The Times

August 2016

A journal of transport timetable history and analysis

Inside: Designing Time(tables)

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The Times

A journal of the Australian Timetable Association Inc. (A0043673H)
Print Publication No: 349069/00070, ISSN 0813-6327

August 2016 **Vol 33 No. 08, Issue No. 391**

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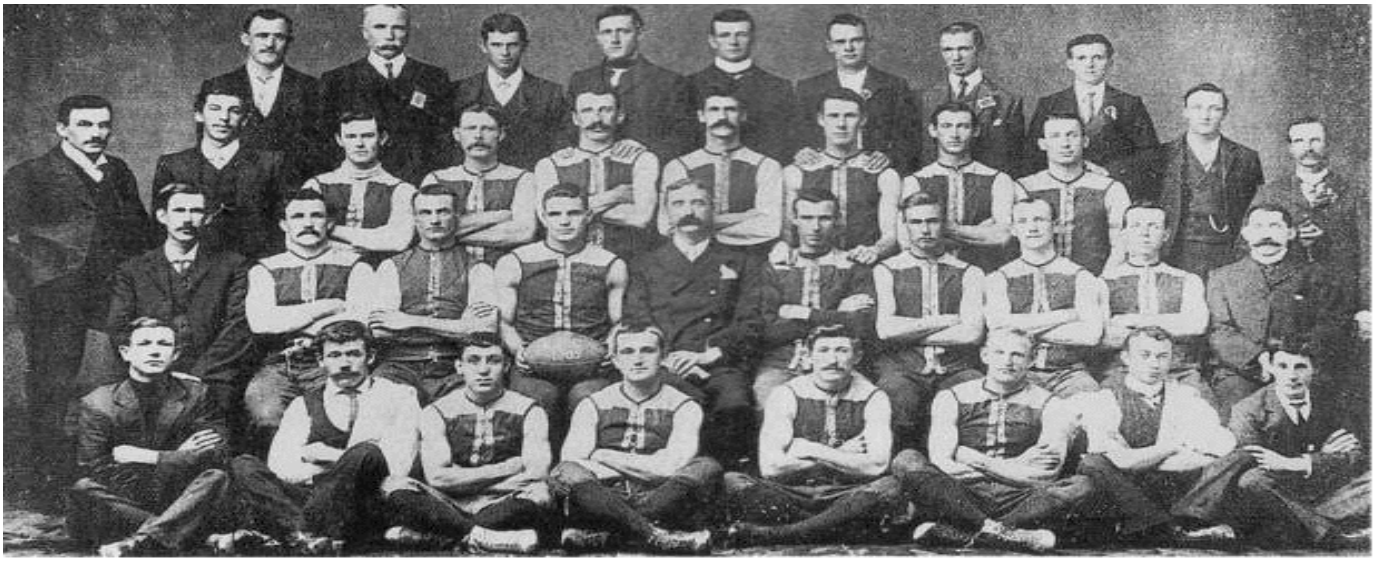
The Red and Blues: A 1905 photograph showing players of the Kalgoorlie Football Club. That year the Kalgoorlie Miner newspaper indicated that the team's colours were red and blue.



Designing Time (part 1)

The Design and Use of Nineteenth-Century Transport Timetables by **MIKE ESBESTER,** *from Journal of Design History 2009 Vol.* ***22,*** *91-113.*

THIS ARTICLE EXAMINES how nineteenth-century transport timetables were designed, understood and used. It examines changes in timetable design during the nineteenth century, as railway timetables in particular had to convey more and more complex information. I argue that time-tables reflected societal notions of time and helped to construct new understandings of space; yet, the times and spaces they propagated were only some of those circulating in the nineteenth century. I demonstrate that the timetable is an item through which it is possible to show how design — in this instance, of information — pervaded day-to-day life. I show that the design of timetables was fundamental to passengers' ability (or inability) to find the information they required. The article therefore analyses a range of passenger responses to timetables, from comments about incomprehensibility to attempts to make timetables more relevant to their individual needs. This focus highlights the significance of design in its social context.

Introduction

Since 9 December 2007, railway passengers in Britain have been unable to consult a single national printed timetable: publication of the, 2,800-page book ceased in the face of dwindling demand[(1)] One of the reasons why demand has fallen is the difficulty that people experienced in reading the timetable book and in extracting the information they required.[(2).] Such difficulty is hardly new: it has been experienced since the 1840s. It is therefore perhaps surprising that time-table producers have often reused designs that readers have found — and still find — problematic to use.

In this article, I show how information was designed and used in the context of the nineteenth-century transport timetable in Britain. In doing so, I show how the timetable reflected changing notions of space and time in the nineteenth century. I start by discussing the historiography of time; in making links between these understandings of time and the analysis offered in this article the railway — the epitome of timetabled precision — is particularly significant. I consider what constituted a timetable and what information it had to convey to prospective passengers. I analyse how the design of timetables dealt with time, looking in turn at some of the physical aspects of design (particularly typography and layout of information) and at some of the theoretical aspects of design (particularly how timetables might have served as a marker of the modern age, reflecting understandings of space and time).

I conclude by assessing how some passengers used timetables and by analysing the gendering of timetable use. In this, we can see some of 'the relations within which design has existed[(3).] I suggest that timetables are one way of accessing how people might have experienced design and information as a regular feature of life in the past, and how everyday design might have shaped peoples' perceptions of the world around them.

Perspectives on time — and timetables

The history of time and time-consciousness has attracted significant attention in the past decade, as critics have sought to reassess EP Thompson's classic account, '*Time, Work-Discipline, and Industrial Capitalism*'. Whilst Thompson does acknowledge the spread of clock time and changes in understandings of time before approximately 1700, his argument focuses on the eighteenth and nineteenth centuries. According to Thompson, 'modern' understandings and uses of time were enforced during industrialization, notably a uniformity in the nature of time. This modern life was centred on the clock, a disciplinary regime of the severest order, and was particularly a product of factory work[(4)].

There have been some important challenes to the homogeneity suggested by Thompson. Stephen Kern's analysis of the period between 1880 and 1918 suggests that people experienced 'a plurality of times', including 'public' and 'private' times [(5).] Paul Glennie and Nigel Thrift have presented a more direct challenge to Thompson, citing the varied ways in which time was experienced throughout the eighteenth and nineteenth centuries, and the increasing use of and competences with clock time between 1300 and 1700. The rise of the factory is not seen as crucial to the spread of time-consciousness, and they suggest that time-discipline was not reliant upon clock discipline [(6).] Accordingly, then, we should not think of the history of time, but rather histories of times. Glennie and Thrift also see travel and communication 'as vital elements in the construction of time' [(7).] This article considers what role transport timetables might have had in these understandings of time and how timetables might have reflected notions of time.

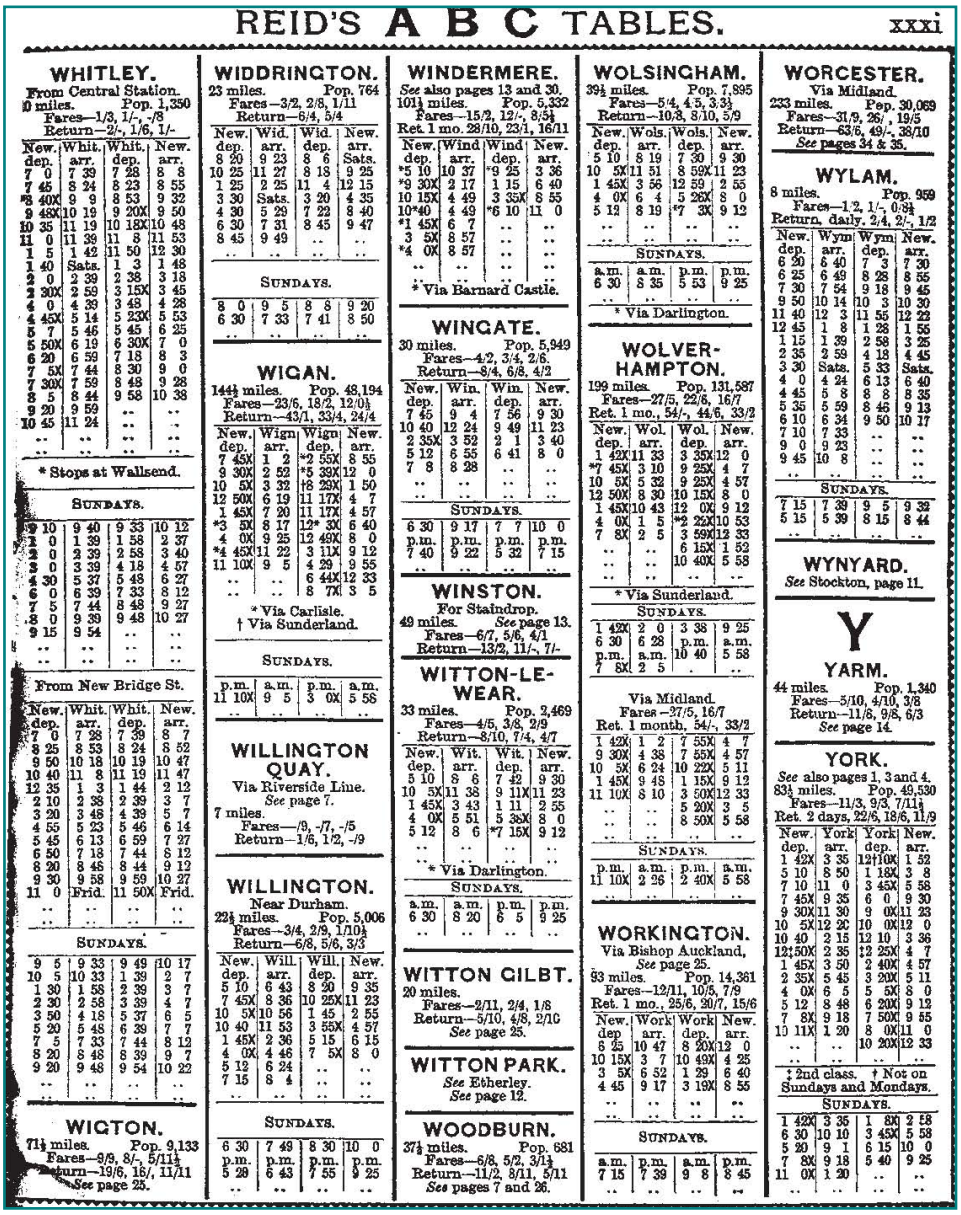
The significance of the timetable is reinforced because the railways occupy an important place in the narrative of the creation and modernization of the 'nation'. The story commonly told observes how the railways were largely responsible for the imposition of standard national time (or time zones in the case of larger countries) [(8);] these accounts often focus on the minutiae of organizing train services rather than considering the wider implications of standard time [(9).] Wolfgang Schivelbusch has offered a much broader approach, discussing how the geographic reach and speed of railways resulted in perceptions of 'space – time compression' : as the time to reach once-distant places reduced, so people understood those places as closer to hand [(10)]. In this article, I demonstrate that timetables offer one way of understanding how the railways might have reordered

spatial awarenesses.

Dorthe Simonsen has recently argued that the homogeneity of Schivelbusch's space – time compression was more apparent than real, as 'speed has produced diverse and interacting, occasionally conflicting, times and spaces' [11]. In terms of the construction of the nation, Eugen Weber's Peasants into Frenchmen has resonances for the design and use of timetables. Weber has argued that, from the 1880s, the railways were one of the forces that drew a group of related but disparate areas together to form the nation 'France'. Along with the education system and the military, the transport network expanded people's spatial awareness and sense of cohesion [12]. Finally, Di Drummond has argued that although the railway did contribute to emerging notions of the British nation in the nineteenth century, the effects of the railway (in terms of travel times and accessibility) were uneven in their distribution[13]. As with time, then, we must question any narrative which posits a single account of space, opting instead for a more nuanced understanding of spaces.

From the general (time) to the specific (timetable): how has the timetable been discussed? Much of the literature which considers the design and reading of timetables and tabular material dates from the 1970s and the 1980s and is connected with computer science, psychology and information design. The concept of functional literacy — the levels of reading and writing ability necessary to perform basic tasks — has also promoted interest in the reading and use of timetables. [14] Yet, research into timetables has paid relatively little attention to the historical origins and evolution of design features used to communicate everyday ideas or information[15]

This paucity of analysis is partly because of the ephemeral nature of the timetable — in the nineteenth century they were mass produced, often on cheap paper, and were only intended to survive for a maximum of six months, and were largely discarded after use. Timetables have also been overlooked by historians of reading, who have concentrated upon the book or the newspaper — a product of the visibility of book and its designated cultural value.[16]. For the design historian, items such as the timetable that are intended for use in everyday life, and where an action is supposed to follow the task of reading, are surely more fruitful lines of enquiry. By examining the design of these items — and the ways in which they were used and how people responded to them — we can gain insight into the relationships between production and consumption and work towards greater understand-ing of the ways in which design could aid, or hinder, everyday activities in the past. Paul Dobraszczyk's recent article on information for Victorian cab users, in this journal,


REID'S A B C TABLES. xxxi

WHITLEY.
From Central Station.
10 miles. Pop. 1,350
Fares—1/3, 1/-, /8
Return—2/-, 1/6, 1/-

New. dep.	Whit. arr.	Whit. dep.	New. arr.
7 0	7 39	7 28	8 8
7 45	8 24	8 23	8 55
¾ 40X	9 9	8 53	9 32
9 48X	10 19	9 20X	9 50
10 35	11 19	10 18X	10 48
11 0	11 39	11 8	11 53
1 5	1 42	11 50	12 30
1 40	Sats.	1 3	1 48
2 0	2 39	2 38	3 18
2 30X	2 59	3 15X	3 45
4 0	4 39	3 48	4 28
4 45X	5 14	5 23X	5 53
5 7	5 46	5 45	6 25
5 50X	6 19	6 30X	7 0
6 20	6 59	7 18	8 3
7 5X	7 44	8 30	9 0
7 30X	7 59	8 48	9 28
8 5	8 44	9 58	10 38
9 20	9 59	..	..
10 45	11 24	..	..
..	..	..	..
..	..	..	..

