
ILKLEY U3A SUMMER SCHOOL, 14th July 2015.
Travelling by Train in the Victorian Era

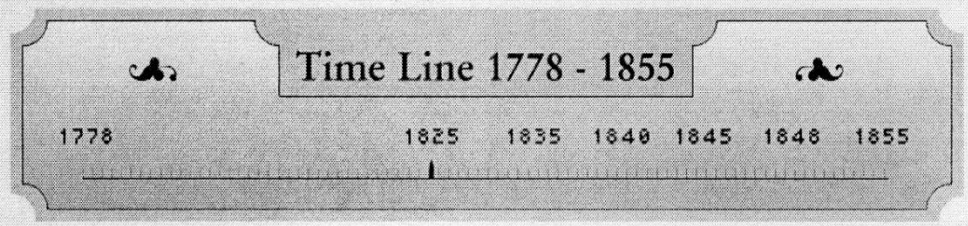
Engineering Triumphs & Battle of the Gauges

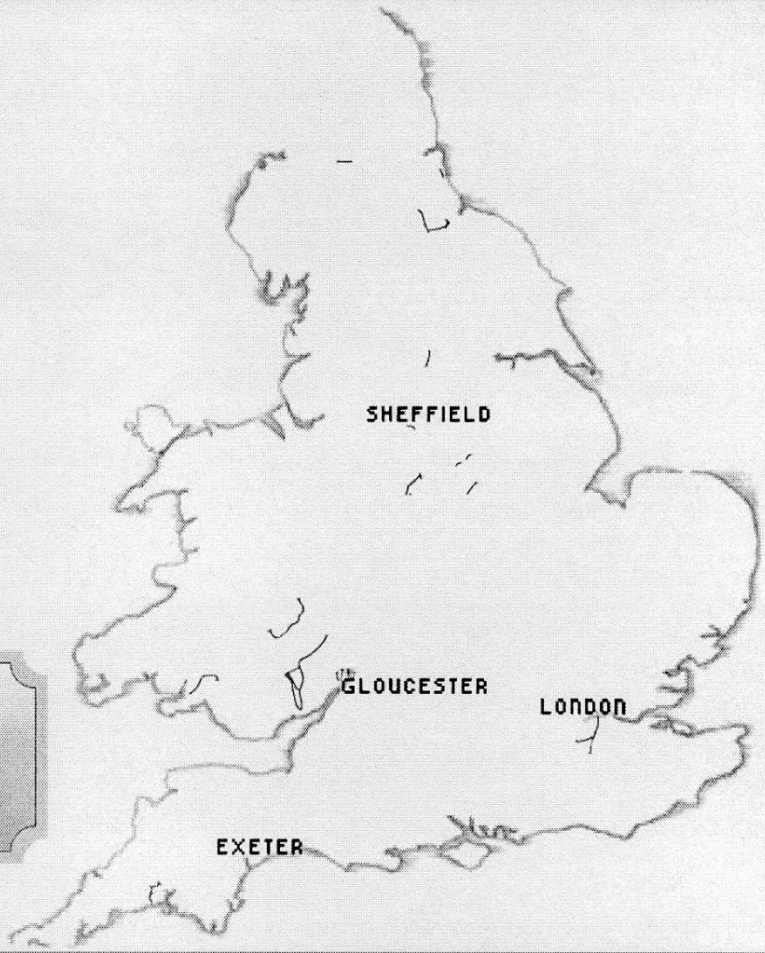
- Growth of System
- Communications: Time
- Battle of the Gauges

The dramatic spread of Railways, 1825 - 1855

1825

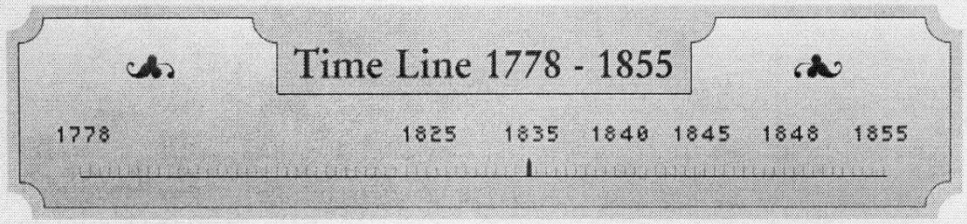
Up to 1825 only a very few short railways offer a public service. These are all horse-powered except for the Stockton & Darlington Railway, which is the first public railway to use steam from the beginning.





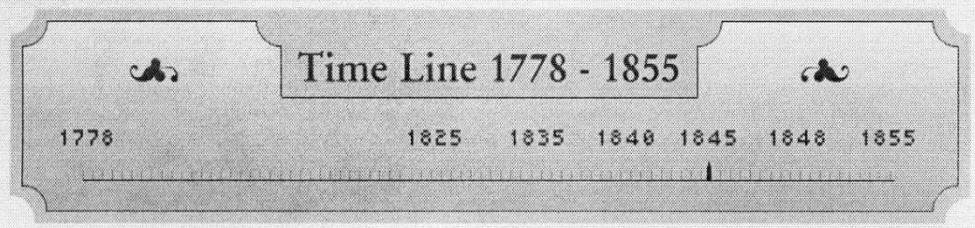
1835

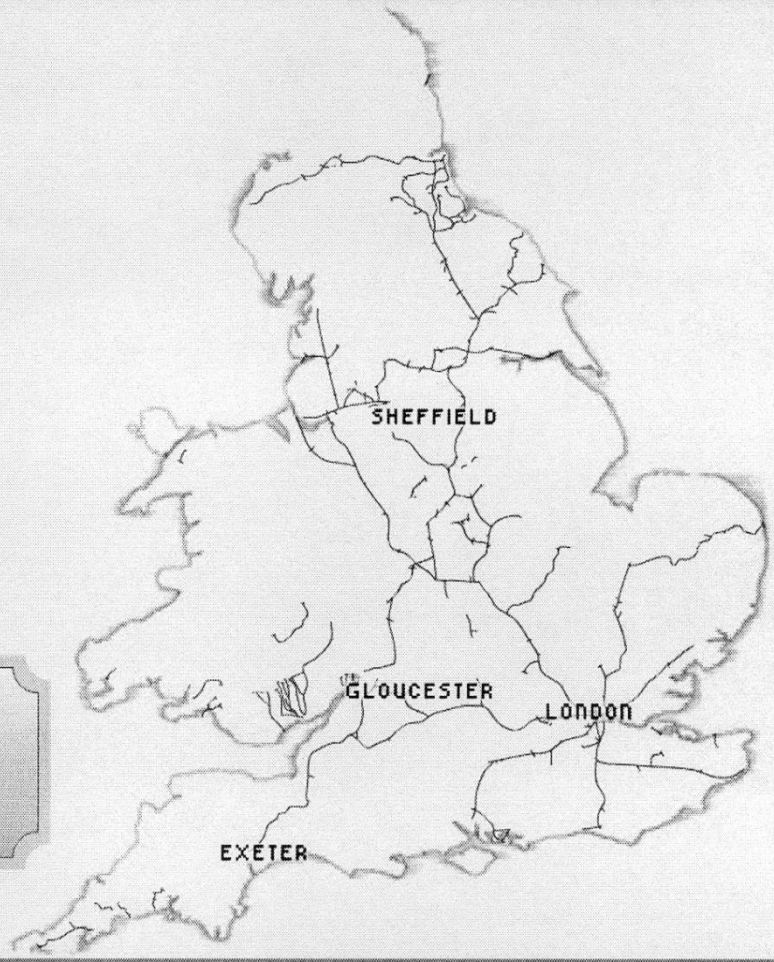
The most significant newcomer is the Liverpool and Manchester Railway, opened in 1830. The appearance of this map is deceptive, for following the Liverpool and Manchester Railway's success many more lines are planned, or under construction but unfinished.



1845

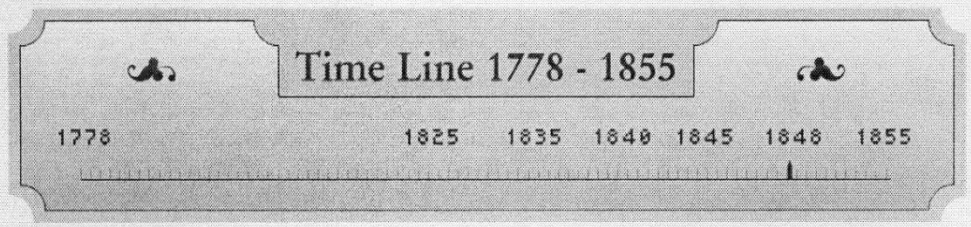
More new trunk lines link London with Newcastle-upon-Tyne, Birmingham with the West Country, and Bristol with London.

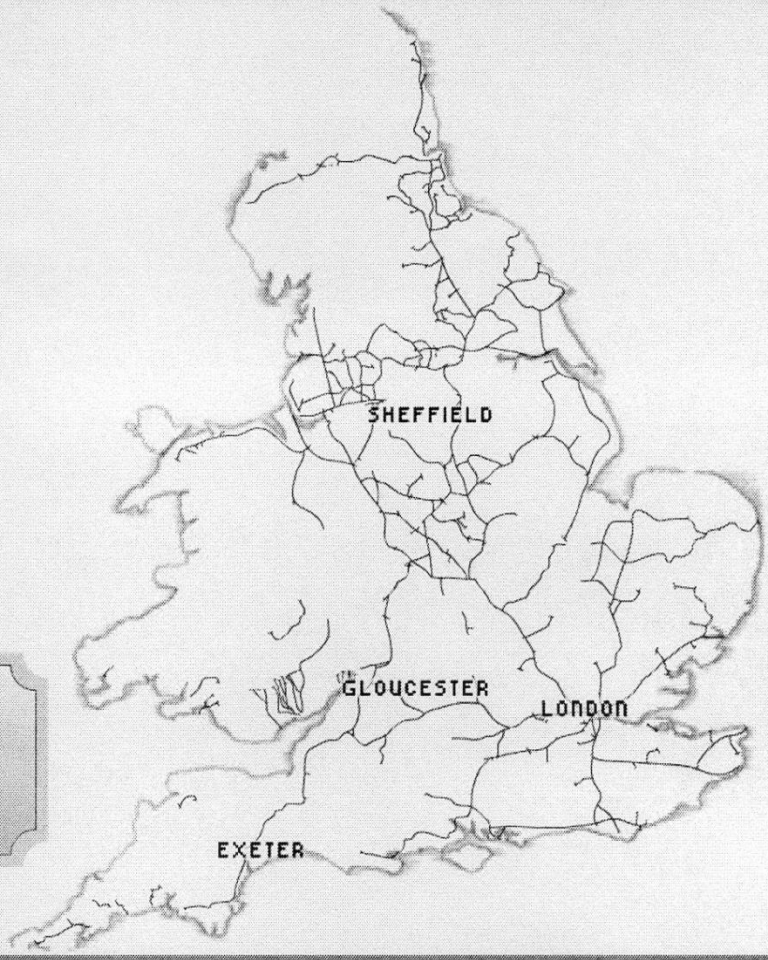




1848

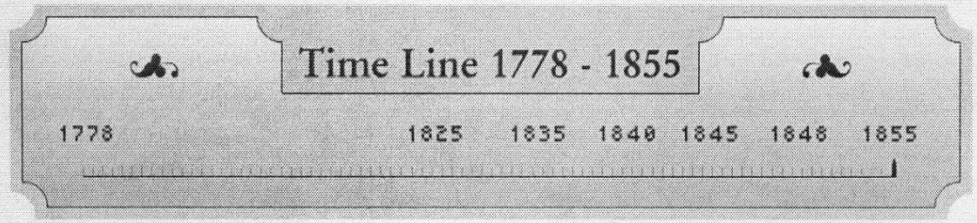
The principal railway companies consolidate their territories and expand into more new areas.

