New Plymouth's 2700 commercial and domestic users of gas but you still owe a nod of acknowledgment to the New Plymouth Gas Company and their somewhat dilapidated 78-year-old works in Gill Street. You may prefer electricity but you still have to walk on city streets sealed with the tar which is the gasworks' main by-product and drive over highways which also contain a proportion of that tar. And you probably have a high regard for the heating qualities of their coke by-product.

And since 1875, the works have been a steady producer of heating, cooking and, at one time, lighting for a large bulk of the community and still have phenomenal production figures. Through their 40 miles of piping flows 50,000,000 cubic feet of gas a year, into the city's fires and furnaces goes 700 tons of coke and for the city council and Ministry of Works they produce 22,000 gallons of tar.

A staff of 15 keep the works going 24 hours a day, 365 days a year.

Over the last two years, the gasworks has undergone major improvements in the provision of modern mechanical methods of working.

One of the most important changes appears at the most spectacular point of gas production, the retort house, where the laborious hand-charging of the banks of retorts has been replaced by a machine method. Since 16 of the 35 retorts are in use all the time and have to be re-

fueled every six hours, the saving in time and effort becomes substantial.

Each of the retorts takes a 3cwt. charge of West Coast bituminous coal and between them they eat up between 2500 and 3000 tons a year. The coal stays in a retort for six hours to carbonise at a temperature of 1100 degrees Centigrade; when all the gas has been driven off the coke residue is withdrawn by the use of a long hooked rod and then the mechanical charger neatly empties a fresh charge into the long, narrow retort.

This operation has its excitement for the novice in the massive tongues of flame that roar from the mouth of the retort as the fresh coal is fed in and in the clouds of steam that fill the retort house as the red-hot coke is cooled off under a powerful stream of water from a hose.

Every ton of coal produces about 15,000 cubic feet of gas, enough to operate the average gas stove for about eight months.

Coal and its blackened and gloomy retort house are not the gasworks' only source of gas now, however. The company's unique exploitation of natural gas from the New Plymouth oil wells has

passed its testing period and they hope to extend its use in future as more gas becomes available.

CONDENSING TOWER

From the retorts, which are coke-heated in sets of six from separate furnaces, the coal gas is passed through the jet condensing tower for cooling and the removal of tar, water and ammonia. It is then piped through boxes containing oxides of iron for purification and the removal of sulphur and on to the station meter for recording.

The natural gas pipe which carries the gas along the city's streets is linked with the coal gas system as part of the purification system and the mixture is then diluted with another gas, producer gas, to bring its heating value down to the Government standard.

The producer gas is manufactured in a burner operated by coke breeze, thus utilising a waste coke product.

Although the gas works operates mainly on equipment that dates back to its earlier days, there are touches of modernity—in the mechanical charger and in the front end loader which to-day makes light of the shifting of coal, tar barrels and other material about the company's yards.

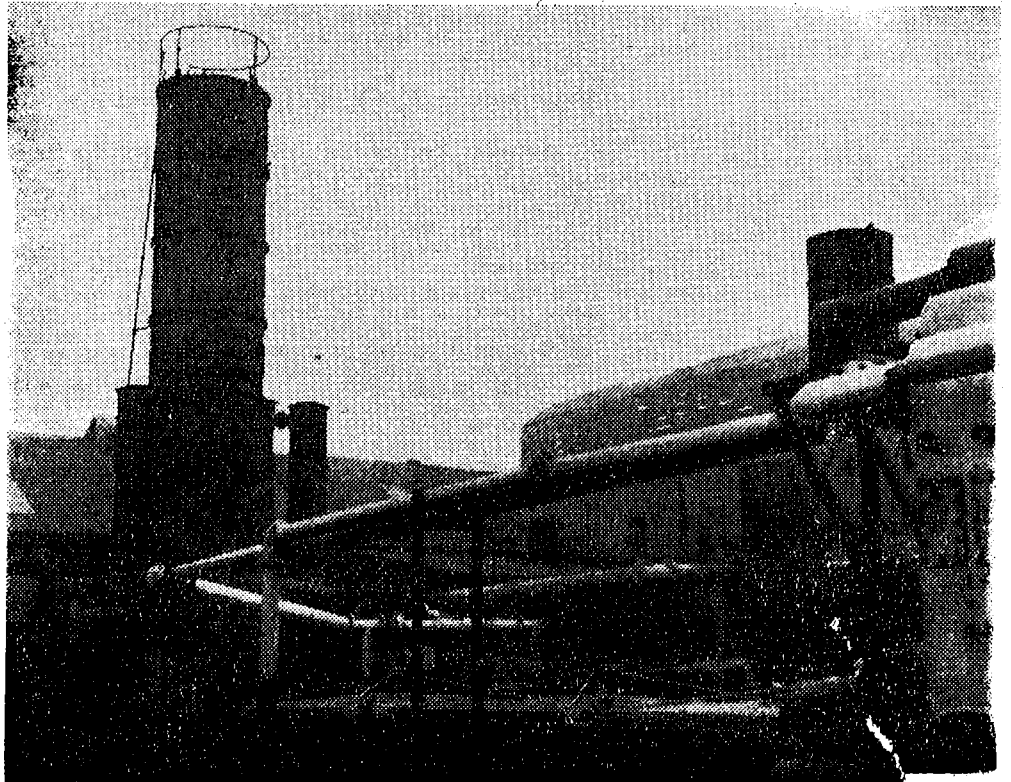
Apart from its major task of producing the city's gas, the company has many established sidelines in residuals. There is a ready market for the surplus coke which comes from the retorts and many of the city's streets are sealed with the tar which is recovered during the manufacture of gas and distilled. Quantities of creosote and horticultural naphtha are also produced for commercial use and there is, eventually, remarkably little waste.

A constant watch is kept on the gas produced in a small test room in one corner of the yard where hour by hour records of the heating qualities and pressure of the gas are recorded by a needle on a chart. The instruments used are checked constantly by a Government inspector and a glance at them can show the moment anything has gone wrong with the quality of the gas.

In a diagonally opposite corner of the works two small rooms contain another important branch of the work—the checking and repair of all the city's meters by a skilled staff.

A GENERAL VIEW OF THE NEW PLYMOUTH GASWORKS showing at the left, the jet condensing tower, in the foreground the pipes and ground-level tanks of part of the purification system and in the background the retort house where the production of gas begins.

—Photo by Douglas Elliott.



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