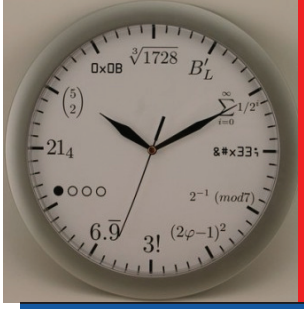
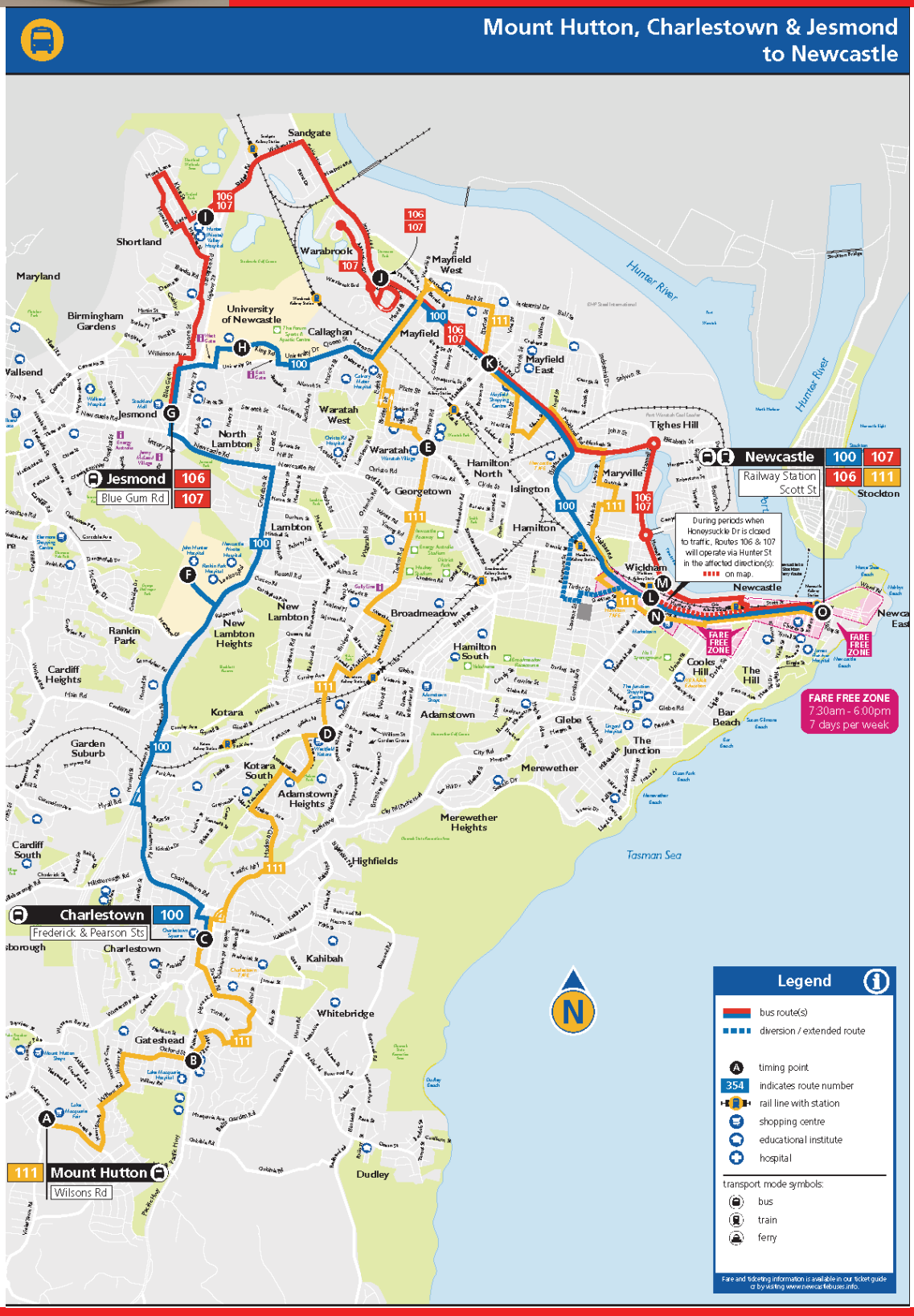


The Times

January 2012

A journal of transport timetable history and analysis



Inside: Mondayitis

Can you read this?

Hunter River Bus

Royal Commission into Railway Timetables

RRP $4.95
Incl. GST

The Times

Journal of the Australian Association of Time Table Collectors Inc. (A0043673H)
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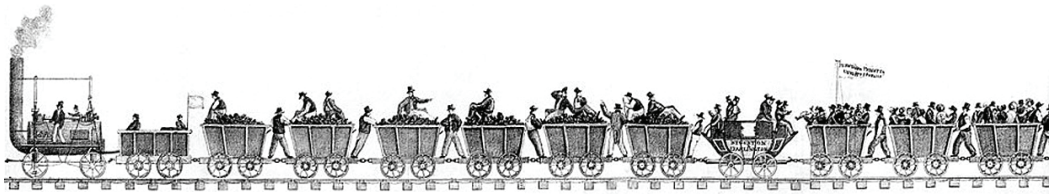
January 2012 **Issue No. 334 Vol 29 No. 01**

—Contents—

On the front cover

Sandwiched between coal-bearing escarpment and the waters of the Hunter River, the strip of land between Hamilton and Newcastle has always been a hotly-contested corridor, where trams, trains and buses have been squeezed in cheek by jowl. In this issue, Jim O'Neil looks at bus routes ancient and modern which funnel commuters and shoppers into the CBD. If certain elements have their way, the buses may soon oust the rail– the corridor of which will be developed into some modern horror.



Contributors Geoff Lambert, Robert Henderson, Jim O'Neil, The Royal Commissioners

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Where to start?

By GEOFF LAMBERT

Monday, Monday can't trust that day
Monday, Monday, it just turns out that way
Oh Monday, Monday, won't go away
Monday, Monday, it's here to stay
Oh Monday, Monday
Oh Monday, Monday

In the September 2011 issue of *The Times*, Albert Isaacs made brief reference to the commencement days and frequencies of railway timetables. The timetable which Albert reviewed was dated 1st March 1889 and its cover bore the exhortation reproduced at the foot of this page. This was fairly plain on its face– timetables were issued monthly and on the first day of the month. At this stage of railway development it was fair to say that this had become a tradition. It was a tradition that was under some pressure.

In Victoria in 1889, the era of the Octopus Act, no fewer than 15 segments of railway line were opened, a rate of slightly more than 1 per month, each requiring a new timetable for that segment and often revised timetables on the connecting lines. One railway (Healesville) was actually opened on the date of the timetable which Albert reviewed.

It was more than just new lines that dictated the frequent re-issue of timetables. Traffic on railways was growing at a compound rate of 13% per year, or 1% per month. New trains were constantly needed.

The first of the month seems to have been chosen by most railways as the most logical day to commence a new timetable. But was it? Judaeo-Christian religion had long operated on the basis that the week was the next most convenient unit of time to regulate human activity after the day- *"On the seventh day, He rested"*. After that, came the seasons and the year. There was not much wriggle room for the entity we know as the month– this derived, after all, from the Moon.

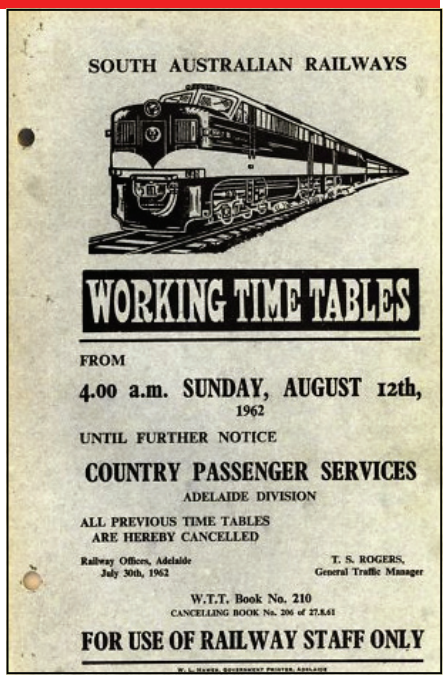
Railways were wont to issue timetables in which the day of the month of the commencement of the timetable was not even given. In this, they were probably aping Bradshaw which could not bring itself (for religious reasons) to even mention the names of the months. It gave only numbers. Timetables like this implied that they came into effect on the first day of that month– perhaps. Bradshaw, it must be said, was hardly a paragon in this. The early issues did carry a day-date, usually the 25th of the month for some reason.

Railways were already moving away from this tradition in the 1880s. The Victorian Railways was loathe to completely scuttle it though.

VR Public Time Tables (especially) had begun to move away from it in the early 1880s and most issued after about 1884 commenced on Mondays and hence hardly ever on the first of a month. The few exceptions were made because of the opening of Main Lines– a new PTT had been issued on Tuesday 8th May in 1888 when the Bairnsdale line opened, for instance.

The issuing of working timetables was equally haphazard. As the table on page 5 shows, they tended to be less often issued on the 1st of the month (46% vs. 51%) and less often on Mondays (31% vs. 37%), but the difference was not very marked. For seven of the timetable issue days, the 1st was also a Monday.

If a new timetable started on a particular day, most people would think—incorrectly as it turns out—that the commencement time would be midnight. This was very often not the case, as the example of the SAR WTT of 12-Aug-1962 shows. It commenced at 4 AM. Why is this? I do not know. For years, the SAR had followed the American tradition and had chosen 12:01 AM as the commencement time of a new timetable. The 1962 issues seem to have been the first to deviate from this but the divergence grew with the years. New timetables in 1966 had a commencement hour of 10 AM– conceivably because this was during church hours. This is probably a matter of convenience. This seems to be so for the weather bureau, whose day commences at 9 AM, rather than 12 AM. One reasons is so that its legions of rural weather observers can get dad out on the tractor and the kids bundled off to school before reading the rain gauge. Rain that falls during breakfast is yesterday's rain. On New Years Day, breakfast rain is last year's rain. On the other hand, BOM rain predictions for Sydney cover a 10 PM to 10 PM day (noon to noon GMT).


SOUTH AUSTRALIAN RAILWAYS

WORKING TIME TABLES

FROM
4.00 a.m. SUNDAY, AUGUST 12th, 1962
UNTIL FURTHER NOTICE

COUNTRY PASSENGER SERVICES
ADELAIDE DIVISION

ALL PREVIOUS TIME TABLES ARE HEREBY CANCELLED

Railway Offices, Adelaide
July 30th, 1962

T. S. ROGERS,
General Traffic Manager

W.T.T. Book No. 210
CANCELLING BOOK No. 206 of 27.8.61

FOR USE OF RAILWAY STAFF ONLY

Even on modern railways, it is not always true that the natural division point is midnight. On ARTC, it seems that 6 AM is in some ways a more logical time to turn over a new leaf. That is certainly the hour at which the ARTC Train Control Boards refresh themselves most comprehensively. This may be related to a staff shift change– again a matter of convenience.

In this regard, it is also often supposed—and again incorrectly—that natural divisions in time marking are logically organised to coincide. In the simplest example, it would seem logical that the first day of the year ought to fall on the first day of the first month. This has hardly ever been so. New Year's Day has variously fallen on 15-March, 15-June, 15-September and 25-December. Indeed, since the inception of the Julian calendar, New Year's Day has more often fallen on those days than on 1-Jan. This seems peculiar until we again remember that the financial year commences on 1st-June. When I lived in the USA, the personal income tax year commenced on 16-April. This is still an acceptable boundary for US taxpayers.

Boundaries always cause problems, but no more so than in the computer age, where "splitting and lumping" often go astray. Can anyone say whether midnight is any particular day– yesterday, today, or tomorrow? This is not a trivial question, because important consequences flow from the answers. In Bill Gates' world midnight is defined to be 24:00:00 hours in ***Today.*** There is no such a time as 00:00:00. Again, this is often a matter of convenience. Computer time has to have a starting point and,

N.B.—Suggestions or proposed alterations for next month must be forwarded to the Traffic Manager NOT LATER than the 15th instant.

R. H. FRANCIS,
TRAFFIC MANAGER.

since time is always expressed in days and fractions of a day, there has to be both a starting time and a starting day. For Bill Gates that is the first tick of the clock on 1-Jan-1900. For the late Steve Jobs, it was the first tick of the clock on 1-Jan-1904. If you use a program like Excel, you have probably already discovered this. I ran foul of it recently when trying to draw up a timetable for the landing of Space Shuttle Endeavour shown on page 16. The reason is complicated, but it has to do with the vagaries introduced by the existence of Leap Years and the fact that a year is, on average, about 365.2422 days long and not 365¼ days, as we were taught in school. This is why the year 1900 was not a leap year in the Gregorian calendar which we use today. People have rioted over these things.

The Day1/Day2 boundary problem existed on railways long before the existence of computers and was one of the reasons why so many American railroads started a new timetable at 12:01 AM. Here the decision was a long way from just being a matter of convenience or of nit-picking fussiness by pedants. Cornfield meets could result if train crews got it wrong because the timetable was for so long the *ne plus ultra* of safety. The American Association of Railroads had a kind of "Mothers Committee" which fielded questions from worried Managers of its member roads on all manner of rule and safety issues. The most popular class of question had to do with the precedence of trains on the night of a timetable change. One can see why, when one reads the critical Rule 4 of the Standard Code (rule book) reproduced above. The Committee spend 10 pages fielding questions about Rule 4 out of a total space (devoted to more than 250 rules) of just over 100 pages. It was important– but confusing—stuff. It was important stuff because the timetable was what we would call in Australia a "safeworking instrument". It practically had a power equivalent to that potent symbol the electric staff. Possession by the trainmen of an ETT was nine-tenths of the law.

Railways are not always free agents in this matter. To avoid such confusion and to facilitate interworking on adjacent systems, the European Parliament has laid down the following law on railway timetables:

The change of working timetable shall take place at midnight on the second Saturday in December. Where a change or adjustment is carried out after the winter, in particular to take account, where appropriate, of changes in regional passenger traffic timetables, it shall take place at midnight on the second Saturday in June and at such other intervals between these dates as are required. Infrastructure managers may agree on different dates and in this case they shall inform the Commission if international traffic may be affected.

TIME-TABLES.

4. Each time-table, from the moment it takes effect, supersedes the preceding time-table, and its schedules take effect on any division, or subdivision, at the leaving time at their initial stations on such division, or subdivision. But when a schedule of the preceding time-table corresponds in number, class, day of leaving, direction, and initial and terminal stations with a schedule of the new time-table, a train authorized by the preceding time-table will retain its train orders and assume the schedule of the corresponding number of the new time-table.

Schedules on each division, or subdivision, date from their initial stations on such division, or subdivision.

Not more than one schedule of the same number and day shall be in effect on any division, or subdivision.

That is a forced cooperation. Britain, for one, was not impressed, but had to knuckle under.

Where multiple railway networks exist—in parallel or end-to-end—synchronicity of timetable change seems desirable. For a long time in Australia, it hardly mattered and it hardly ever happened. It does now– at least to some extent. This is at least partly a consequence of the interdigitization of systems such as occurs between V/Line/ARTC/RailCorp. ARTC issues new timetables on a fairly fixed schedule– in January, April, July and October– but sometimes in between (with different version numbers). RailCorp. recasts its timetables only once a year– in October. Thus there is synchronicity between the two systems only in October– and even then things can go awry as they did last year because of trouble with the Southern Sydney Freight Line.

In North America, there seems to be no formal agreement about these matters and certainly no legal requirement. However synchronicity has happened in the past. The most notable example of this seems to have been 26-Apr-1964, where practically every Class 1 railroad on the continent issued a complete suite of new Employee Time Tables. I do not know what reasons lay behind this– but it is most striking.

