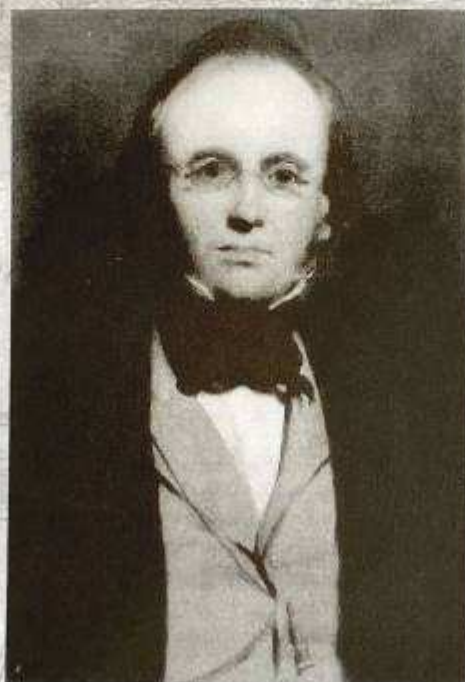


An appreciation of the professional work of
JOHN MILLER CE FRSE

(1805-83)

SCOTTISH RAILWAY ENGINEER EXTRAORDINAIRE



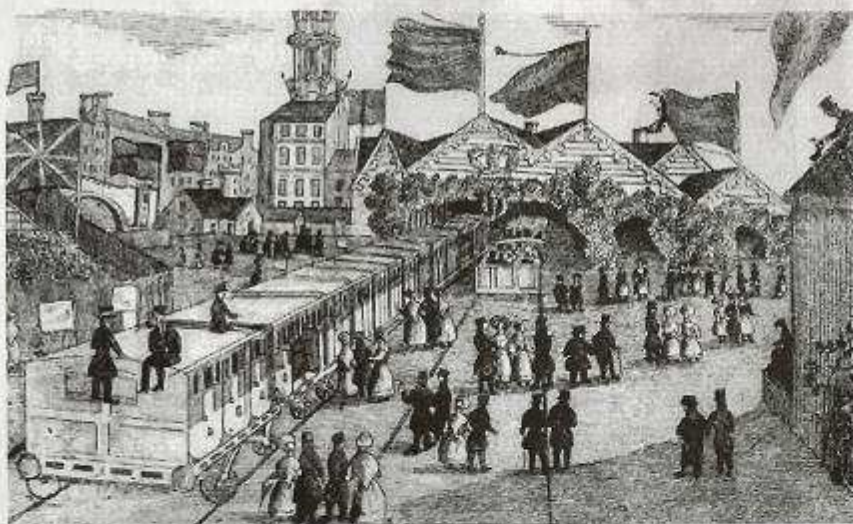
On the occasion of the unveiling by
SARAH BOYACK
MSP Edinburgh Central
of a plaque in his honour at Haymarket Station,
on the bicentenary of his birth

26th July 2005

PROF ROLAND PAXTON PICE FRSE
School of the Built Environment, Heriot-Watt University
Edinburgh 2005

PROFESSIONAL CAREER

MILLER, son of an Ayr wright, later builder, attended Ayr Academy and then trained in a solicitor's office before in 1823, at the age of 18, entering Thomas Grainger's office in Edinburgh as a trainee land surveyor. He acquitted himself so well in this art that Grainger took him into partnership in 1825, following which he worked extensively on estate plans and road and railway projects. From 1830 the firm strongly advocated the use of steam locomotives in consultation with the famous Stephenson's for a projected railway between Edinburgh and Glasgow. In 1832 Miller achieved membership of the Institution of Civil Engineers. Soon afterwards each partner took sole responsibility for his own work. Miller then successfully engineered the *Dundee & Arbroath*, the *Glasgow, Paisley, Kilmarnock & Ayr* and, Scotland's first inter-city railway, the *Edinburgh & Glasgow*.



Ayr Station designed by Miller at its private opening on 11th August 1840 -
He's probably in the picture!

In 1841 he was elected a Fellow of the Royal Society of Edinburgh*.