* Stops at Wallsend.

SUNDAYS.

9 10	9 40	9 33	10 12
1 0	1 39	1 58	2 37
2 0	2 39	2 58	3 40
3 0	3 39	4 18	4 57
4 30	5 37	5 48	6 27
6 0	6 39	7 33	8 12
7 5	7 44	8 48	9 27
8 0	9 39	9 48	10 27
9 15	9 54	..	..
..	..	..	..
..	..	..	..

From New Bridge St.

New. dep.	Whit. arr.	Whit. dep.	New. arr.
7 0	7 28	7 39	8 7
8 25	8 53	8 24	8 52
9 50	10 18	10 19	10 47
10 40	11 8	11 19	11 47
12 35	1 3	1 44	2 12
2 10	2 38	2 39	3 7
3 20	3 48	4 39	5 7
4 55	5 23	5 46	6 14
5 45	6 13	6 59	7 27
6 50	7 18	7 44	8 12
8 20	8 48	8 44	9 12
9 30	9 58	9 59	10 27
11 0	Frid.	11 50X	Frid.
..	..	..	..
..	..	..	..

SUNDAYS.

9 5	9 33	9 49	10 17
10 5	10 33	1 39	2 7
1 30	1 58	2 39	3 7
2 30	2 58	3 39	4 7
3 50	4 18	5 37	6 5
5 20	5 48	6 39	7 7
7 5	7 33	7 44	8 12
8 20	8 48	8 39	9 7
9 20	9 48	9 54	10 22
..	..	..	..
..	..	..	..

WIGTON.
71½ miles. Pop. 9,133
Fares—9/8, 8/-, 5/11½
Return—19/6, 16/, 11/11
See page 25.

WIDDRINGTON.
23 miles. Pop. 764
Fares—3/2, 2/8, 1/11
Return—6/4, 5/4

New. dep.	Wid. arr.	Wid. dep.	New. arr.
8 20	9 23	8 6	Sats.
10 25	11 27	8 18	9 25
1 25	2 25	11 4	12 15
3 30	Sats.	3 20	4 35
4 30	5 29	7 22	8 40
6 30	7 31	8 45	9 47
8 45	9 49	..	..
..	..	..	..

SUNDAYS.

8 0	9 5	8 8	9 20
6 30	7 33	7 41	8 50
..	..	..	..

WIGAN.
144½ miles. Pop. 48,194
Fares—23/6, 18/2, 12/0½
Return—43/1, 33/4, 24/4

New. dep.	Wign arr.	Wign dep.	New. arr.
7 45X	1 2	*2 55X	8 55
9 30X	2 52	*5 39X	12 0
10 5X	3 32	†8 29X	1 50
12 50X	6 19	11 17X	4 7
1 45X	7 20	11 17X	4 57
*3 5X	8 17	12* 3X	6 40
4 0X	9 25	12 49X	8 0
*4 45X	11 22	3 11X	9 12
11 10X	9 5	4 29	9 55
..	..	6 44X	12 33
..	..	8 7X	3 5

* Via Carlisle.
† Via Sunderland.

SUNDAYS.

p.m.	a.m.	p.m.	a.m.
11 10X	9 5	3 0X	5 56
..	..	..	..

WILLINGTON QUAY.
Via Riverside Line.
See page 7.
7 miles.
Fares—/9, -/7, -/5
Return—1/6, 1/2, -/9

WILLINGTON.
Near Durham.
22½ miles. Pop. 5,006
Fares—3/4, 2/9, 1/10½
Return—6/8, 5/6, 3/3

New. dep.	Will. arr.	Will. dep.	New. arr.
5 10	6 43	8 20	9 35
7 45X	8 36	10 25X	11 23
10 5X	10 56	1 45	2 55
10 40	11 53	3 55X	4 57
1 45X	2 36	5 15	6 15
4 0X	4 46	7 5X	8 0
5 12	6 24	..	..
7 15	8 4	..	..
..	..	..	..

SUNDAYS.

6 30	7 49	8 30	10 0
p.m.	p.m.	p.m.	p.m.
5 28	6 43	7 55	9 25
..	..	..	..

WINDERMERE.
See also pages 13 and 30.
10½ miles. Pop. 5,332
Fares—15/2, 12/-, 8/5½
Ret. 1 mo. 28/10, 23/1, 16/11

New. dep.	Wind arr.	Wind dep.	New. arr.
*5 10	10 37	*9 25	3 36
*9 30X	2 17	1 15	6 40
10 15X	4 49	3 35X	8 55
10*40	4 49	*6 10	11 0
*1 45X	6 7	..	..
3 5X	8 57	..	..
*4 0X	8 57	..	..
..	..	..	..
..	..	..	..

* Via Barnard Castle.

WINGATE.
30 miles. Pop. 5,949
Fares—4/2, 3/4, 2/6
Return—8/4, 6/8, 4/2

New. dep.	Win. arr.	Win. dep.	New. arr.
7 45	9 4	7 56	9 30
10 40	12 24	9 49	11 23
2 35X	3 52	2 1	3 40
5 12	6 55	6 41	8 0
7 8	8 38	..	..
..	..	..	..
..	..	..	..

SUNDAYS.

6 30	9 17	7	7	10 0
p.m.	p.m.	p.m.	p.m.	p.m.
7 40	9 22	5 32	7 15	
..	..	..	..	

WINSTON.
For Staindrop.
49 miles. See page 13.
Fares—6/7, 5/6, 4/1
Return—13/2, 11/-, 7/-

WITTON-LE-WEAR.
33 miles. Pop. 2,469
Fares—4/5, 3/8, 2/9
Return—8/10, 7/4, 4/7

New. dep.	Wit. arr.	Wit. dep.	New. arr.
5 10	8 6	7 42	9 30
10 5X	11 38	9 11X	11 23
1 45X	3 43	1 11	2 55
4 0X	5 51	5 36X	8 0
5 12	8 6	*7 15X	9 12
..	..	..	..
..	..	..	..

* Via Darlington.

SUNDAYS.

a.m.	a.m.	p.m.	p.m.
6 30	8 20	6 5	9 25
..	..	..	..

WITTON GILBT.
20 miles.
Fares—2/11, 2/4, 1/8
Return—5/10, 4/8, 2/10
See page 25.

WITTON PARK.
See Etherley.
See page 12.

WOODBURN.
37½ miles. Pop. 681
Fares—6/8, 5/2, 3/1½
Return—11/2, 8/11, 5/11
See pages 7 and 26.

WOLSINGHAM.
39½ miles. Pop. 7,895
Fares—5/4, 4/5, 3/3½
Return—10/8, 8/10, 5/9

New. dep.	Wols. arr.	Wols. dep.	New. arr.
5 10	8 19	7 30	9 30
10 5X	11 51	8 59X	11 23
1 45X	3 56	12 59	2 55
4 0X	6 4	5 26X	8 0
5 12	8 19	*7 3X	9 12
..	..	..	..
..	..	..	..

SUNDAYS.

a.m.	a.m.	p.m.	p.m.
6 30	8 35	5 53	9 25
..	..	..	..

* Via Darlington.

WOLVERHAMPTON.
199 miles. Pop. 131,587
Fares—27/5, 22/6, 16/7
Ret. 1 mo., 54/-, 44/6, 33/2

New. dep.	Wol. arr.	Wol. dep.	New. arr.
1 42X	11 33	3 35X	12 0
*7 45X	3 10	9 25X	4 7
10 5X	5 32	9 25X	4 57
12 50X	8 30	10 15X	8 0
1 45X	10 43	12 0X	9 12
4 0X	1 5	*2 22X	10 53
7 8X	2 5	3 59X	12 33
..	..	6 15X	1 52
..	..	10 40X	5 58
..	..	..	..

* Via Sunderland.

SUNDAYS.

1 42X	2 0	3 38	9 25
6 30	6 28	p.m.	a.m.
p.m.	a.m.	10 40	5 58
7 8X	2 5	.	..

Via Midland.
Fares—37/5, 16/7
Ret. 1 month, 54/-, 33/2

1 42X	1 2	7 55X	4 7
9 30X	4 38	7 55X	4 57
10 5X	6 24	10 22X	5 11
1 45X	9 48	1 15X	9 12
11 10X	8 10	3 50X	12 33
..	..	5 20X	3 5
..	..	8 50X	5 58
..	..	..	..

SUNDAYS.

p.m.	a.m.	p.m.	a.m.
11 10X	2 26	2 40X	5 58
..	..	..	..

WORKINGTON.
Via Bishop Auckland,
See page 25.
93 miles. Pop. 14,361
Fares—12/11, 10/5, 7/9
Ret. 1 mo., 25/6, 20/7, 15/6

New. dep	Work arr.	Work dep.	New. arr.
8 25	10 47	8 20X	12 0
10 15X	3 7	10 49X	4 25
3 5X	6 52	1 29	6 40
4 45	9 17	3 19X	8 55
..	..	..	..
..	..	..	..

SUNDAYS.

a.m.	p.m.	a.m.	p.m.
7 15	7 39	9 8	8 45
..	..	..	..

WORCESTER.
Via Midland.
233 miles. Pop. 30,069
Fares—31/2, 26/, 19/5
Return—63/6, 49/-, 38/10
See pages 34 & 35.

WYLAM.
8 miles. Pop. 959
Fares—1/2, 1/-, 0/8½
Return, daily, 2/4, 2/-, 1/2

New. dep.	Wym arr.	Wym dep.	New. arr.
6 20	6 40	7 3	7 30
6 25	6 49	8 28	8 55
7 30	7 54	9 18	9 45
9 50	10 14	10 3	10 30
11 40	12 3	11 55	12 22
12 45	1 8	1 28	1 55
1 15	1 39	2 58	3 25
2 35	2 59	4 18	4 45
3 30	Sats.	5 33	Sats.
4 0	4 24	6 13	6 40
4 45	5 8	8 8	8 35
5 35	5 59	8 46	9 13
6 10	6 34	9 50	10 17
7 10	7 33	..	..
9 0	9 23	..	..
9 45	10 8	..	..
..	..	..	..

SUNDAYS.

7 15	7 39	9 5	9 32
5 15	5 39	8 15	8 44
..	..	..	..

WYNYARD.
See Stockton, page 11.

Y

YARM.
44 miles. Pop. 1,340
Fares—5/10, 4/10, 3/8
Return—11/8, 9/8, 6/3
See page 14.

YORK.
See also pages 1, 3 and 4.
83½ miles. Pop. 49,530
Fares—11/3, 9/3, 7/1½
Ret. 2 days, 22/6, 18/6, 11/9

New. dep.	York arr.	York dep.	New. arr.
1 42X	3 35	12‡10X	1 52
5 10	8 50	1 18X	3 8
7 10	11 0	3 45X	5 58
7 45X	9 35	6 0	9 30
9 30X	11 30	9 0X	11 23
10 5X	12 2C	10 0X	12 0
10 40	2 15	12 10	3 36
12‡50X	2 35	‡2 25X	4 7
1 45X	3 50	2 40X	4 57
2 35X	5 45	3 20X	5 11
4 0X	6 5	5 5X	8 0
5 12	8 48	6 20X	9 12
7 8X	9 18	7 50X	9 55
10 11X	1 20	8 0X	11 0
..	..	10 20X	12 33
..	..	..	..

‡ 2nd class. † Not on Sundays and Mondays.

SUNDAYS.

1 42X	3 35	1 8X	2 58
6 30	10 10	3 45X	5 58
5 20	9 1	6 15	10 0
7 8X	9 18	5 40	9 25
11 0X	1 20	..	..
..	..	..	..

Fig 1. Reid's Railway Guide and North-East Coast ABC TimeTable, Andrew Reid, Newcastle, April 1886, p. xxxi, 190

demonstrates the value of such an approach.[17]. The following analysis of timetables develops this approach to the history of design in daily life.

What is a 'timetable' ?

The timetable is an arrangement of information, designed to show when events happen; in relation to transport, typically they inform the user of the destinations between which the service runs and the time at which it leaves each calling point. The timetable is an artefact of everyday mobility: it represents the factors that shape provision of services and signifies to the passenger when and where they can travel[18]. It is a representation, in two dimensions, of space and time. When we think of the timetable, we tend to visualize a matrix arrangement of information; the calling points typically use the vertical axis, whilst the horizontal axis shows the progression of time through the day.

However, other designs, although not tabular, were commonly understood to be 'timetables.'