If timetables are to commence on the first day of the week– then what IS that day? Only two candidates seem to present themselves—Sunday and Monday. If, however, we allow into the debate the current timetables of NSW RailCorp, we are going to have to allow Saturday as a contestant. Ambivalence rules here also. For instance, most Australian railways recently settled on a convention on interstate train numbering that assigned the first digit of a train number to the day of the week and made Sunday #1 (top right p 5). This is the practice, but if one looks inside the timetables– especially that of ARTC, one finds that tabular and graphical time tables assume something different– Monday appears first and Sunday appears last (2nd top right, p5). This seems to be a biblical hangover. NSW Rail Corp issues its Working Timetable in two volumes for weekdays (vol 1 Passenger, vol 4 Freight) and for weekends (Vol 2 passenger, Vol 5 freight). By date, vols 2 and 5 precede vols 1 and 4 because their commencement date is the Saturday ***preceding*** the first day of the weekday timetable (Monday). No other railway does this, I think. The old practice in NSW was to commence Vol 1 on the Monday and volume 2 on the ***following*** Saturday.

We have taken quite a drunkard's walk to get back to our original implicit question– when do most timetables commence? The charts on page 5 show that Sunday is overwhelmingly favoured in North America and is well out in front in Australia.

One can carry out a similar analysis for the month of issue. Such an analysis shows no favouritism in Australia but a heavy preponderance on April (Spring) and September/October (Fall) in North America.

The Mamas & The Papas got it wrong!

Effect Date	Month Day	Weekday	System PTT	System WTT
2-Feb-1880	2	Mon	X	X
1-Mar-1880	1	Mon	X	X
1-Apr-1880	1	Thu	X	X
3-May-1880	3	Mon	X	X
Jun-1880	???	???	X	X
Aug-1880	???	???	X	X
Sep-1880	???	???	X	X
1-Oct-1880	1	Fri	X	X
1-Nov-1880	1	Mon	X	X
1-Dec-1880	1	Wed	X	X
1-Jan-1881	1	Sat	X	
3-Feb-1881	3	Thu	X	
7-Mar-1881	7	Mon	X	
9-May-1881	9	Mon	X	
1-Jun-1881	1	Wed	X	
1-Jul-1881	1	Fri	X	
1-Aug-1881	1	Mon	X	
1-Sep-1881	1	Thu	X	
1-Oct-1881	1	Sat	X	
1-Nov-1881	1	Tue	X	
1-Dec-1881	1	Thu	X	X
11-Jan-1882	11	Wed	X	X
2-Feb-1882	2	Thu	X	X
1-Mar-1882	1	Wed	X	X
3-Apr-1882	3	Mon	X	
1-May-1882	1	Mon	X	
1-Jun-1882	1	Thu	X	
1-Jul-1882	1	Sat	X	
1-Aug-1882	1	Tue	X	
1-Sep-1882	1	Fri	X	
2-Oct-1882	2	Mon	X	
1-Nov-1882	1	Wed	X	
1-Dec-1882	1	Fri	X	X
8-Jan-1883	8	Mon		X
1-Feb-1883	1	Thu		X
1-Mar-1883	1	Thu		X
1-Aug-1883	1	Wed		X
20-Aug-1883	20	Mon		X
15-Oct-1883	15	Mon		X
7-Jan-1884	7	Mon	X	
3-Mar-1884	3	Mon	X	
2-Apr-1884	2	Wed	X	
5-May-1884	5	Mon	X	
2-Jun-1884	2	Mon	X	
3-Jul-1884	3	Thu	X	
1-Sep-1884	1	Mon	X	
1-Oct-1884	1	Wed	X	X
1-Dec-1884	1	Mon	X	
15-Jan-1885	15	Thu	X	
2-Mar-1885	2	Mon	X	
4-May-1885	4	Mon	X	
1-Jul-1885	1	Wed	X	
1-Sep-1885	1	Tue	X	
3-Dec-1885	3	Thu	X	X
9-Feb-1886	9	Tue		X
1-Apr-1886	1	Thu	X	X
12-Apr-1886	12	Mon		X
1-Jul-1886	1	Thu	X	X
3-Nov-1886	3	Wed	X	X
19-Jan-1887	19	Wed	X	X
8-Jun-1887	8	Wed	X	X
10-Oct-1887	10	Mon	X	
19-Dec-1887	19	Mon	X	X
19-Mar-1888	19	Mon		X
8-May-1888	8	Tue	X	X
1-Oct-1888	1	Mon	X	X
1-Mar-1889	1	Fri	X	X
12-Aug-1889	12	Mon	X	
Number on 1st of month	33		30	16
Number on Mondays		27	22	11
Total	68		59	35

ARTC

1. TRAIN NUMBERING

ARTC owns and issues train numbers for the ARTC Network.

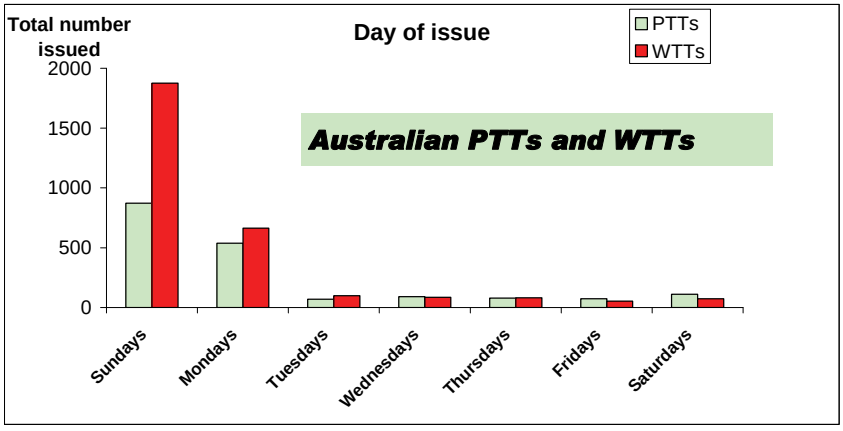
1.1. Freight and Passenger (Defined Interstate Rail Network)

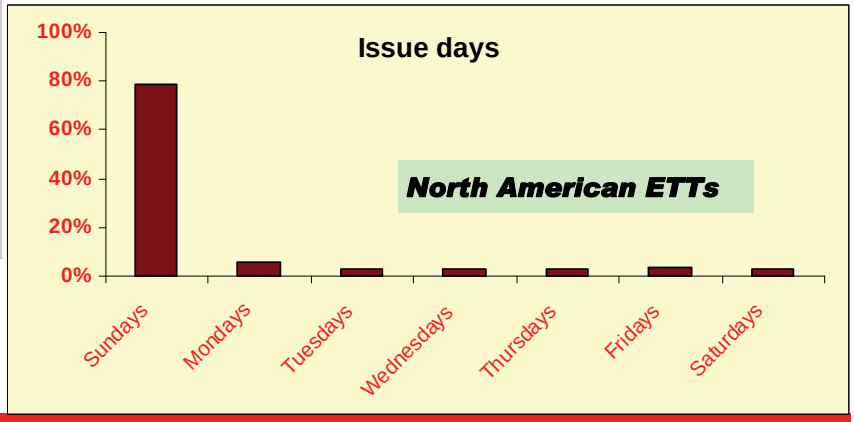
Character	Description
NNNN	**First character – The day of the week on which the train departs** 1 = Sunday 2 = Monday 3 = Tuesday 4 = Wednesday 5 = Thursday 6 = Friday 7 = Saturday

PAGE: NSWVIC 500 — Melbourne (Tottenham) - Albury

1st page of Tottenham-Albury MTP 15-Jan-2012

TRAIN NO		8605	5T24	9603V	8615	2MC2	2MB2	8625	2MB7	5T22	2MB4
LENGTH (Metres)		0	0	865	0	1500	1500	0	1500	0	1500
DAYS		MON	MON	MON	MON	MON	MON	MON	MON	MON	MON
SCHEDULE		XPT	XPT	EXP	XPT	SFR	SFR	XPT	SFR	XPT	SFR
STATUS		M	M	M	M	M	M	M	M	M	M
OPERATOR		VLP	CLK	PND	VLP	PNT	PNT	VLP	INTR	CLK	PNT
COMMODITY		CNYPASS	CNYPASS	GENFRGT	CNYPASS	GENFRGT	GENFRGT	CNYPASS	GENFRGT	CNYPASS	GENFRGT
Tottenham	arr										
	dep	07:24	08:44	09:02	12:14	14:42	16:18	18:16	18:46	20:09	20:24
Tottenham Junction	arr										
	dep	07:25	08:44	09:03	12:15	14:43	16:20	18:16	18:46	20:09	20:25
Albion Junction	arr										
	dep										
Sunshine	arr										
	dep	07:26	08:45	09:04	12:16	14:44	16:21	18:17	18:47	20:10	20:26
McIntyre Loop	arr							18:21			
	dep	07:29	08:48	09:07	12:19	14:47	16:24	18:34	18:50	20:13	20:29
Tullamarine Loop	arr										
	dep	07:33	08:52	09:13	12:23	14:52	16:29	18:39	18:55	20:17	20:34
Jacana Loop	arr										
	dep										
Broadmeadows	arr	07:35			12:25			18:41			
	dep	07:36	08:54	09:18	12:26	14:57	16:34	18:42	19:00	20:20	20:39
Somerton Loop	arr			09:24							
	dep	07:40	08:56	-----	12:30	15:02	16:39	18:46	19:05	20:23	20:44
Donnybrook	arr					15:13					
	dep	07:45	09:02		12:36	15:15	16:49	18:52	19:15	20:29	20:54
Wallan	arr					15:27					
	dep	07:55	09:09		12:45	15:47	16:59	19:01	19:25	20:36	21:04
Kilmore East	arr		09:19								
	dep	08:04	09:31		12:54	15:56	17:09	19:10	19:35	20:45	21:14
Tallarook	arr										
	dep	08:20	09:44		13:10	16:16	17:27	19:26	19:55	20:58	21:32
Seymour Platform	arr	08:24			13:14			19:30			
	dep	08:26	09:46		13:16	16:24	17:35	19:32	20:03	21:00	21:40
Seymour Loop	arr										





Legibility of Timetables

ROBERT HENDERSON

I was prompted to think about the legibility of timetables when I was looking at the Route 148 timetable of 1959 in Jim O'Neil's article entitled "Thornleigh" in the August 2011 issue of The Times. It has made me list some of my pet peeves about the difficulty of reading timetables.

Jim drew attention to one feature which detracted from the Route 148 timetable dated 16 June 1959, namely that buses to Dartford Road appeared in the two separate sections of the timetable. This made it hard if you wanted to quickly scan all trips to or from that part of the route. In this case, as the whole timetable was contained on a single page, it was possibly not overly difficult to see all Dartford Road trips without much trouble.

However, a very similar situation occurs in a number of Sydney Buses' current timetables. I refer, for example, to the fact that on weekdays and Saturdays there is an average 10-minute headway between Manly Wharf and Warringah Mall, quite a heavily patronised section of route. But nowhere is that fact advertised. Trips on Routes 155 and 156 (three an hour) are shown in one timetable booklet, those on Route 159 (one trip) in a second booklet and those on Route 169 (two trips) in a third. There is not even the slightest reference in any of those timetables to the existence of additional buses along the busy corridor in other timetables.

The lack of a complete timetable also applies to the Metrobus routes that Sydney Buses run, and this was canvassed by Jim Wells in the July 2011 issue of The Times.

Another oddity about some current Sydney Buses timetables is almost the opposite of that described between Manly Wharf and Warringah Mall. An example of what I am talking about here is the timetable for buses between Burwood and Strathfield on the south side of the railway (see Fig 1, right). In this case, Route 407 runs from Burwood to Strathfield via one quite lengthy route and Route 408 also runs between the two stations (and continues on to Flemington and Rookwood Cemetery) by a much shorter and quite different route. Yet they are displayed on the same timetable as if the two routes provide some alternative to each other. This is despite the fact that the only common points on the two routes are the termini themselves. For most people, there is a vastly quicker and more frequent train service to cover that journey.

Another of my dislikes about some of Sydney Buses timetables is the separation of explanations about symbols and abbreviations from the symbols themselves (which occurs in some timetable booklets, but not others). To go back to Routes 155 and 156, the timetable booklet consists of 16 pages. Alphabetical symbols are used on pages 2, 3, 5, 10, 11 and 13, but there is no reference to where the explanation of those symbols may be found. The explanations are in fact on page 16, right at the back of the booklet.

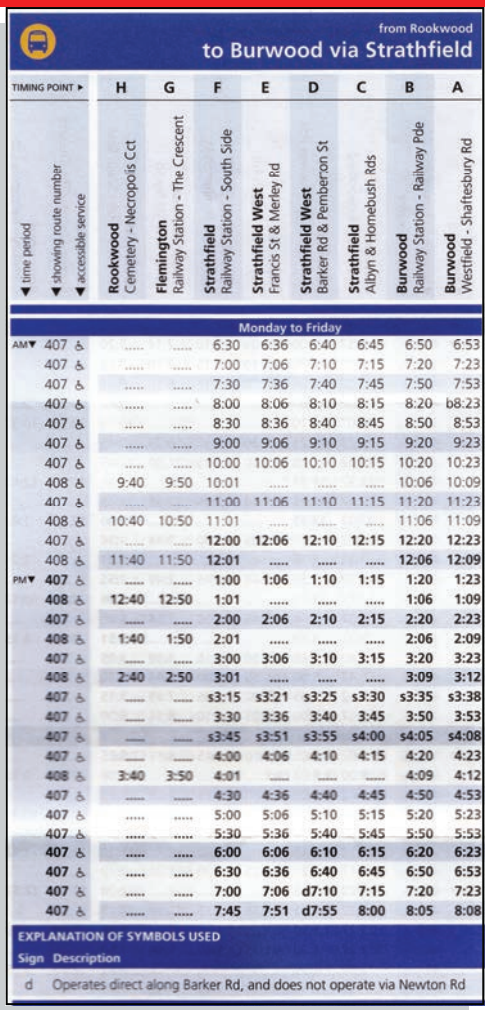
For many people, reading a timetable is hard enough without having to search for explanations of letters or symbols. So why not make reading a timetable as user-friendly as possible? In this booklet, there is sufficient white space on a number of pages for the explanations to be fitted in on the double-page spreads where the symbols occur, which would facilitate overall legibility of the timetable.

Another offender against this principle is the current set of CityRail timetables. In the timetable pages, they too have letters to explain things about various trips. But there is nothing to tell the reader that the explanations may in fact be found on page 8 of each booklet. Each booklet contains a table of contents, but the explanations are not listed as a separate item in that table, as they are apparently regarded merely as a segment of "General Information".

Yet, going back to "the good old days, when I was a lad", things were so much better. Looking at an old NSWGR Suburban Time-Table (note the hyphen), for example that of 5 May 1968, the foot of each page has text to the effect of "For explanatory notes, see page …".

Talking about explanations about letters and symbols reminds me of Busways' timetables for Routes 881 and 882 (Campbelltown-Leumeah area) back in the 1990s (see 2). It is littered with letters on almost every trip (the six Sunday trips, for example, have a total of five letters to help explain where they run and which trains they connect with). It also offends in that the two routes had almost no commonality (except for the added complication that they were combined at nights and on Sundays). But what really upsets me about it is the explanations for letters W, Y and Z.

