



The Times

May 2005

A journal of transport timetable history and analysis

Departures from:
John O' Groats, Bus Stand



Service 77 JOHN O' GROATS - WICK
Monday to Saturday

Service	77	77	77	77	77	77
	14	16	18	20	22	24
John O' Groats, Bus Stand	0745	0805	0865	0925	0985	1045
Carleton	---	0813	0873	---	---	0933
Sile	---	0820	0880	---	---	---
Prescott	0755	0820	0850	0900	0935	0955
Auchtermuir	0800	0835	0855	0905	0935	0955
Ross	0805	0840	0860	0910	0955	1030
Ross, Cross Roads	0815	0850	0910	0920	0955	1040
Wick, Rail Station	0820	0900	0920	0930	0955	1050

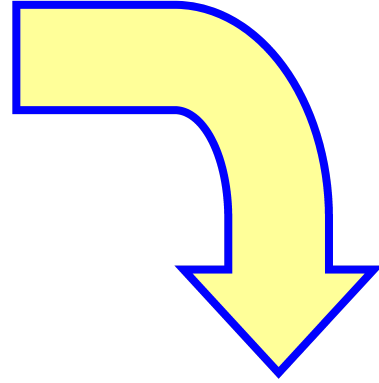
Service 80 JOHN O' GROATS - Dunnet - Castletown - THURSO
Service 280 JOHN O' GROATS - Dunnet - Castletown - Thurso - DOUNREAY
Monday to Saturday

Service	280	80	80	80	80	80
	10	10	10	10	10	10
John O' Groats, Bus Stand	0647	0700	0800	0815	0830	0850
Carleton	0651	0700	0800	0821	0831	0850
Thrs, Post Office	0700	0710	0810	0830	0840	0900
Stonemyre, Baptist Church	0705	0801	0821	0836	0846	0906
Greenwa, Cross Roads	0710	0807	0827	0842	0852	0912
Sarnock	---	0810	---	0845	0855	---
Brough	---	0818	0833	0854	0904	---
Dunnet Corner	0715	0812	0832	0856	0906	0921
Castletown	0720	0820	0840	0901	0911	0926
Thurso, St George Street	0725	0825	0845	0911	0921	0936
Dounreay, Bus Station	0730	---	---	---	---	---
Thurso, Rail Station	---	0830	0850	0920	---	---
Thurso High School	---	0835	---	---	---	---

Notes
AK - Operates via Auchtermuir Village when Ross School is open.
NS - Not Saturdays
s - School days only
S - Saturdays only

NO SUNDAY SERVICES FROM THIS STOP

www.rapsons.co.uk Highland Country
Effective from: 20th June 2003 © 2003 Bus Systems



From John O'Groats to Land's End.... How computers are changing modern bus timetables everywhere

Departures from:
LAND'S END



1 LANDS END - PENZANCE via Sennen - St Buryan - Ditt

1A LANDS END - PENZANCE via Porthcove - Trean - St Buryan - Shaftesbury - Pord

1B LANDS END - PENZANCE via Sennen - St Buryan - Shaftesbury - Pord

The numbers in the circles indicate approximate timings in minutes from LAND'S END.

Mondays to Saturdays			
Time	Service	Stop	Time
0720	1B	Sch	1058
0729	1B	SSH	1207
0858	1A		1258
1007	1		1407

Sundays			
Time	Service	Stop	Time
1005	1A		1405
1205	1B		1605

Notes:
SSH - Shaftesbury Only
SSH - Shaftesbury and Shaftesbury Village only
Sun - This journey runs during the summer: 20th May until 28th August

traveline public transport info 0870 608 2 608

Effective from: 20th June 2003 © 2003 Bus Systems

Inside: Modern bus network timetabling
Buffalo Rd buses
Broome by day and by night
Timetable for a 2 billion mile journey

RRP \$2.95
Incl. GST

The Times

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—Contents—

HASTUS, OMNIBUS AND ALL THAT	3
REPLICATED STATION NAMES	7
BUSES IN BUFFALO RD, RYDE	8
INDIAN RAILWAY ATLAS	13
BUSES IN BROOME	14
TITAN TIMETABLE	16

For... freedom!

