



## ***Account of Purley on Thames***

# **Electricity Supplies**

### ***Background***

For many people electricity is an incomprehensible phenomenon. Somehow or other electricity flows down a piece of wire and can be used to create light or heat or it can be used to drive a motor. If the wire is broken then the flow is interrupted and this principle can be used to switch the power on and off at will.

For most people there are two sources of electricity, the battery and the power station. The former is highly portable, very convenient, very safe but also relatively expensive, of short life and low power. Batteries are divided into two main categories, the wet and the dry. The wet battery is filled with acid and is relatively familiar as a component of a car. The dry battery is used to power torches, electronic gadgets and a host of small domestic appliances.

With the power station one gains economy of scale but it requires a sophisticated distribution system, often employing ugly overhead lines to get the electricity from station to consumer.

### ***Early Domestic Supplies***

When radio first appeared it was the wet battery that provided most of the power. People used to own two or more batteries (or accumulators as they were then called). One would be used to power the radio while the second was taken to a shop to be re-charged. It was more convenient to have three because then one could collect one battery as the old one was left for re-charging, replace the one attached to the radio during the week and be ready to take the flat battery to the shop next Saturday morning. For many people this was a regular weekly social occasion.

An alternative was to generate your own electricity. Many houses, especially in the country areas had their own small generator which could supply electricity at a fairly steady rate on a small scale using petrol or diesel oil as a fuel. It was expensive, messy and noisy. It was subject to frequent breakdowns and the supply was very difficult to regulate. It was useful only to run small motors or to provide lighting. Some particularly fortunate people could use a fall of water, eg a small stream, to drive a small generator. This was much cheaper, more reliable and quieter, but equally difficult to regulate. Most of these early sources of generated electricity used Direct Current at relatively low voltages usually in the range 12 to 50 volts.

### ***Public Distribution Systems***

Once the principles of the dynamo, now called a generator, were understood it became practical to generate electricity on a fairly large scale and sell it to consumers. The power was distributed by wires attached to poles and usually each consumer would have a meter to measure the amount used so that an appropriate charge could be made. Initially this was practicable only in the urban areas where the distances between power station and consumers could be kept relatively short, as electricity is used up to drive it along the wires

The first system for England was proposed by St George Lane-Fox in 1878 and the world's first public power station was opened at Holborn Viaduct in London on Jan 12th 1882, about nine months before Edison's first American station in New York City. At first all the stations provide Direct Current (DC) but they later switched to Alternating Current (AC) after it was shown to be very much more efficient for transmission over long distances.

At first the AC systems operated with the same voltage from power station to consumer, usually around 500V and with a relatively low frequency (12 to 20 cycles per second) However it soon became clear that 500 volts was too dangerous for domestic use and not very efficient for carrying current over long distances. Thus the multi-voltage distribution systems began to emerge. In these the power was generated and transmitted at relatively high voltages (30-100,000 volts) and transformers were used to bring it down to domestic levels at 100 to 200 volts.

Nowadays we have a 275,000 volts super-grid feeding a 132,000 National grid with 33,000 volt local links. These feed power to area stations whence 11,000 volt distribution cables carry it to local sub-stations supplying current at 240 volts (single phase) to domestic premises or 415 (3 phase) to industrial premises.

The use of electricity to power clocks and other timing devices meant that the frequency of the current had to be very closely regulated. In both Britain and America 25 cycles per second was fairly common, but since the war Britain fell into line with most of the rest of Europe and standardised at 50 cps while America moved to 60 cps. This discrepancy has had a devastating effect, making it impracticable to bring domestic appliances across the Atlantic, but, more importantly making it difficult to synchronise television pictures or sound tracks of electrically powered film cameras. Luckily the growth of electronic technology has enabled most of the fundamental problems to be disguised effectively from the consumer.

### *The Wessex Electricity Company*

The first company to provide electrical power in the area was the Whitchurch and Pangbourne Electricity Company. They had a water driven turbine adjacent to Whitchurch lock and provided electricity to the two principal parishes and to a few outlying premises in the Pangbourne and Whitchurch area.

In 1931 there was an attempt to persuade them to lay a cable to Purley. This would have been a practical proposition if a large number of people would become subscribers. There was a certain amount of opposition to the proposal but the general reaction was one of indifference. A Parish Poll was conducted but the response was so low that the Company dropped the idea.

Once a substantial part of the Purley Rise Estate had been constructed and new people moved into the village, the situation changed and a cable was laid from Pangbourne to a new sub-station in Beech Road, Purley's first. This was opened in 1937 by the Wessex Electricity Company which had taken over the Pangbourne and Whitchurch Company a few years earlier.

In 1943 the Wessex Electricity Company was reported as operating in 8 counties, 2 County Boroughs (including Reading) and 900 parishes (ref 320)

The 1948 Electricity Act saw the Wessex Electricity Company nationalised to form the major portion of the Southern Electricity Board.

### *The Local Power Grid*

Purley is crossed by a secondary link in the National Grid which runs from Pangbourne to Kidmore End. It crosses under the Thames with buried cables and is then carried on pylons from the Thames across the fields around Scrases Farm and on to the main distribution transformer in Pangbourne. It operates at 33,000 volts.