Early sources of transport service information adopted an existing layout of information, based upon the book — already familiar to those who could read. Detailing an extremely limited number of services, they used linear sentences to provide the passenger with information [19] If it was necessary to convey more information (more services on the same route, for example), other designs offered advantages over linear text. Information about multiple services was presented as lists, in which one service time was visibly distinguished from the next, often using a separate line for each time [20] Finally, there was the 'ABC' [1]. First introduced in 1853, it listed in alphabetical order all the destinations accessible from one location. This offered the reader simplicity. The Railway

Traveller's Handy Book— an advice manual for prospective passengers — noted that 'The ABC Railway Guide is … an easy work of reference, the names of the places being alphabetically arranged …. It is, however, chiefly adapted for the use of persons who have only to proceed direct from one point to another.'[21]

The table, on the other hand, conveyed information that was 'free standing': it was possible to use it to or from any point on the system [2]. These tables were comprehensive, showing every passenger service operating on that route. From the late-1830s, the railways added a previously unseen layer of complexity to timetables. As the railway system grew to cover greater distances during the nineteenth century, timetables increased in size [22]. This was a result of factors such as the speed and numbers of services run, the numbers of different routes served, the precision of timing required for operation, the capacity of the infrastructure and the number of different operators. Representing this information in linear sentences was possible, but it would have taken up vast amounts of space. The tabular design was, comparatively, more space efficient; and it might have made the information more easily comprehensible by the user.[23]

The remaining examples in this article are taken from tabular railway passenger [24] timetables, for two reasons. Structural factors (particularly the complexity, number and interlinking of services) meant that railways had to cope with more difficult issues than most other transport providers. This manifested itself in the provision of complex information within the tabular space of the railway timetable and in the use of some innovative designs to convey service information. In addition, the table was the dominant design used to convey information to railway passengers. In principle, the points raised are applicable to any tabular timetable (hereafter simply timetable), whether railway or beyond (for example, for collections from urban post boxes in the 1850s).[25]

A Tide Table for Bewmares Ferry where mark's are Sett from Penmaenmawr to the Ferry side for ye Safety of Travellers

Highwater	Lowwater		Highwater	Lowwater
Morning			Evening	
Hours:min	Ho:min:	The ☽ Age	Ho: min:	Ho: min
10 - 30	4 - 18		10 - 30	4 18
11 - 18	5 - 06	1 - 16	11 - 18	5 - 06
12 - 06	5 - 54	2 - 17	12 - 06	5 - 54
12 - 54	6 - 42	3 - 18	12 - 54	6 - 42
1 - 42	7 - 30	4 - 19	1 - 42	7 - 30
2 - 30	8 - 18	5 - 20	2 - 30	8 - 18
3 - 18	9 - 06	6 - 21	3 - 18	9 - 06
4 - 06	9 - 54	7 - 22	4 - 06	9 - 54
4 - 54	10 - 42	8 - 23	4 - 54	10 - 42
5 - 42	11 - 30	9 - 24	5 - 42	11 - 30
6 - 30	12 - 18	10 - 25	6 - 30	12 - 18
7 - 18	1 - 06	11 - 26	7 - 18	1 - 06
8 - 06	1 - 54	12 - 27	8 - 06	1 - 54
8 - 54	2 - 42	13 - 28	8 - 54	2 - 42
9 - 42	3 - 30	14 - 29	9 - 42	3 - 30
		15 - 30		

Fig 3. Tide Table for Bewmares Ferry, n.d. (late-eighteenth century), 130 × 72 mm. Centre for Ephemera Studies, University of Reading..

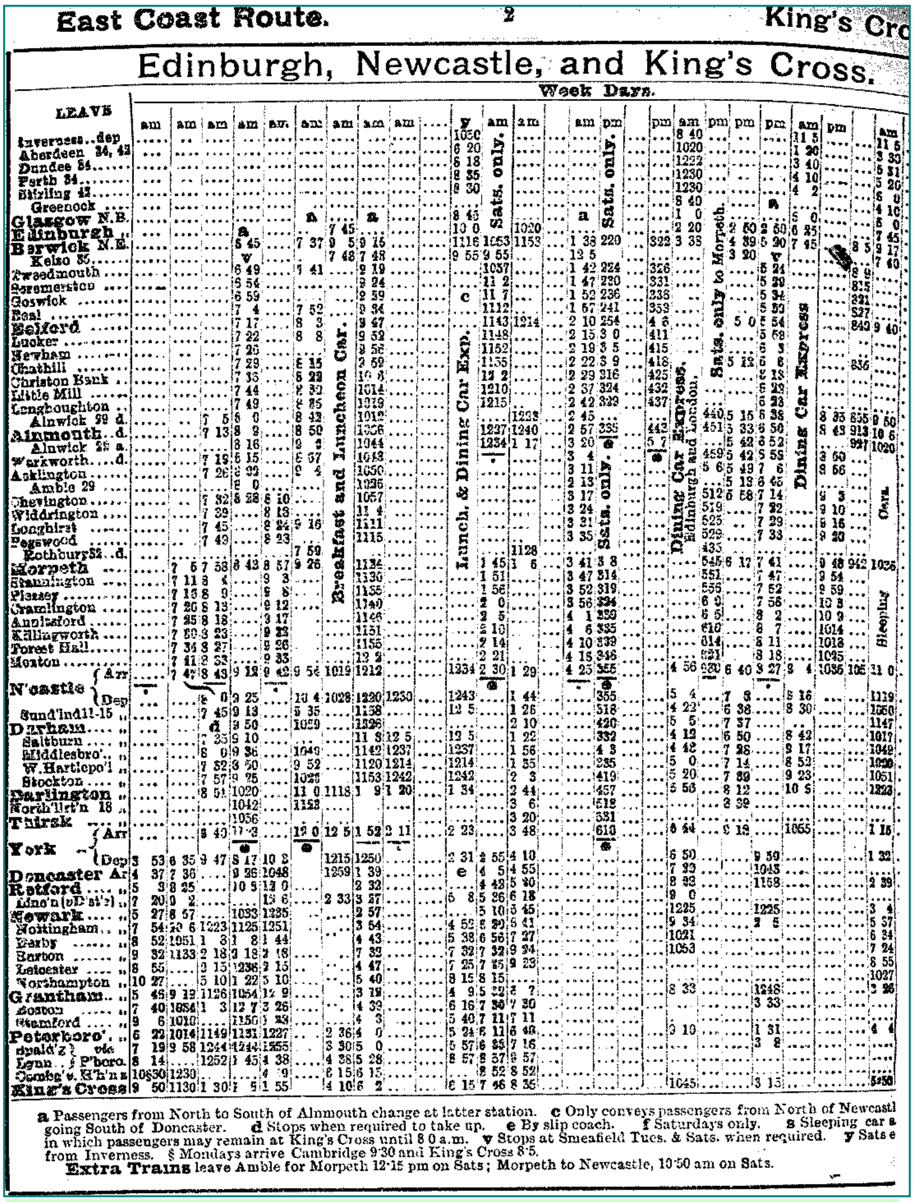


Fig 2. Reid's Railway Guide and North-East Coast ABC Time Table, Andrew Reid, Newcastle, February 1913, p. 2. Complete passenger service information, displayed in a matrix arrangement; locations down the vertical, time throughout the day increasing along the horizontal. © British Library Board. All Rights Reserved, PP.2500.nk.

Tabular information did not suddenly manifest itself in the transport timetable; way timetable producers drew upon tables found elsewhere in society. Items such as ledgers and accounts, bills of mortality, tide tables, logarithmic tables and almanacs used horizontal and vertical axes [3].[26] The tabular arrangement was more widely distributed in society than might have been thought, so at least some people would have been familiar with the demands that the railway timetable made upon reading skills (particularly the need to read on both axes).

The increasing complexity of travel services on offer during this period saw a corresponding increase in the quantity and complexity of information about travel required by the passenger. The first public steam railway was opened for traffic in 1830, between Liverpool and Manchester; in the subsequent decade, many more lines were built across Britain, increasing the

NORFOLK AND EASTERN COUNTIES RAILWAYS TIME TABLE.

Yarmouth, Norwich, Ely, Cambridge, and London.

*** Passengers are recommended to be at the Stations five minutes earlier than the time specified in the Table, which is the approximate time only.

OCTOBER 1, 1846.

DOWN TRAINS, Sundays excepted. | **SUNDAY TRAINS.**

Miles.	LONDON TO YARMOUTH.	A.M.	A.M.	A.M.	Parliamentary Train. P.M.	Express Train. P.M.	Mail Train. P.M.	A.M.	A.M.	A.M.	P.M.	Mail Train. P.M.
0	LONDON	....	7 15	11 30	2 0	6 0	8 40	....	....	6 45	2 0	8 40
57¼	CAMBRIDGE	6 50	9 22	1 46	5 50	7 55	10 57	....	7 0	9 48	5 8	10 57
88	BRANDON	8 7	10 45	3 0	6 50	9 0	12 25	....	8 22	11 13	6 25	12 25
95½	THETFORD	8 19	10 59	3 14	6 55	9 12	12 42	....	8 34	11 30	6 37	12 42
103½	Harling Road	8 30	11 9	3 26	7 7	....	....	....	8 46	11 42	6 48	....
106½	Eccles Road	8 39	11 17	....	7 15	....	....	....	8 54	11 50	6 56	....
110	ATTLEBOROUGH	8 52	11 29	3 44	7 27	9 39	1 17	....	9 7	12 6	7 11	1 17
113	Spooner Row	8 57	....	....	7 32	....	....	....	9 12	12 11	7 15	....
115½	WYMONDHAM	9 12	11 45	4 0	7 46	9 54	1 30	....	9 27	12 26	7 29	1 30
119½	Hethersett	9 18	....	....	7 54	....	....	....	9 33	12 32	7 34	....
125	Trowse	9 47	....	4 32	8 17	....	....	....	10 2	1 2	8 2	....
126	NORWICH arrive	9 52	12 22	4 37	8 22	10 20	1 55	....	10 7	1 7	8 7	1 55
	NORWICH depart	10 0	12 30	4 45	8 30	10 30	2 5	8 0	10 15	1 15	8 15	2 5
132	Brundall	10 6	12 39	4 54	8 39	....	....	8 9	10 24	1 24	8 24	....
134	Buckenham	10 12	....	5 0	8 45	....	....	8 15	10 30	1 30	8 30	....
136	Cantley	10 18	....	....	8 51	....	....	8 21	10 36	1 36	8 36	....
138	Reedham	10 24	12 48	5 9	8 57	....	....	8 27	10 42	1 42	8 42	....
142	Berney Arms	10 36	....	....	9 7	....	....	8 37	....	....	8 57	....
146	YARMOUTH	10 55	1 10	5 30	9 25	11 15	2 55	8 55	11 10	2 10	9 10	2 55

UP TRAINS, Sundays excepted. | **SUNDAY TRAINS.**

Miles.	YARMOUTH TO LONDON.	Express Train. A.M.	A.M.	A.M.	P.M.	Parliamentary Train. P.M.	Mail Train. A.M.	Parliamentary Train. A.M.	P.M.	P.M.	P.M.	Mail Train. P.M.
0	YARMOUTH	5 0	....	10 15	3 0	7 0	10 17	8 0	2 0	6 0	8 30	10 17
4	Berney Arms	....	....	10 22	....	7 6	....	8 6	....	....	8 36	....
8	Reedham	....	....	10 27	3 12	7 15	....	8 12	2 12	6 12	8 45	....
10	Cantley	....	....	10 35	....	7 22	....	8 19	2 19	6 19	8 52	....
12	Buckenham	....	....	10 38	3 23	7 28	....	8 25	2 25	6 25	8 58	....
14	Brundall	....	....	10 44	3 29	7 34	....	8 31	2 30	6 31	9 4	....
20	NORWICH arrive	5 37	....	11 7	3 52	7 52	10 57	8 52	2 52	6 52	9 25	10 57
	NORWICH depart	5 45	7 30	11 15	4 0	8 0	11 7	9 0	3 0	7 0	....	11 7
21	Trowse	....	7 35	11 20	....	8 5	....	9 5	3 5	7 5	....	....
26½	Hethersett	....	7 42	....	....	8 12	....	9 12	3 12	7 12	....	....
30½	WYMONDHAM	6 3	7 57	11 38	4 19	8 24	11 32	9 28	3 28	7 28	....	11 32
33	Spooner Row	....	8 1	....	....	8 28	....	9 32	3 32	7 32	....	....
36	ATTLEBOROUGH	6 13	8 15	11 53	4 38	8 43	11 45	9 47	3 47	7 47	....	11 45
39½	Eccles Road	....	8 20	....	4 43	8 48	....	9 52	3 52	7 52	....	....
43½	Harling Road	....	8 28	12 3	4 52	8 58	....	10 0	4 0	8 0	....	....
50½	THETFORD	6 45	8 51	12 24	5 16	9 24	12 20	10 25	4 25	8 25	....	12 20
58	BRANDON	7 5	9 15	12 45	5 40	10 0	12 53	10 50	4 50	8 50	....	12 53
88½	CAMBRIDGE	8 17	10 41	2 1	7 2	11 30	2 7	....	6 19	10 12	....	2 7
146	LONDON	10 15	1 5	4 0	10 0	....	4 26	....	9 40	....	....	4 26

Third Class Passengers can Book by every Train between Yarmouth and Norwich, and by Trains leaving Norwich at 7 30 a.m. to London, at 4 and at 8 p.m. to Brandon. Also by the Train leaving London at 2 p.m., and from Brandon 8 7 and 10 45 a.m. to Norwich.
Children under three years of age are conveyed free, above three and under ten years, half-price.
On Saturdays a Market Train will run from Yarmouth to Norwich at a quarter past 12 p.m., and from Norwich to Cambridge at 6 30 p.m., calling at all Stations; the 8 0 p.m. Train from Norwich to Cambridge will not run on Saturdays.

Fig 4. Norfolk and Eastern Counties Railway Time Table, 1 October 1846, printed in unknown newspaper, 214 × 185 mm. Note the indications of the route served: 'Yarmouth, Norwich, Ely, Cambridge, and London' underneath the timetable title and 'London to Yarmouth' and 'Yarmouth to London' in the table itself. These last two designations also give the direction of travel 'down' from London to Yarmouth and 'up' from Yarmouth to London. Note also the bold rule dividing Sunday trains from weekday services, the rules dividing the up and down services and the indication of morning or afternoon departure at the head of each column ('A.M.' / 'P.M.'). Rickards Collection, 'Railways' Box, Centre for Ephemera Studies, University of Reading.

number of companies that offered services and the distances that it was possible to travel by train. [27] As a result of the increased mobility of the nineteenth century, more people than ever before required information about transport services.[28] Timetables codified this information, potentially being read by millions of people; they represented an attempt to aid passengers' transit through the transport system.

