

subterranean **SOUTHWARK**

Disused Tube Lines

Nuclear Bunkers

Crypts and Catacombs

Underground Toilets

Rivers, Spas and Wells

Thames Tunnels

Remnants and

Rumours



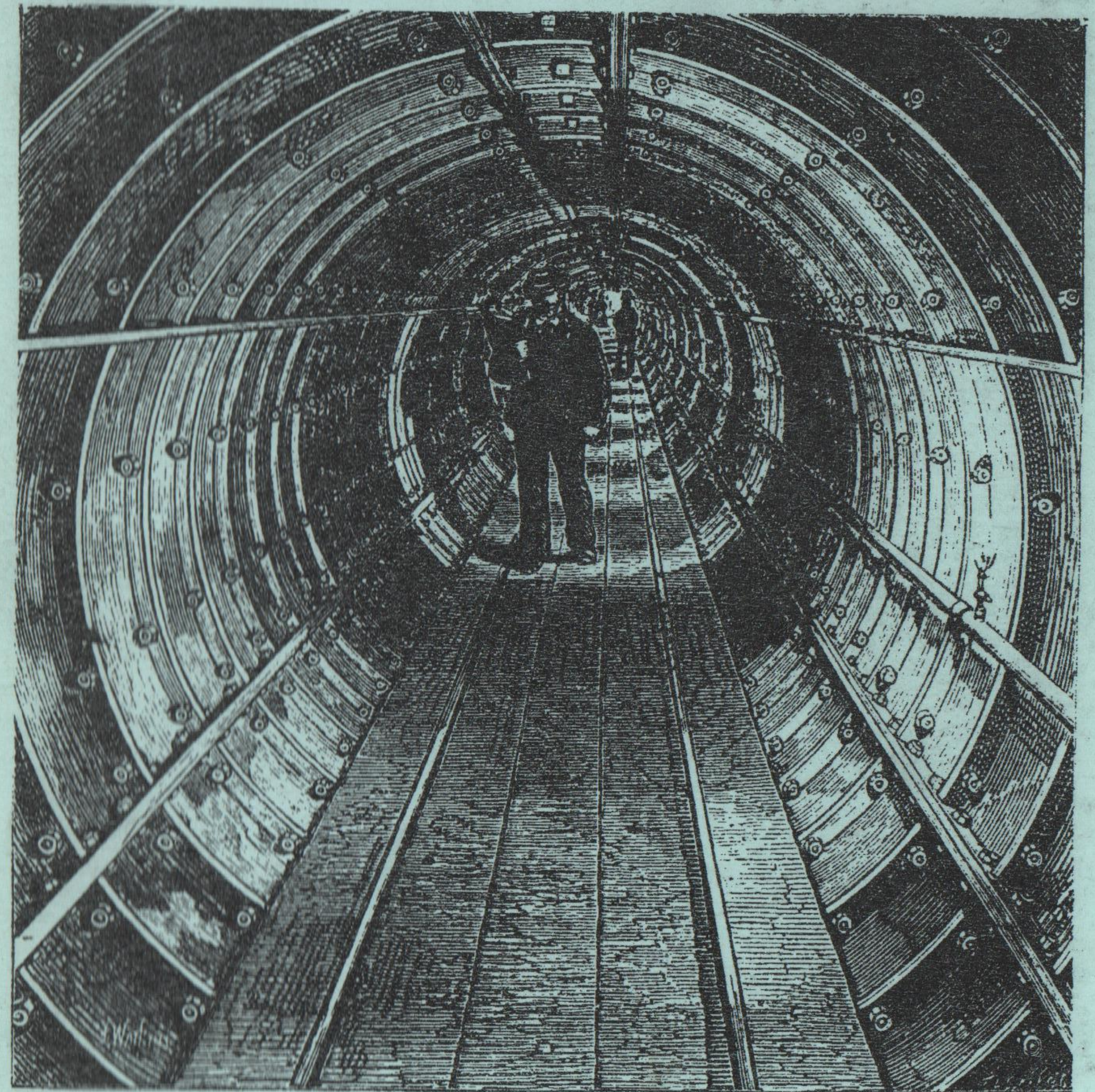
Miner in Drift Way during construction of,
The Thames Archway at Rotherhithe 1807

Ever wondered what's under the Southwark soil? Which tunnels, subways, bunkers and hiding holes are right beneath our feet. Whether it's a mile or so of disused Northern Line or the long lost Camber Well, a secret passage way for 18th century villains or an emergency exit shaft for the Jubilee Line. This booklet reveals all.

a Past Tense publication - 2003

- HAND MADE IN WALWORTH -

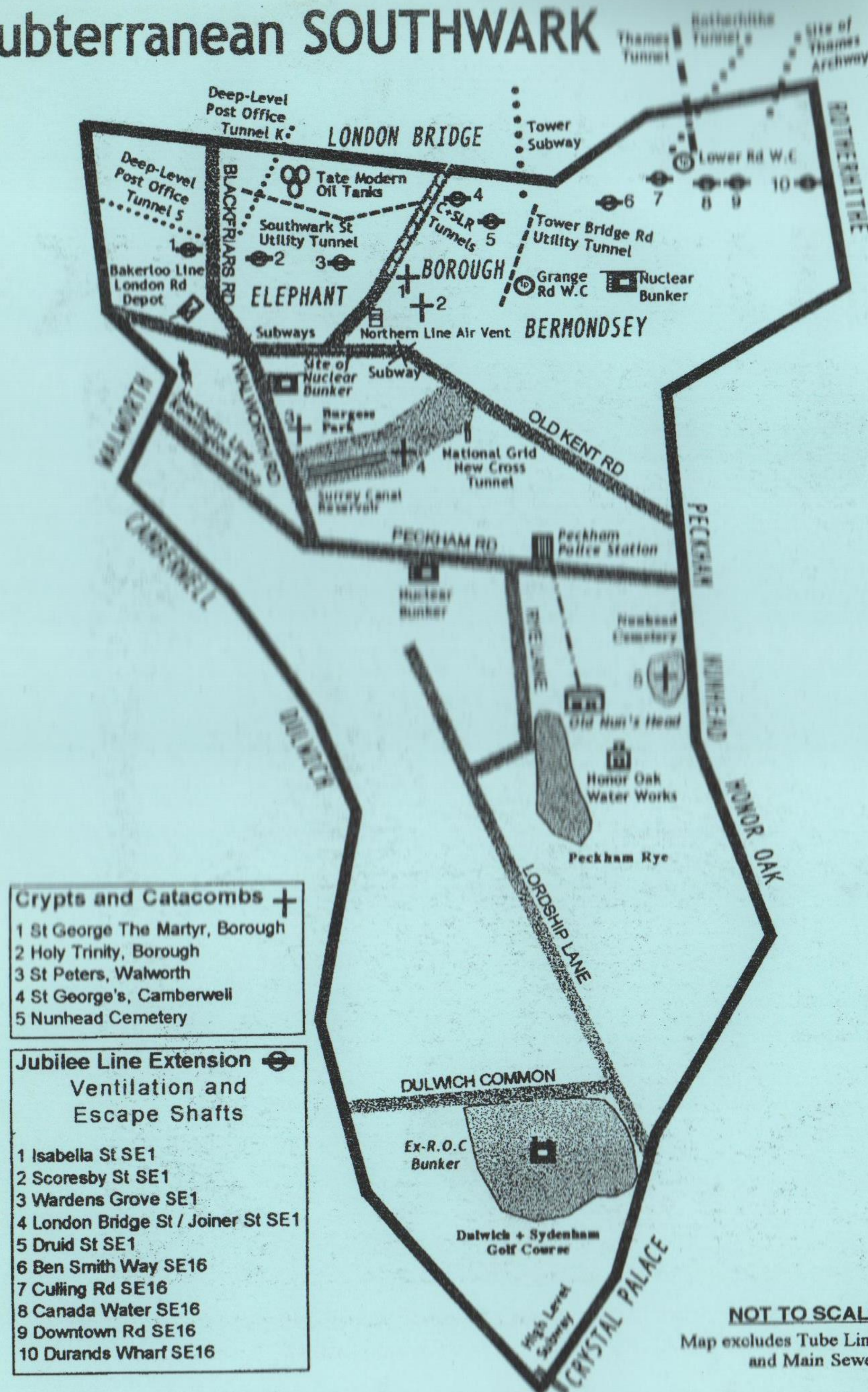
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Walking The Tower Subway at Bermondsey circa.1893

Christopher Jones

Subterranean SOUTHWARK



Subterranean SOUTHWARK

Christopher Jones

Map of Main Southwark Subterranea

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Introduction

'...after a time in profound obscurity, I came upon one of those round well-like openings of which I have told you...I lit a match and looking down...I saw for the first time a number of metal foot and hand rests forming a kind of ladder down the shaft.'

The Time Machine, H.G Wells, 1895

There is an enduring interest in matters subterranean. The first question anyone asks during a conversation about researching the underground is, 'Have you been down there?'. It's probably the possibility of learning about something secret that prompts that question. There's a sense of adventure or the desire to escape the everyday, the familiar, the known about above ground world for something else. *Maybe they do things differently down there?*

This is the fantasist's idea of what we may find beneath the very ground we cross in our day to day occupations but it's one I whole heartedly endorse. There is that tinge of mystery, a certain feeling of almost subversion that comes from researching what exactly is down there. So here is a dossier of the locally subterranean, written in anticipation of further underground revelations in different boroughs, produced by different local diggers and detectives. In that way, we might know a little more of how underground London connects itself up. As a picture of any one locality, this is also a reflection of what's likely to be found elsewhere.

And so it takes little imagination to envisage actual below ground journeys where we begin at a utility tunnel here and cross to a sewer before surfacing there after walking a mile or so of Post Office deep level tunnel. Hopefully, the thrill of going about in this fashion might mean that we meet someone coming the other way and that would be quite lovely. Of course, a fascinatingly technical but still mundane tube journey could whisk us from Morden to Edgware in less than an hour but that's just not quite the same!

Okay, so now, a step down into the world of the facts at your fingertips. What started out as a simple attempt to round up the basics and produce something quite concise, has taken on a life of its own and turned out to be, in parts, quite complicated. I have tried to fit the more whimsical around the more dense. In advance, I apologise for the lengthy nature of some items especially the Civil Defence chapter. In the world of tunnel-ology, that one area of interest seems to demand facts, names and dates. I hope the general details can be picked up by those less inclined to transpot the details of obscure manufacturers of ventilating systems. Some other chapters do go in for who did what and for how much but I hope this industrial archaeology adds to the local interest and social history angle rather than detracts. In this respect, I have included a basic map of what's going down in Southwark as well as a decent index to whet your appetite for the possibly unknown.

I also apologise for the incomplete nature of this work. I have chosen to leave out the following subterranean fittings and here's why:

- Details of the construction of the Northern and Bakerloo tube lines through Southwark as numerous histories of the London Underground are already available.
- Details of the making of The Thames Tunnel at Rotherhithe to concentrate on the less well known stories of the tunnels of Trevithick, Barlow and the London County Council.
- Details of the utility companies pipes and cables such as water, gas, telecommunications as I wanted to finish this project at some point in my life and drew a line here. An exception was made in the non-mundane case of The London Hydraulic Power Co.

Luckily, I have also taken liberties and stepped outside something you might call the conventions of what is meant by 'subterranean'. So, Haywards, manufacturer of superb coalplates, is here despite being tenuously subterranean but wonderfully local. This way of proceeding is based in my interest and imagination in the area where I live first and the underground stuff a really, really close second. It is also because there is always a human element to these tales in that after the construction, there is the utility and I have tried to include details and funnies around that.

Finally, as can be seen in the rumours and myth section, there is so much more. In this round-up section, I simply either ran out of leads or hadn't very much to say. There are some digressions there but I hope enjoyably so.

As for thank you's and inspirations, I've included these somewhere as well as a fairly full bibliography. Errors and mistakes are bound to have been made. I hope readers will spend some time to get in touch and point these out or add new information towards a second edition.

Finally, if we despair of the revelations included here or feel that bringing details of the underground to the surface glare of life as we live it on the pavements seems to lessen our adventures, be heartened, there is so much more down there. We just haven't fallen into it yet.

2002 / Early 2003

On Illustrations:

Most of the old-fashioned illustrations used in this booklet have come from the amazing picture archive 'The Southwark Collection' housed at the Southwark Local Studies Library in The Borough. This excellent institution has generously allowed me to reproduce them here for your delight and for this I thank them.

Other illustrations available in the collection are: photos of Civil Defence activity at Camberwell Town Hall (WW2) / Grove Vale Depot / Kirkwood Rd (Cold War) and Peckham Rd (1980's), under 'Civil Defence', as well as photos of the WW2 underground hospital in Bermondsey, some sewers, the subway at Crystal Palace and the Southwark St utility tunnel ventilation decoration. Plans, maps or illustrations are also resident for underground rivers, the Thames tunnel crossings, underground public conveniences, crypts and archaeological digs.

The Library can be found at 211 Borough High St, SE1 behind the John Harvard Lending Library. It offers excellent opportunities for browsing and discovery.

Some Southwark Subways

Victorian Utility Subways

'Access, Cleanliness, and Permanence'

Most Londoners are intimately aware of the Capital's utility subways without even knowing it, for anyone who grew up in London will remember being seven years old and walking over those huge metal grilles in various West End pavements. They seem so wrong and abnormal and so likely to swallow you up whole. As you step gingerly onto the grill, testing it with your weight, all that dimly-light space below seems so eerie and mysterious and horribly evil. It's a trial to cross one but we do, partly in fear, but secretly feeling adventurous. In later years we have forgotten them again and only something like this brings them back to mind. If you would like to maintain your deeply unconscious memories of hidden London then stop reading now. If however, the phrase 'Victorian Utility Subway' seems too marvellous to ignore, then please go on.

Introducing Mr John Williams

The rapid expansion of the metropolis in the nineteenth century brought constant upheaval to the riverside streets of Southwark, with demolition of densely-packed parts of town in favour of new wider streets and new bridges across the Thames. At the same time, new improvements in sewerage removal, water and gas supply, telegraphs and later electricity, brought the constant need to lay subterranean sewers, pipes and conduits in the road or path way.

In 1817, a strange character called Mr John Williams, 'of Birchin Lane', began to tout his latest patent to MP's advocating a single passage under the street for all utilities. From his experiences working in the early gas industry, he had devised this method 'to prevent the frequent removal of the pavement and carriage paths'. Despite tireless efforts to interest the world in his patent subways, he ended up auctioning off the idea in a London coffee house, four years before publishing in 1828 'a bulky octavo volume' entitled 'An historical account of subways in the Metropolis for the flow of pure water and gas into the houses of the inhabitants without disturbing the pavements, including the projects of 1824 & 1825'. Such a tunnel, explains the 1867 book *Curiosities of London*, would 'do away with the nuisance caused by the stoppage of thoroughfares to repair a gas or water main' as the subway was 'wide and high enough to allow any repairs of this kind being carried on'. Even though Mr John Williams would not find fame with his idea, his good intentions would come to pass.

The Metropolitan Board of Works

The Metropolitan Board of Works, established in 1855, had been the first metropolitan-wide authority for London and became the overseer of much of the capital's regeneration schemes from sewers and roads to embankments and tunnels. In January 1857, Board member Mr Wright had got the Board to agree 'that Prizes be offered for Public Competition for Designs showing the best mode of laying out the surface and subsoil of the new street in Southwark as an example of a First-Class St, and for the street in Westminster as a Second-Class street showing the disposition of the private vaults, sewers, gas and water pipes, telegraph wires, with any parts of the soil appropriated to other useful purposes'. A panel of seven men, four professionals, two Board members and the Board Chairman would judge the designs and award prizes of 100, 50 and 10 guineas respectively for the new Southwark St.

In reponse to the contest, 39 competitors sent in designs, each tender listed in the Board of Works minutes under a number and motto, 'Cloaca Magna and Minor', 'Opinions Differ', 'Utilitate', 'Perseverance (in A Circle)' and 'A.D 2000' being some examples of the latter. By October, the final winners for 'First-Class' Southwark St could be announced: first prize to H D Davis of Maida Hill West (Juvenis, Unus inter multos), the other winners being James Taylor Knowles of Gray's Inn (Strada nuova) and Frederick and Alfred Warren of Duke St (Ferimur per opaca locorum). Oddly enough, a letter was then received in November from a Mr John Williams claiming a reward as the inventor of utility subways. The Board, in spite of a follow-up protest letter early in the next year, decided that there was no ground for the claim. Later, having got over it maybe, Mr John Williams wrote again, this time offering his services in connection with 'the formation of subways'. Only after this, forty years on from his patent, does he finally disappear from the history books.

The New Street...

Keen then on the idea of the utility subways, the Metropolitan Board of Works had laid down their first tunnel in Covent Garden beneath the new 'Second-Class' Garrick St and Cranbourn St, opening in 1861. In the same year, when the proposed new Southwark St came to be considered, a similar utility subway came to the south of the river area.

This new road scheme, called the Southwark and Westminster Communication, planned on demolishing the slums and overcrowded streets around Bankside to create an east to west link from London Bridge Station in The Borough to Blackfriars and then on towards the West End. In the end, this vast metropolitan construction saw the pulling down of about 400 houses and the removal of 4000 local people for the creation of a 70ft wide boulevard-style road with some fairly fancy Italianate or Gothic-style buildings along the sides. Today, despite recent monstrous additions, some sense of the scale of the undertaking remains if you walk down Southwark St. Above its slow and lengthy curve, spots of fancy brick and stonework can still be seen high up on many buildings. Kirkaldy's Testing Works and The Hop Exchange are notable and worth a look. Invisible, of course, is our innovative subterranean tunnel.

...and the New Subway

'Mr Doulton gives notice relative to the construction of a subway along the Southwark and Westminster Communication'. The 26th April 1861 minutes of the regular weekly meeting of the Metropolitan Board of Works began the whole shebang, the task at hand proceeded at a pace. The Board Engineer was instructed to 'prepare Drawings, Specifications and Estimates of a suitable subway for the new street in Southwark' and tenders were advertised by July. William B Downs and Co., of nearby Union St, were the eventual winners, their estimate of £7,983 coming closest to the engineer's original estimate of £7,800. A Mr Pearson of Vauxhall's tender of £10,195 was the highest received. Downs soon went to work on the first stage.

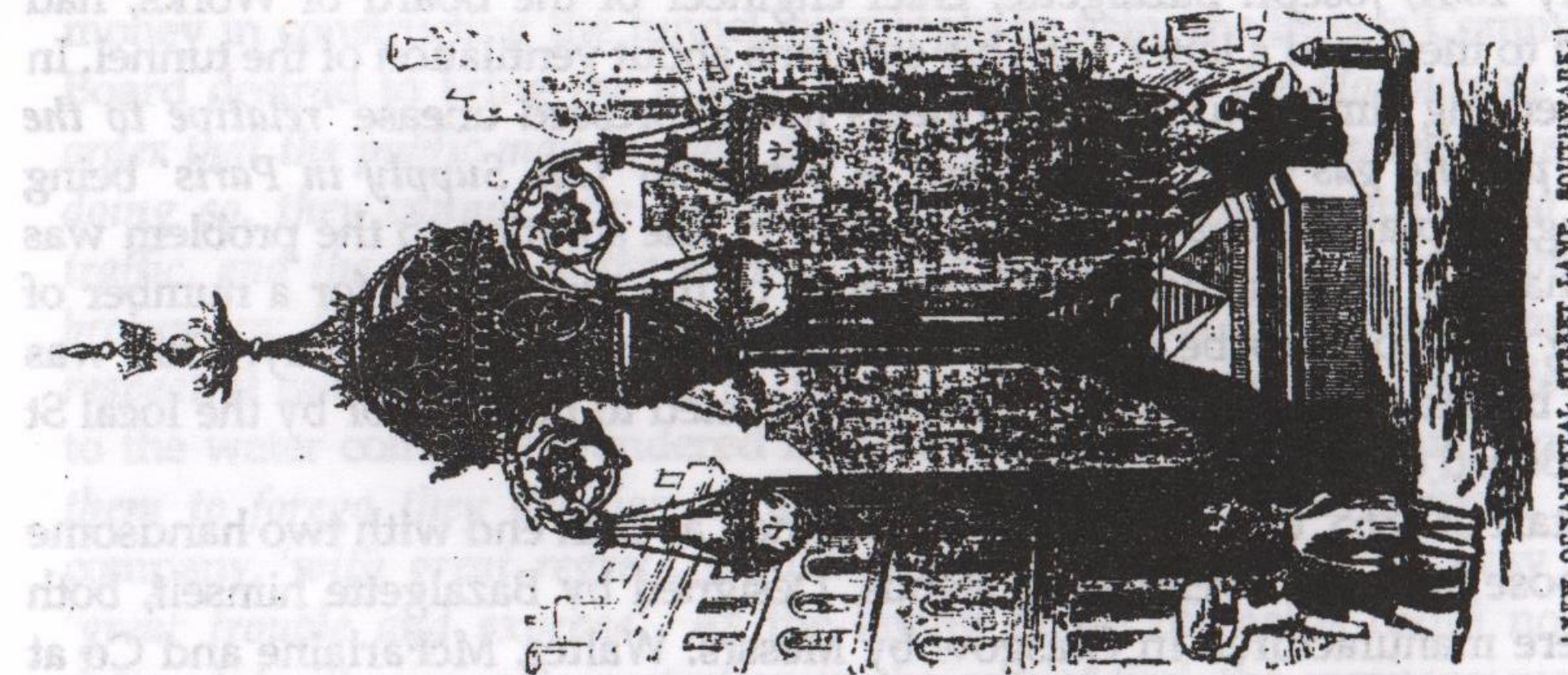
The Planning

The Board Engineer had proposed that the 12ft wide by 7ft high arched subway be slowly built westwards, the work being carried out in sections. Each section of the subway would feature extensions of numerous smaller side passages reaching out from the tunnel to cellars beneath the new buildings on the side of the road. In these side passages conduits would be run for domestic gas and water supply plus cable laid for electric street lighting. It is worth adding here that the parallel with Mr John Williams patent design is very close. A longitudinal illustration of a street with a subway beneath it from his 1828 book is identical in design to contract drawings made by the MBW in 1861.

Alongside the side conduits, glazed stoneware pipes would run at a steep decline out from the cellar to let household drainage reach the sewer. The formation of a sewer beneath the floor of the utility subway was necessary for drainage of the subway and the basements of the new houses as they came to be built, but this posed 'considerable difficulty' in the locality of Gravel Lane (now Great Suffolk St) as the subway sewer there was well below the level of high water of The Thames. The Board's planned Low-Level Intercepting Sewer, one of a network of vastly improved sewers they were building London-wide, would not be in place before the new utility tunnel opened and so sewerage could only be discharged into the existing tide-locked sewers with their 'present inconveniences'. This would be remedied after the completion of the new bigger sewer. In the Southwark Bridge Rd area, the sewer could easily be drained into the existing Battle Bridge Main sewer. Sewerage from the Green Walk and Guildford St sections would end up discharging through the Gravel Lane sewer, via a tide flap into The Thames.

The Building

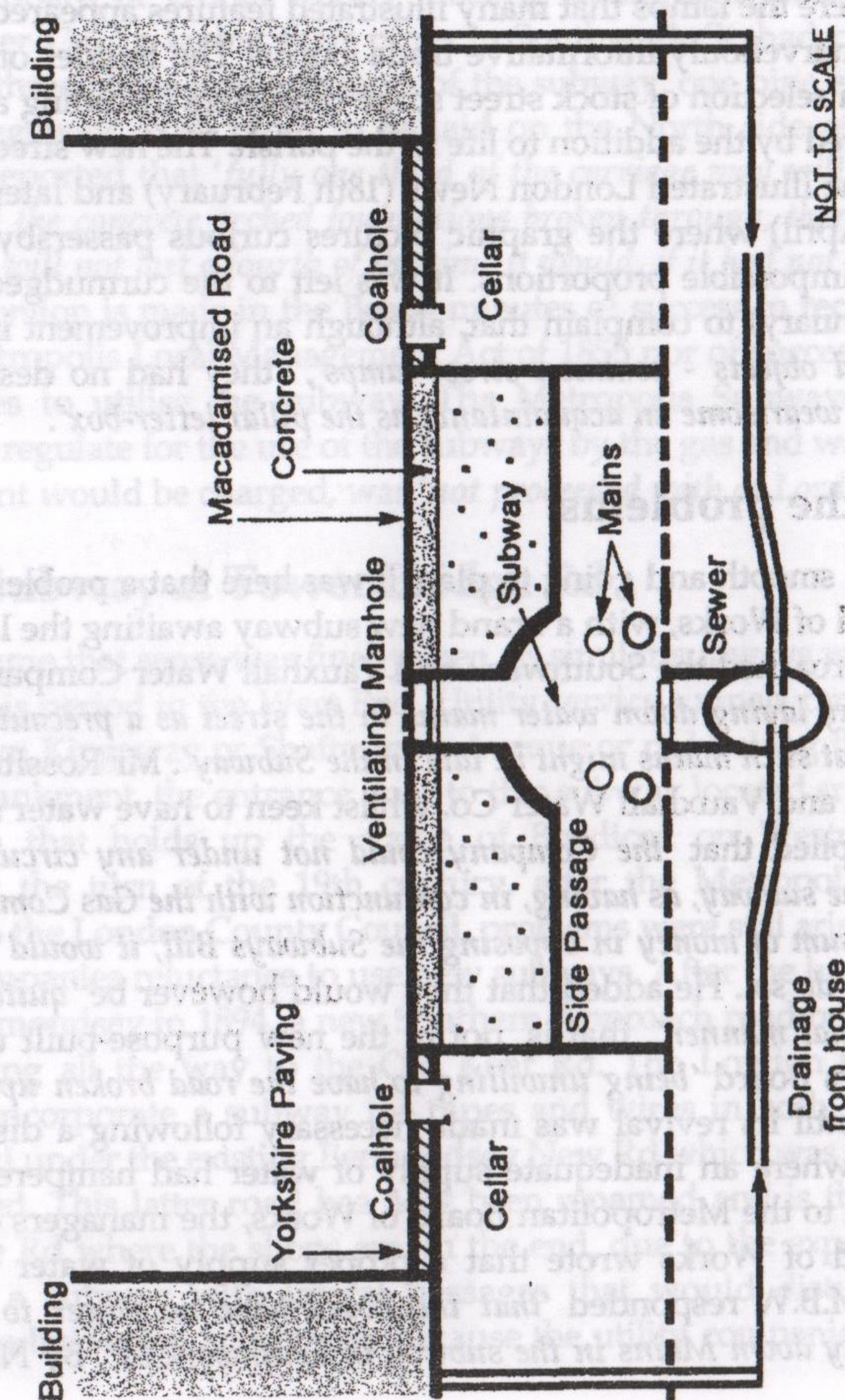
The first part of the new subway was built from Borough High St to Southwark Bridge Rd, a distance of 1860 feet, completed by May 1862. Contracts were then signed in August for Mr Downs to complete the next section from Southwark Bridge Rd to Great Guildford St. On 30th January 1863, the remaining length from Great Guildford St to Blackfriars Rd was put out to be completed by public competition at an estimated cost of £20,000.



Cross Section of Southwark Street Utility Subway

- showing side passages and sewer -

taken from Metropolitan Board of Works contract drawings 1861



In early 1864, Joseph Bazalgette, chief engineer of the Board of Works, had submitted to the Board a letter with his concerns about ventilation of the tunnel. In Paris, observing similar tunnels, engineers had expressed unease *'relative to the danger of placing gas pipes in subways'*, a paper on *'Gas Supply in Paris'* being later brought up at the Board's weekly meeting. The solution to the problem was for two shafts to be constructed at both ends of the tunnel and for a number of ventilating manholes to be included along the route of the subway. This was approved by the Board in February, the bill expected to be paid for by the local St Saviours Board of Works.

By the start of 1865, the new street was adorned at each end with two handsome dual purpose lamp and ventilating stands. Designed by Bazalgette himself, both stands were manufactured in Glasgow by Messrs. Walter, McFarlane and Co at the Saracen Factory at a cost of £225 each. Sitting atop a 5ft redstone base, the cast iron stand rose another 27ft or so, one central ventilating column holding four large lamps. On the very top, a finial small crown was set above a much larger and ornate crown, this majestic ironwork being the disguise for the ventilating outlet. So splendid were the lamps that many illustrated features appeared in the London press. In the marvellously informative trade journal *The Builder* on 14th February 1865 a random selection of stock street scene characters including an agitated dog, seem bewildered by the addition to life in the parish. The new street furniture also appeared in the *Illustrated London News* (18th February) and later in the *London Journal* (8th April) where the graphic pictures curious passersby dwarfed by a lampstand of impossible proportions. It was left to the curmudgeons at *Building News* (27th January) to complain that, although an improvement in the design of *'those wretched objects - common street lamps'*, they had no desire *'to see it as familiar and as wearisome an acquaintance as the pillar letter-box'*.

And now the problems

If all seemed smooth and going to plan, it was here that a problem arose. The St Saviours Board of Works, with a brand new subway awaiting the laying of mains and pipes, approached the Southwark and Vauxhall Water Company *'with a view to that Company laying down water mains in the street as a precautionary measure against fire...that such mains might be laid in the Subway'*. Mr Rossiter, secretary of the Southwark and Vauxhall Water Co. whilst keen to have water supplied to the new street, replied that *'the Company could not under any circumstances, avail themselves of the subway, as having, in conjunction with the Gas Companies, laid out a considerable sum of money in opposing the Subways Bill, it would be inconsistent on their part to do so'*. He added that they would however be *'quite willing to lay pipes in the usual manner'*, that is, not in the new purpose-built utility subway. The St Saviours Board *'being unwilling to have the road broken up'* let the matter lay dormant until its revival was made necessary following a disastrous fire in Southwark St where an inadequate supply of water had hampered tackling the fire. Appealing to the Metropolitan Board of Works, the managers of the subway, the local Board of Works wrote that a proper supply of water must be soon secured. The M.B.W responded *'that the Board have no power to compel Water Companies to lay down Mains in the subway in Southwark St'*. By November 1865,

the M.B.W were also dismayed at the impasse. Having spent a considerable sum of money in constructing the tunnel, seemingly in vain, the Streets Committee of the Board desired to bring the matter to the attention of *'the Honourable Board'*, *'in order that the public may be made aware with whom the responsibility rests, and, in doing so, they cannot help expressing their sense of inconvenience to the public traffic, and the injury to the paving, which must necessarily ensue from its being broken up; feeling assured that, when once the Street is interfered with in that respect, it can never be restored to its present solid and excellent condition'*. A letter to the water company wondered if there was anything they could do to *'induce them to forego their decision at which they appear to have arrived'*. The water company, *'with great regret'*, would not lay its mains in the subway due to the *'great trouble and expense'*. As the laying down of mains could no longer be delayed, *'with a view to protection in the case of fire'*, the company would gladly listen to advice from the Board *'so as to place the water mains as not to interfere with the Subway, or the use to be derived from it'*. Oh dear!

However, even this, was not to be. On 1st December, a report was given to the Metropolitan Board of Works weekly meeting stating that the Southwark and Vauxhall Water Co., in laying their pipes in Southwark St, had cut through the brickwork of three of the side entrances of the subway, one pipe even protruding into the passageway. With pipes to be laid on the North side of the street, the Board sadly reported that *'fully one third of the carriage way will thus have been disturbed, and the concrete arched foundations broken through, thereby ruining the paving, which will not last a fourth of the time it would, if it had not been disturbed'*. No further mention is made in the Board minutes of success in receiving damages under the Metropolis Local Management Act of 1855 nor of success in convincing the companies to utilise the subway. The Metropolis Subways Bill to allow Parliament to regulate for the use of the subways by the gas and water companies, for who no rent would be charged, was *'not proceeded with at Lords'* in 1867.

Another Subway at Tower Bridge Rd

We can assume that sense was finally seen, as similar subways were constructed all through this period in the West End. Utility service tunnels can be spotted, for example, down Kingsway or Shaftesbury Avenue or right along the length of the Victoria Embankment, the entrance door to this subway located snugly at the rear of the plinth that holds up the statue of Boadicea on Westminster Bridge. However, by the turn of the 19th century, after the Metropolitan Board had morphed into the London County Council, problems were still arising locally with the utility companies reluctance to use new subways. After the building of Tower Bridge in Bermondsey in 1894, a new Southern Approach road began to be put in place stretching all the way to the Old Kent Rd. The London County Council intended to incorporate a subway for pipes and wires in both the new Tower Bridge Rd and under the existing Bermondsey New Rd which was in the process of being widened. This latter road has now been renamed and is the lower end of Tower Bridge Rd where the shops are. In the end, due to the expensive nature of constructing a subway with lateral passages that would disturb the already completed roadwidening and largely because the utility companies again refused

to use the tunnel, the subway was only built under the new approach road from Tooley St to the start of Bermondsey New Rd, near the junction with Grange Rd.

The Subways in the Twenty-First Century

One hundred and something years later and both subways are still going strong carrying water, gas, electricity, telephone and the new-fangled cable services, sometimes as little as 17 inches beneath our feet. In 2001, due to a proposed upgrading of Southwark St by Transport for London, the subway underwent an inspection carried out by the local Southwark Bridge Rd engineers Sir Frederick Snow and Partners to assess the tunnel's structural integrity and to check on the condition of its Victorian brickwork. The survey found that despite its age it was in generally good condition with a little brick spalling but also in need of a lighting system and improved ventilation to comply with latest health and safety legislation. In a repeat of the past, it was found that recent work undertaken by statutory authorities and cable laying companies had sometimes been poorly installed, in some cases blocking the side passages.

What can be seen today...

You can still see the entrances and manholes for both subways if you go and take a slow walk. For Southwark St, starting at The Borough High St end, you'll find the familiar metal grill and incorporated manhole opposite Harpers Cafe on the corner block. You can't miss as it's almost 10ft by 5.5ft dead set in the centre of the roadway. If you follow the route west you will see the regular and varied ventilating manholes set roughly every 70 feet as you go. At the junction with Sumner St, you'll find the second entrance grill. Beyond that there are no more entry points and less manholes.

Check out the numerous designs of coalplates set in the paving above the cellars at each end of the street. You can find nice examples of Haywards (*see elsewhere in this booklet*) Patent Self-Locking Plates and their No.1 D Ventilating plates.

For Tower Bridge Rd, the first grill is set in the pavement, close to the traffic lights, on the Manze's Pie and Mash side near the junction with Bermondsey St and Grange Rd. Other entrances are much further up and all in the centre of the road. At Abbey St, the vent is single-size but the last two, one opposite Travel Inn and one by the London City Mission are standard child-scaring size.

'Cross The Roads Via The Subways'

Under The Elephant

The most famous of the Borough's subterranean walkways has to be the warren at Elephant and Castle. A lot of people assume that these concrete tunnels arrived with the mid-60's shopping centre development. In fact, underground walkways have been in place at this mega-junction at The Elephant since 1911 when it was

recognised that heavy traffic was impeding a walker's way around the area. In a two hour period from 5 to 7pm on 26th May 1911, 4,631 tram cars, motor buses and others passed by the Headway, 'equal to 38.55 vehicles a minute', a figure in excess of those that 'pass at the Mansion House' in The City. Obviously attempting to cross the junction would be a hazardous business.

This scheme, prepared by the Borough Engineer in 1905 planned subways radiating 'from the Headway connecting it with Rabbit's corner, Upton's Corner, ALfred's Head corner and Rockingham Public House (Tarn's Corner)'. By way of locating these places and for nostalgia's sake - The Headway was where the Bakerloo Line tube stands at London Rd and Newington Causeway. The corners referred to were colloquial and based on well-known local shops. Rabbits And Son, manufacturer of boots and shoes, had one shop at 2 - 14 Newington Butts (now the corner of the London College of Printing). Upton's hatters and hosiers, were at 68 London Rd and 2 - 4 St George's Rd (now Perronet House). Finally Tarn And Co's general store could be visited at 165 - 173 Newington Causeway and round the corner at 5 - 21 New Kent Rd (where the modern Elephant and Castle pub now stands).

Despite earlier fights from 1900 to 1909 with The Baker St and Waterloo Railway Co. over a failure to build a promised pedestrian subway system and with the London County Council over financing, the tunnel scheme was eventually awarded to Perry and Co. of Bow with the estimated £8,733 cost supplying the 'central hall connected by five passages to various points ...around this place'.

The tunnels were constructed 'with cast iron tubes in seven sections bolted together...to form a ring of 10 feet 3 inches internal diameter, and the length of each ring is 1 foot 5.75 inches'. Despite serious water problems from underground streams and necessary diversion of water and gas pipes, telephone and electric cables, the tunnels were complete and opened for business on 1st June 1911 by The Mayoress.

Pedestrians could walk with plenty of headroom with a maximum height of 7 feet 9 inches. 8 feet was provided from side to side. Beneath the footway, a service tunnel was built for pipes and cables. Steps leading down to the tunnels ranged from 20 to 27 and signs were posted atop the iron railings that surrounding each entrance reading 'Cross The Roads Via The Subways'. Later on, a sixth subway was built from the north side of the New Kent Rd to the south side. In 1941, Southwark Civil Defence minutes note that despite the relative safety offered by the subways against bombing, police were to be used to prevent people using the thoroughfares as shelters.

The Modern Elephant

After the post-war re-building of most of the Elephant and Castle area, the familiar and infamous subways that we know today were spread further and wider than the original iron tunnels. Despite endless re-jigging, the subways remain one of local people's least liked feature of the area. In 1992, the grim and greying rats maze was overhauled with the help of various artists. Colourful murals were placed in most of the subways. Now, a walk through the seven or so subways can take you though a Victorian street scene complete with vandalised policeman and idle flaneur, a jungle landscape, an undersea panorama and a chess

The Rise and Fall of The Underground Convenience

In 1840, George Jennings was working out of 29 Great Charlotte Street, off Blackfriars Rd in Southwark. He can be found in that years Post Office Directory listed as a work-a-day plumber. Fifteen years later, his listing had changed to the grand-sounding '*inventor and manufacturer of the earthenware watercloset*'. Two years further on, and with a move to nearby Holland Street, George Jennings had become the Southwark company for '*Engineering, Building and Sanitary Appliances*'. With such steady profit and progress, it was not surprising that by 1900, Jennings and Co. was world-famous for its splendid underground toilets, its W.C.'s turning up anywhere from Argentina to South Africa.

Toilets For All, One Penny A Go

It had been the Great Exhibition of 1851 in Hyde Park that was the key to the company's success. Given responsibility for the Crystal Palace public conveniences, his '*monkey closets*' had been an astounding hit. Over 827,000 people paid to use his prototype retiring rooms. Right away, the company began to design and build underground toilets for London's needy and the first opened in The City, opposite the Royal Exchange, in 1855. By the turn of the Twentieth Century, these particularly Victorian institutions could be found at most major junctions and crossroads. With distinctive iron railings and stone stairs leading down to a large tiled chamber, the passerby, caught short, could desposit 1d with an attendant and then proceed to a now time-honoured "*spending a penny*".

Local Loos

Locally, work started by the different vestries in the last quarter of the 19th century continued in the new Metropolitan Boroughs of Bermondsey, Camberwell and Southwark, created in 1900. In what is now the modern borough of Southwark, between 1883 and 1910, almost two dozen underground toilets were built. By this time, George Jennings and Co. had left the borough for neighbouring Lambeth where their new large sanitary manufacturing works nestled on Palace Wharf, near The Thames. It was another Lambeth firm, B Finch and Co., who came to be the main builder of the new and popular local underground toilets, with Jennings or Doultons, (also Lambeth-based) supplying the fittings. The South London Press for 12th May 1900 reports that '*the public convenience at the top of Rye Lane was formally opened on Tuesday afternoon...the key of the premises was duly handed to Dr. Smith (chairman of the Sewers and sanitary Committee of Camberwell Vestry) by Mr George Jennings on behalf of the contractors and Dr. Smith forthwith declared the structure to be open to the public*'. After a great many reported vote of thanks and a speech by Mr Jennings, the article begins to give clues as the architectural features of the new subterranean chamber. Here, '*the lavatory is fitted with many novel contrivances, among which the Wenham*

game with oversize pieces featuring the faces of local people. Other mosaics and garish tiles cover the ramps often inducing hallucinations on very sunny days. Strangely enough, the subway that runs from the shopping centre to the Newington Butts has been left in it's original but now somewhat derelict state. Alongside the public thoroughfares, a number of service tunnels run around the subways with large vents in situ right by The Butts pub. Once, on passing, a small and dusky voice came out of the large grill. On inspection, a local man of the streets, was stuck behind the subway having entered an open door on the quick the night before but on waking had found himself stuck in a labyrinth of dim and grimy tunnels to nowhere in particular.

Further ingenious plans for helping walkers around the maze came to fruition in 1998 when designer Lippa Pearce and Southwark Council placed 95 slightly curving signs made of '*dark blue vitreous enamel and brushed stainless steel*' around the Elephant area, atop and in each subway. Using a series of numbers, arrows and commonly recognised symbols, the signs were noticed straightaway to become the perfect surface for a variety of flyposters and stickers.

Elsewhere, Southwark has more than its fair share of concrete under-the-road subways. Many were beamed down from municipal offices as solutions to the ascendancy of heavy traffic in the late 60's. Instead of competing with fast cars for time and space above ground, pedestrians could now reach the other side of the road without delay by using simple concrete tunnels beneath the roar of the motor cars. It was probably seemed a grand idea at the time, like high-rise estates. Existing examples of the reality of concrete pedestrian tunnels can be found at the junction of Jamaica Rd and Bevington St in Bermondsey and at the crazed 1970 flyover scheme at Bricklayers Arms at Old Kent Rd. The latter is a monster roundabout with six long pedestrian subways not worth visiting unless you want a prime example of induced urban paranoia. As a hopeful sign of the times, a similar subway linking sections of the Heygate Estate under Heygate St at Walworth Rd was filled in during the late 1990's, gone and forgotten.

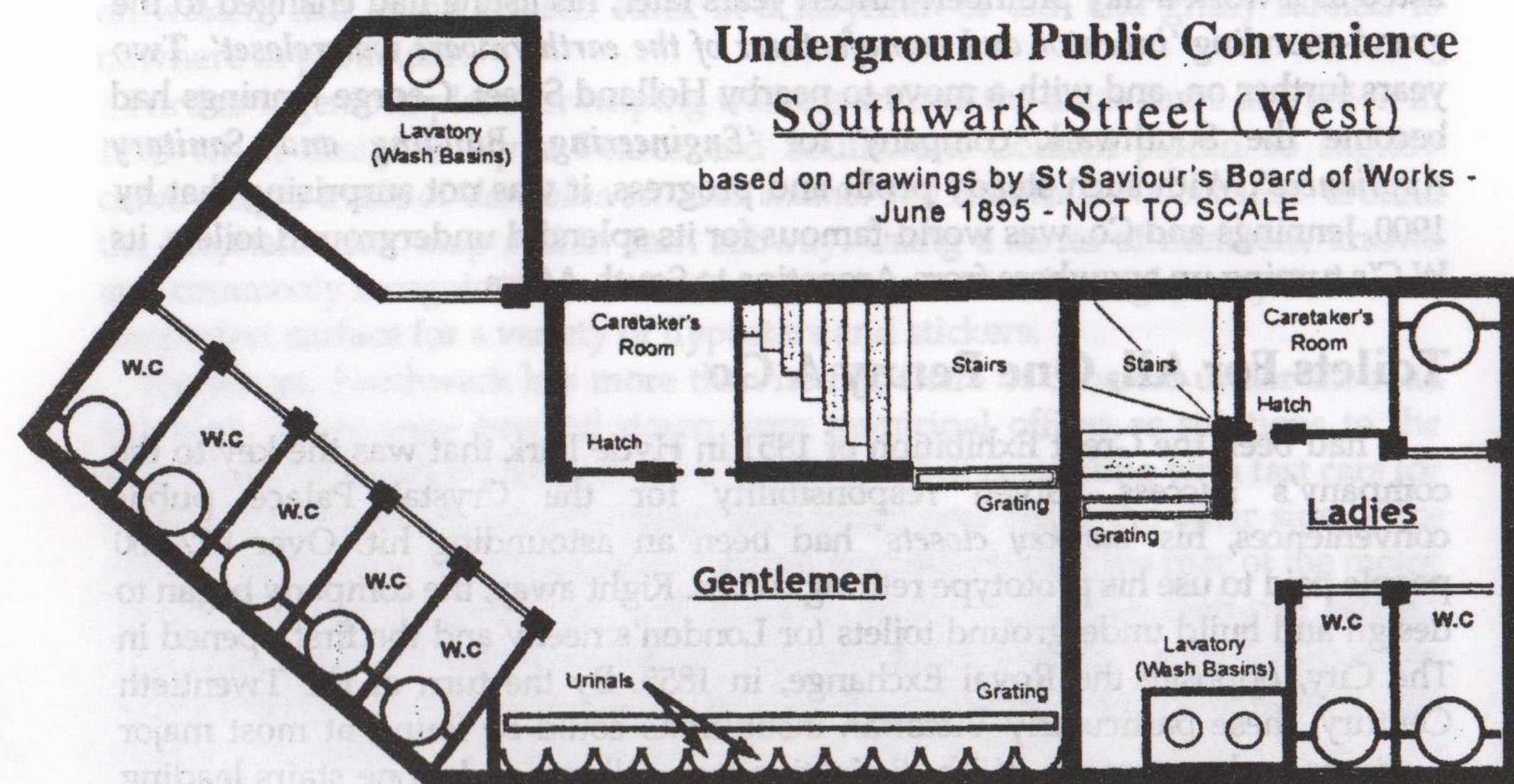
Back at The Elephant and it's worth pointing out that each visit to Tesco's, Tlön Books or Peacocks is carried out subterraneously as the entire Lower Ground Floor is built below the level of the ground outside. Beneath that level exists an even deeper series of car parks and service areas.