The main 11,000 volt supply comes from Pangbourne along Purley Rise. Spurs go off to Scrases farm, to the Trenthams Estate and to Long Lane School. It terminates at a major junction at the corner of New Hill and Oxford Road. From here a second supply from Reading via the Wimpey Estate comes in and a further branch takes supplies down to Brading Way.

The second 11,000 volt supply comes in from the Westwood Farm Estate, thence via the Roebuck,

Purley Beeches and Knowsley Road to the packing station on Long Lane. Spurs come off to serve Pike Shaw and link to the New Hill sub-station, and to provide an alternative route to Denefield School.

All the 11,000 volt feeder system and the majority of the 240 volt distribution system is now contained in ducts buried underground.

### *A Social Necessity*

So dependent have we become on electricity that we cannot do without a regular secure supply. In the 1940s and 1950s when coal shortages, strikes and breakdowns were frequent, causing power to be switched off, people grumbled but adjusted quickly to the temporary inconvenience. Nowadays however we have people on life support system powered by electricity, freezers containing considerable quantities of frozen or chilled foods and timing devices which depend upon a stable and well regulated supply. Thus when the power is cut off even for a short period, there can be considerable economic loss and even life may be endangered. In the 1970s when it looked as if things were going back to the bad old days there was a rush to purchase portable generators to provide emergency supplies.

This dependence was brought very forcibly to Purley in July 1989 when a major fault occurred which meant that many parts of the parish were deprived of power for several hours and the River Estate for over 30 hours. Things started to go wrong on the Thursday (July 6th) when violent storms brought down power lines and caused short interruptions of supply. Electricity was restored fairly quickly but on Friday night further faults occurred, triggered no doubt by the earlier problems. Around 8 pm most of the northern parts of the Parish lost their power. Cecil Aldin Drive was split into two. The south side which got its power from the Wimpey Estate was unaffected but the north side joined the rest of Purley in the dark until power was restored around 11 pm.

The sub-station on St Mary's Avenue which supplied the Purley River Estate developed serious faults and Southern Electricity crews spent all of Saturday and early Sunday in replacing burnt out cables. The main 11,000 volt cables which ran along Colyton Way had failed, but luckily someone had had the foresight to provide an emergency duct when the roads were made up so that spare cable could be laid without having to dig up the faulty cable. This enabled power to be restored on Sunday morning. For many, particularly the elderly, this was a traumatic experience. However the good neighbourly spirit of the estate surfaced and those fortunate enough to have gas stoves or camping stoves were able to cook and boil water for the less fortunate. The church also suffered and to get the organ working for a wedding on the Saturday afternoon, a small portable generator was brought in.

### *Substations in Purley*

The following lists the substations in Purley and notes their interconnections. These sub-stations contain transformers which convert 11,000 volts down to 240 volts single phase for distribution to domestic premises. There are a few 415 volt 3 phase supplies for large customers.

In order to show the interconnections, a number of stations outside the Parish need to be included. Where Southern Electric references are not known they are referenced by letters.

<b>Ref</b>	<b>Name</b>
A	Purley Hall <i>Located on the north side of Purley Rise opposite Purley Hall.</i>
B	Lock Lane 3502 <i>Located near junction of Mapledurham Drive and Wintringham Way</i>
C	Brading Way <i>Located on South side of Brading Way at east end. Serves River Gardens, Chestnut Grove, Brading Way, Wintringham Way, The Short, Oak Tree Walk, Park Walk, Colyton Way (east side)</i>

<b>Ref</b>	<b>Name</b>
D	Packing Station
E	Scraces farm
2448	Ullswater Drive
2452	Oregon Avenue
2461	Fulbrooke Crescent
3501	Roebuck
3502	New Hill <i>Located on NE corner of New Hill and Oxford Road</i>
3503	Home Farm Estate                      3502 <i>Located on Purley Village just to the west of the junction with Farm Close. Serves Farm Close, Purley Village and Lister Close</i>
3504	Cecil Aldin Drive <i>Located on the south side of Cecil Aldin Drive about mid-way along</i>
3505	Long Lane School <i>Located on the west side of Long Lane just south of the school.</i>
3506	White Lodge Close
3507	Longleat Drive
3511	Oxford Road <i>Located on NE corner of Purley Lane and Oxford Road. Serves Purley Lane, Allison Gardens, Cecil Aldin Drive (1-8) and lower Long Lane.</i>
3512	Trentham's Car Park <i>Was once located just inside Trentham's Car Park to the south of Purley Rise. Served Belleisle, Kennel Cottages and Beech Road (east) now replaced by substation on west of Sherwood Rise</i>
3513	Trentham's Workshops <i>An industrial supply for Trenthams. Now removed.</i>
3515	Beech Road <i>The first sub station in Purley</i>
3516	Glebe Road
3545	Purley Beeches
3546	St Mary's Avenue <i>Located on St Mary's Avenue adjacent to Primrose Close. Serves Primrose Close, Chiltern View, Thames Reach, Mapledurham Drive, Colyton Way (west side), St Mary's Avenue.</i>
3547	Denefield School
3551	Apple Close
3552	Goodliffe Gardens
3570	Knowsley Road <i>Located on south side of Knowsley Road just Opposite Devonshire Gardens</i>