The number of timetables in circulation increased dramatically during the nineteenth century: in one year of the 1880s, a single railway company produced 35,000 copies of its summer timetable — and this does not include the winter issue or timetable posters for display at stations; or timetables produced by any of the approximately 100 other railway companies or those produced by other transport providers or by the hundreds of private publishers.[29] As a result, in 1874 The Times news-paper felt confident that this was 'an age of timetables'. [30] Evidence from newspapers and literary sources suggests that timetables were to be found in private and in public: Wilkie Collins, George Gissing and Anthony Trollope all made timetables a natural part of the scene in the guest houses used to accommodate their characters.[31] It seems likely that this availability of timetables ensured that reading tabular material — particularly in public — became more widespread than had previously been the case. Clearly, timetables came to play a part in the public life of the nation.

Timetables also went beyond a practical purpose: they offered support for conceptions of time and space, providing knowledge of places that were often far distant. In 1885, Edmund Venables saw timetables as 'a necessity of life in these days of constant locomotion'. [32] The increased opportunities for travel and the increasing distances over which it was possible to journey — the space – time compression identified by Schivelbusch — helped to change mentalities. In the course of everyday life, it became necessary for many people to conceptualize their journeys across the nation: the timetable was a support for this process. To Venables, then, as to others, timetables were emblematic of modern time and nation.

Designing time

The timetable was part of what GK Chesterton characterized as the 'literature of information': it was not read for pleasure, but for action, to enable mobility. [33] The timetable needed to convey at least three things: a departure location, an arrival location and a time of departure. During the nineteenth century, as timetables had to convey an increasing quantity of information, many design features were incorporated in order to try to transmit details of the services on offer. In the following discussion, I highlight only a few of the common designs, which can be considered typical of timetables and which relate to the issues of space and time I wish to interrogate.[34]

The first tabular railway timetables were produced in 1838. [35] A basic 'grammar' of the timetable was soon established, in which time was represented along the horizontal axis and location down the vertical axis [4].[36] This tabular arrangement of information had solidified by approximately the early 1840s, quickly becoming the standard design for complex transport timetables. This meant that the reader knew what to expect from one timetable to the next. The timetable would show the progression of time, as a service made its way along a particular route: space and time were linked. In order to support vertical reading — up or down the list of times at which a train called at the stations along a route — column rules were included, separating different services from each other and preventing people from reading tables as if they were linear text.[37]

As the numbers of services increased, so too did the volume of information contained in the timetable. From simple tables containing only 20 or 30 times, timetables grew to include hundreds of individual timings. Time appeared to multiply, with more choices available to the passenger, requiring more decisions about where and when to travel. In most instances, passengers would not have been interested in everything contained in the timetable — they required only the details of the journey that they intended to make.[38] Timetables therefore had to balance the provision of complete information about services

with designs that allowed the passengers to search out and access information specific to their individual needs. In order to achieve this, 'prompts' were included to help the readers identify the information most relevant to them. In timetable books, pages were numbered, and indexes and contents pages listed locations served. Tables were given titles indicating the route detailed (for example, see [4], 'London to Yarmouth').

Time was one of the most complex challenges faced by timetable designers. Exact times were clearly significant in representing railway services: times were given down to single minutes. Yet until the 1860s, there was no agreed meaning of 'exact time'. Until a uniform time zone was legally imposed in 1880, time in Britain varied according to location.[39] This resulted in debate as to which time should be used in the timetable: local time contrasted with 'London time' (i.e. Greenwich Mean Time (GMT)). If local time were used, people could get to the station at 'their' time, but if the trains were running on London time, passengers would either have to wait or they were in danger of missing their train. In contrast, using London time in the timetable might confuse passengers, particularly as the differences were magnified the further away from London people travelled — Oxford was five minutes behind London; Plymouth, twenty minutes.[40]

As the railway network extended over increasing distances and ran increasing numbers of trains, the problems raised by these differences in time according to longitude became more acute. From the 1840s, timetables would often specify which time they used. For example, the Grand Junction Railway timetable of 1846 informed the reader that that company used local time: 'N.B. – The Clocks are set according to the Longitude of each Station'.[41] The Great Western Railway, on the other hand, specified in 1842 that 'London time is kept at all the stations on the railway'.[42] If time was not yet standard, travellers were at least pre-warned of potentially critical discrepancies. By the 1860s, London time was accepted as the standard measure, and this qualifier virtually disappeared on timetables. The railways' role in introducing uniform time has been noted; the timetable had an important role in disseminating knowledge of a national, standard time.

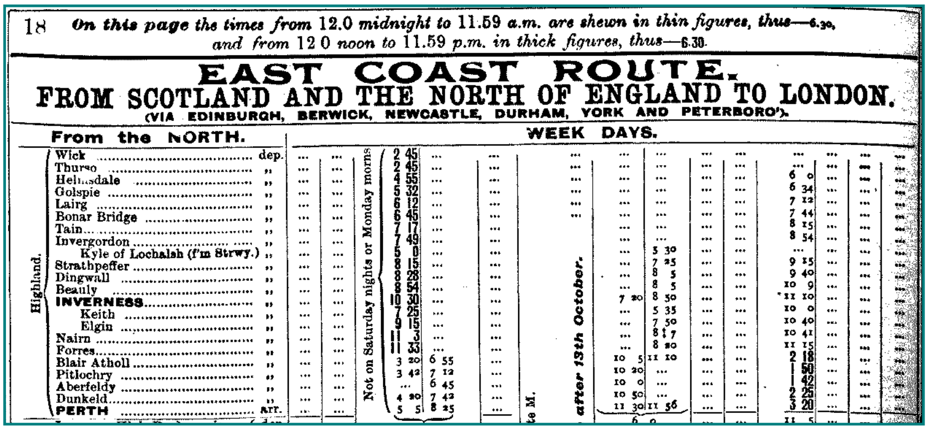
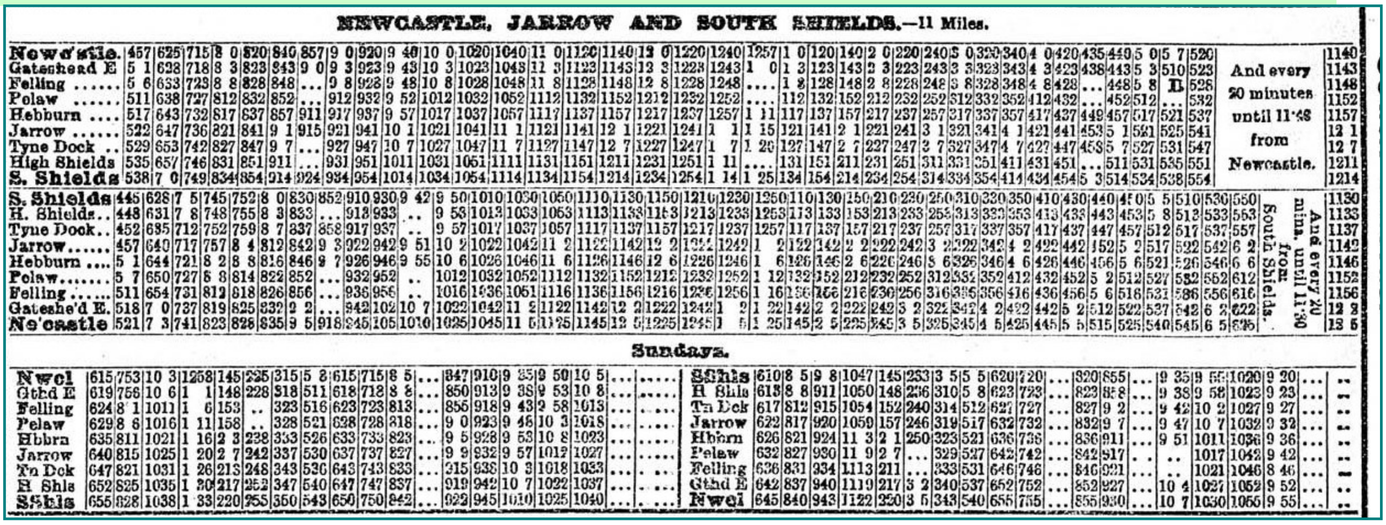


Fig 5. Great Northern Railway Express Route October 1902 until June 1903, Love and Malcomson, London, 1902, p. 18, detail 75 × 167 mm, from page 290 × 180 mm. How to understand the difference between morning and afternoon times is explained at the top of the page, to the right of the page number; type size and weight (the 'thin' and 'thick' figures) are used to indicate meaning. In this scheme, the train departing Wick at 2.45 is an afternoon departure; it arrives at Perth at 5.05 in the morning. Note also the space between the hour and minute figures, rather than a decimal point; and the lack of a '0' for minutes past the hour less than 10. Ken Hoole Study Centre, Darlington, KH 3100.

Assuming passengers understood which time system was in use, there still remained the issue of how time should be divided. Hours and minutes had to be represented in the timetable, and they had to be distinguishable from each other so as to avoid confusion. Rather than using a decimal point or physical mark on the page, most timetables separated hours from minutes with a space [5]. This seemed legible enough when the timetable was well spaced. Yet when space was at a premium, some publications attempted to cram as much information as possible onto the page, resulting in a mass of numbers and extreme difficulty in differentiating the hour from the minute [6]. It was observed

Fig 6. Reid's Railway Guide and North-East Coast ABC TimeTable, Andrew Reid, Newcastle, February 1913, p. 10, detail 176 × 107 mm, from page 188 × 155 mm. The mass of figures makes legibility difficult. It is uncertain why Reid chose to print the times for each stop for the route between Newcastle and South Shields (and return — the upper two tables on the page) for times between 4.57 a.m. and 5.20 p.m. and then decided to use a 'frequency service' indicator ('And every 20 minutes until 11.40 from Newcastle'). It is possible that Reid had intended to set every time, but failed to allow enough space — an error only realized part way through the expensive process of setting the type. © British Library Board. All Rights Reserved, PP.2500.nk.



GRAND JUNCTION RAILWAY.

LIVERPOOL, BIRMINGHAM, AND LONDON

TIME AND FARE TABLE,

ON AND AFTER THE 1st FEBRUARY, 1846.

(The Time and Fare Tables for the Other Sections are issued separately.)

NOTICE.—The Doors of the Booking Offices will be closed punctually at the Hours fixed for the Departure of the Trains, after which no person can be admitted. Passengers, to ensure being booked, should arrive at the First Class Stations *Five Minutes*, and at the Second Class Stations *Ten Minutes* earlier than the times mentioned in the following Tables.

Passengers cannot be re-booked at the Road side Stations by the same Train.

N.B.—The Clocks are set according to the Longitude of each Station.

Distance from Liverpool.	Lancaster and LIVERPOOL to BIRMINGHAM and London. Stations.	Up Trains from Liverpool. 1	2	3	4	5	6	7	8	9	Sunday Trains. 1	2	3	4	Passenger Fares from Liverpool. By 9 15 A.M. and Express Train	First Class.	Second Class.	Third Class.
Miles.	Leave	4 0 A M Mail Mixed ¶	6 A.M 1st&2d Class ¶	6 30 A.M. 3rd Class only	9 15 A M 1st Class ¶	11 0 A M Mail Mixed. ¶	1 0 P M 1st Cla Mixed ¶	4 0 P.M. Express Train.	5 0+ P M 1st&2d Class ¶	8 15 P M Mail Mixed ¶	10 A.M. Mail Mixed & 3dCl ¶	9 15 A M 1st Cl. Mixed. ¶	11 0 A M Mail Mixed. ¶	8 15 P M Mail Mixed. ¶				
	Lancaster	2 30				9 20				6 55	2 30			8 55				
	Preston	3 27				10 20			3 40	7 53	3 27			7 53				
	LIVERPOOL *Arrive at*	4 0	6 0	6 30	9 15	11 0	1 0	4 0	5 0	8 15	4 0	9 15	11 0	8 15				
15¾	Parkside																	
18¾	Newton Junction		6 43	7 46	9 42		1 30		5 42			9 42						
19¾	WARRINGTON	4 38	6 57	8 0	9 59	11 47	1 47	4 39	6 57	9 2	4 36	9 59	11 47	9 2	3 6	3 0	2 6	1 6
23¾	Moore		7 6	8 22					6 7							3 6	2 6	1 6
25	Preston Brook		7 13	8 33			2 0		6 14							4 0	3 0	1 11
29¼	Acton		7 24	8 52					6 25							5 0	3 6	2 6
31¾	HARTFORD	5 10	7 33	9 6	10 28	12 21	2 18		6 38	9 36	5 11	10 28	12 21	9 36	6 0	5 6	4 0	2 6
36¼	Winsford		7 46	9 26			2 28		6 47							5 6	4 0	2 8
38¾	Minshull Vernon		7 53	9 39					6 53							5 6	4 0	2 8
43¼	CREWE	5 37	8 8	10 0	10 53	12 47	2 47	5 23	7 3	10 2	5 37	10 58	12 47	10 2		6 6	4 6	3 3
46	Basford		8 19	10 0					7 19							7 6	5 0	3 6
51¼	Madeley		8 37	10 8*					7 37							8 0	5 6	3 11
54¾	WHITMORE	6 17	8 45	11 37	11 30	1 27	3 24		7 45	10 42	6 17	11 30	1 27	10 42		8 6	5 6	4 4
62¼	Norton Bridge		9 4	12 0			3 44		8 4							9 0	6 0	4 8
66¾	STAFFORD	6 47	9 18	12 16	2 0	1 57	4 0	6 10	8 18	11 12	6 47	12 0	1 57	11 12	11 6	10 0	7 6	5 2
71¾	Penkridge		9 33	12 32			4 12		8 33						12 0	11 6	8 0	5 6
76	Spread Eagle		9 41	12 40					8 41						13 0	12 0	8 6	5 9
77¾	Four Ashes		9 47	12 47					8 47						14 0	13 6	10 0	6 6
83	WOLVERHAMPTON	7 22	10 4	1 2	2 35	2 36	4 39	6 39	9 4	11 50	7 22	12 35	2 36	11 51	17 6	14 6	11 6	7 0
84¾	Wiltenhall		10 14	1 13			4 46		9 14							15 0	11 9	7 2
88	WALSALL	7 36	10 22	1 22		2 54	4 57		9 22	12 0	7 35					15 6	12 0	7 5
90¾	Newton Road		10 31	1 31					9 31							16 0	12 3	7 7
94¾	Perry Bar		10 43	1 44					9 42							16 5	12 6	7 11
97¼	BIRMINGHAM	8 6	11 0	2 0	1 15	3 20	5 30	7 10	10 0	12 36	8 6	1 15	3 20	12 36	20 0	17 0	13 0	8 2

N.B.—The Sunday Trains stop at First Class Stations only.