The explanation for letter W, which refers to one trip in the morning peak hour, has 64 words in it. The explanation for letter Y, which refers to the combined trips on Saturday and Sunday mornings, has 66 words in it. And, to top it all off, the explanation for letter Z, which refers to the combined trips during the evening, has a grand total of 77 words in it! How many potential passengers tried to read all that, but gave up in disgust and caught a taxi?



from Rookwood
to Burwood via Strathfield

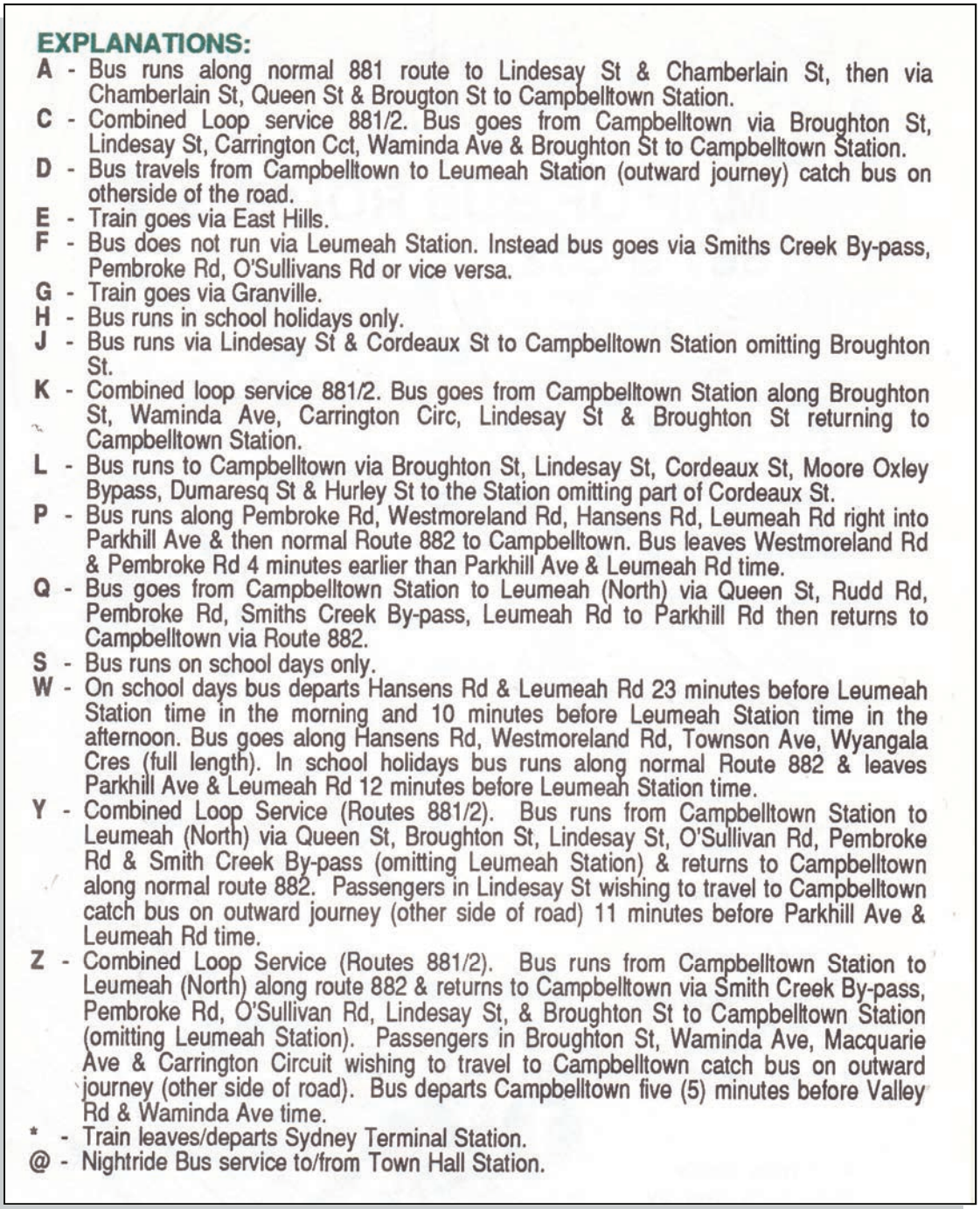
TIMING POINT ▸		H	G	F	E	D	C	B	A
▼ time period		Rookwood Cemetery - Necropolis Cct	Flemington Railway Station - The Crescent	Strathfield Railway Station - South Side	Strathfield West Francis St & Merley Rd	Strathfield West Barker Rd & Pemberton St	Strathfield Albyn & Homebush Rds	Burwood Railway Station - Railway Pde	Burwood Westfield - Shaftesbury Rd
▼ showing route number									
▼ accessible service									
Monday to Friday									
AM▼	407 ♿	.....	.....	6:30	6:36	6:40	6:45	6:50	6:53
	407 ♿	.....	.....	7:00	7:06	7:10	7:15	7:20	7:23
	407 ♿	.....	.....	7:30	7:36	7:40	7:45	7:50	7:53
	407 ♿	.....	.....	8:00	8:06	8:10	8:15	8:20	b8:23
	407 ♿	.....	.....	8:30	8:36	8:40	8:45	8:50	8:53
	407 ♿	.....	.....	9:00	9:06	9:10	9:15	9:20	9:23
	407 ♿	.....	.....	10:00	10:06	10:10	10:15	10:20	10:23
	408 ♿	9:40	9:50	10:01	.....	.....	.....	10:06	10:09
	407 ♿	.....	.....	11:00	11:06	11:10	11:15	11:20	11:23
	408 ♿	10:40	10:50	11:01	.....	.....	.....	11:06	11:09
	407 ♿	.....	.....	12:00	12:06	12:10	12:15	12:20	12:23
	408 ♿	11:40	11:50	12:01	.....	.....	.....	12:06	12:09
PM▼	407 ♿	.....	.....	1:00	1:06	1:10	1:15	1:20	1:23
	408 ♿	12:40	12:50	1:01	.....	.....	.....	1:06	1:09
	407 ♿	.....	.....	2:00	2:06	2:10	2:15	2:20	2:23
	408 ♿	1:40	1:50	2:01	.....	.....	.....	2:06	2:09
	407 ♿	.....	.....	3:00	3:06	3:10	3:15	3:20	3:23
	408 ♿	2:40	2:50	3:01	.....	.....	.....	3:09	3:12
	407 ♿	.....	.....	s3:15	s3:21	s3:25	s3:30	s3:35	s3:38
	407 ♿	.....	.....	3:30	3:36	3:40	3:45	3:50	3:53
	407 ♿	.....	.....	s3:45	s3:51	s3:55	s4:00	s4:05	s4:08
	407 ♿	.....	.....	4:00	4:06	4:10	4:15	4:20	4:23
	408 ♿	3:40	3:50	4:01	.....	.....	.....	4:09	4:12
	407 ♿	.....	.....	4:30	4:36	4:40	4:45	4:50	4:53
	407 ♿	.....	.....	5:00	5:06	5:10	5:15	5:20	5:23
	407 ♿	.....	.....	5:30	5:36	5:40	5:45	5:50	5:53
	407 ♿	.....	.....	6:00	6:06	6:10	6:15	6:20	6:23
	407 ♿	.....	.....	6:30	6:36	6:40	6:45	6:50	6:53
	407 ♿	.....	.....	7:00	7:06	d7:10	7:15	7:20	7:23
	407 ♿	.....	.....	7:45	7:51	d7:55	8:00	8:05	8:08

EXPLANATION OF SYMBOLS USED

Sign	Description
d	Operates direct along Barker Rd, and does not operate via Newton Rd

Fig 1 No two ways about it? Oh yes there are, but you have to read between the lines!

Even if a reader can find where the explanations are, a further difficulty is whether those explanations are listed in any sensible order. To exemplify this defect, I looked at a series of my Route 43 (Chatswood-Ryde-West Ryde) timetables, run by Hunters Hill Bus Company and later North & Western Bus Lines. In the timetable when the route first commenced in 1967, there were no symbols at all, with such variations to the standard route as there were being spelled out in readable text right in the timetable itself (see Fig 3) – a method which I thoroughly applaud. By the time of the 1970 timetable, however, there were five symbols and letters



EXPLANATIONS:

A - Bus runs along normal 881 route to Lindesay St & Chamberlain St, then via Chamberlain St, Queen St & Brougton St to Campbelltown Station.
C - Combined Loop service 881/2. Bus goes from Campbelltown via Broughton St, Lindesay St, Carrington Cct, Waminda Ave & Broughton St to Campbelltown Station.
D - Bus travels from Campbelltown to Leumeah Station (outward journey) catch bus on otherside of the road.
E - Train goes via East Hills.
F - Bus does not run via Leumeah Station. Instead bus goes via Smiths Creek By-pass, Pembroke Rd, O'Sullivans Rd or vice versa.
G - Train goes via Granville.
H - Bus runs in school holidays only.
J - Bus runs via Lindesay St & Cordeaux St to Campbelltown Station omitting Broughton St.
K - Combined loop service 881/2. Bus goes from Campbelltown Station along Broughton St, Waminda Ave, Carrington Circ, Lindesay St & Broughton St returning to Campbelltown Station.
L - Bus runs to Campbelltown via Broughton St, Lindesay St, Cordeaux St, Moore Oxley Bypass, Dumaresq St & Hurley St to the Station omitting part of Cordeaux St.
P - Bus runs along Pembroke Rd, Westmoreland Rd, Hansens Rd, Leumeah Rd right into Parkhill Ave & then normal Route 882 to Campbelltown. Bus leaves Westmoreland Rd & Pembroke Rd 4 minutes earlier than Parkhill Ave & Leumeah Rd time.
Q - Bus goes from Campbelltown Station to Leumeah (North) via Queen St, Rudd Rd, Pembroke Rd, Smiths Creek By-pass, Leumeah Rd to Parkhill Rd then returns to Campbelltown via Route 882.
S - Bus runs on school days only.
W - On school days bus departs Hansens Rd & Leumeah Rd 23 minutes before Leumeah Station time in the morning and 10 minutes before Leumeah Station time in the afternoon. Bus goes along Hansens Rd, Westmoreland Rd, Townson Ave, Wyangala Cres (full length). In school holidays bus runs along normal Route 882 & leaves Parkhill Ave & Leumeah Rd 12 minutes before Leumeah Station time.
Y - Combined Loop Service (Routes 881/2). Bus runs from Campbelltown Station to Leumeah (North) via Queen St, Broughton St, Lindesay St, O'Sullivan Rd, Pembroke Rd & Smith Creek By-pass (omitting Leumeah Station) & returns to Campbelltown along normal route 882. Passengers in Lindesay St wishing to travel to Campbelltown catch bus on outward journey (other side of road) 11 minutes before Parkhill Ave & Leumeah Rd time.
Z - Combined Loop Service (Routes 881/2). Bus runs from Campbelltown Station to Leumeah (North) along route 882 & returns to Campbelltown via Smith Creek By-pass, Pembroke Rd, O'Sullivan Rd, Lindesay St, & Broughton St to Campbelltown Station (omitting Leumeah Station). Passengers in Broughton St, Waminda Ave, Macquarie Ave & Carrington Circuit wishing to travel to Campbelltown catch bus on outward journey (other side of road). Bus departs Campbelltown five (5) minutes before Valley Rd & Waminda Ave time.
* - Train leaves/departs Sydney Terminal Station.
@ - Nightride Bus service to/from Town Hall Station.

Fig 2 Alphabet Soup in the timetable

used, but conveniently listed in alphabetical order (see Fig 4). But by the 1980s, things had worsened to the extent that there were 13 symbols and letters used, the explanatory list of which appears to be in quite a random order (see Fig 5).

Returning to the 1959 Route 148 timetable in Jim's article, which I mentioned at the top of this article, did you notice two oddities? The first is the letters "NLR" above the first trip from Pennant Hills Station, which letters are not explained in the "Notes". The second is that, even though there is an explanation for the letters "DT", those letters are not actually used in the timetable itself!

I cannot let this subject pass without mentioning the explanation for letter C in Deanes Coaches timetable for Routes 127, 169 and 224 (Wynyard-Northwood-Longueville-Lane Cove) in 1974. It states that C means "From Mars Road in reverse". While I suspect I know what it really means, I cannot help but picture the poor driver engaging reverse gear at Mars Road and travelling all the way from there to Lane Cove and Northwood looking in his rear-vision mirrors!

To finish on another lighter note, please read what appears in the Route 93 timetable for Campbelltown-Leumeah via Ruse and Leumeah North in 1975, when Hal Woodward was General Manager of Campbelltown Transit Company (a forerunner of Busways Campbelltown). There it is stated for all to read:

"Did you know that there is a public Sydney telephone on this bus route, which, when operative, allows you to call metropolitan and Sydney calls at local rates, thus avoiding costly STD charges. The phone is located in Hansens Road, at the Westmoreland Road corner. Times of buses at this point are show in the timetable for your convenience."

RYDE to CHATSWOOD STATION

DEPART CHATSWOOD STATION	Depart Epping Rd. and Centennial Avenue	Depart Channel 10	Depart Epping & Lane Cove Roads	Depart Wicks & Cox's Roads	ARRIVE MACQUARIE UNIVERSITY	ARRIVE RYDE
	TO UNIVERSITY & RYDE →					
FRIDAYS						
a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.
-	-	5.56	-	6.1	-	6.7
-	-	6.14	-	6.19	-	6.25
-	-	6.34	-	6.39	-	6.45
6.40	6.49	6.53	-	6.58	-	7.4
7.0	7.8	7.12	7.16 arrive A.W.A. 7.18am			-
7.0	7.9	7.13	-	7.18	-	7.24
7.18	7.27	7.31	-	7.35	-	7.42
7.39	7.48	7.52	-	7.57	-	8.3
7.55	8.4	8.8	8.12 via A.W.A.		8.16	-.
8.0	8.9	8.13	-	8.18	-	8.24
8.5	8.14	8.18	8.22 via A.W.A.		8.26	-
8.17	8.26	8.30	-	8.35	-	8.44
8.20	8.29	8.33	8.37	-	8.41	-
8.40	8.49	8.53	-	8.58	-	9.4
9.15	9.24	9.28	-	9.33	-	9.39
9.40	9.49	9.53	9.57	-	-	10.4
10.10	10.19	10.23	-	10.28	-	10.34
10.40	10.49	10.53	-	10.58	-	11.4
11.10	11.19	11.23	-	11.28	-	11.34
11.40	11.49	11.53	11.57	-	-	12.4
12.10	12.19	12.23	-	12.28	-	12.34
12.40	12.49	12.53	12.57	-	-	1.4
1.10	1.19	1.23	-	1.28	-	1.34
1.40	1.49	1.53	1.57	-	-	2.4
2.10	2.19	2.23	-	2.28	-	2.34
2.25	2.34	2.38	2.42	-	2.46	-
2.40	2.49	2.53	-	2.58	-	3.4
3.10	3.19	3.23	-	3.28	-	3.34
-	-	-	-	-	-	-
3.50	3.59	4.3	-	4.8	-	4.14
4.12	4.21	4.25	-	4.30	-	4.36
4.30	4.39	4.43	-	4.48	-	4.54
-	-	-	-	-	-	-
-	-	-	-	-	-	-
4.50	4.59	5.3	-	5.8	-	5.14
-	-	-	-	-	-	-
5.11	5.20	5.24	-	5.29	-	5.35
-	-	-	-	-	-	-
5.32	5.41	5.45	-	5.49	-	5.55
5.53	6.2	6.6	-	6.10	-	6.16
6.16	6.25	6.29	-	6.33	-	6.39
6.50	6.59	7.3	-	7.7	-	7.13
7.26	7.35	7.39	-	7.43	-	7.49
7.47	7.55	7.59	-	8.3	-	8.8
8.50	8.58	9.2	-	9.6	-	9.11
9.40	9.48	9.52	-	9.56	-	10.1

formation - see overleaf

Fig 3 Brevity is the soul of wit– how to minimise those pesky explanatory letters.

GENERAL SERVICE INFORMATION

Abbreviations used in this time-table:-

ϕ	denotes Bus starts at Blenheim Road & Edmondson Street
B	denotes Runs on school days only
EC	denotes Bus diverts via Cox's Road, Lane Cove Road, Epping Road and Wicks Roa
TL	denotes This journey terminates after setting down last passenger, but not before Buffalo Road Ryde
ZZ	denotes During School term, school children will not be carried on this journey

ABBREVIATIONS USED IN THIS TIMETABLE

A	runs to or from Edmondson St & Blenheim Rd,Nth Ryde
Ø	departure time at Buffalo & Lane Cove Roads.
EC	bus diverts via Coxs,Lane Cove,Epping & Wicks Rds.
H	bus diverts via Centennial Ave, Burns Bay Rd, Cullen St, Mars Rd, Hallam St, Barwon St, Moore St to Epping Rd.
B	this bus runs on School Days only.
**	runs to or from Moore St & Epping Rd.
LS	runs on late shopping nights only.
P	runs 10 minutes later on late shopping nights.
C	runs via Epping Rd direct & omits Edmondson St.
Z	on school days, runs via Pacific Highway.
D	runs to or from Monash Road depot.
GS	runs to or from Tindale & Mowbray Rds.
RS	bus commences from Railway St bus stop in Chatswood opposite the Kings Theatre.