SUBWAYS:

- Southwark St - Metropolitan Board of Works Minutes 1857 - 1866 (*)
 - Tower Bridge Rd - London County Council Minutes 1897 (*)
 - John Williams and Metropolitan Subways - Dr Mary Mills
- in Subterranea Britannica Bulletin 31, Winter 2000

(*) means material is archived in the Southwark Local Studies Library,
211 Borough High St, SE1 behind the John Harvard Library

ventilating shaft is noteworthy. The wrought-iron gas fittings by Jennings have been introduced here for the first time'. Sadly, although we are now beginning to get a clearer picture of life below the pavements, the piece does not tell us whether the popular enamelled advice 'Kindly adjust your dress before leaving' could be found at the top of the stairs nor whether Mr A Ashwell of Herne Hill's 1883 patent 'Vacant/Engaged' signs were fixed to the doors.



A Detailed Look At Your Convenience

Luckily for us there exists further paperwork. An entry in the 1894/95 Annual Report of St Saviours Board of Works takes us closer in imagining a trip underground. This convenience, constructed in 1895 on the former site of the ventilating lamp stand atop the Southwark St utility tunnel near Blackfriars Rd, is fully described. This commodious chamber was 52 feet long by 15ft in width with all the inner walls faced with ivory white glazed bricks and coloured dado. The roof, consisting of compound girders, steel joists and plates, is covered with patent pavement lights, except where 'vehicular traffic passes'. Fittings are sumptuous with twelve rouge royal marble urinals with enamelled iron circular backs, all flushed from two tanks and regulated as required. The water closets are of the 'syphonic pattern' made in white china and flushed by 3 gallon cisterns and the lavatory basins are also white china with rouge royal marble tops and brass fittings. A Blackman's air fan, driven by water, ventilates the convenience whilst electric light is installed throughout. Plans and drawings made by the St Saviours Board of Works in June 1895 show the ratio of fittings per ladies and gents. Five Water Closets awaited the men but women had to make do with three. Both toilets, however, contained two lavatory hand basins and a caretaker's cubicle.

Further detail may be gleaned from the plans made two years earlier for the new convenience at the east end of Southwark St. This was a much more grandiose chamber with exquisite colour plans made of virtually every fitting from cubicle door to wall tiling. Here, although ladies benefited from four W.C's and three basins, the gents was something else. A central pillar had six urinals running round it with a further thirteen set into the wall. Expecting a rush, there were twelve cubicles. The partitioned-off lavatory, in the original sense of the word, had six basins and a dressing table. Other drawings, hand-coloured in washed inks, show the complete design and specifications of the Water Closet itself, pan, cistern and chain pull included, the supplier being Doultons. Another coloured plan gives three pretty designs for the mosaic floor, this undertaken by the Belgian firm of De Grelle, Houdret and Co., (Marble Dept), of London Wall, EC.

Uses and Abuses of The Underground Toilet

Away from the decor, the Great Dover Street P.C's give some example of the local social history of the underground toilet. A report from the St Mary Newington Works and Sanitary Committee was adopted by the Vestry in November 1881, advising the establishment of public water closets in the parish. The Vestry should 'consider the most suitable spot to erect one of these places for testing the usefulness or necessity of such conveniences'. Although the existing urinal at Great Dover Street would be removed, the proposed building would 'provide both urinal and w.c accomodation, viz, one free urinal of eight compartments with two w.c's, and also a first class urinal of three compartments and three w.c's for which a charge of 1d. will be made to persons using the same'. The estimated cost was £468 11s. Four tenders were submitted but the lowest price of Mr H Burman of £620 was declined. After a number of votes and amendments, oppositions and argument, two years later, Mr Burman with his new lower £548 tender was given the go ahead. The underground convenience, for men only, opened on 3rd August 1883. But there were more problems down under. In October 1886, 'six Haywards No.3 12 inch hexagonal unglazed circular iron gratings were fixed in the footway over the toilets for the purpose of improving ventilation'. Nonetheless, six years later several complaints had been received at the local vestry of 'the public water closets by St Georges Church having become very foul'. In 1890, 'the stench continued to be intolerable'. One year later and the entire convenience was reconstructed to open again on 26th August. It was reported that new locks where the penny releases a spring and falls into a coin box had been a great success for the parish. The amount of money taken had 'quickly increased', no doubt in line with a certain decrease in the attendant's perks of the job.

In 1894, both attendants, Gant and Fletcher, were dismissed from Great Dover St, the Public Health Committee 'being dissatisfied with the way in which their duties had been discharged'. Gant, 'in consideration of his 11 years' service and good character, as well as the rough usage he had undergone in the performance of his duties and his increasing infirmities' was placed on the 'old men's gang' to assist in sweeping the roads. New attendants, Henry Welch and Thomas Flinn, were recruited 'on the same terms as their predecessors, viz. 25s. per week with uniform'.

Other historical moments of interest mainly to the aficionado or the obsessive, consist of endless repair to the doorlocks (*'eight Maskylyne's patent automatic locks purchased'*, 1903), the yearly re-fitting of stair treads (*'steps...refaced with Mason's Patent Cast Safety treads at a cost of £37'*, 1903), the occasional floral improvement (five and a half dozen shrubs planted in tubs in the spaces atop the W.C's, 1901) and upgrades in technology (*'lighting has been improved by the substitution of incandescent for flat flame burner, 1906'*, *'new porcelain urinals have been fitted in place of the old iron ones at Southwark St'*, 1907).

More Toilets

By this time, many of the borough's above ground urinals and conveniences had been removed and the penny-spender was going underground. P.C's had been built at Manor Place, Walworth (1880's), at St George's Rd near the Elephant (October 1893), in Tooley St at London Bridge Station (1895) and near Tower Bridge (December 1899). The Borough Road Library let a small westerly plot of land to the vestry in 1898, bringing in £5 rent per year, for an underground convenience for women. A bit further North, Southwark Street got two, one at Borough High St (1896) and another one west at Blackfriars (1899). According to the St Saviours Board of Works Annual Report from 1899-1900, the Southwark St conveniences were visited by 208, 282 persons in that year.

In 1900, the local Bermondsey area boasted *'44 public sanitary conveniences in the borough, 42 of which are the ordinary urinals for men and two underground conveniences (one of which is for males and females both); in addition there are 71 urinals attached to public houses'*. But the lack of convenience for women was starting to be noticed and toilets came to be built at Newington Butts (March 1901) and at the Bricklayer's Arms, Old Kent Rd (1901), both with ladies and gents catered for. In 1905 the London County Council's plans for a wider circuit for electric trams detouring off from Borough High Street saw the older toilets demolished and new underground toilets were opened for men in Great Dover Street and for women in Long Lane on 27th October 1905. More specifically women-only sited P.C's came along at Arnside St (March 1907) and Newington Causeway (March 1908).

Jobs

The underground convenience, as well as providing a welcome stop for many a passerby, was also a valuable site of employment for local people with some obvious status attached. A story from the Southwark Council Annual Reports tells of Mr J F Graham, a Council occasional labourer who, after bravely attempting to save some children's lives from a disastrous fire in Blackwood St, was appointed to the staff of lavatory attendant to mark the Council's appreciation and recognition of his conduct.

In Bermondsey in 1908, 161 males and 69 females applied for posts in a new convenience. The successful candidates were an ex-grocer, a domestic servant, a cutter, a homemaker or were without employment. The women were all widows and the men all married.

In Southwark, by February 1901, the Boro' Engineer required 21 permanent staff

and 2 temps to work in the toilets. Pay was 30s per week, with uniform, for the men but only 18s a week for the women. Opening hours for the borough's then 9 underground male toilets was from 5am until 12.30am. For women, at the 6 underground toilets, hours were slightly reduced from 6am until 12pm.

The below ground buildings could also be the site of social struggle. A Mr J Smart was found guilty on 3rd December 1889 of posting bills in the Manor Place convenience and fined 20/- or face 14 days inside. In October 1907, after protest from Southwark Trades and Labour Council, the important free use of one W.C per toilet was re-instated after the council had closed them citing *'constant abuse and nuisance'*.

Spend A Penny No More

According to the British Toilet Association (*yes, there is such a body*), public conveniences have been dropping like flies with a third of council-run lavs closed in a single three year period during the late Nineties. The situation at 1999 left an estimated one toilet per 10,000 people in England. Despite running a Good Loo Campaign, the world-famous underground W.C is rapidly disappearing.

Sadly, the fate of these splendid subterranean resting rooms was long ago sealed as houses all came to be built with loos included. Changes in toilet technology, removal of attendants and cuts in funding leading to vandalism and disrepair has all but seen off the below-ground convenience. The actual dates of the closing of the borough's many fine underground conveniences are much harder to come by.

The Duke Street underground convenience was closed on 30th October 1912 in connection with the extension of the terminus of the London County Council tramways. The L.C.C paid Bermondsey Borough Council £1,100 and demolished it. Ordnance Survey maps seem to indicate the closure of Arnside St, Beresford Rd, Bush Rd, Rye Lane by 1933. A V2 rocket destroyed the area all around the Southwark Park Rd toilet in October 1944 and it has dropped off the map by the 1950's. The underground urinal in Borough Rd was shut in 1960 and Great Dover St, Newington Butts and both Southwark St lavatories have gone by the early 1960's. The massive post-war redevelopment of the entire Elephant and Castle area removed toilets in St George's Rd and Newington Causeway and Manor Place was demolished in November 1964, two years after the penny admission had been abolished on the grounds of public health. The New Kent Rd conveniences shut around late 1967 and the *'intention to close'* Rye Lane is in Council minutes of February 1972. The last sighting in photos of Borough Rd West is in 1983.

Going To The Toilet

Unlike in other parts of the U.K where underground chambers have been converted into anything from sunbed parlours, cafes, bars and the Guinness Record smallest theatre in the world, in Southwark, the sites were simply filled in and sealed over. Where there was once a score of underground toilets, only two of these great public institutions remain today. The only remaining open one is at Grange Road, near Bermondsey Antiques Market. This historic site gives you

some indication of the typical white-tiled underground urinal and closet. The above ground structures have been much altered with glass skylights added in and most of the fancy iron signs, lamps and ventilators now gone. A single plain green ventilating column now stands guard at the site.

The other remnants are at the junction of Lower Rd and Albion St, by the entrance to the Rotherhithe Tunnel, where the 'triangular shaped' building was auctioned off by Strettons on 10th September 2001 for £40,000. The catalogue entry for the 'approximately 1290 sq ft' toilet informs us that 'the property benefits from planning consent for change of use to A1 (Florist with associated workshop and offices at lower level dated 3.01.2001)'. A small illustration of the ex-toilet shows a cantilevered glass canopy extended over a re-jigged chamber, presumably from the earlier appeal for planning permission for an underground flower shop. Maybe, for once the place will smell of roses.

Underground Convenience Data:

- Great Dover St, by St George The Martyr - (M) Opened 3rd August 1883
- Manor Place, off Walworth Rd - (M) open by 1889
- Great Dover St, by St George The Martyr - (M) re-opened 26th August 1891
- Southwark St, by Borough High St - (M+F) 1893
- St George's Rd, by Elephant + Castle - (M) October 1893
- Tooley St, by Duke St - (M) 11th April 1895
- Southwark St, by Blackfriars Rd - (M+F) 6th October 1896
- Borough Rd, by Library - (F) open by 1899
- Tooley St, by Tower Bridge Rd - (M+F) 23rd December 1899
- Rye Lane, by Peckham High St - (?) 8th May 1900
- Old Kent Rd, by New Kent Rd - (M+F) 1901
- Newington Butts, by Kennington Lane - (M+F) 9th March 1901
- Borough Rd, by Stones End - (M) open by 1902
- Grange Rd, by Tower Bridge Rd - (M+F) 20th December 1902
- Southwark Park Rd, by Galleywell Rd - (M+F) 14th February 1903
- Bush Rd, by Rotherhithe New Rd - (M+F) 3rd April 1903
- Borough Rd, by St George's Circus - (M) open by 1905
- Beresford Rd*, off Walworth Rd - (M) open by 1905 (*now John Ruskin St)
- Great Dover St, by St George The Martyr - (M) re-opened Oct 27th 1905
- Long Lane, by St George The Martyr - (F) Oct 27th 1905
- Arnside St, by Walworth Rd - (F) 11th March 1907
- Newington Causeway, by Elephant + Castle - (F) 21st March 1908
- Lower Rd, by Albion Rd - (M+F) approx. 1908

UNDERGROUND TOILETS:

- St Mary Newington Vestry Annual Reports 1881 -1895 (*)
- St George The Martyr Vestry Annual Reports 1889 -1899 (*)
- St Saviours Board of Works Annual Reports 1894 -1895 (*)
- St Saviours Board of Works Public Convenience Plans, 1893 +1896 (*)
- Metropolitan Borough of Southwark Annual Reports 1901 - 1909 (*)
- Metropolitan Borough of Bermondsey Annual Reports 1900 - 1910 (*)

Southwark and War

Damp Basements and Secret Nuclear Bunkers

Going Underground

In the First World War, it had been the soldiers that had dug into the earth for strategy and survival, fighting battles from trenches and foxholes in a far away land. By the middle of the Twentieth Century, war had come to be experienced and fought at home as well. With the new invention of air raids, the war now fell directly from the sky on the civilian population below who, alongside the government, were sitting in bunkers and shelters below the earth awaiting the all-clear.

On a local tip, the physical legacy from 50 years of planning for 'conventional' and nuclear war has all but disappeared. Right now, there are no Civil Defence training rooms and there are no mothballed deep shelters for the civilian masses. There are no decontamination centres and there are no underground war rooms on standby for the three minute warning. All that is currently left is a huge partially-flooded subterranean concrete box in a vacant plot of land in Peckham where the maps for plotting the advance of a war are still on the walls but slowly mouldering away. For now, for us, it seems that war has returned to the corner of a foreign field.

Under The Town Halls in WW2

The civil defence structures put into place during the Second World War had been in preparation since 1924 when the Air Raid Precautions Committee had first been set -up. Although the experiences of the Zeppelin bombing raids on Britain in the First World War and the shutdown of the 1926 General Strike were studied to find solutions to civil strife, it was the grim details of the German air raids in the Spanish Civil War that shaped much of the forthcoming ARP work. The powers that be were convinced that in the first few days of any future war, thousands of Londoners would lose their lives from air raids. With this in mind, ARP work focused on measures to counteract the bombings such as the blackout, construction of shelters and plans to deal with the civilian displaced, or worse, the dead. With the looming Munich crisis, the ARP Act had come into effect on 1st January 1938 requiring local councils to establish and account for a local ARP infrastructure that could provide repair and demolition, ambulances, wardens, gas attack

decontamination and other vital local services. In addition, local councils were instructed to earmark useful municipal buildings to provide posts and depots for ARP operation and services. Less than two years later, this emergency planning became reality as Hitler invaded Poland and the start of another world war began. On September 1st 1939 the blackout was imposed and ARP services went full time to await the expected air raids.

Local Work: The Basement Control Centres

At a local level, ARP work meant co-ordinating an emergency response to any bombing raids. To this end, the ARP established Report Centres in different parts of the borough to collect incoming messages from wardens and others on the local damage and casualties and to process this information to make an accurate picture as possible of the local situation. At the top of the chain of report centres was a borough-wide Control Centre who used this info to map what services and resources were where, based on the seriousness of each local incident. In charge was the Borough Controller and then the heads of the different ARP services plus a staff of telephonists and messengers plus officers from the police and fire services and the public utilities. Continuously staffed, all the centres functioned night and day to provide an ARP response to enemy attack. The Control Centres themselves, needing to be protected from the falling bombs, were, in the main, secreted away in the basements of Town Halls or other municipal buildings, each Control subject to strict security measures.

Bermondsey

The main Metropolitan Borough of Bermondsey Control room was situated beneath the Municipal Offices on Spa Rd co-ordinating the Wardens service, the Light and Heavy Rescue services, Ambulance service, first-aid posts and the Fire Guard. These new offices, opened in only 1930, contained a *'provision of strong rooms and storage accommodation for records, documents, books etc. in the basement'*. This was the ideal subterranean refuge for coordinating civil defence work against all but a heavy direct hit. In fact, the older Bermondsey Town Hall next door was badly destroyed in 1940 during an air raid but the control room underneath the Municipal Offices was untouched by the blast.

Southwark

The main Metropolitan Borough of Southwark Control Centre was situated beneath the Health Services Dept in Walworth Rd, next door to the Newington library. Strict security was in force at all times, with special passes issued to the Centre staff and, by the middle of 1941, the Home Guard had been assigned the special task of guarding the place. The idea of a connecting corridor linking the Control with the Town Hall, on the other side of the library, had been suggested in early 1939 but despite the Town Hall's basement containing *'strong rooms for preservation of parish deeds'* the plan was overruled by the Home Office in October. One year later, roughly £200 of steel strutting was added to reinforce the centre, fitted by Dorman Long & Co. SW8. In 1941, after lengthy delays, the London Civil

Defence Region approved £496 for new ventilation and filtration plant for the Control.

In the first few months of the war, a subsidiary Control Centre was also in operation from the large basement of Borough Rd Library, SE1. This was later changed into a Report Centre before being closed down by the Home Office in November 1939, remaining in a state of readiness should it be needed once again.

In May 1941, the idea of opening up an fall back Control Centre came up at the Civil Defence Committee. If the Control beneath the Health Services was put out of operation due to enemy action, it was put forward that space could be created in the Deep Tunnel Shelters beneath Borough High St for an emergency centre. As the provision of a back-up Control was recommended by the Home Office, plans were submitted in June by the Borough Engineer to the London Civil Defence Region but these were rejected by the Committee. Despite this rebuff, the minutes of the Civil Defence Committee suggest that a small room in the tunnels was fitted out with some emergency equipment and maybe some maps even though it later reported that the air was very bad down there and that work could not be carried on in the Centre for longer than two hours.

Camberwell

In the Second World War, the main Metropolitan Borough of Camberwell control room was situated beneath the Town Hall in Peckham Rd, SE5. Recently built in 1934, plans for the building show a basement containing 3 records offices, a staff room, *'two strong rooms'* and rooms for electrical and air-conditioning plant. Photos of the Control in operation during wartime show men and women at desks, pushing pens or answering telephones, all huddled beneath fierce bare lightbulbs. Desk stations were provided for an Immediate Action Officer, a Medical Officer, an ARP controller, the Borough Engineer and an Ambulance Officer. On the desk of the Resources Officer there is an impressive peg board to log available resources. Telephonists sat at five *'In Telephones'* and two *'In and Out phones'* for Fire Brigade and Police. Above their heads, hastily put up shelves hold precarious stacks and stacks of council documents including many packages labelled *'Minutes 1906'*, *'Minutes 1924'* and so on.

Going Nuclear: The Cold War Bunkers of Southwark

Although Civil Defence had been stood down in 1945, with the background of an increasingly unsteady international situation, the Civil Defence Act of 1948 quickly revived the service. Initially, Civil Defence planning continued along the lines that had been experienced and worked through during the war. It was assumed that, despite the invention of the atomic bomb, a war would continue mainly along *'conventional'* lines with Civil Defence tackling either high-explosive or incendiary but not nuclear bombs. Dealing with the dead and injured, rehousing and feeding the displaced and keeping a local area functioning, as had been in place less than four years ago, was the assumed order of the day.

In 1949, a Home Office Working Party on War Rooms recommended that each Civil Defence region would have a purpose-built hardened Control Room. As London had been split up into four administrative areas, four regional war rooms

were built between 1953 and 1956 at Mill Hill (N), Wanstead Flats (E), Cheam (W) and Chislehurst (S), each to report to the central government war room. Beneath this regional layer, Civil Defence planners had placed a Borough structure, with each Borough responsible for the planning and construction of their own tough control centre, leading to a bunker building frenzy in the mid-1950's. As can be seen from the following account of the local centres, despite the rush to build, this programme was fraught with bureaucracy, hesitation and delays from the Home Office and the boroughs. This was not only due to arguments over economies but also to the changing face of war itself.

The Cold War at Local Level

With the start of the Cold War and testing of the first Russian Hydrogen bomb in 1949 there began a slow dawning sense of pointlessness to Civil Defence work with the emerging facts that the new H-bomb had a massive destructive capability that would be followed up by deadly radioactive fall-out. Civil Defence work would begin to shift away from the previous ARP-style protection and survival of the population towards a newer, more basic idea. This new reality would concentrate resources for maintaining a '*continuity of government*' by safekeeping only a select few officials in underground reinforced concrete bunkers. Presumably, on emergence after a nuclear conflict, these leaders would govern themselves, and a few surviving but mutating stragglers.

By 1957, a Defence White Paper set out a clear lack of faith in the Civil Defence programme as it was and, based on that conclusion, the Civil Defence Corps was laid to rest in March 1968.

Southwark's Cold War Bunker

By 1951, the Metropolitan Borough of Southwark had committed to the construction of a purpose-built emergency wartime control centre. In the meantime, various other local premises would function for local Civil Defence preparation and training, the main centres being at Occupation Rd and the old WW2 Report Centre beneath the Library in Borough Rd. Here a '*large basement room in the south west corner*' was redecorated and turned into a store for CD equipment, including '*40 protective clothing suits and 100 respirators*'.

In October 1951, the Council began acquire the leasehold of a site bordered by 1-7 Hewson St and 30/34 Heygate St, SE17, a vacant plot a few streets behind Walworth Rd and to the rear and left of the Town Hall. Its owners, the Fishmongers Company, agreed to a £50 a year lease for 21 years with a further 7 year option.

On securing the land, calculations and plans were made to build a reinforced concrete below-ground Control Centre, estimated at £8000. The bunker would also come with a new Civil Defence training premises on top, estimated at further £3000. The good intention to include a dormitory extension for 30 bunks in the subterranean bunker was scotched by the Home Office who were looking for savings to made. Although it seemed sensible to include a sleeping quarters now rather than wait for an emergency situation to dig, build and seal a new extension to the centre, the Home Office could not be persuaded and it approved the centre

'based upon that of a typical Grade A shelter' with an estimate of £14,983, minus the dormitory and certain fittings. Emergency lighting and ventilation was also cut from the designs at a saving of £1,250, the intention being to install it in time of crisis. All this was happily deemed '*reasonable*' and '*economical*' by the Government.

This Way to Hewson St

By the start of the year four companies were bidding for the construction work, the firm Howard Farrow + Co. Ltd of NW11 finally winning the tender at £18,203 4s 0d. to build the below-ground centre. With a priority authorisation for 23.1 tons of steel received from the Home Office in June 1952, aswell as a 75% Civil Defence grant, everything was ready to roll.

The building work was started on 8th September 1952 with complete excavation and preparation for the bottom concrete slab underway by October. In January 1953, the reinforced concrete walls and floor were finished with reinforcing rods for the roof in position and the concreting of the roof slab to be next. By March, the whole bunker was complete. Ministry of Works officers then suggested a few safety alterations including the addition of a second door at the top of the staircase to act as a gas break plus the fitting of ARP self-tightening locks and draught excluders on the stairway and the escape hatch doors. The all-important Radiac equipment for monitoring radiation, now delivered to the site, was to be stored in a new partition created in the Messengers room.

A long running saga concerning the ventilation of the new Control Centre was still underway in November with J Jeffreys + Co Ltd of Waterloo Rd, SE1 still waiting to fit the ventilating ducting and grilles. An idea to recycle the vent and filtration plant from old Borough Rd centre was eagerly brought up but ultimately came to nothing when it was pointed out that whereas the new ventilation outlet was 18" by 10", the old one was only 6" by 4". The new plant was eventually installed in the bunker despite the economics. Some tables and cabinets and other goodies were moved over from Borough Rd but £697 2s 9d was set aside for brand new Centre furniture. Stamfords map shop in Covent Garden supplied 2 maps for the centre at a cost of £33 17s 0d, one of Southwark at a scale of 1/1250 and a London Region one 2.5 inches to 1 mile and a small sum was also spent on affixing signs in the locality, each with the Civil Defence emblem and the words '*Southwark Division - Headquarters - Hewson St*'.

Problems Down Below

At the end of 1953, the Civil Defence Committee minutes report '*after periods of heavy rainfall, water has penetrated into the Control Centre in a number of places*'. It was to be a continuous problem that patching would not fix and six months later '*slight defects in the construction work were being remedied to prevent the dampness*'. By October, the dampness was still preventing full occupation of the Control Centre and the Council was hoping to get the Home Office to pay an estimated £625 for the cost of the reconstruction and asphaltting work as the bunker had been built to recommended Home Office specifications. Three other minor problems also arose at this time in the form of the winter, local rats and

small boys. The bunker was far too cold to work in comfortably and so insulation had to be added at more expense. The rodents were congregating and causing a nuisance due in part of the previous failure to demolish old basement sewer chambers and pipework but this was sorted out during the on-going damp-proofing works. More trouble was also being caused by adolescents continuously breaking the window frames and other parts of the building. One young boy, perhaps testing the efficiency of the service, even blew up the postbox with a firework one Guy Fawkes Night.

By February 1955, almost one and a half years after completion and one year exactly after Home Office approval of telecommunications, the phones and lines were finally being sorted out. By the end of the year, the Message Room would have 6 lines with pedestal type telephones and headgear receivers. The Control Room would get '1 exchange line terminated on hand microphone' plus one other line 'connected via instrument' to the Message Room and the Liaison Room would get one single exchange line

Bermondsey's Cold War Bunker

In 1951, with the old basement centre under the Municipal Office in Spa Rd in use as a Borough Engineer and Surveyor's store, considerations were now being given to the provision of a new control centre for the Metropolitan Borough of Bermondsey. It was to be a long and torturous story before the new centre was finally realised.

At an early stage, four fundamental requirements were brought to the attention of the Civil Defence committee by the Borough Architect. The control must be situated on a site clear of other buildings and easily accessible to all types of traffic. It must be reasonably near the centre of the borough. It should be internally planned to give maximum efficiency during full operation, with adequate accommodation for the rest and feeding of stand-by staff, all on a self-contained basis. Even during the war the old basement Control had fallen badly short of these requirements and 'these drawbacks would be accentuated in the circumstances of the more formidable attacks that might develop'. A suggestion that the basement of the old store buildings in the council's nearby Neckinger Depot could be used for the new centre was scotched on the question of 'these drawbacks'. What was needed was a building of 'strong frame construction and fire resisting' to prevent a centre becoming untenable due to damage, fire or even direct hit. Underlined in the Architect's report was that the solution would be found 'in building a self-contained centre in an open situation as possible'. There were a number of war damaged sites where this might be possible but many of these were earmarked for new housing.

Enter Southwark Park

Eventually, on 5th April 1951, the Committee resolved that a site in Southwark Park would best satisfy all requirements. The London County Council (LCC), who owned the park seemed favourable and it was suggested that the site could be somewhere near the Christ Church Gate, Jamaica Rd, 'in the neighbourhood of the last war trench shelters'.

By November, the London Regional Civil Defence Office were expecting to receive the Council's proposal alongside sketch plans and estimates of cost. However, the London County Council, 'at officer level', were now not at all favourable to the Southwark Park plan. The LCC would, however, be a bit more agreeable to the siting the control on the forthcoming Bermondsey Spa recreation ground opposite Whitmores works and close by the Municipal Offices and bombed-out Town Hall on Spa Rd. Later in the month, the LCC informed the Mayor that 'they were adverse to the centre being sited in Southwark Park' but that they would talk to their Parks Committee. No objection was raised to using the new Bermondsey Spa site but they would require the centre to be entirely under the ground. The Committee still wanted Southwark Park and expressed the opinion to press the County Council on the matter. The LCC replied early on in the new year with technical reasons for their refusal. If the centre was built above ground then there would be an unacceptable 'loss of amenity'. If the centre was put beneath the ground, then the question arose of 'the difficulties of the Bermondsey subsoil'. Again, Bermondsey Spa was put forward. 'The centre should not need any ventilators projecting above ground in peace-time, except as can be incorporated in a satisfactory design for the entrance'. A further meeting between the County and the local council did not reconcile the Park plan. The Parks Committee of the LCC felt that the local council had not given adequate reason why the Spa site could not be used, and insisted that the centre must be underground, a point already accepted by the Home Office. It was also felt that in peace time the centre needed an entrance from the street to avoid having to provide access at times when the park was closed. In response, Bermondsey's Council Architect did not see why the control had to be underground and 'expressed the opinion that it could be made to look quite artistic'. A communication was sent to the LCC stating, once again, that from the point of view of accessibility and remoteness from other buildings, the centre should be constructed above ground in Southwark Park where no loss of amenity would be suffered. The centre, it was suggested, 'could be the base of some peace-time erection...such as a bandstand'. A deputation to the LCC on 5th February 1952 to seek the go ahead with the park site was again rebuffed, Mr Dennison Croucher, chairman of the Parks Committee reporting that the LCC had already given way to three other boroughs who had constructed their centres in LCC open spaces, albeit underground. As other boroughs were keen to place their centres closeby existing Town Halls, he thought that the LCC's offer of the Bermondsey Spa site would have been 'a gift from the Gods' to the local council. Again the Bermondsey subsoil was brought up but also the danger of flooding, 'particularly if a serious breach occurred in the river wall'.

By May, the Home Office stated that it could not 'except in very exceptional circumstances, agree to a Control Centre constructed in any of the County Council's parks'. It was pointed out that the LCC had offered the Bermondsey Spa open space but the Home Office insisted that 'a very strong case would have to be made out for the use of even that site'. Regarding the Park plan, the Home Office were adamant that it could not be used and in any case, 'it was too adjacent to the Docks area'. Other possibilities were now brought up by the committee, including the site of the open market in Southwark Park Road, or a site opposite Enid Garages but a deputation was also arranged to visit the Home Office to press for the Southwark

Park site.

One more try...

The passing of the Civil Defence (Appropriation of Lands and Buildings) Act, in operation from November 1952, meant that centres could be built on open spaces if there was a genuine shortage of possible sites but a letter from the Home Office from the Borough sought confirmation that 'no suitable alternative' could be found. By 5th February 1953, the Council Architect was 'emphatically' for the Park, the Housing Director thought the Spa site might be more suitable but the Building Manager, perhaps unhelpfully, suggested the basement of the Rotherhithe Baths. In the end, it was agreed to approach the LCC 'in respect of the use of the Bermondsey Spa site for the Borough's Report and Control Centre', especially as some 'value' was now being seen in having the control near the Municipal Offices. The LCC were happy and agreed in May.

In reply to the London Regional Office's enquiry regarding alternative sites for the centre, the Borough had again insisted in June that 'Bermondsey Spa is the only one suitable'. The proposal, referred to the Ministry of Housing and Local Government, now came back with a Ministry-suggested possible alternative site 'somewhere within the first and second period programmed areas on the north and south side of Abbey St (roughly between Stanworth St, Horney Lane, Tower Bridge Rd and Neckinger St)'. Set aside for a block of flats, the Regional Office wanted to know if the new control could be built under the courtyard or under the flats themselves. The problems, then outlined by the Borough, would be falling debris, telephones lines traversing courtyards and the effect on morale - 'the comings and goings of the Control Staff will be a matter of comment by a large number of residents and irrespective of reason, an influx of staff will be construed as "Danger Imminent"'. Including the bunker in the housing programme might also see a wait of up to five years before the base would be built, besides, negotiations with the LCC for the Spa site had been 'satisfactorily concluded'.

By late 1953, with the laying-out of Bermondsey Spa open space in full progress, the LCC was worried that the corner set aside would present 'an unworthy contrast to the rest of the gardens when a formal opening comes'. It pressed for prompt action to secure completion of the control centre. Finally, the Home Office approved the Spa Rd site on 24th November and by the start of the next year, with principles laid out in the London Regional Office's circular No.19/1952, a draft plan had been produced with some local modifications.

The Bunker Plans

All in all, the underground chamber would be 105ft long by 37ft width with a headroom of 9ft and split into three blocks. The Central Block would contain a Messengers Room (12ft by 11ft) for use by messengers attached to the Centre; A Message Room (17ft by 18ft) fitted with 13 telephone booths and provision for wireless communication; the Control Room (22ft by 18ft) for the Controller and his staff and heads of services and sections would have a map, tally boards and telephones for 'from this room "Battle Control" will be exercised'; A Liaison-Information Room (20ft by 18ft) for representatives from Public Utilities and other

authorised persons requiring information under operational conditions and the post-raid period as well as a conference room for the Controller away from the distractions of the Control Room.

The second section would be the Welfare Block with toilets for both sexes, washing facilities and reserve chemical closets; a Canteen and Welfare Room (20ft by 10ft) for recreation and rest with simple cooking facilities; lastly dormitories for each sex sleeping 15 persons each in three tier bunks, providing accommodation for just over 50% of operational staff.

The last section was a Domestic Block containing a Plant Room full of ventilation plant and filters for dust and toxic agents; the Engine Room, self-ventilated with the standby engine and generator; lastly a Storage room for cleaning materials, protective clothing, first aid equipment and stationery.

The entrance to the bunker would be by means of a staircase and an air lock would make an emergency exit by means of a vertical shaft provided with a permanent ladder and closed top and bottom by gas tight doors.

After some back and forth with the Home Office, and with some storage accommodation deleted from the plans, the Civil Defence Department of the Ministry on 31st March gave approval 'in principle for the construction of the...Control Centre in accordance with the Drawing No.CD, 2/2 subject to the incorporation of the following recommendations...that the inner air lock door should open inwards i.e. towards the building'.

The Bunker Not Quite Yet Built

Finally, the Control Centre mooted back in early 1951, looked like it would be built. Tenders were asked for, the Town Clerk reporting that, presumably on grounds of secrecy, it would be a matter of policy as to whether the Bermondsey District Labour Organisation could compete. In October 1954, the Borough Engineer suggested that a structural consultant be engaged, putting forward Major W V Zinn Bsc, M.I.C.E, an expert in these matters. A local quantity surveyors, W G Edwards and A Avery Hall, of Blackfriars Rd, was also engaged.

Then, in January 1955, with a review civil defence policy underway and a rethinking 'of operational control and positive improvements in methods of control', the Home Office sent a letter to the local council telling them 'to stop work on planning the Control Centre'. The Civil Defence Committee could report that no money had been wasted as Major Zinn had not charged a fee and the Surveyors had not done any surveying as yet.

Almost a year later, in November, the LCC wanted to know if the local council still needed the Bermondsey Spa site. Consulting the Home Office, the local Borough was told that that the Office was now unable to advise whether it was needed or not as static control would now be sited outside the Borough area. Although it might be useful as a report centre, the Home Office restriction on capital expenditure meant it was unlikely to authorise the building of such a centre.

Cold War Civil Defence In Action

By 1955, Civil Defence locally consisted of a Headquarters Section (without a

bunker), Wardens, Rescue, Ambulance and Casualty Collection and Welfare. The key HQ's section, described in a 1955 Bermondsey Civil Defence recruitment booklet, was in charge of *'the higher control of the battle to save life. Responsible for the principal deployment of services and the maintenance of communications. Personnel range from telephonists to operators officers and the technically-minded will be interested in wireless, field cable telephones, specialised reconnaissance parties'*. This section was further divided into a Control and Communications Sub-Section who would operate the awaited Control and Report centres, and the Reconnaissance Section who would report on technical aspects of nuclear, chemical and biological warfare amongst other tasks.

With the Home Office decision still awaited, the Civil Defence Committee brought in the news that the relative effects of a 10 megaton bomb might create a crater a mile wide by 175ft deep. The chances of running a Borough from beneath the ground seemed to be less likely than before.

Nothing Happens

For the next 6 years discussion of a Control Centre drops out of the minutes of the Civil Defence Committee. Finally on 20th July 1961, a Town Clerk's report is reproduced at length. As a result of another Home Office review, and *'in the light of the development of new and more powerful weapons, it had been decided that plans for the adaption of premises for use as Area Controls could now be considered'*. It was hoped that, with there being no general authority for purpose built controls, local authorities who were planning Town Halls or other buildings might consider providing an Area Control. In the five-year programme for the Area Controls, there would be some provision for Sub-Area Controls and Bermondsey began again to search for suitable sites, a preference now being expressed for the basement beneath the workshops and the new garages being planned at the Neckinger Depot, behind the Municipal Offices. It was this site that had first been proposed in 1951, almost exactly ten years earlier. *'This basement with certain alterations at this stage mainly to secure the necessary protection against radiation and to improve the entrances and exits could readily be adapted'*. Being Council property and thus saving money and time, the depot had little or few surrounding buildings and would be steel-framed with reinforced concrete floors. Proposed works to create a Control Centre beneath would be *'the excavation and construction of an additional entrance and exit to facilitate control and because both the original entrances are subject to closure by heavy debris'*. The new entrance would be a tunnel under part of the single storey portion of the building and the ground floor of this section would be thickened to give a protection factor of *'at least 100 irrespective of the sheet asbestos roof'*. Connections would also need to be supplied to drains and utility services. The estimated cost of the works was £3000 where 75% of the cost would be met by the Home Office.

In November, the Works Committee of the Borough approved the payment by the Home Office of £5,200 in lieu of rent for use of the basement Neckinger Depot as a sub-area control for Civil Defence purposes with security of tenure for 60 years.

Two years later, in March 1963, the Home Office would inform the Council that *'internal works necessary in the basement of the new garages...may be commenced*

during 1963/64'. By July, a further £5000 was needed for heating, lighting and general finishing, the balance of work expected to be completed in the following year. A Civil Defence Annual Report for 1964 tells of the Civil Defence training taking place in two rooms in the basement of the Municipal Office. *'There is no sub area control...but an emergency one could be established in the basement of the Municipal Offices'*. In late October, the Council's consultants Frederick Snow and Partners, conclude that another £8,300 is needed for general building works, heating and ventilation to complete the underground works. The Home Office would be applied to for approval for the new expenditure.

By March 1965, the minutes state that the new centre will not be finished before the 1st April when the three Metropolitan Boroughs of Bermondsey, Southwark and Camberwell were to be amalgamated into the London Borough of Southwark. A small social would be held for members of the local Civil Defence Corps on 31st March in the basement premises of the Municipal Offices.

In the end, by March 1966, work had begun on the conversion of the new bunker to the downgraded task of being a central Civil Defence store. The bunker is still there today and you can see the entrance by the Council One Stop Shop at the old Town Hall in Spa Rd. To the left of the Shop, a door leads into a concrete stairwell that leads down into the old control centre.

Camberwell's Cold War Bunker

In 1951, Camberwell Civil Defence Committee minutes note *'as an integral part of normal long-term planning, it has been decided to provide machinery for the earmarking of premise which might be required for accomodation by competent authorities in the event of an emergency'*. However, there was no spare office space beneath the Town Hall on Peckham Rd as there had been four years earlier.

Down Beneath The Depot

Grove Vale, a council depot in East Dulwich, SE22, had been on standby as a gas decontamination centre during the last war. In the basement, below the cleansing station, a small local emergency control centre had also been in operation. In a 1949 Government-fostered review of possible local premises for Civil Defence work, Grove Vale, with its large office space and approximately 3000 sq ft yard, came to be considered for civil defence training *'although the emergency control centre...was of no use to the council due to dampness'*. In November 1950, the story had changed *'with regard to the Headquarter's Section, it would appear that the ideal place for a nerve centre of an organisation planned to deal with bombing such as might be expected in a future war would be specially constructed underground in a large open space in the Borough. In the absence of any lead from the government, it is suggested that the Control Room in the basement of the Town Hall and the Emergency Control Room at Grove Vale Depot should be earmarked'*.

There were problems at the Town Hall however. *'The Acting Town Clerk reported that a representative of the Principal Regional Officer had raised the question of the suitability of the Town Hall basement to house the Main Control Centre, taking into account the suitability of the building in the event of atomic*

warfare...The Borough Engineer and Surveyor pointed out to make the basement up to the appropriate standard of protection would require approximately 2ft of concrete over the Borough Treasurer's floor'. This would obviously not aid the work of the Borough Treasurer. Alternative sites in the borough were suggested by the Engineer - the crypt of the bombed-out St Mary's Church in St Mary's Rd, SE15 which had been converted to a public air-raid shelter during WW2 and was still there. Pelican Yard, off Peckham Rd was brought up but other members of the committee suggested the Leyton Square underground shelter or Camden Church. The site of 28 Peckham Rd, diagonally opposite the Town Hall was another possibility, one member suggested that 'consideration should be given to the possibility of constructing a tunnel underground from 28 Peckham Rd to the Town Hall'. Regarding Grove Vale, the Borough Engineer thought that it would be possible 'to fix some form of concrete shell over the control centre but pointed out that it would be easier if the centre were a new building'. With all the alternatives in the air, the committee resolved that the Borough Engineer submit a full report on the suitability of the abovementioned sites for the construction of a control centre.

Planning A Brand New Bunker

The report arrived in July 1951 and the committee moved closer to a resolution. The crypt of St Marys, with its WW2 shelter, was ruled out as a new church was to be built on the site. Camden Church was similarly scratched. Although the church was not to be used for worship in the future, it would take too much excavation and building to be of any use. Pelican Yard was scheduled for housing and, being some distance from the Town Hall, would be useless, if built, for the storage of valuable records. The basement control centre at Grove Vale, built on clay, was described as 'not now watertight' and its roof, which formed the floor of the decontamination centre, if concreted over to provide the requisite thickness, would make the cleansing station useless through lack of headroom. It was also pointed out that if this became the new control centre, then a new reserve would have to be built elsewhere. It was decided that it would still be used as a reserve control, 'even if it does not provide complete protection from atomic attack'. There was also a report on the London County Council-owned 21 to 27 Peckham Rd but this was intended for a nurses' quarters even though it was large enough for the Control Room and close to Town Hall.

Over the road, at no.28, the corner site with Vestry Rd was currently a private car park pending the building of new council offices. 'The tentative planning is for a six-storey office block including a basement, with access to all floors by means of a staircase and lift. If the basement is constructed to form the Control Centre, the concrete over would have to be from two ft to five ft thick according to the degree of protection advocated by the Home Office. The lift and staircase would need to pass through the concrete cover which would form a weakness unless temporarily concreted over or enclosed below ground level with concrete walls of the requisite thickness of from two to five feet'.