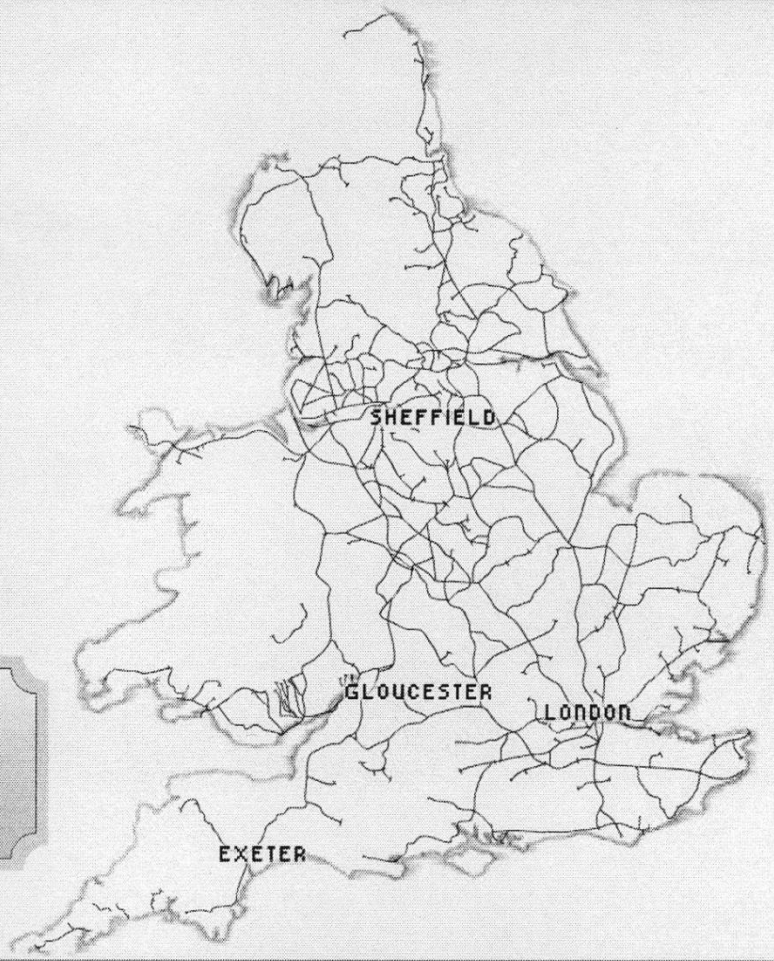




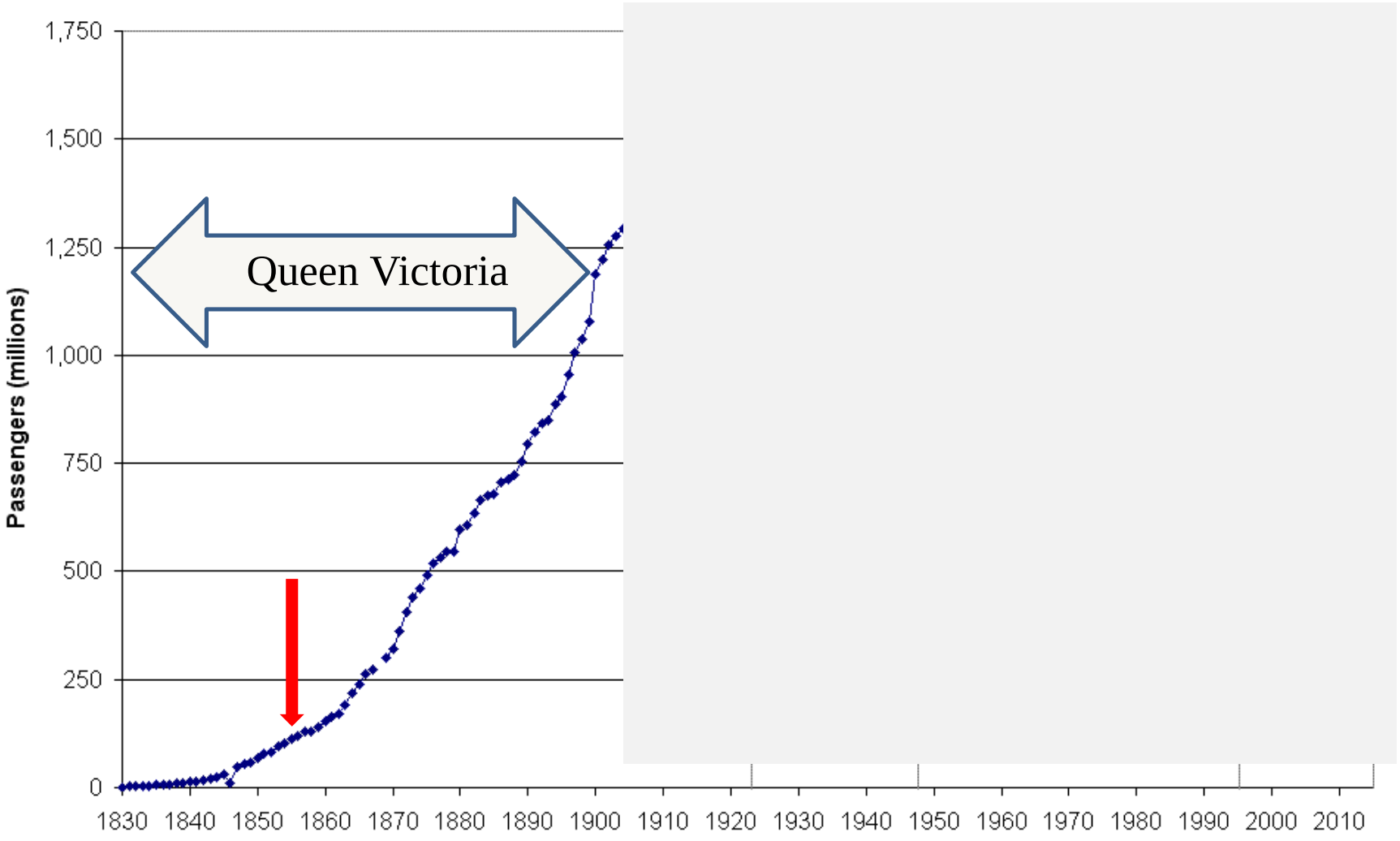
1855

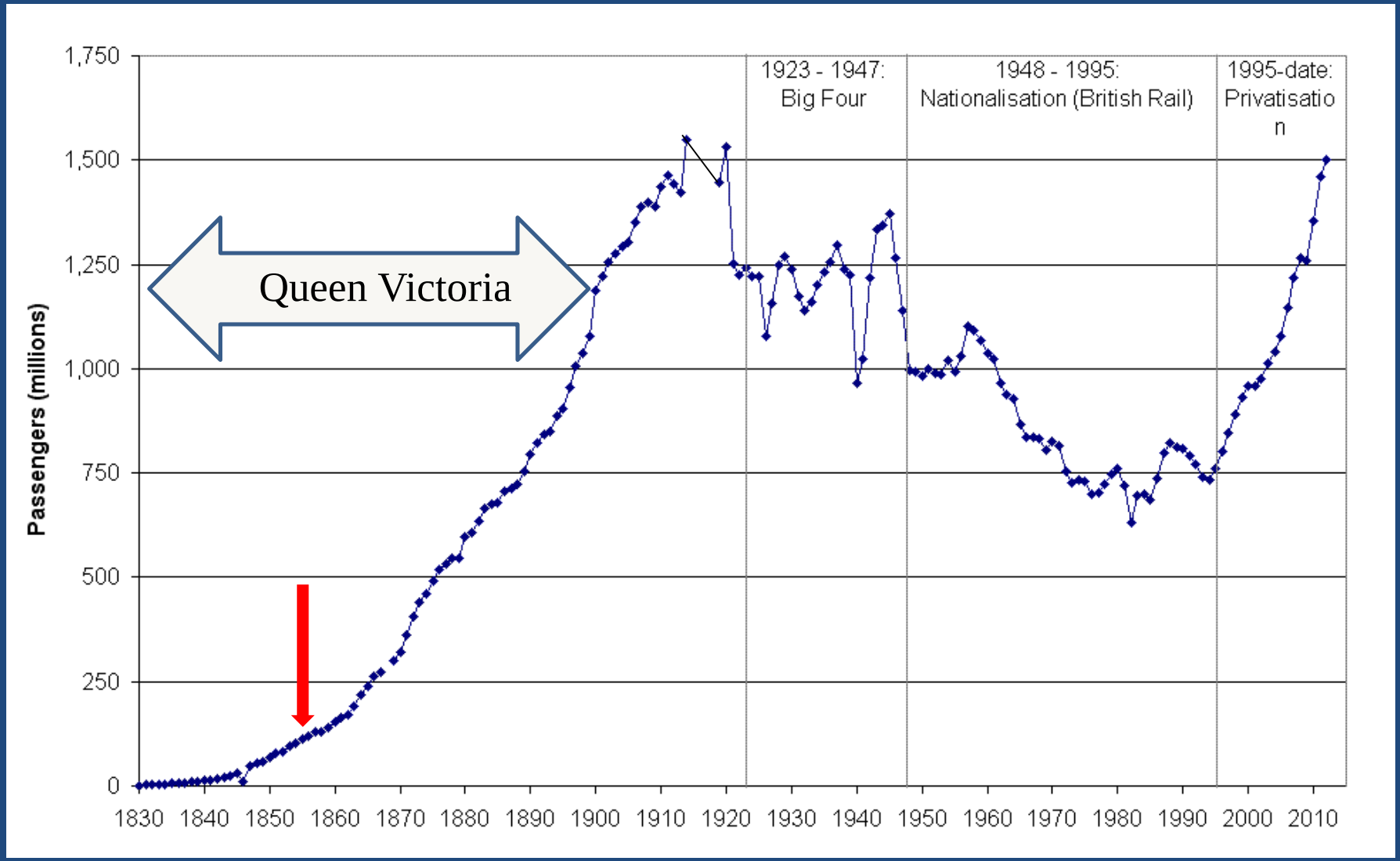
The results of the 'railway mania' are seen with the completion of many new competing routes. One of these is the east coast route to Scotland. Much of the enduring railway system in England and Wales is now in place.





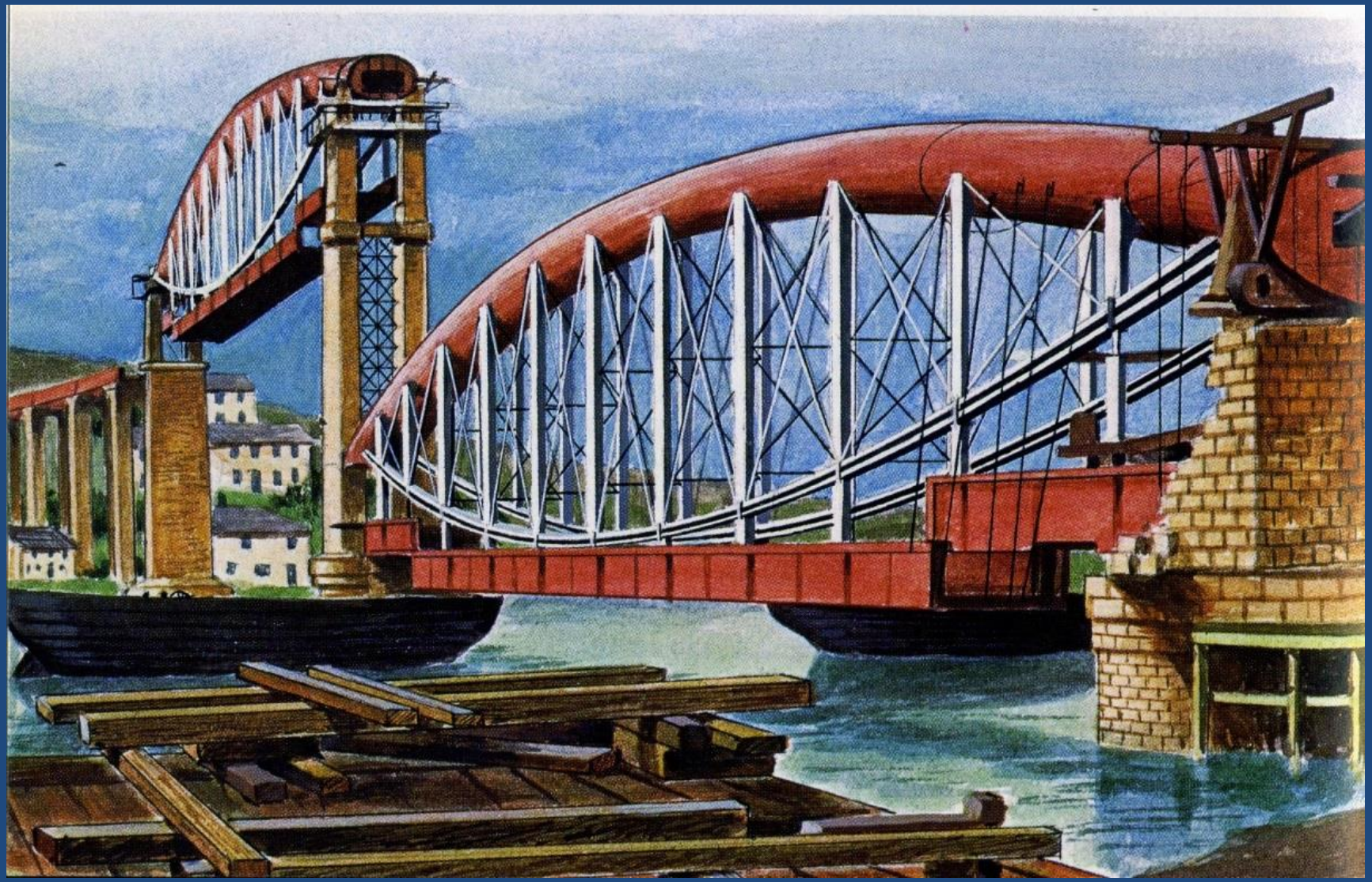
Passenger travel, 1830 - 2010


Passengers (millions)
1,750
1,500
1,250
1,000
750
500
250
0
Queen Victoria
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010


1,750
1,500
1,250
1,000
750
500
250
0
Passengers (millions)
1923 - 1947: Big Four
1948 - 1995: Nationalisation (British Rail)
1995-date: Privatisation
Queen Victoria
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010

Needless to say, Civil Engineering played a major part……but we have time for only a glimpse……..