Fig 4 (above) and 5 (right); serial backsliding at Hunters Hill.

Bus Routes North of the Hunter Valley Railway

JIM O'NEIL

Government Buses in Newcastle, like those in Sydney, were grouped in sets by geographical area, each in a distinct group of hundreds. Those government buses which operated to the north of the old main line going from Newcastle to Maitland and further north were numbered in the 100 series. The 100s covered a very small geographical area. Almost all of them fell in the 10x series and the few government bus routes with numbers higher than 111 were short lived, part-time, or both.

My first timetable was acquired in the AATTC Auction number 30, held in 2010, and it was issued in 1948, reprinted up-to-date in September of that year (see our pages 10-11). It covered the buses operating in the suburb of Mayfield, on routes 101, 102 and 104. These are partly similar to those I came to know at a later time, but also had significant differences. The 104, which I'm not looking at today, was familiar to me, operating to the centre of Mayfield via Waratah Station and the southern parts of Mayfield. Routes 101 and 102 were not as I remembered them from the seventies. We can see from the information on routes on page 10 of the timetable that these two routes operated north of the Pacific Highway, through East Mayfield, splitting when they came to the shops, with the 101 running up the Highway and the 102 going north into West Mayfield, and both then crossing the railway again to terminate at Waratah Hospital. There were no buses operating up the Highway as far as Hanbury Street because this was the route used by the trams, which presumably had a separate timetable.

We may note the timetable was numbered A.9. - the same number as a reprinting in October 1949 which I also got from the same auction. I was familiar in the late fifties and sixties with a system in which timetables had a number in the top right hand corner, which went up as the year went on. At that time Newcastle did the same, with an N prefix before the number. In the forties Newcastle wasn't using this system, but one with a letter followed by a number. Around that time a letter and a number similarly identified Sydney tram timetables, but the Sydney government bus timetables I have from those years don't have any number in the top right hand corner

On the second page we have a list of Industrial services, operating to Heavy Industries from Newcastle, and a few short workings from Tighe's Hill. On page 13 of the timetable we find the Explanatory Notes listing the many and varied ways these buses operated through East Mayfield. The timetable tells us they were route 101 and 102 buses, but doesn't tell us which bus carried which number. As they didn't run west of Hanbury Street, we can't use that criterion to decide. In fact, Greg Travers and Richard Peck say in Government Bus Routes in Sydney and Newcastle that industrial services on routes 101 and 102 had been renumbered 405 in 1945.

The timetables for the regular routes don't give a separate timing point for Bull Street (or, indeed, Maud Street and the Highway). If you want to know which way the buses went through Mayfield West, you have to look under the column "Via Route Number". A bus on route 101 was usually followed by a route 102 bus, and vice versa. There are a few exceptions, a route 102 bus at 8.47 a.m. follows another 102 leaving Newcastle at 8.22, for example, but the blanks in the line between them suggest to me that there had once been a 101 service running then, which had now been cancelled. The first two buses on weekdays ran out as 101s and both returned as 102. The same thing happened on Saturdays, when, in fact the first five buses outbound were all 101s, but the third came back still on the route 101, while the other four returned as 102s. These two routes provided a basic service of two an hour from early morning to after midday, with considerable augmentation in peak hours. When we remember that the route 104 and the trams also served Mayfield, as well as the trains to Waratah Station, we can see it was well provided with public transport.

The trams were replaced by the route 105, which was extended to Maud St along the highway. This allowed the 101 via Mayfield East to be terminated at Hanbury St, and the 102 then ran to Hanbury St along the Highway. It was also extended southwards to Lambton from Waratah Hospital. Two new routes, the 100 to the University and the 108 to the Commonwealth Hostel were introduced at different times and the routes 102 and 105 swapped their routes through Mayfield West with the 102 now going up the Highway on its way to Lambton and the 105 going up Bull Street to Mayfield West, with some 105 journeys extended to Lambton.

This was the situation at the date of my next timetable December 1970 (see our pages 11-12) I actually caught the route 100 from my home in Waratah near the Hospital to work at the University when my car was not available. I have reproduced the front and back covers (with the map) and the first two pages of weekday services out of Newcastle (late evening services from 9 p.m. to 12.6 a.m. ran over on to the top of page 4.) There are two successive University services in the morning, leaving Newcastle at 8.2 and 8.25W (W indicates departs from Wood Street.) Thereafter there was a bus on the 100 approximately every hour, with those in shopping hours extended to Jesmond Centre (marked J.) The last bus of the day on the route 100 left Newcastle at 7.7 and terminated at Mayfield West outside University terms (indicated by M.) There were three 108 services, departing Newcastle at 6.15, 8.51 and 5.6 and another bus to the Commonwealth Hostel operating via Bull Street, and so carrying route 105, at 9.31 a.m. There was no housing development west of Maud St in the 1970s.

The basic service on both the 102 and the 105 was two buses each hour, with extra buses in Peak hours. One 102 each hour ran to Lambton, the other only to Waratah Hospital or the Station. Most 105s ran only to Mayfield West, but a few shown here ran to Waratah Station, such as the 6.49 from Newcastle, or Waratah Hospital, such as the 8.42 a.m. There is no 105 operating to Lambton shown on these two pages. In fact there were only two such 105s in the timetable, both running on Sundays: the 2.14 from Lambton and the 3.15 return journey from Newcastle. The corresponding trips on Holidays were run as 102s. I'm afraid I can't think why that happened.

My next timetable commenced on 30 April 2001 (see our pages 12-13). Once again, I've reproduced the times of weekday buses out from Newcastle. The route 100 has been extended from Jesmond to Wallsend shopping centre, and diverted through the University grounds. A basic service of one bus an hour with another one starting from Museum in University terms only. The dates of the University terms are given at the end of the timetable so you'll know when the buses marked U are operating. The 102 has been extended to John Hunter Hospital, but now operates down Hanbury St and not past Waratah Hospital, which is now called Mater Hospital in the timetable. (I thought it always has been.) The 102 also had a basic hourly service.

The 105 has been extended into

A.9.

DEPARTMENT OF ROAD TRANSPORT AND TRAMWAYS, NEW SOUTH WALES.

OMNIBUS TIME-TABLES

ROUTE 101.

NEWCASTLE—TIGHE'S HILL—WARATAH HOSPITAL
(via Mayfield and Maitland Road).

ROUTE 102.

NEWCASTLE—TIGHE'S HILL—WARATAH HOSPITAL
(via Mayfield and Mayfield West).

ROUTE 104.

NEWCASTLE—MAYFIELD
(via Waratah Railway Station).

Commencing Sunday, 15th February, 1948.

Reprinted up-to-date to Sunday, 26th September, 1948.

Published by Authority of Commissioner for Road Transport and Tramways, N.S.W.

(ISSUED GRATIS.)

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ROUTE 101—NEWCASTLE—WARATAH HOSPITAL
(via MAITLAND ROAD).

ROUTE 102—NEWCASTLE—WARATAH HOSPITAL
(via MAYFIELD WEST).

INDUSTRIAL JOURNEYS.

MONDAYS TO FRIDAYS.

From **Newcastle.**—*sg*6.44, *ue*7.0, *p*7.0, *f*7.1, *hg*7.10, *c*7.18, *g*8.32, *f*8.35 a.m., *c*3.10, *g*3.12, *wg*3.18, *wg*11.13, *c*11.10, *g*11.17 p.m.

From **Tighe's Hill** (additional).—*g*7.30, *e*7.40, *g*7.54 a.m.

To **Newcastle.**—*g*8.12, *c*8.13 a.m., *q*4.6, *b*4.7, *f*4.10, *g*4.19, *c*4.21, §*g*4.48, *b*5.5, *f*5.5, *q*12.16, *hc*12.16, *g*12.24 a.m.

SATURDAYS.

From **Newcastle.**—*sg*6.44, *ue*7.0, *p*7.0, *g*7.2, *e*7.28, *fg*8.34, *g*10.47, *g*11.17 a.m., *ug*3.14, *g*11.17 p.m.

From **Tighe's Hill** (additional).—*g*7.30, *g*7.54 a.m.

To **Newcastle.**—*g*8.12, *c*8.13, *g*11.36, a.m., *p*12.3, *k*12.6, *g*4.12, *f*4.15 p.m., *g*12.20, *f*12.22 a.m.

SUNDAYS.

From **Newcastle.**—*g*7.23 a.m., *a*3.17, *sg*11.16, *c*11.17 p.m.

To **Newcastle.**—*g*8.9 a.m., *g*4.16 p.m., *g*12.20 a.m.

HOLIDAYS.

From **Newcastle.**—*sg*6.44, *ue*7.0, *p*7.0, *f*7.1, *g*7.5, *g*8.32, *f*8.37 a.m., *c*3.10, *g*3.12, *wg*11.13, *c*11.15, *g*11.17 p.m.

From **Tighe's Hill** (additional).—*g*7.30, *e*7.40 a.m.

To **Newcastle.**—*c*8.10, *g*8.12 a.m., *g*4.12, *c*4.13 p.m., *c*12.14, *b*12.19, *f*12.18 a.m.

For Routes and Explanatory Notes, see pages 10 and 13.
For Sections and Fares, see pages 11 and 12.
For Running Times, see page 10.

ROUTE 101—NEWCASTLE—WARATAH HOSPITAL
(via MAITLAND ROAD).

ROUTE 102—NEWCASTLE—WARATAH HOSPITAL
(via MAYFIELD WEST).

MONDAYS TO FRIDAYS.

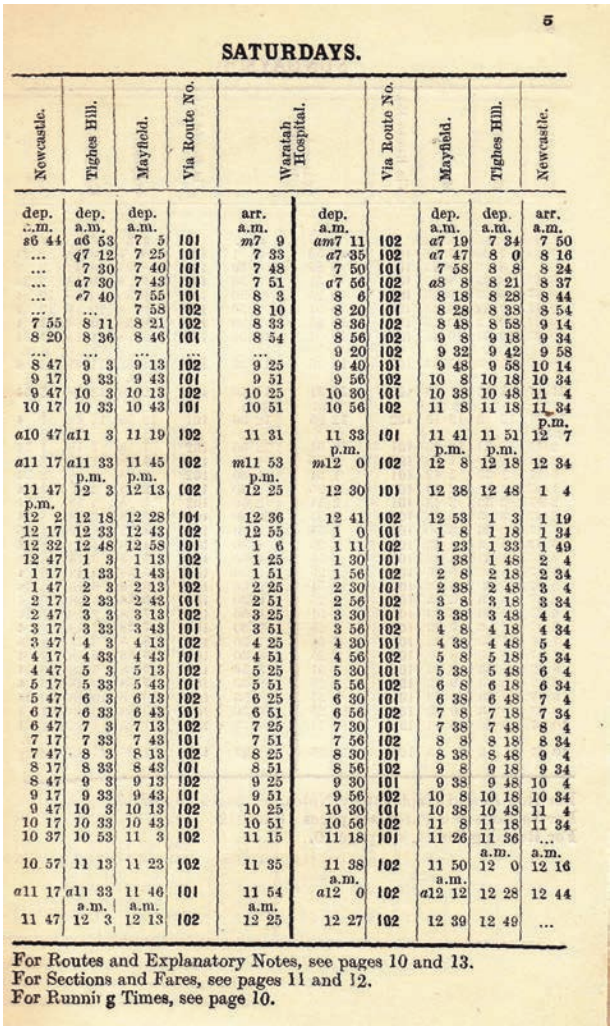
Newcastle.	Tighes Hill.	Mayfield.	Via Route No.	Waratah Hospital.	Via Route No.	Mayfield.	Tighes Hill.	Newcastle.
dep.	dep.	dep.		arr.		arr. or dep.	arr. or dep.	arr.
a.m.	a.m.	a.m.		a.m.		a.m.	a.m.	a.m.
...	...	7 5	101	*m*7 9	102	*a*7 19	7 34	7 50
*a*7 0	7 12	7 25	101	7 33	102	*a*7 47	8 0	8 16
...	...	7 33	102	7 45	101	7 58	8 8	8 24
...	*a*7 30	7 43	101	7 51	102	*a*8 8	8 21	8 37
...	...	7 51	102	8 3	102	8 18	8 28	8 44
...	*a*7 40	7 55	101	8 3	101	8 22	8 32	8 48
...	...	...	...	...	102	8 43	8 53	9 9
8 0	8 16	8 26	101	8 34	101	8 48	8 58	9 14
8 22	8 38	8 48	102	9 0	101	9 10	9 20	9 36
...	...	...	...	...	102	9 23	9 33	9 49
8 47	9 3	9 13	102	9 25	101	9 38	9 48	10 4
9 17	9 33	9 43	101	9 51	102	10 8	10 18	10 34
9 47	10 3	10 13	102	10 25	101	10 38	10 48	11 4
10 17	10 33	10 43	101	10 51	102	11 8	11 18	11 34
10 47	11 3	11 13	102	11 25	101	11 38	11 48	12 4
11 17	11 33	11 43	101	11 51	102	12 8	12 18	12 34
11 47	12 3	12 13	102	12 25	101	12 38	12 48	1 4
12 17	12 33	12 43	101	12 51	102	1 8	1 18	1 34
12 47	1 3	1 13	102	1 25	101	1 38	1 48	2 4
1 17	1 33	1 43	101	1 51	102	2 8	2 18	2 34
1 47	2 3	2 13	102	2 25	101	2 38	2 48	3 4
2 17	2 33	2 43	101	2 51	102	3 8	3 18	3 34
2 47	3 3	3 13	102	3 25	102	3 42	3 52	4 8
3 17	3 33	3 43	101	3 51	*a*3 53	101	*a*4 1	4 14
3 32	3 48	3 58	101	4 6	4 10	101	4 18	4 28
3 47	4 3	4 13	102	4 25	4 29	102	4 41	...
4 17	4 33	4 43	101	4 51	*a*4 53	101	*a*5 1	5 12
4 35	4 51	5 1	102	*m*5 9	*m*5 11	101	5 19	5 29
...	...	...	...	...	5 27	102	5 39	5 49
4 55	5 11	5 21	101	5 29	5 31	101	5 39	...
5 2	5 18	5 28	102	5 40	...	...	...	...
5 12	5 28	5 38	101	5 46	5 52	101	6 0	6 10
5 27	5 43	5 53	102	6 5	6 7	102	6 19	6 29
5 47	6 3	6 13	101	6 21	6 24	101	6 32	6 42
6 7	6 23	6 33	102	6 45	6 47	102	6 59	7 9
6 27	6 43	6 53	101	7 1	7 10	101	7 18	7 28
...	6 53	7 3	102	7 15	7 26	102	7 38	...

For Routes and Explanatory Notes, see pages 10 and 13.
For Sections and Fares, see pages 11 and 12.
For Running Times, see page 10.

MONDAYS TO FRIDAYS—*continued.*

Newcastle.	Tighes Hill.	Mayfield.	Via Route No.	Waratah Hospital.	Via Route No.	Mayfield.	Tighes Hill.	Newcastle.
dep.	dep.	dep.		arr.	dep.		arr. or dep.	dep.	arr.
p.m.	p.m.	p.m.		p.m.	p.m.		p.m.	p.m.	p.m.
6 47	7 3	7 13	102	7 25	7 28	101	7 36	7 46	8 2
7 17	7 33	7 43	101	7 51	7 56	102	8 8	8 18	8 34
7 47	8 3	8 13	102	8 25	8 30	101	8 38	8 48	9 4
8 17	8 33	8 43	101	8 51	8 56	102	9 8	9 18	9 34
8 47	9 3	9 13	102	9 25	9 30	101	9 38	9 48	10 4
9 17	9 33	9 43	101	9 51	9 56	102	10 8	10 18	10 34
9 47	10 3	10 13	102	10 25	10 30	101	10 38	10 48	11 4
10 17	10 33	10 43	101	10 51	10 53	101	11 1	11 11	11 27
10 37	10 53	11 3	102	11 15	11 18	102	11 30	11 40	...
								a.m.	
10 57	11 13	11 23	102	11 35	11 38	102	11 50	12 0	...
				a.m.	a.m.		a.m.		a.m.
...	11 42	11 52	101	12 0	*a*12 8	102	*a*12 20	12 33	12 49
	a.m.	a.m.							
11 52	12 8	12 18	102	12 30	12 32	102	12 44	12 54	...