Fig 7. (a) Grand Junction Railway, Liverpool, Birmingham and London Time and Fare Table, 1 February 1846, detail 203 × 217 mm, from page 477 × 265 mm. (b). Reproduced by permission of the Bodleian Library, University of Oxford, John Johnson Coll. Railways Folder III, Grand Junction Railway, Time and Fare Table, 1st Feb 1846 (b) Grand Junction Railway, Liverpool, Birmingham and London Time and Fare Table, 1 February 1846, detail 63 × 168 mm, from page 477 × 265 mm. Weight, case and larger type size are used to indicate the more important stations on the line (Liverpool, Warrington, Hartford, etc.). Leader dots are also used to guide the eye across the page, from the locations to the times at which trains call at the respective stations. Reproduced by permission of the Bodleian Library, University of Oxford, John Johnson Coll. Railways Folder III, Grand Junction Railway, Time and Fare Table, 1st Feb 1846.

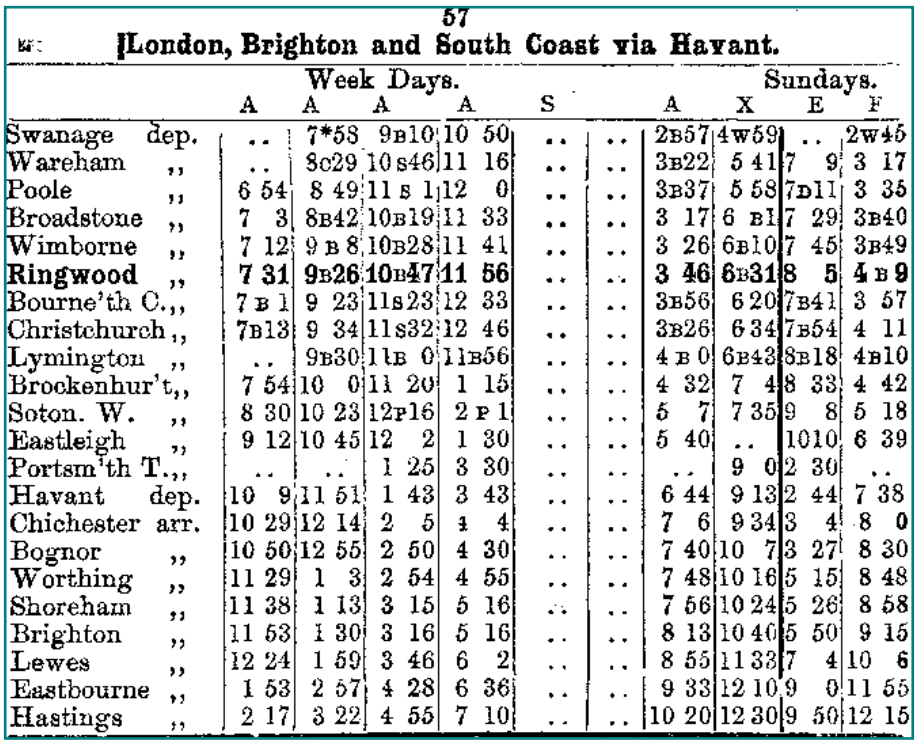
in 1897 that:

Crowded columns seem to be inevitably characteristic of Time Tables .... They are narrowed down to limits which crush the figures within them into a black mass, often in many pages obscuring the figures; at all times rendering them difficult to make out; everything is so compressed. [43]

This was a trade-off between the physical constraints of the format and the functionality of the finished item — and one in which the functionality could suffer.

The timetable also signalled the continuing rise of non-natural time and rhythms. Although awareness of (non-natural) clock time predated industrialization, as Glennie and Thrift have shown, with industrialization, the significance and precision of clock time became increasingly important in daily life.[44] Dickens dramatized this in Dombey and Son: Staggs's Gardens is converted — 'There was even railway time observed in clocks, as if the sun itself had given in'. [45] The timetable exemplified this; time was shown as divided into hours and minutes and split between morning and afternoon. Before the 1960s, timetables used the twelve-hour clock, which meant that morning had to be distinguished from afternoon in some way.[46] A number of techniques were used. Most common was the inclusion of 'a.m.' or 'p.m.' with the particular service being referred to: probably near the departure time from the train's originating point [4]. The Great Northern Railway's 1902 timetable attempted to avoid this by using different sizes and typefaces to depict morning or afternoon [5]. This was a very deliberate attempt to draw the reader's attention to the formatting of the timetable and make design features carry meaning. Such designs were attempts to make the information more readily accessible to the passenger — and to reinforce understandings of time that were socially constructed.

Similarly, the different social values placed upon different days of the week were reflected in the design of the timetable. As different train times operated on Sundays, it was necessary to signal these differences clearly. This was done by separating Sundays from weekdays. Most tables con-



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London, Brighton and South Coast via Havant.

	Week Days.					Sundays.			
	A	A	A	A	S	A	X	E	F
Swanage dep.	..	7*53	9B10	10 50	.. ..	2B57	4W59	..	2W45
Wareham ,,	..	8c29	10s46	11 16	.. ..	3B22	5 41	7 9	3 17
Poole ,,	6 54	8 49	11 s 1	12 0	.. ..	3B37	5 58	7D11	3 35
Broadstone ,,	7 3	8B42	10B19	11 33	.. ..	3 17	6 B1	7 29	3B40
Wimborne ,,	7 12	9 B 8	10B28	11 41	.. ..	3 26	6B10	7 45	3B49
Ringwood ,,	**7 31**	**9B26**	**10B47**	**11 56**	.. ..	**3 46**	**6B31**	**8 5**	**4 B 9**
Bourne'th C.,,	7 B 1	9 23	11s23	12 33	.. ..	3B56	6 20	7B41	3 57
Christchurch ,,	7B13	9 34	11s32	12 46	.. ..	3B26	6 34	7B54	4 11
Lymington ,,	..	9B30	11B 0	11B56	.. ..	4 B 0	6B43	8B18	4B10
Brockenhur't,,	7 54	10 0	11 20	1 15	.. ..	4 32	7 4	8 33	4 42
Soton. W. ,,	8 30	10 23	12P16	2 P 1	.. ..	5 7	7 35	9 8	5 18
Eastleigh ,,	9 12	10 45	12 2	1 30	.. ..	5 40	..	1010	6 39
Portsm'th T.,,	..	..	1 25	3 30	.. ..	..	9 0	2 30	..
Havant dep.	10 9	11 51	1 43	3 43	.. ..	6 44	9 13	2 44	7 38
Chichester arr.	10 29	12 14	2 5	4 4	.. ..	7 6	9 34	3 4	8 0
Bognor ,,	10 50	12 55	2 50	4 30	.. ..	7 40	10 7	3 27	8 30
Worthing ,,	11 29	1 3	2 54	4 55	.. ..	7 48	10 16	5 15	8 48
Shoreham ,,	11 38	1 13	3 15	5 16	.. ..	7 56	10 24	5 26	8 58
Brighton ,,	11 53	1 30	3 16	5 16	.. ..	8 13	10 40	5 50	9 15
Lewes ,,	12 24	1 59	3 46	6 2	.. ..	8 55	11 33	7 4	10 6
Eastbourne ,,	1 53	2 57	4 28	6 36	.. ..	9 33	12 10	9 0	11 55
Hastings ,,	2 17	3 22	4 55	7 10	.. ..	10 20	12 30	9 50	12 15

Fig 8. Brown's Clear Type Railway Time Table, Ringwood, December 1907, p. 57, 164 × 104 mm. Notes are used in the body of the table, indicated in this instance by the letters 'A – H', with the meaning of each explained beneath the table. © British Library Board. All Rights Reserved, PP.2500.ft.

tained details of the trains in two separate but related portions of the table: one under the title 'weekdays' and the other under the title 'Sundays'. In addition, the difference was highlighted by the bold rule dividing the sections [4].

We can see that type was used to indicate meaning in the timetable. Michael Twyman has traced the appearance of bold typefaces in the nineteenth century, observing the technical and stylistic changes that made bold typefaces possible. This involved the rise of 'non-linear' reading, whereby people were not intended to read all of a text, left to right, top to bottom. Instead, items were read selectively, as people searched for information that concerned them, reading vertically as well as horizontally. It was necessary to draw the reader's attention to key information in a text, and bold typefaces were one such strategy in the period after approximately 1820.[47] Upper case and bold typeface — either together or individually — were used to highlight items perceived to be of particular importance on a route and to make them more immediately accessible for the reader: in some, significant stations are immediately obvious [7]. Those existing towns that warranted stations were given a new importance, both locally and nationally; the railways also created new towns (such as Crewe) where previously there had been none. This reoriented relations between places and timetable design indicated to the passenger how these spatial relations were structured, both along the line (with stations of varying importance) and locally (only certain towns in a locality were accessible by train).

These design solutions were relatively straightforward; but timetables also had to convey information of much greater complexity. As the timetable attempted to convey more and more information, a mass of symbols were integrated into the tables amongst the times. These symbols were often explained in a key close to the relevant table, as they were certainly not immediately obvious [8]. It is possible that readers were already familiar with the conventions of the symbol in the text and the key with the explanation elsewhere (for example, the footnote); William Sherman has documented the use of symbols in this way in the sixteenth century.[48] Symbols and keys were to be found in timetable books as early as 1852 and were common by the 1860s,[49] when it was ob-served that 'by reason of the various signs and symbols having to be made use of, it is not so easy of interpretation as it might be'.[50] In the timetable, even the supposedly fixed times came with exceptions and caveats that the reader had to check carefully.

[to be continued]

Notes

1 A. Martin, 'End of the Line for Railway Timetables', The Guardian, 16 May 2007, http://www.guardian.co.uk/world/2007/may/16/ transport.uk accessed 15 January 2008. The printed timetable has not, however, disappeared: each railway company still issues printed timetables for its own services; timetable posters can be found at stations and the full national timetable is still published online, on the Network Rail website.

2 For example, in November 2007, a British national newspaper reported that 'many people find reading timetables and planning routes for travelling to interviews and jobs very confusing'. K. Corr, quoted in K. Hilpern, 'A Lift for the Economy', The Guardian, 28 November 2007, http://society.guardian.co.uk/publicservice-sawards/story/0,,2218986,00.html accessed 20 January 2008. See also, D. Bartram, 'The Presentation of Information about Bus Services', in Information Design: The Design and Evaluation of Signs and Printed Material, R. Easterby & H. Zwaga (eds.), John Wiley, Chichester, 1984, pp. 312 – 3; Y. Joshi, 'Design specifications for tables: a case-study', Typography papers, vol. 1, 1996, p. 93.

3 T. Putnam, 'Foreword: Design and Polity in Comparative Perspective', Journal of Design History, vol. 20, no. 2, 2007, p. 89.

4 E. P. Thompson, 'Time, Work-discipline, and Industrial Capitalism', Past and Present, no. 38, December 1967, pp.56-97. See also, S. Pollard, 'Factory Discipline in the Industrial Revolution', Economic History Review, New Series, vol. 16, no. 2, 1963, pp. 254 – 71.

5 S. Kern, The Culture of Time and Space, 1880 – 1918, Harvard University Press, Cambridge, 1983.

6 P. Glennie & N. Thrift, 'Reworking E.P. Thompson's " Time, Work-discipline and Industrial Capitalism "', Time & Society, vol. 5, no. 3, October 1996, pp. 275 – 99; P. Glennie & N. Thrift, 'The Spaces of Clock Times', in The Social in Question. New Bearings in History and the Social Sciences, P. Joyce (ed.), Routledge, London, 2002, pp. 151 – 74; P. Glennie & N. Thrift, 'Revolutions in the Times. Clocks and the Temporal Structures of Everyday Life', in Geography and Revolution, D. Livingstone & C. Withers (eds.), University of Chicago Press, Chicago, 2005, pp. 160 – 98.

7 Glennie and Thrift, 'Reworking E.P. Thompson', op. cit., p. 281.

8 E. Zerubavel, 'The Standardization of Time: A Sociological Perspective', American Journal of Sociology, vol. 88, no. 1, July 1982, pp. 5 – 10; M. O'Mal-

ley, Keeping Watch: A History of American Time, Viking Penguin, New York, 1990.

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10 W. Schivelbusch, The Railway Journey. Trains and Travel in the Nineteenth Century, trans. A. Hollo, Basil Blackwell, Oxford, 1980.