PHOTOPHANE



Communications

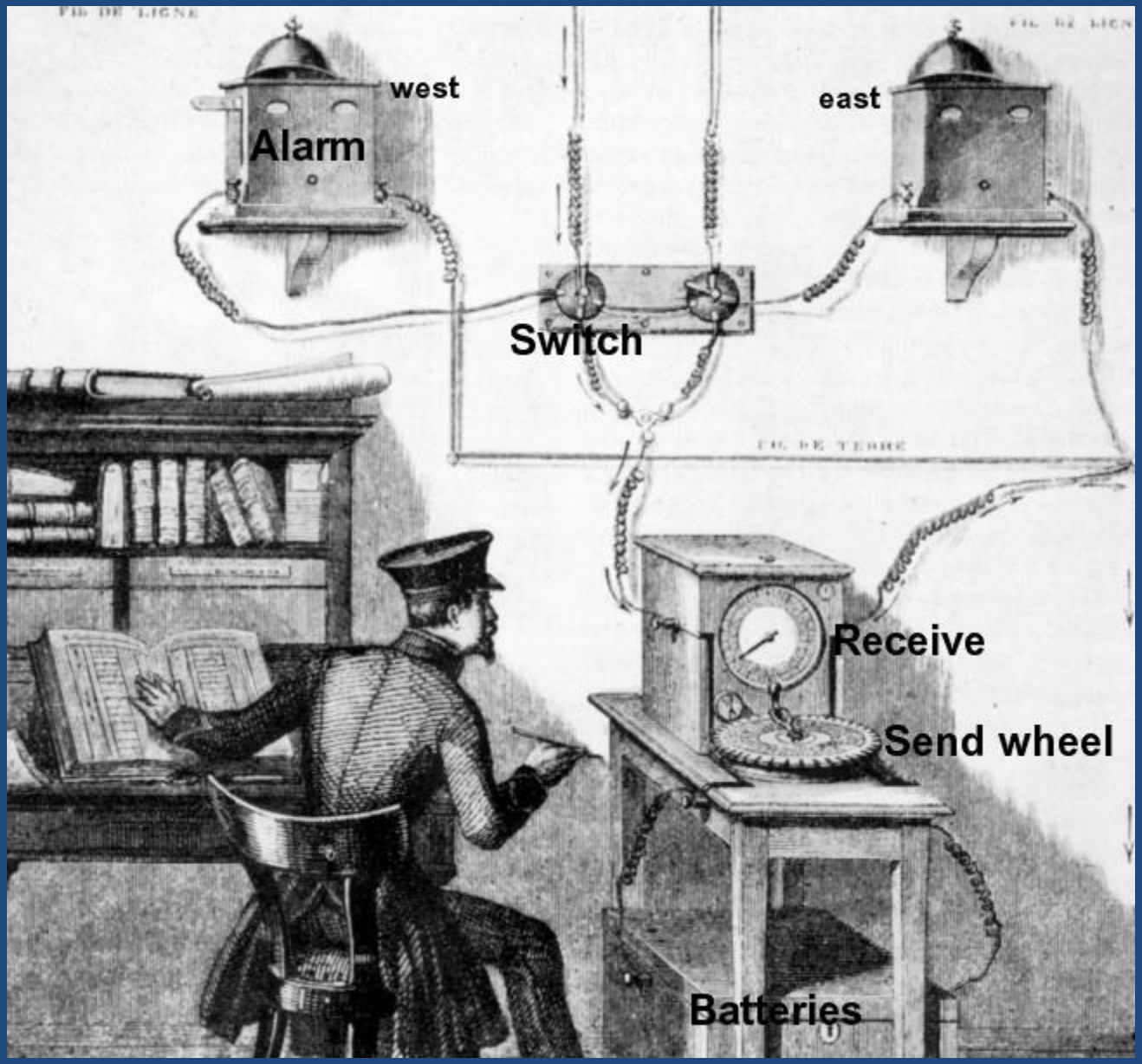
1838 Telegraph

Initially using a system of several needles, but later predominantly Morse code.

Provided the ability to respond quickly to changes in demand, e.g. additional trains or coaches required.

1840 Standard Time (Great Western)

1876 Telephone


west
Alarm
east
Switch
Receive
Send wheel
Batteries

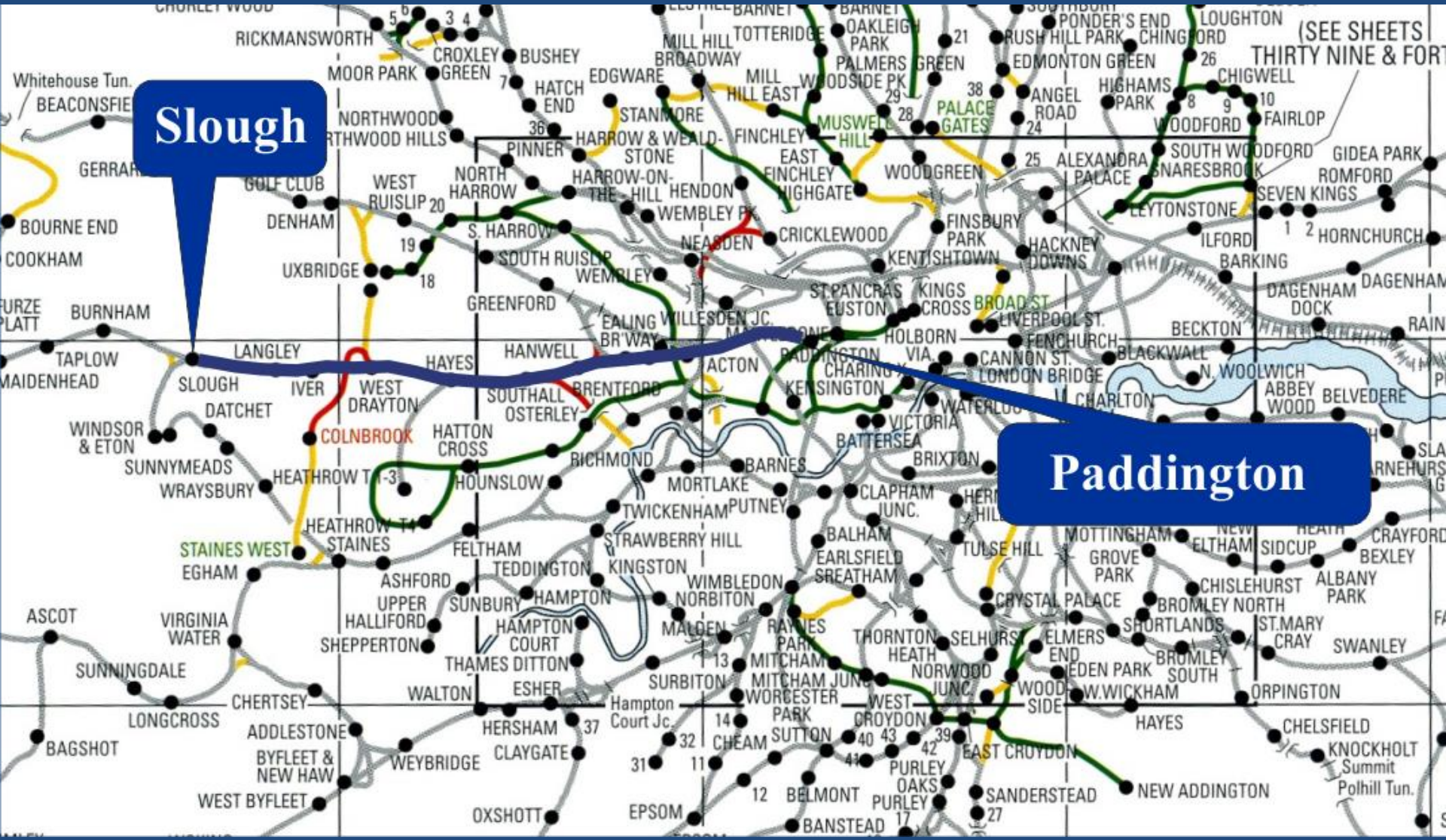
Telegraph Lines, 1854

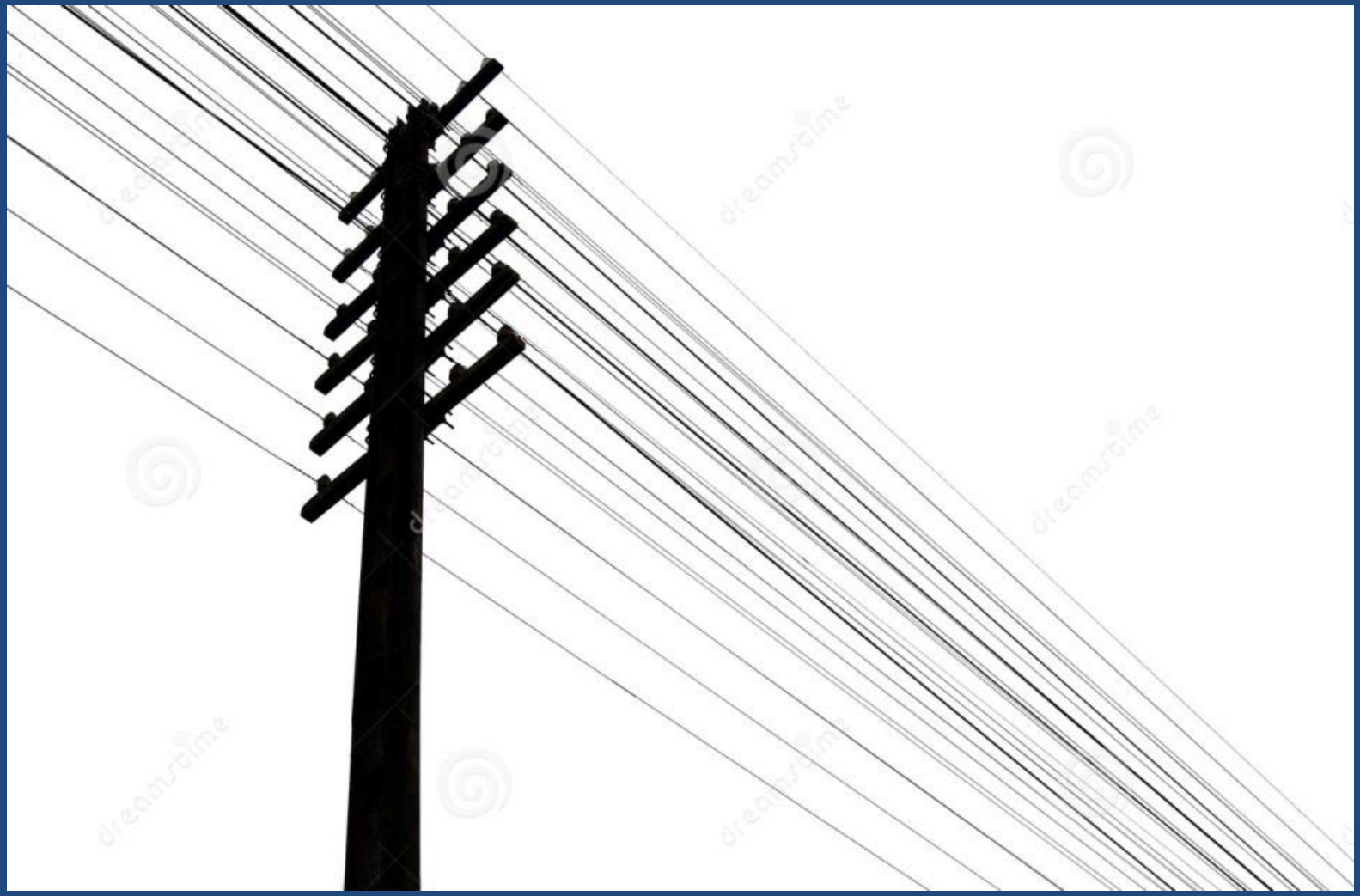
January 1st, 1845:-

First use of a needle telegraph message to apprehend a murderer (John Tawell, who killed his mistress).