It was decided to ask the Home Office for its views regarding these sites and that Grove Vale, 'the Committee have agreed that the control room at the depot shall be a reserve control in the event of war'. Works estimated to be £277 17s 6d would be

carried out there to establish the Civil Defence centre.

Photos from Grove Vale circa 1953, show a large training room complete with rows of folding chairs and a flipchart that reads 'Basic General'. In other pictures, from other days, a blackboard has a pinned-up picture of three types of bomb, with the accompanying chalk text - 'Thin Case, Medium Case, Thick Case'. There is also a picture of large and impressive colour-coded floor map of the Borough with a scale of 5ft to 1 mile. Leading off from this main room are two smaller rooms. An 'Equipment Room' with numerous desks and paperwork and a partitioned area with three telephone stations. The 'No.1 Lecture Room' is a smaller room for talks and slide shows.

Borough Control - 28 Peckham Rd, SE5

By September 1951, the Home Office favoured the site at 28 Peckham Rd as it was already owned by the council, was near to the Town Hall and because it could be used in peace time for storage of council documents. The Civil Defence Committee meeting of that month also agreed. Subject to the agreement of the Finance Committee, the new Camberwell Control Centre would be built at 28 Peckham Rd, without delay, on receipt of approval from the Home Office. In addition, the Borough Engineer asked for the concrete reinforcement to be extended to five feet, instead of the Home Office recommended two feet, to prevent the infiltration of gamma rays. It was further carried that the Liversedge Reinforced Concrete Co of WC2 be appointed as consulting engineers. The Home Office at this point also recommended that communications for training should be of direct internal point-to-point wire method consisted simply of two sets of telephones connected by permanent wiring with hand generators provided for ringing. Private wires with four telephones had been installed by the Post Office at Harvey Hall, another Civil Defence training centre in Harvey Rd, Camberwell and this would be transferred to Grove Vale Reserve Report Centre at a later date when the depot was ready.

Final Home Office authorisation came in November 1951 for construction of a basement of Grade A standard of protection to take a four-storey framed structure above, estimated to cost £14,529. Plans were drawn up by the consulting engineers and tenders were invited for the scheme.

Building The Bunker

The following year in March, 14 firms submitted tenders with estimates varying from £20,227 to £26,470. The lowest three were all local Southwark firms, Greenaway & Sons Ltd, of Lordship Lane, SE22, J W Falkner & Sons, of Ossory Rd, SE1 and lastly F Troy & Co Ltd, of Great Suffolk St, SE1. A full Council meeting on 18th March accepted the lowest tender from Greenaway & Sons, who were contracted to work from 7th July 1953 until 6th April 1954, adding a further £3,180 for various consultant's fees and the supply and installation of ventilating and standby generating plant by Hopes Heating & Engineering Ltd, W1.

By mid-November 1953, the 4ft thick concrete sub-base over the site and 2.3ft thick reinforced concrete floor were built and the 1 ft internal and external walls were half finished. Steel re-inforcement of walls was 85% complete. Problems had

interrupted work when a 4ft water main under the pavement in Vestry Rd was accidentally fractured and the flood of water demolished some of the brick shuttering around the site. The Fire Brigade were called and the site was pumped. Later, a 37ft length of brick shuttering had also collapsed due to the pressure of back fill charged with rain.

Not so many months later, a progress report from April 1954 indicates that most of the work had been completed despite delays from inclement weather in finishing the roof. As a new block was expected to be built fairly soon over the basement, a temporary roof had been provided but this had led to many problems. A six-week extension was granted to complete the Control Centre although by July, the carpenter, decorator and floorlayer could not complete outstanding works because the roof was still not watertight and the concrete floor was still damp. £660 was paid out 'as a matter of urgency' on asphaltting the leaky roof. It was hoped that all works could be completed by August and that the Mayor could fix a date for opening and invite the Home Secretary to open the centre. In the end, the work was reported finished on 31st August and, standing in for the Home Secretary 'who was not able to attend', The Rt. Hon J Chuter Ede, C.H, J.P, D.L and M.P officially opened the place on 9th October.

111 Kirkwood Rd, SE15

Alongside the long story of 28 Peckham Rd, in July 1951, the Civil Defence Committee had asked for the building of another Civil Defence social and training centre to cater for volunteers from the Southern part of the Borough. Negotiations with the owner of sites at 65 - 73 Brayards Rd and 111A + B Kirkwood Rd, SE15, had led to the freehold purchase of the land for £500 but, at November 1952, Home Office approval had still not been received. In a similar enthusiasm for new centres, proposals were also put forward at this time for another centre on the London County Council's Kingswood Estate, Dulwich.

21 companies registered their interest in building the new Kirkwood Centre but only 12 had submitted tenders in the end. W W Rowney & Co, Blackfriars Rd was the only Southwark firm to compete. The council chose the lowest quote of £5,375 from E Satterthwaite Ltd, Clapham and contracted them for eight months, work commencing on 6th January 1954 with most of the excavation and concrete bases being completed by April. A progress report from July shows that the centre was almost entirely finished bar painting and a few odd jobs. The Mayor had also authorised, among other sundries, a hatch and cover in the lobby at the cost of £23 10s. The Centre was opened on the 9th October, the same day as Peckham Rd. Photos from the official tour show the basement 'Controller' room with the usual desks and phones.

Another later photo from a Civil Defence training exercise in Kirkwood Rd in either 1954 or 55 shows a man with a pointer standing on top of a large floorplan of the Camberwell Borough area with various buildings, trucks and towers placed upon it. An audience of civil defence volunteers listens in earnest. Oddly enough, the man is standing directly on top of the map location of 28 Peckham Rd as he does his pointy stick work.

Dulwich Dies Out

As for the proposed Dulwich sub-control centre, the Borough Engineer was proposing that it 'be built underground and to a Grade A standard similar to the main Control Centre. It should have a net building area of about 2,100 superficial feet and should be situated remote from the main Control Centre, preferably with an intervening hill', as recommended by the Home Office. Sites under consideration were the grounds of Kingswood House, Kingswood Drive, SE19 and two council depots, one at Henslowe Rd, SE22, the other at Marsden Rd, SE15.

On 13th April 1954, the Civil Defence Committee recommended the area on Kingswood Estate but a later review of Civil Defence policy undertaken by the Government put the Kingswood Centre in hold. Despite official sanction by the Home Office in March 1955, 'instructions were later received to suspend further action on this proposal'. Although Grove Vale had been completed some time around March 1953, and training lectures and other Civil Defence work had been happening there, the proposed centre near Kingswood House was meant to supersede it.

Civil Defence Closes Shop

From 1965 onwards, the Peckham Rd bunker would become the main control centre for the newly created Borough of Southwark. The bunker and above-ground building in Hewson St would continue as a Civil Defence centre for Walworth as would Kirkwood Rd for Peckham. Other premises were Harvey Hall in Camberwell, Grove Vale in Dulwich and the Municipal Offices (still!) for Bermondsey. In a May 1967 review, most of the above got the chop in advance of the final winding up of the Civil Defence service in 1968. Kirkwood Rd and Harvey Hall were passed on to the Health Committee to function as health centres. Grove Vale was now passed back to the Borough Engineer and was converted into a sports and social club in the early 1970's, the bunker becoming in part the men's showers and locker room. By the end of the decade, Hewson St had had its chips and was to make way for the massive Heygate Estate programme, echoing French thinker Guy Debord's observation that 'the new architecture that is now taking shape with the large housing developments is not really distinct from the architecture of the shelters...humanising housing blocks is as ridiculous a notion as humanising atomic war'.

Kirkwood Rd became the longest surviving ex-Civil Defence premises but even this was finally demolished in the mid-1990's and a set of flats were built on the site.

Southwark's Civil Defence Plans for Nuclear War

On 1st April 1974, London was again designated a civil defence region with its main Sub-Regional Control, designated '51', at the former Rotor radar bunker Kelvedon Hatch in Essex. By the mid-70's, the Greater London Council had split this area into five sections (N, NE, NW, SW and SE), each section being made up of a number of boroughs. The new London Borough of Southwark was included in the SE area, sharing a main group control centre with Lewisham, Bromley,

Croydon, Greenwich and Bexley.

The site of the secret SE group control was Pear Tree House, a council block at the junction of Lunham Rd and Hawke Rd in SE19 (Lambeth) with a 18 room concrete bunker beneath it, although not underground. This was designated the code 51C. Built in the early 1960's, the Southwark Civil Defence Committee however *'did not consider the proposed design and construction of the HQ to be adequate in the event of war'*. You can still see this fairly odd centre today, although it's been non-operational since 1993 and now stands empty awaiting redevelopment.

At a more local level, the Southwark area would have its own Borough Control Centre where the Borough Controller would report to the SE London Control on the state of play above ground and coordinate forces and resources following a nuclear bomb attack. This local bunker, the old Metropolitan Borough of Camberwell control on Peckham Rd, was designated the code 51C5 i.e 51 (Kelvedon Hatch) + C (Pear Tree House) + 5 (Southwark).

In turn, throughout Southwark, a set of eight Borough Wartime Headquarters would be in operation to work locally in the aftermath of the attack. These were as follows:

- Borough (Sector S - Municipal Offices, Larcom St SE17),
- Bermondsey (Sector K - Municipal Buildings, Spa Rd SE16),
- Rotherhithe (Sector L - Public Baths, Lower Rd SE16),
- Walworth (Sector R - Infants School, John Ruskin St SE5),
- Camberwell (Sector Q - South London Art Gallery, Peckham Rd SE5),
- North Peckham (Sector M - Civic Centre, Old Kent Rd SE15),
- Nunhead (Sector N - Nunhead Library, Gordon Rd SE15)
- Dulwich (Sector P - Dulwich District Library, Lordship Lane SE22)

Beyond this level of organisation, a number of Main Community Care Centres and Community Care Centres were to operate in numerous school and college buildings to enable local communities to be treated for injuries, sort out re-housing and receive food after a nuclear explosion or two. The trusty Spa Rd Municipal Offices, although the only surviving Civil Defence premises included in this post-attack emergency infrastructure, came with a familiar problem. A copy of Civic News No.3 from 1979 tells us that *'the basement - used for storage - floods after heavy rain, has fungus and rot and the roof also leaks'*.

Despite this grand plan, the Council paper *'Organisation For War'* that outlines the above paints a bleak outlook for the civil defence structure in the event of a nuclear war. Despite praising the more *'sturdy standard'* of the Victorian buildings that housed many of the local wartime headquarters, *'should a nuclear explosion take place within 5 miles of the centre of Southwark, the premises of the Borough Wartime HQ's would have no better chance of surviving the explosion than private dwellings'*. If you were down in the control however, *'located in a basement some 17ft beneath the ground level, this is bound to enhance the chance of surviving'*.

Whatever Happened To Peckham Rd?

Despite another national bunker building frenzy in the early 1980's as a result of a growing mini-Cold War and the pro-nuclear civil defence regime of the new

Conservative administration, the secret nuclear bolt hole for the rulers of post-nuclear Southwark had become less than secret. Alongside many other municipalities, Southwark had declared itself a Nuclear Free Zone and had refused to take place in a 1982 countrywide Civil Defence exercise called Hard Rock. By extension, one year later, the Council, in conjunction with the local Campaign For Nuclear Disarmament group, had published details of the Borough's operational war plan in the event of a future nuclear strike. Not only was the plan futile, they wrote in the introduction to their digest of plan, but *'it is very dangerous and irresponsible because it misleads the people of Southwark into believing that nuclear war to be not only survivable but acceptable'*. A colourful leaflet was also circulating the borough - *'In the event of a nuclear attack, the Town Hall will move to Southwark Entertainments'* - behind the text, the familiar symbol of the mushroom cloud. This was a council leaflet advertising an Open Day for the bunker. *'The emergency control centre from where Southwark would be administered after a nuclear attack will be opened for public inspection on Saturday January 29th from 10am to 4pm. The centre is located underneath the box office of Southwark entertainments at 28 Peckham Road. Southwark - a nuclear free zone'*. In a London radio interview, Councillor Andy Choke, asked whether this sort of thing should be kept secret, replied *'No, I think the public should be fully informed that there's really no defence against nuclear war...if the bomb was dropped in Croydon, most of the population of Southwark would not survive'*. Apart from inspecting all the rooms in the bunker during the open day, residents could also view an exhibition staged by the local Campaign For Nuclear Disarmament in the emergency planning room.

Having made it to the bottom of the main entrance and exit stairs, the visitor would have found a central corridor with a number of different rooms leading off from it. Photos taken in 1983 show much of what could be found below the ground. A Communications Centre has five booths for different phone and radio communications and a number of desks and chairs, in-trays and files. The signs above the stations read *'SE Group Flood Net / Borough Net / Raynet / Tele. Op2 / Tele. Op1'*. A large wall board for following circuits of communication has the following eerie codes of operation - *'Red: Out of Order / Black: Not Open / Green: Working'*. Next door was the all important Control Room with a large table filled with network of communications equipment including 8 head sets. Behind a flipchart that reads only *'Radio'*, many wall-mounted maps of London and Southwark can be seen. Other rooms were for Support sections, Switchboard and Teleprinters, Storage and a Generator and Ventilation plantroom. There was also space for a canteen plus ladies and gents toilets with showers. An emergency hatch, accessible via a ladder mounted onto the wall, was at the extreme end of the centre. In many respects, it follows the same planning as the Bermondsey Control design from 1954 minus the dormitories, although the storage room may have earlier been for used staff accommodation.

Where Is It Now?

In the late 1990's, the above ground building was demolished leaving a derelict corner plot of Peckham and Vestry Rd awaiting redevelopment and the abandoned

bunker below. Visiting the site on 6th March 2001 via a large hole in the wooden fence, I found a large expanse of concrete and one large hole leading directly down into the old control centre. Some attempt to cover the hole had been made with loose metal waste presumably to discourage children from falling down there. Visitors from the Subterranea Britannica's Research Study Group, who explored and documented the empty centre later that year, reported that by the time of their visit, *'one side of the stairway into the bunker has been filled with concrete leaving a six foot drop onto the steps. A hinged grille has been fixed over the remaining part of the well and this is kept securely locked'*.

The Sub Brit team found that despite the exposure to the elements, the centre was in a reasonably good condition without the destruction and ransacking you might expect from such an open site. The hot air hand dryers in the toilets were still in working order and files and papers were still resident in many filing cabinets. The only signs of decay were moulding maps, a bad smell and *'several inches of water on the floor'*, probably from rain coming in. This last point was nothing new. In 1983, the council had announced through the war plan digest that the centre *'is flooded whenever there is heavy rain'*.

Royal Observer Corps, Dulwich

Strange Goings On In Dulwich

Finally, there was one other subterranean cold war bolthole in the Borough of Southwark which has yet to be mentioned. This secret bunker would, in fact, at certain times of the year, have a group of strangely behaving men clambouring into it and locking themselves inside. However, doing all this on a semi-regular basis in the environs of the Dulwich and Sydenham Golf Course made the bunker a less-than-secret secret.

It could be found just north of the clubhouse, behind the practice nets, immediately adjacent to a long wooden building, for this was a standard Royal Observer Corps underground post, of which there were another 1559 posts, eight miles apart from each other in a grid pattern covering more or less the whole country. Costing roughly £1250 each, each post was designed for a four person team to be squeezed into a rectangular reinforced concrete box approximately 20ft by 7ft by 7ft, with walls over 7ft thick. Inside would be a standard table, cupboard, two-tier bunkbeds, a teletalk machine and a ventilation opening connected to shaft that extended just a little way above the ground outside. Food and water was stored to enable the operators to hold out for one week. This particular post was opened in May 1965 at the tail end of a large ROC post building starting back in 1956.

The point of the bunker was, in the case of a nuclear attack, to produce data on the number, vicinity and strength of the blasts and the local level of radiation and to report this to its ROC Group Headquarters. With this in mind, various instruments were in situ including a Fixed Survey Meter and a Bomb Power

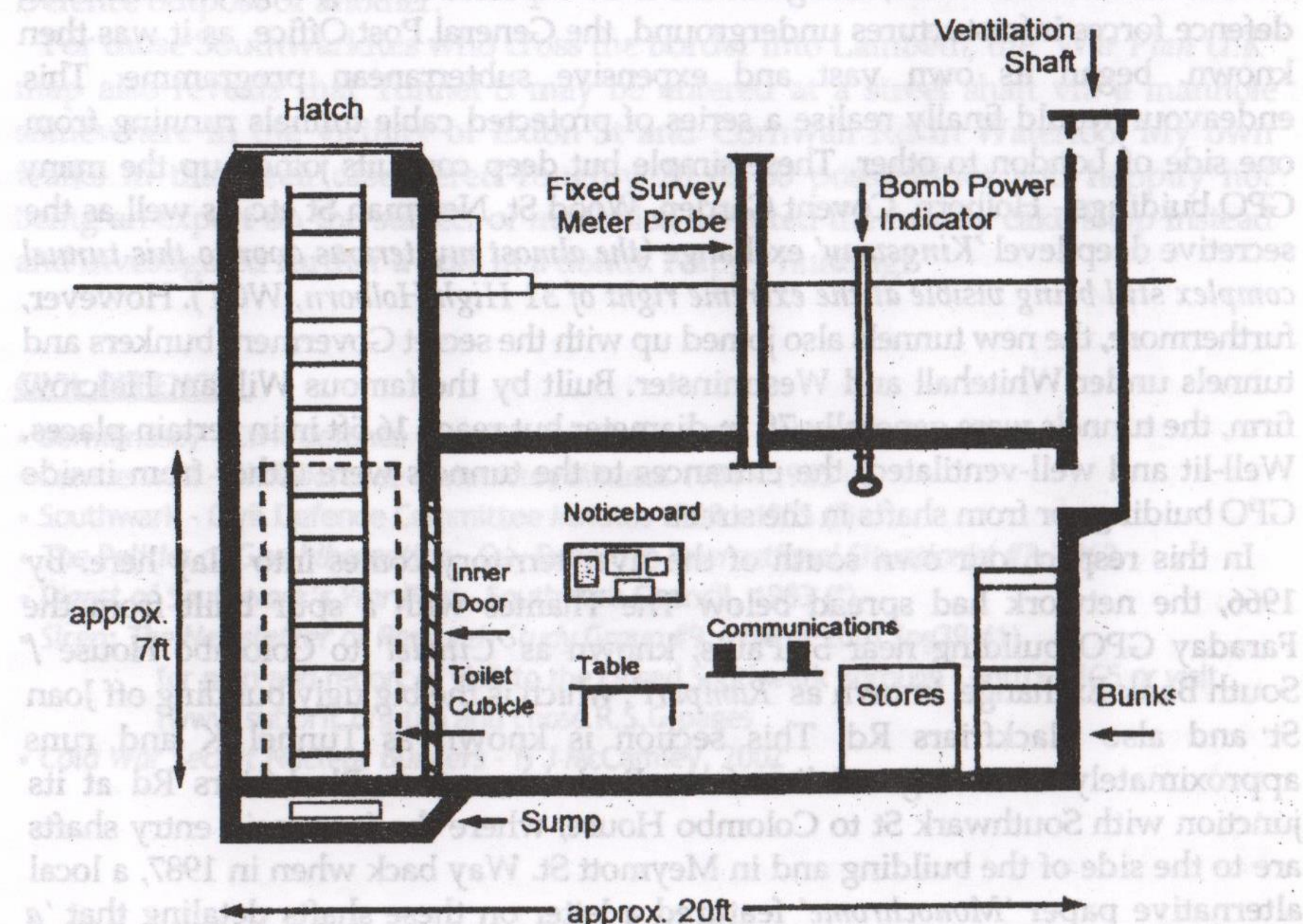
Indicator, both of which extended through the roof to the world outside but could be read from the comfort of the bunker. In lieu of no real war, the ROC would hold regular imaginary exercises instead.

During the 1980's, the post not surprisingly became subject to some publicity and scrutiny by the local peace movement. On the night before the ROC exercises of March 15th 1986, three women occupied the bunker and secured it from inside. At 3am, they were discovered and evicted to the local police station. The next day, a group of protestors from Streatham and Dulwich CND came to the post in solidarity with the arrested. Four of the group sat on the bunker lid for half an hour before everyone was moved on by the police, *'some on horseback'*.

By September 1991, the war games were over and the ROC and its posts were closed down. One year later, the underground chamber was acquired by the golf club, stripped of fittings and filled with water. However for this bunker, the water was intentional, the concrete chamber becoming a more pacific water tank for the irrigation system that the golf course uses.

Royal Observer Corps Observation Post

- standard design showing shafts and test equipment -



The Deep-Level Post Office Cable Tunnels in Southwark

Tunnel K and Tunnel S reach Codename 'Rampart'

On a nuclear bomb tip, there is just time to mention one other deep down tunnel that runs through Southwark on its way here and there. This one, despite being similarly a product of the Cold War times, is still in use and still remains a semi-secret. You won't find the entrance to this one of a traffic laden high street or in the middle of a golf-course.

The testing of Soviet atomic bombs just after WW2 brought a certain panic to Her Majesty's government and many underground defence-related projects were put in place over a five-year period. These, in the main, were related to radar and anti-aircraft operations as well as the construction of the regional war rooms as described above. However, alongside the to-be-expected sinking of government and defence forces infrastructures underground, the General Post Office, as it was then known, began its own vast and expensive subterranean programme. This endeavour would finally realise a series of protected cable tunnels running from one side of London to other. These simple but deep conduits joined up the many GPO buildings - Holborn, Covent Garden, Wood St, Newman St etc. as well as the secretive deep level 'Kingsway' exchange (*the almost mysterious door to this tunnel complex still being visible at the extreme right of 31 High Holborn, WC1*). However, furthermore, the new tunnels also joined up with the secret Government bunkers and tunnels under Whitehall and Westminster. Built by the famous William Halcrow firm, the tunnels were generally 7ft in diameter but reach 16.5ft in in certain places. Well-lit and well-ventilated, the entrances to the tunnels were either from inside GPO buildings or from shafts in the street.

In this respect, our own south of the river territory comes into play here. By 1966, the network had spread below The Thames with a spur built from the Faraday GPO building near St Pauls, known as 'Citadel' to Colombo House / South Bank Exchange, known as 'Rampart', which is the big ugly building off Joan St and also Blackfriars Rd. This section is known as Tunnel K and runs approximately in a diagonal line from Bankside, across Blackfriars Rd at its junction with Southwark St to Colombo House, where the four main entry shafts are to the side of the building and in Meymott St. Way back when in 1987, a local alternative paper 'Monochrome' featured a letter on these shafts detailing that 'a shaft head can be seen...behind some hoardings at the junction of Joan St and The Cut...below the locked cover is a 30ft drop'. Since then, this site has been redeveloped as Southwark station on the new Jubilee Line Extension which raises interesting

questions about the number of air vents in the vicinity.

From 'Rampart', Tunnel S runs north west in a curve towards the Royal Festival Hall at South Bank before crossing under The Thames on the east side of Hungerford Bridge and heading on to the Post Office on William IV St near Trafalgar Square. About midway, the tunnel passes under the IMAX cinema that sits in the middle of The Bullring. This fairly recent development was not allowed to sink deep pile foundation presumably for this reason.

This route is supplied to us by the intrepid author Duncan Campbell, his book 'War Plan U.K' (1982) being the best history of one-time subterranean government secrets. In 1980, entering the tunnels from a roadside shaft in Sclater St, Bethnal Green, he spent some time traversing the network at his leisure before revealing what he had found in the Christmas edition of the New Statesman. Photos of his tour can be found somewhere on the WWW with a simple search. Judging by the difficulty in snaring secondhand copies of 'War Plan U.K', underground obsessives probably spend many an hour poring over his map of the tunnels trying to see what goes where. Seeing as the tunnel lines are solid black on a fairly faintly reproduced London map, headache and slight error must be allowed for. Incidentally, Peter Laurie, in his 'Beneath The City Streets' (1979), the first book to try and rumble the tunnels, suggests that Tunnel K runs slightly more west than Campbell's later plotting, passing beneath the then Bankside Power Station, now the Tate Modern. He also speculates that it passes below the monstrous St Christopher's House on Southwark Street, one-time residence of some Ministry of Defence outpost or another.

For those Southwarkites who cross the border into Lambeth, the 'War Plan U.K' map also reveals that Tunnel S may be entered at a street shaft via a manhole somewhere in the vicinity of Exton St and Cornwall Rd in Waterloo. My own walks in that area discovered roughly 20 or 30 possibilities and happily not being an expert on the subject of manholes, I visited the nearby cake shop instead and investigated further a hole in a donut. Happy hunting!

CIVIL DEFENCE:

- Bermondsey - Civil Defence Committee Minutes 1951 - 1965 (*)
- Camberwell - Civil Defence Committee Minutes 1951 - 1955 (*)
- Southwark - Civil Defence Committee Minutes 1939 - 1955 (*)
- *The Politics of Geo-hibernation* - Guy Debord in *International Situationist* #7, 1962
- *Digest of Southwark's War Plan* - Southwark Council, 1983 (*)
- *Siren: The Newsletter of Research Study Group* #9, Winter 2001 (pg39-41)
for plan and report of visit to the closed Southwark Borough Control 51C5 or visit
(www.subbrit.org.uk) and chose R.S.G pages
- *Cold War Secret Nuclear Bunkers* - N J McCamley, 2002

Six Foot Under Or More

Crypts and Catacombs of Southwark

'DISCOVERY OF HUMAN BONES - On Saturday, as some boys were playing in St George's Fields, near to the Borough Rd, one of them, on jumping upon a newly-made hillock, was somewhat alarmed to find that the ground gave way under his feet. On examination it was discovered that he had leaped upon a considerable quantity of mutilated human remains, that had the appearance of being recently deposited there. On being uncovered, a most disgusting scene presented itself; legs and arms of all sizes, some with scarcely any flesh remaining, and all in a state of perfect putridity, were exposed to view. The stench was horrible. They were removed to the Churchyard in two carts. It is supposed that they are the refuse of the anatomical departments of the hospitals in the vicinity'.

Funeral Times

Whereas now we expect to place our loved ones into the graves of local cemeteries, or remember them with some notice or tablet at a crematorium, this press report from 1821 serves well to remind us that attitudes to the dead and their burial have come a long way over the years. For a long time, under common law, it was the right of every parishioner to have a christian burial in the parish churchyard, or for the richer of the area, to lay in the crypts and catacombs of a local church. Non-conformists could be buried in local burial grounds but these were not really widespread until the 18th Century. Deadman's Place at Bankside, for example, now Park St, had been the site of a burial ground since the 17th Century. Although the name is wonderfully appropriate, it proceeded the non-conformist burial ground and independent chapel that was first noted in Neals 1640 *'History of the Puritans'*. It lasted right up until 1841 when it was itself buried beneath the new paved yard of Barclay Perkins brewery. Local lore speaks of the burial ground as a plague pit. This is probably not the case. A real plague pit could be found in 1666 when 35 victims of the foul disease were buried in the Dulwich Burial Ground.

New Homes For The Dead

By the turn of the 19th Century, the legacy of parish burials had led to such severe overcrowding in many churchyards that it was often impossible for all to have a decent burial. Entrepreneurs had begun to establish privately-run burial grounds after the 1820's but these were often run with an eye on profit and

quickly filled up. In Southwark, the infamous New Bunhill Fields was opened in 1820 in Devereil St, off the Old Kent Rd by Mr Hoole and Mr Martin. Twenty years later, the small one-acre site had seen an estimated 10,000 bodies interred there. Below a small chapel in the site was said to be another 2000 bodies heaped in rotting coffins. A local bootmaker, Mr Jenner, would do the honours for the dear-departed whilst the measly sum of £1 would buy burial time of six months. It is not clear what happened to the bodies when, six months later, a further pound was not forthcoming. This burying ground finally closed down in 1853 to become a timber yard with the chapel being taken over by Methodists.

Another private burial site could be found at Coxson's Place in Horselydown. This land was opened up for interment in 1822 but, according to Ron Woollacott in his marvellous publication *'Southwark's Burying Places'*, *'the undertaker later acquired the cellars under four houses adjoining the ground and converted them into burial vaults'*. The undertaker's assistant *'masqueraded as a Minister of Religion at funerals'*. Although burials ceased in the 1850's, the cellars were noted to be still full of coffins in 1894 by Mrs Basil Holmes in her *'The London Burial Grounds'*.

From 1827 onwards, London began to see the opening of large public lawn-style cemeteries run as commercial ventures. Kensal Green in North London was the first with Norwood in South London opening in 1837. In the next four years, Highgate, Nunhead, Abney Park and Tower Hamlets were all opened. A little later, in the middle of the century, Parliament, in response to Edwin Chadwick's report on the grave crisis in the churchyards, passed new laws that would permanently close a large number of burial grounds in and around London. In many cases, the grounds were turned into public gardens by the local municipal authorities which made a change from the former deposits for *'waste-paper, dead cats, rotten food, old clothes etc'* as described by Isabel Holmes in her book. The above-mentioned Deadman's Place could by 1839 be described by George Walker in his *'Gatherings From Graveyards'* as being *'surcharged with dead - the name befits the appearance'*.

A local insight into the extreme poverty and ailments of the working classes through time can be found in the Museum of London report on the Cross Bones burying ground in The Borough. It contains a wealth of material on the history of this pauper's grave as well as various post-excavation medical reports on bones and bodies, the latter you could summarise as *'How the Poor Die'*. More myth-making accounts of the burial ground can be found in the epic poems of local writer John Constable, whose *'The Song of The Goose'* is narrated by a working woman buried in Cross Bones.

Vestigia Subterranea:

The Ancient Crypt Discoveries of the 1830's

A great deal of excitement was had around the early 1830's when at the north end of the Borough not one, but two, ancient crypts were discovered quite close to each other. The first was discovered beneath the sticky out remains of what is thought to have been the hostelry of the Priory of Lewes, near to Tooley St, a place of rest and abode for monks and passing strangers.

The occasion of the building of a large approach road to the new London Bridge meant that the sometimes 12 foot high remains of the old house were to be knocked

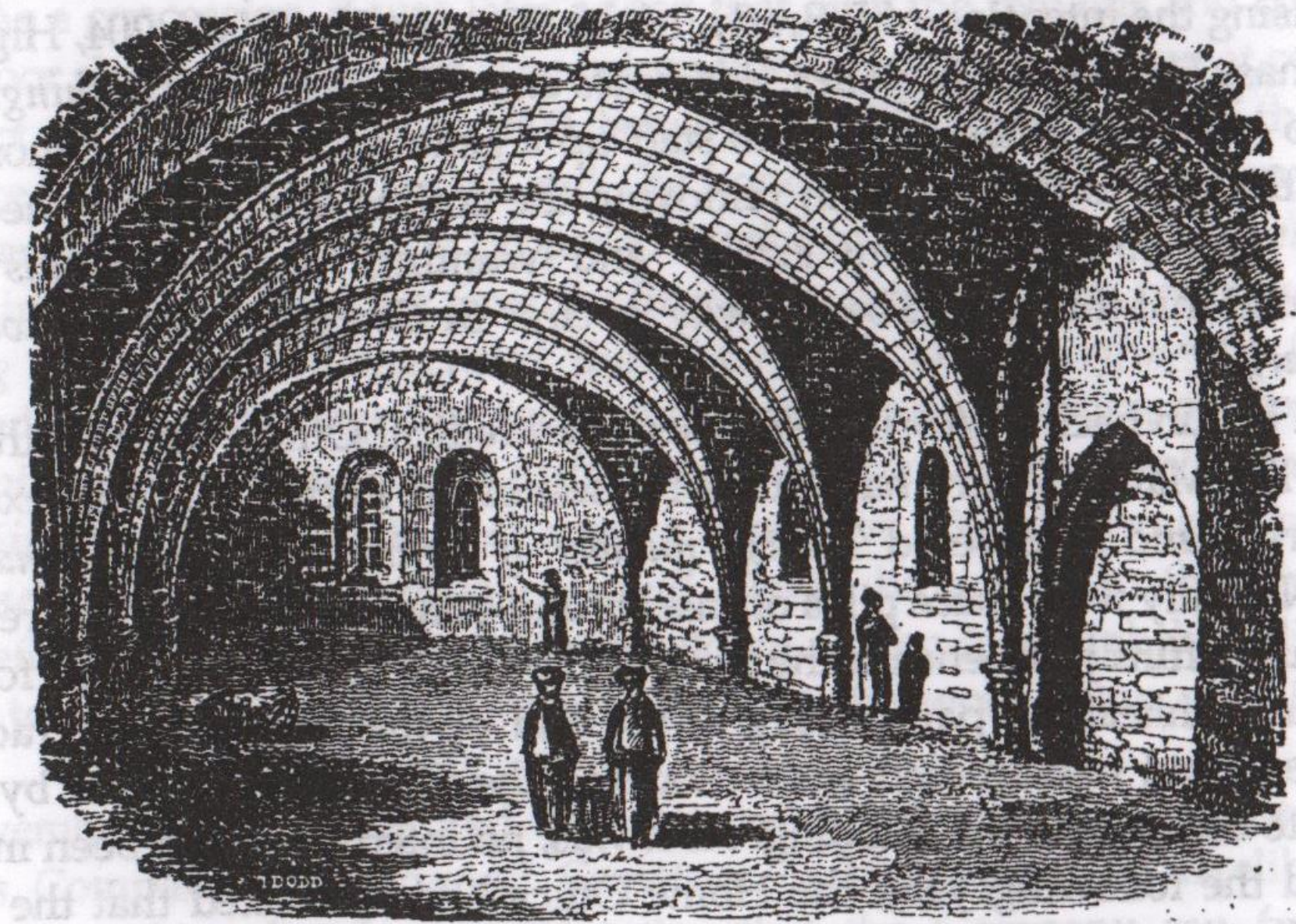
down. It was then in 1829 that beneath Churchyard Alley that the old crypt was discovered with much to do in various gentleman's magazines where the history of London was debated in a civilised fashion. Various historical quotations were put forward as to the truth and rumour surrounding the remains. Wilkinson, writing in the *'Londina Illustrata'*, considered the subterranean chamber to be an oratory, a place for religious worship but elsewhere speculation was that the vault was *'rather the sub-aula of some stately mansion'*, here translated as a space constructed beneath a large hall. What can be agreed on is the beautiful nature of the rediscovered crypt.

'The Mirror' from 21st August 1830 adds that *'the most curious vault...belonged to the monks of Lewes, in Sussex. Dugdale mentions it as having been swallowed up in an earthquake but the present remains prove that statement as fabulous as there is not one stone out of place. It is principally constructed of fire and freestone and measures 40ft long by 16 wide; it has semi-circular arches with groins in the intervals, supported by column with neatly carved caps..at the south end there are two semi-circular leaded windows, and on the mullion there is a date which appears to be 1011. On the west side there are two niches and a door, with a subterranean passage which formally communicated with St Saviours Church'*. Reported elsewhere was that, rather helpfully, a person *'attends on the spot with lights to show these ancient vaultings to persons curious in the matter of antiquity'*. A long discussion of the vault in the *'Gentleman's Magazine'*, April 1830, also tells us that the crypt was not as forgotten as had been thought. Although the possessors of the above ground buildings did not know of the underground chamber, correspondent A J K writes that it *'was occupied for a century by persons who had casually broken into it from an adjacent souterrain'*. In a closing remark that would remain timeless in Southwark, he comments *'the new road or any other superstructure might have been formed over the vault; but the Vandalism which sometimes marks the march of modern improvement, in a few days, will I fear sweep the residence...from the surface of the Earth'*. An erudite paper by a John Gage Esq appearing in *'Archaeologia'* Vol 23 of 1831 seems to give the best account of the *'Remains of the Prior of Lewes's Hostlery'* with six *'accompanying drawings'* concluding that the buildings dated from the Twelfth Century.

With good fortune, in 1832 another elderly subterranean chamber of Norman work was discovered a mere 155 yards east from the Churchyard Alley in Carter Lane, beneath some *'ancient wooden tenements occupied by very poor people'*. *'The Graphic and Historical Illustrator'* continues - *'These remains consist of a vaulted chamber, forming a parallelogram of about twenty-seven feet in length by twenty-one in width, and originally about ten feet in height; but earth has accumulated to the depth of about three feet...In the centre is a plain massive round pillar, from the capital of which elliptic-ribbed arches are extended to a flat pier, or pilaster, at each end of the four sides of the chamber; and from the pilasters to square quarter-columns at the angles of the chamber, other similar arches are extended, forming a groined roof'*.

Here again, it seems that the locals of Walnut Tree Alley, a small court off Carter Lane, already knew about the place. A set of wooden steps went down into the earth where an entrance had been made through the wall of the chamber. Talk was also heard of the chamber being recently used a cyder cellar.

Many years later, excavations made for the Jubilee Line Extension in 1992 at Mayor Sworder's Arches in Joiner St uncovered trench-built foundations made from course chalk blocks. The Museum of London Archaeology Service speculate that the foundations *'may be the remains of the undercroft'* of the Prior of Lewes's townhouse.



The first ancient crypt discovery of 1829, Churchyard Alley

Clearing The Crypts

By the 1890's, the legacy of parish overcrowding came to be considered when many of the local churches in the borough decided to sort out the chaos in their crypts which were often full to bursting with coffins and caskets in various states of disrepair. At Christ Church on Blackfriars Rd, 652 bodies were removed from the crypt in April and May 1895 to Brookwood Cemetery. Robert W Bowers, who helped in the removal, describes *'a veritable charnel house, a seething mass of corruption'* in his *'Sketches of Southwark Old and New'* from 1902. It seems that thirty or so years before the removal, many of the lead coffins had been rearranged in piles on the crypt floor and covered with ballast and charcoal *'to meet sanitary requirements'*. The subsequent placing of heating apparatus in the crypt led to many of the coffins melting away. Other coffins were found to be underwater due to the constant flooding that had plagued the church for a great number of years. A grisly picture featured in his book shows a most unsavoury rotting coffin and decaying inhabitant on a pile of earth.

Crypt Trouble at St George The Martyr

An illustrated feature from a 1906 London newspaper on the crypt of St George

The Martyr in Borough High St informs us that a sign over the door at the south east end of the church reads *'This spacious and dry basement to be let for storage puposes. Apply to Field and Sons, 54 Borough High St'*. Although all seems in order, less than a decade before the offer was posted, a great local furore had erupted concerning the removal of human remains from the crypt.

At the turn of the century, a strange handbill was circulating in the Borough area with the heading *'CORPSES WANTED FOR THE BOROUGH MUSEUM'*. Advertising the intention of E Brady, of the 'Hole In The Wall', 204, High St, Boro to purchase *'coffins, coffin-plates, odd bones and all kinds of pretty things'*, it seems either to refer to a grisly attempt to start up a genuine museum, or more likely to protest the cost to the parish in removing the coffins and clearing the crypt. Mr Brady, *'open to buy to any extent'* and wanting *'corpses for his musuem'* proclaimed that this would be the way *'to clear St George's Crypt without expense to the Parish!'*

It had begun back in April 1898 when the Medical Officer for Health for the St George The Martyr Vestry had, at the request of the Rector, made an examination of the crypt and discovered *'a large number of coffins and human remains in the crypt'*. Not only were there piles of caskets and bones on the floor, there were also numerous coffins just beneath the floor of the crypt. The air was also found to be musty and unhealthy, particularly at the end of the crypt where cracks in the structure, about half-an-inch wide rendered the Church dangerous by allowing effluvia to escape into the building. As it was, no interments had been made since 1834 and the following year, the Home Office had instructed that the primarily lead coffins be rearranged and covered with charcoal and gravel although, as a history of the church published in 1965 details, *'after a lapse of years insanitary conditions became manifest'*. In his opinion as a Medical Officer, the church was *'in a state dangerous to public health'*. The church history tells us that *'in the early 19th Century, it was stated that the rector of that period was constrained to read out the burial service at the entrance to the crypt because of the aroma arising from the extensive burials in it. It has further been stated that odours from the vaults became a nuisance and caused members of the congregation to faint during service'*.

On Tuesday 17th May, at the request of the Public Health Committee, Dr Walter Pakes, the Assistant Demonstrator of Bacteriology at Guy's Hospital took samples of air from a *'spot at the western extremity of the central aisle of the crypt'*. Later in the month, his formal report was received by the Vestry whereby, in technical terms, he outlined that he had found *'carbon dioxide in the air to the extent of 1.206 parts per thousands parts of air'*. On *'organisms'*, he reported that *'the number per cubic feet were 16,500, of these four-fifths consisted of moulds, oidia, torulae and parciniae; the remaining fifth consisted of bacteria, among which no pathogenic bacteria could be discovered'*. As there were neither traces of either sulphurated hydrogen nor sulphur dioxide in the air, there was no cause for alarm.

Despite this, the Burial Acts Department of the Home Office who had now become involved in the matter, still intended to advise the Queen in Council that an Order should be made for the removal of human remains from the crypt. The Vestry, *'as the elected Representatives of the Parishioners...regretted the action taken by the Home Secretary'* and tried to persuade him that *'the length and period*

which has elapsed since any bodies were buried precluded any danger to public health'. Might it not be sufficient, they thought, to overcome the difficulty *'by the whole surface of the crypt being sealed with a layer of concrete'*, this would also act upon the cracks in the crypt and *'probably bind the structure together'*. The Home Office, once again, did not agree. On 25th January 1899, the churchwardens discovered a six-month old letter from the Government *'in one of the lower rooms of the New Alley premises, adjoining the churchyard'* containing the Order to clear the crypt. As a concession, it was later added that only the remains and coffins on the crypt floor should be removed. The below-floor remains could stay at peace.

A contract dated 9th September 1899, between the Churchwardens of the Parish of St George the Martyr, Southwark and The London Necropolis Company, of 188 Westminster Bridge Rd, lists the proposed works to be carried out in relation to the bodies in the crypt. *'Raising from the Crypt, the intact coffins, removing to and re-interring in approved Consecrated Burial Ground...at per coffin 25s 8d'*. The removal and burial of damaged or decayed coffins or the depositing of *'loose bones, fragments of human remains, coffin fittings or coffin wood'* in *'properly made cases, 6ft by 1ft 6in by 1ft 6in'* would cost a more expensive 33s 8d. *'4 inches of newly-made coarsely-powdered vegetable charcoal'* would be added to the bones and remains before the lid would be screwed down. A ten-foot high hoarding with hood was to be fixed around the site to prevent the work being seen from the outside.

By November, 1405 bodies had been removed and reinterred in the London Necropolis Company's Brookwood Cemetery in Woking, in all likelihood the remains being taking by the special trains that the Company ran from their Necropolis Station on Westminster Bridge Rd right into their private cemetery. A replica of the Obelisk at St George's Circus was erected at the cemetery to remember those removed from the old crypt.

The Home Office, after visiting the newly cleared crypt, declared the job done and that no further removals would be necessary providing that the floor was now cemented over and that cross ventilation be introduced to air the place out.

Six years later, a feature in the Morning Leader of 26th March 1905 pictures *'The Crypt To Let in "Little Dorrit's" Church'* with a mention of Dickens Little Dorrit and her nap on the steps plus the accompanying note that the *'wardens are glad to let the vaults for a little extra revenue'*. There is also a curious side illustration depicting one of the side vaults of the crypt *'where Sir James Pocock, Knight of Finchley, was imprisoned'*. For what and by whom, it does not say.

By the 1960's, one end of the cleared crypt was in use as a meeting place for various parish groups and as the HQ of the 4th Southwark St George's Scout group. Today a small plaque, over a closed up doorway at the South east corner of the building records this, the scout group eventually ceasing to exist by the mid-nineties. During the late 1980's, the other part of the crypt was used, for a few years, as a social club and then in the early 1990's regular poetry readings were held in association with *'Ambit'*, the literary journal.