I did something today. I spoke out for an oppressed minority. I stood up for a cause. A lost cause, even. I stood up to be counted. I did not flinch. I was determined not to be ashamed of who I am. I did not care what people thought. Yes, that's right. I walked into *WH Smith* on Waterloo Station and openly, without any furtiveness, bought the new National Rail Timetable without offering a lame excuse such as "it's for the office". Sure, people buying such things without a good excuse usually get the same polite-yet-disapproving smile the sales assistant reserve for people buying porn mags (actually, maybe I'd have been less brazen about it if I'd wrapped the timetable in a copy of *Razzle*) but, well, timetables just appeal to me, and the National Rail Timetable is a good one. Sure, it doesn't have the authoritative heft of the Deutsche Bahn Allgemeine Kursbuch, a multi-volume behemoth which comes in a box with a handle, or the perky yellowness of the Nederlandse Spoorwegen Spoorboekje, but it's still 2600 wafer-thin pages of closely spaced numbers and armchair travel. And this being Britain, it comes with a booklet of amendments which have been made before it's even come into force. Oh yes, and I can even use it for planning journeys - I find it easier to use the timetable than the web as with a timetable it's possible to see the bigger picture (how many trains there are, when's the next connection if I miss it, etc) than with the web journey planner, which only presents a number of possible complete journeys and - most importantly - doesn't allow for trains being late and missed connections. Not that such things ever happen in Britain, Oh no.

From: *Not In Production*: Broadcasting on the London station of the Independent Television Authority. May 07, 2004

Contributors Geoff Lambert, Victor Isaacs, Duncan MacAuslan., Jim O'Neil, Jim Stokes, Alf Trumper, Roger Wheaton, Judy Lambert

The Times welcomes articles and letters. Send paper manuscripts or word-processor files on disk or via e-mail to the editor at the address below. Illustrations should be submitted as clean sharp photocopies on white paper or scanned GIF or TIF format images with at least 300 dpi resolution on disk or via e-mail.

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Hastus, Omnibus and all that— modern commercial packages to manage bus timetabling.

GEOFF LAMBERT looks at some modern tools designed to produce modern bus timetables— and to provide them to the passenger.

If you peer at the fine print in the bottom left-hand corner of a Sydney Buses bus-stop timetable you will find the word *Hastus*.... It's a bit mysterious— what does it mean? It is the name of one of several companies world-wide who market bus system scheduling software. I came across them when collating material on modern methods of timetabling. At least two of these companies seem to market systems to Australian operators, and we illustrate some of their products here, including some specific examples from Sydney.

Bus scheduling is a complex business, although it does not have the disadvantage of operating in a one-dimensional world as does railway scheduling— i.e. buses can dodge one another, trains cannot. This tends to shift the focus of what the software packages do more to service provision than vehicle management. Thus, most of the material glimpsed here is material for public consumption. Indeed most of the software packages on the market don't seem to do much in the way of optimisation of scheduling anyway, they seem to mostly take a predetermined schedule and build all the ancillary products around them. The exception is probably *Hastus*, discussed later

Our first item is like this. At right is a product familiar to all of our Sydney members— a modern Transit Graphics timetable produced for Sydney Buses. Although it is fairly obviously a computer product, it is not directly the product of schedule-planning software— at least not directly. The John O Groats to Lands End **is** however. This one is from Omnibus, a major product provider from the UK. You might be tempted to think that this was just an omnibus advertising gimmick— nearly all the illustrations here come from the company websites. But, no, First Group actually does run a **Route 1** service from Penzance to land End— I nearly got run over by it while wandering the back-streets of Penzance. The service shown here is just about right