The message sent from Slough to Paddington:-

A MURDER HAS **G**UST BEEN COMMITTED AT SALT HILL AND THE SUSPECT WAS SEEN TO TAKE A FIRST CLASS TICKET TO LONDON BY THE TRAIN WHICH LEFT SLOUGH AT 742PM HE IS IN THE GARB OF A **KW**AKER WITH A GREAT COAT ON WHICH REACHES NEARLY DOWN TO HIS FEET HE IS IN THE LAST COMPARTMENT OF THE SECOND CLASS COMPARTMENT


Slough
Paddington
(SEE SHEETS THIRTY NINE & FORT
RICKMANSWORTH
Whitehouse Tun.
BEACONSFIE
MOOR PARK
CROXLEY GREEN
BUSHEY
HATCH END
EDGWARE
MILL HILL BROADWAY
TOTTERIDGE
OAKLEIGH PARK
PONDER'S END
LOUGHTON
RUSH HILL PARK
CHINGFORD
PALMERS GREEN
EDMONTON GREEN
CHIGWELL
HIGHAMS PARK
WOODSIDE PK
MILL HILL EAST
ANGEL ROAD
PALACE GATES
WOODFORD
FAIRLOP
NORTHWOOD
NORTHWOOD HILLS
STANMORE
HARROW & WEALD-STONE
FINCHLEY
MUSWELL HILL
EAST FINCHLEY
WOODGREEN
ALEXANDRA PALACE
SOUTH WOODFORD
SNARESBROOK
GIDEA PARK
ROMFORD
SEVEN KINGS
LEYTONSTONE
ILFORD
HORNCHURCH
BARKING
DAGENHAM DOCK
DAGENHAM
BECKTON
RAIN
PINNER
NORTH HARROW
HARROW-ON-THE-HILL
HENDON
WEMBLEY PK
GERRARDS CROSS
GOLF CLUB
WEST RUISLIP
DENHAM
S. HARROW
CRICKLEWOOD
NEASDEN
FINSBURY PARK
HACKNEY DOWNS
KENTISH TOWN
BOURNE END
COOKHAM
UXBRIDGE
SOUTH RUISLIP
WEMBLEY
GREENFORD
ST.PANCRAS
EUSTON
KINGS CROSS
BROAD ST.
LIVERPOOL ST.
FURZE PLATT
BURNHAM
EALING BR'WAY
WILLESDEN JC.
HOLBORN
FENCHURCH ST.
TAPLOW
MAIDENHEAD
LANGLEY
HAYES
HANWELL
ACTON
PADDINGTON
CHARING CROSS
CANNON ST.
LONDON BRIDGE
BLACKWALL
N. WOOLWICH
ABBEY WOOD
BELVEDERE
SLOUGH
IVER
WEST DRAYTON
SOUTHALL
BRENTFORD
KENSINGTON
WATERLOO
CHARLTON
DATCHET
OSTERLEY
VICTORIA
WINDSOR & ETON
COLNBROOK
HATTON CROSS
BATTERSEA
SUNNYMEADS
RICHMOND
BARNES
BRIXTON
WRAYSBURY
HEATHROW T.3
HOUNSLOW
MORTLAKE
CLAPHAM JUNC.
TWICKENHAM
PUTNEY
HEATHROW T.4
STAINES
STRAWBERRY HILL
BALHAM
TULSE HILL
MOTTINGHAM
ELTHAM
SIDCUP
CRAYFORD
BEXLEY
STAINES WEST
FELTHAM
EARLSFIELD
GROVE PARK
EGHAM
TEDDINGTON
KINGSTON
SREATHAM
ALBANY PARK
ASHFORD
WIMBLEDON
CHISLEHURST
UPPER HALLIFORD
SUNBURY
HAMPTON
NORBITON
CRYSTAL PALACE
BROMLEY NORTH
ASCOT
VIRGINIA WATER
HAMPTON COURT
MALDEN
RAYNES PARK
SHORTLANDS
ST.MARY CRAY
SHEPPERTON
THORNTON HEATH
SELHURST
ELMERS END
SWANLEY
THAMES DITTON
MITCHAM
EDEN PARK
BROMLEY SOUTH
SUNNINGDALE
SURBITON
MITCHAM JUNC.
NORWOOD JUNC.
WOOD SIDE
W.WICKHAM
ORPINGTON
CHERTSEY
WALTON
ESHER
Hampton Court Jc.
WORCESTER PARK
WEST CROYDON
LONGCROSS
HERSHAM
CHEAM
SUTTON
HAYES
CHELSFIELD
ADDLESTONE
BAGSHOT
CLAYGATE
EAST CROYDON
KNOCKHOLT
Summit
Polhill Tun.
BYFLEET & NEW HAW
WEYBRIDGE
PURLEY OAKS
NEW ADDINGTON
WEST BYFLEET
BELMONT
SANDERSTEAD
OXSHOTT
EPSOM
BANSTEAD



The railway telephone network developed less rapidly……..

An aside……

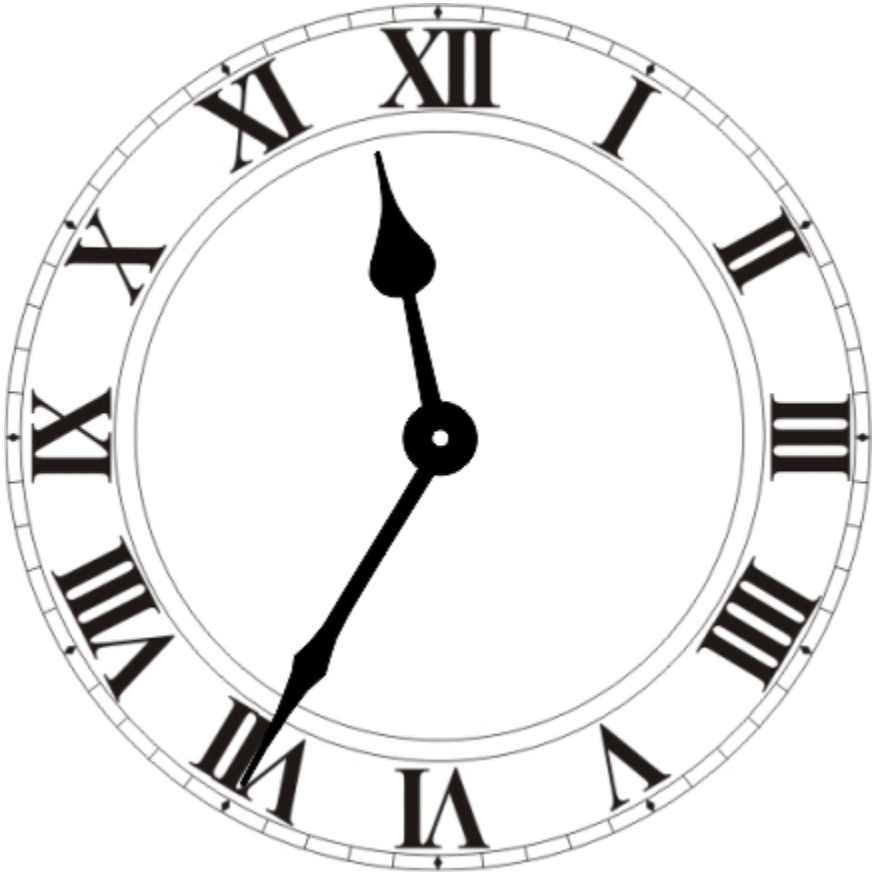
when was the first transatlantic telephone cable completed?

1956

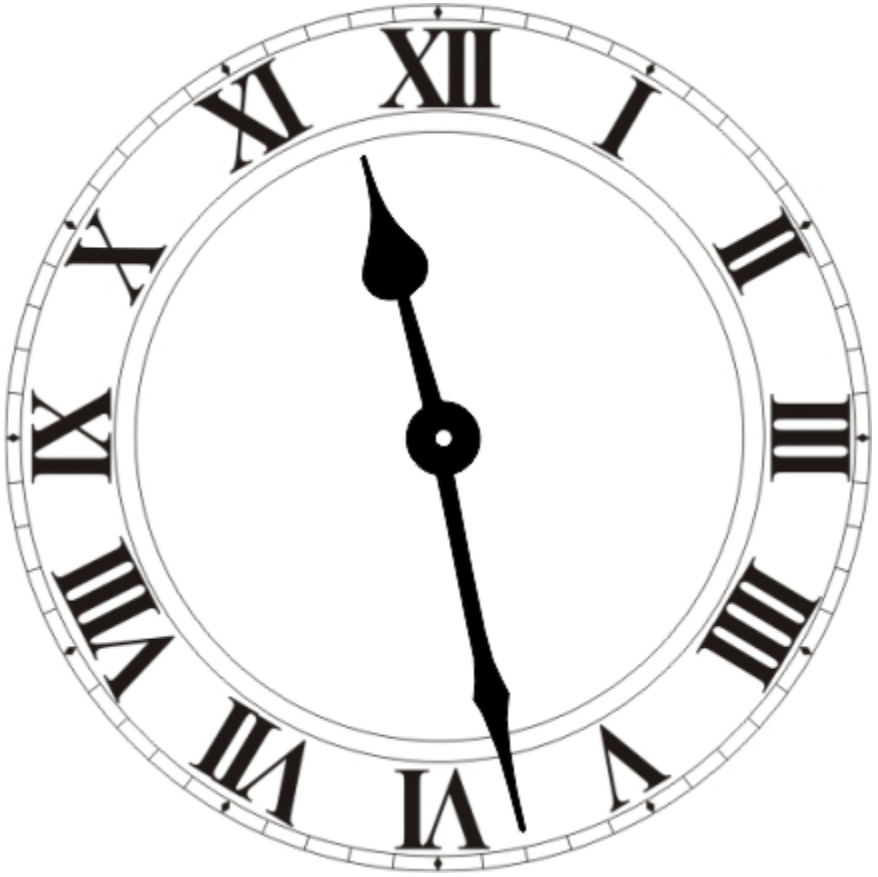
Turning now to Time, before the telegraph, chronometers had to be carried by train to remote stations so that the local clocks could be synchronised.

The Great Western Railway was the first to introduce Standard Time, in 1840.

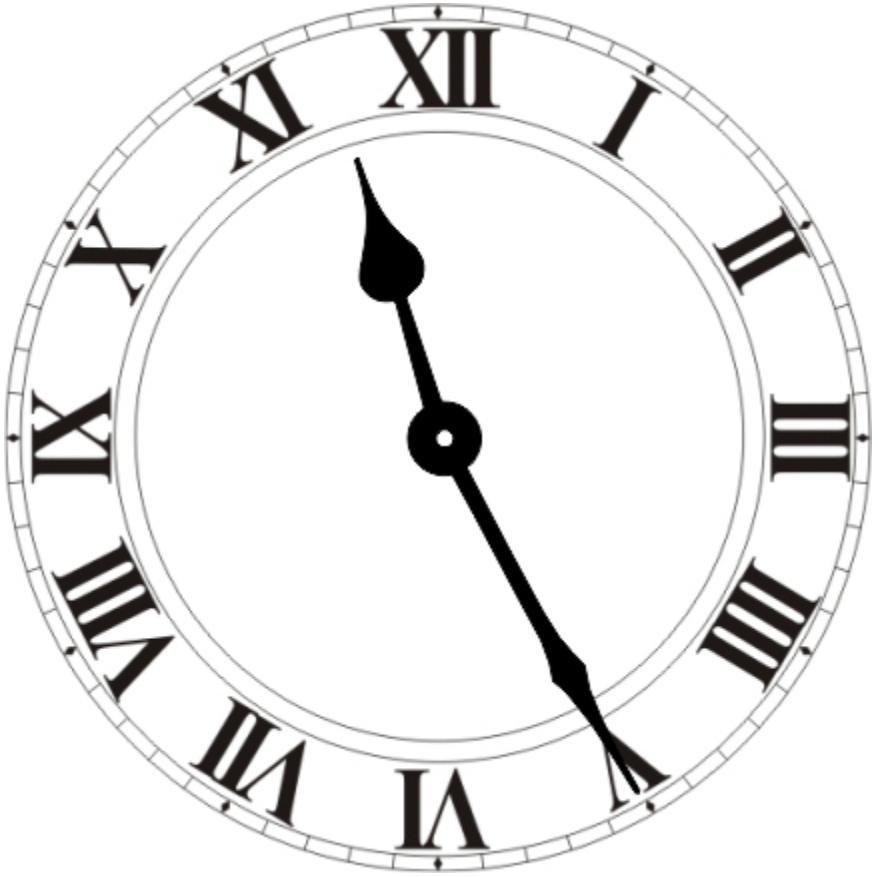
Prior to that, the time varied depending on longitude:-