Today, the crypt is mainly is use for Sunday School and for tea and coffee after the service as well as for mid-week prayer by Christ the Resurrection Church, the Nigerian congregation who share the use of the building. Despite this subterranean activity, the Rev. Tony Lucas writes that the *'structural problems...affect the whole*

building which is slowly sinking and cracking apart. We are in the final stages of raising the funding for a wholesale Restoration. This will involve the underpinning of the entire church, in order to save it from possible collapse. The procedure which the architect and engineer intend to use involves taking up the floor of the church, demolishing the existing crypt structure and then creating a concrete table under the building, section by section. When everything is put back together again, we shall be left with an entirely new crypt space, which will be three times as large as the present one. This should afford exciting new opportunities for the future and enable us to undertake new social and community activities on the site'.

Scandal at St Thomas's and Panic at St John's

At almost the same time as the St George The Martyr case, lurid headlines began to appear in the daily papers - 'Desecration Of The Dead', 'Allegations Against The Bishop' and 'A Southwark Charnel House' - all concerning the crypt of the disused St Thomas's near London Bridge. The story ran that, without the proper authority from the 'sanitary authorities', those in charge of the church has begun to clear the crypt of its coffins and human remains. An estimated 500 bodies had been removed, 'many of them being the bodies of personages of considerable historical notoriety in their day' added 'The Times' from 31st May 1899. A special committee reported back to the St Olave's Board of Works, that on visiting the vaults they had witnessed a van at the door loaded down with flattened lead coffins that they guessed at weighing between 1 or 2 tons. This, they were informed, was the third load which was being taken to the smelter at Limehouse. In the crypt itself they found a large case 'filled with the contents of the broken-up coffins...and a heap of broken-up lead coffins which had evidently been ripped open'. In another corner, a huge pile of wood from destroyed coffins, that seemed 'in quite good condition' the 'Daily Graphic' added, was waiting to go to the Shoreditch Vestry's 'destructor'. Overseeing the removal was Dr Bond, the local Medical Health Officer. The committee were convinced that no proper steps were being taken for the preservation and identification of the coffins nor for the recording of any bodies removed. Not only this but the Bishop of Southwark was unable to furnish them with a contract under which the removal of the bodies was deemed appropriate. In an interview, Dr Bond, now temporarily suspended from his post, had spoken of the Bishop's desire to keep the whole affair a secret and his own agreement seeing that 'he knew how sentimental people get over a few dry bones'. The Bishop, when questioned by the 'Daily Graphic', then assured the committee that the work was being undertaken with the special approval of an Act of Parliament passed one year earlier. The Board of Works disagreed and thought that they should have been consulted before any removal was undertaken.

By June the furore had settled with Dr Bond producing letters between him and the Bishop in respect of the removal and the sub-section of the St Thomas's (Southwark) Act 1898 giving permission to clear the crypt. Although Dr Bond was quickly reinstated, the Board of Works expressed their indignation that officers of the board could seemingly do what they liked regardless of what the Board approved.

By 1911, the dead were still capable of causing a local panic. A newspaper

report entitled 'Coffins in Crypt' spoke of how the rector of St John's Church, Horselydown in Bermondsey had been trying without success for three years to get an estimated 700 to 800 coffins out from his crypt, concerned that the bodies were a danger to the public. In this case, the local medical officer was worried that the 'periodical collapse of coffins' would lead to 'the escape of noxious gases'.

Crypt-o-mania: St Peter's and St Giles

In Walworth, five years earlier, less fuss had been made at St Peters, when the newly arrived Rev T W Horsley had cleared the crypt of its piles of disordered coffins and local cats who found the place 'a convenient place for kittening and nocturnal concerts'. No talk of 'a danger to the public' had come up before the '247 unburied corpses or sets of bones' had been sent packing to Woking. With this act, the Rev spoke of inspiring 'the same to be done in several other older churches in South London', though with obviously much more difficulty. With the bodies gone, he now issued an appeal for £250 to turn the crypt into a playground for local poor children.

The beautiful crypt beneath St Peters, was described in a letter from Horsley to the 'Westminster Budget' of 21st September 1894 - 'The word crypt perhaps hardly suggests the fact, which is that under the church there is a very large basement, stone-floored and stone-roofed, lighted and ventilated by nine windows on each side and divided by five aisles by a picturesque arrangement of circular and semi-circular arches, the work of Sir John Soane'. Later, an architectural review of the crypt painted a even fuller picture - 'The remarkable undercroft is lit by area windows and each individual area has the earth held away, as it were, by a horizontal semi-circular arch. This prepares one for the surprise of the undercroft itself where there are barrel arches, that is, full circles. It is like a series of interconnecting tunnels but is seldom visible'.

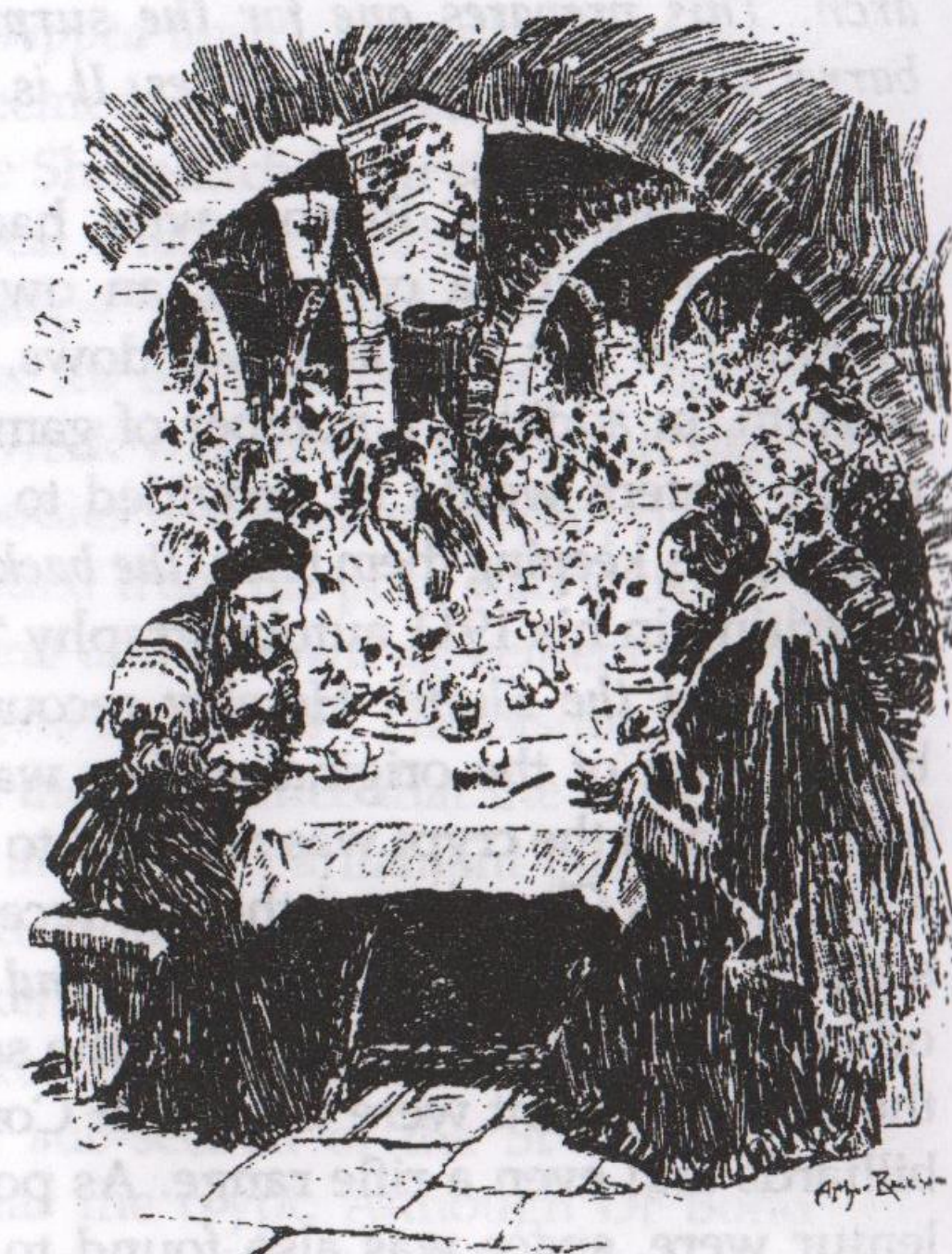
The reforming Rector, who had already established a small zoo in the churchyard with a cockatoo, an owl, a squirrel, some monkeys and a lemur, intended to put in glazed windows, lay on gas and install a wooden floor for warmth. In addition a number of games, some simple gymnastic equipment and a magic lantern would be provided to make the crypt into a place for children to congregate, keeping them from 'the back-street gutter'.

Writing in his 1911 autobiography 'I Remember: Memories of a 'Sky Pilot' in the Prison and the Slum', Horsley recounts the rejigging of the crypt. Some of the bricking up of the original arches was removed by the Reverend with a sledge hammer and the crypt was restored to a hall. One aisle was partitioned off to make a Children's Church and the old recesses were filled with large cookers to cook soup in the winter for 'hundreds and thousands of meals' for local children and others outside the district where the soup was sent by cart. Also found lurking in the new basement were the Cadet Corps and Boy's Club with a special room for billiards and even a rifle range. As popular as the games, billiards, soup and the lemur were, space was also found to host large Christmas parties for the over-sixties of the parish.

The first of these 'Christmas in The Crypt' parties was described, with much violin-playing in the background, in an illustrated feature in the 'Westminster

Budget of January 10th 1896 - 'in what hovels, amid what cruel want and bitter deprivation these grey-haired feeble folks are spending their last days on Earth?'. Paragraphs later, the three-hour party is described with coloured lanterns hung from the arches and sterling work from Mr Earee, the well-known Hackney caterer. 'The wholesome odour of good viands' wafts through the formerly musty crypt, as hot joints, steaming vegetables and sweet tea are lavished on the rheumatic and withered partygoers. With dessert and the Reverend's speech over, with paper bags of presents handed out, some with picture books, clothes or baccy for the men, the party is delighted by the three 'clever ventriloquial' performances from Mr Frank Percival. Also delightful were Mr Sam Wright's 'negro melodies', Miss Gethen's hospital stories, Horsley's three daughters pretty sketch, as illustrated in the feature, and the musical Mr H Giles.

The following year, the 8th January 1897's *Westminster Budget* again features an illustrated story of 'Our First Santa Claus Party', although it was Crypt Party No.2, where similar reportage to the above can be found with added Xmas cheer spread by Liptons who had provided a packet of tea for all the 'ancients' and Wills who supplied the tobacco for males. Further Westminster Budget Xmas parties, it notes, were to be held later that week in Stepney and Lavender Hill with Mile End to be the host to their Cripples Party at the end of the month.



The crypt and crypt party at St Peters, Walworth

More Tales From The Crypt

On a more grisly note, it was here that hundreds of people took shelter on 29th October 1940 to sit out an air raid. For some local people, it was tragically to be their last night here on Earth for three high explosive bombs penetrated the roof and floor of the church and exploded in the packed crypt. Different figures put the number of dead at 62 or 84. Luckily, many more deaths were avoided for the church itself did not collapse down into the basement. When the building was later surveyed, the engineers found that the arches continued below the ground to form complete brick circles and surmised that these had acted as giant springs as the building had jumped up in the air on explosion but settled firmly back down on its sturdy foundations avoiding collapse and deadly falling masonry.

In 1974, the crypt was back in the news again. This time reporters spoke of 'soft lights, piped music and the chink of glasses' at Walworth's latest club. The club in the crypt committee had passed 300 members, all now allowed to partake in a drink or two at a bar kitted out by Courages. Although Horsley had campaigned against Gin Palaces, the latest Rev in the job, Paul Jobson, thought that the social club and bar would only add to his job of making St Peters attractive to parishioners. As well as beer and spirits, there were easy chairs, coloured spot-lights, music and a dartboard. The paper adds, in his previous church in Woolwich, he had run a restaurant and a discotheque.

Twenty or so years later, the crypt is once again set to be a place of community education with a plan to convert the now cramped and semi-derelict space into a place of learning with after-school workshops, music and drama, internet and IT skill-development. With an initial Lottery grant of £250,000 a further £350,000 is sought to finish the task.

Sixties crypt conversion had also surfaced at St Giles on Camberwell Church St in 1964. The Rev John Nicholls, establishing the St Giles Trust, had the old crypt turned into a health and social centre for the single homeless after the removal and resealing of many tombs and coffins of old Camberwell notabilities. The *'South London Observer'* reports that 'a teenage girl had baked scores of cakes which she has sold' to raise money urgently needed for repairs. Less charitably, the *'South London Press'* told its readers that 'in the past four months, human remains have been removed to turn the crypt into a centre for homeless, tramps, sexual perverts and alcoholics'.

More crypt refurbishing was also up at the impressive Holy Trinity church in Trinity Square, The Borough, which had been shut for service in 1959. By February 1974 the place was undergoing conversion to the Henry Wood Rehearsal Hall for orchestras. Working in the crypt, the builders noticed some fairly new brickwork and after breaking through discovered that the crypt extended further than was previously thought. Not only was there now more space to be used 'as extra storage space' to accompany the planned subterranean cafe and music library, but they also had found the final resting home of close to 400 lead coffins. Dating from around 1825 when interment first began at the church, nearly all the remains were of children. The oft-mentioned Necropolis Company, like Ghostbusters, were called in and the coffins were removed to its Brookwood Cemetery.

Despite all these removals in the Victorian times, in the case of St Mary's of Rotherhithe, the crypt is mentioned in Woollacott's booklet as still containing 'about 1,700 coffins'.

And Briefly, Creeping Into Some Other Southwark Crypts...

Other relatively more modern crypts no longer with us are as follows: The Most Holy Trinity church, Parkers Row near Dockhead, was bombed out on 18th December 1940. Here the vault was 'open to the air by iron gratings'.

St Mary Magdalene, St Mary's Rd in Peckham was also bombed in that year, it's surviving crypt recycled with a bit of concrete and hard work to serve as a local air-raid shelter. It appears that despite burial vaults in the crypt, no-one had been interred there and in 1875 the place had been in use as a school room. In 1961, 'the site of the old crypt had to be exposed by the removal of the air-raid shelter and the cavity filled in to form the floor of the new church' built on the site. The Synagogue in Rouel Rd, Bermondsey gave similar shelter and security to locals during the war.

The previously mentioned St John's Horselydown was similarly bombed out in the war, standing derelict until the 1970's when the London City Mission built its offices atop the remains. The foundations and surrounding stone walls of the old church now form the basement of their new three-storey building at Tower Bridge Rd and Druid St.

The Spectre of Smallpox

The human remains panic of the last years of the early nineteenth century made a small return in 1992 at the semi-derelict St George's Church on Wells Way in Camberwell. Closed in the early 1970's, the crypt and its coffins had been repeatedly vandalised until in the 80's when the human remains were placed in a special section of the crypt and walled in with bricks. Even this did not deter the ghoulish and 'grave robbers' bashed through the wall in 1985 leading to concern with local residents via the Southwark Environment Trust, and later the Department of Health, that small amounts of the smallpox virus could still be present in the corpses still at rest beneath the church.

In the end, the ruins described in 'Building Housing Supplement' of 27th August 1993, as 'an adventure playground for wayward youths', was to be converted into 30 one-bedroom flats for a Housing Association in 1992. It was here that the surviving crypt added to the project. Instead of putting in heavy foundations and piling, the converters constructed concrete beams on top of the strong brick vaults to take the load of the walls of the new flats. At the same time, work was able to continue with the bodies still below, some 134 coffins and 120 bags of human remains being later removed by Necropolis to Nunhead Cemetery. A plaque was placed in the crypt to record the move.

Nunhead Cemetery

A Tour Of The Crypts and Catacombs

Walking around Nunhead Cemetery...

Nunhead Cemetery, or more fancily, the Cemetery of All Saints, Nunhead, had been opened by the London Cemetery Company in 1840 as part of the continuing expansion of suburban privately-owned burial spaces. This 51-acre site, on the top of a hill, laid out by the Company's Surveyor, Mr James Bunstone Bunning, featured a host of splendid lodges, chapels and more importantly crypts and catacombs. In a perfect world, where no human denudation of Nunhead's Victorian subterranea has taken place, picking any of the three available paths could lead you somewhere underground. Using the modern names for the cemetery's many curving paths, we will imagine ourselves in our perfect world.

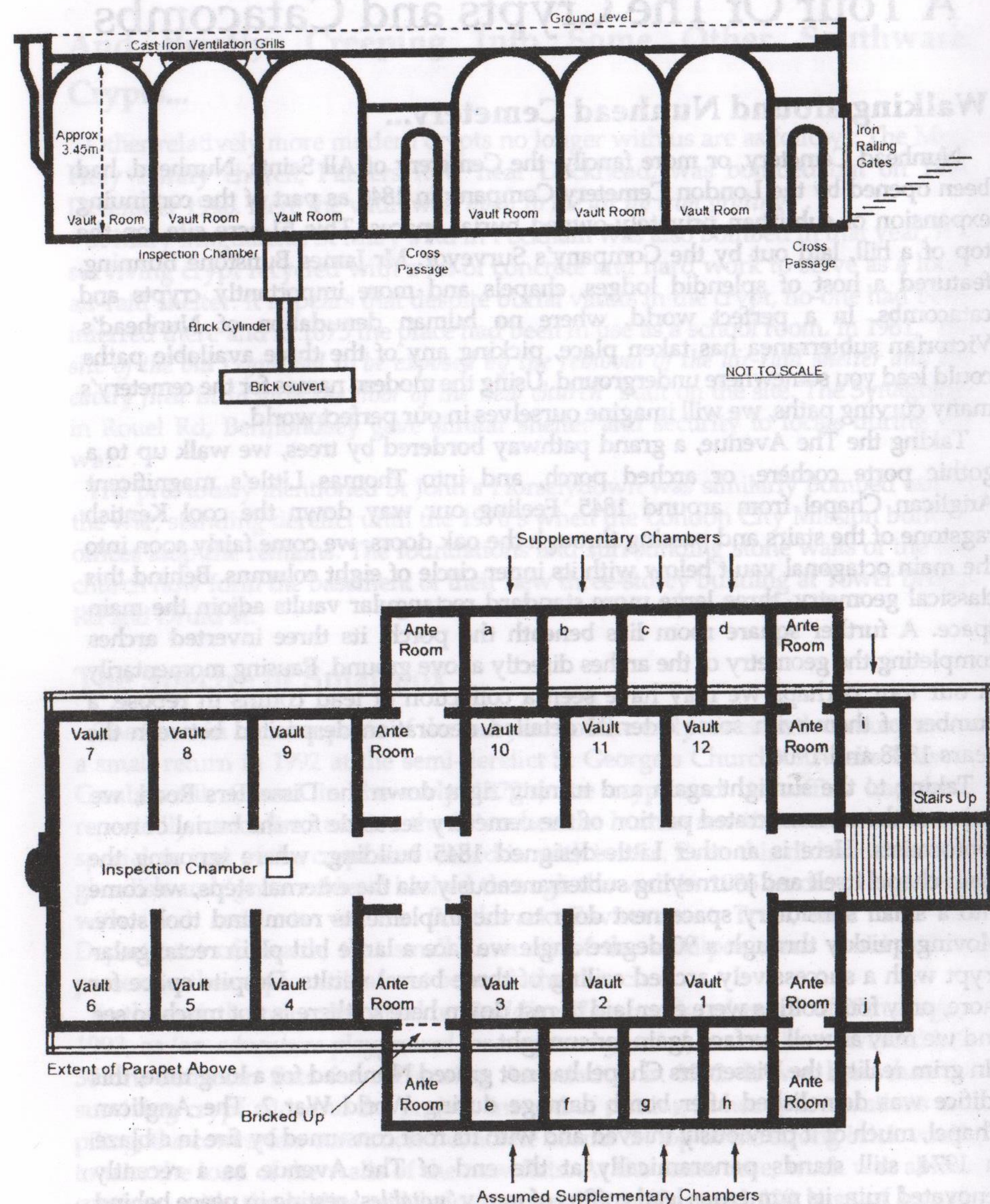
Taking the The Avenue, a grand pathway bordered by trees, we walk up to a gothic porte cochère, or arched porch, and into Thomas Little's magnificent Anglican Chapel from around 1845. Feeling our way down the cool Kentish ragstone of the stairs and passing through the oak doors, we come fairly soon into the main octagonal vault below with its inner circle of eight columns. Behind this classical geometry, three large more standard rectangular vaults adjoin the main space. A further square room lies beneath the porch, its three inverted arches completing the geometry of the arches directly above ground. Pausing momentarily in our tour perhaps we may have seen a collection of lead coffins in repose, a number of them with some external detailed decoration despoised between the years 1848 and 1906.

Taking to the sunlight again and turning right down the Dissenters Road, we arrive at the unconsecrated portion of the cemetery set aside for the burial of non-conformists. Here is another Little-designed 1845 building, where ignoring the main chapel itself and journeying subterraneously via the external steps, we come into a small subsidiary space next door to the implements room and tool store. Moving quickly through a 90-degree angle we face a large but plain rectangular crypt with a successively arched ceiling of three barrel vaults. Despite space for more, only four coffins were ever laid to rest down here so there is not much to see and we may as well surface again for sunlight.

In grim reality, the Dissenters Chapel has not graced Nunhead for a long time, this edifice was demolished after bomb damage during World War 2. The Anglican Chapel, much of it previously thieved and with its roof consumed by fire in a blaze in 1974, still stands panoramically at the end of The Avenue as a recently renovated ruin, its numerous lead coffins of many 'notables' resting in peace behind locked gates. The coffins from the bombed out Dissenters Chapel were added to these original deposits in 1951.

...And Its Splendid Victorian Catacombs

If, back at the gates we had taken the lefthand path then the real thing would



Main Catacombs, Nunhead Cemetery

- showing side passages and vaults -

have presented itself to us much sooner. Just a short way up this track on the right, surrounded by trees and overgrown with plants and weeds, there stands the splendid catacombs, probably designed by Bunning and dating from 1840. The first queer catacomb was in fact a large cylindrical brickwork chamber 2.80m in diameter but belling in to 2.28m at the bottom. Standing on the floor of the 'Catacomb Shaft', 5.85m below the surface of the Earth, we could inspect the 15 burial cells in each of the East and Western walls. Each cell, capped off by a headstone, measured 2.65m deep by 1.41m wide, plenty for a coffin with a little bit extra for comfort. Returning to the surface, our brick entrance rises a mere 1.65m. above the ground, its heavy stone slabs resting on internal brick arches. If we do not leave by 1976, we will be trapped as the entire catacomb was filled and bricked-up and the protruding entrance demolished by the new owner Southwark Council who bought and took over the running of the cemetery in November of that year. Ron Woollacott records that another two catacomb shafts were built close by but were removed in the 1890's. A further shaft could be found on the western side behind the Scottish Martyrs obelisk. This shaft was abandoned many years ago by the London Cemetery Co. who demolished its 'outer works'.

Our real star, however, is close by. Here we find ourselves descending 24 stone steps and through iron gates into the marvellously perfect Victorian Main Catacombs. Built in brick, we ignore a side passage and step into the main rectangular structure consisting of a central passageway surrounded by twelve vault rooms. Walking the passageway with its standard barrel-vault roof, from start to finish we see the first set of vaults, three on each side of us, all similarly barrel-vaulted at right angles to the inner corridor. Coming to a second small cross passage leading off at right angles, we cross thorough and arrive at the last set of vaults, with the same three on each side of us. Above our heads affixed in the ceiling are two cast iron grills for ventilating the place and on the floor an Inspection Chamber reveals a brick cylinder that goes down into into a culvert almost 4.5 metres below. An emergency access shaft is also present, recessed into the far wall with an iron ladder to take you back above ground in a jiffy.

Looking at the vaults themselves we can see that they are divided up into a set of mainly stone slab cells for the laying-in of coffins. 144 burial cells in all are arranged in batches of 12 on each side of the main passage. Taking some time we could stop and read the memorial tablets for those in much better circumstances who were buried here rather than beneath the lawns of the Cemetery of All Saints, Nunhead.

If we were to poke further and return to the cross passage, moving either left or right on your preference, we would find that two ante rooms at each end, some with coffins resting on iron beams. These are mirrored at the first cross way we encountered at the foot of the steps down into the catacombs. Slightly more hidden away are a group of eight smaller supplementary chambers behind the back wall of the first vault room measuring 1.71 by 2.15m by 2.55 deep. Two further chambers can also be found on either side of the steps down and then that's all there is. Consult the handy illustration if the above description has rendered you quite insensible.

But we end our perfect tour with a tale. Mrs Joan Harrison MBE recalls in 'Nunhead Remembered: Stories, Anecdotes and Observations', edited by Rex Batten

in 1995, that on taking her usual Saturday stroll with her mother via the cemetery, the sudden cry of an air raid warning, interrupted their walk. They were both quickly ushered down some stone steps into an underground shelter but after spending some four hours in the gloom, they begin to realise that *'around the walls are plaques of the coffins of the embalmed. We were sitting on park benches in the catacombs...assembled for the purpose of providing an air-raid shelter'*.

And today?

Jumping back into the here and now, the Main Catacombs are now sadly also sealed on the advice of consulting engineers M McDowell and Partners, of Surrey, who surveyed both sites in October 1975. By the mid-70's, reports of nocturnal ghoulish goings-on in the cemetery and the continuous destruction of the fine tombs, chapel and catacombs had reached the national press. Something had to be done to stop the cemetery from being surreptitiously removed very slowly piece by piece. These days, after a long makeover from the Council and the foundational work done by the Friends Of Nunhead Cemetery, the place remains a wild but calm place for the dead and buried as well as those who wander the nature reserves and overgrowth in search of a pretty Hawksbeard or to visit the Ginkgo tree.

Tramping about the main catacomb in January 2002, there was very little to see of the structure apart from a small raised area covered in leaves, scrub and other greenery. At one side, close to the still visible parapet of the catacombs, a big memorial stone inscribed in Latin records the removal of bodies from the St Christopher-le-Stocks churchyard in the City to Nunhead in 1867. By the former entrance, enthusiastic digging by strangers had only succeeded in uncovering a wet and muddy hole into a sealed small ante room that adjoins the bottom of the stairs. Disinterested in exploring further, I thought about the other marvellous South London catacomb in Norwood Cemetery. There, after similar destruction, the catacombs were also sealed but remain visible. Kneeling down by one of the grilled windows for a few moments, a sense of dusty Victorian splendour from the very creepy cold interior was possible. At Nunhead, nothing of the sort is possible.

CRYPTS and CATACOMBS:

- *Oratory: Under The Antient Mansion, Or Inn, Of The Priors Of Lewes In Sussex* - Wilkinson, Londina Illustrata 1830's, (*)
- *St George The Martyr Annual Report 1898-1899* (*)
- *I Remember: Memories of a 'Sky Pilot' in the Prison and the Slum* - John William Horsley, 1911 (*)
- *Victorian Catacombs, Nunhead Cemetery, Southwark: Building Survey and Structural Report* - M McDowell and Partners, October 1975 (*)
- *Nunhead Cemetery, London: A History of the Planning, Architecture, Landscaping and Fortunes of a Great Nineteenth Century Cemetery* - James Stevens Curl, 1977 (*)
- *Nunhead Cemetery: An Illustrated Guide* - Friends of Nunhead Cemetery, 1988 (*)
- *The Cross Bones Burial Ground, Redcross Way, Southwark: Archaeological Excavations for the Jubilee Line Extension Project* - Megan Brickley, Adrian Miles and Hilary Stainer, 1999 (*)
- *Southwark's Burying Places: Past and Present* - Ron Woollacott, 2001 (*)

Underground Water Rivers, Spas, Wells, Sewers and Reservoirs of The Borough

'...the stories, by the time Profane heard them, were pretty much apocryphal and more fantasy than the record itself warranted...it is this way with sewer stories. They just are. Truth or falsity don't apply...'

'V', Thomas Pynchon, 1961

All The Rivers

Sailing The Neckinger

It has been said that if we were to bring the River Neckinger back to the surface of the Borough then we could take a small boat and sail from Bermondsey to The Elephant and beyond. Sadly, this is probably not the case and as the watercourse has been confined underground for such a long, long time, no-one really knows which river, stream, ditch or puddle was what. In fact today, the only visible clue to any subterranean Southwark water course remains the inland quay at St Saviours Dock, near the east side of Tower Bridge and this is a human-made alteration of the original outlet into The Thames.

The name itself, although subject to much speculation, has a variety of meanings. 'Neckinger' could be a corrupted form of the word 'neckerchief', an allusion to the knotted course of the river or a grim association with the hangman's noose. That the name Neckinger has come to be associated with execution is no surprise as a gallows site was near the riverside, on Jacobs Island in Bermondsey and is marked on a 1740 map as 'The Devil's Neckenger'. This was presumed to be the execution place of the Manor of Bermondsey. Later, by 1813, a public house known as 'The Dead Tree' stood on that spot. Another watery connection is made by linking the 14th century 'Nettinger' version of the name to fish caught locally in nets.

Which way?

What is agreed on is that, in ancient times, the river, on nearing The Thames, ran through a number of tidal ditches around a bunch of gravel eyots or small islands, that would geographically become Bermondsey and London Bridge. Much much later, the Cluniac Abbey established in 1082 on the site of Bermondsey Square used the Neckinger to turn their mills, the river later becoming, for generation after generation, both the water supplier and engine of local industry. The leather industry that Bermondsey was once famous for, spread rapidly because of the 'plentiful water obtained twice daily from the tidal stream' to the tanneries.

By the middle of the nineteenth century, the importance of the river for industry had waned with steam and artesian wells taking away the need for the tidal streams. With rubbish and industrial waste all thrown in the ditches, outbreaks of cholera were frequent and so the river ditches began to be filled in to close off the infectious source of the disease. Literary portraits of the foul and fetid Folly Ditch, 'the Venice of Drains' in Bermondsey can be read in Charles Dickens (*Oliver Twist*), Henry Mayhew (*Morning Chronicle*, September 1849) and Charles Kingsley (*Alton Locke*).

An early attempt to pin down the Neckinger's way by Harold Adshead in the March 1953 'Port of London Authority Monthly' confuses a number of streams and courses and tells us that as the river wends its merry way from the riverside, a number of bridges used to cross it. One at Grange Farm on what is now known as Grange Rd but the most famous bridge being where the stream crossed the Old Kent Rd, near the present day Albany Rd. This crossing came to be known as St Thomas a Watering, after St Thomas a Becket, the patron saint of a nearby hospital from 1213. The site is still locally remembered by the Thomas a Becket public house at 320 Old Kent Rd.

By the sixteenth century, the place was also being used for executions for the County of Surrey with saxifrage, burr-reedes and water gladioli all recorded as growing in the 'ditch right against the place of execution'. Beside this pretty flora, numerous felons, priests and gentlemen all took their last breath here.

Another much earlier interpretation by Robert W Bowers, writing in the South London Press of 19th July 1910, has us believe that the submerged Neckinger is called 'The Tigris' and that past St Thomas a Watering 'it proceeds a little to the south east of the end of the Kentish Rd - now Tabard St - the old Dover Rd, thence to Newington Butts, where it intersected the roadway, running to the north of Spurgeon's Tabernacle whence it continued its course by the Old Newington Rectory to the Black Prince, at Kennington, it ran west-by-south through Vauxhall to Thames'. Around the area of The Elephant, he plots a watercourse that was forded by 'a small one-arched bridge' near the Fishmongers Almshouses, at Newington Butts as well as a number of moats, ditches and bridges nearby at the old St Gabriels Church. Other ditches and streams ran west under what is now called Brook Drive. Other newspaper cuttings from that year taking up the lost rivers of London story, report that 'in 1739, when Maitland, in his Survey of

London said that...a small watercourse denominated the river Tygris which is part of Cnut's canal'. This snippet refers to the belief that when invading London in 1016, the young Dane Cnut on being unable to get past the defensive London Bridge, cut a canal around Southwark using the Neckinger to sail his boats to Westminster. This is probably the starting point for the belief that a raised Neckinger would enable us to boat to Bermondsey or raft to The Elephant.

The Evidence

Sailing our boat in the other direction under the captainship of Walter Besant and his 1899 'London, South of The River' tome, we would have followed the Lock Stream that 'runs eastwards from Newington Butts (to a) pond stream near Lock Hospital, crossed Great Dover St near the first milestone from London Bridge, turned South-East then North-East again, parallel to Tower Bridge Rd along the line of Abbey St' and hence to the Thames. Under Richard Trench, in the much later 'London Under London', we row hard from the Imperial War Museum taking a 'half-circle eastwards at Brook Drive, around the back of St Thomas Hospital...and under the Elephant and Castle', running across 'New Kent Rd, then cross(ing) over Spurgeon St, then over Dover St and Tabard St to Prioress St, where it turns sharply turns north-east under Green Walk to Tower Bridge Rd and into Abbey St. Beyond this the rivers crosses 'Jamaica Rd and divided into two branches. Between the two lay Jacob's Island'.

Happily for those in hurry, Nicholas Barton's classic 'The Lost Rivers of London', reprinted in 1992, provides probably the most accurate break down and route of what flowed where and where it went. He helps us out by separating our streams and ditches into two distinct rivers, The Neckinger and The Earl's Sluice. He dismissed the claim that The Neckinger flowed past the Old Kent Rd and onto Bermondsey and names this stream as the Earl's Sluice. It was this river that originated at Denmark Hill, flowing first north for a mile or so, then turning east to cross Camberwell Rd and go alongside what is now Albany Rd. From the Old Kent Rd, it veers eastwards along Rolls Rd, Rotherhithe New Rd towards Deptford where it joins The Thames. While there are no maps in existence that show this river reaching Bermondsey, several depict the eastwards flow of this river. On one map, he says, the name Earl's Sluice is written. The river was still above ground at the Old Kent Rd as late as 1831 but the main part of the watercourse was enclosed in the Metropolitan Board of Work's Earl Main Sewer of a decade earlier. He suggests that the name originates from the early Twelfth Century when the first Earl of Gloucester was Lord of the Manor of Camberwell and Peckham. Indeed, a tributary from The Peck river in Peckham joined the Earl's Sluice.

On The Neckinger, he plots this short course:- From St Saviours Dock to Bermondsey Abbey, at Abbey St, 'running continuous with the Lock Stream which ran eastwards from Newington Butts, formed a pond near the Lock Hospital'. Here he follows Besant's description as above, where the river wends and bends to Tower Bridge Rd before 'meandering through fields and tenter-grounds to the river' along

the line of Abbey St. A connecting watercourse between the Neckinger and the Earl's Sluice, that may have been artificial, ran down the north side of the Upper Old Kent Rd. This is shown on a few maps where this stream could be crossed by a bridge near what is now Dunton Rd.

Barton adds that you can clearly see on the famous Rocques map of 18th Century London, that the Lock stream continues 'round the west side of St George's Fields to near the site of today's Waterloo Station'. Here, finally, it does seem that with a little concerted spade work, we could replace the 188 bus with a charming river voyage.

Even if you don't want to come to the water, the water might come to you. In August 1927, Mrs Williams was standing in her back garden in Rephardim St, Bermondsey when she suddenly disappeared, swallowed up by the earth. On hearing screaming, her daughter-in-law came to the garden and saw only a hole in the concrete fill to brimming with black slimy water. Then hair was seen and the relative reached in grabbed Mrs William's blouse and pulled. As the grasp was uncertain, she soon disappeared again from sight. The continued commotion soon brought others to the scene and Mrs Williams was finally pulled from the hole, badly bruised and covered in slime. Her husband was able to explain the mystery hole in a report in the Sunday Pictorial of August 28th - 'I believe there was an old tannery on the spot in bygone times, but this has been a real well, not a tan-pit'. A picture of the dark hole and a small crowd of grim faced locals appears in the paper beside the headline - 'Garden 'Swallows Up' A Woman'.



The Peck

This river mentioned above, was charted by Mr Gautrey, 'the well-known South London educationalist' and governor of Honor Oak Girls School, in a South London Press article of 4th August 1933. The course is as follows:- 'The little river rises at One Tree Hill, the highest point in the district and flows down towards the edge of the school grounds, where it courses along in a tricking stream through rows of delightful elm trees. It then crosses the road into Peckham Rye Park where a little rustic bridge has been built over it, and after running through a dell, its water widen into a charming lily pond...After that the course of The Peck is less pleasant to recount. It becomes one of the many underground rivers of London, and what was once a little brook for a poet to dream on, now turns into part of the Metropolitan drainage scheme actually ending its career as drainage water emptying into the murky Thames'.

Barton puts the course of The Peck as rising at Forest Hill Rd. It then ran alongside the west side of Peckham Rye, east at Brayards Rd, north at Queens Rd, up Asylum Rd, over Old Kent Rd, Ilderton Rd and to Deptford.

The course of this river is still visible to the searching eye as a little valley that runs to the North along the Western side of the Park.

Wells and Spas, Natural and Artificial

The Camber Well

And, of course, on the subject of underground water, our fine district of Camberwell is obviously named after some local outpouring of H₂O. A well or wells reputed to have healing qualities have been assumed to be in the area since earliest times, the mixed clay and gravel soil abounding in natural springs and wells. 'Camber' has been read as meaning 'crooked' in reference to cripples hoping to find medicinal value from the local well water. That St Giles is the local church gives added weight to this idea, this saint being the patron of the sick and infirm. Other educated guesses, of which there are many, put forth that the name Camberwell comes from the word 'camb' referring to the hill crest of Grove Park, south of Camberwell Church St, where the spring surfaces. Before the erection of modern housing there in the 19th century, this area of Camberwell was mainly open ground where a small spring broke out of the hillside of Camberwell Grove and ran towards Camberwell Green. Skirting the west side of Camberwell Rd and running on to Boundary Lane, the watercourse continued along the route of what is now Albany Rd towards St Thomas A Watering at Old Kent Rd and then on

again to Bermondsey. Wells St, that cuts Burgess Park in two, is the site of other old wells.

Dr Lettsom's Fancy

Doctor Lettsom, a fascinating character of some philanthropic repute, lived in his sprawling Grove Park estate complete with thousands of bees, a Temple of Sybils and numerous other ornamental features. These lands spread all the way from the top of the hill down to the present day Lettsom St. In the late 18th century, the local springs were used to supply a fountain, a reservoir and an ornamental lake created in the garden. The fountain itself was supplied via pipe from the reservoir although by 1850 the water had '*ceased to play*'. Cottages built on Lettsom's estate were also supplied with water from the spring, the water diverted through numerous underground brick conduits that the doctor had '*been the author of*'.

With the coming of the South London Railway tunnel in 1866 that cuts across Camberwell Grove, the lake and fountain cottages in the grounds were demolished. At the same time, the brick conduits were also cut in two by the new development. The remaining water tunnels were then forgotten until 1st January 1917 when a horse was killed and a cart driver injured when one of them caved in at the present day site of 118-120 Camberwell Grove. On the existence of the conduits, around 1919, Philip Mainwaring Johnston was assured by a boy that '*he and his companions have crawled in it as far as Dulwich*'. His book '*Old Camberwell*' similarly recounts that a gang of girls had also explored the tunnel for hundreds of yards in the northwards direction.

The last hundred years has seen the reporting of numerous re-discoveries of the spring and associated wells and conduits but none so much as during building works on the site in the late 1950's. Then a report of the Camberwell Borough's Engineers Dept detailed the uncovering of wells all around Grove Park and Camberwell Grove and of flows of water beneath Grove Chapel. Mary Boast, in her '*Story of Camberwell*', repeats that the original Camber Well could be found on the site of 56 Grove Park where '*until about 150 years ago*' a donkey went round and round drawing up water. Occasional letters, enquiries and photos purporting to show the special well crop up roughly every twenty or so years in the local papers.

It's All At The Spa

What could be better on a crisp autumn morning or a sultry late summer's evening in the Eighteenth Century than to take a trip to a local spa. From roughly 1840 until 1880, London was gripped by this watery fad, with a number of spa or wells springing up all over the Capital city, some newly discovered, others merely revived from an earlier period. Although, in theory, the primary attraction was the restorative powers of the spring water itself, full to good health with medicinal traces of iron, magnesium or sulphates, in the main, it was the added

other attractions that brought in the crowds. Warwick Wroth, in his fine 1896 study '*The London Pleasure Gardens*' asserts that taking the spring water was only really a persons '*excuse*' for '*unnecessary gaities and dissipation under the pretence of seeking to repair their shattered constitutions*'. As will be seen, all the spa gardens below offered official diversions from their watery intent, with special firework displays and painted themed panoramas or evening concerts of known and reputed acts. However, there was always the background possibility of pleasure of the illicit or furtive type. The history of many of the pleasure gardens show that much of the pleasure to be had occurred in secluded arbours or darker corners. With the mixing of the classes, what could be better for the wealthy than a romp in the bushes with a wench or a wobegone? What smiles could come from money-making game of the lower orders robbing or pick-pocketing the higher ones?

But this should not be overstated. It is said that Bankside resident Mrs Thrale, famous diarist and convenor of the famous literary salon that included Dr Johnson, Edmund Burke and Joshua Reynolds, took the waters at the Dog and Duck for over forty years, to eventually die at the ripe old age of 80.

Bermondsey Spa

Possibly the only local spa to still be remembered, if by name only, Thomas Keyse's Bermondsey Spa Gardens were opened up in 1770 upon the discovery of a chalybeate, a mineral spring containing iron salts. Although he had purchased the Waterman's Arms and adjoining waste ground five years earlier and turned the site into a tea gardens with exhibitions of his own paintings, it was a decade later that his cheery enthusiasm paid off with the Gardens becoming a humble local rival to the larger and more grandiose pleasure gardens at Vauxhall. At Bermondsey Spa, the throngs enjoyed tea drinking accompanied by an orchestra in a pleasure ground lit by red, white, green and blue lanterns. Spa poets and singers were also popular, as were the later fireworks, illuminated cascade and some time explosive representation of the Siege of Gibraltar. Whether the Spa's mineral water was more popular than Keyse's own preparation of cherry brandy is not recorded.

Sadly, by 1795, the whole spectacle was in sorry decline. Crowds were down and the fireworks were long gone. A lengthy description of a visit to the Spa in J T Smith's '*A Book for a Rainy Day*' describes the state affairs on '*one bright July evening*' where the solitary visitor and owner watch the orchestra-accompanied singer go through the motions. '*This is sad work*', says Keyse, '*but the woman must sing according to her contract*'. The servants are encouraged to applaud as passersby '*would make a bad report if they had not heard more than the clapping of one pair of hands*'. Although far too long to quote in full, the extract is worth searching out for the author's meeting in the Gallery with the extravagant, optimistic but melancholy Keyse who was to die in the house in the Gardens in 1800. Newer managers failed to make a go of it, despite the occasional delights of 'a

silver cup run...by gentlemen's ponies'. The site at the present day corner of Spa Rd and Rouel Rd was closed in 1804 and later built over, at one point being the location of Pearce Duff + Co baking powder manufacturers.

Finch's Grotto Gardens

This pleasure ground was situated, according to Warwick Wroth, on a *'triangular piece of land forming the western side of St George's St, Southwark, and bounded on the south by the road called Dirty Lane and on the north by a vinegar yard in Lombard St, and the extremity of St Saviour's Parish'*.

Opened in 1760, by Thomas Finch, the garden of *'lofty trees, and planted with evergreens and shrubs'* had as its showpiece, a medicinal spring over which Finch had built a grotto. Inside, a fountain splashed its water over artificial embankments, forming a *'natural and beautiful cascade'*. Although recommended to his patients at the time by local doctor Townsend, a much later Dr William Rendle, described the spring in his *'Inns of Old Southwark'* from 1888, as *'merely the filtered soakage of a super-saturated soil'* which would we found *'almost anywhere in Southwark', 'a covetous doctor or imagination'* doing the rest.

From 1764 onwards, nightly entertainments could be enjoyed including an two orchestras, *'numerous singers and instrumentalists'* plus occasional fireworks. Despite these lavish diversions, by 1773, with Finch dead and the gardens now in the hands of a Mr Williams, the grotto was pulled down to make way for a skittle ground attached to the adjoining local tavern. The Tavern itself, still named after the grotto, burned down in May 1795, its replacement The Goldsmith's Arms continuing to be known as the *'Old Grotto new reviv'd'*. When this public house was later removed for the creation of the new Southwark Bridge Rd in 1825, a newer Goldsmith's Arms was erected on a site much closer to the original grotto gardens. In the main, most of Finch's Grotto Gardens are now covered up by the large Fire Brigade Training Centre buildings on the west side of Southwark Bridge Rd. Several vacants plots of land exist near the relatively new Grotto Court but these only conjure up a landscape of rusting Cola tins and ancient but empty Golden Wonder crisp packets.