SERVICES TO CITY													
Time Period	Stopping Photo Number	A	B	C	D	E	F	G	H	I	J	K	L
		La Perouse (Anzac Pk loop)	Little Bay (Anzac Pk)	Malabar Heights (Bliga Cr & Anzac Pk)	Malabar (Anzac Pk & Franklin St)	Manubra Junction (Anzac Pk & Manubra Rd)	Kingsford (Anzac Pk & Darroven Rd)	Anzac Parade Junction (Cleveland St)	Railway Square (Lee St)	Darlinghurst (Taylor Square)	Martin Place (Elizabeth St)	City (Elizabeth & Liverpool Sts)	Circular Quay (Young St)
Monday to Friday													
AM													
394	...	04:17	...	4:20	4:25	4:31	4:38	...	4:42	4:48	...	4:52	...
393	...	...	...	04:31	4:36	4:42	4:49	5:00	...	5:07	5:15	...	5:19
394	04:38	04:41	...	04:44	04:49	04:55	5:02	...	5:07	5:15	...	5:19	...
390	5:07	5:10	...	5:14	5:19	5:26	5:32	...	5:37	5:45	...	5:49	...
390	...	5:25	...	5:27	5:32	5:38	5:45	5:56	...	...	...	...	...
399	...	05:25	05:27	5:34	5:39	5:45	5:52	...	5:57	6:05	...	6:09	...
394	5:37	5:40	...	5:44	5:49	5:55	6:02	...	6:07	6:15	...	6:19	...
390	...	5:53	...	5:57	6:02	6:08	6:15	6:26	...	...	...	...	...
399	...	5:50	05:52	5:59	6:04	6:10	6:17	...	6:22	6:30	...	6:34	...
394	06:02	6:05	...	6:09	6:14	6:20	6:27	...	6:32	6:40	...	6:44	...
390	...	06:15	...	6:19	6:24	6:30	6:37	8:48	...	...	...	...	...
399	...	6:20	06:22	6:29	6:34	6:40	6:47	...	6:52	7:00	...	7:04	...
390	...	6:25	...	6:29	6:34	6:40	6:47	6:58	...	...	...	...	...
394	6:32	6:35	...	6:39	6:44	6:50	6:57	...	7:02	7:10	...	7:14	...
390	...	6:42	...	6:46	6:51	6:57	7:04	7:15	...	...	...	...	...
394	6:42	6:45	...	6:49	6:54	7:00	7:07	...	7:13	7:21	...	7:25	...
390	...	6:49	...	6:53	6:58	7:04	7:11	7:22	...	...	...	...	...
399	...	06:49	06:50	6:57	7:02	7:08	7:15	...	7:21	7:29	...	7:33	...
L94	06:48	6:51	...	6:56	7:04	7:10	...	...	7:24	7:31	...	7:36	...
390	...	07:00	...	7:05	7:11	7:17	7:24	7:36	...	...	...	...	...
394	...	...	...	07:08	7:14	7:20	7:27	...	7:33	7:41	...	7:45	...
K94	7:04	7:07	...	7:12	7:18	7:24	...	...	7:30	7:40	7:44	...	...
399	...	7:09	7:06	7:13	7:19	7:25	7:33	...	7:39	7:47	...	7:51	...
390	...	...	...	7:15	7:21	7:27	7:37	7:50	...	...	...	...	...
L94	07:07	7:10	...	7:15	7:23	7:29	...	...	7:44	7:51	...	7:55	...
390	...	07:15	...	7:20	7:26	7:32	7:44	7:57	...	...	...	...	...
K94	7:14	7:17	...	7:22	7:28	7:36	...	...	7:52	7:56	...	...	...
394	...	...	...	...	7:38	7:50	...	...	7:56	8:04	...	8:08	...
394	...	...	...	7:26	7:32	7:39	7:51	...	7:57	8:05	...	8:09	...
L94	07:20	7:23	...	7:28	7:36	7:42	...	...	7:57	8:04	...	8:08	...
399	...	7:19	7:21	7:29	7:36	7:43	7:55	8:08	...	...	...	8:13	...
390	...	...	...	...	7:36	7:43	7:55	8:08	...	...	...	...	...

