

A German lithograph by Trautmann after Bonish, showing the Rotherhithe shaft with a pump slung over the top and extracting from the sump, and on the right hand side, the tunnelling shield followed by a platform.

(Photo: Guildhall Library)

# Rotherhithe: the Brunel Exhibition Project

MALCOLM PRESKETT

## THE THAMES TUNNEL

THE early 19th century saw a continuous stream of carts and wagons plying the narrow streets between the docks on the north shore of the Thames below the Tower and the mills and warehouses which had sprung up on the opposite bank around Rotherhithe. It was claimed that it cost more to carry skins across the Thames from Wapping than across the Atlantic from Hudson Bay.

The idea of a tunnel under the Thames was first mooted by Ralph Dodd at the end of the 18th century — 900 feet long between Gravesend and Tilbury at an estimated cost of £16,000. After the shaft was dug 146 feet the attempt was abandoned.

In 1802 a Cornishman, Robert 'The Mole' Vazie circulated a plan for a shorter tunnel between Rotherhithe and Limehouse. Attracting greater support due to the large amount of commercial traffic it would carry, the Thames Archway Company was formed. Vazie proposed building a shaft near Lav-

ender Lane, Rotherhithe and from its base a closely timbered driftway would be driven to connect with a north bank shaft. The main tunnel would be built above the drift which would then serve as a drain. When the shaft was forty-two feet deep, gravel was encountered and water poured in. Using a caisson work continued and at a depth of 76 feet borings revealed quicksand. It was decided to begin the drift without going deeper. The directors however lost faith in Vazie and called in Richard Trevithick, another Cornishman, who soon assumed complete control. Six months and 1,026 feet later under the low water mark on the north shore, the river poured in—Trevithick and the men just escaped with their lives. The hole was plugged with bags of clay and work was resumed within a week but water continued to burst in. With the driftway so close to the north shore the Company lost heart and the attempt was abandoned.

Marc Brunel, an innovative Frenchman, ousted from his own country by the threat of the Revolu-

tion, was working in Chatham Dockyard when he came across the feverish action of the *Teredo Navalis* a shipworm reputed to have sunk more ships than all the cannon ever cast. Its boring action sowed the seed in Brunel's mind from which grew the idea of his first patented tunnelling shield. Brunel had concluded that in order to avoid collapse, in all soft soil tunnelling the top and sides of the excavation had to be supported until the brickwork lining was built.

Further, since under the Thames the tunnel would be driven entirely through mud it would be necessary to hold up the face of the heading as well. His first scheme, patented in 1818, consisted of a twelve foot auger blade encased in an iron cylinder. The blade would be rotated by the miner, while, at the same time, the cylinder would be held back by jacks working against the brickwork lining. The miners would have required Herculean strength and Brunel soon modified his design to that which has formed the basis of tunnelling shields ever since.

Brunel's tunnel was to be 22 feet high by 38 feet wide and would be dug simultaneously by a team of 36 men. To remove the massive amount of spoil a 50 foot diameter shaft would be constructed at Cow Court, Rotherhithe, to a depth of 70 feet. Work began on 2nd March 1825, watched by a constant crowd of tourists and sightseers. Well-upholstered seats were rigged up so that ladies could be hoisted down the shaft by workmen.

The shield was constructed at the bottom of the shaft and began its ponderous journey on 25th November 1825. Soon water began to pour in and a team of men operated bucket pumps to keep the workings dry. Marc Brunel was assisted by his 20-year-old son, Isambard Kingdom Brunel, as engineer-