For Routes and Explanatory Notes see pages 10 and 13.
For Sections and Fares, see pages 11 and 12.
For Running Times, see page 10.



5

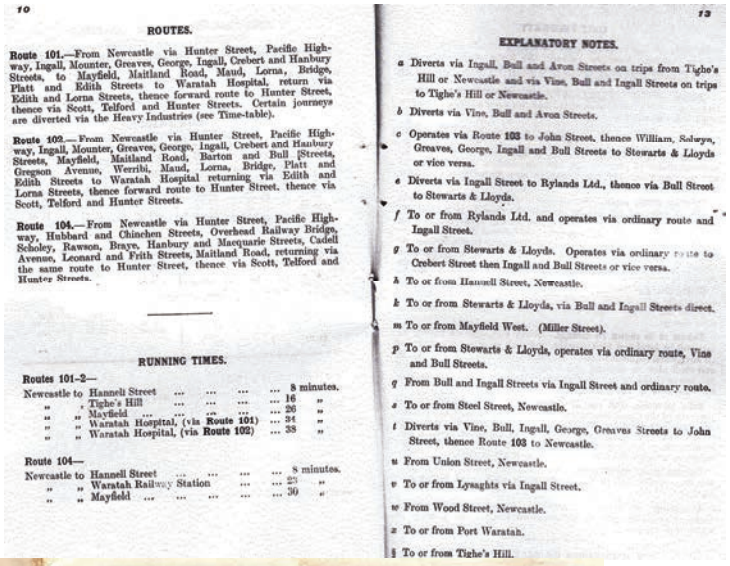
SATURDAYS.

Newcastle.	Tighes Hill.	Mayfield.	Via Route No.	Waratah Hospital.	Via Route No.	Mayfield.	Tighes Hill.	Newcastle.
dep. c.m.	dep. a.m.	dep. a.m.		arr. a.m.	dep. a.m.		dep. a.m.	dep. a.m.	arr. a.m.
s6 44	a6 53	7 5	101	m7 9	am7 11	102	a7 19	7 34	7 50
...	q7 12	7 25	101	7 33	a7 35	102	a7 47	8 0	8 16
...	7 30	7 40	101	7 48	7 50	101	7 58	8 8	8 24
...	a7 30	7 43	101	7 51	a7 56	102	a8 8	8 21	8 37
...	e7 40	7 55	101	8 3	8 6	102	8 18	8 28	8 44
...	...	7 58	102	8 10	8 20	101	8 28	8 38	8 54
7 55	8 11	8 21	102	8 33	8 36	102	8 48	8 58	9 14
8 20	8 36	8 46	101	8 54	8 56	102	9 8	9 18	9 34
...	...	...	...	...	9 20	102	9 32	9 42	9 58
8 47	9 3	9 13	102	9 25	9 40	101	9 48	9 58	10 14
9 17	9 33	9 43	101	9 51	9 56	102	10 8	10 18	10 34
9 47	10 3	10 13	102	10 25	10 30	101	10 38	10 48	11 4
10 17	10 33	10 43	101	10 51	10 56	102	11 8	11 18	11 34
									p.m.
a10 47	a11 3	11 19	102	11 31	11 33	101	11 41	11 51	12 7
					p.m.		p.m.	p.m.	
a11 17	a11 33	11 45	102	m11 53	m12 0	102	12 8	12 18	12 34
	p.m.	p.m.		p.m.					
11 47	12 3	12 13	102	12 25	12 30	101	12 38	12 48	1 4
p.m.									
12 2	12 18	12 28	101	12 36	12 41	102	12 53	1 3	1 19
12 17	12 33	12 43	102	12 55	1 0	101	1 8	1 18	1 34
12 32	12 48	12 58	101	1 6	1 11	102	1 23	1 33	1 49
12 47	1 3	1 13	102	1 25	1 30	101	1 38	1 48	2 4
1 17	1 33	1 43	101	1 51	1 56	102	2 8	2 18	2 34
1 47	2 3	2 13	102	2 25	2 30	101	2 38	2 48	3 4
2 17	2 33	2 43	101	2 51	2 56	102	3 8	3 18	3 34
2 47	3 3	3 13	102	3 25	3 30	101	3 38	3 48	4 4
3 17	3 33	3 43	101	3 51	3 56	102	4 8	4 18	4 34
3 47	4 3	4 13	102	4 25	4 30	101	4 38	4 48	5 4
4 17	4 33	4 43	101	4 51	4 56	102	5 8	5 18	5 34
4 47	5 3	5 13	102	5 25	5 30	101	5 38	5 48	6 4
5 17	5 33	5 43	101	5 51	5 56	102	6 8	6 18	6 34
5 47	6 3	6 13	102	6 25	6 30	101	6 38	6 48	7 4
6 17	6 33	6 43	101	6 51	6 56	102	7 8	7 18	7 34
6 47	7 3	7 13	102	7 25	7 30	101	7 38	7 48	8 4
7 17	7 33	7 43	101	7 51	7 56	102	8 8	8 18	8 34
7 47	8 3	8 13	102	8 25	8 30	101	8 38	8 48	9 4
8 17	8 33	8 43	101	8 51	8 56	102	9 8	9 18	9 34
8 47	9 3	9 13	102	9 25	9 30	101	9 38	9 48	10 4
9 17	9 33	9 43	101	9 51	9 56	102	10 8	10 18	10 34
9 47	10 3	10 13	102	10 25	10 30	101	10 38	10 48	11 4
10 17	10 33	10 43	101	10 51	10 56	102	11 8	11 18	11 34
10 37	10 53	11 3	102	11 15	11 18	101	11 26	11 36	...
								a.m.	a.m.
10 57	11 13	11 23	102	11 35	11 38	102	11 50	12 0	12 16
					a.m.		a.m.		
a11 17	a11 33	11 46	101	11 54	a12 0	102	a12 12	12 28	12 44
	a.m.	a.m.		a.m.					
11 47	12 3	12 13	102	12 25	12 27	102	12 39	12 49	...

For Routes and Explanatory Notes, see pages 10 and 13.
For Sections and Fares, see pages 11 and 12.
For Runni g Times, see page 10.

Warabrook, a new suburb since my time in Newcastle, and then over the section the 102 had abandoned past the Mater Hospital, to terminate at the K-mart in Waratah. This also had a basic hourly service. Two new routes have been established. A new 103 ran to Jesmond, and then north to Shortland (covered by the 233 in my day). Its basic hourly service, combined with the route 100, gave two buses an hour to the University and Jesmond. With the decline in the Industrial area, the old route 103 to Port Waratah had ceased. Another new route, the 106 ran from Jesmond to Mayfield. It was shown in a separate timetable and there were only two trips a day, weekdays only. Journeys left Jesmond at 8.41 and 9.41 in the morning and returned from Mayfield at 11.15 a.m. and 2.15 p.m. We may also note that the early morning (before 7 o'clock) and late evening services (after 8 o'clock) are shown in red, are all route 100s and start from Newcastle Station, not Zaara Street.

My next timetable was issued on 17 October 2010 and is current as I write (see page 13 and the map on our cover). I have reproduced the weekday



10

ROUTES.

Route 101.—From Newcastle via Hunter Street, Pacific Highway, Ingall, Mounter, Greaves, George, Ingall, Crebert and Hanbury Streets, to Mayfield, Maitland Road, Maud, Lorna, Bridge, Platt and Edith Streets to Waratah Hospital, return via Edith and Lorna Streets, thence forward route to Hunter Street, thence via Scott, Telford and Hunter Streets. Certain journeys are diverted via the Heavy Industries (see Time-table).

Route 102.—From Newcastle via Hunter Street, Pacific Highway, Ingall, Mounter, Greaves, George, Ingall, Crebert and Hanbury Streets, Mayfield, Maitland Road, Barton and Bull Streets, Gregson Avenue, Werribi, Maud, Lorna, Bridge, Platt and Edith Streets to Waratah Hospital returning via Edith and Lorna Streets, thence forward route to Hunter Street, thence via Scott, Telford and Hunter Streets.

Route 104.—From Newcastle via Hunter Street, Pacific Highway, Hubbard and Chinchen Streets, Overhead Railway Bridge, Scholey, Rawson, Braye, Hanbury and Macquarie Streets, Cadell Avenue, Leonard and Frith Streets, Maitland Road, returning via the same route to Hunter Street, thence via Scott, Telford and Hunter Streets.

RUNNING TIMES.

Routes 101–2—

Newcastle to	Hannell Street	8 minutes.
"	Tighe's Hill	16 "
"	Mayfield	26 "
"	Waratah Hospital, (via Route 101)	34 "
"	Waratah Hospital, (via Route 102)	38 "

Route 104—

Newcastle to	Hannell Street	8 minutes.
"	Waratah Railway Station	23 "
"	Mayfield	30 "

13

EXPLANATORY NOTES.

a Diverts via Ingall, Bull and Avon Streets on trips from Tighe's Hill or Newcastle and via Vine, Bull and Ingall Streets on trips to Tighe's Hill or Newcastle.

b Diverts via Vine, Bull and Avon Streets.

c Operates via Route 103 to John Street, thence William, Selwyn, Greaves, George, Ingall and Bull Streets to Stewarts & Lloyds or vice versa.

e Diverts via Ingall Street to Rylands Ltd., thence via Bull Street to Stewarts & Lloyds.

f To or from Rylands Ltd. and operates via ordinary route and Ingall Street.

g To or from Stewarts & Lloyds. Operates via ordinary route to Crebert Street then Ingall and Bull Streets or vice versa.

h To or from Hannell Street, Newcastle.

k To or from Stewarts & Lloyds, via Bull and Ingall Streets direct.

m To or from Mayfield West. (Miller Street).

p To or from Stewarts & Lloyds, operates via ordinary route, Vine and Bull Streets.

q From Bull and Ingall Streets via Ingall Street and ordinary route.

s To or from Steel Street, Newcastle.

t Diverts via Vine, Bull, Ingall, George, Greaves Streets to John Street, thence Route 103 to Newcastle.

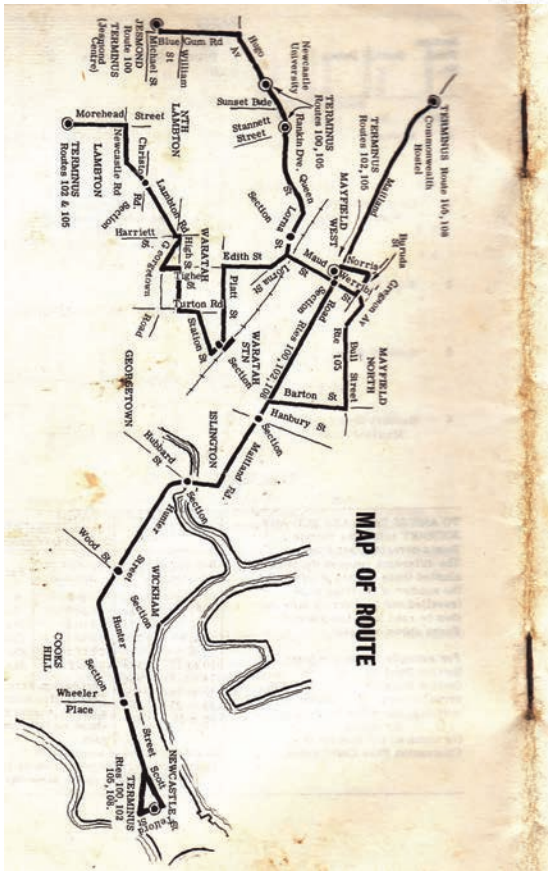
u From Union Street, Newcastle.

v To or from Lysaghts via Ingall Street.

w From Wood Street, Newcastle.

x To or from Port Waratah.

§ To or from Tighe's Hill.



N 7

DEPARTMENT OF GOVERNMENT TRANSPORT, N. S. W.

BUS TIMETABLE

ROUTE 100
NEWCASTLE - MAYFIELD - WARATAH WEST (Rankin Drive) **- UNIVERSITY - JESMOND CENTRE** (via Maitland Road direct)

ROUTE 102
NEWCASTLE - MAYFIELD - WARATAH STATION - LAMBTON (via Maitland Road direct)

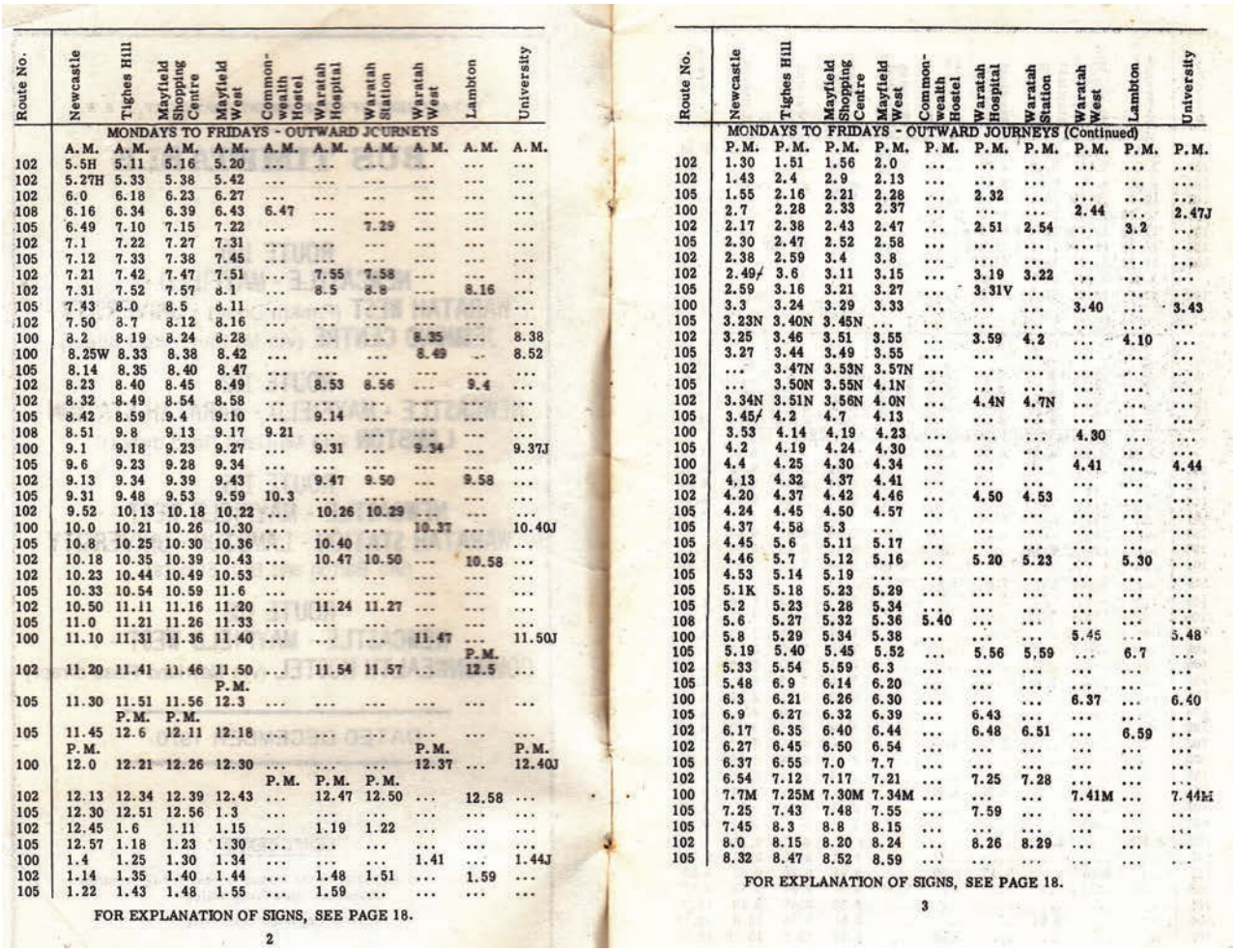
ROUTE 105
NEWCASTLE - MAYFIELD WEST - WARATAH STATION - LAMBTON - UNIVERSITY
(via Barton and Bull Streets)

ROUTE 108
NEWCASTLE - MAYFIELD WEST - COMMONWEALTH HOSTEL (via Maitland Road direct)

DATED DECEMBER 1970

ISSUED GRATIS

Published by Authority of the Commissioner for Government Transport, New South Wales.