EXPLANATIONS

Sign Description

a Wheelchair-accessible

b Operates direct via Prince Edward St, Malabar (not via Malabar Beach)

c Connects at Anzac Pk Junction with Route 372 Railway Square service. Through fares allowed.

am - normal type / pm - bold type

too; there are only slight variations in the current (May 2005) First timetable. The John O'Groats timetable is real too— a service operated by 'Highland Country', a subsidiary of Rapsons.

Illustrated on the next page (top) is some publicity material from *Hastus*, a product of GIRO, a Canadian company, which markets a wide range of products and whose name appears on some of our Sydney timetables. *Hastus* is very popular, with 250 customers world-wide— to the extent that it now has an international users group, who hold biennial conventions. In Australia,

it is used by Yarra Trams, Sydney Buses, Busways, ACTION and Brisbane Transport among others. On our page 5 are two 'stop timetables' found on the web-site of Sydney buses, and relating to services in the regions of my home— the Northern Beaches. These illustrate the flexibility of the system and show departures from a particular stop, grouped by route and by time respectively.

Core of the *Hastus* system is the Relational Database, wherein resides the data required to run all the other functions. These can roughly be divided between (1)

Timetable departures from a stop

from stop: 206911, 206912, 206947 & 206954, Neutral Bay, Military or Watson (on 15 Apr 2005)

click on a departure time to view the whole trip:

route: 151 - going to GVB, York near Market from 206911	4:27am 4:37am 4:47am 4:57am 5:07am
route: 164 - going to GVB, York near Market from 206911	4:54am 4:59am
route: 248 - going to Warrington Set Down Terminus, York or Margaret from 206911	5:20am
route: 178 - going to Warrington Set Down Terminus, York or Margaret from 206911	5:30am
route: 247 - going to Warrington Set Down Terminus, York or Margaret from 206911	5:50am 6:00am 6:10am 6:20am
route: 144 - going to St Leonards, Royal North Shore Hospital from 206911	6:00am 6:40am 7:00am 7:40am 7:50am 8:30am 8:50am 9:10am 9:30am 9:50am 10:10am 10:30am
route: 164 - going to Warrington Set Down Terminus, York or Margaret from 206911	6:00am 6:05am
route: 143 - going to Chatswood Station Set Down Only from 206911	6:30am 6:40am 7:00am 7:20am 7:30am 7:50am 8:10am
route: 178 - going to Warrington Set Down Terminus, York or Margaret from 206911	6:30am 7:00am
route: 257 - going to Chatswood Interchange Set Down from 206911	6:30am 7:00am 7:20am 7:40am 8:00am 8:20am 8:40am
route: 230 - going to Murrumbidgee Park, Alford or Olympic from 206911	6:30am 7:00am

Scheduling (the green units at top-visible in colour in The Times web version; (2) Timetable provision (cream, left middle); *post-hoc* service analysis (orange, lower left); crew functions (lower right, brown) and; miscellaneous including paratransit, which I think means transit for the disabled (bottom boxes). The system interfaces to other computer systems (data import/export, 'Other Systems, bottom grey boxes).

At the bottom of page 4 is a 'bus graph', part of the crew scheduling package that comes with the Omnibus system.. Bus-savvy readers are invited to submit their interpretations of what it represents> Like Hastus, the Omnibus package is centred around a relational database—Omnibase—and the bus graph is part of this. Other components of the Omnibus package include Omintimes (which draws up the timetables); Omnirota (a crew rostering system); Omnistop (a system for preparing various types of 'stop timetables'); Crew Plan (an

automatic crew-scheduling and; Pocket Bus electronic assistant for inspectors, service controllers and other on-road staff. It can display timetables, departure lists and journey detail from OMNITIMES data on a handheld Pocket PC or Personal Digital Assistant.

