HOW THE POWER STATIONS CARRY ON

By a STATION ENGINEER

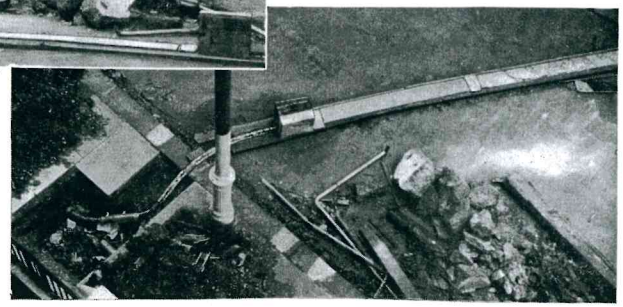
CONTINUITY of electricity supply is of paramount importance at any time, but during wartime it becomes a vital nerve of our great war effort. It is one of our great utility services and as such is just as essential to our vast army of domestic users as to our numerous industries.

There is a body of men, who maintain this service, of whom little is heard and whose efficiency is incalculable. Before electricity reaches your home to be used for cooking, heating, lighting, cleaning, and the radio, it makes a somewhat varied journey. The Power Station represents the starting point where it is first made, or, technically speaking, generated. From here it passes from point to point through smaller stations known as sub-stations, all of which are linked together by cables or overhead lines now so familiar to us all.

The whole of this vast organisation, consisting of some 4,000 miles of main transmission lines and up to 150 generating stations, is controlled from special Control Rooms or nerve centres situated in various parts of the country. From these centres, by many alternative methods, the personnel are kept in touch with the Generating Station staffs, upon whose efforts depends a never ceasing supply of electricity. On very rare occasions some of you may have been inconvenienced by a failure of supply to your home. To-day this possibility is greatly aggravated by the effects of enemy action. This does not necessarily mean the trouble is at the Power Station, as so many are led to believe, but just a break in the link between you and the main point. Such a mishap is not directly the responsibility of the station staffs, it is their duty to tend the miiiions of horse-power of electrical machinery required to make electricity, the prime movers. This duty must be carried on day and night, never ceasing, because as we know it is not possible to store so great an amount of electricity as is now required by the public served.

During the hours of darkness the former brilliant illumination of Engine Rooms, in which giant masses of revolving machines hungrily devour some hundreds of tons of steam every hour, now gives place to shaded lights, for here black-out restrictions are and must be very stringent. You would see fleeting shadows of men pass from instrument boards to valve platforms making various adjustments to the plant. They are guided partly by the familiarity of sound acquired only by years of operating experience. To a stranger the noise would seem impossible to bear for hours on end, but to these men it is music. Any change of note in this continuous drone is easily detected apart from abnormal readings which would be indicated on the numerous gauges.

Perhaps when black-out time arrives or when the sirens sound you may wonder how these men are carrying on. To visit a Power Station in ordinary times would give one some surprise at the apparent air of unconcern shown by the operators upon whom so much depends in this great electrical age; but their vigilance never relaxes, and when the sirens sound each man will be found all ready at his post. He views his giant machines and instruments perhaps with rather more anxiety, as he alone knows what depends upon his actions. Each man on the station staff is detailed for a specific duty, should an emergency arise, which it is imperative he should carry out when instructed. Enemy aircraft in the vicinity may mean a decrease in the amount of load required from this station, due, perhaps, to factories stopping while danger is imminent. Quickly instructions are signalled to the boiler attendants, who, with an efficiency almost unequalled, slow down fans, ease off the coal supply to the furnaces and reduce in a very few minutes to a smouldering mass the furnace fires which previously were a blazing inferno. Gradually the steam pressure, which under normal working conditions is about 600 pounds per square inch, falls back; more load falls away temporarily and up will rise the steam again nearly to blowing-off point, but deftly it is checked. Very seldom is this steam allowed to vent itself and escape into the atmosphere as this is bad practice and shows a lack of co-operation between the staffs concerned. Now all these jobs must be carried out even while enemy aircraft are overhead, perhaps bombs are dropping and shrapnel falling.



Diverting a cable round a bomb crater to replace a damaged section.

"Electrical Review."

A well-known engineer says:

"Although the last few months have brought us many added duties and anxieties, I have found life much more interesting than in normal times. It has been a real pleasure to contribute to ensuring continuity of supply which is taken by the public for granted, but which means real devotion to duty by a whole host of people."

Spotters who help to keep the wheels of industry turning.

"Electrical Industries."

This may be rather difficult to grasp unless a parallel is given, and in this respect we may instance a pot of water on your cooker boiling plate. The water boils, steam is given off and then it starts to boil more than you wish. Your next move is to turn down your heat from "High" to "Low," as you still wish the pot to boil, but not violently. So it is with the giant furnaces and boilers in the Power Station in order that the generators running in the Engine Room may still have a supply of steam to keep them going and so maintain your lights. These pieces of whirring machinery cannot be stopped, as I have said before. The time taken to raise them again to their speed of 3,000 revolutions per minute makes this alone prohibitive, apart from the fact that hospitals, A.R.P. centres, your homes and shelters, will require electricity in order also to carry on. During this period the Control Engineers are keeping careful check on their vast array of instruments as well. Any sign of disturbance on the system of cables is quickly noted and must be accounted for.

When the signal is received that more load must be picked up, perhaps in order to help another station, this is flashed to the boiler staff, who immediately coax the furnace fires back to life. Long tongues of flame shoot up, licking the water tubes which form part of the boiler. Back in the Control Room the Engineers, by the operation of a small wheel, start to open the valves of the turbine which drive the generators, so that the gaping mouths may once again commence to devour more steam.