

The compact 60-MW boiler-turbine unit installed in 1951. Scaffolding is now in position to prepare for a second 60-MW unit later this year.

**The Story of PORTOBELLO POWER STATION Its Development . . . Its Output . . . Its Efficiency**

TO-DAY'S generation is perhaps inclined to take our public services for granted. To them electricity comes at the touch of a switch. And when one thinks of electricity in Edinburgh one's thoughts turn to Portobello Power Station, one of the city's landmarks.

Behind it all lies the romantic story of electricity. That began as far back as 1831 when Michael Faraday discovered the principle of electro-magnetic induction. At first progress was slow, and it was not until the 1860s that other pioneers developed generators capable of producing electricity for public use. By the 1870s quite a few public places were lit by electric arc lamps, though each installation required its own engine and dynamo.

**These early Years of Development**

In 1879, almost simultaneously, Sir Joseph Swan in London and Thomas Edison in America, invented the incandescent filament lamp, and so the electric lighting of homes became a practicable proposition. By 1896, 130 undertakings, then quite small, were supplying electricity. One of them was Edinburgh Corporation which had commenced a year earlier to generate electricity from a small steam-driven station at Dewar Place. Later a similar station was built at Macdonald Road, but before long the two stations were totally inadequate for the growth of the load. In 1913 Edinburgh showed its initiative by deciding to build a larger station at Portobello, to generate alternating current at 6,600 volts.

This scheme was delayed until after the first World War. However, in 1923 Portobello Power Station was opened by H.M. King George V, when the equipment consisted of eight 80,000-lb. boilers and three 12.5 MW sets. A fourth 12.5 MW set was added in 1926, two 31.25 sets in 1930, and a further 30 MW set in 1938, making, with a set transferred from Macdonald Road, a total capacity of 149 MW.

**Big Scheme of further Development**

The site of the Portobello Power Station is one of unique convenience, the closest colliery being only two miles away and the farthest, in the Lothians, some eight miles. A further development was in 1938, when a ferro-concrete gantry was built to carry a flue and

chimney to serve the whole station. Individual stacks were taken down, and a 365-ft. chimney which now dominates our coastline came into being.

Immediately after the second World War our city was faced with the necessity for still further development to meet growing demands. An ambitious programme of reconstruction was initiated by Edinburgh Corporation and continued by the British Electricity Authority. First was the replacement of three 12.5 MW generators and eight boilers installed in 1923 by two 60 MW boiler-turbine units. The first was commissioned early in 1951, the second will be in operation later this year, and the third unit is due for completion in 1956.

Anyone privileged to visit Portobello Power Station gets an immediate impression of great efficiency and vast

**Our Part as Suppliers**

*We, at North British, have been privileged to supply over a long number of years, many of the rubber products used at Portobello Power Station.*

*These include conveyor belting and tippler buffers referred to in this article, rubber seals for the intake pipes offshore, protective footwear, hose. Recently, we installed an anti-vibration pad for a new transformer at the Telford Road Sub-Station.*

power, yet everything is so compact and tidy. Officials take pride in the appearance of their station, and a liberal use of silver paint on the equipment helps considerably.

A view of the three intake pipes from the Firth of Forth for cooling purposes. The fourth and right-hand is the return pipe.



Main Control Room, with its array of instruments under constant supervision to ensure the maintenance of output.

**What Edinburgh Consumes**

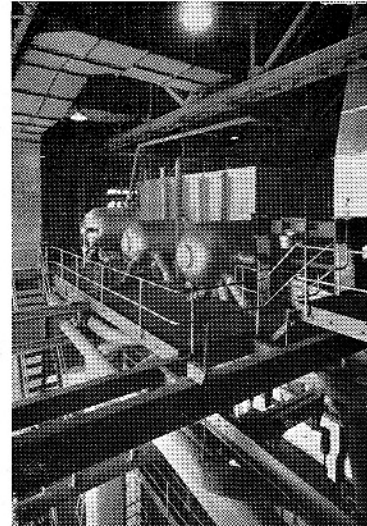
And what of this vast power? Does it satisfy Edinburgh? Yes and no. The present output is roughly 130,000 KW. Edinburgh's requirements in winter averages 160,000 KW, and in summer approximately 100,000 KW.

That in effect means that at times Portobello sends its surplus elsewhere. There are three lines to other stations: 1. Galashiels, and thence to Carlisle and Dunston, Northumberland; 2. Motherwell and Glasgow; 3. Bonnybridge and the Hydro Electric Board. Despite all the tremendous achievements in electricity, it is a commodity which cannot be stored, and so what Edinburgh does not need benefits the National Grid.

Coal is the life-blood of electricity, and to achieve its efficiency Portobello Power Station consumes more than 1,000 tons a day—small, fine coal from the Lothians collieries. Most of it comes by rail to the siding adjacent to the station, where incidentally comes its first contact with North British. You remember the pioneering work we undertook a few years ago to perfect a rubber fender for a tippler plant. We scored a big success here and to-day our rubber fenders are doing a first-class job at that stage where the wagons spill out their coal to the chute, below which operate two large conveyor belts.

**Portobello's Outstanding Record**

For a distance of over 200 yards these North British conveyor belts take the small, dry coal from the tippler, below two thoroughfares, including the Great North Road, into the station and the hoppers which carry the coal to the boilers. These conveyors do a vital job to make Portobello Station an efficient and economical unit. In-



High up in the station with its "cat-walk" girders is the 60-MW boiler.

identally Portobello in 1953 was the most efficient unit throughout the whole of the country.

Whenever in the future we switch on our electric light, use the vacuum cleaner, watch television, or benefit from the advantages of a refrigerator, we should remember that down at Portobello is Edinburgh's main supply of the vital power, all made possible by such men of vision as Faraday, Swan, Edison, and Ferranti.

Just as they were pioneers, so were we at Castle Mills, when away back in 1859 rubber belting was made under a patent in the name of Spencer T. Parmelee. Little did he realise how far-reaching would be the outcome of his initiative.

From the station roof you get a magnificent view to Arthur Seat. In the foreground is the rail siding, and, behind, the coal stocks.