By 1846 Miller had more mileage of railway in Scotland to his credit than any other engineer. His many projects included extending the *Edinburgh & Glasgow* to central Edinburgh and, for the *North British*, continuing the line along the east coast to Berwick-upon-

Tweed - the first railway across the border, not managed however without some flood damage to hastily done work. In 1845 he deposited plans in parliament for more than 1,500 miles of railway including the *Edinburgh & Hawick* completed in 1849, the first leg of the legendary 'Waverley Route' to Carlisle from 1862. Also, from 1846-50, the strategic *Glasgow, Dumfries & Carlisle*, via Nithsdale with its 1,400 yard Drumlanrig Tunnel and numerous viaducts.

Many of Miller's skilfully designed lines, with their near flat gradients and well-built stations, viaducts tunnels and hundreds of bridges, continue to make an essential contribution to the national network, not least, the magnificent viaducts at Dunglass, Lugar Water and, Ballochmyle, Britain's largest masonry railway arch with a span of 181 ft, towering 164 ft over the River Ayr. On the *Edinburgh & Glasgow*, basically the present express line, despite its hilly terrain he achieved a gradient of only 1 in 880 between the cities by means of deep cuttings, high embankments, 3 tunnels totalling 2,345 yards, 7 viaducts with 86 arches and many bridges. He used the best contractors on key elements such as J. Gibb & Son (Almond Viaduct and Winchburgh Tunnel) and Forbes, Ross & Mitchell (Falkirk Tunnel; Union Canal Viaduct). Miller's heavy engineering has since paid for itself many times over in user benefit. Government inspector Sir Frederic Smith paid tribute to it in 1841, *'There is no line in the Kingdom which possesses so great a number of beautiful pieces of masonry and the whole of the bridges and viaducts appear to have been constructed with great care'*.

Miller retired in c.1850 aged 45 a wealthy man and for more than 30 years enjoyed first, the fine house at Millfield, Polmont, he had had built in c.1843 and, from 1852-3, country estates at Leithenhopies, Innerleithen; and Drumlithie. He served as a Liberal MP for Edinburgh from 1868-74.

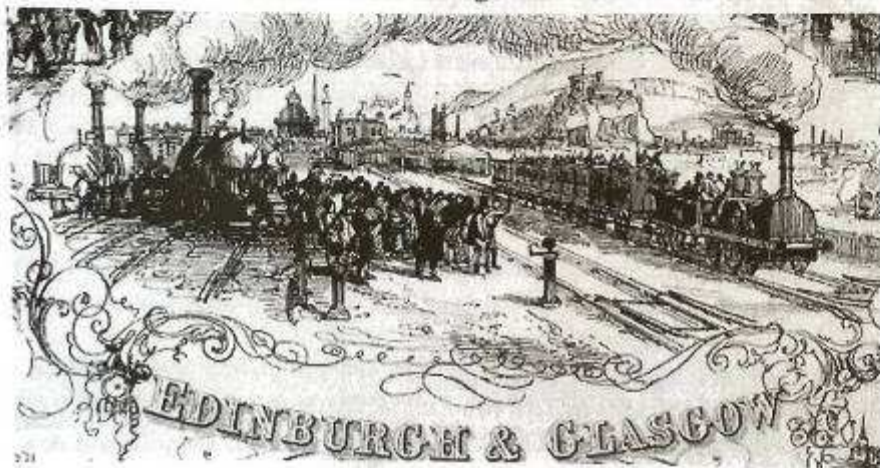
THE EDINBURGH & GLASGOW AT HAYMARKET STATION


 IN COMMEMORATION OF THE OUTSTANDING ACHIEVEMENT OF
JOHN MILLER 1805-83, C.E., F.R.S.E.
 ENGINEER FOR MOST OF THE EARLY MAIN LINE RAILWAYS IN
 SCOTLAND, INCLUDING THE NORTH BRITISH THE FIRST LINE ACROSS
 THE BORDER, AND THE EDINBURGH & GLASGOW, THE FIRST
 INTER-CITY LINE, FOR WHICH HAYMARKET STATION WAS THE
 EDINBURGH TERMINUS FROM 1842-45
 PRESENTED BY THE INSTITUTION OF CIVIL ENGINEERS AND
 DEDICATED ON 16 JULY 2005, THE BICENTENARY OF MILLER'S BIRTH.
 BY




Alexander Pollock Ltd's proof layout of the plaque to be unveiled.

he even had a Bury locomotive named after him on the Ayrshire line! In 1841, the agreed method of working was, 'the trains are to stop short of the building and while the tickets are being collected, the engine will be got behind the train and it will be gently propelled to the platform'.