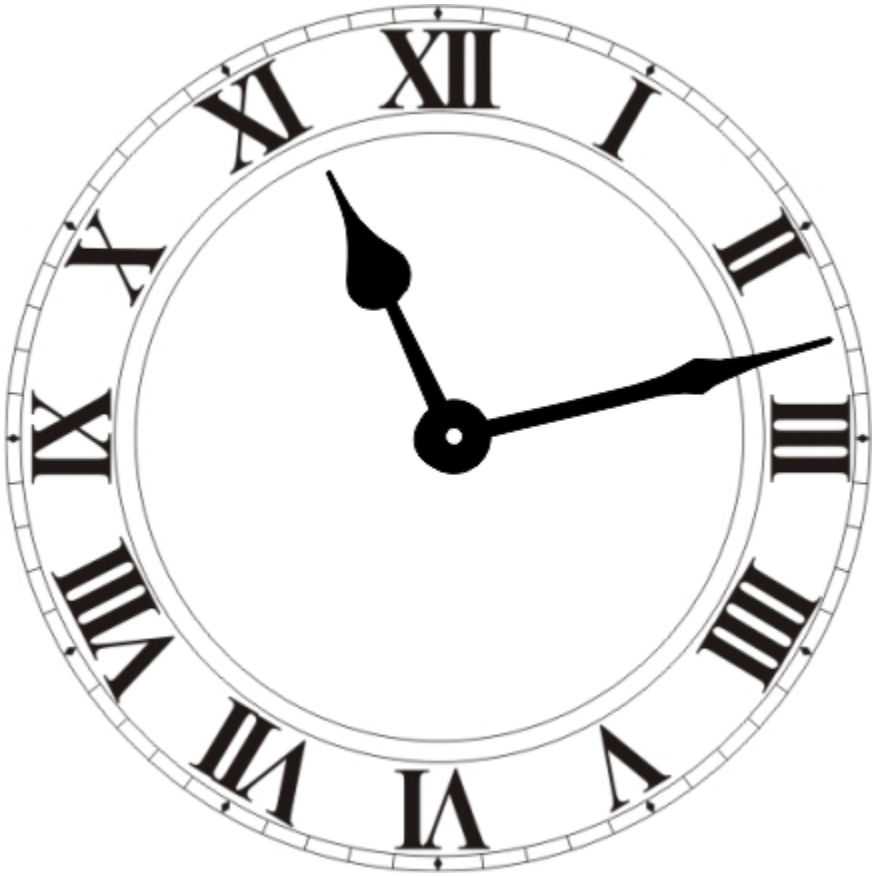
London 11.35



Ilkley 11.28



Bristol 11.25



Penzance 11.13

The telegraph allowed for the synchronising of time across the system on a daily basis.

Remarkably, this practice continued well into the 1960’s on BR (M).

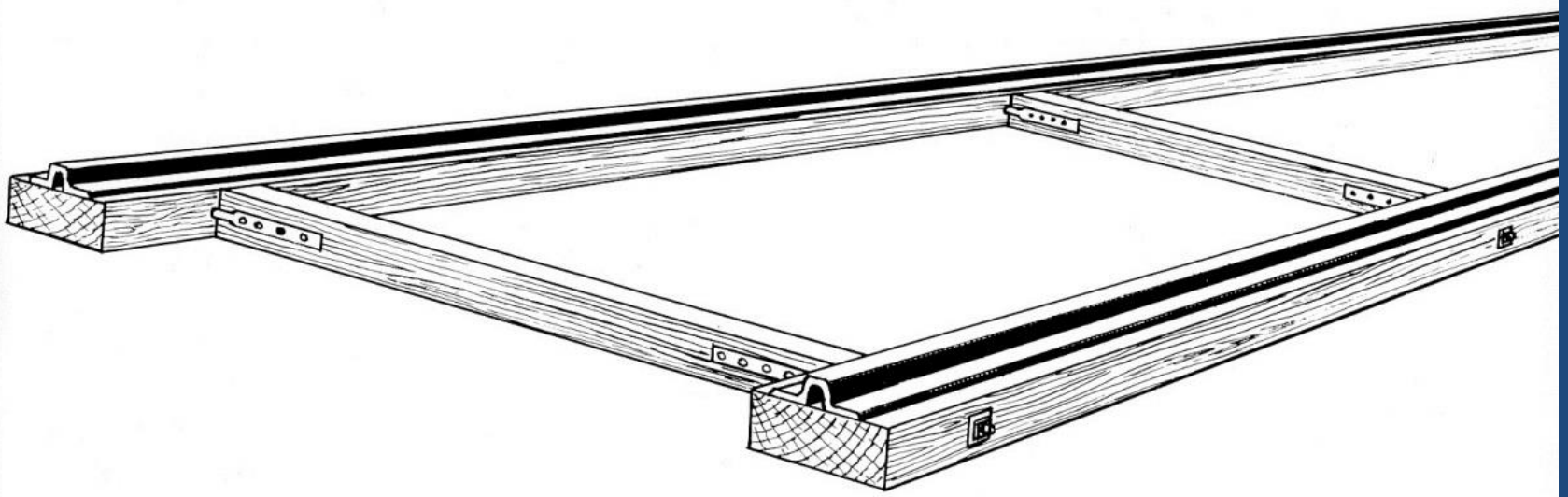
Battle of the Gauges

Great Western Railway 1833 - 1947

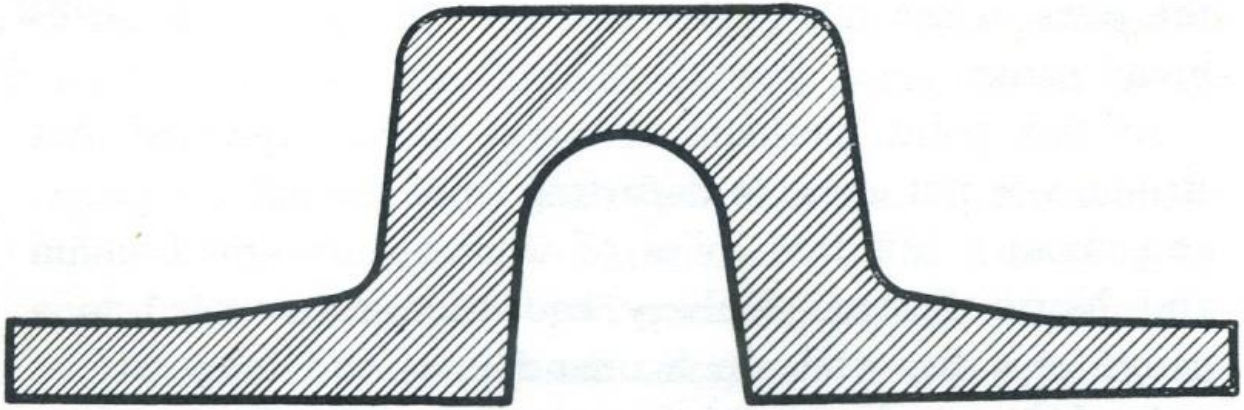
First trains London to Bristol (Broad Gauge) 1838

Parliamentary Gauge Commission Report 1846 – no new broad gauge lines permitted

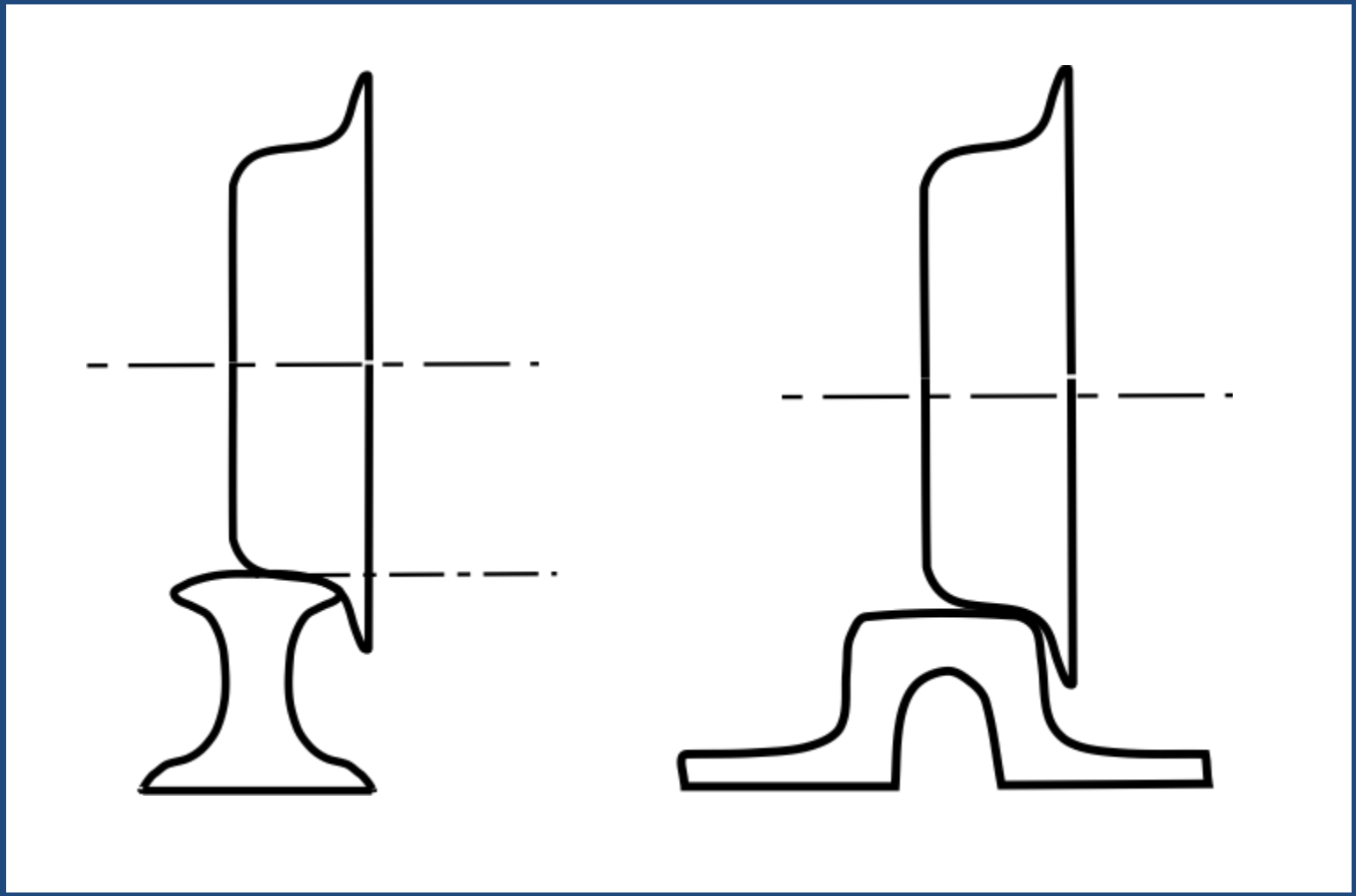
End of Broad Gauge 1892



The unique design of track for Brunel's broad gauge railway.