Restoration Spring Gardens

The Restoration Tavern stood in the Eighteenth Century at the edge of St George's Fields. Before the advent of sandwich shops and tower blocks, this whole area was a dominating but infamous expanse of grassy fields with the occasional duck pond, grisly murder or popular curiosity such as a large kettle with a women living inside it. Nowadays you could say it corresponds to the territory roughly between Borough High St and Waterloo Rd.

The tavern, close to what is now The Cut near Blackfriars Rd, had been in existence for a long, long time before 31st March 1733 when an advertisement in the *'Country Journal, or the Craftsmen'* reveals a *'Purging Spring'* that was *'already well-known for the cure of all cancerous and scourbutic humours'*. Later in

that year another spring, a chalybeate, *'lately discovered...at Mr Lewis's, commonly called the Restauration Gardens'* offered refreshment *'of the nature of Piermont Water but superior'*. Both obviously healthy waters, said to *'far exceed'* the waters of the nearby Dog and Duck, were available everyday at the gardens as well as across The Thames at a corkcutter's under Exeter Exchange, The Strand. Here, the unenthusiastic Dr Rendle would again pronounce that the water must *'have been mere soakage from a swamp'*, the aqua *'permeated with unwholesome ingredients'*.

Dog and Duck

The mineral springs of the Dog and Duck Inn of St George's Fields were first advertised around about 1731 although the tavern itself has been traced back as far as 1642. At the time of the advert, the Dog and Duck began to call itself *'St George's Spaw'*, its *'asperient'* water being sold at the pump for six pence a gallon, with *'recommendation from eminent physicians for gout, stone, king's evil, sore eyes and inveterate cancers'*. A few years later, a dozen bottles of St George's Spa water could be purchased for one shilling.

Later on, between 1754 and 1770, the water's reputation spread, being ranked with the water of the famous spas at Buxton, Tunbridge and Cheltenham. New buildings were erected for visitors including a long room for breakfasting with tea, coffee and hot rolls, the morning being a traditional time for the imbibing of fortifying waters. A bowling green and a large swimming bath over two hundred feet long were also added. Other improvements in later years were the addition of a organ to entertain the merry dancing and drinking, and a temporary circus. Despite, or because of, the amusements, the crowds of the Dog and Duck took a more seedy turn with the place becoming known as the haunt of *'the riff-raff and the scum of the town'*. The *'Sunday Rambler'* who visited the place around 1796 discovered a bankrupt banker and his mistress, a notorious lady named Nan Sheldon, although notariety for what is not mentioned, and another lady attired in extreme fashion and known as *'Tippy Molly'*. J de Castro's *'Memoirs'*, published in 1824, similarly recall *'the children of poverty, irregularity and distress'*. In 1799, the institution was suppressed and the buildings were taken by the establishment of the School of the Indigent Blind until 1811 when all was cleared to make way for the present Bethlehem Hospital, more popularly known as Bedlam.

In 1856, the ubiquitous Dr Rendle, our then Officer of Health in St George's parish, on procuring an analysis of water from a superficial well on the site of the Dog and Duck, could describe the medicinal liquid as *'a decidedly unsafe water'* containing many impurities such as *'alkaline chlorides, sulphates and nitrates, gypsum and carbonate of lime'*, with a little *'phosphoric acid'* thrown in. Nowadays, the old hospital has become the Imperial War Museum but here you can still buy a restorative drink of tea or coffee from a delightful chalet in the gardens or take your modern day chances with a can of fizzy drink.

And Dulwich too

Further south, the Dulwich Wells, at the junction of Lordship Lane and Dulwich Common Rd, operated from roughly 1740 when a spring was discovered in the grounds of The Green Man tavern. The 'purging qualities' of the water when drunk fresh 'in the quantity of five half-pint glasses' was reported to the Royal Society. For the next forty years the water was drunk on the premises, sold in the streets and regularly taken to St Bart's Hospital before the spring fell into disuse. The tavern was then converted into the Dulwich Grove school, Lord Byron being its famous pupil.

Dead Dogs of Old

The last subject to be mentioned in our section on drinking water must be the increasing number of dead dogs being excavated from Roman wells across London. Some archaeologists are now asserting that specific animal offerings were made to either induce or oversee a favourable supply of water or to give a final votive of thanks before the depositing of a mass of material to close the well. Water, being associated with the dwelling places of the gods and being a great source of sustenance, could expect some sort of veneration by both pre-Roman pagan britains and Romans themselves. Ralph Merrifield, noted archaeologist has written on this practice that 'the regular occurrence of these fatalities after a well ceased to be used and just before its shaft was filled...suggests very strongly a sacrificial rite appropriate to that occasion'.

Here, in Southwark, no less than twenty dog skeletons were excavated in 1978 from three late 3rd century wells at 1 - 7 St Thomas St. The skeletons differed from other excavated remains in that they were fully intact, ranging from Terrier to Boxer size. The other excavated bones from pigs and chicken had signs of being chopped up and prepared for the purpose of food, not ritual. More digging at 107-115 Borough High St in 1982 uncovered a further 4 dogs from a wood-lined well. The 1977 dig that found the Roman Hunter God down a well beneath Southwark Cathedral also uncovered the skeletal remains of a dog and a cat. Ritual significance was made of this unusual pairing although others put it down to the 'natural antagonism of the two species', and down the well they had tumbled!

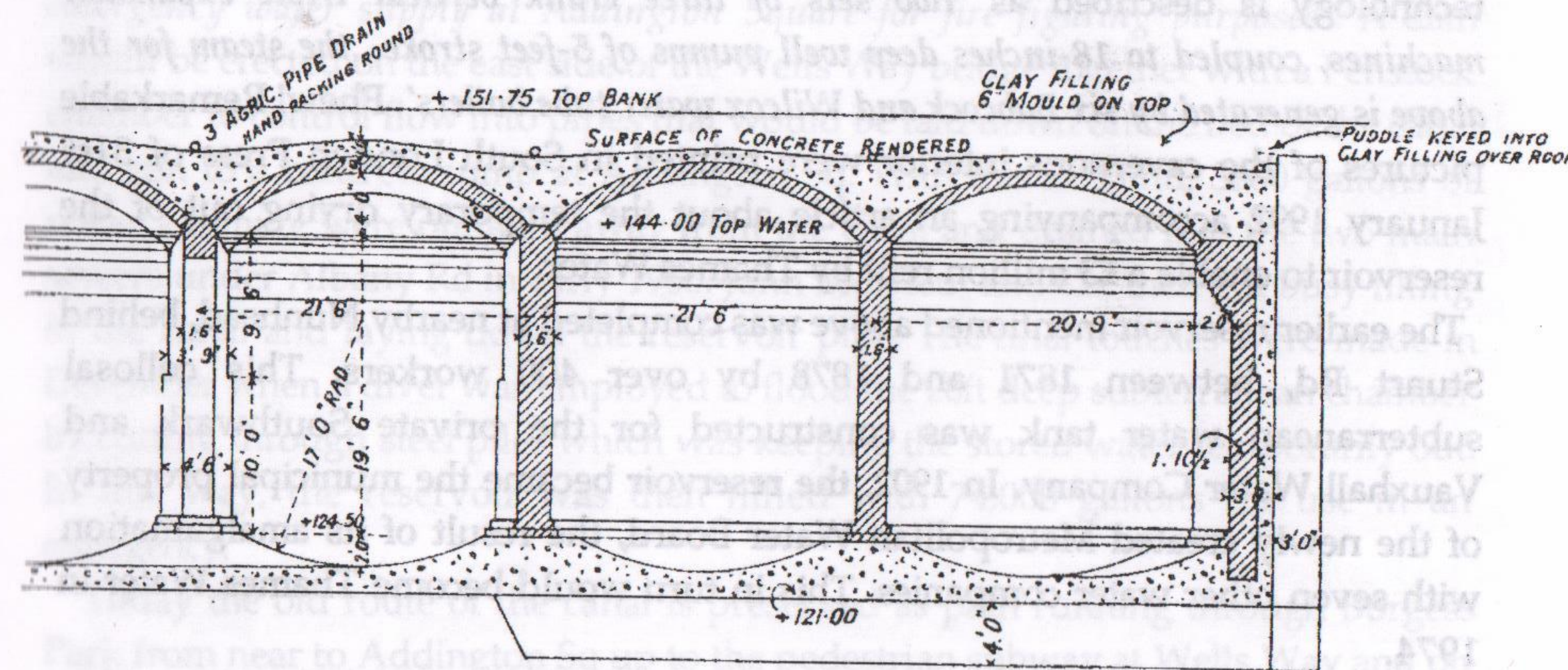
As so many Roman wells have been brought to light around the Borough High St and west end of Southwark St in the last 50 years, it will not surprise readers that at an excavation in Swan St in October 1998, what was found dead in the well? Only the remains of the top half of a human 'deposited head downwards'. The reason why is unclear but ideas include 'ritual, a criminal act or a wider outbreak of disorder at some time in the 2nd century'. Accompanying the (un)fortunate Roman was a dog's head, of course.

Subterranean Cathedrals Full Of Water

Honor Oak Reservoir

If I was to tell you that there is a Victorian building in Honor Oak over 90ft high and made up of 16 million bricks, I bet you couldn't tell me where it is. Well, there is. But you can't see it. Huh? Don't panic. It's the Honor Oak Reservoir, beneath the golf course off Cheltenham Rd and it holds millions of gallons of water for 'back-up' supply to South London.

The Central Service Reservoir at Honor Oak began to be put in place around the close of the 19th century. In 1898, a large Hoffman kiln and brick making machinery were put in place on the 28.5 acre site, to enable the excavated clay to be made into the bricks that would be used to build the vast underground tank for the Metropolitan Water Board. In the end, 19 million bricks were made, 3 million more than were necessary for the reservoir. By 1909 the complex was complete and became the world's largest underground waterhole.



Cross-section through Honor Oak Reservoir

How They Made It

The concrete floor of the reservoir was formed by a series of inverted arches crossing each other at right angles where at each apex a brick column rose up to hold up the parallel segmented arched ceiling. In this way, the reservoir was divided into hundreds of cells, each cell measuring 21ft 6in square. The underground cavern was further divided into four quarters by a strong brick and concrete wall running North/South and East/West, each chamber capable of being filled or emptied independently of each other. At the central meeting of these division walls, a circular valve chamber 24ft in diameter held various large pipes

and valves to control supply and to draw-off water contained within the structure. These valves were all manipulated from a house built over this valve well on top of the buried reservoir. The water, at the time of building, came from the Board's pumping station at Hampton, 17 miles away, via a 42in pipe connecting into the main at Homestall Rd that supplied the earlier Nunhead reservoir. These days, it is complimented by the Thames Water Ring Main, an 80 kilometre long water pipe that runs around London at a depth of 40m below ground, supplying water from pump out shafts at Battersea and Brixton.

In all, the monster watery labyrinth measured approximately 14 acres with 10 acres available to be filled with water reaching at its maximum depth some 34ft below the ground. A technical report on the building includes the fact that *'the lengths of the covering arches, if placed in a single line, would reach about four miles'*.

At the same time, a deep well Pumping Station was built near to the Honor Oak reservoir. The well, 11ft across, was sunk 300ft through the clay, some 150ft of it boring through porous chalk. From here, tunnels were driven in several directions, all in all about 3,400ft, enabling a large supply of water to be tapped and brought to the surface by a series of engines. For industrial archaeology fans, the technology is described as *'two sets of three crank vertical triple expansion machines, coupled to 18-inches deep well pumps of 5-feet stroke...the steam for the above is generated by six Babcock and Wilcox water tube boilers'*. Phew! Remarkable pictures of the cavernous interior were printed in South London Press of 31st January 1992 accompanying an article about the temporary drying out of the reservoir to enable a £3 million refit by Thames Water.

The earlier reservoir mentioned above was completed at nearby Nunhead, behind Stuart Rd, between 1871 and 1878 by over 400 workers. This colossal subterranean water tank was constructed for the private Southwark and Vauxhall Water Company. In 1902, the reservoir became the municipal property of the newly created Metropolitan Water Board, the result of its amalgamation with seven other water companies. This in turn would become Thames Water in 1974.

In the 90's, Nunhead was re-jigged by Thames Water. A new reservoir with a capacity of 7.7 million gallons of treated drinking water was put in place between September 1992 and 1994 at a cost of £16 million, the original Victorian work being stripped out and replaced. The brickwork, which was slipping due to lack of original foundations, was demolished and replaced with a new concrete and steel reinforced reservoir. The old bricks were then crushed and used as fill in the concrete walls. In addition, a 90cm pipeline was also put in place connecting Nunhead to Honor Oak and a new overflow pipe connecting the reservoir to the large Effra sewer that serves a large part of South East London.

The Old Surrey Canal

Beneath The Grass, the Water

The old Surrey Canal ran from Deptford to Camberwell Rd with a branch heading east near the Old Kent Rd to run on to Peckham. Not so many years ago the canal was still in regular use with barges and boats bringing various cargoes from The Thames right up to the wharves at Camberwell and Peckham. By 1960 however, the canal trade was finished and the waterway lay still and stagnant and dangerous to local inquiring children. With this last point in mind the stretch of canal from Wells Way to Camberwell Rd, a small matter of four million gallons worth of mud and murk, was to be filled in, this process revealing a canal bed filled at each side with timbers, bikes, prams, a dozen or more cracked safes and the odd drowned cat in a weighted bag. Here, with utility in mind, the London County Council decided to lay down an underground reservoir to *'provide an emergency water supply at Addington Square for fire fighting purposes'*. A dam would be erected on the east side of the Wells Way bridge together with a Penstock chamber to control flow into pipes that would be laid down on the bed of the canal and run to a concrete sump at Addington Sq. With this in mind, 3000 gallons of water a minute were pumped away from the canal and drained into the two main sewers under Albany Rd in early 1960. John Mowlem and Co. then got busy filling in the canal and laying down the reservoir pipe. The final touches were made in December when a diver was employed to flood the 20ft deep subterranean chamber by cutting through steel piles which was keeping the stored water temporarily out. In this way, the reservoir was then filled with 74,000 gallons for use in an emergency.

Today the old route of the canal is preserved as path running through Burgess Park from near to Addington Sq up to the pedestrian subway at Wells Way and on to Trafalgar Avenue. The branch canal to Peckham is now a pleasant and quiet wooded way running South at the junction of Trafalgar Ave and Sumner Rd and leading right up to the new Peckham Library near Canal Head. There isn't much to see of the dam and sump apart from numerous ventilating grills and manhole covers at each end.

The London Hydraulic Power Company

What was it?

Although hydraulic power was a rival to the then embryonic electrical power supply industry, this little known utility ran successfully for over a hundred years before giving up the ghost to the now commonplace 240 volts we know and love. Simply put, power could be extracted from water sent through a pipe at high pressure by utilising the potential energy stored in it. In London, water was extracted from The Thames or a canal, filtered and warmed to prevent freezing and then pumped via steam pumps into an accumulator tower where high pressure was produced via a weight, a ram and a cylinder connected to a hydraulic main. A more complicated description of how hydraulic power works can be found in the New Scientist of 28th July 1977 where the phrases '*hydrostatic compression*' and '*frictional losses*' are much bandied about.

Hydraulic Power Locally

Hydraulic power first came to the London Docks in 1802 but it was not until fifty years later that it would begin to spread across London. By 1850, numerous small pumps had been built to produce energy for specific local machines. In Southwark, it was not until 1872 that hydraulic power came to Surrey Docks to power hoists at a new grain warehouse with small scale pumping stations put into operation at Hays Wharf in 1874 and Thames Tunnel Wharf in 1877. Around this time the London Hydraulic Power Company sought to create a cheaper supply of hydraulic power based on a wider spread distribution of water via a network of underground pipes. With more customers attracted to cheaper power, profits for the private company would be greatly enhanced. Unsurprisingly, the establishment of the London Hydraulic Power Company Ltd in 1860 was met by strong opposition from the private water companies. The chairman of the Southwark and Vauxhall Water Co. managed to persuade parliament to run a new clause in the LHP Co. Act whereby the new company was required to obtain its water supply from the private water business. In this way, the prevention of success for the LHP Co. was easy - the privates simply refused to sell them any water. Overcoming this, by July 1871, new powers were approved and the company began constructing their first pumping station on Falcon Wharf, off Holland St (now Hopton St) at Bankside. The water came from The Thames, ran through the LHP pipes at high pressure before returning to the river via the sewers. By September 1883, the first LHP hydraulic powered machines were running in nearby St Mary Overy's Wharf. From then on the company began

supplying hydraulic power to customers all over London, the local usage being measured by a water meter, predating electrical metering by four years. For the next sixty years, the ever successful London Hydraulic Power Company constructed an expansive network of subterranean cast-iron water pipes across London from East to West. All in all, by The Thirties, over 186 miles of piping had been laid down with 33 million gallons a week supplied to power over 8000 hydraulically operated machines. The map of these underground pipes and junctions looks as complicated as any single page of a London A-Z. As two-thirds of the company's business was in the dock and railway industry, the generated power was used to power cranes, hoists, conveyors, capstans, lock gates and moving bridges. The remaining business was made up of an assortment of lifts in commercial and residential buildings, revolving stages and safety curtains in theatres as well for organ blowers and vacuum cleaners.

To propel the millions of gallons of water through these pipes, a further four pumping stations were put into place at Pimlico, Wapping, Islington and Rotherhithe, this being the last pumping station to be built, becoming operational from 1903. Pipes were also carried across Vauxhall, Waterloo and Southwark Bridge and in 1896, the LHP Co. had paid £3000 for the now closed Tower Subway, running under The Thames from Tower Hill to Bermondsey, and installed a 10 inch and a 7 inch water main inside it to provide hydraulic power to the local area. Another innovation was to lay their pipes in the under-the-road utility duct of the Rotherhithe Tunnel when it was built in 1906.

Despite their good fortune, by the 1930's, business was beginning to lose out to the increasing electrical take over of power supply. Falcon Wharf Pumping Station was closed in 1931 and became a warehouse. The second world war added to their decline as a vast number of the company's pipes and machines were damaged when bombing raids destroyed large areas of London's docklands. The programme of electrification of the LHP's pumping works from 1953 to 1966 failed to halt the company's decline and by 30th June 1977 it was all over, their remaining 500 customers converted over to electronically-powered hydraulic machinery.

Hydraulic Architecture

The Rotherhithe Pumping Station itself, similar to the other four, comprised of a pumphouse and engine room, an octagonal chimney, a boiler house, a 60ft accumulator tower, engineers houses and coal stores. Records do not show the contents of Renforth St engine and boiler rooms but a comparative description of the Wapping station may help. Here 6 inverted triple expansion steam pumping engines were in place. With water supplied direct from Albion Dock, coal for the station was brought over to the site via light railway from Canada Dock. It is known that in 1927, Rotherhithe was enjoying the work of a parsons steam turbine and, after 1930, Babcock chain grate boilers that could raise steam at 150lbs per square inch. With the introduction of electricity in 1961 to Rotherhithe, all the steam plant was removed and new electric three throw ram pumps were

installed. With the decline of the LHP Co., Renforth St closed for power business in 1977 leaving an underground maze of mainly 15cm pipes roughly 1 ft beneath the streets. An LHP map of the network from 1926 paints a picture of the primary Southwark mains running west to east through Stamford St, Southwark St, Tooley St, Jamaica Rd and then off through the Rotherhithe Tunnel. Above these, the mains run through the various dock side streets - Bankside, Shad Thames, Mill St, Rotherhithe St etc. The most southernly main is a branch that divides at Jamaica Rd to run west down Spa Rd, Grange Rd and Dunton Rd to reach Bricklayers Arms Goods Station. The eastern spur runs down Rouel Rd to Lynton Rd and the Willow Walk Goods Station. Elsewhere, another run-off main heads south beneath the length of Great Suffolk St from Southwark St.

These pipes were later brought into use as fibre-optic conduits by Mercury Communications who bought the LHP Co. in 1977. The LHP Company's offices, which had always remained local to Southwark moving from Holland St in the late 1880's to Hatfields near Blackfriars Rd by 1950, then remained at Renforth St until at least 1985. The original pumping station at Holland St was knocked down after 1977 to enable the council estate Falcon Point to be added to the riverside landscape. Despite the loss, some consolation is that it is still possible, although difficult, to find the letters 'LHP' with a surrounding chequerboard margin on service stop-cock covers in the pavements and gutters along the line of the company's mains. At Renforth St, after years of dereliction, the Grade 2 listed building was messily converted to fashionable private housing around the year 2000. The tower and the chimney remain but to no great effect.

For above ground fans, the rams, sluices and capstans of the hydraulically-powered lock can still be seen at Greenland Dock. The sub-structures of a hydraulic swing bridge including the turntable and hydraulic gear have been preserved at Russia Dock Passage. Tower Bridge's own smaller pumping station can be viewed on the east side of Tower Bridge Rd. A chimney and accumulator tower sit side by side almost invisible beneath the bridge itself, hydraulic power once moving the very bascules of the bridge.

Artesian Well Manufacturers

Islers of Bear Lane, Southwark

After the publication of many horrific analyses of Thames water in the 19th Century, it was no wonder that many London businesses turned to boring their own wells for a constant, cheap supply of clean water to aid their industry and manufacturing. Not only were the problems of contaminated supply surpassed but

the interference and expense of relying on water utility companies or public services were overcome.

For Southwark, with its many breweries and food producers, the local firm of Isler and Co. came to be one of the most popularly used artesian well borers and engineers. Situated in Bear Lane, of Southwark St, Isler's '*Artesian Works*' increased the spread of the French artesian well system whereby a well is sunk far enough into the ground beneath the usual clay, loam, sand and gravel, as at London, to reach into the deep chalk layer, or London Basin, where clean water resides in its porous and cellular structure. When the '*cap*' formed by the heavy clay is pierced by the well, water, if under sufficient pressure will rush to the surface. This is because the level of the water table in the Chilterns and North Downs, the two saturated chalky ridges to the North and South of the Capital, is higher than the water table in central London. The depth of the well '*ensures the total exclusion of any water, either from the surface or any stratum between the surface and the bottom of the bore*'. Originally, the famous fountains of Trafalgar Sq were deep artesian wells, the force of the water coming quite naturally.

Established in 1884, by former '*French and Italian translator*' Camillo Isler, the company sunk numerous local artesian wells to bring fresh water to various Southwark industries. R White and Sons of Camberwell, famous for their lemonade, had wells sunk by Isler's in Bagshot St in 1894, Cunard St and two in Neate St in 1895. Pink and Sons, jam manufacturers in Staple St, Bermondsey were '*never short of water*' after boring a well in 1886. Here, 18 gallons a minute flowed up from under the ground. An analysis of the water from this well in 1889 observed that, of parts per 100,000, 13.9 parts were '*sulphuric acid*'. A second Pink's well was bored around 1889. Other happy Isler's customers were Schweppe and Co. at Bankside, the Hibernia Chambers at London Bridge (1887), Grove's Sawmills in Deverell St, Potts Vinegar Works at Park St, the South London Brewery on Southwark Bridge Rd and Ashford's Laundry in Albany Rd (1908).

Further artesian connection to the Borough could be found with the firm Samuel Francis Baker and Co. of 160A Southwark Bridge Rd who bored wells in 1863 for Mr Cooper, a leather dresser of Crimscott St. Other bores were sunk for Oaster and Palmer's tannery, Grange Rd in 1859 and for Peak Frean and Co's biscuit factory in Drummond Rd in 1878. Another firm, Bridge Iron Works and Co, came to 208 Blackfriars Rd, SE1 from Lambeth in the 1960's. This firm of '*artesian well boring tool makers*' subsequently moved to Potter's Fields in the seventies before leaving the area in the topsy-turvy world of the 1980's.

Lastly, users of the Camberwell Baths, Old Kent Rd were complaining in 1903 that water provided to them via a new artesian well was a nasty rusty colour. Thinking that they were bathing in already dirty water, an analysis was demanded. When the results were announced, the water was found to be reddish brown, not from clay, but from the piercing by the well of a underground spring high in iron mineral content. It was said by many that local rheumatics had

reported feeling better since the dirty water had started to flow.

All About Sewers

The Early Underground Sewers of Bermondsey

Walking the streets of Bermondsey in 1850 might have been a fun affair but it was also a malodorous one. At this time, most of the sewage of the day was still carried Thamesward in open channels. The infamous Jacob's Island, surrounded on all sides by fetid effluence and water, came to be the most famous local example of the poverty and poor sanitation of working class districts in days of old. In 1832, 1848 and 1853, outbreaks of cholera had killed thousands in Bermondsey. The lack of proper sewage disposal meant that rubbish and mess ended up dumped into ditches or cesspools. Added to this, the fairly new household privy often emptied straight into the local streams, the same water supply being also used for cooking and drinking. It was obvious that something had to be done to prevent further epidemics and eventually this came about via the ideas of health reformer, Edwin Chadwick. Even though Chadwick, amongst others, thought that cholera spread via bad odour and not through infected water, his ideas for putting sewage through underground clay earthenware pipes was a step in the right direction.

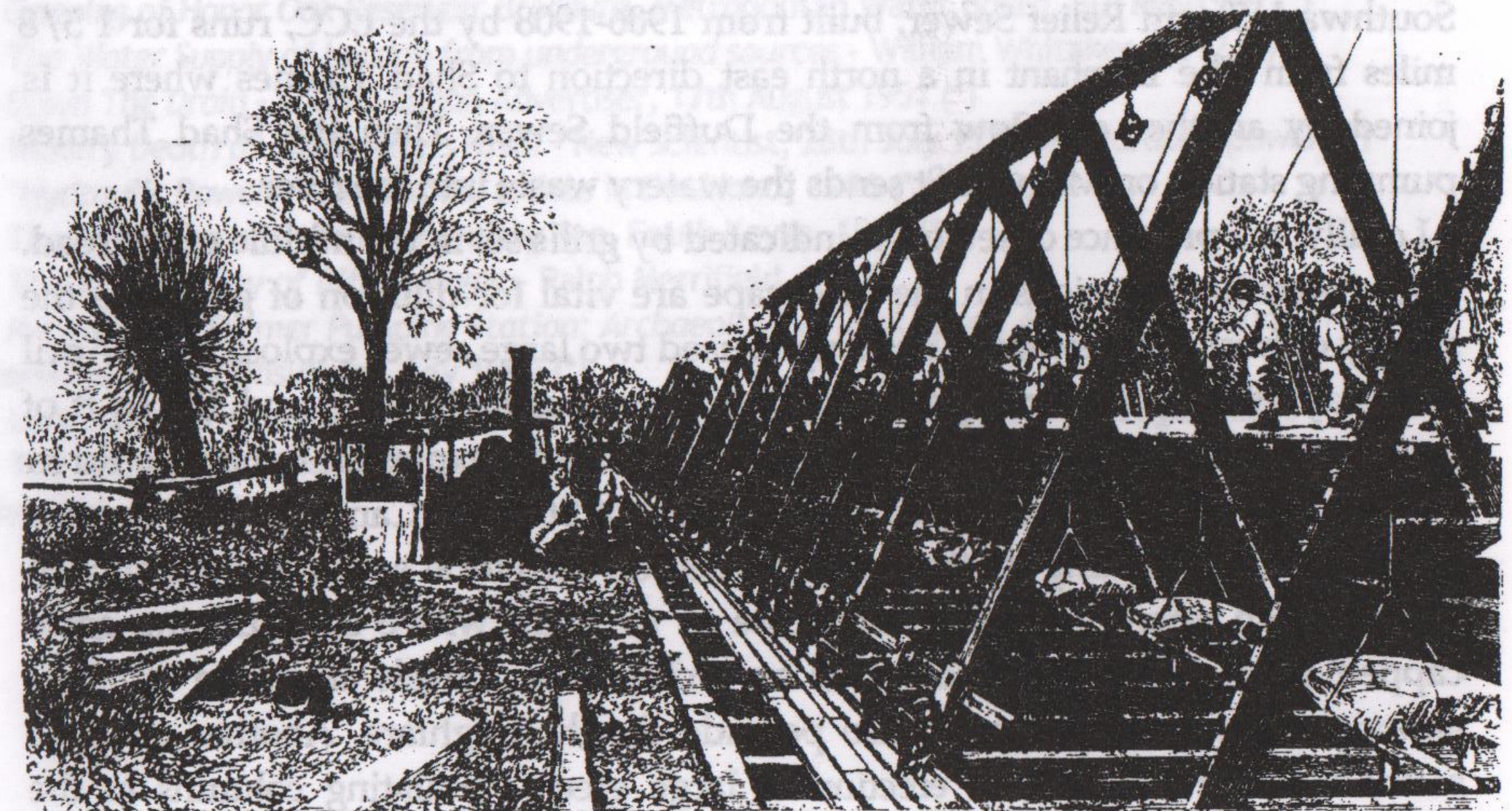
In 1848, the newly created Metropolitan Commission of Sewers began to take the task in hand and organise for the filling in of the streams, closing of the cesspools and the construction of underground sewers. In its time, thousands of feet of sewers were laid beneath the Bermondsey streets - 600ft under Pages Walk, 660ft under Crimscott St and 1069ft under Crucifix Lane, for example, all built in 1854. Alongside the Commission, the local Bermondsey Vestry were also laying down other sewers. Between 1856 and 1860, the Vestry had laid 14,829ft of sewers, less than half of what the MCS had built, but concentrating more on the vital task of connecting up local buildings to existing sewers.

By 1856, the MCS had been wound down and the new spiffy Metropolitan Board of Works arrived to begin a necessary London-wide arterial sewage system that would act as the main drain for the local area. Such a scheme had been the remit of the MCS but had never come about. Delays in creating local sewers were often put down to this lack of main drainage. Now the MBW laid out its serious plans. In September 1859, as a first step, the large Earl Sewer running to Deptford was connected to Bermondsey at Jamaica Row. Despite this, problems with discharge led to the possibility of flooding in this low-lying area as the outlet was below the high-level tide. Eventually, a pumping station was built to force the sewerage into The Thames. Then, taking inspiration from an earlier 1834 plan by biblical scene painter John Martin to 'rescue the Thames' through a

system of intercepting sewers, the MBW began the huge task of draining London's waste from West to East.

Bazalgette...again!

The real backbone of today's London's sewer system was then set out 150 years ago by the Chief Engineer of the Metropolitan Board of Works, Bazalgette. His radical plan for more efficient sewerage and drainage for the capital has left us a vast network of large brick-built sewerage tunnels beneath our feet. No longer would open sewer channels stink up the neighbourhood or The Thames cause a 'Great Stink'. Instead of the flushings of thousands of homes and the waste from local industry running through the streets, the five big sewers that Bazalgette had built across London, take the messiness far, far away to Barking Creek and Crossness. In turn, miles and miles of main sewers were constructed locally to be fed from hundreds of local small scale sewers fed from drainage culverts fed from thousands of toilets and sinks! Mostly, the large and deeper down interceptory sewers run from West to East following the line of The Thames. In South London, the smaller main sewers tend to run South to North following the geographical curve down of the London Basin enabling gravity to direct the waste and water into the intercepting sewer. Pumping stations then do the job of pushing the sewerage from West to East.



Barrow Hoist at the building of Southern High Level at Peckham

The Southern Sewer Network

South of the river, this meant two vast interceptory sewers running from Putney to Deptford, known as the Southern Low Level Sewer, and from Balham to Deptford, the Southern High Level Sewer, both constructed from 1859 to 1868. A

further offshoot from the Low Level line was a special branch sewer that serviced Bermondsey, built in 1865 by John Aird and Sons for £97,515. Metropolitan Board of Works contract drawings from 1862 showing the six Bermondsey construction boreholes along the route depict a landscape now very much absent from modern day Bermondsey. Spa Rd is already in existence but heading east the sewer was laid down beneath market gardens, orchards and old cartways right up to Lower Rd. Less than 25 years later the whole area would be built up with houses and industry. Further South, a similar branch sewer called The Effra runs through Dulwich connecting to the High Level at Peckham.

When all the Southern waste arrives at Deptford, a pumping station lifted the sewerage to run along the long Southern Outfall Sewer, the effluence finally reaching the massive Crossness Works on Erith Marshes to await discharge. Initially, the sewerage was dumped into The Thames but within twenty years the waste came to be chemically treated and dumped further out in a depression far out in the Thames Estuary called 'The Black Deep'. Nowadays, since 1998, all Southern waste is incinerated at Crossness before dumping.

After problems of heavy rains overflowing the sewers, 12 miles of storm water relief sewers were added to Bazalgette's 1300 miles of egg-shaped sewers during the 1870's to prevent floods. Now, when the rainfall is heavy, the sewers run full but the, by now, diluted sewage is able to overflow at special weirs to run through storm relief channels and on into The Thames. The Bermondsey and Southwark Storm Relief Sewer, built from 1906-1908 by the LCC, runs for 1 5/8 miles from The Elephant in a north east direction to Shad Thames where it is joined by another overflow from the Duffield Sewer. Then the Shad Thames pumping station on Maguire St sends the watery waste into the river.

Locally, the presence of sewers is indicated by grills set in the middle of the road. These metallic intrusions in the landscape are vital for dilution of gases via the supply of fresh air. Sewerage build up caused two large sewer explosions in April and May 1909 at the same point in Long Lane causing 54 sq ft and 100 sq ft of pavement to be blown up. An earlier and more deadly explosion in Grange Rd in January had killed two passersby. The Vestry of St Giles, Camberwell, reported in 1886, that ventilating shafts were included on each local sewer at a distance of roughly 50m apart. The shaft itself rose to the road where a ventilating grate capped it off. Airholes equal to 60 sq inches meant fresh air could circulate although some odours would also pervade the thoroughfare. Another effective method was the occasional erection of large green ventilating columns in the pavement. You can one of these explosion-avoiding devices in operation at the junction of Addington Sq and Walworth Rd.

Tracking The Sewers

If you want to know topographically where in Southwark the large intercepting sewers run, then check this:

The Southern High Level Sewer extends from Denmark Hill to Peckham running

beneath De Crispigny Park, Camberwell Grove, Denman Rd, Lyndhurst Rd, Hanover Park, St Mary's Church and Queen's Rd.

The Southern Low Level extends from Camberwell to New Cross running beneath Grosvenor Park, Albany Rd, Neate St, Herring St, Trafalgar Ave, Peckham Park Rd, Pencraig Way, Old Kent Rd and White Post Lane being primarily 6ft 6in to 7ft barrel sewer.

The Effra Branch diverts from the High Level just west of St Mary's Church and runs beneath Evelina Rd, Nunhead Lane, East Dulwich Rd, Lordship Lane/North Cross Rd and College Rd.

The Bermondsey Branch diverts from the Low Level in Deptford and enters Southwark running along Lower Rd. The branch then heads west at Surrey Quays and runs beneath Southwark Park at Gomm Rd, Clement Rd and then between Storks Rd and Keetons St, Dockley Rd to hit the junction of Spa Rd and St James church where the it diverts into the storm relief sewer from Elephant and the Duffield Sluice heading Thamesward. This 6000+ ft 6ft barrel sewer has two Penstock Chambers, one at the Duffield junction and another where it connects to the Earl Sewer or 'Black Ditch' at Deptford, a Penstock being a massive gate that diverts or dams the flow of the sewerage and rainfall.

WELLS, SPAS, WATER and SEWERS:

- *The London Pleasure Gardens of the Eighteenth Century* - Warwick Wroth, 1896 (*)
- *Opening of Honor Oak Reservoir Brochure*, Metropolitan Water Board, 5th May 1909 (*)
- *The Water Supply of London from underground sources* - William Whitaker, 1912 (*)
- *Down The Drain* - South London Advertiser, 17th August 1951 (*)
- *Watery Death of Electricity's Rival* - New Scientist, 28th July 1977 on hydraulic power (*)
- 'Hydraulic Power' - Tim Smith, article in *Dockland*, 1986 (*)
- *Thomas Keyse and the Bermondsey Spa*, Frank Keyse, 1986 (*)
- *The Archaeology of Ritual Magic* - Ralph Merrifield, 1987
- *Renforth St: Former Pumping Station: Archaeological Desk Based Assessment* - Duncan Hawkins, CgMs Consulting, July 1999 (*)
- *London Under Ground: The Archaeology of a City* - Haynes, Sheldon + Hannigan, 2000 (*)
- *The Administration and Financing of Sewer Construction in Bermondsey 1851 - 1860* - Will Shepard, 2000? (*)

Some Southwark Tunnels That Go Under The Thames

The Thames Archway

Robert Vazie and Richard Trevithick

If you wander round Rotherhithe today, you can't escape from Brunel and his famous Thames Tunnel. Once a pedestrian and carriage passenger way, it is now the running tunnels for the East London Line tube. However, before that 'great bore', there was a much earlier attempt to cross below the waters of The Thames which has all but faded away in local memory and recognition.

In the early years of the 1800's, Robert Vazie, a mining engineer originally from Cornwall, had been lurking around on the Rotherhithe and Limehouse river fronts conducting test borings to see if a underwater crossing was in any way feasible. Convinced of the possibility of driving a tunnel beneath the water from one side to the other and that such work would be '*not so expensive as had been expected*', an Act of Parliament was passed in 1805 incorporating '*one Body Politick and Corporate*' The Thames Archway Company, for the purpose of building a tunnel '*from the Parish of St Mary Rotherhithe, in the County of Surrey, to the opposite side of the said River in the County of Middlesex*'. The new tunnel would be '*passable for Horses and Cattle, with or without Carriages, and for Foot Passengers*'.

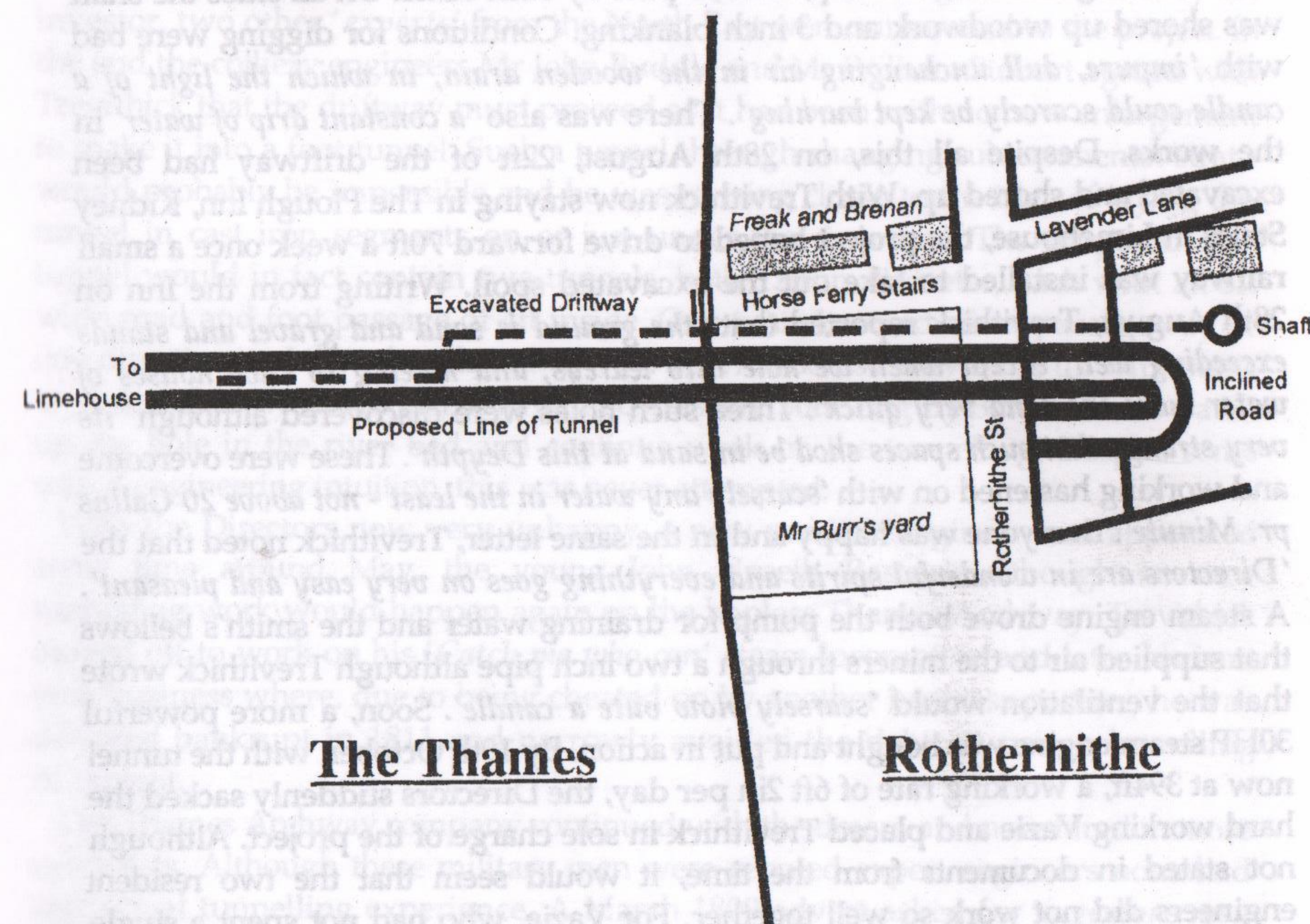
The money needed to see the adventure through was quoted at £140,000 so a subscription was started to raise the money with shares being sold in £100 lots. Vazie and family were some of the first to stump up the capital before other investors began to be attracted by the pioneering scheme. The Parliamentary Act also allowed for the sum of £60,000 to be raised by mortgage if it was deemed necessary.

The Great Work

Vazie chose to start the tunnel on the Rotherhithe side and the site works were located between Rotherhithe St and Lavender Lane (now Road) at a distance of 315ft back from the river. An 11ft in diameter shaft was to be sunk into the earth until it reached an expected band of clay which would be perfect for tunnelling through to the other side of the Thames. One year later, with the shaft only

Plan of Thames Archway Company's River Tunnel - showing site and workings at Rotherhithe 1805 - 1809

taken from Thames Archway Company lithograph 1805



reaching 42ft deep and a constant problem of water leaking in from the surrounding marsh land, the money raised so far was all used up. At this point it was becoming difficult to persuade investors to keep the money coming in but after Vazie made new borings and restated the feasibility of the clay band beneath the river, one brave soul invested enough to keep the project going. However, with the shaft now reduced to only 8ft across, at the depth of 76ft, the engineer reached quicksand and the investors again began to worry. Directors of the Thames Archway now sought the opinions of William Chapman and John Rennie, two highly respected engineers who proceeded to disagree on what would be the best way to continue the tunnel. Vazie, at this point wishing to please the Directors recommended the good advice of Richard Trevithick, an all-round famous engineer responsible for all manor of steam dredgers, barges, engines and other assorted projects. Although a great inventor, Trevithick was a terrible businessman who had been constantly ripped-off throughout his commercial ventures. For whatever reason, Trevithick signed up with the Thames Archway Co. on 10th August 1807

to complete the driftway for the fee of £1000, or £500 if the company abandoned the scheme mid-way. Trevithick himself reckoned on *'making a 1000 pounds very easy'*. From the bottom of the shaft, or *'pit'* as he called it, Trevithick saw no problems ahead and *'no doubt of compleating it speedily'* in nine months. With this in mind, he sent for men from Cornwall to help him out.