11 D.G. Simonsen, 'Accelerating Modernity: Time-space Compression in the Wake of the Aeroplane', Journal of Transport History, third series, vol. 26, no. 2, September 2005, p. 100.

12 E. Weber, Peasants into Frenchmen: The Modernization of Rural France, 1870 – 1914, Stanford University Press, Stanford, 1976.

13 D. Drummond, '" Railway Space " and the Creation of New Concepts of Nationhood in Victorian Britain', in Leeds Centre Working Papers in Victorian Studies, K. Sayer (ed.), 'Victorian Space(s)', vol. 8, 2006, pp. 24–42.

14 For example, on transport timetables see Bartram, op. cit., pp. 299–319; M. Horne, J. Roberts & D. Rose, 'Getting There: An Assessment of London Transport's Endeavour to Improve bus Passenger Information Literature for Central London, 1979 – 1985. Pt 1', Information Design Journal, vol. 5, no. 1, 1986, pp. 3 – 27; Horne et al., 'Getting there: Pt 2', Information Design Journal, vol. 5, no. 2, 1987, pp. 87 – 110; Y. Joshi, 'Graphic Representation of Railway Timetables: A Case-study', Information Design Journal, vol. 8, no. 2, 1996, pp. 189 – 91; E. Tufte, Envisioning Information, Graphics Press, Cheshire, 1990, pp. 24 – 6, 31, 45 – 7, 102 – 10. On tables in general, see P. Wright & K Fox, 'Presenting Information in Tables', Applied Ergonomics, vol. 1, no. 4, September 1970, pp. 234 – 2; P. Wright, 'Decision Making as a Factor in the Ease of Using Numerical Tables', Ergonomics, vol. 20, no. 1, January 1977, pp. 91 – 6; P. Norrish, 'Moving Tables From Paper to CRT Screen', Visible Language, vol. 18, no. 2, 1984, pp. 154 – 70; Joshi, op. cit., pp. 93 – 104. On functional liter-acy and timetables, see M. MacKenzie-Taylor, 'Developing Design Through Dialogue: Transport Tables and Graphs', in Visual Information for Everyday Use: Design and Research Perspectives, H. Zwaga, T. Boersema & C. M. H. Hoonhout (eds.), Taylor & Francis, London, 1999, pp. 177 – 93; P. Wright, 'Functional Literacy: Reading and Writing at Work', Ergonomics, vol. 31, 1988, pp. 265 – 90.

15 Reflecting its role in railway operation, the timetable as an object has received a reasonable degree of study: M. Rickards, 'Timetable', in The Encyclopedia of Ephemera, M. Rickards (ed.), British Library, London, 2000, pp. 327 – 28; J. Simmons, 'Timetables', in The Oxford Companion to British Railway History, J. Simmons & G. Biddle (eds.), Oxford University Press, Oxford, 1997, pp. 513 – 5; J. Simmons, 'Bradshaw', in The Express Train and Other Railway Studies, J. Simmons (ed.), David St John Thomas, Nairn, 1994, pp. 173–93; J. Simmons, 'Working Timetables', in The Express Train, Simmons (ed.), pp. 194–212; J. Gough, 'A Note on Midland Railway Operating Documents' in The Impact of the Railway on Society in Britain. Essays in honour of Jack Simmons, A. K. B. Evans & J. V. Gough (eds.), Ashgate, Aldershot, 2003, pp. 61 – 73. Timetable design and its history has been less extensively discussed; valuable contributions are R. Kinross, 'The Rhetoric of Neutrality', Design Issues, vol. 2, no. 2, 1985, pp. 18 – 30; M. Twyman, 'The Bold Idea: The Use of Bold-looking Types in the Nineteenth Century', Journal of the Printing Historical Society, vol. 22, 1993, pp. 124, 127 – 9; M. Twyman, Printing 1770 – 1970. An Illustrated History of its Development and Uses in England, British Library Press, London, 1970, pp. 17, 120 – 1, 188 – 9; C. Barman, 'Timetable Typography', Typography, vol. 5, 1938, pp. 9 – 17. A number of bibliographic articles also provide descriptive details of timetables: C. Lee, The Centenary of Bradshaw, Railway Gazette, London, 1940; E. H. Dring, 'Early Railway Time Tables', The Library, fourth series, vol. 2, no. 3, 1 December 1921, pp. 137 – 73; P. Fitzgerald, The Story of Bradshaw's Guide, Field & Tuer, London, 1890.

16 For example, Leah Price reflects the dominance of books in the history of reading in 'Reading: The State of the Discipline', Book History, vol. 7, 2004, pp. 304 – 20; Jonathan Rose concentrates on book reading in The Intellectual Life of the British Working Classes, Yale University Press, New Haven, 2001; and Alberto Manguel merges all types of reading matter into book reading in A History of Reading, Harper Collins, London, 1996. Discussion on the Society for the History of Authorship, Reading and Publication email list concentrates almost entirely upon books or newspapers, a focus reflected in the papers delivered at their annual conferences. For a detailed account of timetable reading in the past, see M. Esbester, 'Nineteenth-century Timetables and the History of Reading', Book History, vol. 12, 2009 (forthcoming).

17 P. Dobraszczyk, 'Useful Reading? Designing Information for London's Victorian Cab Passengers', Journal of Design History, vol. 21, no. 2, 2008, pp. 121 – 41.

18 Provision of services is influenced, for example, by planning, route and stock availability, route capacity, economics of de-mand and supply, politico-legal factors and cultural elements.

19 For example, Rusher's Reading Guide noted that 'Harris and Co's pass upwards [i.e. towards London] daily, from three to four in the morning [time of departure] … Change horses at Mr Hayman's, Castle-street [place of departure] — Golden Cross, Charing Cross, London [destination].' Rusher's Reading Guide, or Gentleman's and Trader's Directory, James Rusher, Reading, 1801, unpaginated, p. 7.

20 For example, see John Johnson Collection, Bodleian Library, Oxford, Coaches 1, A New Stage, handbill (c.1800). On the list, see M. Twyman, 'A Schema for the Study of Graphic Language', in Processing of Visible Language, Vol. 1, P. Kolers, M. Wrolstad & H. Bouma (eds.), Plenum, New York, 1979, pp. 117 – 50, esp. p. 124.

21 The Railway Traveller's Handy Book (1862), J. Simmons (ed.), Adams & Dart, Bath, 1972, p. 21.

22 For example, monthly issues of Bradshaw's reflected this increasing complexity: from 98 pages of timetables in 1852, to over 200 in 1862, approximately 410 in 1888 and over 940 pages in 1912.

23 M. Twyman, 'Articulating Graphic Language: A Historical Perspective', in Toward a New Understanding of Literacy, M. Wrolstad & D. Fisher (eds.), Praeger, New York, 1986, pp. 203, 206 – 7.

24 Railway companies also produced 'working timetables', which included every movement on the railway lines (such as goods trains) and were used only by railway employees in order to ensure the efficient operation of the system as a whole. These timetables followed the same structural layout as passenger timetables (matrix arrangement, locations on the vertical axis, increasing time throughout the day on the horizontal axis), and they seem to have evolved in the mid-1840s, shortly after passenger timetables and as traffic intensified. They were designed for a skilled subset of the population — railway employees — who were familiar with the intricacies of railway operation and timetables. On the similar

design of information, compare the passenger timetables featured in this article with the working timetables in London and South Western Railway, Working Time Tables, 1 June – 30 September 1909 (1909), Ian Allen, Shepperton, 1969. Surprisingly, given they were private operational documents, working timetables have received a limited amount of historical discussion: Simmons, 'Working Timetables,' op. cit.; Gough, op. cit. As with railway passenger timetables, working timetables were observed contemporaneously: a series of (largely descriptive) articles, by G. Sekon, appeared in The Railway Magazine between October 1907 and February 1909.

25 For example, see British Postal Guide, London, 1857, pp. 128 – 9.

26 Brief descriptions and historical contextual information about these documents can be found in M. Rickards, The Encyclopedia of Ephemera.

27 Simmons, 'Bradshaw', op. cit., p. 174; Barman, op. cit., p. 10.

28 J. Simmons, The Victorian Railway, Thames & Hudson, London, 1991, pp. 314 – 8.

29 F. Williams, Our Iron Roads, 2nd edn., 1883, Frank Cass & Co., London, 1968, p. 386.

30 The Times, 29 August 1874, p. 9, col. c.

31 For example, see W. Collins, The Moonstone, Harper and Bros, New York, 1868, p. 87; W. Collins, No Name, vol. 2, Sampson Low, Son and Co, London, 1862, pp. 358 – 9; W. Collins, Man and Wife, vol. 1, F.S. Ellis, London, 1870, pp. 225 – 6; vol. 3, F.S. Ellis, London, 1870, p. 35; G. Gissing, In the Year of Jubilee, vol. 2, Lawrence and Bullen, London, 1894, p. 202; G. Gissing, Born in Exile, Adam and Charles Black, London, 1893, p. 416; A. Trollope, The Golden Lion of Granpere, Harper and Bros, New York, 1872, p. 87.

32 The Times, 14 August 1885, p. 10, col. d.

33 G. K. Chesterton, 'Literature of Information', The Speaker, 3 August 1901, p. 126.

34 Needless to say, there were attempted innovations that resulted in some unusual designs, which, although interesting, did not become common and failed to last much longer than a year or two. It is impossible to say whether this was a result of the failure of the designs themselves or of the conservatism of the producers (who had capital invested in the existing designs) and users (who knew how to use the existing designs).

35 Simmons, 'Bradshaw', op. cit., p. 173.

36 Interestingly, this reversed the use of axes in chronological tables, which represented time down the vertical axis and space/ place across the vertical axis. On chronological tables, see Twyman, 'Articulating Graphic Language', op. cit.

37 On columns, see Twyman, 'Articulating Graphic Language', op. cit., p. 203. This also helped the printer to set the table. This convention lasted until the mid-twentieth century and the influence of Herbert Spencer, who questioned the value of column rules in making timetable information accessible. For example, see H. Spencer, Design in Business Printing, Sylvan Press, London, 1952; Twyman, 'Articulating graphic language', op. cit., p. 210.

38 MacKenzie-Taylor, op. cit., pp. 180, 191.

39 Statutes (Definition of Time) Act, 1880 (43 and 44 Vict. c. 9).

40 Simmons notes that this debate was not new to the railways, but had taken place on a limited scale when fast mail coaches were introduced in the 1780s. However, in the 1840s as the railways developed into a national network accessible by large numbers of the population, who were thereby able to move at increasing speeds, the debate about national/local time became more pressing. Simmons, The Victorian Railway, op. cit., pp. 345 – 6.

41 John Johnson Collection, Bodleian Library, Oxford, Railway Folder III, Grand Junction Railway, Liverpool, Birmingham and London Time and Fare Table, 1 February 1846.

42 John Johnson Collection, Bodleian Library, Oxford, Railway Folder III, Great Western Railway, London to Cirencester, Bath, Bristol and Bridgewater, 1 June 1842.

43 A. Hill, The Complete Time Table, Andrew Hill, Glasgow, 1897, p. 4.

44 Glennie and Thrift, 'Reworking E.P. Thompson', op. cit., pp. 282 – 4; Glennie and Thrift, 'Revolutions in the Times', op. cit., pp. 162, 171 – 7.

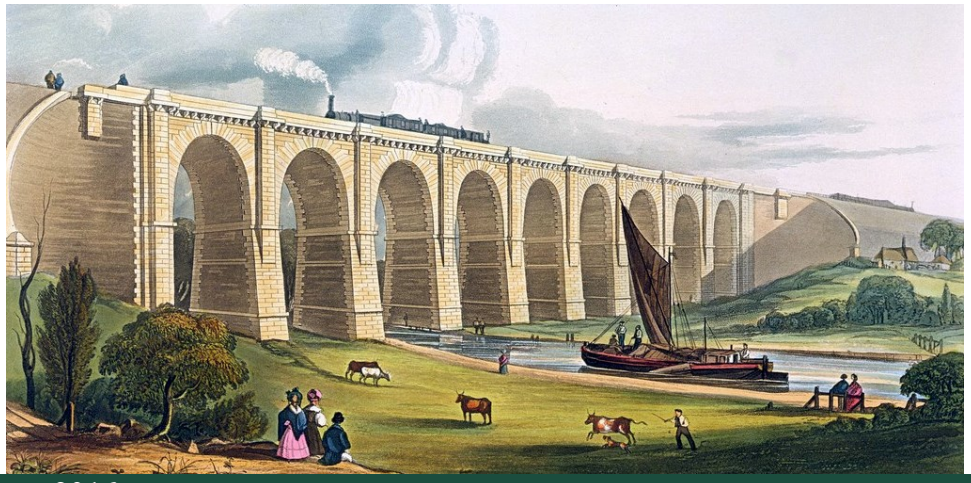
45 C. Dickens, Dombey and Son, Bradbury and Evans, London, 1848, p. 155. See also R. D. Blackmore, Erema, or, My Father's Sin, vol. 3, Smith, Elder & Co., London, 1877, pp. 61 – 2.

46 This issue still confronts timetable designers to this day: Mackenzie-Taylor, op. cit., p. 185.

47 Twyman, 'The Bold Idea', op. cit.

48 W. Sherman, 'Toward a History of the Manicule', in Owners, Annotators and the Signs of Reading, R. Myers, M. Harris & G. Mandelbrote (eds.), Oak Knoll Press and British Library, London, 2005, p. 38.

49 Symbols are to be found in Bradshaw's of 1852 (for example, see National Railway Museum, York (NRM), BRAD 14/12, Bradshaw's Threepenny Guide for all the Railways, Bradshaw & Blacklock, London, December 1852, p. 72). By the 1860s, some complex symbol and key arrangements were to be found in virtually every Bradshaw (for example, NRM, BRAD 22/10, Bradshaw's Threepenny Guide for all the Railways, Bradshaw & Blacklock, London, October 1860, p. 88).