Section of Brunel's Bridge Rail



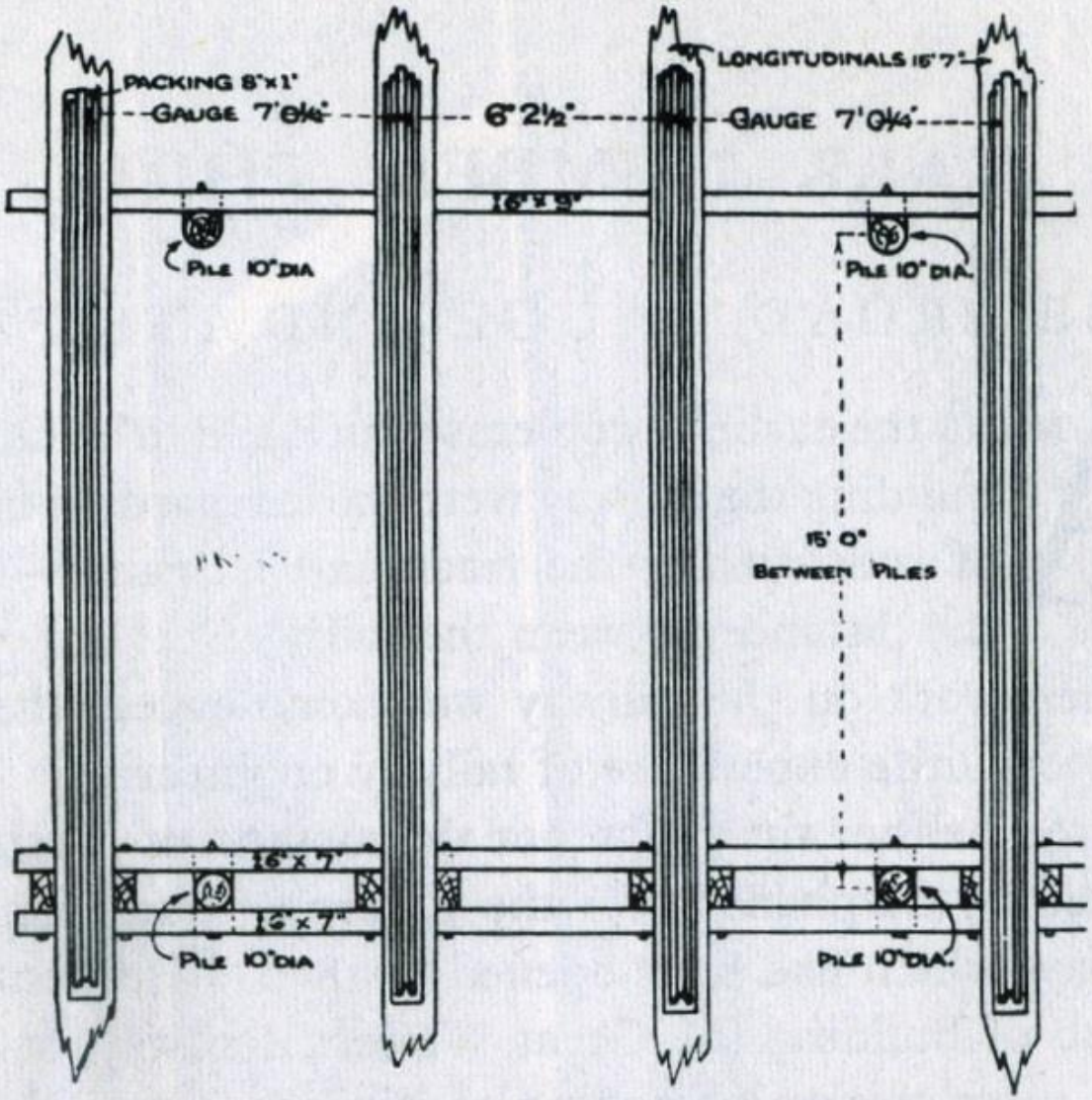


Diagram of original G.W.R. Track

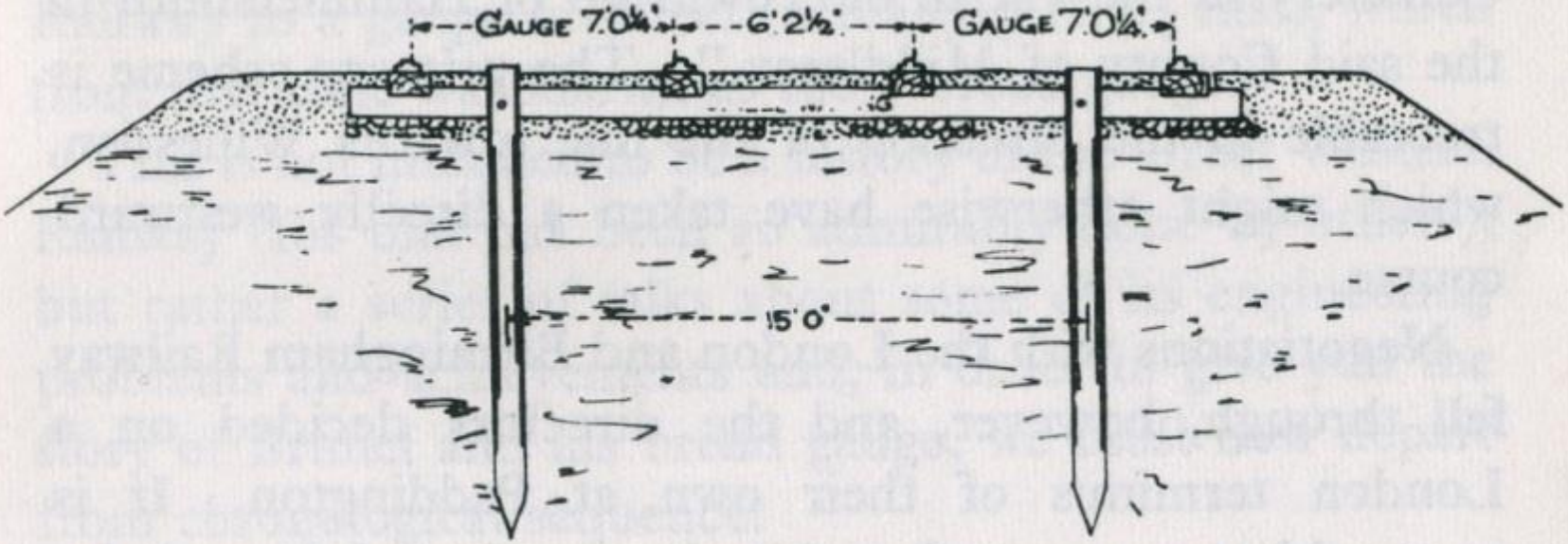
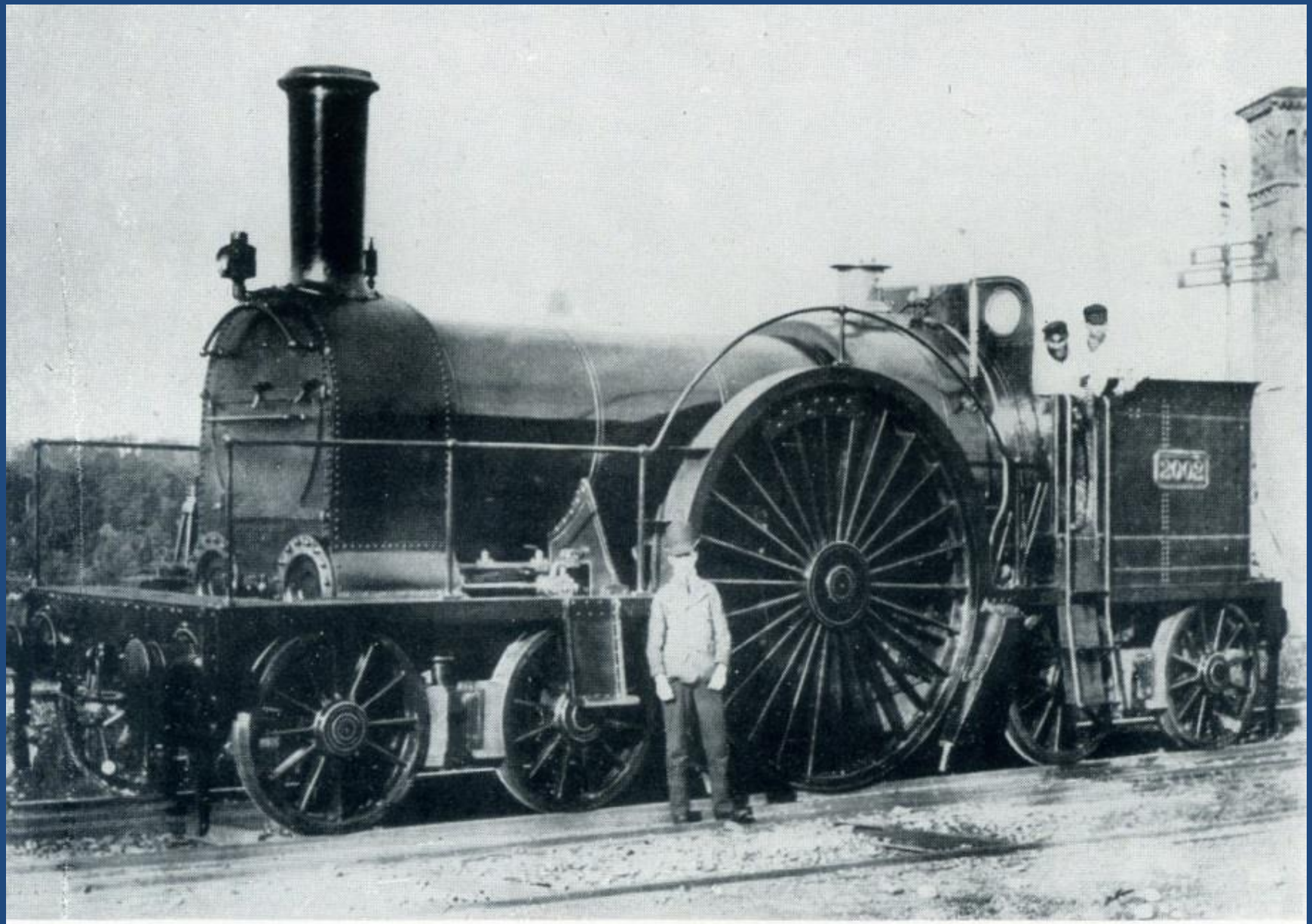
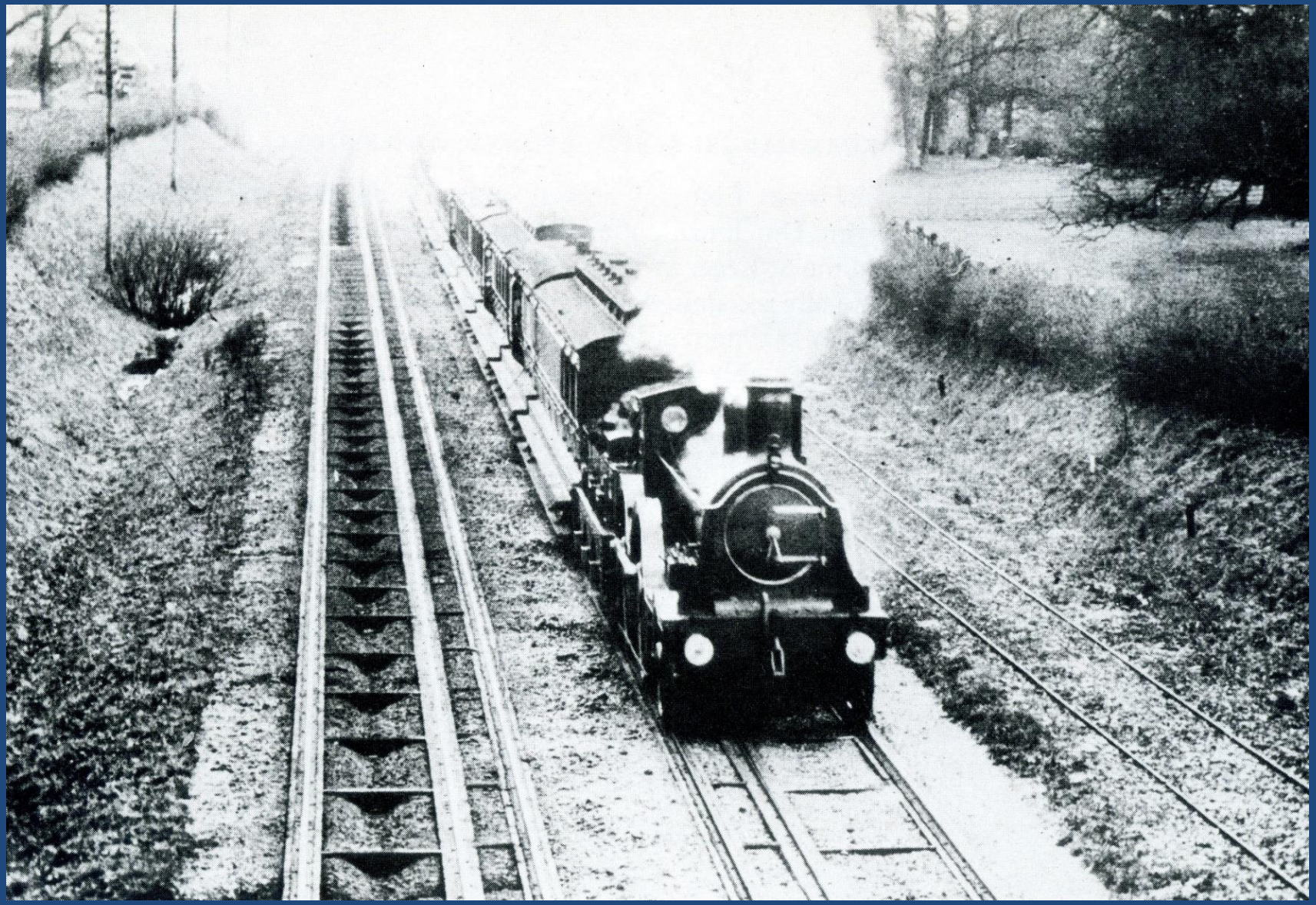