THE PLAQUE to be unveiled at Haymarket Station is shown below. The organisers are delighted that Miller's great, great, grand-daughter Paula Clarke, her husband Michael and daughter Dr Natasha intend to be present. By locating the plaque on platform 4 it is hoped that its readers will spare a thought for the remarkable man whose foresight is still contributing to their smooth and rapid inter city travel.

This view of Haymarket Station is from an invitation to the private opening of the line on 18th February 1842 sent to Mr. Buchanan (George Buchanan CE?). The locomotives and carriages also came under Miller's remit -

From an 1844 railway time table it can be seen that the journey times from Haymarket to Glasgow varied from 110 to 150 minutes, at a maximum speed of about 30 mph, an epoch-making improvement on the travel time by road or canal. The 4/- 3rd class fare was expensive at a time when a labourer's rate was 2/- a day. Note the timeless caveat, 'or as soon thereafter as circumstances will admit'!

By 1846 the line had been extended by Ross & Mitchell under Miller's direction to what is now Waverley Station by means of a twin track tunnel 907 m long to Princes Street Gardens. Its

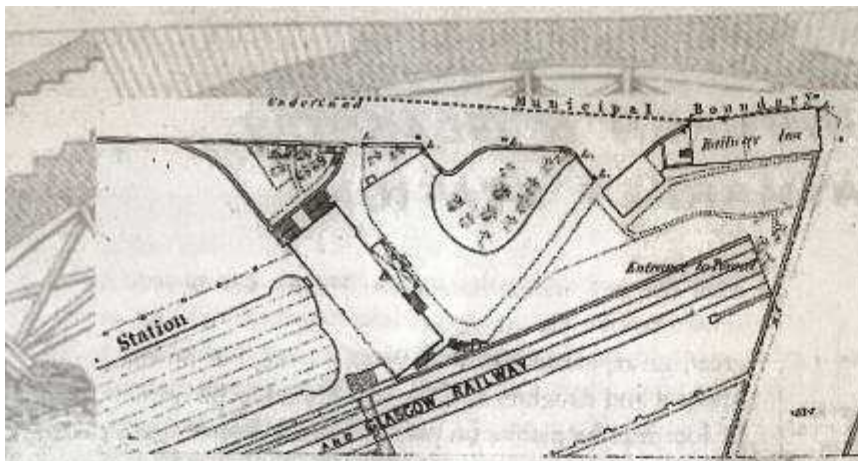
entrance is shown on the plan (1855). Also, the station's attractive approach and 4-track passenger 'train shed', with the columns of its ornamental ironwork canopy to the north, now re-erected at Bo'ness Railway Museum.

EDINBURGH TO GLASGOW.—Down Trains.
EDINBURGH to GLASGOW.—Down Trains.

STATIONS.	TIME OF DEPARTURE.								FARES From Edinburgh		
	7 o'clock		9 o'clock		11 o'clock		1 o'clock		CLASS		
	Mixing.	Morning.	Morning.	Aftern.	Aftern.	Evening.	Evening.	1st.	2d.	3d.	
FROM EDINBURGH,	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	s. d.	s. d.	s. d.	
Gogar,	7 0	8 0	11 —	1 —	3 —	6 —	10 —	0 0	0 0	0 0	
Ratho,	7 14	—	—	1 10	3 10	6 10	—	1 4	1 0	0 0	
Broxburn,	7 25	—	—	—	—	6 27	—	1 0	1 0	0 10	
Winthorpe,	7 34	—	—	11 20	—	6 32	—	2 0	1 0	1 0	
LINLITHGOW,	7 40	—	—	11 44	1 42	6 45	10 02	2 0	2 0	1 0	
Polmont,	7 56	8 07	—	11 54	—	6 50	—	3 0	2 0	2 0	
FALKIRK,	8 8	—	—	12 0	2 5	7 10	11 10	4 0	3 0	2 0	
Camelon,	8 20	9 0	12 5	—	—	7 16	—	4 0	3 0	2 0	
CASTLECAR,	8 25	—	—	—	—	7 20	11 30	4 0	3 0	2 0	
Croy,	8 37	9 11	—	12 09	—	7 26	—	5 0	4 0	2 0	
Kirkintilloch,	8 43	—	—	12 15	—	7 31	—	6 0	5 0	2 0	
Bishop-Briggs,	8 52	9 32	12 45	—	—	7 36	—	7 0	6 0	2 0	
arriving at GLASGOW, at	9 12	—	—	—	—	—	—	7 5	6 0	3 0	
	9 30	0 00	1 5	3 —	5 10	8 10	12 00	0 0	0 0	4 0	