Route No.	Newcastle	Tighes Hill	Mayfield Shopping Centre	Mayfield West	Commonwealth Hostel	Waratah Hospital	Waratah Station	Waratah West	Lambton	University
	MONDAYS TO FRIDAYS - OUTWARD JOURNEYS									
	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.
102	5.5H	5.11	5.16	5.20	...	...	...	...	...	...
102	5.27H	5.33	5.38	5.42	...	...	...	...	...	...
102	6.0	6.18	6.23	6.27	...	...	...	...	...	...
108	6.16	6.34	6.39	6.43	6.47	...	...	...	...	...
105	6.49	7.10	7.15	7.22	...	...	7.29	...	...	...
102	7.1	7.22	7.27	7.31	...	...	...	...	...	...
105	7.12	7.33	7.38	7.45	...	...	...	...	...	...
102	7.21	7.42	7.47	7.51	...	7.55	7.58	...	...	...
102	7.31	7.52	7.57	8.1	...	8.5	8.8	...	8.16	...
105	7.43	8.0	8.5	8.11	...	...	...	...	...	...
102	7.50	8.7	8.12	8.16	...	...	...	...	...	...
100	8.2	8.19	8.24	8.28	...	...	...	8.35	...	8.38
100	8.25W	8.33	8.38	8.42	...	...	...	8.49	...	8.52
105	8.14	8.35	8.40	8.47	...	...	...	...	...	...
102	8.23	8.40	8.45	8.49	...	8.53	8.56	...	9.4	...
102	8.32	8.49	8.54	8.58	...	...	...	...	...	...
105	8.42	8.59	9.4	9.10	...	9.14	...	...	...	...
108	8.51	9.8	9.13	9.17	9.21	...	...	...	...	...
100	9.1	9.18	9.23	9.27	...	9.31	...	9.34	...	9.37J
105	9.6	9.23	9.28	9.34	...	...	...	...	...	...
102	9.13	9.34	9.39	9.43	...	9.47	9.50	...	9.58	...
105	9.31	9.48	9.53	9.59	10.3	...	...	...	...	...
102	9.52	10.13	10.18	10.22	...	10.26	10.29	...	...	...
100	10.0	10.21	10.26	10.30	...	...	...	10.37	...	10.40J
105	10.8	10.25	10.30	10.36	...	10.40	...	...	...	...
102	10.18	10.35	10.39	10.43	...	10.47	10.50	...	10.58	...
102	10.23	10.44	10.49	10.53	...	...	...	...	...	...
105	10.33	10.54	10.59	11.6	...	...	...	...	...	...
102	10.50	11.11	11.16	11.20	...	11.24	11.27	...	...	...
105	11.0	11.21	11.26	11.33	...	...	...	...	...	...
100	11.10	11.31	11.36	11.40	...	...	...	11.47	...	11.50J
									P.M.	
102	11.20	11.41	11.46	11.50	...	11.54	11.57	...	12.5	...
				P.M.						
105	11.30	11.51	11.56	12.3	...	...	...	...	...	...
		P.M.	P.M.							
105	11.45	12.6	12.11	12.18	...	...	...	...	...	...
	P.M.							P.M.		P.M.
100	12.0	12.21	12.26	12.30	...	...	...	12.37	...	12.40J
					P.M.	P.M.	P.M.			
102	12.13	12.34	12.39	12.43	...	12.47	12.50	...	12.58	...
105	12.30	12.51	12.56	1.3	...	...	...	...	...	...
102	12.45	1.6	1.11	1.15	...	1.19	1.22	...	...	...
105	12.57	1.18	1.23	1.30	...	...	...	...	...	...
100	1.4	1.25	1.30	1.34	...	...	...	1.41	...	1.44J
102	1.14	1.35	1.40	1.44	...	1.48	1.51	...	1.59	...
105	1.22	1.43	1.48	1.55	...	1.59	...	...	...	...

FOR EXPLANATION OF SIGNS, SEE PAGE 18.

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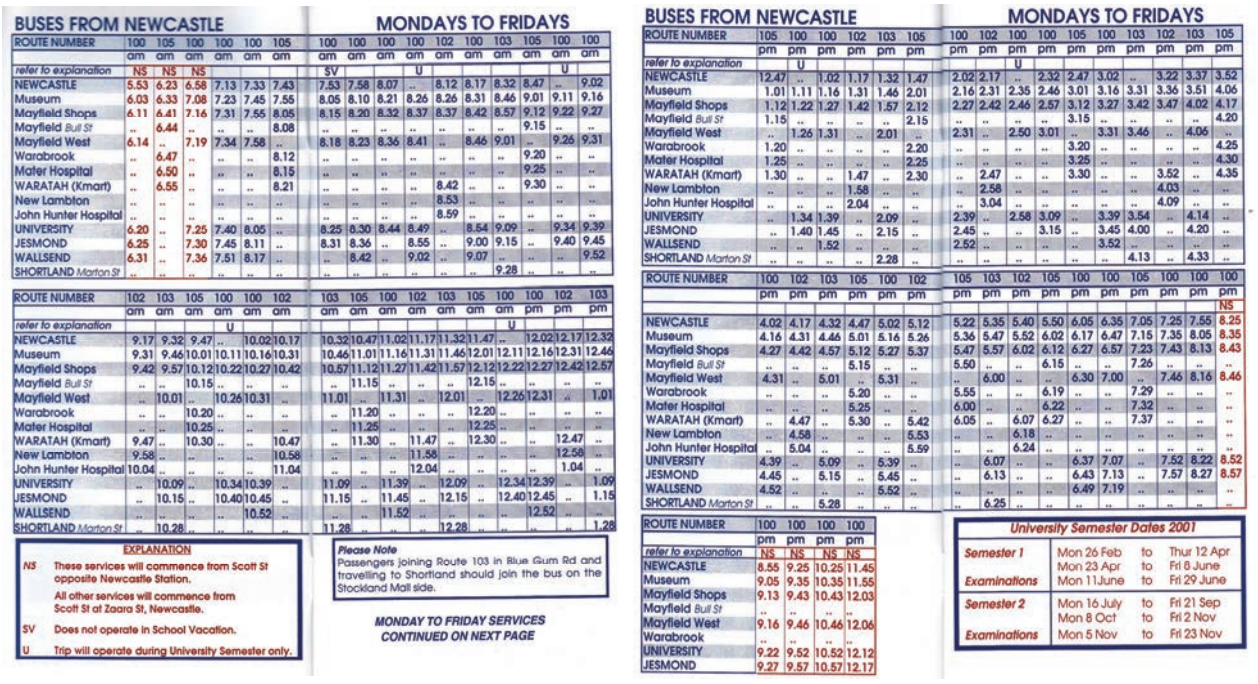
Route No.	Newcastle	Tighes Hill	Mayfield Shopping Centre	Mayfield West	Commonwealth Hostel	Waratah Hospital	Waratah Station	Waratah West	Lambton	University
	MONDAYS TO FRIDAYS - OUTWARD JOURNEYS (Continued)									
	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.
102	1.30	1.51	1.56	2.0	...	...	...	...	...	...
102	1.43	2.4	2.9	2.13	...	...	...	...	...	...
105	1.55	2.16	2.21	2.28	...	2.32	...	...	...	...
100	2.7	2.28	2.33	2.37	...	...	...	2.44	...	2.47J
102	2.17	2.38	2.43	2.47	...	2.51	2.54	...	3.2	...
105	2.30	2.47	2.52	2.58	...	...	...	...	...	...
102	2.38	2.59	3.4	3.8	...	...	...	...	...	...
102	2.49	3.6	3.11	3.15	...	3.19	3.22	...	...	...
105	2.59	3.16	3.21	3.27	...	3.31V	...	...	...	...
100	3.3	3.24	3.29	3.33	...	...	...	3.40	...	3.43
105	3.23N	3.40N	3.45N	...	...	...	...	...	...	...
102	3.25	3.46	3.51	3.55	...	3.59	4.2	...	4.10	...
105	3.27	3.44	3.49	3.55	...	...	...	...	...	...
102	...	3.47N	3.53N	3.57N	...	...	...	...	...	...
105	...	3.50N	3.55N	4.1N	...	...	...	...	...	...
102	3.34N	3.51N	3.56N	4.0N	...	4.4N	4.7N	...	...	...
105	3.45	4.2	4.7	4.13	...	...	...	...	...	...
100	3.53	4.14	4.19	4.23	...	...	...	4.30	...	...
105	4.2	4.19	4.24	4.30	...	...	...	...	...	...
100	4.4	4.25	4.30	4.34	...	...	...	4.41	...	4.44
102	4.13	4.32	4.37	4.41	...	...	...	...	...	...
102	4.20	4.37	4.42	4.46	...	4.50	4.53	...	...	...
105	4.24	4.45	4.50	4.57	...	...	...	...	...	...
105	4.37	4.58	5.3	...	...	...	...	...	...	...
105	4.45	5.6	5.11	5.17	...	...	...	...	...	...
102	4.46	5.7	5.12	5.16	...	5.20	5.23	...	5.30	...
105	4.53	5.14	5.19	...	...	...	...	...	...	...
105	5.1K	5.18	5.23	5.29	...	...	...	...	...	...
105	5.2	5.23	5.28	5.34	...	...	...	...	...	...
108	5.6	5.27	5.32	5.36	5.40	...	...	...	...	...
100	5.8	5.29	5.34	5.38	...	...	...	5.45	...	5.48
105	5.19	5.40	5.45	5.52	...	5.56	5.59	...	6.7	...
102	5.33	5.54	5.59	6.3	...	...	...	...	...	...
105	5.48	6.9	6.14	6.20	...	...	...	...	...	...
100	6.3	6.21	6.26	6.30	...	...	...	6.37	...	6.40
105	6.9	6.27	6.32	6.39	...	6.43	...	...	...	...
102	6.17	6.35	6.40	6.44	...	6.48	6.51	...	6.59	...
102	6.27	6.45	6.50	6.54	...	...	...	...	...	...
105	6.37	6.55	7.0	7.7	...	...	...	...	...	...
102	6.54	7.12	7.17	7.21	...	7.25	7.28	...	...	...
100	7.7M	7.25M	7.30M	7.34M	...	...	...	7.41M	...	7.44M
105	7.25	7.43	7.48	7.55	...	7.59	...	...	...	...
105	7.45	8.3	8.8	8.15	...	...	...	...	...	...
102	8.0	8.15	8.20	8.24	...	8.26	8.29	...	...	...
105	8.32	8.47	8.52	8.59	...	...	...	...	...	...

FOR EXPLANATION OF SIGNS, SEE PAGE 18.

3



BUSES FROM NEWCASTLE — **MONDAYS TO FRIDAYS**

ROUTE NUMBER	100	105	100	100	100	105	100	100	100	100	102	100	103	105	100	100
	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am
refer to explanation	NS	NS	NS				SV			U					U	
NEWCASTLE	5.53	6.23	6.58	7.13	7.33	7.43	7.53	7.58	8.07	..	8.12	8.17	8.32	8.47	..	9.02
Museum	6.03	6.33	7.08	7.23	7.45	7.55	8.05	8.10	8.21	8.26	8.26	8.31	8.46	9.01	9.11	9.16
Mayfield Shops	6.11	6.41	7.16	7.31	7.55	8.05	8.15	8.20	8.32	8.37	8.37	8.42	8.57	9.12	9.22	9.27
Mayfield *Bull St*	..	6.44	..	..	..	8.08	..	..	..	..	..	..	..	9.15	..	..
Mayfield West	6.14	..	7.19	7.34	7.58	..	8.18	8.23	8.36	8.41	..	8.46	9.01	..	9.26	9.31
Warabrook	..	6.47	..	..	..	8.12	..	..	..	..	..	..	..	9.20	..	..
Mater Hospital	..	6.50	..	..	..	8.15	..	..	..	..	..	..	..	9.25	..	..
WARATAH (Kmart)	..	6.55	..	..	..	8.21	..	..	..	..	8.42	..	..	9.30	..	..
New Lambton	..	..	..	..	..	..	..	..	..	..	8.53	..	..	..	..	..
John Hunter Hospital	..	..	..	..	..	..	..	..	..	..	8.59	..	..	..	..	..
UNIVERSITY	6.20	..	7.25	7.40	8.05	..	8.25	8.30	8.44	8.49	..	8.54	9.09	..	9.34	9.39
JESMOND	6.25	..	7.30	7.45	8.11	..	8.31	8.36	..	8.55	..	9.00	9.15	..	9.40	9.45
WALLSEND	6.31	..	7.36	7.51	8.17	..	..	8.42	..	9.02	..	9.07	..	..	..	9.52
SHORTLAND *Marton St*	..	..	..	..	..	..	..	..	..	..	..	..	9.28	..	..	..

ROUTE NUMBER	102	103	105	100	100	102	103	105	100	102	103	105	100	100	102	103
	am	am	am	am	am	am	am	am	am	am	am	am	am	pm	pm	pm
refer to explanation				U									U			
NEWCASTLE	9.17	9.32	9.47	..	10.02	10.17	10.32	10.47	11.02	11.17	11.32	11.47	..	12.02	12.17	12.32
Museum	9.31	9.46	10.01	10.11	10.16	10.31	10.46	11.01	11.16	11.31	11.46	12.01	12.11	12.16	12.31	12.46
Mayfield Shops	9.42	9.57	10.12	10.22	10.27	10.42	10.57	11.12	11.27	11.42	11.57	12.12	12.22	12.27	12.42	12.57
Mayfield *Bull St*	..	..	10.15	..	..	..	..	11.15	..	..	..	12.15	..	..	..	..
Mayfield West	..	10.01	..	10.26	10.31	..	11.01	..	11.31	..	12.01	..	12.26	12.31	..	1.01
Warabrook	..	..	10.20	..	..	..	..	11.20	..	..	..	12.20	..	..	..	..
Mater Hospital	..	..	10.25	..	..	..	..	11.25	..	..	..	12.25	..	..	..	..
WARATAH (Kmart)	9.47	..	10.30	..	..	10.47	..	11.30	..	11.47	..	12.30	..	..	12.47	..
New Lambton	9.58	..	..	..	..	10.58	..	..	..	11.58	..	..	..	..	12.58	..
John Hunter Hospital	10.04	..	..	..	..	11.04	..	..	..	12.04	..	..	..	..	1.04	..
UNIVERSITY	..	10.09	..	10.34	10.39	..	11.09	..	11.39	..	12.09	..	12.34	12.39	..	1.09
JESMOND	..	10.15	..	10.40	10.45	..	11.15	..	11.45	..	12.15	..	12.40	12.45	..	1.15
WALLSEND	..	..	..	..	10.52	..	..	..	11.52	..	..	..	..	12.52	..	..
SHORTLAND *Marton St*	..	10.28	..	..	..	..	11.28	..	..	..	12.28	..	..	..	..	1.28

EXPLANATION

- **NS** These services will commence from Scott St opposite Newcastle Station. All other services will commence from Scott St at Zaara St, Newcastle.
- **SV** Does not operate in School Vacation.
- **U** Trip will operate during University Semester only.

Please Note
Passengers joining Route 103 in Blue Gum Rd and travelling to Shortland should join the bus on the Stockland Mall side.