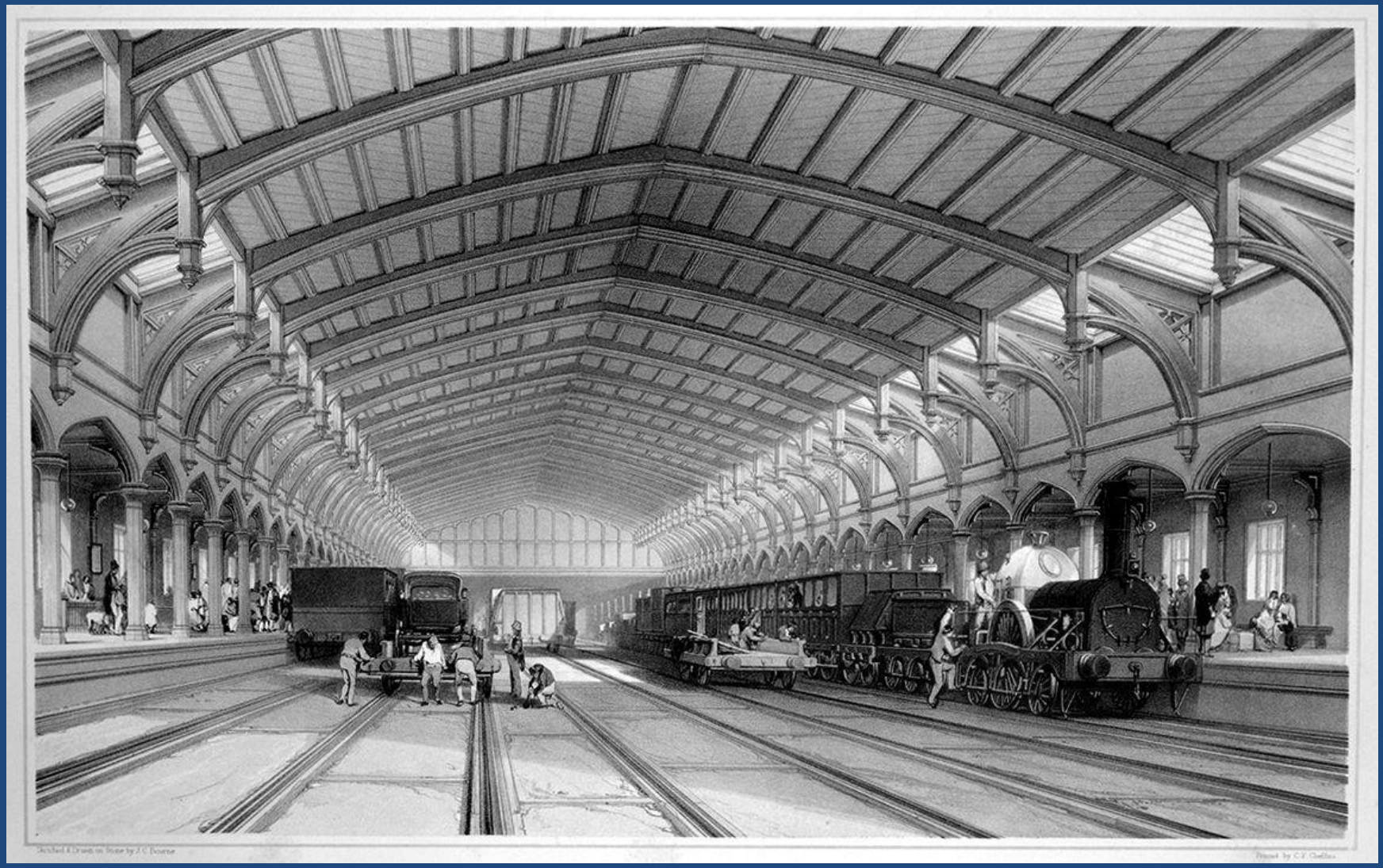
Diagram showing piling



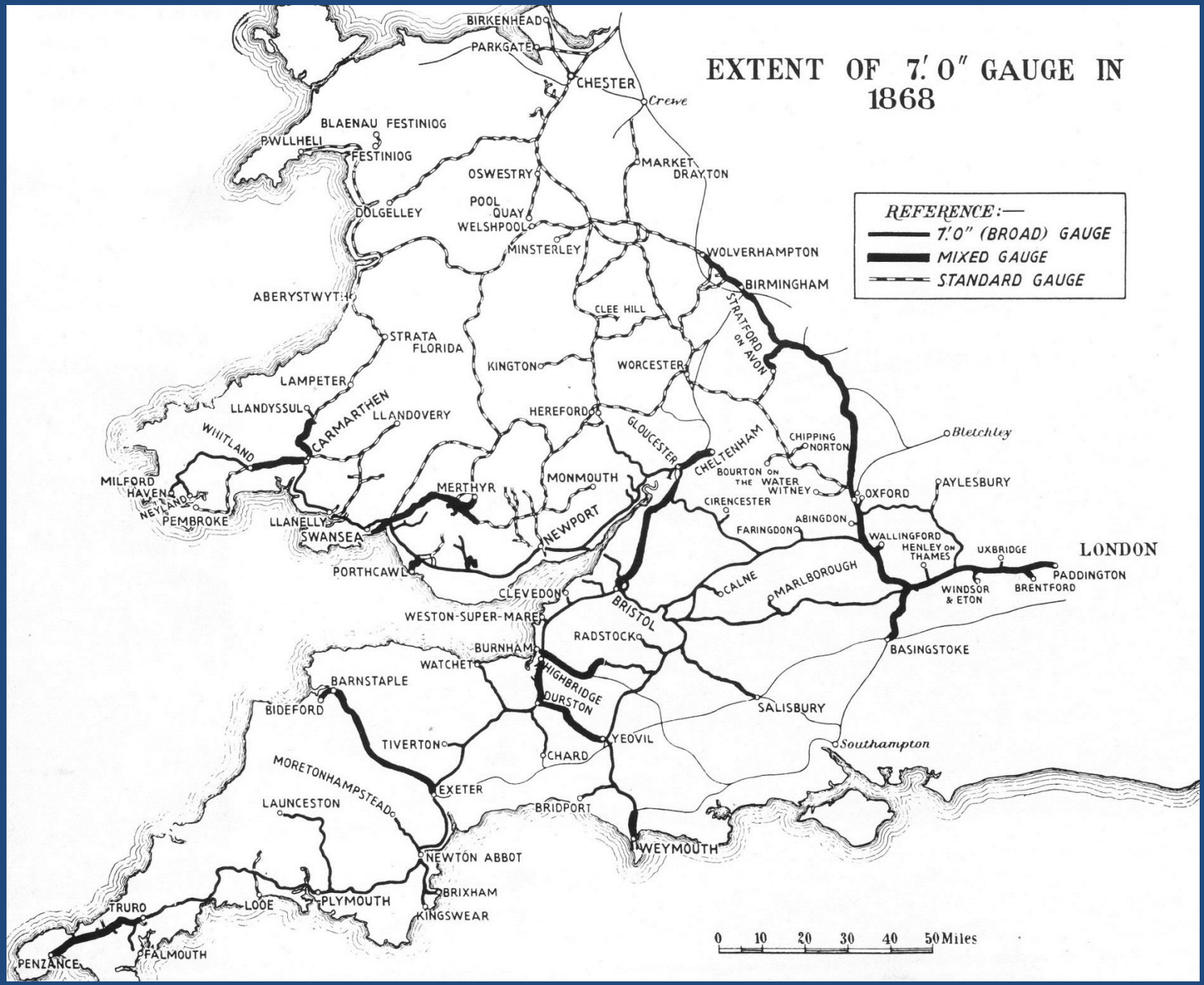
GREAT WESTERN RAILWAY (BROAD GAUGE)



Mixed Gauge, Convertible Loco

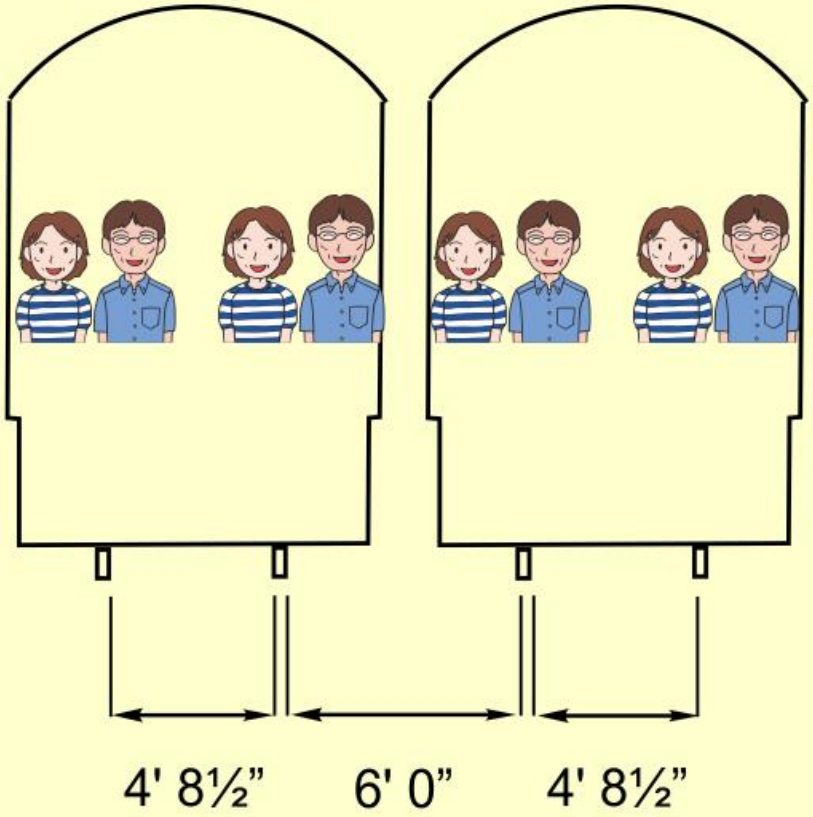


Fun in the Transfer Shed

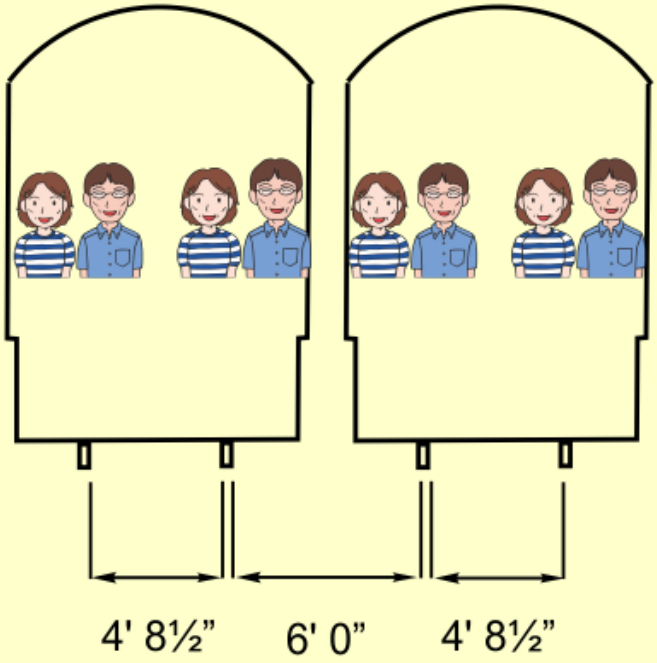

EXTENT OF 7′ 0″ GAUGE IN 1868
REFERENCE:—
7′ 0″ (BROAD) GAUGE
MIXED GAUGE
STANDARD GAUGE
BIRKENHEAD
PARKGATE
CHESTER
Crewe
BLAENAU FESTINIOG
PWLLHELI
FESTINIOG
OSWESTRY
MARKET DRAYTON
DOLGELLEY
POOL QUAY
WELSHPOOL
MINSTERLEY
WOLVERHAMPTON
BIRMINGHAM
ABERYSTWYTH
CLEE HILL
STRATFORD ON AVON
STRATA FLORIDA
KINGTON
WORCESTER
LAMPETER
LLANDYSSUL
CARMARTHEN
LLANDOVERY
HEREFORD
GLOUCESTER
CHELTENHAM
CHIPPING NORTON
Bletchley
WHITLAND
MILFORD HAVEN
NEYLAND
PEMBROKE
MERTHYR
MONMOUTH
BOURTON ON THE WATER
WITNEY
OXFORD
AYLESBURY
CIRENCESTER
LLANELLY
SWANSEA
NEWPORT
ABINGDON
FARINGDON
WALLINGFORD
HENLEY ON THAMES
UXBRIDGE
LONDON
PORTHCAWL
CLEVEDON
CALNE
MARLBOROUGH
PADDINGTON
BRENTFORD
WINDSOR & ETON
WESTON-SUPER-MARE
BRISTOL
RADSTOCK
BURNHAM
WATCHET
BASINGSTOKE
BARNSTAPLE
HIGHBRIDGE
DURSTON
BIDEFORD
SALISBURY
TIVERTON
YEOVIL
Southampton
CHARD
MORETONHAMPSTEAD
EXETER
LAUNCESTON
BRIDPORT
WEYMOUTH
NEWTON ABBOT
BRIXHAM
TRURO
LOOE
PLYMOUTH
KINGSWEAR
FALMOUTH
PENZANCE
0 10 20 30 40 50 Miles

Brunel’s quest for high speed meant that stability was important, which is probably why he restricted the width of his coaches to not much more than the gauge of the track.