On 18th August, the driftway from the bottom of the shaft was begun, driving North, the tunnel only 2.5 to 3ft wide and 5ft high and with little possibility for miners or engineers to stand up, turn or pass by each other. On all sides the shaft was shored up with woodwork and 3 inch planking. Conditions for digging were bad with *'impure, dull unchanging air in the wooden drain, in which the light of a candle could scarcely be kept burning'*. There was also *'a constant drip of water'* in the works. Despite all this, on 28th August, 22ft of the driftway had been excavated and shored up. With Trevithick now staying in The Plough Inn, Kidney Stairs in Limehouse, the project hoped to drive forward 70ft a week once a small railway was installed to take out the excavated spoil. Writing from the Inn on 28th August, Trevithick reported that *'the ground is sand and gravel and stands exceeding well, except when we hole into leareys, and holeing to such houses of water make the sand very quick'*. Three such holes were discovered although *'its very strange that such spaces shod be in sand at this Deypth'*. These were overcome and working hastened on with *'scarsely any water in the least - not above 20 Gallns pr. Minute'*. Everyone was happy and in the same letter, Trevithick noted that the *'Directors are in wonderful spirits and everything goes on very easy and pleasant'*. A steam engine drove both the pump for draining water and the smith's bellows that supplied air to the miners through a two inch pipe although Trevithick wrote that the ventilation would *'scarsely blow oute a candle'*. Soon, a more powerful 30HP steam engine was bought and put in action. By 19th October, with the tunnel now at 394ft, a working rate of 6ft 2in per day, the Directors suddenly sacked the hard working Vazie and placed Trevithick in sole charge of the project. Although not stated in documents from the time, it would seem that the two resident engineers did not work so well together. For Vazie, who had not spent a single night away from the project area, it was to be the end of four and a half years hard and dedicated work.

Disaster

By 29th November, the working speed was up to 11ft 2in per day and at 26 January 1808, with the problems of quicksand encountered and dealt with and a hard band of rock dispatched with *'chisels and wedges'*, the tunnel was now 1028ft in length. It was at this point when the roof partially collapsed leaving a large hole in the river bed which had to be plugged with a large batch of clay much to the displeasure of the Mayor of London who hated interference in his river bed. It was a perilous situation with the driftway filling rapidly with the high-pressured high tide water until those in the tunnel had barely any breathing room between the level of the water and the roof of the shaft. Happily, everyone made a lucky escape, Trevithick coming out last, covered in mud and having lost both his hat and shoes. By this time, Trevithick's entire family had moved up from pastoral Cornwall to join him at a house in Rotherhithe *'in a dingy situation near the mouth of the driftway'*, the landscape filled with constant smoke and noise. Such

adventures did not bring much joy to the happy home or his long suffering wife Jane. Trevithick's practice of riveting together large experimental tanks in their new Rotherhithe home probably did not help matters along either.

Despite the accident, Trevithick managed to extend the shaft another 12ft by various inventive means and expected to *'hole up to the surface in 10 or 12 days'*. Such optimism now did not cut much mustard with the Company and in April, with the Directors very unhappy and some attempted rubbishing of Trevithick by an investor, two other *'experts'* from the North East were summoned to the project. In the end the colliery engineers Mr John Buddle and Mr William Stobart agreed with Trevithick that the driftway must proceed as it had been with no new enlargement to make it into a foot tunnel. Such a tunnel through changing subterranean strata would probably be impossible and he was moving closer to the idea of laying the tunnel in cast iron segments on or just under the river bed. The proposed new tunnel would in fact contain two tunnels, both 12ft in diameter, each with an 8ft wide road and foot passage of 4ft inside. One tunnel would allow passageway in one direction and the other the other way. Trevithick also now came up with plans to sink a shaft within a large clay-filled caisson, 50ft long by 30ft wide, to patch up the hole in the river bed and continue work on the tunnelling. Despite some sound engineering intuition, this was never attempted.

With the Directors now very unhappy, a new resident engineer was appointed some time around May, the young John Urpeth Rastrick although no new tunnelling work would happen again on the hapless Thames Archway. Trevithick moved off to work on his *'Catch me who can'* steam locomotive and later his iron tank business where, due to being cheated on by another business partner, he was declared bankrupt in 1811 and narrowly avoided the debtor's prison by selling the patent.

The Thames Archway company continued with the dream and now hired in more specialists. Although these military men were reputed expert engineers none had any actual tunnelling experience. A March 1809 advert asked for *'ingenious men of every description'* to stump up ideas to see the project through and despite a whole host of new plans being submitted, the overseers William Jessop, an engineer and Dr Hutton, a mathematician, concluded that *'it was impracticable to make under the Thames a tunnel of useful size by an underground excavation'* and the Thames Archway was finally abandoned. Brunel's Thames Tunnel, bored with a tunnelling shield, the first subterranean crossing arrived, after years of deaths and delay, in March 1843. Sadly Trevithick had died ten years earlier in April 1833 aged 62, being buried in a paupers grave in Dartford, Kent despite a life of wonderful inventions and strange adventures all around the world.

The Thames Tunnel

The long and deadly history of constructing Brunel's Thames crossing from Rotherhithe to Wapping (1825-1843) is not included here, due to the large number of books and pamphlets readily available. The tunnel, since December 1869, has

been used for the East London tube line. Details of Brunel's innovative tunnelling shield and images of 'The Great Bore', as it came to be dubbed, can be found at the Brunel Engine House Museum, Railway Avenue SE16 (0207-231-3840). Close by is the remaining brick stump of the first shaft to sunk on the project. A Guardian report from 29th July 2002 reveals that the trustees of the Museum hope to convert the disused shaft into a 'vertical museum'.

The Tower Subway

An Iron Tube Beneath The Thames

The creator of the Tower Subway, 'the first tube tunnel in the world', Peter William Barlow had already seen some success early in his life with numerous inventive engineering projects. Responsible for the erection of the first bridge at Lambeth in 1862, his work on that bridges piers had convinced him of the practability of driving cast-iron cylinders horizontally in suitable ground to create sub-aqueous tunnels. The previous blunders of the infamous Thames Tunnel had many engineers and entrepreneurs convinced that such a task was impossible. With great enthusiasm, by 1864 Barlow had designed and patented a circular excavating shield, No.2207, a change from the innovative but rectangular cutting shield Brunel had come up with. The new idea was that from within the thin iron cylindrical cutting shield, cast-iron segments would be pieced together to form a tunnel as the cutting shield edged ever forward. The thinness of the shield prevented subsidence as the distance between the segments and the earth was minimal. In the same year Barlow applied for an Act to build a subway beneath the River Thames below The Tower of London. A scheme Barlow had been involved in to build a bridge below The Tower had earlier come to nothing and London Bridge, the nearest crossing for Rotherhithe and the East End was greatly overcrowded. Despite the technical wizardry, wharf owners would not allow the scheme to happen on their land and it was abandoned. Not to be put off, Barlow in 1867 wrote a 16-page pamphlet entitled 'On The Relief of London Street Traffic, with a description of the Tower Subway now Shortly to be Executed'. In this he described his idea of the 'omnibus railway' whereby carriages on rails within the slightly dipping subway would use gravity 'to give the required velocity'. This time around the subway would be west of the Tower and he already managed to get the approval of testy Tower Authorities and secured arrangements for the land on the Surrey side. He further noted that 'Mr Tilley who is making borings for the Tower Subway, informs me that he is boring for a tunnel from Dover to Calais'. For the privilege of digging on Tower land, Barlow was charged Crown rates of £10 a yard for tunnelling under Crown land plus £3 a yard for tunnelling under their side of the river. A further sum was payable for the site works, charged at the rate of £150,000 per acre. Seeing that The Times reported that Barlow's works were 'about the size of a kitchen' this may have been manageable. In the end, an estimated tenth of the Company's funds went to the Government. A bag of 300 Henry II silver coins found by the tunnellers but counting as treasure trove also went straight to

the Crown.

On 29th May 1868, an Act of Parliament approved the plans, incorporated the Tower Subway Company and authorised capital of £12,000 in 1200 £10 shares. A further £4000 could be borrowed. Compensation to watermen was also dealt with in the act. Soon, directors for the company were sorted out and the planned route of the £16,000 project was settled as running from a point on Great Tower Hill in the north to place just beyond Pickle Herring Stairs in the south. In no time at all the capital flowed in but there were difficulties in finding anyone to undertake this, as yet, untried method of construction. Eventually, James Henry Greathead, a former pupil of Barlow and a considerable talent, tendered for the contract and was accepted. Barlow was very happy to work alongside the 24 year old Greathead and the tender was also low, just £9,400 for the subway and working shafts.

The Work Makes Haste

Now, with the tunnel set to burrow through the thick London clay and the need for compressed air working unnecessary, Greathead devised his own tunnelling shield. It was about 4ft 9in long and made from wrought and cast iron, weighing roughly 2.5 tons. Through a door in the middle of the shield, enough clay was removed to make a chamber for a single man to work on enlarging the working space. With two men then at work, all the clay within the shield was removed for a distance of 2ft at a time before through means of screw-jacks the shield was forced forward into the excavated space.

The tunnel itself would be roughly 1,340ft in length, running level for some 100ft on each side before dipping down on a gradient of 1 in 29 towards a once-again level middle section. Keeping an average distance of 30ft left between the top of the tunnel and the river bed, the shield advanced 9ft every 24 hours by means of the hard working round-the-clock relay gangs. The tunnel segments were made up of cast-iron rings 1ft 6in wide and seven-eighths of an inch thick, each portion caulked with oakum and pointed with medina cement. The space between the edge of the shield and the tube segments, less than one inch, was then filled with blue lias lime which acted as a preservative for the iron.

The actual construction work was completed in well under one year with the first shaft begun in Tower Hill on 16th February 1869 and the finishing touches complete by December.

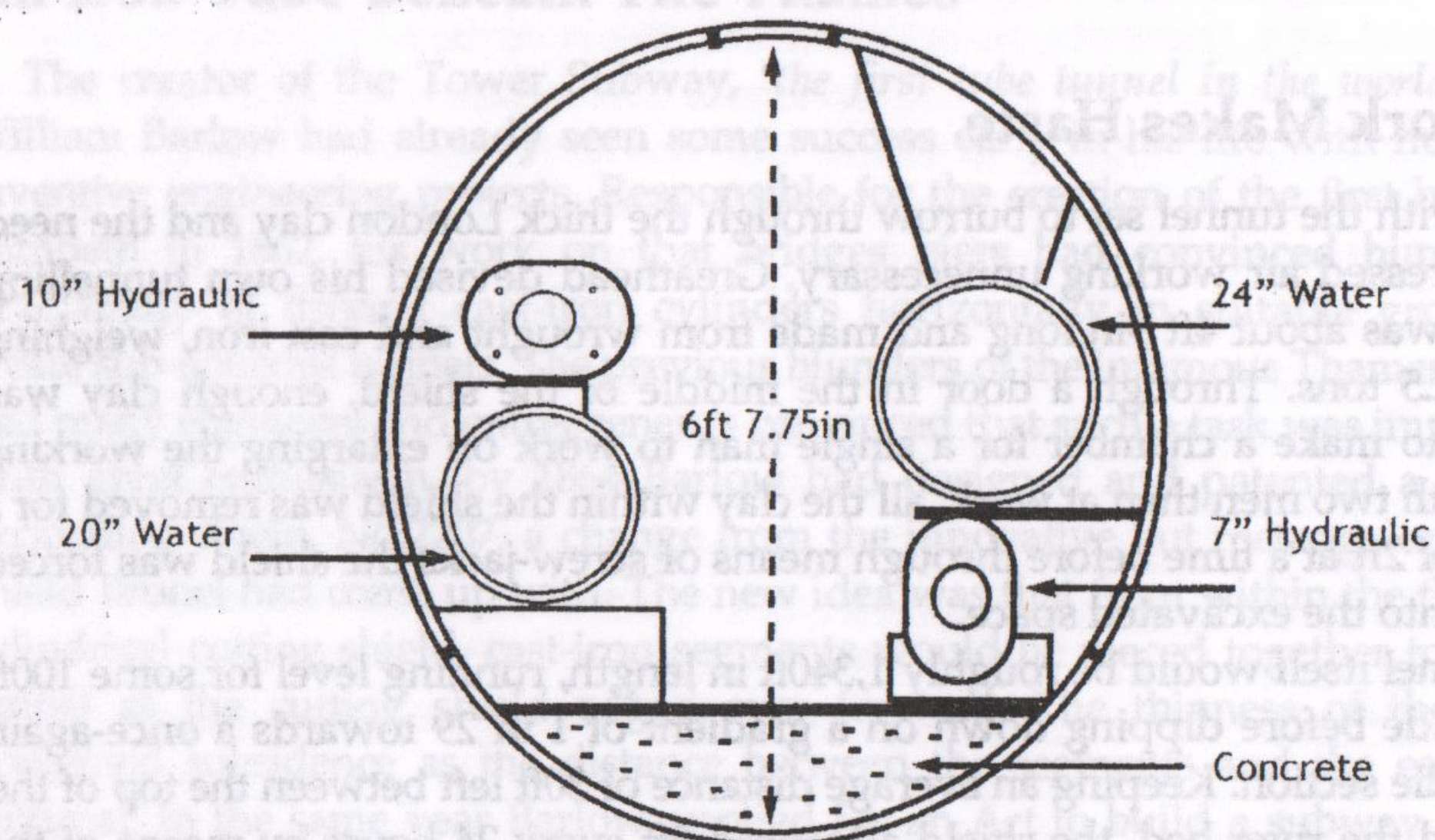
From Tower Hill the new subway ran to the Surrey side and passed under Barclay's Brewery to end on the west side of Vine Street, about 200ft from the riverside Pickle Herring Street. Inside, the diameter was squeezed by the internal flanges to just over 6ft 7 inches with a 2ft 6in guage railway track laid on timber sleepers which in turn rested on the concrete filled bottom of the tunnel. For passengers to descend into the subway, two shafts were built at each end with a square iron kiosk roughly 9ft square on top serving as an entrance to the lifts. These lifts were iron cages with capacity for seven passengers at a time. The Tower Hill shaft near to Lower Thames St was 58ft deep and 10ft in diameter and the Vine St shaft was 52ft deep and 10ft in diameter, reducing to 8ft at the bottom. At the bottom of the shafts a waiting room, some 35ft by 19ft and with seats, was

level with the subway itself. Beneath the subway, chambers at each end housed steam engines that powered the car and the lifts.

Once at the bottom of the shaft and ready to cross, passengers took a single 10.5 ft long carriage 'omnibus' pulled along by a steel cable that ran over a drum operated by an engine at each end of the subway. No windows were provided for the 14 seated passengers but woodcuts on the walls apparently provided a sense of space.

The Tower Subway

- cross section showing arrangement of pipes and hangings -
taken from Air Raid Damage Emergency Repair Report 1940



Squeezing Across The Thames

Experimental trips started on 28th March 1870 with a single fare costing 2d for first class and 1d for second class. With only one carriage in operation, first class here meant only a priority for journeying in times of excess passengers. Despite an initial success in moving people from one side of the river to another, and a temporary price increase in first to 3d, there were also numerous problems with delays in the lift and car and difficulty with keeping the paraffin lanterns lit due to a rush of air from the movement of the carriage. The lifts also had to be upgraded for safety reasons. However, the subway went into operation full time on 2 August 1870 with the car running twenty trips an hour daily but not on Sundays. The time it took to go from one side to other was approximately 25 seconds in the lift and 70 seconds in the omnibus.

Sadly by November, a Receiver was appointed by the Master of the Rolls as a result of pressure from some creditors on the company and the railway operation ceased, partly in due to some minor accidents and trouble with the mechanics. After this, the car, lifts and accessories were all taken out and the Tower Subway now became a foot tunnel. In each shaft, timber staircases were put in place of the

old lifts, Tower Hill having 96 stairs down. Timber pavement was provided until its replacement with stoneware tiles in 1896 plus gas jets illuminating the way through at regular intervals.

Once again, in December, the tunnel was opened for traffic with the journey fare reduced to half a penny. By 13th March 1871, the opening hours were from 4.30am until 12.30am and a few months later an estimated 19,000 to 20,000 people were using the crossing a week. Such was the success of the new tunnel that in July 1882 a conference of working people from both sides of the river resolved that the subway, being such a great service to the working classes, should be enlarged and made accessible for vehicular traffic. The meeting also declared itself opposed to any new bridge at the Tower of London. Meetings in Bermondsey, Rotherhithe, Limehouse and Whitechapel were also held in support of the subway and a manifesto was printed and distributed on Mayday 1883. Despite this solid activity, the end was looming when the Metropolitan Board of Works, who favoured a new bridge, gained the Tower Bridge Act of August 1885 which led to the building and opening of Tower Bridge, complete with footway, in June 1894. The Act recognising the effect on the fortunes of the Tower Subway allowed for compensation to be forthcoming. In the end, with the subway 'injuriously affected' by the new Tower Bridge, the Company, hoping for £30,000 received after arbitration a mere £13,000. The subway came to a sad and miserable end on 7th March 1896 and was sold under powers enacted one year later to the London Hydraulic Power Company for £3000 for the running of hydraulic mains under The Thames. Agreement was also later reached by the new owners for the Metropolitan Water Board to lay two 20 inch cast-iron water mains inside the old subway. The first went down in 1898, the second in 1925. The old iron staircases were then removed and replaced by a series of ladders and the entrance kiosk on Tower Hill was demolished and replaced by a circular brick structure. A plaque put up on the side reads 'London Hydraulic Power Company - Tower Subway - Constructed A.D 1868' which is wrong as work did not start until February 1869.

Despite the end of the Tower Subway, the initial success persuaded Barlow that further subways should be attempted. In 1870, he had the Southwark and City Subway Company incorporated by an Act with the intention of running a tubular underground railway from St George The Martyr church in The Borough through to Arthur Street West in The City. Despite his enthusiasm, the capital could not be raised and by 1873 he had abandoned the project making the Tower Subway his last major work. Retiring from his engineering occupation around the 1880's, he died at home in May 1885. It should be noted that Greathead, the former pupil of Barlow, went on to work on the great City and South London Railway twin bore tunnels from Elephant to The City, the basis of the early Northern Line.

The Tower Subway Today

In 1940, as a result of a bomb explosion in the river bed of The Thames and the resulting damage to the subway, a 170ft section of the tunnel was replaced with an expanded diameter of 10ft. Although the bomb did not hit the tunnel, the clay transmitted the shock through to the tunnel which closed up in a part from its 6ft 7in diameter to only 4ft 2in. Luckily little water penetrated the tunnel. The

contractor engaged in the repair work, which due to wartime restrictions was not reported on until 1945, was the famous and ubiquitous John Mowlem and Co Ltd.

By the 1980's, with the Tower Subway reappearing in the public mind through the publication of Trench and Hillman's '*London Under London*', the subway still carried the water mains of the then Thames Water Authority. Not long after, the subway changed hands and became the property of Trident who ran cable television through it. Today it is the property of Cable and Wireless. The more recent circular brick entrance still stands on Tower Hill looking like a closed up tourist toilet. Sadly, on the Southwark side, with Vine Street now the very short Vine Lane north off Tooley St, the entrance structure is long gone and the entrance point is slap bang in the middle of the vast More London development by Tower Bridge. Letters to the Liaison Officers of the building works could not get to the bottom of what would be happening to the entrance point but it is likely that one of the many More London offices buildings will have a curious and interesting trapdoor in its basement, as has happened at other sites built over disused tube lines.

The Rotherhithe Tunnel

More Thames Crossings Needed

Various attempts have been made to bridge the Thames at Rotherhithe to make up for the lack of crossings available east of London Bridge. In the 1816, a bill was promoted for the erection of an iron high-level bridge from Hanover St in Rotherhithe to New Gravel Lane in Wapping. Despite successive annual bills the scheme had petered out by 1818. A more determined effort had come in 1878 from the robust and go-getting Metropolitan Board of Works who planned a high-level one span bridge from Horselydown to Little Tower Hill. Again, due to strong opposition, the Board's Bill was rejected. Not to be defeated, Bazalgette, the Board's chief engineer, then proposed a series of crossings including a bridge at the Tower, tunnels at Rotherhithe and at Blackwall plus two ferry crossings at Woolwich and Greenwich. As it turned out, despite most of the plans being scuppered at the time, time has seen all but the Greenwich ferry crossing come into existence. Tower Bridge, backed by the City of London Corporation opened in 1894. The Woolwich Ferry began sailing in 1889 and a foot tunnel, opened in 1902 replaced the mooted Greenwich ferry. Lastly the Blackwall Tunnel had come into operation in 1897.

With the establishment of the London County Council in 1889, the question of a crossing at Rotherhithe came up once again. A proposed ferry crossing came to nothing in 1893 but by 1900 the Thames Tunnel (*Rotherhithe and Ratcliff*) Act was passed. Despite furious opposition and many amendments, the plans were set in motion for a sub-aqueous tunnel between Rotherhithe and Shadwell at an estimated cost of £2,198,250. By October 1903, with property acquired, the tenders were put out to potential tunnel builders. With the two lowest tenders

excluded on the grounds of insufficient experience, Price and Reeves, the '*railway and dock contractors*' from Westminster, won the contract and work was ordered to begin on 14th April 1904.

The requirements set out at the planning stages were as follows: that sufficient roadway be incorporated to allow two carts or carriages to pass by each other and with a broad pavement on either side of the thoroughfare; that the gradients would be easy on local traffic; that the length of the tunnel would be as short as possible consistent with the gradients. This required the tunnel to run as close as possible to the river bed; that the entrances to the tunnel would be placed in busy, well-known streets for easy access; that the construction process be as watertight as possible to avoid the use of costly pumping measures.

Planning and Construction

To give as much space as possible for traffic and foot users, 16ft would be allowed for the width of the road and the pavements would be 4.8ft each. On the question of the gradients, the open approach section of 2,020 feet would be about 1 in 36 taking the road way from street level entrances just off Commercial Rd in Stepney and off Lower Road in Rotherhithe to roughly 75ft underground. The total length of the tunnel would finally stretch for 6,883 feet (1.3 miles) consisting of the open section, a further 1,122 feet of cut-and-cover and a middle segment of cast-iron and concrete tunnel of 3,741 feet.

Walking the tunnel today reveals the following:

- From Lower Rd, you descend roughly 24ft for 280 yards at which point you stand right over the running tunnel of the East London Line. A few yards on and you reach the start of the cut-and-cover section which runs 180 yards to Shaft No.1. At this point, the tunnel proper is entered and after 300 yards, you reach the deepest level below ground. Here is Shaft No.2. The passage from Shaft No.2 to Shaft No.3 is 515 yards, rising gently (1 in 800) to facilitate drainage. This section is the subaqueous portion of the tunnel and runs obliquely to the river to avoid the Shadwell Basin on the north side. Leaving the water, you begin to ascend again, first for 390 yards to Shaft No.4 and then another 200 yards of cut-and cover. This section curves widely before settling down for the final 360 yards of open-approach.

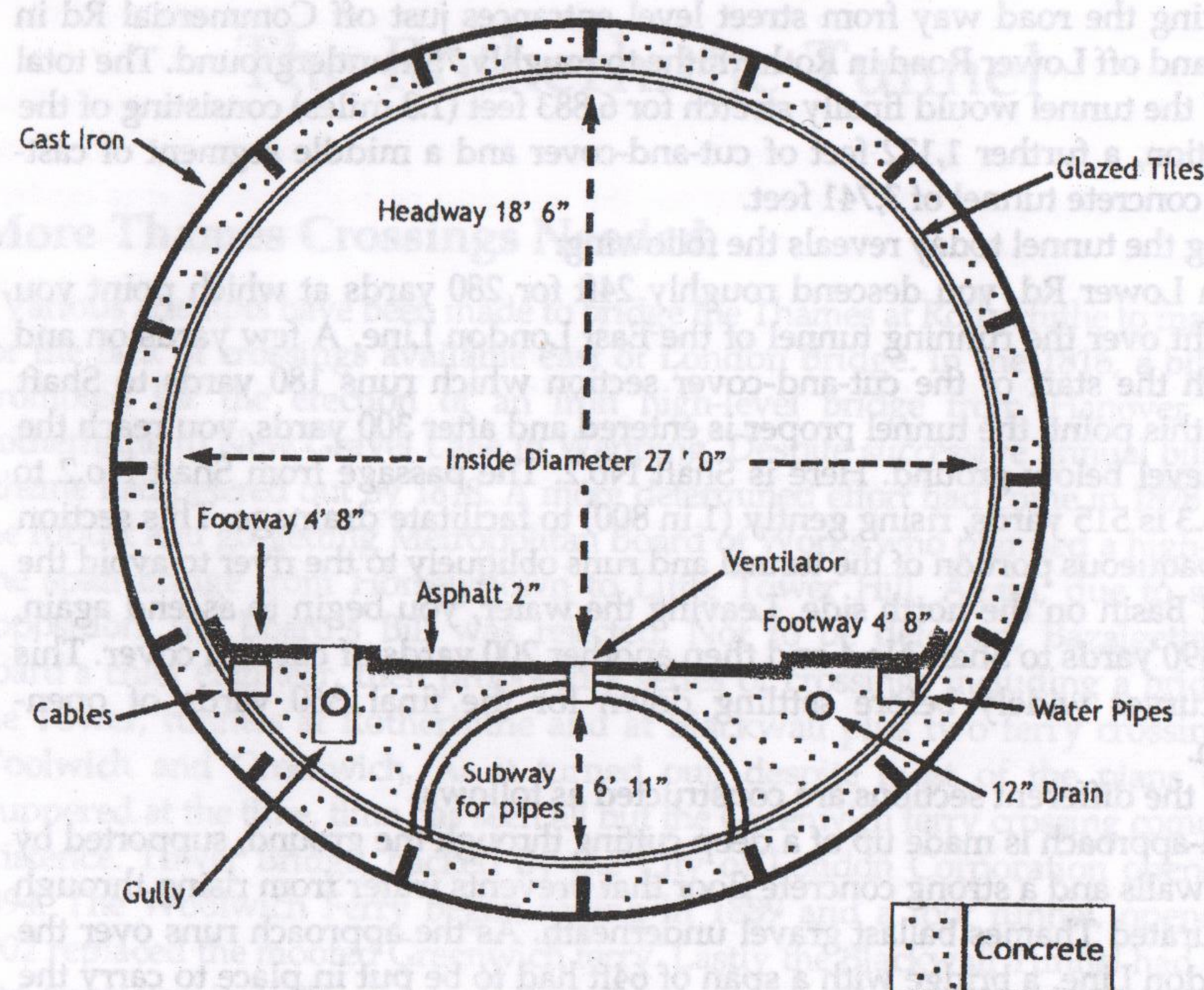
Briefly, the different sections are constructed as follows:

The open-approach is made up of a deep cutting through the ground, supported by concrete walls and a strong concrete floor that prevents water from rising through from saturated Thames ballast gravel underneath. As the approach runs over the East London Line, a bridge with a span of 64ft had to be put in place to carry the tunnel over the railway line less than 20ft below.

The cut-and-cover section is simply a deep trench cut into the ground enabling a brick work tunnel to be constructed instead of bored. On completion, the tunnel is sealed over with earth. Here, with the trench ranging from 35 to 56ft in depth and with a width of 35ft, timbers held the sides in place and water was conducted by pipes away to wells or sumps before being pumped to the surface. As the trench drove forward, sections of tunnel were built of 2ft thick brickwork with an internal diameter of 27ft. On completion, asphalt was added over the brickwork to

keep out water. Then a final layer of concrete was put down to give the tunnel additional strength. At the point of entry from open-approach to cut-and-cover, ornamental stone work in red granite finish the tunnel faces.

The more complicated cast-iron segments of the tunnel were completed, as per normal, through the sinking of four huge steel caissons each one provided with two circular tunnel openings that are plugged until the tunnelling shield is ready to run through the shaft. The caissons were 60ft in width and the tallest being close to 100ft high and weighing 7,000 tons. Partially assembled on the ground and then fully built up as the ground beneath the shaft was excavated, the rate of descent averaged about 1 ft per day. Derrick cranes hoisted out the excavated material and compressed air removed the water that slowly seeped into the riverside shafts No's 2 and 3. After reaching the required depth, the underside of the shaft floor was filled with concrete to provide a stable base and spiral stairs were fitted in 2 and 3 to provide entry and exit points for pedestrians. Lighting was put in place as three rows of incandescent electric lamps spaced 30ft apart in each row.



The Rotherhithe Tunnel Cross Section

based on drawing by Maurice Fitzwilliam

London County Council Chief Engineer 1908 - NOT TO SCALE

Tunnelling

The tunnelling began in February 1906 at Shaft No.3 and reached the other side of The Thames in November. The tunnelling shield was larger than any other previously employed on The Thames and was made up of an 18ft hollow cylinder some 30ft in diameter and containing sixteen 6ft compartments for tunnelling work. Forced forwards by hydraulic jacks, with short lengths of cast-iron segments held temporarily behind while excavation took place, the spoil was sent back via small railway wagons on a specially laid track. As the ground was removed, the jacks then pressed the shield forward for the length of a ring (2.6ft) in a matter of minutes. In a 24 hour period it was usual that the shield would advance by 10ft by way of 75 labourers working three very hard shifts of 8 hours each under compressed air. With very little delay like Trevithick or death like Brunel, the tunnel section was completed by August 1907 with only the tiling, road building and lighting to be completed.

The actual underwater tunnel is made up of cast-iron plates bolted together at internal flanges. The plates are each built up of sixteen 2.6ft wide rings weighing 19 tons plus one further special wedged key-piece. All the flanges were machine finished to provide a tight fit. A small groove at the inner side of the flange provides what is known as a 'rust joint' where cast-iron borings and salt-ammoniac is hammered in to finally set very hard and watertight. Where the tunnel curves on the north side, each ring had to be slightly tapered. After completion of the iron section, concrete was used to line the tunnel. Interestingly enough, before the road was finally laid inside the tunnel, a utility subway, approx. 13ft wide and 7ft high, was built underneath through the whole length to provide an easy access passage way for various pipes, electric cables and drains. Finally, the inside of the tunnel was covered with over 1,250,000 glazed white tiles. To prevent large vehicles from going down the open-approach and then finding themselves too big to fit the tunnel, special gauge arches were put right at the start of the vehicle entrance to weed out the enormous. In a pleasant touch these were made up of semi-circular sections of the original cutting edge of the shields.

One year earlier than anticipated, the Prince of Wales officially opened the new convenience on 12th June 1908, allowing folks and vehicles to cross from Rotherhithe to Stepney and back at total final cost to the LCC of about £2 million. In fact, in the first year of operation, figures record that 2,389,552 pedestrians and 946,398 vehicles took the new sub-aquaeos route.

In Southwark, one social cost was the displacement of 1,707 'persons of the working class' although provision was made in the original enabling Act for rehousing. A site acquired at Swan Rd was used for large blocks of tenement buildings. Winchelsea Buildings were built in 1902 with Rye and Sandwich Buildings put up in 1903. Hythe and Seaford Buildings followed a little later.

Despite the displacement, the new tunnel provided work for 23 staff including electrical fitters, pump attendants, a lamp cleaner and labourers, man and boy. The Tunnel Superintendent, responsible also for Blackwall and Greenwich, worked out of Rotherhithe for £325 per year plus house and free coal and light. Lower down the scale, the Stores Clerk received £2 5s per week to oversee the Tunnel Stores which supplied all three Thames tunnels.

Visiting the Shaft Heads

Various refits and disasters have taken place including a single decker bus catching fire in the tunnel on 16th May 1931. The incandescent lights were replaced by fluorescent ones in 1956 and again upgraded in 1980-81 when an £1.8 million renovation of the illuminations and vent system closed the tunnel for 8 months. Another £1.5 million was spent on replacing the eight vent fans in November 1998, each new fan weighing in at five tons each. If you visit the route of the tunnel, it's worth stopping to see the lovely brick shaft heads. No.1, the old construction shaft topped off with a conical roof, is at the junction of Brunel Rd and Canon Beck Rd and bears a small historical plaque. The other one, with the four fans whirring down below, is on the riverside off Rotherhithe St, just west of the old Surrey Basin. This fancy red brick and Portland stone drum is nothing more than a grandiose entrance into a large cylinder sunk into the ground. Inside, a wrought-iron staircase descends right to the level of the fans and footway below. Inside, the spiralling balustrade and cast lamps have been retained, although sadly this oft-used pedestrian entrance is now closed to foot traffic. The building is partially obscured by heavy metal security fencing but you can still peer through and see the LCC monogram that features in the many decorative iron grilles. On the other side of the river, the companion shafthead entrance in King Edward Memorial Park, Shadwell, is fully viewable.

Taking The Tunnel

Interesting accounts of the 'traversing the tunnel' itself now follow. E. H Tabor, Resident Engineer in Charge of Construction writing at a time when the price of cheese was low and the motor vehicle was not the main obtrusive feature of city life, reports that, '*inspired with the wish to walk under the river*', the peripatetically inclined descends one of the spiral staircases to the '*rumbling noise*' below and meets a roar and hubbub of '*lorries, cabs and omnibuses and other vehicles*'. A very satisfactory illumination is afforded by the '*gleaming*' lights and white tiles but '*it is hard to locate the cause of a noise by the ear with the accuracy possible in the upper world*'. After '*quite a long tramp*' and the mounting of many stairs, our perambulator finds itself '*overlooking wharves, where derricks are slinging cargoes into the holds of barges*'. Looking back across the water, the other shore seems a mere '*stones throw away*'. Lest the visitor should slope or slack, he suggests taking the road entrance back down to the tunnel and walking the final open-approach section to '*appreciate more fully the construction details*' and '*the true magnitude of the enterprise*'. In order to repeat this grand tour almost one century later, I enlisted help and made that journey.

A Walk Through The Rotherhithe Tunnel

8th February 2002

It is probably an act of sheer dimensia or folly to do this. However, if you want to experience one of the few remaining original London adventures, then you should at least make this journey once in your life but once is quite enough.

We chose to take the stairs from nearby Albion Rd so that we would arrive right on the pavement of the South Portal of the Rotherhithe Tunnel. In this way, we arrived suddenly head-on at the pavement with less than four and a half feet between us and the onward rush of vehicles. It is here that the mammoth tiling job is the most impressive with white glazed tiles reaching hundreds of feet all around you. Mid-way through it's akin to being flushed down a lavatory pan.

We walked confidently right into the mouth of the tunnel with an admixture of exhilaration, disbelief and fear. Excitement because we had never crossed this river in such a bizarre way and wanted to. Unknowing because after less than 100 metres into the trip, we couldn't really believe that pedestrians are actually allowed to walk through the tunnel. Terror because the traffic is really so, so close as you continue to walk further and further into a surreal ever twisting corridor hundreds of metres below water. No-one stopped or shouted at us in a '*what do you think you are doing?*' kind of fashion and we settled on remembering that it is in fact okay to do this. We managed to walk side-by side for most of the adventure but the person on the outside felt very nervous especially as Tower Bridge was closed the day we went and everyone and their mad dog was using the tunnel.

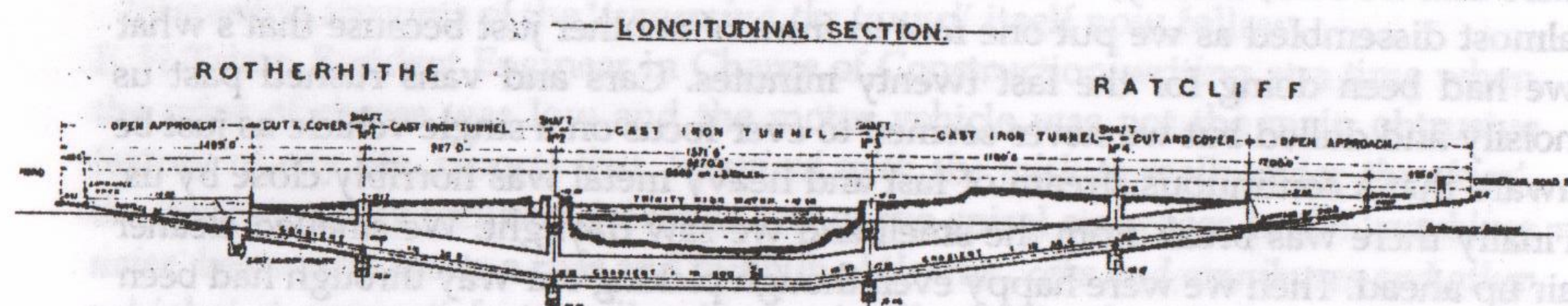
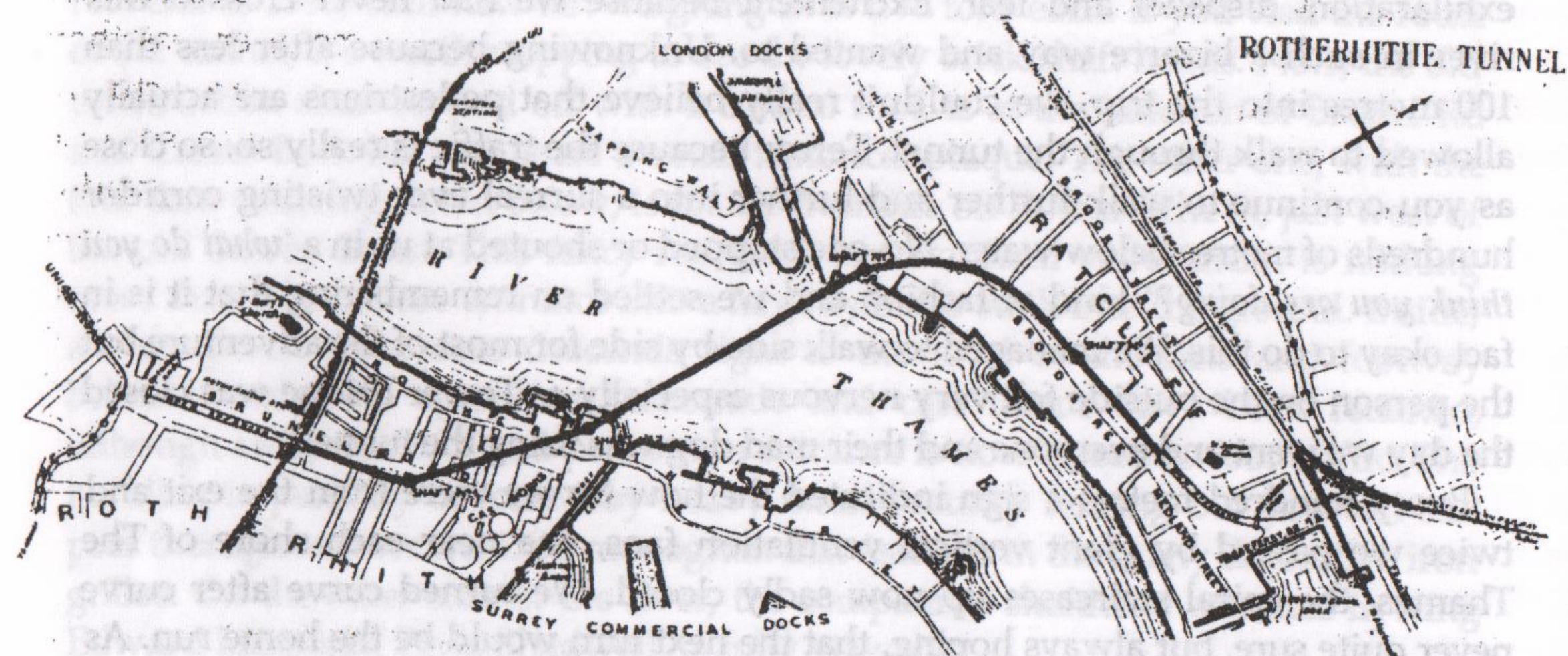
Every hundred metres a sign indicated the how far we were from the exit and twice we passed by giant vertical ventilation fans, one near each shore of The Thames, the spiral staircases up now sadly closed. We turned curve after curve never quite sure, but always hoping, that the next turn would be the home run. As we reached the Shadwell Shaft (No.3), the fumes became almost overwhelming, air whirling all over, the dust rising and our eyes not very happy at all. It was about here that we both, silently, wondered how much further the tunnel would be. Time almost dissembled as we put one foot in front of another just because that's what we had been doing for the last twenty minutes. Cars and vans rushed past us noisily and dulled but we never seemed to ever focus on a single vehicle as just be aware that a continuous stream of fast and heavy metal was horribly close by us. Finally there was break from the smell and we saw daylight. We smelled cleaner air up ahead. Then we were happy even though picking our way through had been mysterious and odd enough for a brief enough time.

Up the stairs and we came out on the roar of traffic along The Highway at Limehouse. We had made it. It seemed like we should be whisked away for medical examination or de-contamination showers. We settled for examining the beautiful Edwardian brick building atop the No.3 Shadwell shaft and fans in the local riverside park before stumbling towards Brick Lane where we poured coffee down our monoxide scorched throats. It was worth the trip, just to say we had and so you don't have to.

The very good book '*Downriver*' by Iain Sinclair contains a similar Hades-style account of walking the tunnel, '*the worst London has to offer*'. He asks pointedly '*Why are there no other walkers?*'.

As a finale, a short history of omnibus routes through the tunnel is in order to satisfy all. In the 1930's, workers and other folks heading to Surrey Docks could catch a No.82 from Limehouse right through the tunnel. Withdrawn in the 1960's this left the East London Line as the only local means across the water. Twenty years later and the P14 service was introduced to once again take riders beneath the Thames tunnel-style. Once again though, this route was abandoned in 1999

with the arrival of the Jubilee Line Extension nearby. Happily for all, the new 395 bus service (following the old 82 route) now takes us through the tunnel on Mondays to Saturday from 9am until 6pm.



TUNNELS:

- *The Life of Trevithick* - F Trevithick, 1872 (*)
- *Trevithick: The Engineer and The Man* - H Dickinson and A Titley, 1934 (*)
- *Rotherhithe's Forgotten Tunnel* - Stuart Rankin, *Redriff Chronicle*, Summer 1978 (*)
- *Emergency Repair to the Tower Subway, London after Air-raid Damage* - H J Boyer Harding, published in *Journal of Institute of Civil Engineers*, November 1945 (*)
- *The Tower Subway: The First Tube Tunnel In The World* - Charles E Lee, *Transactions of the Newcomen Society* Vol XLIII 1970-1970 (*)
- *Opening of The Rotherhithe Tunnel* - London County Council brochure, 1908 (*)
- *The Rotherhithe Tunnel* - E H Tabor, 1910 (*)
- *Downriver* - Iain Sinclair, 1991 - see Chapter Two, Part IX for Rotherhithe Tunnel walk

Underground Railways, Used and Disused

The Disused Northern Line

The following account relies heavily on Peter Bancroft's excellent pamphlet '*The Railway to King William St and Southwark Deep Tunnel Air-Raid Shelter*' published in 1981, the most comprehensively researched account available. The inclusion of many photos and diagrams give you the chance to really see what was and what still is below the ground if the following descriptions whet your whistle.

Beneath Borough High St

The story of the City and South London Railway, nowadays called the Northern Line, is fairly well-known. Opened for public use in December 1890, it was the London's first tube railway. Running from Stockwell via Oval, Kennington, Elephant and Castle and Borough, the last stop on the new line was King William St, 75ft below the nearby Monument in The City. By 1900, due to the severe curves of the underground tunnel line at King William St, further plans were laid down to abandon the original twin running tunnels and for two more less curved tunnels to be built. Opened in February 1900, the new tunnels diverted from the originals at Borough and ran via a new station at London Bridge to a newly reconstructed station north of the river called Bank. As before, the tunnels ran below the ground following the route of Borough High St until they reached the river where this time the new line curved to run under The Thames on the east side of London Bridge, the old line having been constructed to run west of the crossing. The new northbound tunnel left the old one just north of St George The Martyr church and the new southbound one left its old path close by to the old Halfmoon Yard, a little bit up the road from the John Harvard Library. With the new line in operation, Southwark was left with 0.74 miles of old cast-iron lined tunnels, 10ft 2 inches in diameter, abandoned below the surface of The Borough.

What To Do With A Length of Disused Tunnel?