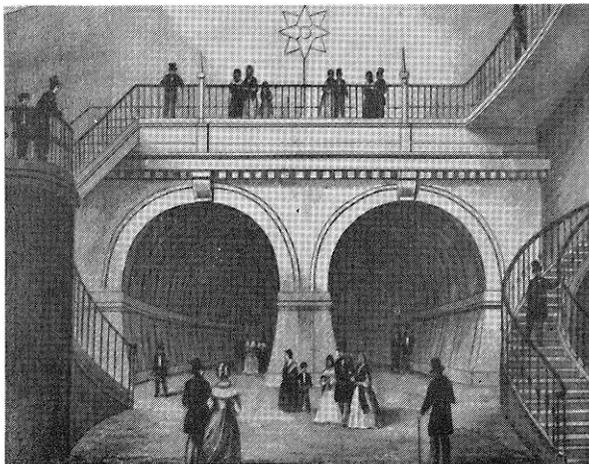


Fig. 2. The southern entrance to the Tunnel

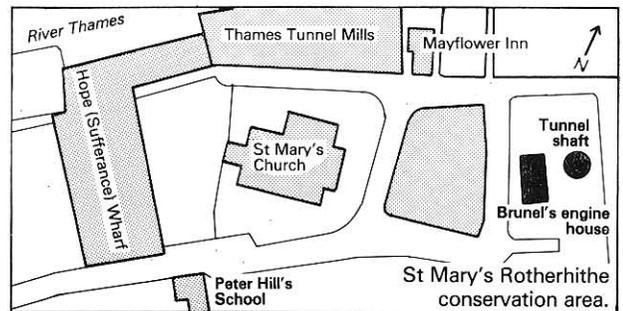


Fig. 3. Location of Tunnel and engine house

in-charge. After six months 100 feet of tunnel had been built. Work continued at about 1 foot per day for the next year without serious difficulties until, almost half-way across, on 18th May, 1827, a great inundation occurred and the tunnel was completely flooded. Despite the curate of St. Mary Rotherhithe declaring that it was 'but a just judgment upon the presumptuous aspiration of mortal men,' the hole was located using a diving bell and Isambard Brunel actually stood on top of the frame as it protruded from the bottom of the hole in the river bed. Hazel rods and clay were dumped and the cavity filled. After some difficulty the tunnel was drained, work restarted, and on 10th November, quite undaunted, a banquet was held to the accompaniment of the Band of the Coldstream Guards.

But the festivities were not to last and in the next January the Tunnel was again flooded with the loss of six men. Funds were running out and *The Times* began to refer to 'The Great Bore.' It was not until 1836 that the midstream was reached and the northern shaft pierced six years later.

On 25th March, 1843, the Tunnel was opened to the public and 50,000 people walked through. It was the wonder of the age but to Brunel the Tunnel was a terrible failure. No more money was available and descents allowing the vehicular traffic could not be afforded. Marc Brunel was not paid his £5,000 bonus on completion and died in 1849 an embittered invalid. The world had failed him, though he is now regarded as a major force in the development of production engineering. Twenty years after his death the tunnel was taken over by the East London Railway and now echoes to the local underground trains which run from Whitechapel to New Cross.

## THE PROJECT

The rundown of London's docks and the rise in land prices threaten to erase an important part of London's history as a great port. Rotherhithe is an area which once resounded to the hustle and bustle of a busy warehouse complex but sadly now seems

a forgotten island among a sea of dereliction.

It was here that Marc Brunel's Thames Tunnel was begun in 1825 and the Brunel Exhibition Project/Rotherhithe intend to convert an engine house, used during the construction of the tunnel, and set up in it a permanent exhibition devoted to the achievements of the 19th century engineers 'Marc and Isambard Brunel,' the story of the Tunnel, and the history of Rotherhithe. (fig. 4)

Around the engine house, for long an area of squalor, a landscaped garden will be laid out while nearby by an associated project, Rotherhithe Workshops Limited, are actively converting a disused warehouse into workshops for craftsmen, similar to those in Camberwell. One of the special features will be an early music centre where instruments will be built using original methods. The accent of the whole scheme is local involvement and amenity groups are actively helping.

During the previous year considerable progress has been achieved. The GLC and the London Borough of Southwark, have made grants or offered support in kind, the Department of Environment has given financial help for building restoration and European Architectural Heritage Year has made a grant for landscaping. Help is also being received from engineering firms especially those engaged in tunnelling technologies. This summer a major exhibi-



Fig. 4. The Tunnel engine house, built 1825

tion on tunnelling is being staged by the British Tunnelling Society and part of this exhibition will form the basis of the permanent display at Rotherhithe.

More help is always welcome and an association has been formed to co-ordinate activities. An archaeological advisory group is especially needed. All offers of help and interest should be sent to: Nicholas Falk, 46 Ainger Road, London NW3 3AH; telephone: 01-586 3850.

## The South-West London Team

THE SOUTH WEST London Archaeological Team is now fully operative in the boroughs of Wandsworth, Merton, Kingston, and Richmond, under the sponsorship of the Surrey Archaeological Society with support from the Department of the Environment.

The Team is composed of three full-time staff members: the Senior Field Officer is Scott McCracken (see photo) lately Assistant Director of the Chesterfield Archaeological Research Committee; Gale Canvin, Director of Rescue Excavations for the Fulham and Hammersmith Historical Society and an Assistant Editor of the *London Archaeologist* is the Field Officer; while Caroline Evans, the environmentalist, with special interest in pollen studies, is Research Assistant.

Their first task is to prepare a separate implications report for the boroughs of Wandsworth and Merton. These reports will assess the nature of future archaeological work once the threat posed by development is known. The Wandsworth report is nearing completion and work is beginning on the one for Merton. The Team will also maintain close contacts with local societies engaged in excavations.

Premises for the Team are located in Mitcham and comprise an office and storage space, shared with the Merton Historical Society. The Merton Libraries Committee very kindly provided these.

While the primary objective is survey work, it is hoped that the Team will play an increasing role in rescue excavation in South West London.