MONDAY TO FRIDAY SERVICES CONTINUED ON NEXT PAGE

BUSES FROM NEWCASTLE — **MONDAYS TO FRIDAYS**

ROUTE NUMBER	105	100	100	102	103	105	100	102	100	100	105	100	103	102	103	105
	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm
refer to explanation		U							U							
NEWCASTLE	12.47	..	1.02	1.17	1.32	1.47	2.02	2.17	..	2.32	2.47	3.02	..	3.22	3.37	3.52
Museum	1.01	1.11	1.16	1.31	1.46	2.01	2.16	2.31	2.35	2.46	3.01	3.16	3.31	3.36	3.51	4.06
Mayfield Shops	1.12	1.22	1.27	1.42	1.57	2.12	2.27	2.42	2.46	2.57	3.12	3.27	3.42	3.47	4.02	4.17
Mayfield *Bull St*	1.15	..	..	..	..	2.15	..	..	..	..	3.15	..	..	..	..	4.20
Mayfield West	..	1.26	1.31	..	2.01	..	2.31	..	2.50	3.01	..	3.31	3.46	..	4.06	..
Warabrook	1.20	..	..	..	..	2.20	..	..	..	..	3.20	..	..	..	..	4.25
Mater Hospital	1.25	..	..	..	..	2.25	..	..	..	..	3.25	..	..	..	..	4.30
WARATAH (Kmart)	1.30	..	..	1.47	..	2.30	..	2.47	..	..	3.30	..	..	3.52	..	4.35
New Lambton	..	..	..	1.58	..	..	..	2.58	..	..	..	..	..	4.03	..	..
John Hunter Hospital	..	..	..	2.04	..	..	..	3.04	..	..	..	..	..	4.09	..	..
UNIVERSITY	..	1.34	1.39	..	2.09	..	2.39	..	2.58	3.09	..	3.39	3.54	..	4.14	..
JESMOND	..	1.40	1.45	..	2.15	..	2.45	..	..	3.15	..	3.45	4.00	..	4.20	..
WALLSEND	..	..	1.52	..	..	..	2.52	..	..	..	..	3.52	..	..	..	..
SHORTLAND *Marton St*	..	..	..	..	2.28	..	..	..	..	..	..	..	4.13	..	4.33	..

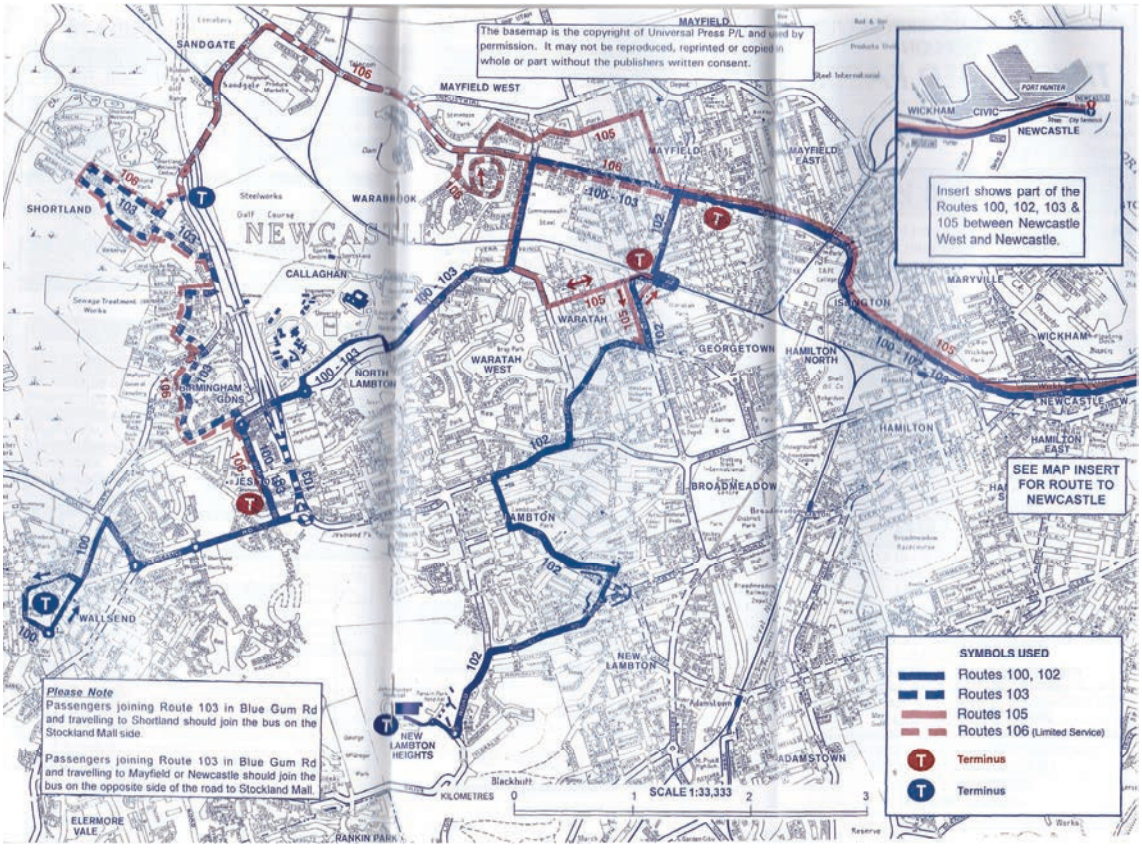
ROUTE NUMBER	100	102	103	105	100	102	105	103	102	105	100	100	105	100	100	100
	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm
																NS
NEWCASTLE	4.02	4.17	4.32	4.47	5.02	5.12	5.22	5.35	5.40	5.50	6.05	6.35	7.05	7.25	7.55	8.25
Museum	4.16	4.31	4.46	5.01	5.16	5.26	5.36	5.47	5.52	6.02	6.17	6.47	7.15	7.35	8.05	8.35
Mayfield Shops	4.27	4.42	4.57	5.12	5.27	5.37	5.47	5.57	6.02	6.12	6.27	6.57	7.23	7.43	8.13	8.43
Mayfield *Bull St*	..	..	..	5.15	..	..	5.50	..	..	6.15	..	..	7.26	..	..	..
Mayfield West	4.31	..	5.01	..	5.31	..	..	6.00	..	..	6.30	7.00	..	7.46	8.16	8.46
Warabrook	..	..	..	5.20	..	..	5.55	..	..	6.19	..	..	7.29	..	..	..
Mater Hospital	..	..	..	5.25	..	..	6.00	..	..	6.22	..	..	7.32	..	..	..
WARATAH (Kmart)	..	4.47	..	5.30	..	5.42	6.05	..	6.07	6.27	..	..	7.37	..	..	..
New Lambton	..	4.58	..	..	..	5.53	..	..	6.18	..	..	..	..	..	..	..
John Hunter Hospital	..	5.04	..	..	..	5.59	..	..	6.24	..	..	..	..	..	..	..
UNIVERSITY	4.39	..	5.09	..	5.39	..	..	6.07	..	..	6.37	7.07	..	7.52	8.22	8.52
JESMOND	4.45	..	5.15	..	5.45	..	..	6.13	..	..	6.43	7.13	..	7.57	8.27	8.57
WALLSEND	4.52	..	..	..	5.52	..	..	..	..	..	6.49	7.19	..	..	..	..
SHORTLAND *Marton St*	..	..	5.28	..	..	..	..	..	6.25	..	..	..	..	..	..	..

ROUTE NUMBER	100	100	100	100
	pm	pm	pm	pm
refer to explanation	NS	NS	NS	NS
NEWCASTLE	8.55	9.25	10.25	11.45
Museum	9.05	9.35	10.35	11.55
Mayfield Shops	9.13	9.43	10.43	12.03
Mayfield *Bull St*	..	..	..	..
Mayfield West	9.16	9.46	10.46	12.06
Warabrook	..	..	..	..
UNIVERSITY	9.22	9.52	10.52	12.12
JESMOND	9.27	9.57	10.57	12.17

University Semester Dates 2001

Semester 1	Mon 26 Feb	to	Thur 12 Apr
	Mon 23 Apr	to	Fri 8 June
Examinations	Mon 11June	to	Fri 29 June
Semester 2	Mon 16 July	to	Fri 21 Sep
	Mon 8 Oct	to	Fri 2 Nov
Examinations	Mon 5 Nov	to	Fri 23 Nov

timetables for buses running out from Newcastle. Once again, there have been major changes to the bus routes over the years, even though many other things have remained the same. The route 100 still operates from Newcastle, up the Pacific Highway in Mayfield through the University grounds to Jesmond. It no longer runs west to Wallsend, but south past the John Hunter Hospital, once terminus of the 102, and then on to Charlestown. There is a basic service of two buses an hour on the 100. The 106 has become a full time bus route, with a bus every hour, more or less. It has been extended to Newcastle, but along Hannell St rather than the Highway. Some of the buses running through Shortland and Warabrook have diverted through the housing estate along Angophora Drive. Since there is access to this housing estate only at the eastern end, these buses, which carry the number 107, take 14 minutes to run from Mayfield to the Warabrook timing point, as



from Newcastle
to Jesmond, Charlestown & Mount Hutton

TIMING POINT ▸	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
◀ time period / ◀ showing route number / ◀ accessible service	Newcastle Railway Station - Scott St	Marketown King St	Wickham Hannell St & Honeysuckle Dr	City West Hunter St & Stewart Ave	Mayfield Maitland Rd & Hanbury St	Warabrook Warabrook Blvd	Shortland Marton St & Sandgate Rd	University of Newcastle Maths Stop	Jesmond Blue Gum Rd & William St	John Hunter Hospital	Waratah Georgetown & Turton Rds	Westfield Kotara Park Ave & Northcott Dr	Charlestown Pearson & Frederick Sts	Gateshead Oxford St & Pacific Hwy	Lake Macquarie Fair Wilsons & Violet Town Rds
Monday to Friday															
AM▾ 100 ♿	6:09	.....	.....	6:16	6:25	.....	.....	6:36	6:39	6:48	.....	.....	6:58	.....	.....
106	.....	.....	6:40	.....	6:49	6:54	7:02	.....	7:13	.....	.....	.....	7:37	.....	.....
100 ♿	6:46	.....	.....	6:53	7:02	.....	.....	7:13	7:16	7:25	.....	.....	7:37	.....	.....
100 ♿	7:08	.....	.....	7:15	7:24	.....	.....	7:35	7:39	7:49	.....	.....	8:04	.....	.....
111	.....	7:16	.....	.....	7:30	.....	.....	.....	.....	.....	7:43	7:56	8:07	8:16	8:25
106 ♿	.....	.....	7:20	.....	7:29	7:35	7:45	.....	7:58	.....	.....	.....	.....	.....	.....
100 ♿	7:23	.....	.....	7:30	7:44	.....	.....	8:01	8:05	8:17	.....	.....	8:32	.....	.....
111	7:51	7:59	.....	.....	8:16	.....	.....	.....	.....	.....	8:31	8:45	8:57	9:06	9:15
100 ♿	7:53	.....	.....	8:03	8:17	.....	.....	8:34	8:38	8:50	.....	.....	9:05	.....	.....
106	7:56	.....	8:05	.....	8:17	8:24	8:34	.....	8:47	.....	.....	.....	.....	.....	.....
100 ♿	8:13	.....	.....	8:23	8:37	.....	.....	8:54	.....	.....	.....	.....	.....	.....	.....
100 ♿	8:36	.....	.....	8:46	9:00	.....	.....	9:17	9:21	9:31	.....	.....	9:45	.....	.....
111	8:40	8:48	.....	.....	9:05	.....	.....	.....	.....	.....	9:18	9:31	9:42	9:51	10:00
107 ♿	8:48	.....	8:59	.....	9:10	9:24	9:34	.....	9:47	.....	.....	.....	.....	.....	.....
100 ♿	9:00	.....	.....	9:10	9:24	.....	.....	9:36	9:40	9:50	.....	.....	10:04	.....	.....
111	9:10	9:18	.....	.....	9:35	.....	.....	.....	.....	.....	9:48	10:01	10:12	10:21	10:30
100 ♿	9:32	.....	.....	9:42	9:56	.....	.....	10:08	10:12	10:22	.....	.....	10:36	.....	.....
107 ♿	9:50	.....	9:59	.....	10:10	10:24	10:34	.....	10:47	.....	.....	.....	.....	.....	.....
100 ♿	10:02	.....	.....	10:12	10:26	.....	.....	10:38	10:42	10:52	.....	.....	11:06	.....	.....
111	10:10	10:18	.....	.....	10:35	.....	.....	.....	.....	.....	10:48	11:01	11:12	11:21	11:30
100 ♿	10:34	.....	.....	10:44	10:58	.....	.....	11:10	11:14	11:24	.....	.....	11:38	.....	.....
107	10:50	.....	10:59	.....	11:10	11:24	11:34	.....	11:47	.....	.....	.....	.....	.....	.....
100 ♿	11:02	.....	.....	11:12	11:26	.....	.....	11:38	11:42	11:52	.....	.....	12:06	.....	.....
111 ♿	11:10	11:18	.....	.....	11:35	.....	.....	.....	.....	.....	11:48	12:01	12:12	12:21	12:30
100 ♿	11:34	.....	.....	11:44	11:58	.....	.....	12:10	12:14	12:24	.....	.....	12:38	.....	.....
107 ♿	11:50	.....	11:59	.....	12:10	12:24	12:34	.....	12:47	.....	.....	.....	.....	.....	.....
PM▾ 100 ♿	12:02	.....	.....	12:12	12:26	.....	.....	12:38	12:42	12:52	.....	.....	1:06	.....	.....
111	12:10	12:18	.....	.....	12:35	.....	.....	.....	.....	.....	12:48	1:01	1:12	1:21	1:30
100 ♿	12:36	.....	.....	12:46	1:00	.....	.....	1:12	1:16	1:26	.....	.....	1:40	.....	.....
107	12:50	.....	12:59	.....	1:10	1:24	1:34	.....	1:47	.....	.....	.....	.....	.....	.....
100 ♿	1:02	.....	.....	1:12	1:26	.....	.....	1:38	1:42	1:52	.....	.....	2:06	.....	.....
111	1:10	1:18	.....	.....	1:35	.....	.....	.....	.....	.....	1:48	2:01	2:12	2:21	2:30
100 ♿	1:32	.....	.....	1:42	1:56	.....	.....	2:08	2:12	2:22	.....	.....	2:36	.....	.....
107 ♿	1:50	.....	1:59	.....	2:10	2:24	2:34	.....	2:47	.....	.....	.....	.....	.....	.....