Or as soon thereafter as circumstances will admit.

* The Society is planning to mark Miller's bicentenary with a conference on Scottish railways with emphasis on the future.



The track was doubled to Waverley following the passing of an act in 1891, requiring a second tunnel to the south and widening of the south side of Haymarket Station to create what is now platform 4.

CONCLUSION



Millfield

Miller's bookplate

MILLER'S achievement was not based so much on innovative engineering as on effective management and skilful application and development of the best traditional practice. In character he emerges as intelligent, ambitious, determined, hard working and confident with a clinical attention to facts and detail - not a man to be trifled with! When questioned in a House of Lords Committee on the Ayrshire line in 1837 on a matter about the Greenock line planned by Grainger he replied testily, 'there has been a mistake in people supposing that I have any connection with the Greenock Line, for I know no more about it than the Man in the Moon . . . I was employed to survey the Ayrshire Line and Mr. Grainger the Greenock Line; but the plans were made out separately and distinctly'. Although Grainger

too made a fundamental contribution to railway development and to Miller's career, Miller's achievement eventually overtook that of all his contemporaries in engineering Scotland's railways and connecting them with England.

His awareness of the work and practice of leading engineers is gleaned from the presence of his book-plate in the atlas of Telford's *Life* (1838); Cresy's *Practical Treatise on Bridge Building* (Rennie's work) (1839); and Simms' *Public Works of Great Britain* (Stephenson & others) (1838). Miller's own bridge timber-work was in turn widely promoted in several editions of Newlands' *Carpenter and Joiner's Assistant* from 1860.

Miller is little known by the public today, perhaps from the seeming loss of his papers and in not having a biography and being overlooked in Marshall's *Biographical Dictionary of Railway Engineers* (1978). But, he undoubtedly earned his place in the first rank of early British railway engineers. It is hoped that this plaque with its long overdue recognition of his outstanding achievement will help to redress this imbalance.

Note: The cover picture is taken from Miller's portrait by Sir John Watson Gordon in 1847 on loan from the Scottish Borders Council to Heriot-Watt University.

Since September 2002, this portrait has been on display in the School of the Built Environment's Sir William Arrol Building with that of his partner Thomas Grainger CE, FRSE, by the same artist.

The university thus recognizes the civil engineering firm of Grainger & Miller (1825-45), the most eminent of its kind in Scotland, which played a key role in the development of the nation's railways and in engineering education - a tradition significantly contributed to and continued by Miller's able chief assistant Benjamin Hall Blyth, from whom the present-day firm of Blyth & Blyth traces its origin. Following Blyth's death in 1886 his brother Edward took into partnership Miller's former assistant and son-in-law George Miller Cunningham, who added the 'Miller' to his name on marriage.



David Cunningham (L) Miller's Great, Great, Grandson; Prof. Paxton; & Prof. Archer, Principal, Heriot-Watt University, at Miller portrait unveiling in 2002. © Roddy Simpson

Background pictures:

The Carpenter & Joiner's Assistant (c.1860), pl. LV. Portobello timber skew viaduct (1846); Union Canal viaduct centering (1840 - Forbes, Ross & Mitchell); Dunglass Viaduct centering (1846 - Ross & Mitchell) Grainger & Miller's promotion of steam locomotion for the *Edinburgh and Glasgow* in 1830