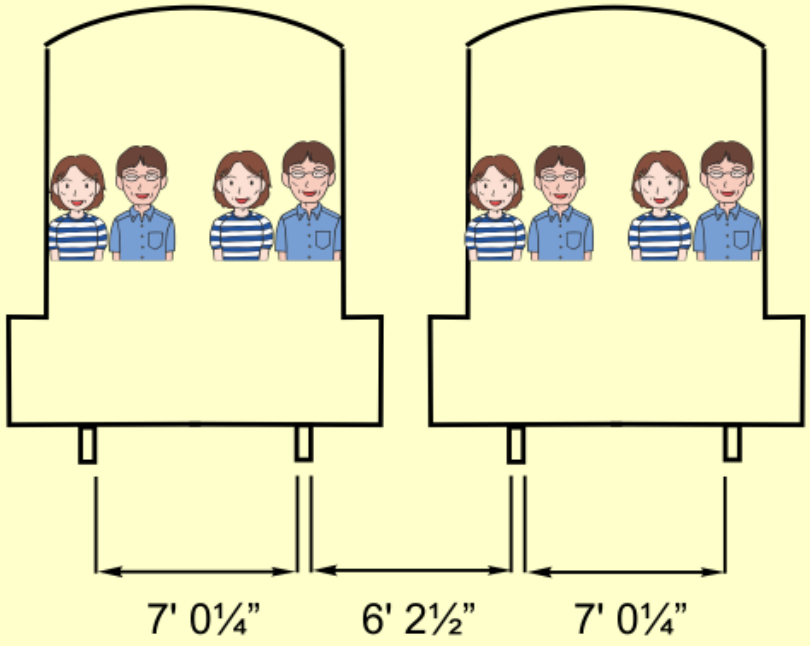
Current Standard Gauge

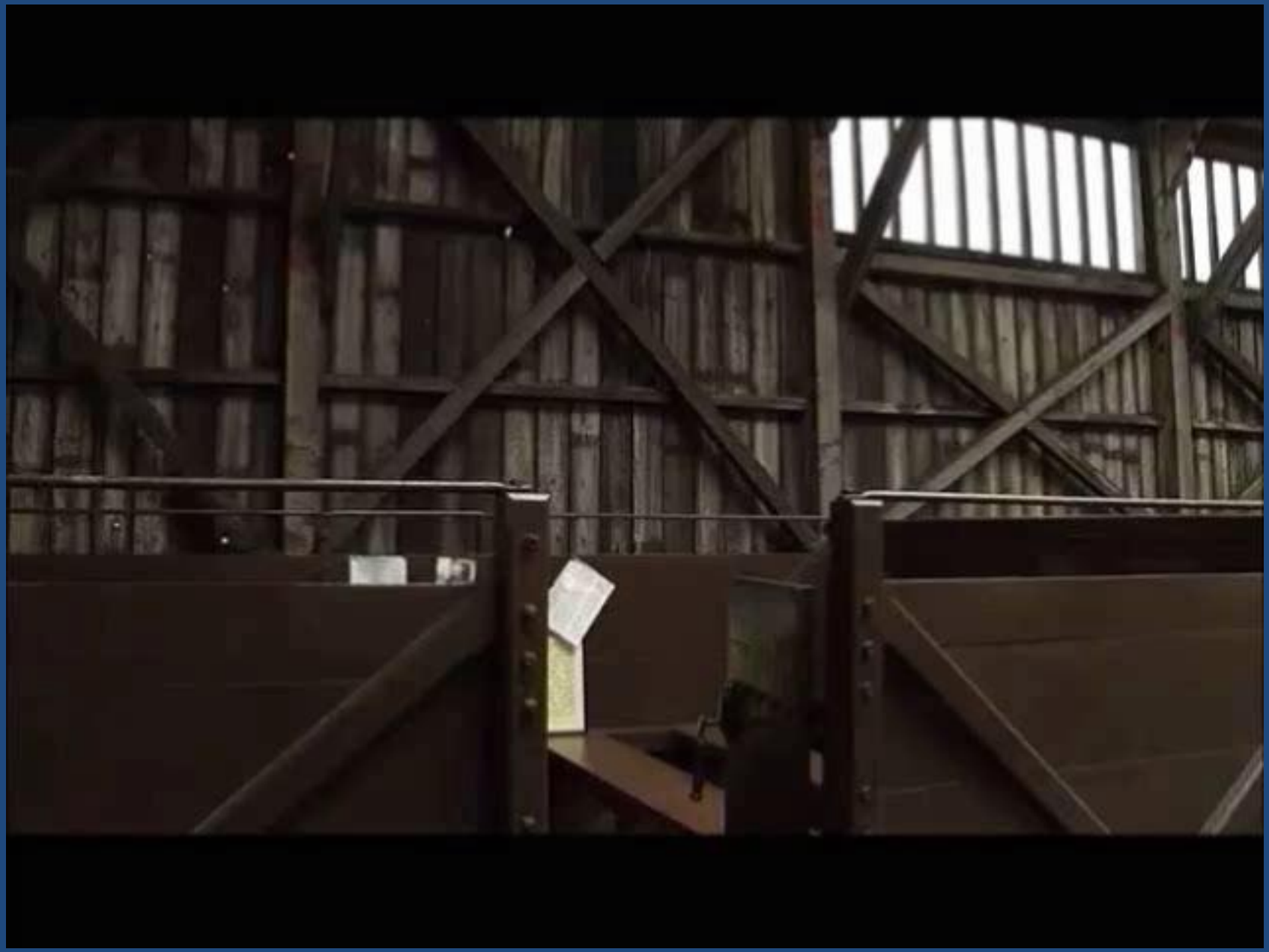


Current Standard Gauge



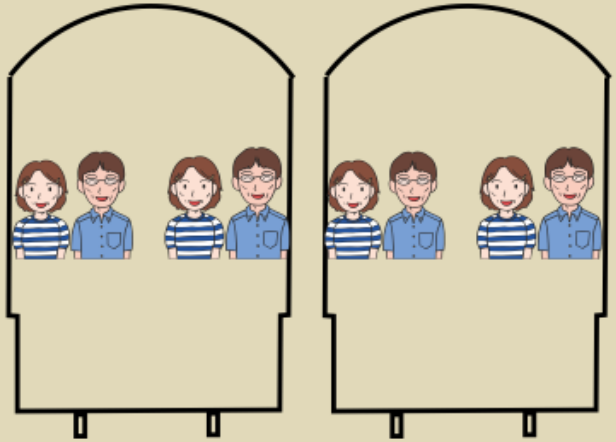
GWR Broad Gauge

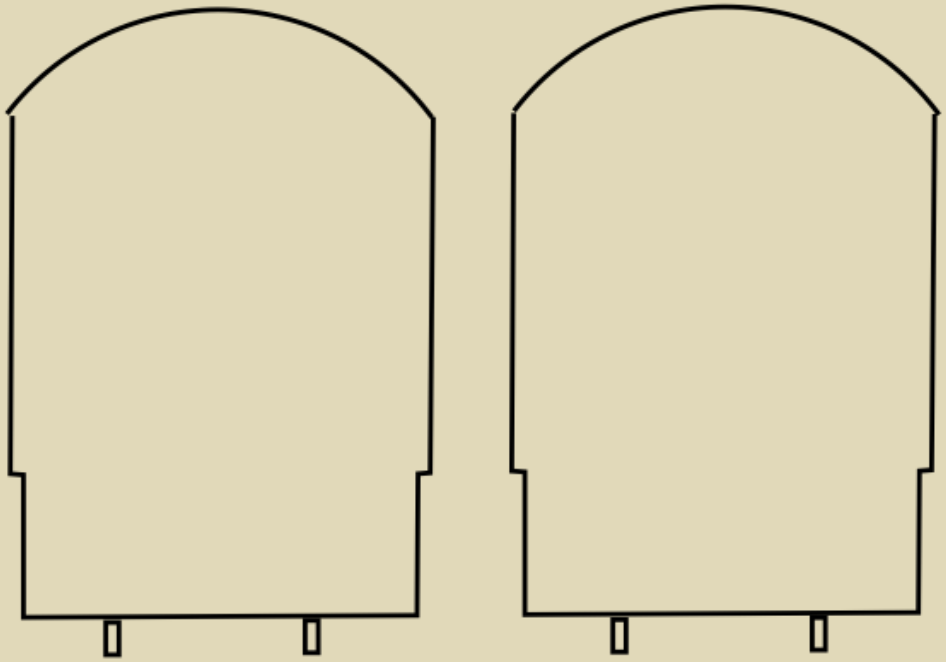




What if Brunel had simply scaled everything up in the ratio of gauges?

Current double track

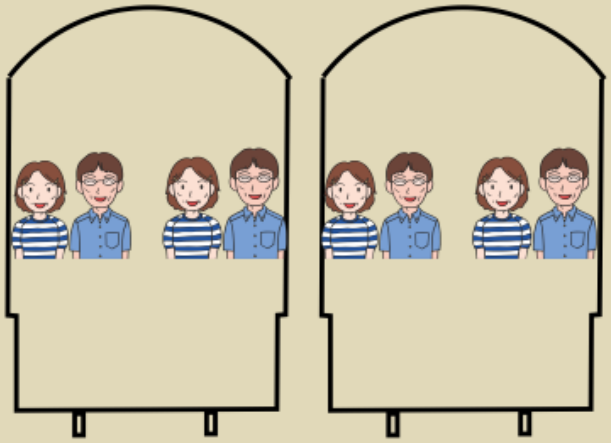


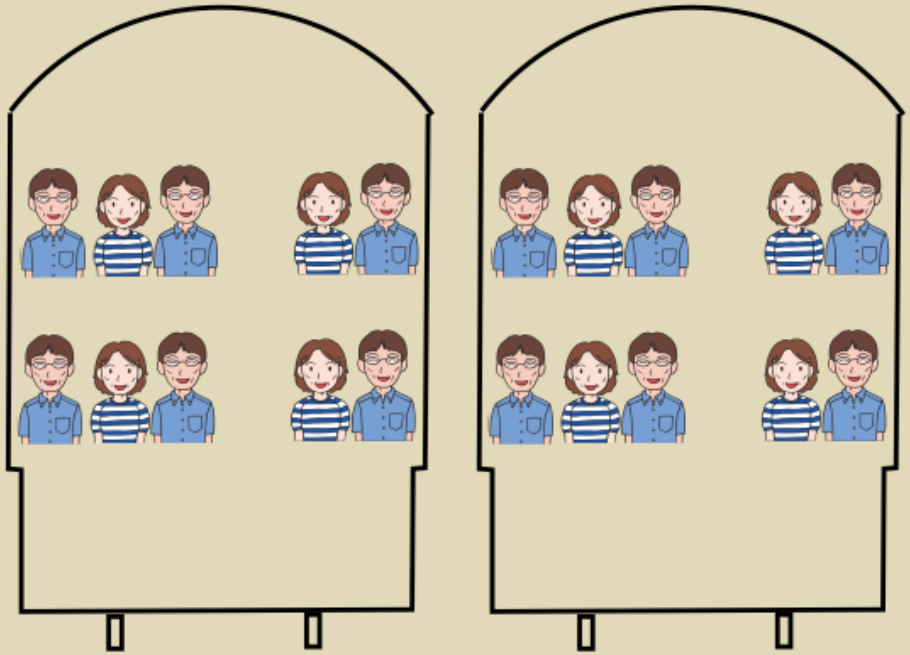


Scaled by 150% (7' - 0¼" /4' - 8½")

What might the 21st century broad gauge look like?

Current double track





Scaled by 150% (7' - 0¼" /4' - 8½")

The best system doesn't always win

Video Tape

Betamax 0% — VHS 100%

PC Operating Systems

Linux (Free source) 2% — Windows (Microsoft) 98%

Wordprocessors

Wordperfect 10% — Word 90%

UK Railways

Broad Gauge 0% — **Standard Gauge 100%**

The End