To the Football– a 6 hour journey

David Whiteford

By the early 20th Century Football (Aussie Rules of course) was a well-established sport in Western Australia with regional leagues set up throughout the state. Matches between towns often required special trains to convey players and spectators and perhaps one of the longest journeys made in WA was that between the goldfields centres of Kalgoorlie and Leonora – a rail distance of 161 miles.

A long discussed match between Kalgoorlie's Mines Rovers and a Northern Combined Association select 18 team was held at Leonora on Sunday 4 September 1910. The Leonora Football Association chartered a special train to depart Kalgoorlie at 7.30am and (according to the Weekly Notice) arrive in Leonora at 1.30pm – a 6 hour journey (The *Kalgoorlie Miner* advertised a 1pm arrival). Four second class coaches and a brake-van made up the consist. Fares from Kalgoorlie were 12/6 return, Menzies 7/6 and Kookynie 5/- and it was reported that over 300 passengers arrived in Leonora, but as most came from intermediate stations the association lost a considerable amount over the train.

The day was not only about football and special tram services were run on the Leonora – Gwalia tram route to give visitors the opportunity to visit Gwalia and the district's major mine, Sons of Gwalia as well as enabling Gwalia residents to visit Leonora. The *Leonora Miner* reported that each tram trip run in quick succession

KALGOORLIE 5 Hours

KALGOORLIE To See the Sights.

FOOTBALL EXCURSION TRAIN

SUNDAY, OCTOBER 9. SUNDAY, OCTOBER 9

NORTHERN DISTRICT CLUBS v. MINES,

TO BE PLAYED AT KALGOORLIE.

RETURN FARES—

LEONORA AND MALCOLM	12s 6d
KOOKYNIE	10s 0d
MENZIES and WOOLGAR	7s 6d

TRAIN LEAVES—

LEONORA, 6.30 a.m. MALCOLM, 7.5 a.m.
KOOKYNIE, 8.5 a.m. MENZIES, 9.35 a.m.
WOOLGAR, 9.50 a.m.

Return from Kalgoorlie, 7.30 p.m.

Any one Without a Railway Ticket on return must pay full fare, as no Single Fares are to be issued.

brought car loads of visitors on pleasure bent. A 3/6" gauge steam tram commenced the two mile route in 1903 and on 5 October 1908 the service was electrified and it was the sole electric car and two steam trailers that ran these 1910 services. The electric services ended in 1916 when a fire destroyed the powerhouse but the tram continued to operate using a converted road motor vehicle until 1921.

The Leonora Football Association said they'd have a strong team to meet the Rovers and a good game should result. However after Leonora had won 7 goals 12 to Rovers' 6 goals 10 the *Kalgoorlie Miner* said The match resulted in a surprise for all parties concerned, as it was looked upon as a foregone conclusion that the Mines would have an easy win.

The return train was timed to leave Leonora at 7.30pm and after the match the visiting team and representatives were entertained at a banquet at the Grand Hotel. An unfortunate incident was that a number of players and visitors, relying on the latitude usually granted on these excursions, did not hurry to catch the train, and only arrived at the station in time to see it steam away. The advertised time for leaving was 7.30 and after waiting ten minutes the inspector, who was on the train, insisted on it leaving and the consequence was that some 40 or 50 passengers were left behind. Much indignation was expressed by the local people, as well as the disappointed passengers at the action of the railway officials in not allowing time for the players to board the train, as they were all within hail on their way down from the banquet when the train pulled out. Considering that the promoters of the excursion paid £128 for the use of the train for the day, the railway officials might have allowed as much latitude as is usually the case on such excursions.

Kalgoorlie residents on the train were due in town at 1.30am on the Monday. For those left in Leonora the next train was No. 6 mixed due out at 8.15am Monday, due in Kalgoorlie at 4.42pm – nearly 8 ½ hours later.

The *Leonora Miner* predicted a return match at Kalgoorlie before the close of the season and such a game was

EASTERN GOLDFIELDS RAILWAY.]

Kalgoorlie to Leonora and Laverton.

DOWN.

Maximum Speed.	Mileage from Perth.		STATIONS.	WEEK DAYS. 3 Goods.	7 Pass.	1 Pass.	5 Mixed.
M.P.H.	M.	C.		Tu. exc. A.M.	A.M.	S P.M.	S P.M.
35	374	78	KALGOORLIE † dep.	6 0	9 40	...	11 15
35	385	34	Gidgi * ... arr.	...	...	...	...
30			Do. ... dep.	...	10a 6	...	a
30-25	393	27	Smithfield * ,,	...	10a25	...	a
...	395	44	Paddington * arr.	...	...	...	...
			Do. ... dep.	7 15	10 34	...	12 8
25	398	22	Broad Arrow ‡† arr.	7 25	10 42	...	12 17
30			Do. ... dep.	7 45	10 52	...	...
...	405	11	Bardoc Tank w	...	...	...	...
30	406	28	Bardoc * ... arr.	8 15	...	...	...
35			Do. ... dep.	8 25	11 18	...	...
...	411	43	Vettersburg * ,,	...	11a30	...	...
...	415	54	Scotia * ...	...	a	...	...
35	420	1	Canegrass * arr.	...	...	...	...
30			Do. ... dep.	...	11a49	...	...
...	429	53	Goongarrie † arr.	10 0	12 10	...	...
...			Do. ... dep.	10 15	12 13	...	...
30-35	437	47	Comet Vale * ,,	...	12 a33	...	...
...	444	36	Doney's * ,,	...	a	...	...
35-30	451	41	Woolgaar * ,,	...	1a 7	7 30 20	
				P.M.			
30	455	39	Menzies † arr.	12 15	1 17	7 30	
					Mixed.		
35			Do. ... dep.	...	1 47	...	...
...	470	2	Myamiu *	...	2a26	...	...
...	484	32	Jessop's Well w* arr	...	...	...	...
...			Do. ... dep.	...	3a16	...	...
...	489	35	Niagara * ... arr.	...	...	...	...
...			Do. ... dep.	...	3a35	...	...
35	493	27	Kookynie † arr.	...	3 47	...	...
30			Do. ... dep.	...	3 57	...	...
30	497	6	Tampa * ... arr.	...	...	...	...
35			Do. ... dep.	...	4a 9	...	...
35-30	504	16	Dingo Creek * ,,	...	4a31	...	...
30-35	513	35	Melita * ... ,,	...	4a58	...	...
35	521	60	Malcolm † arr.	...	5 23	...	...
35	...	...	Do. ... dep.	...	5 38	...	...
35	533	69	Gwalia † ... arr.	...	6 12	...	...
30	...	...	Do. ... dep.	...	6 18	...	...
30	535	71	LEONORA † arr.	...	6 25	...	...
					M.W. F.S.		
35	521	60	Malcolm † dep.	...	5 53	...	...
35	538	21	Eulaminna * arr.	...	...	...	...
25			Do. ... dep.	...	6 a 36	...	...
25	542	41	M. Murrin † arr.	...	6 47	...	...
30			Do. ... dep.	...	7 2	...	...
30	551	54	Kowtah * ... arr.	...	...	...	...
35			Do. ... dep.	...	7 a 27	...	...
...	555	40	566-Mile Tank	...	...	...	...
...	560	68	Morgans † arr.	...	8 0	...	...
			Do. ... dep.	...	8 15	...	...
35-20	573	4	Condenser *	...	a	...	...
20	575	69	Hawk's Nest * arr.	...	...	...	...
30			Do. ... dep.	...	9 a 5	...	...
...	583	32	Craiggiemore * ,,	...	a	...	...
30	585	49	Laverton † arr.	...	9 30	...	...

Load of No. 7 may be completed at Kalgoorlie with loaded trucks (subject to regulations) for Menzies, and beyond.

Guard of No. 3 to give "line clear" from Comet Vale to Goongarrie. Guard of No. 7 to obtain "line clear" from Menzies before leaving Comet Vale.

No. 7 must connect with No. 87, 2nd Div. Express, when running.

[EASTERN GOLDFIELDS RAILWAY.

Laverton and Leonora to Kalgoorlie. UP.

Maximum Speed.	STATIONS.	WEEK DAYS. 6 Mixed.	20 Goods. Can be attached.	4 Goods. Tues.	4 Goods.	4A Empty.	4 Mixed. Sat. only.	12 Goods.
M.P.H.		M.W.F. A.M.	S P.M.	P.M.	Wed. Th. Fr. P.M.	S P.M.	P.M.	A.M.
35	Laverton † .. dep.	5 35	1 45	...	...	...	...	...
...	Craiggiemore * ...	a	a	...	...	...	...	...
35	Hawk's Nest * arr.	...	...	...	...	...	...	...
30	Do. ... dep.	6 a 2	2a12	...	...	...	...	...
30-35	Condenser * ...	a	a	...	...	...	...	...
...	Morgans † ... arr.	6 46	...	...	...	...	...	...
...	Do. .. dep.	6 56	3 6	...	...	...	...	...
...	566-Mile Tank ...	...	...	...	...	...	...	...
35	Kowtah * ... arr.	...	...	...	...	...	...	...
30	Do. ... dep.	7a29	3a39	...	...	...	...	...
...	Murrin Murrin † arr.	7 54	...	...	...	...	...	...
...	Do. ... dep.	8 4	4 12	...	...	...	...	...
30	Eulaminna * arr.	...	...	...	...	...	...	...
35	Do. ... dep.	8a17	4a25	...	...	...	...	...
35	Malcolm † arr.	8 52	5 6	...	...	...	...	...
		Daily.						
30	Leonora † ... dep.	8 15						
30	Gwalia † ... arr.	...						
35	Do. ... dep.	8 29						
35	Malcolm † .. arr.	9 1						
35	Do. ... dep.	9 25	...	...	...	...	...	
35-30	Melita * ,,	9a47	...	...	...	...	...	
...	Dingo Creek * ,,	10a16	...	...	...	...	...	
...	Tampa* ... arr.	...	...	...	...	...	...	
...	Do. ... dep.	10a38	...	...	...	...	...	
...	Kookynie † ... arr.	10 49	...	...	...	...	...	
...	Do. ... dep.	10 58	...	...	...	...	...	
...	Niagara * ... arr.	...	...	...	...	...	...	
...	Do. ... dep.	11a12	...	...	...	...	...	
50	Jessop's Well w * arr.	...	...	...	...	...	...	
35	Do. ... dep.	11a38	...	...	...	...	...	
		P.M.						
...	Myamiu *	12a15	...	...	...	...	...	
...	Menzies † ... arr.	12 58	...	...	...	...	...	
		Pass. 8						
...	Do. ... dep.	1 20	...	5 0	10 45	7 30	10 45	Sunday.
...	Woolgaar * ... arr.	...	...	...	...	7 40	...	
...	Do. ... dep.	1a30	...	...	...		a	
					A.M.			
...	Doney's *	a	...		...	...	a	
35-30	Comet Vale * ,,	2 a 2	...		...	...	a	
..	Goongarrie † arr.	2 20	...	6 30	12 15	...	...	
							Sun.	
							A.M.	
...	Do. ... dep.	2 25	...	6 50	12 50	...	12 50	
...	Canegrass * arr.	...	...	...	...	...	...	
...	Do. ... dep.	2a46	...	...	...	...	a	
...	Scotia *	a	...	...	...	...	a	
...	Vettersburg * ,,	3 a 9	...	...	...	...	a	
...	Bardoc * ... arr.	...	..	...	...	...	a	
...	Do. ... dep.	3 23	..	...	...	...	...	
...	Bardoc Tank w ...	...	...	...	...	...	...	
...	Broad Arrow ‡ † arr.	3 41	...	9 0	2 45	...	2 45	
...	Do. ... dep.	3 46	...	9 30	3 15	...	3 15	12 27
30	Paddington * arr.	...	..	...	...	...	...	...
35	Do. ... dep.	3 53	..	...	...	...	a	...
...	Smithfield* ,,	a	...	...	...	...	a	..
35	Gidgi * ... arr.	...	...	...	...	...	...	...
30	Do. ... dep.	4a16	...	...	...	...	a	...
30	KALGOORLIE ‡ arr.	4 42	...	12 0	5 45	...	5 45	1 23

Takes goods load.

Football Team to Leonora.

(Hired Special.)

Sunday, September 4.

STATIONS.		F1, Pass.	STATIONS.		F2, Pass.
		A.M.			P.M.
Kalgoorlie	... dep.	7 30	Leonora ...	... dep.	7 30
		P.M.			A.M.
Leonora ...	... arr.	1 30	Kalgoorlie	... arr.	1 30

Loco. Department to supply engine power; Station-master, Kalgoorlie, four second class coaches, brake van, and guard.

Specials stop, where required, for passengers.

Passengers will not hold ordinary tickets but must be in possession of cards issued by the organisers, which will only be available between Kalgoorlie and Leonora and by above special trains.

arranged for Sunday 9 October. The special train was to leave Leonora at 6.30am *and promises to be one of the most popular trips yet organised on the northern fields.* The weather on Sunday 9 was fine but attendance at Kalgoorlie Oval smaller than anticipated. There were ugly rumours about the disappointing form shown by some of the Mines Rovers against Boulder City the previous Sunday and this deterred many fans. However the train was well patronised and a handsome surplus was made which [made] up for the previous loss when the Mines team came to Leonora. However the northern football team faced a loss this time, going down 2 goals 6 to Mines Rovers 10 goals 11. The Leonora contingent put it down to playing on turf after the hard grounds of the north.

Unfortunately there was no timetable for the return train in the Weekly Notice but the advertisement in the *Leonora Miner* said the return was due to leave Kalgoorlie at 7.30pm, with the train offering 8 hours to see the sights – and there were also no subsequent reports of passengers being left behind!