Despite parliamentary powers being granted in 1898, a new underground railway planned from The City to Brixton intending to use part of abandoned

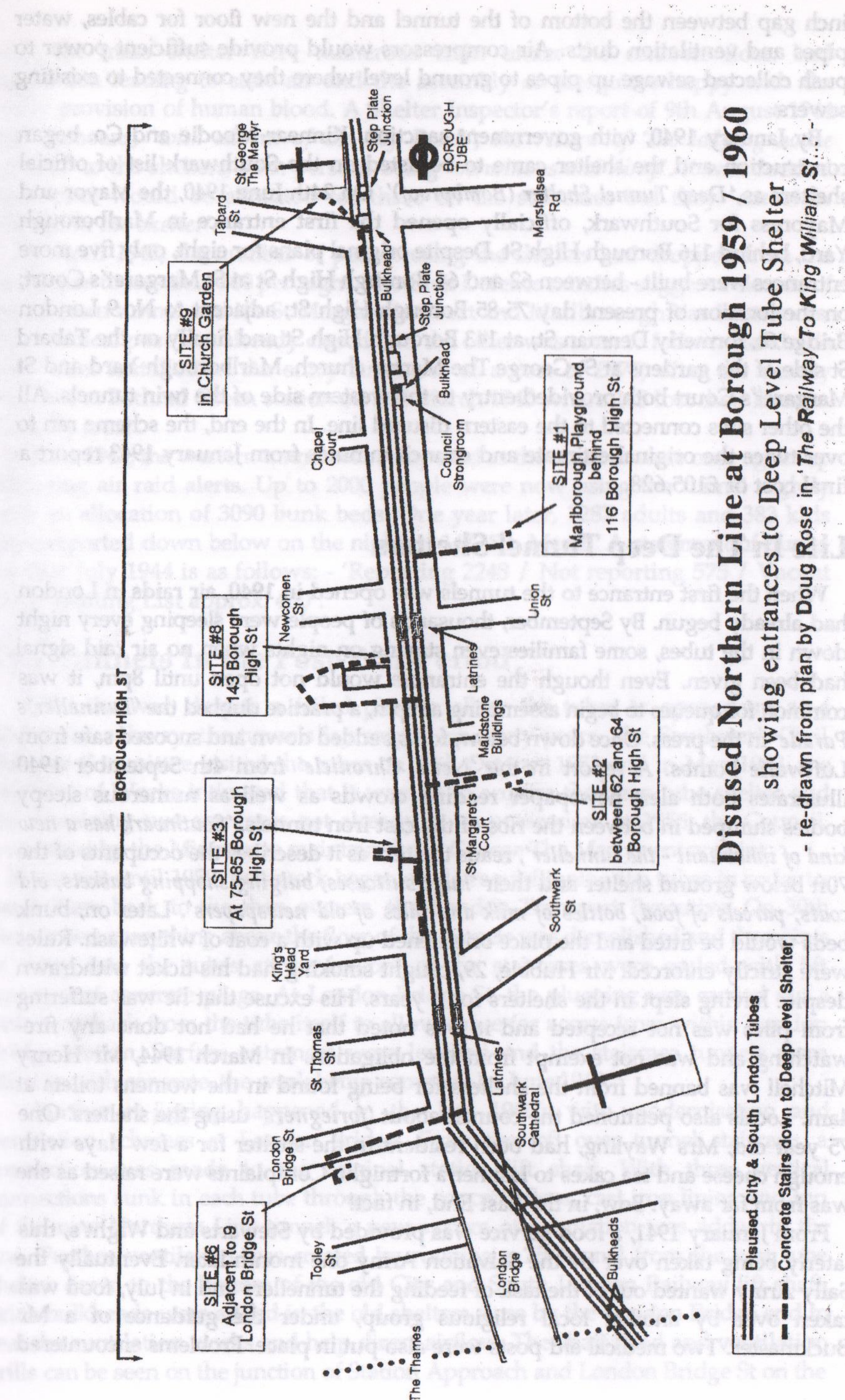
tunnels came to nothing. In 1910, the owners of the old lines, the City and South London Railway Company, reported that mushroom growers had contacted them about using the tunnels for funghi cultivation. Other ideas had been previously suggested such as utilising the old lines as bonded warehouses. Close to the start of World War One, in response to a paranoid call from the editor of 'Railway and Travel Monthly' who feared that enemy spies and explosives might be hidden down below, the lines were searched but nothing untoward was discovered. For good measure though the tunnels were boarded up.

In 1930, new owners Underground Railways Co. held a press visit down there to encourage prospective buyers to come forward. Articles then appeared in the 'Daily Mirror' on 2nd April and in 'The Sphere' on 12th April where an accompanying photo shows the scale and layout of the two abandoned tunnels. In the background of a vast brick built cavern, two black tunnels recede side-by-side mysteriously into the darkness, one tunnel slightly lower than the other. To add further scale, human figures can just be seen poking about in the gloom. A signal arrangement hangs high up on the wall of the cavern. Once again, in 1936, an article appeared in 'The Star' of 17th March. This report mentioned the quarterly checks of the tunnels as well as offering useful suggestions for future use - wine cellars and mushroom growing again or a shooting gallery, night club or pedestrian crossing under The Thames. One final idea was that the subterranean lines would be useful as deep and safe bomb shelters. Less than three years later, in the same newspaper (10.11.39), the same reporter would report that, with the credit all his, that the tunnels were to be put into use as air raid shelters. Southwark Council, convinced of the saving of half the cost of providing ordinary shelters, were about to begin conversion of the tunnels after dropping two other planned underground schemes.

What To Do Answered

The shelter scheme had come up at an Air Raid Precautions meeting before being discussed by the full Southwark Council on 9th December 1939. With approval from the Home Security minister, the Borough Engineer had sought advice from civil engineers Mott, Hay and Anderson on what would be required to convert from old tube lines to new air raid shelters.

With an estimate of three months work at a cost of roughly £50,000, local entrances would be constructed along the length of the tunnel, each entry point consisting of a concrete staircase and walkway sunk to the level of both the old tubes. On completion, with a concrete floor and seats placed in the old tubes plus six sets of latrines each for both sexes, the new shelter would have enough safe space for 8000 persons (later revised up to 14,000). Concrete bulkheads, put in place during the Munich crisis in 1938, already sealed off the Borough end of the old tunnels where they met with the new Northern Line. During winter 1939 and 1940, 6ft thick concrete bulkheads with 4 by 3 ft watertight doors were placed just before the river on the south side to prevent flooding from any bomb damage occurring in the under river section. In addition to the public shelter, a strongroom was built in the western tunnel at the Borough tube-end bulkhead for the storing of council documents. Space was provided beneath each staircase and in the 5ft 3



Disused Northern Line at Borough 1959 / 1960

showing entrances to Deep Level Tube Shelter

- re-drawn from plan by Doug Rose in 'The Railway To King William St'

inch gap between the bottom of the tunnel and the new floor for cables, water pipes and ventilation ducts. Air compressors would provide sufficient power to push collected sewage up pipes to ground level where they connected to existing sewers.

By January 1940, with government sanction, Kinnear Moodie and Co. began construction and the shelter came to be listed on the Southwark list of official shelters as 'Deep Tunnel Shelter (Bombproof)'. On 24th June 1940, the Mayor and Mayoress for Southwark, officially opened the first entrance in Marlborough Yard, behind 116 Borough High St. Despite original plans for eight, only five more entrances were built - between 62 and 64 Borough High St at St Margaret's Court; on the location of present day 75-85 Borough High St; adjacent to No.9 London Bridge St, formerly Denman St; at 143 Borough High St and finally on the Tabard St side of the gardens at St George The Martyr church. Marlborough Yard and St Margaret's Court both provided entry to the western side of the twin tunnels. All the other sites connected to the eastern disused line. In the end, the scheme ran to over twice the original estimate and council minutes from January 1943 report a final cost of £105,628.

Life In The Deep Tunnel Shelters

When the first entrance to the tunnels was opened in 1940, air raids in London had already begun. By September, thousands of people were sleeping every night down in the tubes, some families even staying on nights when no air raid signal had been given. Even though the entrances would not open until 8pm, it was common for queues to begin assembling at 5pm, a practice dubbed the 'Tunneller's Parade' in the press. Once down below, folks bedded down and snoozed safe from Luftwaffe bombs. A report in the 'News Chronicle' from 4th September 1940 illustrates both alert newspaper reading crowds as well as numerous sleepy bodies slumped in between the ribs of the cast iron tunnels. 'Southwark has a new kind of inhabitant - the tunneller', reads the text as it describes the occupants of the 70ft below ground shelter and their 'huge suitcases, bulging shopping baskets, old coats, parcels of food, bottles of milk and piles of old newspapers'. Later on, bunk beds would be fitted and the place brightened up with a coat of whitewash. Rules were strictly enforced. Mr Hubble, 29, caught smoking had his ticket withdrawn despite having slept in the shelters for 3 years. His excuse that he was suffering from piles was not accepted and it was noted that he had not done any fire-watching and was not exempt from the obligation. In March 1944, Mr Henry Mitchell was banned from the shelters for being found in the womens toilets at 4am. Locals also petitioned the council about 'foriegners' using the shelters. One 75 year old, Mrs Wayling, had been resident in the shelter for a few days with enough cheese and tea cakes to last her a fortnight. Complaints were raised as she was from far away. Bow, in the East End, in fact!

From January 1941, a food service was provided by Stewarts and Wight's, this laterly being taken over by the Salvation Army one month later. Eventually the Sally Army wanted out of the task of feeding the tunnellers and in July, food was taken over by another local religious group, under the guidance of a Mr Buckmaster. Two medical aid posts were also put in place. Problems encountered

with the mass shelter were numerous leaks under the concrete floor, bad ventilation leading to stale air and the assembly of mosquitos happy with the ready provision of human blood. A Shelter Inspector's report of 9th August 1944 also bemoans, 'with advent of the Fly Bomb', the return of 'the lodging house element' to the shelters, such persons being 'verminous and dirty'. It was decided that space would be allocated for these on the staircases but they 'cannot be allowed in the shelter'.

By April 1942, the number of people using the shelters had dropped from the thousands to less than 300 per night. The Civil Defence minutes suggest a closure of the western tunnel and it's St Margaret's Court and Marlborough Yard entrances. One medical post had already closed and the other was soon to follow. Handrails were later installed in the entry staircases at a cost of £975, after the deadly accident at Bethnal Green station on 3rd March 1943 where 143 lost their lives in a deadly crush.

In June 1943, the western tunnel was re-opened as the number were once again up following air raid alerts. Up to 2000 people were now using the tunnel nightly with an allocation of 3090 bunk beds. One year later, 1287 adults and 383 kids were reported down below on the night of 14/15th March. A statement of bunks for 31st July 1944 is as follows: - 'Reporting 2248 / Not reporting 575 / Vacant 214 / Waiting List approx. 400'.

The Tunnels In the Post-War Period

After the war, despite a failed plan to allow the tubes to opened up as a pedestrian subway, the tunnels lay empty for many years. The Southwark Civil Defence Committee visited the tubes on 18th October 1952 and in May 1953, the Ministry of Works intimated that it wanted to acquire the deep tube shelter and the remaining two entrances not already in its possession. In 1955, the Council, was asked by the Ministry to maintain the St George The Martye entry point.

It was not until 1959, that work began on de-requisitioning the tubes in order to hand them back to the then owners, the London Transport Executive. On 30th November, everything above the floor of the tunnels was demolished and the points of entry into the tubes at the bottom of the staircases were sealed with 5ft waterproof concrete plugs. At London Bridge St, the plugging was carried out a little way back from the tube itself to allow space for access from within London Bridge station. Surface entrances were levelled and the staircase tunnels were filled in with concrete, the work being complete by June 1960.

Further re-jigging happened in the late 1960's with modernisation and ventilation schemes at London Bridge. From the left over tunnel staircase, a connection was made to the original station lift shaft. With three vertical connections sunk in each tube through the concrete floor, cast iron lining and top of the new Northern Line tunnel, a new system of ventilation was added to the line. Further ventilation was created by running a 7ft tunnel from the east tube shelter down to the bottom of the old City and South London Railway lift shaft. Brick bulkheads were added in the old shelters close by the London Bridge end to seal the ventilation works and help direct airflow. The shaft head and ventilation grills can be seen on the junction of Station Approach and London Bridge St on the

old C&SLR brick building.

In these days, the tunnels running under Southwark, blocked at the riverside and once again at Borough tube, remain empty and derelict. Various visits have from time to time been arranged for enthusiasts to visit the site. In 1959, members of the Railway Club walked the abandoned lines and enjoyed the under river sections complete with stalactites. Another visit took place in April 1964, the participants descending to the tunnels from spiral stairs in Regis House, a building built on the site of the old King William St station and walked as far as the Borough before returning the way they came. A telly programme 'Underground London' with actress Liz Fraser and explorer Rannulph Fiennes featured the tubes in 1971 and yet another group of railway fans were admitted to walk the entire line in December 1975, this time making their entry from London Bridge.

According to postings on the World Wide Web, the tunnels have now been interfered with by the coming of the Jubilee Line Extension. A few years earlier, one of the writers had been shown around the remains of the old tunnels and was able to photograph the tunnels and the side passages created during shelter construction to connect east and west tubes. He also speaks of still being able to see sets of stairs reaching the tube as he walked from London Bridge to the Borough end. A number of wartime posters were also still pasted to the walls, one reading 'No Smoking', another 'Air Raid Precautions'. Another article reports 'following the JBL Ex works, it is clear that at least one of the 1890's tunnels has been completely obliterated by the interchange arrangements with the JBL Ex south of the Northern Line concourse. However, the old Southbound 1890 tunnel can still be glimpsed, near the north (far) end of this concourse: the new lighting fixtures shine some light upwards, illuminating the 1890's tunnel above where a ventilation hole connects the old with the new'. Elsewhere on the cyber oracle, a Richard Griffin writes that in November 2000, 'a recent visit illustrated that then old tunnels are still largely intact and dry on the south side of the river: in the vicinity of London Bridge station the southbound has been cut through completely by the Borough High St escalator shaft, and partially filled in a little further north apparently for strengthening purposes. The northbound tube remains continuous all the way from the under-the-river bulkheads (now completely bricked up on both tunnels to prevent any possibility of flooding from a river-bed breach) to Borough junction'.

Further sifting through old postings on an enthusiasts Internet chatroom updates the recent fate of the 1960's vent shafts in the, by now, much truncated and chopped about old running tunnels. The above-mentioned holes in the northbound 1890's tubes have been sealed at concrete floor level, leaving a six foot shaft that reaches down to present Northern line. The southbound hole remains for ventilation and can be seen at the south end of the concourse where the three cross passages take you to either the north or southbound line. Here, beyond a metal mesh is the large hole heading up. Numerous helpful colour photos accompany these Internet discoveries.

London Rd Bakerloo Line Depot and other Tube novelties

Where's That Then?

Hidden some fourteen foot below the surface of the footway, the London Rd depot of the Bakerloo Line is a marvellous occluded feature of the landscape. Passing by the actual London Rd entrance close to the Obelisk does not give us many clues for the squat brick Edwardian building with its six large windows does not give much away. A couple of ventilation grills hint at possibilities but these are easily overlooked. The other end of the site opposite the Roman Catholic cathedral, at the eastern junction of St George's Rd and Lambeth Rd, is similarly obscure. A high wall excludes the curious from any peek below. The fleet of foot however can take advantage of some street furniture to elevate themselves just a few feet, enough to peer through the additional iron fencing topped off with razor wire to deter aspirant graffiti artists. Alternatively take a bus from The Elephant up St George's Rd and sit upstairs on the right. The view is good but over in five seconds.

Building and Stocking London Rd

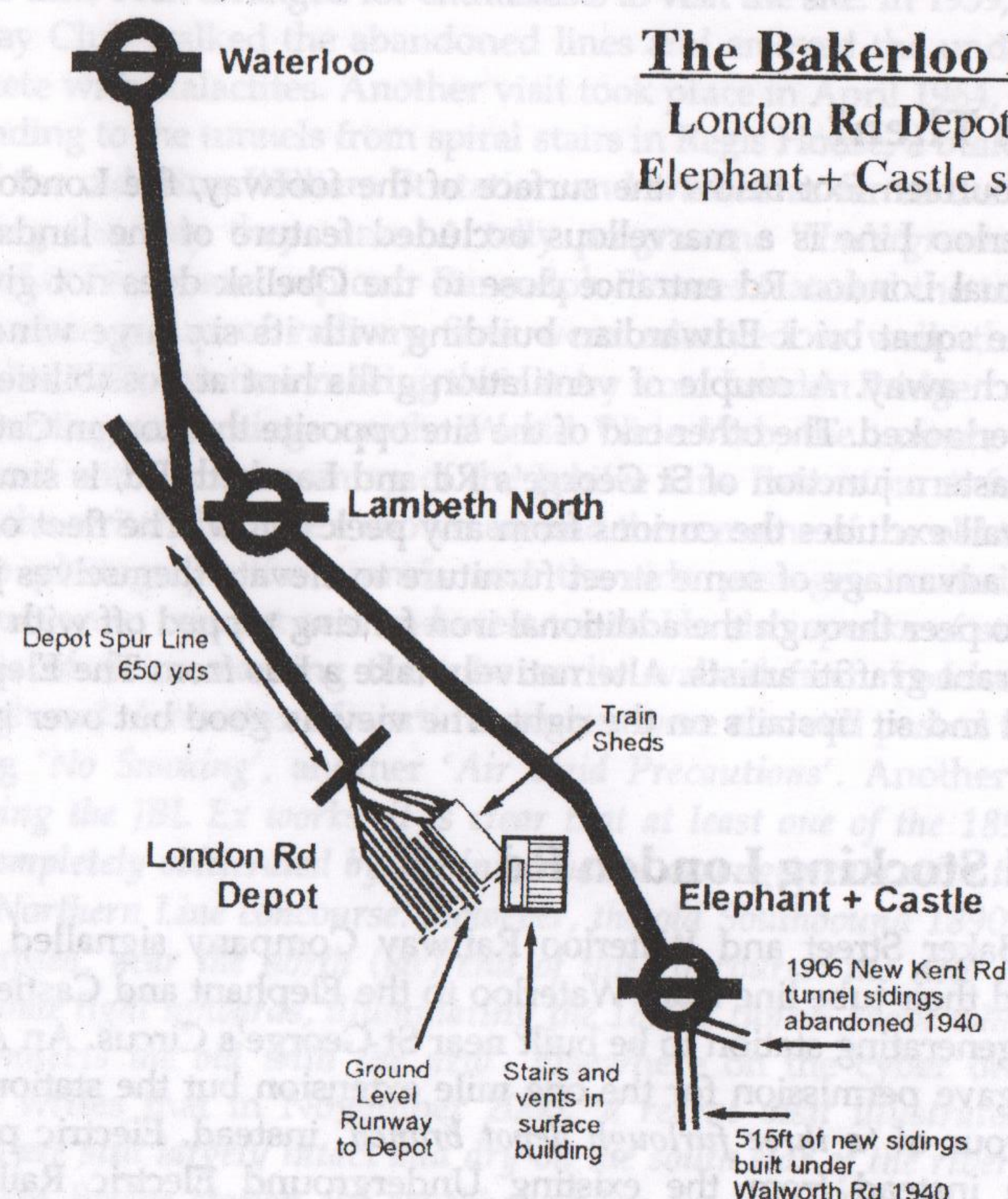
In 1899, the Baker Street and Waterloo Railway Company signalled their intention to extend their tube line from Waterloo to the Elephant and Castle with the addition of a generating station to be built near St George's Circus. An Act of 6th August 1900 gave permission for the one mile extension but the station was abandoned in favour of 'a three furlough depot branch' instead. Electric power was to be taken instead from the existing Underground Electric Railways Company of London Limited's central generating station at Lots Rd, Chelsea Creek. For the depot, the Bakerloo, as it came to be called, negotiated to acquire a three acre parcel of land behind The Obelisk belonging to the Trustees of the Indigent Blind School. John Mowlem and Sons, of Millbank, began construction of the depot in 1904. By 1905, the tunnels were built but the site was still two thirds unexcavated. Later in the year the place was finally completed.

Leaving the normal northbound track just north of Lambeth North tube station, a single 650 yard track ran south to the new 'cramped, expensive site, hemmed in by steep retaining walls'. Here, 14 storage tracks, a small 3-track car shed that was 350ft long, a substation and a paint shop awaited the new Bakerloo Line cars. Back up the track, at the western corner, a blind tunnel was constructed as a shunting neck and a signal box was placed over the tunnel entrance to control movement in the depot. At the London Rd end, a ramp was installed for the delivery of the rolling stock next door to a building housing a vertical shaft containing stairs plus ventilation ducts. The depot's substation took power from point power distributed at a substation at Charing Cross which in turn via high-tension feeder cables took power from Lot's Rd.

The first of the new American-made cars arrived on 12th September 1905, when

The Bakerloo Line

London Rd Depot and Elephant + Castle sidings



the 50ft long carriage, arriving from Manchester at Camden goods yard was drawn by a team of fourteen horses through the early-morning streets of London. Leaving Camden at midnight, it arrived at St George's Circus by 1.35am. Here, it waited for a break in the tram service at just after 2am and was finally in the depot by 5am. Then the horses continued the process again. On one occasion, a steam tractor was used but this broke down in front of the depot blocking the tram routes for twelve hours.

London Rd in Operation and Its Decline

In 1915, signalling operations at London Rd ended when control of the movement in and around the depot moved to the signalling cabin at Lambeth North. Around the same time, the substation was replaced by a new one at Elephant and Castle.

In 1926, a physical connection was made at Lambeth North between the old Bakerloo and the new Northern Line. The join-up was sadly not made as a passenger exchange but in the form of ventilation shafts when the new twin tunnels were constructed just south of the old Bakerloo station, continuing under

the depot' spur tunnel and on to Kennington. By the late 30's, other depots had already opened up further North on the Bakerloo and when the larger Neasden depot was completed in 1938, London Rd lost its main repair facilities to the new site. Around this time a scissors crossover replaced the trailing crossover to the track near Lambeth North to improve access to London Rd. If the fortunes of the depot were failing, the Second World War was none to kind to the place and most of the carriage sheds were bombed reducing the site post-war to a mere stabling sidings. Continuing to serve the Bakerloo for another few decades, by the mid-eighties, the depot was fairly ramshackle with most of the sheds demolished in 1986. These days, the depot continues to offer a resting place for rolling stock with 7 open air sidings and a further 5 covered by a large and renovated shed. All this, in semi-secret, below the pavements and behind large walls.

The Bakerloo Rumours

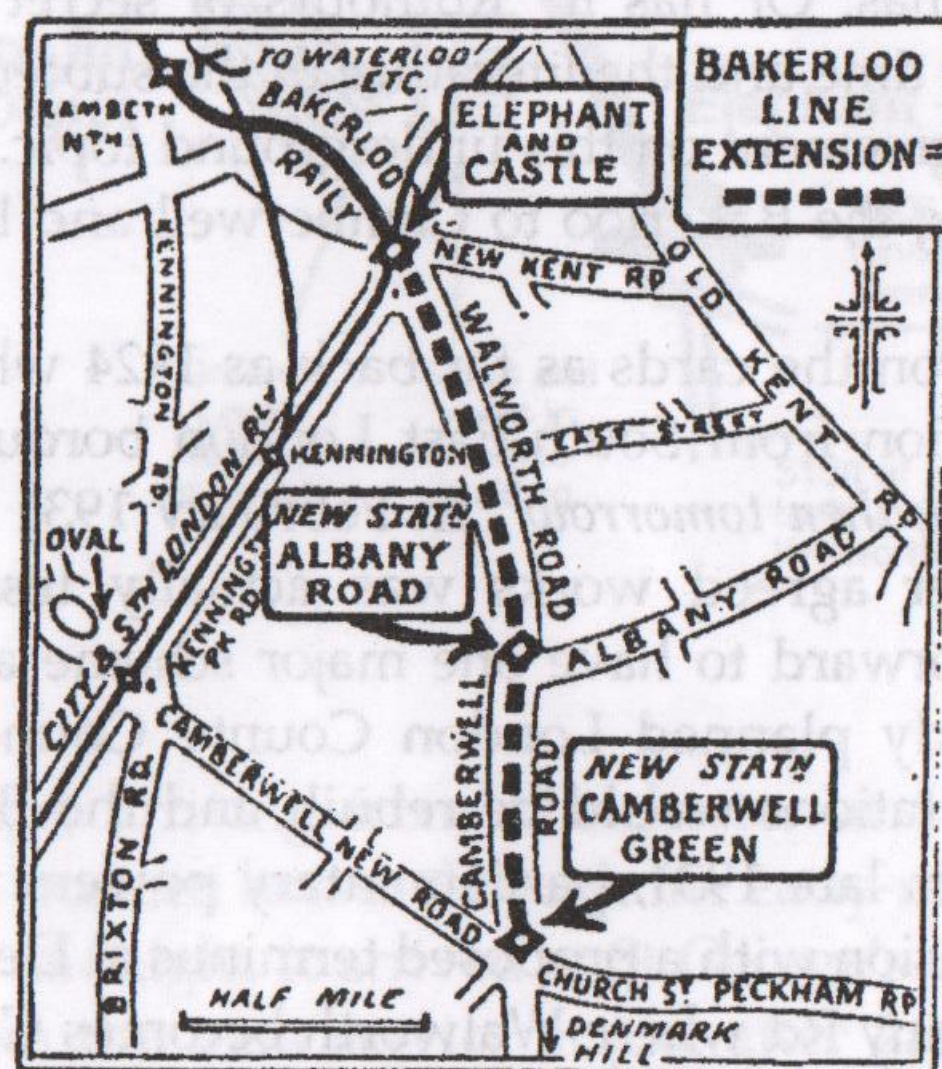
Next stop...Camberwell?

The Bakerloo line does not go as far as Camberwell and that's a fact. It stops at The Elephant and always has. Or has it? Rumours of secret tunnelling in the 1950's crop up from time to time and the literature of the subterranean searcher is a forum of debate and disagreement on this underground topic. What is certain is that the history of extending the Bakerloo to Camberwell and beyond is a tale of endless false starts.

Such a scheme has been on the cards as far back as 1924 when Lord Ashfield declared to a keen deputation from South-East London boroughs that the area should be tubed 'if not today, then tomorrow'. In February 1931 it was found that the eventual cost of earlier agreed works was actually less than had been estimated and it was put forward to have one major scheme at The Elephant in combination with an already planned London County Council reconstruction. Both Elephant and Castle stations would be rebuilt and the Bakerloo would be dug towards Camberwell. In late 1931, parliamentary powers approved the one and three-quarter mile extension with a proposed terminus at Denmark Hill and an intermediate station on Albany Rd where Walworth becomes Camberwell. Barely had the ink dried on the Act when the finance was pulled and the work postponed to lay dormant with the parliamentary powers kept in tact. Various deputations and considerations took place in the late 30's to get the scheme back on track but all to no avail.

In 1940, after the necessary task of extending the Elephant and Castle Bakerloo line platforms from 291ft to 377ft to take the new seven car trains, new twin tunnels sidings that continued south beneath the Walworth Rd were cut for a further 515ft to assist train handling. Using the powers given in the 1931 Act, the new sidings followed the old planned route of the extension to Camberwell and covered approximately one eighteenth of the original distance. The twin tunnels were connected by a scissors crossover and partly cut through the old 1905 sidings that extended past the end of the Bakerloo platforms and ran on a little

In October 1948, the London Plan Working Party recommended in the 'first priority' category the new Route H, the Bakerloo extension to Camberwell. After the strong political lobbying from local South London councils, especially Camberwell, things were looking good for this old chestnut. One year later the British Transport Commission Act renewed the 1931 parliamentary powers and Chairman of London Transport Lord Latham announced at a press conference that the extension would now be built with additional authorisation for a station at Camberwell Green at a cost of £3.5 million. It was planned to sink five working shafts along the route in January 1950 and for work to continue until the estimated completion date of 1953. The intermediate station in Walworth would be shifted back 200 yards from the old Albany Rd suggestion and would now be situated in Westmoreland Rd. Less than nine months later, the plans were once again withdrawn and the scheme deferred again by London Transport 'with great regret'. Excuses were made that new estimates showed that the scheme 'could not be justified' in the present post-war conditions and that difficulties with the sub-soil north of Camberwell Green would make necessary expensive compressed air working. Despite strong campaigning from Camberwell Council over the next decade, it was all over. Well for another few years anyway.



In 1955 parliamentary approval was given to extend the powers to build the Bakerloo down to Camberwell until 1961 although London Transport were, by now, more keen on running the Victoria Line south to Brixton. Beyond 1961 the powers were not renewed. Needless to say, the scheme popped up again in 1963 when London Transport began again to consider the Camberwell plan. A report produced by London Transport and British Rail thought that the extension following all the way through to Peckham might allow some rationalisation of

More rumours

Since that time, various views and versions of what was built over the years appear regularly whenever the subject crops up. For example, a report in Southwark News from April 1996 says '*in the 1940's a mile of tunnel was dug to carry the line south of The Elephant*'. Way before, an interesting pamphlet '*London - The Other Underground*' published in 1974 by Anarchists Anonymous consisting of some insight but mostly speculation, details that the Bakerloo Line Extension from The Elephant is a '*Government tunnel*'! Their accompanying map connects this rumoured State-sponsored tunnel to a whole other network of secretive and subterranean government boltholes that run from The City to Victoria, some of which later turned out to be true.

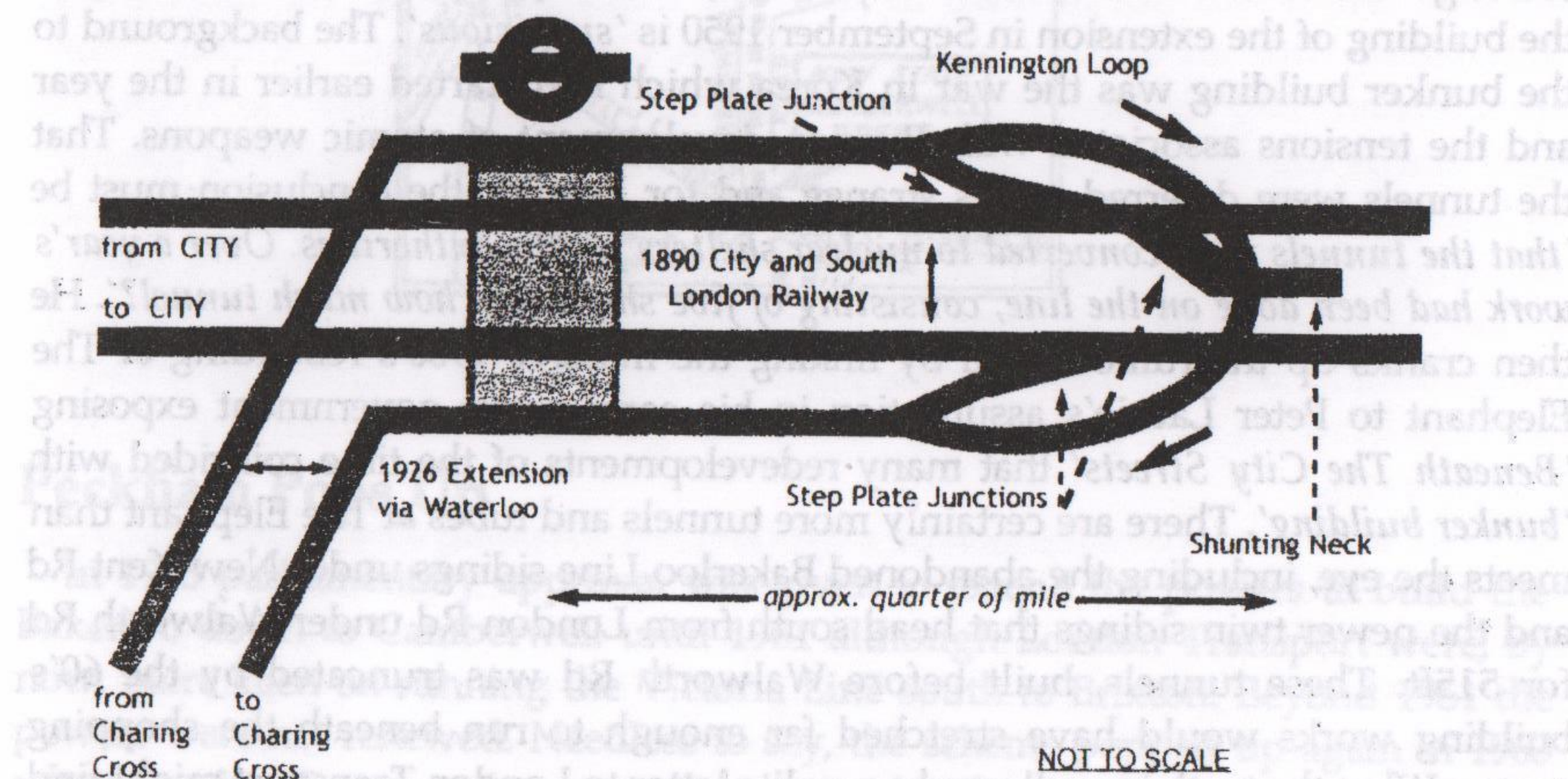
Nigel Pennick, subterranean buff and now reknowned pagan author, writing in his 1988 examination of *'Bunkers Under London'* gives us more details on the January 1950 working shafts with two out of five locations. A 12ft in diameter shaft was sunk at the tiny passageway off 55a Walworth Rd in Farrell Court. This was noted in London Transport *'Plan N-, B-42-12/001'*. Further south, another shaft was sunk *'between Boyson Rd and Boundary Lane'* near Burgess Park, Camberwell. He then goes on to outline his theory. He puts forward, that in the context of the cold war times with the building and reconstruction of many secret government bunkers beneath Holborn and Whitehall, the sudden halting of the building of the extension in September 1950 is *'suspicious'*. The background to the bunker building was the war in Korea which had started earlier in the year and the tensions associated with Russian development of atomic weapons. That the tunnels were deferred seems strange and for Pennick the conclusion must be *'that the tunnels were converted to nuclear shelters for the authorities. Over a year's work had been done on the line, consisting of five shafts and how much tunnel?'* He then cranks up the rumour mill by linking the massive 1960's rebuilding of The Elephant to Peter Laurie's assumption in his early secret government exposing *'Beneath The City Streets'* that many redevelopments of the time coincided with *'bunker building'*. There are certainly more tunnels and tubes at The Elephant than meets the eye, including the abandoned Bakerloo Line sidings under New Kent Rd and the newer twin sidings that head south from London Rd under Walworth Rd for 515ft. These tunnels, built before Walworth Rd was truncated by the 60's building works would have stretched far enough to run beneath the shopping centre. What the truth is, well maybe a polite letter to London Transport might find something out?

The Kennington Loop

Going Loopy in South London

Another local underground oddity is the Kennington Loop that lies beneath the roads of the nearby tube station and allows trains to turn around and head back up North. Built in between April 1924 and 1926 during the southbound extension of the then Hampstead and Highgate line, now better known as the Northern Line, the loop is part of a complicated tangle of lines that meet beneath Kennington. Two new north and southbound lines were dug from Charing Cross via Waterloo and Lambeth North to Kennington where they met the old existing City and South London Railway lines that run to and from the City. Two shafts were sunk in Geraldine Mary Harmsworth park from which the lines were built north to Waterloo and south to Kennington. The tunnels, made through a bed of 2ft thick rock 900ft long, sand and shale and the shelly estuarine clay of the Woolwich and Reading beds, pass under the Imperial War Museum and the old Lambeth Hospital.

This new Charing Cross section of the Northern Line arrived at Kennington, with the northbound running tunnel built to the right of the CSLR lines and the southbound tunnel running with less than 2.6ft - 4ft under it to end up on the left-hand side. At the end of the new lines, step plate junctions were built to enable connection into the CSLR tunnels. The loop itself is comprised of a single large looped tunnel that connects the new southbound to the new northbound. Trains that terminate at Kennington can then be sent round the loop ready for the return journey back to Charing Cross. The loop is big enough that part of it sits beneath a part of Kennington Park, a quarter of a mile away. One final tube innovation was built at the time, a shunting neck added between the existing CSLR stations just past the tunnel line as it heads towards Oval. It was opened to the public at large on 13th September 1926.



Kennington Tube Station

- Old and New Northern Lines showing The Kennington Loop -

Jubilee Line Extension Gazetteer of Emergency Exit Shafts and Vents

Lots to see here

One line that was definitely extended through Southwark is the late 90's Jubilee Line. Acres of ink has already been spilled on the route, it's construction and its fabulously designed stations along the way. Of more interest to the subterraneanly inclined are the host of wonderful ventilation shafts and emergency exists that are dotted around Southwark. Interesting because some care and attention has been paid to please local residents and vent nerds alike. This is in comparison to, say, the older Northern Line air vent in the grounds of the Inner London Crown Court, Newington Causeway which, although large and unusual, is still deadly dull.

These new Jubilee Line Extension buildings help to provide fresher air and temperature control via 2.5m diameter fans placed in the running tunnels every kilometre between stations. For the first time on London Underground, forced ventilation supplements the intrinsic 'piston' ventilation effect of the trains running in the tunnels. All told, the new line has 44 tunnel vent fans and 20 station public-area fans. Ventilation of all underground public areas to suit varying conditions is controlled from the service control centre with computers carrying the action commands to the shafts for the appropriate action for the fans and dampers. Local controls can be used as a fallback should the central system fail. This ventilation system was provided by Drake and Scull Engineering Ltd. Other curious structures along the route house transformer sub-stations.

Helpfully, a number of the buildings have small blue plaques indicating their location and use, eg 'Jubilee Line Downtown Road Shaft - LFB - Intervention Shaft'. And so, taking the visitor on a walk that runs west to east along the route of the Extension, we come across the following:

• Isabella St, SE1

Isabella St can be found directly south of the railway bridge that crosses Blackfriars Rd at the new Southwark Station. Here three railway arches act now as various ventilation shafts, Fire Brigade inlets and escape routes from the track below the ground. Further west, at October 2002, more arches stand empty awaiting conversion into shops. Fitted flush within the arch, these various grilles and doors on offer, all finished off in metallic silver, are the standard Jubilee Line Extension style. Similar arch conversions pop up later.

Luckily for us, there is also a large and fantastic curving lightwell close by to the

now pedestrianised Isabella St. You can't miss it. It's big and tiled with tiny blue squares topped off with a white stone parapet. It throws light down onto a spectacular 131ft long glass wall inside the new station. This internal wall, designed by artist Alexander Beleschenko and structural engineer Tony Hall in conjunction with architect Richard MacCormac, is made up from 660 specially cut pieces of glass. A set illustration from 1815 by Karl Friedrich Schinkel for Mozart's *'The Magic Flute'* is the inspiration. Recreating the dark domed vault of Prussian blue and the ribs of stars from *The Queen of the Night* set in Act I Scene 6 is certainly obscure. With the masonic initiation of the opera's story and MacCormac's talk of the new station as *'like entering a cave'* and taking *'an episodic journey'*, one wonders if there is something mysterious, or just plain amusing, in passing from the darker down below to the light Heavens above? Well worth a look anyway.

On your way around the outside lightwell, you'll also come to another stand alone escape and vent shaft made up of a black brick base with a silver ventilation box on top.

• Joan Street / The Cut, SE1

Here is Southwark Station itself. Numerous grilles and door abound in this area. At rear, for example or under the railway bridge on Blackfriars Rd.

• Scoresby St and Wardens Grove, SE1

The next set of railway arches turned into the now familiar silver vents and doors is just on the eastern side of Blackfriars Rd at Scoresby St. Here, in a change from Isabella St, the silver vents take up the entire arch including the doors. If you're dedicated, backtracking a tiny way to Union St and heading East will take you to more of the above situated in arches at Wardens Grove.

• Redcross Way and Union St, SE1

Here you will find, built on the old Crossbones burial ground, a substation designed by Weston Williamson of Tanner St, SE1 that features the usual motif of black, blue and silver components. According to Kenneth Powell writing in *'Jubilee Line Extension'*, the structure, containing two huge transformers, required *'nothing more than a secure container with good ventilation and occasional access for maintenance... Executed in classic London stick brick...the rhythm of the main façade represents an attempt to express the disposition of the hardware inside the building'*. I didn't groove to hard to that rhythm but it certainly does look technical in its own squat and boxy way.

• London Bridge St and Joiner St, SE1

Walking around the large New London Bridge House in the middle of London Bridge Rd, you won't fail to miss a number of blue and silver air vents there. The first set, on the ascent up to the main London Bridge Station, features an anonymous box for the west emergency exit and behind, a large blue/silver funnel like on an ocean going liner for the air vent. Interestingly, its just behind the vents

installed in 1968 in the original but disused lift shafts of the City and South London Railway London Bridge building that opened in 1900. The vents are visible at various points on this lovely corner building.

Further up and in front of the tower block, another more dull funnel-type vent sits by the road. At Joiner St the eastern ventilating shaft sits aside this newly pedestrianised road. The front features two standard doors set in the usual silver cladding plus vast amounts of ventilation grilling above but the sides differ from the motif and are made of large opaque grey-green glass panels. This is a pretty monumental structure especially if viewed close-up from the pavement. An overall perspective can be obtained from the footbridge next door. The eastern escape shaft is situated inside the covered arch that now makes up most of Joiner St.

Also at London Bridge is the bringing into public use of a number of old Victorian undercrofts formerly used as storehouses for wine and spirits and now in use for passenger circulation from the tube to the mainline train station. Adjoining the arched Joiner St, this arched walkway is fairly impressive in its newly cleaned but still raw brick state. However, now branded as *'The Vaults - deli and market'*, the inevitable gaudy clutter of coffee stops and *'gourmet'* shops now detracts from the wonderful and high arched roofs.

• Druid St, SE1

This large site on Druid St by Tower Bridge Rd is the first of the Jubilee Line Extension in Southwark special designs. Excavation begun January 1995 here to turn a number of railway arches into vents and an escape shaft. Unlike the previously noted standard arch conversion back up the line, something more has been attempted here. Designed by Ian Ritchie Architects, the shaft and a number of plant rooms sit under the main London Bridge line railway viaduct. Kenneth Powell describes the architecture as *'big steel louvres are recessed into the arches and sub-divided by vertical steel blade walls. Exit gates, for use in an emergency, are formed from close-mesh steel grilles and read very much as an insertion - the cleaned and restored arches can be glimpsed through them. All steel plate is finished with a blue epoxy paint'*. There is lots of plant, doors and corridors to see for the curious who press their faces against the mesh. Avoid rush hour as this section of Druid St will be absolutely full of cars, buses and coaches and some. Go at night instead and appreciate the top lighting that gives each arch an eerie and spectral blue glow.

• Ben Smith Way, SE16

Ian Ritchie Architects are also responsible for a vent and escape shaft in Ben Smith Way close to residential area of Broomfield Court. The original plan was dubbed *'the spaceship'* by peeved local residents who demanded that it be placed further under the ground so as not to interfere with their communal garden and garages. The compromise is described in the Royal Academy Magazine of Winter 1999 as the *'shape of fish. One side forming the creeper-covered wall of a delightful raised wall'*. Powell goes further and reports that most of the plant is compressed *'beneath a new raised garden'*. The shaft *'is contained within a curving wall of smooth concrete supporting a trellis and fruit trees. Replacement garages are also*

beneath the landscape'. That does tend to make it sound grander than it is in locale. It really just look like more concrete in an already concrete dense part of Southwark although concrete that's wavy. The two sets of double doors have nice signs on that read 'East Bound' and 'West Bound'.

• Culling Rd at Southwark Park, SE16

Excavation begun January 1995 for this vent, emergency escape shaft and plant room. A 'Special Issue' of Civil Engineering November 1999 writes 'for the ventilation shaft at Culling Rd, the contractor opted for a diaphragm wall shaft instead of a caisson. This was built using a Hydrofraise rig, which enabled panels 2.4m wide by 1m thick to be accurately excavated and concreted to 40m below the ground'. For lesser engineers and visitors, Powell describes the scene as an 'enigmatic incident in the harsh landscape', 'a series of concentric rings of increasing diameter. The building is clad in 2mm copper sheet, arranged in panels and fixed between projecting horizontal stainless-steel angles that wrap around the ground level plantrooms. A projecting concrete blade wall expresses the division between the ventilation zone and the main shaft access point. Night-time illumination 'dramatises' the building'. Stuck in one corner of the recently revamped Southwark Park, this really is perhaps the best of all the specially designed outposts of the Extension. The verdigris colour and the unexpectedly projecting rings work nicely to break up the traditional right-angle fetish of gray coloured public utility architecture.