from Newcastle
to Jesmond, Charlestown & Mount Hutton

TIMING POINT ▸	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
◀ time period / ◀ showing route number / ◀ accessible service	Newcastle Railway Station - Scott St	Marketown King St	Wickham Hannell St & Honeysuckle Dr	City West Hunter St & Stewart Ave	Mayfield Maitland Rd & Hanbury St	Warabrook Warabrook Blvd	Shortland Marton St & Sandgate Rd	University of Newcastle Maths Stop	Jesmond Blue Gum Rd & William St	John Hunter Hospital	Waratah Georgetown & Turton Rds	Westfield Kotara Park Ave & Northcott Dr	Charlestown Pearson & Frederick Sts	Gateshead Oxford St & Pacific Hwy	Lake Macquarie Fair Wilsons & Violet Town Rds
Monday to Friday															
PM▾ 100 ♿	2:02	.....	.....	2:12	2:26	.....	.....	2:38	2:42	2:52	.....	.....	3:06	.....	.....
111	2:25	2:33	.....	.....	2:50	.....	.....	.....	.....	.....	3:03	3:19	3:32	3:43	3:52
100 ♿	2:28	.....	.....	2:38	2:52	.....	.....	3:04	3:08	3:18	.....	.....	3:32	.....	.....
107	2:50	.....	2:59	.....	3:10	3:24	3:34	.....	3:47	.....	.....	.....	.....	.....	.....
100 ♿	3:01	.....	.....	3:11	3:25	.....	.....	3:39	3:43	3:56	.....	.....	4:13	.....	.....
111	3:04	3:18	.....	.....	3:37	.....	.....	.....	.....	.....	3:52	4:08	4:21	4:32	4:41
100 ♿	3:17	.....	.....	3:27	3:41	.....	.....	3:55	.....	.....	.....	.....	.....	.....	.....
100 ♿	3:32	.....	.....	3:42	3:56	.....	.....	4:10	4:14	4:27	.....	.....	4:44	.....	.....
107	3:51	.....	4:00	.....	4:11	4:25	4:35	.....	4:48	.....	.....	.....	.....	.....	.....
111	4:05	4:13	.....	.....	4:32	.....	.....	.....	.....	.....	4:47	5:03	5:14	5:25	5:34
100 ♿	4:08	.....	.....	4:18	4:32	.....	.....	4:46	4:50	5:03	.....	.....	5:20	.....	.....
100 ♿	4:28	.....	.....	4:38	4:52	.....	.....	5:06	5:10	5:23	.....	.....	5:38	.....	.....
106	4:50	.....	4:59	.....	5:10	5:17	5:30	.....	5:43	.....	.....	.....	.....	.....	.....
100 ♿	5:02	.....	.....	5:12	5:26	.....	.....	5:38	5:42	5:52	.....	.....	6:06	.....	.....
111	5:10	5:20	.....	.....	5:37	.....	.....	.....	.....	.....	5:50	6:03	6:12	6:20	6:28
100 ♿	5:32	.....	.....	5:42	5:56	.....	.....	6:08	6:11	6:20	.....	.....	6:30	.....	.....
106	5:50	.....	5:59	.....	6:09	6:14	6:22	.....	6:33	.....	.....	.....	.....	.....	.....
100 ♿	6:04	.....	.....	6:11	6:20	.....	.....	6:31	6:34	6:43	.....	.....	6:53	.....	.....
100 ♿	6:42	.....	.....	6:49	6:58	.....	.....	7:09	7:12	7:21	.....	.....	7:31	.....	.....
106	7:00	.....	7:07	.....	7:16	7:21	7:29	.....	7:40	.....	.....	.....	.....	.....	.....
100 ♿	7:12	.....	.....	7:19	7:28	.....	.....	7:39	7:42	7:51	.....	.....	8:01	.....	.....
100 ♿	7:44	.....	.....	7:51	8:00	.....	.....	8:11	8:14	8:23	.....	.....	8:33	.....	.....
100 ♿	8:42	.....	.....	8:49	8:58	.....	.....	9:09	9:12	9:21	.....	.....	9:31	.....	.....
100 ♿	9:42	.....	.....	9:49	9:58	.....	.....	10:09	10:12	10:21	.....	.....	10:31	.....	.....
100 ♿	10:42	.....	.....	10:49	10:58	.....	.....	11:09	11:12	11:21	.....	.....	11:31	.....	.....
AM▾ 100 ♿	f12:20	.....	.....	g12:27	f12:39	.....	.....	f12:50	f12:53	.....	.....	.....	.....	.....	.....
100 ♿	f1:34	.....	.....	g1:41	f1:53	.....	.....	f2:04	f2:07	.....	.....	.....	.....	.....	.....
100 ♿	f2:15	.....	.....	g2:22	f2:34	.....	.....	f2:45	f2:48	.....	.....	.....	.....	.....	.....
100 ♿	f3:08	.....	.....	g3:15	f3:27	.....	.....	f3:38	f3:41	.....	.....	.....	.....	.....	.....

EXPLANATION OF SYMBOLS USED

Sign	Description
f	Operates early Saturday morning
g	Diverts via Denison & Beaumont Sts. Operates early Saturday morning

against six for the route 106. However, the route 107 buses can be identified in the timetable only by their route number. There is no timing point for Angophora Drive, nor does any symbol show that buses go that way.

The route 103 has ceased, with the extended 106 replacing it at its outer end. The old routes 102 and 105 have also ceased. The route 111 has been diverted over parts of their old routes. It takes a different route from Newcastle to Mayfield, not following the Highway for its full length, going instead via Marketown, Maryville and part of Mayfield South. It then follows the old 105 along Bull St, to the Mater Hospital and a different route to K-Mart Waratah. Parts of the old 102have been replaced by this service. The route 111 then runs southwards to Charlestown via Westfield Kotara, travelling well to the east of the new route of the 100. The 111 has recently been extended south from Charlestown along the back streets of Gateshead and Mount Hutton, as we can see on the map. A basic hourly service is provided on the route 111, giving four buses an hour to Mayfield.

If there is one common factor in the changes in the bus routes I have looked at in this article, it is the increased importance of traffic generators outside the Newcastle CBD. The major out of town shopping centres are the most significant of these, but the roles of the University and of John Hunter Hospital have also been important.

Report of the railway timetable commission

1919.

NEW ZEALAND.

RAILWAY TIME-TABLE COMMISSION

(REPORT OF)

Presented to both Houses of the General Assembly by Command of His Excellency.

REPORT.

In late 1919 a royal commission investigated the coal-saving railway timetable that had been introduced in July that year. The commission reported that 'the curtailment to train services' was brought about solely by the shortage of coal, and outlined the reasons for that shortage.

The 1919 coal shortage

When the First World War broke out New Zealand was still very much dependent on coal. As well as being widely used for heating and cooking, coal powered the railways and shipping, which were the main means of transporting goods and people throughout the country. It also powered gas and steam plants, which generated electricity for many households and industries. Difficulties maintaining a sufficient supply of coal for these services began almost immediately after the declaration of war. Internal production was disrupted by a shortage of miners and strike action, while supplies could not be imported due to a shortage of shipping and heavy demand in other countries. The problems maintaining supply were compounded by an increase in demand for coal from the military. After the influenza pandemic struck New Zealand in October 1918 the coal shortage worsened. Mining areas were badly affected, leaving the workforce even more depleted, and quarantine regulations further disrupted shipping.

In late June 1919 the government introduced a number of measures to address the worsening coal crisis. The working hours of public servants were reduced in order to save coal used for heating, and restrictions were placed on coal consumption during the peace celebrations planned for July 1919. But the most severe measure was a coal-saving railway timetable that saw train services cut to the bare minimum. The timetable came into force on 2 July and continued to operate until 27 September, by which time coal supplies were improving. But it was December 1919 before a full pre-war timetable was reintroduced.

AJHR 1919, D-2a

Cressy Revisited

ROD MILNE *writes*

I enjoyed the Cressy piece in The Times of July 2011 and perhaps even concur that the route is not ideal, even though it does provide access to Geelong.

Having worked in planning all my life, I have seen any number of quite arbitrary decisions made regarding location of infrastructure and justified after that initial decision was made. Humans are good at rationalising bad decisions!

Still saying that, the biggest problem Australian passenger rail faces is privatisation of rail access and the consequent woes visited on users who pay the low rate of access. Stories of steel trains being stowed away for hours waiting for late running high priority trains are legendary and this is all symptomatic of the new privatised regime where those track control is ridiculously conservative

When I lived in the Parkes area in 2005 2006, the fiasco that ensued on Saturday mornings if the Perth bound Trailerail was late was legendary. Trains sitting around in yards for hours waiting for the high access rate train to run through when in the good old days of public ownership of rail access, a sensible approach was taken to let trains out before the so called "hot shot" train.

The impact of track closures on operators like Countrylink, GSR and Transwa is also hugely problematic. Perhaps a different route could have been chosen but country passenger rail's real problems like with privatised track access in my view

The Things that went “bump” in the Night

GEOFF LAMBERT, *with material provided by NASA*

It was 2:00 AM on the morning of 1-June-2011. I was in a bus. Ahead of our bus was the contraption illustrated below. It was paused at a railroad grade crossing where a man with a flag was in the process of guiding it across. When our bus reached the Xing, we too were guided over. It was a slow process but running to a strict timetable. For, half a world away, another vehicle was heading for us to another tight timetable (p16) and at 18,000 mph. This was Space Shuttle *Endeavour*, returning from having driven the Golden Spike to complete the construction of the International Space Station.

The conjunction of 5 miles per second transport with 5 miles per hour transport is not often remarked upon, but it has a long history at Cape Canaveral. The railroad line I crossed in the bus was the NASA railroad, originally a narrow gauge sand-mining railroad.

For nearly three decades, the NASA Railroad at Kennedy Space Center in Florida has kept the space shuttle's solid rocket boosters on track. Getting the 12-foot-wide, 150-ton segments to the launch site was only possible by rail. The segments are loaded by manufacturer ATK at a plant in Promontory, Utah, then shipped in customized train cars on a seven-day trip to Kennedy.

At the Wilson's Corners junction at the northern end of the space center, the NASA Railroad splits into two nine-mile stretches of track. Kennedy's mainline runs south, past the Vehicle Assembly Building and other Launch Complex 39 facilities before reaching the center's Industrial Area. To the east, a second line of track extends to the Cape Canaveral Air Force Station.

The cross-country route involves commercial rail companies such as Union Pacific, Kansas City Southern, Norfolk Southern, CSX and Florida East Coast Railway (FEC). FEC handles the final leg of the trip, pulling the hazardous cargo into NASA's Jay Jay railroad yard north of Titusville, Fla. That's when the Kennedy railroad crew takes charge, starting with a thorough inspection.

Although the train has to traverse a drawbridge spanning the Indian River, the bridge is not strong enough to hold a train with so many heavy cars. The solution: Empty "spacer" cars are added between the segments to distribute the weight over the individual spans of the bridge, so the weight on the bridge is manageable.

The NASA locomotive pulls the train across the river to Wilson Yard, just west of Wilson's Corners junction, where the spacer cars are removed.

Although the Kennedy rails are built to withstand mainline track speeds of 60 mph, when the booster segments arrive at Kennedy, the weight and the danger involved require more caution. "Our track speed is 25 miles an hour -- and normally, we don't reach that," NASA Manager Bryant says. "Normally, our speed is no more than 10 to 15 miles an hour. When we come up to crossings, sometimes it's even slower than that."

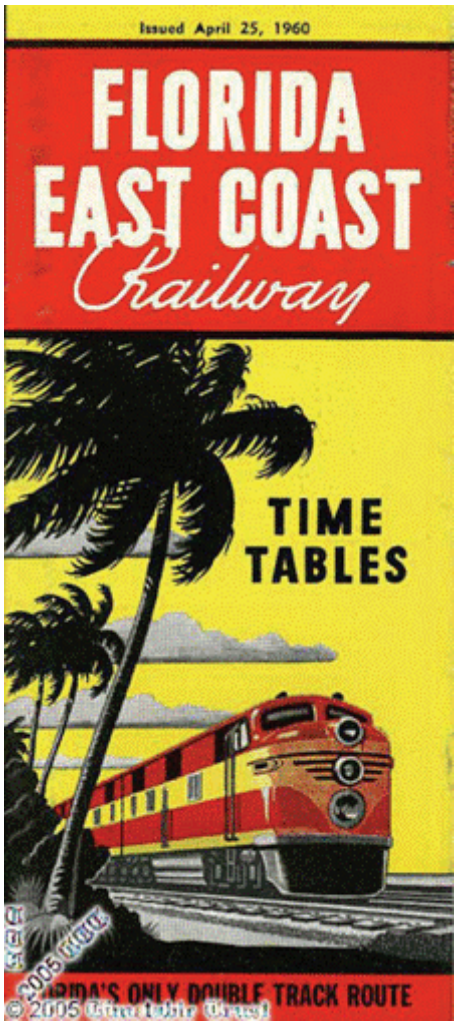
"When we're hauling in, we're hauling 4 to 5 million pounds of explosives," Bryant points out. "Through the crossings, too. It's not something to sneeze about, you know."

Kennedy's rail system was activated in 1963 when FEC (PTT p16) added a 7.5-mile connection from its mainline across the Indian River to the space center. At that time, the spaceport was in the midst of a construction boom as facilities were built for the Apollo program, and the railroad provided a means of hauling heavy building materials into the center.

"The railroad was built to accommodate the freight cars of that time, which were mostly 50 and 70 ton capacity. It was a very adequate railroad for the cars of the time," says David Hoffman, who managed the NASA Railroad at Kennedy for 13 years until his retirement in 1996.

But by the time the Space Shuttle Program

was beginning, the railroad was in sad shape after years of exposure to the salt air and moist, tropical climate. The wood crossties were rotting, rust had eaten away at the hardware, and the rail itself needed to be strengthened. FEC was contracted to upgrade the system.



"We put in the heavy rail (with) welded joints, which are stronger than a bolted joint, and (requires) virtually no maintenance," Hoffman recalls. "And we went to the concrete crossties. You're looking at a 50 or 60 year life of the crosstie instead of 10 or 12 or so for wood in Kennedy's subtropical climate, which means we put it in place and basically walk away and forget it. A lot of that track out there has been in place now since the late 80s, and it has not been touched except for weed spray."

NASA bought that portion of the railroad line from FEC in 1983, two years after the shuttle began flying, and today the skilled Kennedy crew maintains the system. NASA uses switcher locomotives, which are brawny machines that move a lot of weight over relatively short distances. The first locomotives used by NASA were three Alco S2 locomotives obtained surplus from the U.S. Army. Built in the early 1940s, they worked well until the loads required to support the Space Shuttle Program proved beyond their capability. So Hoffman initiated the procurement process to buy the space center three EMD SW-1500 locomotives built between 1968 and 1970.

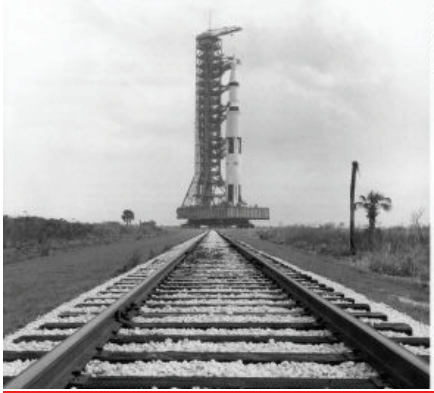
The 1,500-horsepower locomotives used today "have a lot of backbone," according to Bryant. "When we bring in the segments and the spacer cars, we've got probably close to 4 1/2 to 5 million pounds that we pull with one motor."

In addition to more familiar hopper cars and gondola cars, Kennedy's rolling stock includes cars modified or designed here. For example, Hoffman designed the booster structures car, capable of hauling additional shuttle booster components such as frustums and aft skirts. There are only two such cars in the world -- both in the space center's main rail yard.

One of the simpler tasks is hauling spent solid rocket booster casings over to Jay Jay, to be sent back to ATK. With no additional paperwork to handle and no inspections to perform, the task takes about half the time required to bring a loaded set in.

After the landing, we were waved back over the railroad again. Behind us, Endeavour was being vacuum-cleaned by that creepy-crawly and, in a few hours, would itself be towed across the railroad tracks and into the history books.

The final set of space shuttle booster segments arrived in May 2010 and the final shuttle flight landed in July 2011. The future of the railroad is probably assured inasmuch as NASA's new Heavy Lift Vehicle will use a derivative of the solid rocket boosters that trundled across the Banana River behind the Alcos for 30 years..



STS-134 Entry Timeline			SpaceCalc	
Deorbit Ops	TIG-minus	Time	Rev. 186 Deorbit to KSC	REALTIME
	05:06	09:29 PM	Begin deorbit timeline	
	04:51	09:44 PM	Radiator stow	
	04:41	09:54 PM	Astronaut seat installation	
	04:35	10:00 PM	Computers set for deorbit prep	
	04:31	10:04 PM	Hydraulic system configuration	
	04:06	10:29 PM	Flash evaporator cooling system checks	
	04:00	10:35 PM	Final payload deactivation	
	03:46	10:49 PM	Payload bay doors closed	
	03:36	10:59 PM	Mission control 'go' for OPS-3	
	03:26	11:09 PM	OPS-3 transition	
	03:01	11:34 PM	Entry switchlist verification	
	02:51	11:44 PM	Deorbit PAD update	
	02:46	11:49 PM	Crew entry review	
	02:31	12:04 AM	CDR/PLT don entry suits	
	02:14	12:21 AM	IMU alignment	
	02:06	12:29 AM	CDR/PLT strap in; MS suit don	
	01:49	12:46 AM	Shuttle steering check	
	01:46	12:49 AM	Hydraulic system prestart	
	01:39	12:56 AM	Toilet deactivation	
	01:26	01:09 AM	MCC 'go' for deorbit burn	
	01:20	01:15 AM	MS seat ingress	
	01:11	01:24 AM	Single APU start	
	01:05	01:29 AM	Deorbit ignition	delta t = 2m40s
	01:03	01:32 AM	Deorbit burn complete	delta v = 201 mph
	00:31	02:03 AM	Entry interface	
	00:26	02:08 AM	1st roll command to left	
	00:18	02:16 AM	1st roll left to right	
	00:13	02:22 AM	C-band radar acquisition	
	00:06	02:28 AM	Velocity less than mach 2.5	
	00:04	02:31 AM	Velocity less than mach 1	Sonic boom
	00:03	02:31 AM	Left turn to runway 15	
	00:00	02:35 AM	Landing