References:

Kalgoorlie Miner 1/9/1910, 7/9/1910, 8/10/1910 and 15/10/1910

Leonora Miner 10/9/1910, 8/10/1910 and 15/10/1910

Weekly Notice 36 1910

Newcastle 100

Jim Wells

IT IS ALWAYS OF INTEREST to review how bus operators group routes when producing printed or pdf timetables. Some of course don't group – one route, one timetable.

This case study looks at Newcastle, NSW's routes 100, 106,107, and 111.

This is from the cover. Straightaway we have a problem because these routes are not the only ones providing service from these places to Newcastle.

The key to the timetable is a suburb not mentioned above – Mayfield – as all four routes serve it.

Let's get into the detail.

All routes run to or from what the timetable calls Newcastle meaning the CBD located near the now defunct Newcastle railway station. Some would say the CBD itself is now defunct as it is no longer a significant retail area, and has little other 'business' activity. The hospital has closed down. This situation creates a major challenge for designers of Newcastle's bus network

The 111 Mount Hutton service is fascinating. The run time is over an hour and it probably has more street intersection turns than any other service one can think of. Remember the scene from "Murder, She Wrote". Ma'am, the bus goes up the street and the bus goes down the street. The 111 certainly does this but on many of them.

By one count, there are over fifty streets covered, some counted more than once. This must be a nightmare for driver training. Thank goodness for the STA's practice of putting direction signs on power poles to aid drivers.

The first leg of the northbound journey is from Mount Hutton via places you don't need to know about on the other side of the Pacific Highway to Charlestown. But the 111 is not the only service from the Mount to Charlestown, there are also the 310, 317, and 320. Indeed the 310 and 320 also run to Newcastle on a more direct route than the 111, typically taking well under an hour and providing a half hourly service compared to the 111's hourly (Mon-Fri inter peak, no service on Sunday).

Charlestown is now a major retail centre, the biggest in the Newcastle district. It is served by many bus routes as one would expect. For our purposes we need to note that this is the starting point for the 100.

But to revert to the 111. It runs on a more easterly course to Mayfield serving Adamstown Heights, the Kotara shopping centre and then New Lambton and Adamstown, in the process crossing under the railway at Northcott Dr. The railway level crossing at Adamstown would be an unhappy place for bus services; indeed no bus uses it. The delays with freight trains there can be extensive. The good news for 111 users is that it's only a short walk from the stop in St James Road to the station.

The 100 runs roughly half-hourly (some services start at Jesmond and terminate at City West) and crosses the railway unseen (tunnel under Charlestown Road), before serving the John Hunter hospital and reaching Jesmond.

This is the terminal for the remaining two services of our interest – the 106 and 107. The distinction between the two is not evident from the timetable (it should be) but is clear from the map; the 107 does a Warabrook circuit which adds about ten minutes to the journey time. The 106 has departures from Jesmond at 6:44, 7:10, 7:52. The 107 has a service at 8:28 and runs hourly until 15:39 with the 106 running the four remaining services, last at 19:58. So the Warabrook circuit does not get a peak hour service. This pattern is evident on Saturdays; on Sundays all services are 106. By the way the Warabrook circuit is quite some distance from Warabrook railway station; the one that services the University. Note that the 100 serves this latter destination.

As is clear from the map the 100 provides a far more direct service to Mayfield and beyond than the 106/107 which meanders around Shortland and Sandgate.

The meeting point for all our services is the intersection of Maud St. and Maitland Road in Mayfield. The 100, 106 and 107 run east along Maitland Road; the 111 does its thing in Mayfield North to join the others at Barton St. before serving the Mayfield shopping centre. The 100 has a direct route into Newcastle; the 106/107 reasonably direct via Tighes Hill, and, you guessed it, the 111 does its twists and turns.

A strong case can be made for inclusion of the 104 service in the booklet as it serves Mayfield East as well as the University and Jesmond and is in the same number grouping of 100 to 111. There are no other routes in this grouping; indeed there are no other 100 series services except for the 118 which is the Stockton ferry and the once only on Friday and Saturday nights 'night owl' bus to Fern Bay.

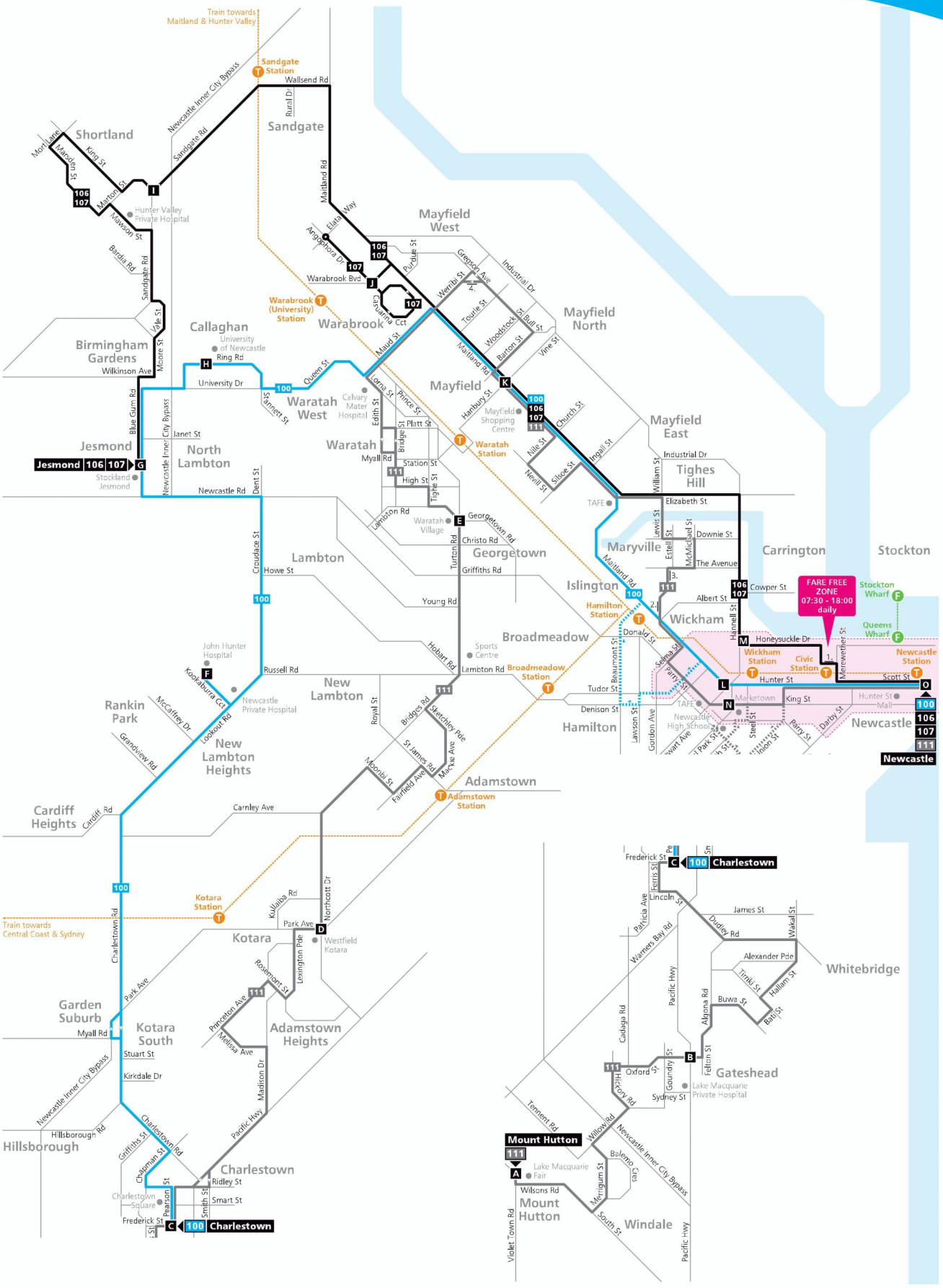
The 104 has a standalone booklet.

In addition to the inclusion of a Warabrook circuit timing point for the 107 service, the timetable would be enhanced by a timing point to breakup up the long sector of the 100 from

Charlestown to the John Hunter Hospital, perhaps at Garden Suburb. Likewise the 111 could have a timing point at Tighes Hill.

I am grateful to Len Regan for his assistance.

	Monday to Friday (continued...)	♿	♿		♿	♿
map ref	Route Number	100	107	100	100	111
A	**Lake Macquarie Fair** Wilsons & Violet Town Rds	...	...	...	...	12:42
B	**Gateshead** Oxford Street & Pacific Highway	...	...	...	...	12:51
C	**Charlestown** Frederick Street & Pearson Street	12:09	...	...	12:47	12:59
D	**Westfield Kotara** Park Avenue & Northcott Drive	...	...	...	...	13:11
E	**Waratah** Georgetown Road & Turton Road	...	...	...	...	13:24
F	**John Hunter Hospital**	12:23	...	...	13:01	...
G	**Jesmond** Blue Gum Road & William Street	12:33	12:28	12:51	13:11	...
H	**University of Newcastle** Mathematics Building	12:37	...	12:55	13:15	...
I	**Shortland** Marton Street & Sandgate Road	...	12:41	...	...	...
J	**Warabrook** Warabrook Boulevard	...	12:58	...	...	...
K	**Mayfield** Maitland Road & Hanbury Street	12:49	13:05	13:07	13:27	13:37
L	**City West** Hunter Street & Stewart Avenue	13:03	...	13:21	13:41	...
M	**Wickham** Hannell Street & Honeysuckle Drive	...	13:16	...	...	...
N	**Marketown** King Street	...	...	...	...	13:54
O	**Newcastle Station** Scott Street	13:11	13:24	...	13:49	14:01


Train towards Maitland & Hunter Valley
Sandgate Station
Wallsend Rd
Rural Dr
Sandgate
Newcastle Inner City Bypass
Sandgate Rd
Shortland
North Lane
Marsden St
King St
Minton St
Newson St
Hunter Valley Private Hospital
Bardia Rd
Vale St
Moore St
Wilkinson Ave
Birmingham Gardens
Callaghan
University of Newcastle
Ring Rd
University Dr
Blue Gum Rd
Janet St
Jesmond
Stockland Jesmond
North Lambton
Newcastle Inner City Bypass
Newcastle Rd
Dent St
Croudace St
Howe St
Lambton
Russell Rd
John Hunter Hospital
Koonadan Cct
Newcastle Private Hospital
Rankin Park
McCaffrey Dr
Grandview Rd
Lookout Rd
New Lambton Heights
New Lambton
Cardiff Heights
Cardiff Rd
Carnley Ave
Charlestown Rd
Park Ave
Garden Suburb
Myall Rd
Kotara South
Stuart St
Kirkdale Dr
Hillsborough Rd
Hillsborough
Griffiths St
Chatsman St
Pearson St
Charlestown Square
Frederick St
Ridley St
Smart St
Smith St
Charlestown
Kotara Station
Train towards Central Coast & Sydney
Kotara
Kulaba Rd
Park Ave
Northcott Dr
Westfield Kotara
Lexington Pde
Rosemont St
Princeton Ave
Melissa Ave
Madison Dr
Pacific Hwy
Adamstown Heights
Adamstown
Adamstown Station
Mayfield West
Maitland Rd
Elara Way
Angophora Dr
Warabrook Blvd
Purdue St
Gregson Ave
Werribi St
Industrial Dr
Tourle St
Woodstock St
Barton St
Bull St
Vine St
Mayfield North
Warabrook (University) Station
Warabrook
Maud St
Mayfield
Hanbury St
Mayfield Shopping Centre
Church St
Nile St
Nevill St
Silsoe St
Ingall St
Mayfield East
Industrial Dr
William St
Tighes Hill
TAFE
Elizabeth St
Lewis St
Estell St
McMichael St
Downie St
The Avenue
Maryville
Carrington
Stockton
Waratah West
Queen St
Lorna St
Edith St
Calvary Mater Hospital
Prince St
Platt St
Bridge St
Waratah
Waratah Station
Myall Rd
Station St
High St
Tighe St
Waratah Village
Lambton Rd
Georgetown Rd
Christo Rd
Georgetown
Griffiths Rd
Turton Rd
Young Rd
Islington
Hamilton Station
Maitland Rd
Albert St
Cowper St
Wickham
Donald St
Honeysuckle Dr
Wickham Station
Civic Station
Hannell St
Merewether St
FARE FREE ZONE 07:30 - 18:00 daily
Stockton Wharf
Queens Wharf
Newcastle Station
Scott St
Hunter St
Broadmeadow
Sports Centre
Broadmeadow Station
Hobart Rd
Lambton Rd
Tudor St
Denison St
Hamilton
Beaumont St
Selma St
Parry St
Lawson St
Gordon Ave
Marketown
King St
Hunter St Mall
Newcastle
Darby St
Steel St
Union St
Newcastle High School
Royal St
Bridges Rd
Sketchley Pde
Mackie Ave
St James Rd
Mortlake St
Fairfield Ave
Frederick St
Ferris St
Lincoln St
Patricia Ave
Warners Bay Rd
James St
Dudley Rd
Wakal St
Alexander Pde
Whitebridge
Tirriki St
Hallam St
Buwa St
Batt St
Pacific Hwy
Cadaga Rd
Alpona Rd
Felton St
Oxford St
Goundry St
Gateshead
Lake Macquarie Private Hospital
Sydney St
Tennent Rd
Willow Rd
Mount Hutton
Lake Macquarie Fair
Wilsons Rd
Balemo Cres
Merrigum St
Newcastle Inner City Bypass
Windale
South St
Violet Town Rd
Pacific Hwy