• Canada Water Station, SE16

Standing alongside the Albion Channel nearby to the new Canada Water Station, this ventilation and escape shaft plus traction sub-station building is another fun geometric pile-up. An isosceles triangular base made from black brick holds up a vast circular biscuit tin shaped vent made up of stacked panelled grills. That's as technical as I can get. At the sharpest end, the brick is truncated and replaced by orange girders projecting outwards like the prow of a ship towards the bird-friendly reed beds of Canada Water. Looking down on the scene from the high rise Canada Estate, the design looks very much like a bizarre eye in a triangle. Other more utilitarian vents are scattered outside the long side wall of the bus station and includes ventilation for the East London Line which crosses above the JL Ex at this point.

• Downtown Rd, SE16

Another mid-tunnel air vent and emergency shaft in Rotherhithe. Powell says 'the perimeter walls are gently curving and the roof is formed as a shallow dome...The exterior is treated as a monolith executed in black basalt concrete'. Oh what pictures words can paint. Despite some curved metal rods that function as a roof and security measure, this is really nothing more than a stocky concrete bunker without colours surrounded by a sturdy metal cage. The rear serves as a canvas for local spraypaint artists. Powell's description continues 'A freestanding miniature monolith provides a separate enclosure for fire brigade inlet

valves'. This 'monolith' is merely a lump of concrete with a standard LFB valve enclosed.

• Durands Wharf, SE16

This was the waterside park that held the initial running tunnels shaft for the westwards digging of the new line. Now that the tunnelling is over, all that is left is the Durands Wharf emergency escape shaft in a newly redesigned small park close to Rotherhithe St. Powell reports that 'two intersecting curved concrete walls form an outer enclosure to the plant and equipment yards, appearing to emerge from the ground and suggesting that they are the extension of a larger subterranean structure. The ventilation / exhaust is formed by an inverted cone of cable mesh inserted between the concrete walls and an elliptical stainless-steel roof'. The concrete was 'surface-ground to expose a black basalt aggregate and give an irregular look'. This one does have more of an air of mystery about it as it is possible to see down past the gate as the floor spirals down towards the internal doors. It seems that if you could just get down there a world of adventure would open up abracadabra. The relative quiet of Rotherhithe St means that you can hear the rush of air from the tube below. The roof can look like a UFO from some angles.

• Other JL Ex stuff

As a brief aside and memory, the following sites also witnessed Jubilee Line Extension tunnelling work:

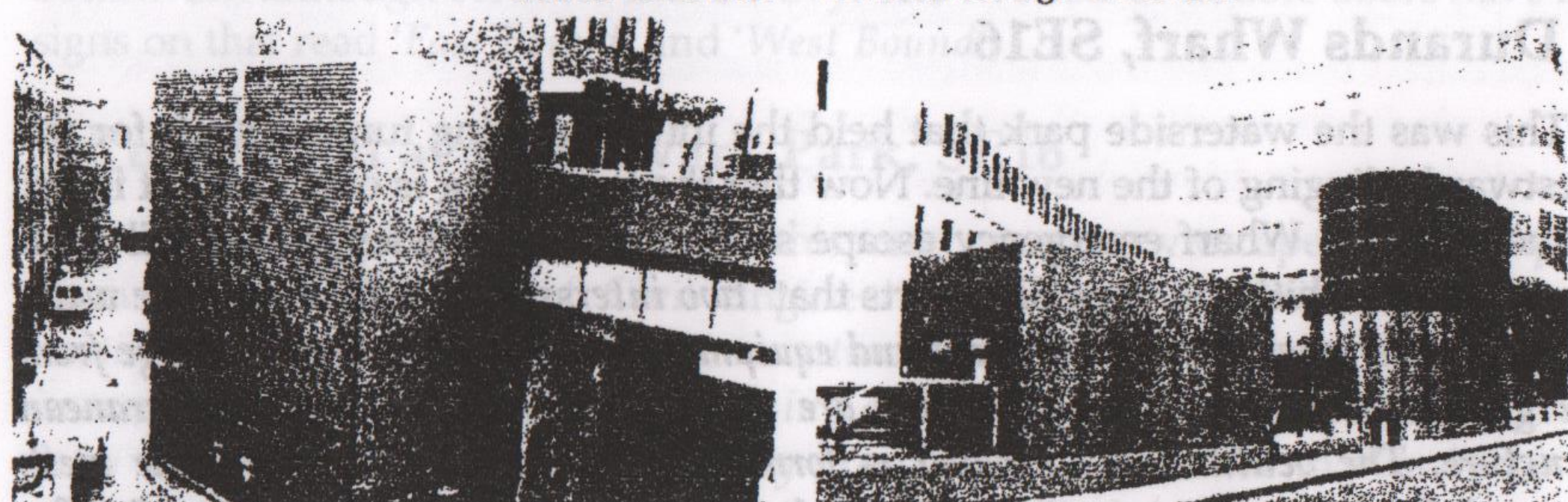
Early trial tunnelling was in operation at the large site on the corner of Redcross Way where it meets Southwark St. The junction of Union St and Gambia St saw the site offices for Ewer St tunnelling works. At 66/68 and 71-75 Union St, a temporary shaft was sunk for ground work. This 'grouting' work was attempting to control damage from tunnelling-induced settlements by 'active' ground replacement. An injection of grout into the ground above the tunnel stabilises the disturbed earth. Further grouting vents were in action at St Thomas St adjacent to No.15 and also at the junction of Redcross Way and O'Meara St where a 4.3m cylindrical shaft was sunk. At the latter, excavations in October 1994 uncovered 9 coffins from a presumed pauper's graves plus other bodies from an old Quaker burial ground. Tunnelling works also were in operation from a shaft sunk in Old Jamaica Rd.

The actual running tunnels of the new tube line were buried far beneath the extent of human and floral occupation of the local terrain. However, all the vents and escape shafts presented a great chance to dig foot by foot through the palimpsest of London life and record the discoveries. Fascinating accounts of these archaeological excavations can be found in the Museum of London Archaeology Service monograph series. Three relevant titles deal with Roman settlement in Southwark, Medieval and later life around the London Bridge Station area and a look at the Cross Bones burial ground in Redcross Way.

On a final note, the rummaging around underground by us two legged beasts is not without consequence for others. In April 1994, during the preparations for the Canada Water JLEx station, 21 foxes were removed from their dens on the overgrown area around Deal Porter's Way. If we are going to represent the

history of the subterranean, these fine urbanites have been at it a lot longer than we have.

Joiner St Shaft London Bridge St Shaft



Welcome to SOUTHWARK



Druid St Vents Ben Smith Way Shafts

NORTHERN LINE (DIS-USED):

- Southwark - Civil Defence Committee Minutes 1939 - 1955 (*)
- *The Railway To King William St and Southwark Deep Tunnel Air-Raid Shelter* - Peter Bancroft, 1981 (*)
- www.leverton.org/tunnels/cslr/index
- <http://members.tripod.com/metadyne/LUGenPhotos.html>

BAKERLOO LINE and LONDON RD DEPOT:

- *The Bakerloo Line: A Brief History* - Charles E Lee, 1973 (*)
- *De-bunking The Bunkers* - Undercurrents #9 Jan/Feb 1975
- *The Bakerloo Line: A Short History* - M A C Horne, 1990 (*)
- *Rails Through The Clay* - Desmond F Croome and Alan A Jackson, 1993

JUBILEE LINE EXTENSION VENTS and SHAFTS:

- *Jubilee Line Extension* - Kenneth Powell, 2000 (*)
- *Civil Engineering Vol 132 Special Issue No.2 November 1999* (*)
- *Aspects of medieval and later Southwark: Archaeological excavations (1991-8) for the Jubilee Line Extension Project* - Heather Knight, 2002

Haywards of The Borough

'Don't Grope About In The Dark'

In London, and beyond, the name of Haywards Ltd is everywhere. If you spend your days looking for pennies on the pavement then you'll already be familiar with the name. If you breeze along like nobody's business then maybe it's a new one on you, for here is another Southwark-based firm with a penchant for patent inventions. Apart from a more mundane manufacturing of iron gates and staircases, what interests us here, is the desire of Edward and William Hayward to ventilate, or more daring still, to illuminate the subterranean.

Dangerous Coalplates

Their works at the corner of Blackfriars Rd and Union St inherited the famous 'dog's head in a pot' metallic sign that Charles Dickens had noticed as a boy in 1823 - 'my usual way home was over Blackfriars Bridge and down that turning in Blackfriars Rd that has Rowland Hill's Chapel on one side and the likeness of a golden dog licking a golden pot over a shop door on the other'. Here, for many years, it had been manufacturing a whole range of coalplates to cover the pavement-set delivery hole to coal cellars. During 1865, a number of news stories had reported the death of Mrs Flowers who had fallen through an unfastened coalplate in Guildford St and the unhappy case of Sir Philip Owen, who after slipping halfway down a coalhole, had been unable to accompany the Queen round 'an interesting exhibition'. Haywards were quick to point out that the incident in Guildford St had not been due to a Haywards coalplate, of which many were set in the above mentioned street. In fact, Haywards plates were safe and secure due to their Patent Self-Locking and Non-Slip mechanism.

A Haywards catalogue indicates the range of coalplates available - the classic No.5D solid plate reading 'Haywards, Patent Self-Locking Plate, Borough, London', the No.5C Ventilating plate and the No.5B Illuminating Plate with Glass. Ranging from 12 to 14 inches in diameter, you would pay from 6/- to 12/- depending on stone or asphalt fixing. The older and more stylish No.1D was available at 5/3 for a solid 12 inch to 29/3 for a 21 inch illuminating plate reading 'Hayward Brothers 117 & 119 Union St, Boro'. A good spot to view some of these in situ is in the pavement of Southwark St, outside the little shops near the Blackfriars railway bridge.

Confusingly, 'Iron & Steel and Grindstone Merchants' J W Cunningham of 196 Blackfriars Rd, feature the dog and pot image on their own coalplates after moving to the premises in 1895. The original and lovely golden dog can now be viewed in the Cuming Museum, on Walworth Rd.

'Have Daylight and Fresh Air, and Clean Bright Spaces':

Haywards' Patent Prismatic Pavement Lights

This was not however Haywards first product to brighten up the underworld. In July 1871, the senior partner in Haywards Brothers of Union St patented his most important invention, Patent No.2014, 'Improvements in Pavement Lighting', later to become world-famous as the Hayward Patent Pavement Light. Described in their own history book 'Years of Reflection', this invention 'revolutionised basement lighting, which had been a continual source of worry to builders and architects for some years'. No longer would a basement be a dark and dangerous waste of space for the storage and losing of valuable material, with Patent Pavement Lights, the light of day would reach all corners ensuring good fortune for all. (Pictured on page 115)

Iron gratings set in the footway to bring light below were nothing new at the time, other firms were in that business too. The only problem with these was rain getting inside and heels becoming stuck. From 1857, Haywards had been making circular grates with rough glass set in a hexagonal pattern to light basements. What made the new Haywards Patent different was the discovery that by taking a block of glass and cutting it in half, rays of light would be thrown in certain directions, with the possibility of directing the reflected light. The new pavement lights, prismatic in operation, were described thus - 'unlike ordinary reflectors, which become tarnished or covered in dust, these retain their brightness, as the reflection comes from inside the body of the glass'. The new invention was an immediate hit with the first commercial use of the lights at the corner of Poultry and Queen Victoria St, fixed in the pavement around the Mansion House. By the turn of the new century, in Bond St alone, over one hundred different premises had ordered pavements lights, one company reporting 'our basement is lighted by Haywards Patent Pavement Lights, the daylight being thrown back, enabling the space to be utilised as a counting house'. The Army and Navy Toilet Club in Queen Victoria St was similarly happy with the product.

'Years of Reflection' can boast 'close to 1900, William Eckstein, delivered an important lecture to the Architectural Association entitled 'Interior Lighting''. This speech reported in full in 'The Builder' 'revealed a technical knowledge of pavement lights which has never been surpassed. It forms the basis of the section of the Encyclopaedia Britannica which quotes Eckstein's lecture as an authority'. Joining the firm in 1880 to create 'Hayward Brothers & Eckstein Ltd', by the time of the First World War the company had dropped his name in case clients imagined that 'there is some German interest in the business'. Eventually, the company moved most of its manufacturing plant to Enfield but retained the Union St factory until the mid-70's.

Today, you can view the older Patent Pavement Lights outside 101 Southwark St. The 20th Century concrete instead of iron 'Haywards Lux-O-Crete' design can be seen at the building on the west side of Blackfriars Rd at its Stamford St junction.

HAYWARDS:

- Years Of Reflection: The Story of Haywards of The Borough, 1954 (*)

Other Tunnels: Remnants and Rumours

'Is the master out of his mind?', she asked me.

I nodded.

'And he's taking you with him?'

I nodded again.

'Where?', she asked.

I pointed towards the centre of the Earth.

'Into the cellar!', exclaimed the old servant.

'No', I said. 'Further down than that'.

Journey To The Centre of The Earth - Jules Verne, 1864

What's Going On Down There?

If we are to continue looking at what lies beneath the Southwark soil, then maybe it is a good idea to actually pass through the soil itself. What makes up the earth that we walk upon? And what has been carelessly and not so carelessly left below by generations of Southwarkites.

There are no end of detailed reports from the time of great commerce in Southwark when test borings were sunk for all sorts of industrious purposes. More recently, archaeological reports accompany most of the new demolition and development currently widespread across the area. To be brief, for a whole book could be written on this topic, let's wander to random sites and see what's down there.

The following are all taken from various 19th century reports gathered by the Metropolitan Board of Works. An investigation of the Dulwich Wells reveals standard London Clay for 40ft before water was found. 20ft was clay 'with vegetable substances', the other 20ft was clay with 'pyrites and septaria' (iron crystal and hard, rounded ironstone). At the more western end of the land, D Allport's dig from 1841 at St James Rd, near the Old Kent Rd, reveals 3ft of 'mould and clay', 9ft of 'peat and decomposed vegetable matter'. Beneath that, Allport kept going through 'white sand, with many nuts and pieces of deer's antler'. Up North and borings made for the 'proposed Tunnel Sewer by J Phillips, Surveyor' in 1849 at Globe Dock, Rotherhithe brought up many different samples. Described in blocks, Phillips discovered 12ft of Alluvium (ground and yellow silt), some Sand and Gravel, 35ft of Woolwich Beds (dark clay, sands, grey clay, calcareous

concretion, mixed sand and white marl, green sand and pebbles), Green Thanet Sand and finally the famous chalky London Basin.

This is all very well for minerals and all that but what kind of life has been here. A report of excavations around Tooley St in 1899 throws up an overwhelming wealth of details on former life down there. Highlights from the three detected levels of Marsh Clay, Carbonaceous Silt and River Mud include vole bones and 23 types of molluscs in the clay section. Human, goat, ox, eel, roach and frog bones, 41 molluscs, 4 insect types, fruit seeds plus weeds, grasses, flowers and trees found in the silt. At the river bed level, a horse and pig can be added alongside the mass of molluscs such as slugs and snails.

The list of plants found in the silt provided a wonderful look at the type of stuff grown around the area in Roman times - fennel, hemp, damsons, figs, flax and corn marigold among apples and blackberries.

Aside from this ancient compost and the animal life and not forgetting the exotic bison's horns and elephant's tusk found 20ft below Grosvenor Park, Camberwell in the 1880's, there are some great human deposits in the masses of archaeological files.

A scattering of Roman burials across North Southwark have been consistently unearthed by the constant upheaval from periods of development. In 1812, a coffin decorated with patterns and the goddess Minerva, complete with Roman bones inside, was dug up at the Deaf and Dumb Asylum near the Old Kent Rd. In 1825 digging under what would become the Engine House of Barclay Perkins brewery at Bankside brought forth a skeleton with a jar containing Roman coins found between its bony legs. Finally, during the 1830's, Roman urns, lachrymatories of glass and other vessels were found under the latter day burial ground at Devereil St. A grey pottery urn contained bones that had been burnt. These are just three examples of many, many finds.

During the recent 1998/1999 building of the new extension of Southwark Cathedral, a large expanse of Roman road made from thick gravel layers compacted together was re-excavated. The road was the final stretch that lead to the Roman bridgehead north east of the site. It had first been discovered in the 60's and 70's by diggers from the Southwark and Lambeth Archaeology Society but covered over again to preserve it. Luckily for us, the recent development has chosen to keep the road and other observable discoveries open to the public through the creation of a viewing platform close by the new foyer entrance.

Better than all this however is the discovery of a banana skin from Tudor times beneath the ground in Tooley St in 1999. The medieval accident waiting to happen was then put on show at the Museum of London for all to enjoy the oldest sighting of a banana in all of London history.

Hail Mithras! Hail Isis!

Hail Anubis! Hail Hekate!

There has not been a more fascinating discovery from Roman London since the excavation of the Walbrook Mithraic temple in 1954 although many amazing finds

pop up every year. For fans of the underground, the worshipping of this originally Persian god and the slow ascent through the seven grades of initiation, always took place in a special temple constructed beneath the earth, the symbolic cave representing the world. The Mithraeum at Walbrook was near intact with many beautiful statues found in the vicinity and now displayed in the Museum of London. Despite the original subterranean placing of the temple, it was moved from its original site and now stands high up on an anonymous plinth in Queen Victoria St, EC4. Although the find was north of our borders, speculation and small possibility are open for a Southwark Mithraeum with the discovery in 1977 of a Roman hunter god with Mithraic features excavated from the crypt of Southwark Cathedral.

On the subject of veneration, the discovery of a wine jug at Tooley St / Duke St Hill near London Bridge in 1912 gave rise to much speculation as to whether a Temple of Isis might have been constructed somewhere on the southern bank of the Thames. Inscribed in the jug were the words 'LONDINI AD FANUM ISIDIS' (*At London at the Temple of Isis*). On matters subterranean, an initiate of the mysteries would hope, on dying, to find themselves within '*an underworld Elysium with the luminous vision of the Goddess*' such as Isis. The goddess herself spells it out quite clearly to Apuleius in the initiatory conclusion of his book '*The Golden Ass*' - '*under my protection...at the destined end of your life, you descend to the land of ghosts, there too in the subterranean hemispheres you shall have frequent occasions to adore me*'.

More exciting discoveries were made near a walled Roman cemetery beneath 165 Great Dover St in 1996 when a novel burial site was unearthed. The grave, outside the boundary walls of the cemetery, took the unusual form of a pit where the body of a young woman had been burnt on a pyre leaving the ash and bones cremated in the hollow. Scattered in the remains was the debris of a luxurious funeral meal consisting of dove, figs, cereal and chicken plus numerous burnt pine cones for aromatic smoke. Also accompanying the young woman of obvious status, were 8 unused lamps and 8 probable incense burners. Of special interest here, is that three of the lamps were decorated with a depiction of the Egyptian jackal-headed Anubis, something very rare for Roman Britain. The God himself was the controller of the ways to the underworld of the dead as well as being nephew of Isis. Jenny Hall, from the Museum of London, has written on our fallen comrade, '*...the cult of Isis became particularly popular with women, and there epigraphic evidence of the presence of a temple of Isis in London. The deceased, therefore, may possibly have been an influential follower of Isis*'. Anubis was also assimilated by Roman religion to Mercury, a God associated with gladiatorial combats. The fourth lamp has a fallen Samnite gladiator on it which gave rise to the notion that here was the first discovery of a British gladiatrix.

As to the whereabouts of the Isis temple, described in '*Roman London*' by Roger Marsden, as '*one of the most important monuments of Londinium that is yet to be discovered*', speculation is that it is unlikely to have been in Southwark despite our hopes and dreams.

On other Goddesses, further back, at Newington Causeway, a shallow wood-lined pit was uncovered containing the skeletons of two dogs and some second century pottery. Here, local pagans attributed the site as an offering to Hekate, the

goddess of magic and sorcery and no stranger to the underworld. An overseer of junctions, the siting would have been at the meeting of both long Roman roads, Watling St from Kent and Stane St from Sussex. Other local concrete poets have recently contributed the nearby Heygate St as a misspelled resonance to our local offering to Hekate.

One last Southwark Anubis tip is the mysterious appearance of the one-eyed human demon to hero and inadvertent time traveller Brendan Doyle in Tim Power's *'The Anubis Gates'* from 1983. Led by the demon across Blackfriars Bridge in the year of 1810, and *'then to the left down one of the narrower streets and finally to a high brick wall that completely enclosed one fairly large lot'*, Doyle is shown the secret entrance to the underworld among a heap of bones on a hillock by the remains of ancient walls. Unconvinced of the sincerity and true nature of the ragged character, our adventurer declines the *'Anubis Gate'* and continues his quest. The modern day equivalent could well be the emergency escape shaft of the Jubilee Line Extension at Scoresby St, so be warned if you find yourself suddenly attending Coleridge's lecture on Milton at The Crown and Anchor, Soho on 8th October 1810 alongside Mr Doyle.

Coil And The Clink

The fascinating and arcane English musical group Coil were proud to announce on the sleeve of their rather good record *'Astral Disaster'* that it was *'recorded in two days at Samhain 1998...under the level of The River Thames in the ancient Borough of Southwark'*. The work was produced they told me, *'in a private studio nearby to Clink St'*. Their song *'The Lost Rivers of London'* appears on their earlier *'Unnatural History III'* CD (1997).

The Clink prison itself, in the vicinity of the modern day Clink Street, is another mysterious subterranean puzzle. The Bishop of Winchester's prison was in existence as least as far back as 1503-4 when Winchester pipe rolls record the making of two iron bars *'pro Clinco prison'*. A lease of land to Robert Cruys from 1661 *'was between part of the of the late Mansion House of the late Bishop of Winchester under which the prison called The Clink lay'*. Wherever it was, it was certainly unsavoury and wet and probably constructed below the high water level. According to one source, it may have been sited, *'just west of the Great Hall of Winchester Palace'* where a *'low-lying partly underground dungeon...very damp being between the river, common sewer and pike gardens'*. Another writer in agreement, has *'strong consideration for the location...vacant ground of the West side of Stoney St next to Clink St'*. The Clink Museum, probably shut by the continuing redevelopment of Clink Wharf by the time you read this, was situated on Clink Street.

In September/October 1995, some sub-space near the site of the Clink Museum was used for an art installation entitled *'H.G'* by Robert Wilson. One critic spoke of *'downstairs...a ragged Piranesian warren of tunnels...high vaults and cramped chambers'*. Another reviewer spoke of descending *'into the semi-darkness of the vaults...entering a submerged archetypal space of nightmare'*. The reviewer, Anna MacDonald, continues to where *'the vaults are quite cold, nearly dark and each step*

disturbs the dust. Their construction is supported by thick wooden beams that appear old enough to make one uncomfortably aware of the weight of the earth around. The ceilings are arched, varying in height and the rough uneven stone underfoot makes walking a risky business'. Her conclusion on *'H.G'*, after a slow tour of installed images and sounds, was of experiencing an *'adventure story where every shadow seemed loaded with possibilities'*.

Rewinding back to music, local Nigerian-born rapper Ca\$hino's video to his track *'Subterranean'* was shot on Ayslesbury Estate. Another video, filmed at Surrey Quays, directs us to *'Keep It Underground'*.

Underground around Peckham and Nunhead

Rumours of tunnels abound in the Peckham and Nunhead area of the borough. Popular word of mouth spreads the story that The Old Nun's Head pub in Nunhead was built on the former site of a convent and that the name refers to the placing of the Lady Superior's head on pike-staff after soldiers of King Henry had caught the unfortunate women in the act of fleeing. Here, it is rumoured, many of the other sisters were able to escape via the use of an underground tunnel that was rediscovered by builders in the 1933 in the cellar of the pub. A South London Press report tells us that *'when the pub was being rebuilt, a workman discovered a tunnel in the cellar. It came out where the public toilets in Meeting House Lane now stand'*. A journalist was shown into the cellar in August *'where the semi-circular entrance to the nun's tunnel was still to be seen...it has long been bricked up and no trace of the tunnel itself has been discovered'*.

A further connection to The Old Nun's Head is the rumour of another tunnel that ran northwards from the site to a house on Meeting House Lane in Peckham where dissenting Protestants would meet in the 17th century. Information from 1958 from Mr Hahn, ex-Chief Librarian and Curator of The Southwark Collection, details that *'according to legend, a tunnel ran from this house in two directions. One way led to the Old Kent Rd...the entrance to a tunnel in Alexandra Street, Deptford...in the grounds of a 17th century manor house...destroyed in 1936...A tunnel was also reputed to run in the other direction, from Meeting House Lane to the Nun's Head Tavern...but there is no record of this tunnel having been seen'*.

Curiously enough, the novel *'The Ballad of Peckham Rye'* by Muriel Spark entertains us when the odd character Dougal Douglass begins to poke around a newly discovered tunnel in Peckham: - *'Do you know'*, Dougal said, *'up at the police station they are excavating an underground tunnel which starts in the station yard and runs all the way to Nunhead'*. The tunnel, fictionally starting at the Peckham cop shop at Meeting House Lane and containing bodies of nuns, runs 600 yards to Gordon Rd instead of Nunhead with a comfortable head height of 8ft. Later on, bad deeds come to be perpetrated down under. Further rumours turn up in Olive Walker's 1954 book *'A Tour of Camberwell'*. She tells us *'Grimwade Crescent (both ends turning out of Evelina Rd) was the scene of a disappearing trick some time ago. A lorry loaded with coal sank 2ft underground. There is said to be an underground tunnel there, constructed hundreds of years ago, leading to the police station in the High St'*.

It would appear that the Peckham / Nunhead environs are a positive resonator for subterranean myth with tunnels extending north, south, east and west. What is going on there?

Jack Sheppard's Tunnel

The popular 18th Century thief and prison escapee extraordinaire Jack Sheppard has long been associated with Southwark in fiction and fact. Sheppard, who managed to break out of London's most infamous gaols no less than five times in his short career in crime, later became more well known among young children than the Duke of Wellington. That Jonathon Wild, the crafty 'Thieftaker General' and someone Sheppard would have had crossed paths with, had a warehouse for stolen goods on Newington Butts may explain the caption for a faded picture of a derelict house that sits in the Southwark Collection. The copperplate writing says *'Newington Butts improvements - the above house marked for demolition is situated in Clock Passage, Newington Butts...it is known in the neighbourhood as one of the retreats of the notorious Jack Sheppard and is said to have had a subterranean passage to the riverside'*.

All Around Crystal Palace

The site of the former glasshouse, the Crystal Palace, is chock with subterranean fancy and innovation. To fit in with the general sumptuous architecture of the palace and gardens, in 1861, a beautifully ornate passageway designed by Edward Barry was constructed at the High Level railway station below Crystal Palace Parade. This footway enabled passengers to disembark from the trains and walk directly under the road and arrive right at the entrance to the glassy temple. Alan R Warwick beautifully describes the subway in his 1991 book *'The Phoenix Suburb'* - *'Hidden from the eye, like some Pharaoh's tomb, where it lies secretly beneath the Parade roadway, is a vaulted chamber of impressive proportions. It is a place of warm colour, of red and cream brickwork, each brick fitted with geometrical precision and interlaced with ribs of stone. Octagonal pillars support a vaulted roof of remarkable strength that sustains the roadway above'*. He continues *'the vaulted chamber is Byzantine in style, a truly magnificent example of the skill of the workmen...they were Cathedral bricklayers from Italy, specialists in the craft of building crypts of great beauty and strength'*. The description of the subway in the *'Listed Buildings in Southwark'* report from 1988 whets our appetite for the mysterious thoroughfare with talk of *'fan-vaulted roof...roundels in red and cream brick...diaper patterning...Ovolo stone mouldings'*.

Sadly, the subway today lies unused, long since sealed by subsequent custodians to protect its poetry from the general population. For good or bad, this Victorian splendour lies in secret. If you can find a copy, the CD-ROM *'Macabre London'*, put together by Joel MacGregor and Tess O'Leary in the mid-90's, contains a short film of a sunlit walk through the subway showing many of its best features.

Close by, back at the site of the former High Level Railway Station and track, which was demolished in 1961, a large section of *'arcaded buttress walling consisting of stock brick arches with red brick niches, spandrels and cornice'*

(Spurgeon) can be viewed from Spinney Gardens. Following this wall brings the walker to the impressive red and white brickwork mouth of the Joseph Paxton Tunnel. Paxton, the grand architect of the great Palace work, had this railway tunnel built to take the High Level line north through the earth for 400 metres, the tunnel end coming out in the Great North Wood, of which today only small fragments remain for the nature lover. A small and colourful train sitting on concrete rails sits forlornly at the entrance to the tunnel, dwarfed by the heavily fortified iron gates that prevent the overly curious from running into the darkness.

Two handy guides to the area are: *'Discover Sydenham and Catford'* by Darrell Spurgeon (1999) and an illustrated guided tour of the many pockets of remaining woodland published by the Friends of The Great North Wood titled *'From The Nun's Head to the Screaming Alice: A Green Walk Along The Old Crystal Palace High Level Railway'*, 1995

Although, not strictly speaking in Southwark as the official boundary indicates, this area being the delicate meeting point of four local authorities, the original terraces of Crystal Palace can still be enjoyed by the adventurer. Somewhat more subterraneously, behind each of the brick alcoves that run from east to west dividing the upper terrace from the lower one, Paxton had built various tunnels that ran beneath the Palace and served as service subways for mixed operations included plumbing for the nearby large water fountains.

Just after midnight on April Fool's Day 1998, 18 people and 2 dogs climbed up to the top terrace of Crystal Palace site and set up camp in response to the threat by Bromley Council to clear the trees there in preparation for the building of a giant multiplex cinema. As the days went on, and as the campaign fought the development, the camp became to be known as Big Willow Eco Village and began to spread over into the minute portion of the site that was in the borough of Southwark. Of relevance here, is the then popular tactic of tunnelling into the earth to enable committed hunkered down protestors to hold off attempts to evict the protest site. By the following March, when one of a series of *'Children's and Tunnel Moles'* parties was held, an impressive set of underground tunnels and bunkers had been dug as well as a garden that produced occasional food for the camp. Despite Bromley's insistence that the digging was damaging the above-mentioned Paxton's tunnels, the protestors never found them even though digging in *'was spurred on by rumours of existing tunnel networks'*. On 3rd March 1999, the eviction happened and 350 police and bailiffs repossessed the camp. Incredibly, the eviction could not be completed until the last two underground resistors Ken and Animal were finally dug out after an incredible 19 days underground. From within their bunker they had phoned out why they were prepared to rough it out - *'Ordinary people are constantly excluded from the decisions made about their environment. The only way for us to resist this is by direct action'*.

The Shallow Grave of The Mannings

Grisly goings on were afoot in one of Bermondsey's most famous murder cases from 1849 when Marie and Frederick Manning murdered Patrick O'Connor in their house at 3 Miniver Place, off Weston St. O'Connor might have been Marie's

lover at the time but the murder was for his money. On August 9th, O'Connor visited the Mannings for dinner and on the way downstairs to wash his hands before eating, Marie shot him in the head. Falling forwards into the back kitchen, the body fell conveniently close to shallow pit they had dug previously but O'Connor was not yet dead. Calling on her husband to finish the task at hand, Fredrick bashed his skull in with a crowbar that they had previously bought nearby. Then they put the now dead man into the new grave and covered him with lime. When police discovered O'Connor's cash box raided in his flat soon after Marie had been round, it was not too difficult to put two and two together. Some days later, police inspecting the Mannings house discovered a damp patch between two flagstones and a naked and bound body was soon exhumed from the makeshift grave. A precise ground plan of the Manning's house published at the time in a newspaper puts the prepared grave at the size of 5ft 8 inches by 2ft. Any road up, the jig was now up.

Somewhat famously, the pair were strung up from a rather public gallows at Horsemonger Gaol near The Elephant on November 13th. An estimated 10,000 people turned up to watch the grisly spectacle including Charles Dickens who then called for an end to public executions. The Manning's somewhat austere and tiny gravestones can be seen in the Cuming Museum on Walworth Rd.

On a fictional level, the brother of Jimmy Jenner, the part-deaf, one-legged private detective from Bermondsey in John Milne's *'Alive and Kicking'* (1999) was murdered in a trench in Abbey St in 1968. Thirty years later, back in Bermondsey and not recognising the place at all, Jimmy finally learns the truth after 250 pages of a highly entertaining read - *'We walked round to the junction of Abbey St...I showed her the bit of tarmac. Under there is where my brother died', 'It doesn't look like the spot' (Judy said). 'They've knocked down a church and built a dual-carriage way since'. 'How do you know?'. 'I know. Believe me I know. I was born here'.*

Bread and Wine from Underground

At the end of the 19th century, it was common that bakehouses were built and operated partially underground despite the danger posed by a possible lack of ventilation. From January 1896, any underground place used afresh as a bakery would be prohibited under the 1895 Factory and Workshops Act. In spite of this and the intention of the government that the underground works should cease to exist, in 1897 in the St George The Martyr vestry alone there were still 16 such underground bakehouses. At the turn of the new century, a new Factory and Workshops Act (Section 101 - 1901) sought that each bakehouse be inspected to meet *'minimum requirements'* for construction, ventilation and cleanliness with certificates being issued on satisfaction. The Act defined the premises as *'any underground bakehouse, any baking room of which is so situated that the surface of the floor is more than three feet below the surface of the footway of the adjoining street, or of the ground adjoining or nearest to the room'*. By 1904, after some delays and extensive visits from inspectors, 33 of the Metropolitan Borough of Bermondsey's 35 underground bakehouses were granted certificates, of which the Bermondsey bakers Henry Anderson of 7 Paradise St and James Douglas Rule of 2

Alscot Rd serve as fine examples.

On wine, an illustration from Pictorial World, 3rd March 1883 happily depicts various scenes from the work-a-day wonders at Max Greger Ltd, Great Guildford St SE1. Aside from the vast wine 600ft warehouse that stretches down the street, our eye is caught by other illustrations of the vast cellar beneath the building. Here, beneath the rumbling of horse carriages above, a massive cellar stretches as far as the eye can see, beside each pillar are stacking dozens of hogsheads. In another picture, their celebrated vats are shown dwarfing over the workers, each oversize barrel capable of holding 15,000 gallons of wine.

Wine was still being stored near the riverside in the 1950's when *'shadowy vaults'* beneath London Bridge were in use by J L P Lebegue's.

Safe and Sound Under The Ground

During the Second World War, an underground hospital was opened beneath one of the wharves in Tooley St for those from Bermondsey who needed rest and treatment. The South London Press from 27th January 1942 describing a visit mention corridors lined with *'fern-bearing pots'*, *'tiny wards'* with two beds in each *'with multi-coloured covers'* and the walls painted *'a distempered yellow'*. It continues *'This charming little hospital'* means that patients *'will be safe against air raids, warm in cold weather, cool in hot weather. They will have the advantage of good food, well cooked and brought to them regularly'*. Stored batteries meant that emergency lighting could be run for 40 hours in the event of electricity failure.

Deep Below the Tate Modern

The home of the fairly new Tate Modern art gallery is, of course, the old Bankside Power Station, built in two phases between 1948 and 1963. Although closed in 1981, 33,000 sq ft of the basement still holds switching gear, electricity plant and a control room, the large transformers of London Electricity still humming today as the visitor wanders among the exhibits at lower levels. The hum is the result of the transformers converting high power electric from the National Grid into low power electric for use in London. At basement levels, a cable corridor also runs east-west beneath the high art above. Little known about at the time of writing but very exciting from both our point of view as well as the directors of the new Tate are the massive subterranean oil tanks left over from the days of holding the black juice for producing electric power. Situated at the south-west end of the gallery, these vast underground cylinders, arranged like a giant 3-leaf clover, take up 0.9 of an acre, each tank measuring approx. 100ft in diameter. A photo in *'Building The Tate Modern'* by Rowan Moore and Raymund Ryan reveals the ginormous size and present beauty of these empty industrial museums. A figure stands at an expansive grey curving wall of the oil tank, in the foreground giant beams reach way up to the black ceiling, oblique shadows cast up the wall like projections. On buying the site for the intended gallery, the purchasers were not even aware of the hundreds of feet of extra space that hidden underground. Karl Sabbagh's *'Power Into Art'*, 2000, has the following anecdote:

'When the Tate had decided to commit themselves at Bankside, they had not really known much about the space at basement level to the south of the building. But as Peter Wilson began to explore the building he made a discovery. 'I think the biggest surprise is the sheer extent of space at basement level. We've discovered that there is space stretching out not only under the London Electricity sub-station but out under the road, and that space leads on directly to the huge oil tanks which are buried under the lawn to the south of the building...'. Now, there are slow plans for Tate Modern Phase 2 to convert the tanks into three more exhibition areas. I look forward.

Tunnel Entrance in Burgess Park

On things electric, there stands alone at the east end of Burgess Park, at the meeting of Trafalgar Ave and Sumner Rd, a curious brick structure like a tiny watchtower. At one side of the square turret, an anonymous white door indicates facility for human ingress. Above the brickwork, a metal grill extends around the four walls as a ventilating system. A sign reads 'National Grid - New Cross Tunnel - Danger 275,000 volts - No entry without authority'. National Grid were less than forthcoming as to the size and extent of this tunnel although they wrote that the shaft 'probably relates to our New Cross - Wimbledon 275 kV cable which crosses Burgess Park. Most of this route is probably laid in the street rather than tunnel'. Richard Trench notes in his book 'London Under London' from 1984 that the then London Electricity Board owned 'a couple of tunnels under the Surrey Canal and another under the Old Kent Road' but leaves us wanting more.

CRYSTAL PALACE:

- The Phoenix Suburb - Alan R Warwick, 1991 (*)
- Macabre London - Joel MacGregor and Tess O'Leary, mid-90's CD-ROM
- Listed Buildings In Southwark Vol 1 - Dept. of Culture, Media and Sport, 1998 (*)
- Storming The Palace: Park Life in South London - Do Or Die! Voices From Earth First! #8, 1999
- Caves and Tunnels in South East England Pt14 - Chelsea Speleological Society, 2001

MISCELLANEOUS:

- Camberwell Council minutes (on Surrey Canal reservoir) 1959 / 1960 (*)
- Astral Disaster - Coil, Threshold House 1999
- The London Hanged - Peter Linebaugh, 1991
(best account of life and death of Jack Sheppard, so far)
- Fogou: A Journey Into The Underworld - Jo May, 1996
- Building The Tate Modern - Rowan Moore and Raymund Ryan, 2000 (*)
- Girl Power! - Jenny Hall (Roman Curator, Museum of London), 2000 - on Great Dover St 1986 burial site and Gladiatrix
- Underground Mythology - Sylvia P Beamon, 2002

More Books:

'Later that night he sneaks out of his room, and goes up onto the roof...he sees the Trog slums on the other side of the stinking lake...even further out...there are cave mouths, gaping giant holes leading away in to endless mazes of Gondwana, the Hollow Earth...he's never wanted to think about the real caves, the infinite dark dank fateful tunnels beneath the Ice, beneath the City, beneath the World. Instead, he's buried himself in dreams. But the sight of the unknown thrills him. Now he begins to wonder, if the real world might be as interesting - or even more interesting - than the world of his books...'

'Cave Pirates of The Hollow Earth', Peter Lamborn Wilson, 1989

some random FICTIONS with subterranea

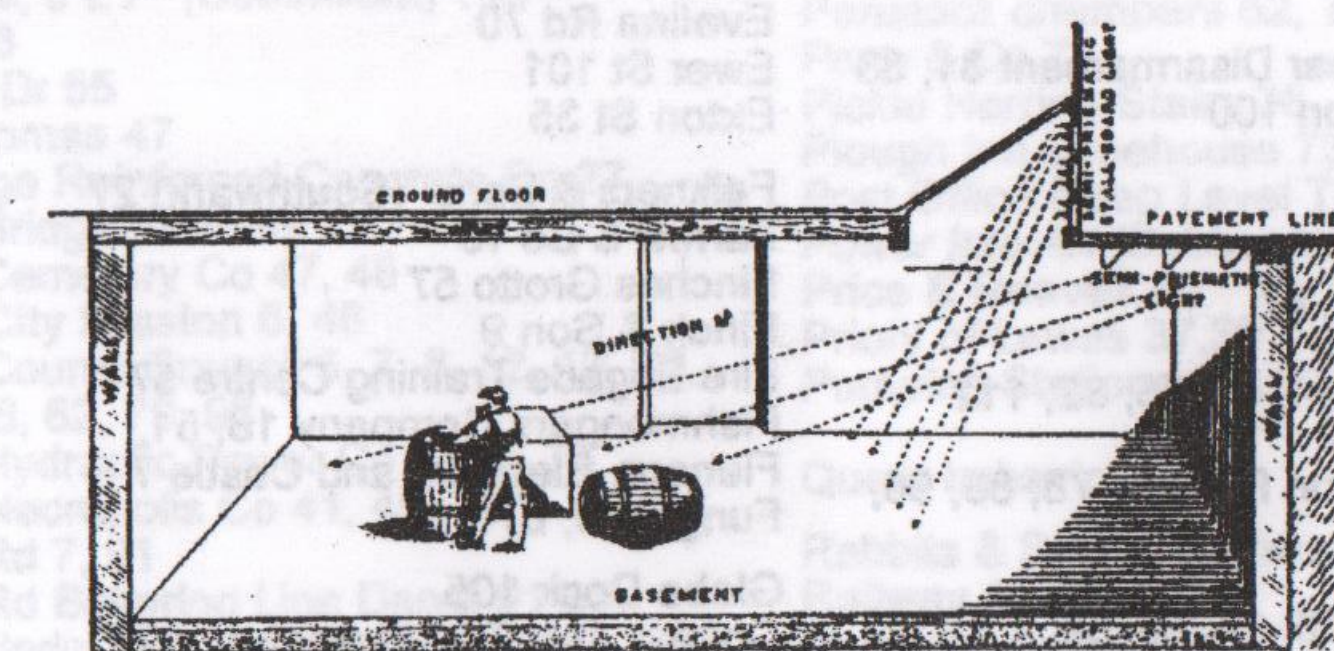
- Journey To The Centre of The Earth - Jules Verne, 1864
- The Time Machine - H G Wells, 1895
- The Ballad Of Peckham Rye - Muriel Spark, 1960
- V - Thomas Pynchon, 1961
- Cave Pirates of the Hollow Earth - Peter Lamborn Wilson, in Tarot Tales, 1989
- Cavedweller - Dorothy Allison, 1998

GENERAL LONDON SUBTERRANEA:

- Beneath The City Streets - Peter Laurie, 1970 Reprinted 1979 + 1983
- War Plan U.K - Duncan Campbell, 1982 Reprinted 1983
- Bunkers Under London - Nigel Pennick, 1988
- 'London Storeys' - Evening Standard ES Magazine, 10th May 1996 (fascinating article on Kingsway Underground Complex, Holborn)
- London Under London: A Subterranean Guide - Richard Trench and Ellis Hillman, 1998 (*)
- Subterranean City: Beneath The Streets of London - Anthony Clayton, 2000 (*)

Interesting Books That I Am Too Poor To Be Able To Read

- Into Unknown England - P J Keating, 1976
- The Life Below The Ground: A Study of the Subterranean in Literature - Wendy Lesser, 1987
- Black Swine: In The Sewers of Hampstead - Thomas Boyle, 1989
- Notes On The Underground: Essays on Technology, Society and the Imagination - Rosalind Williams, 1990
- The Arcades Project - Walter Benjamin, 2001



Semi-prismatic pavement and stall board lights, 1879

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Christopher Jones
 c/o 56a Infoshop
 56 Crampton St
 London SE17 3AE U.K
chris56a@yahoo.co.uk