Omnibus is a UK-based company and its product is (fairly obviously) in wide use all over the U.K.—there are 90 users there plus 2 in Hong Kong. A major use is by the First Group (they also use Hastus), with 26 networks using Omnibus.

Omnibus' particular strength seems to be in its crew scheduling and rostering functions, shown in the two sample "screen-shots" at the top of the next page. Omnibus is also strong on provision of customer information (our cover and the "stem and leaf plot at the bottom of the next page.

Both Omnibus and Hastus have extensive web-sites which advertise their wares. Omnibus' is particularly useful, with many downloadable sample timetables in PDF format. Hastus is at <http://www.giro.ca/> and Omnibus at <http://www.omnibus-systems.co.uk/> The Times editor has

Timetable departures from a stop

from stop: 209579: Manly Wharf, (Stand A) (on 10-Apr-2005)

PM

6:30am	156 - going to Mons Vale, Pittwater nr Waratah from 209579
7:35am	136 - going to Chatswood Interchange Set Down from 209579
7:40am	155 - going to McCarrs Creek Terminus from 209579
8:20am	155 - going to McCarrs Creek Terminus from 209579
8:20am	139 - going to Brookvale Bus Depot, Pittwater Rd. from 209579
8:27am	169 - going to QVB, York near Market from 209579
8:40am	136 - going to Chatswood Interchange Set Down from 209579
8:45am	155 - going to Bayview Garden Village Terminus, Annam Rd. from 209579
8:55am	136 - going to Chatswood Interchange Set Down from 209579
9:22am	156 - going to McCarrs Creek Terminus from 209579
9:25am	136 - going to Chatswood Interchange Set Down from 209579
9:27am	169 - going to QVB, York near Market from 209579
9:42am	155 - going to Bayview Garden Village Terminus, Annam Rd. from 209579
9:42am	139 - going to Warringah Mall Terminus from 209579
9:45am	136 - going to Chatswood Interchange Set Down from 209579
10:12am	156 - going to McCarrs Creek Terminus from 209579
10:15am	136 - going to Chatswood Interchange Set Down from 209579
10:27am	169 - going to QVB, York near Market from 209579
10:42am	155 - going to Bayview Garden Village Terminus, Annam Rd. from 209579
10:42am	139 - going to Warringah Mall Terminus from 209579
10:45am	136 - going to Chatswood Interchange Set Down from 209579
11:12am	156 - going to McCarrs Creek Terminus from 209579
11:15am	136 - going to Chatswood Interchange Set Down from 209579
11:27am	169 - going to QVB, York near Market from 209579
11:42am	155 - going to Bayview Garden Village Terminus, Annam Rd. from 209579
11:42am	139 - going to Warringah Mall Terminus from 209579
11:45am	136 - going to Chatswood Interchange Set Down from 209579

PM

12:07pm	169 - going to Frenchs Forest Cemetery, Hakas Ave. from 209579
12:12pm	156 - going to McCarrs Creek Terminus from 209579
12:15pm	136 - going to Chatswood Interchange Set Down from 209579
12:27pm	169 - going to QVB, York near Market from 209579
12:42pm	155 - going to Bayview Garden Village Terminus, Annam Rd. from 209579
12:42pm	139 - going to Warringah Mall Terminus from 209579
12:45pm	136 - going to Chatswood Interchange Set Down from 209579
1:12pm	156 - going to McCarrs Creek Terminus from 209579
1:15pm	136 - going to Chatswood Interchange Set Down from 209579
1:27pm	169 - going to QVB, York near Market from 209579
1:42pm	155 - going to Bayview Garden Village Terminus, Annam Rd. from 209579
1:42pm	139 - going to Warringah Mall Terminus from 209579
1:45pm	136 - going to Chatswood Interchange Set Down from 209579

Replicated station names

ROGER WHEATON, JIM STOKES and ALF TRUMPER have all written with further information, corrections and insights into the replication of station names in Australasian timetables. Yet more next month!

From Roger Wheaton

Duplicated names:

Does Victoria Square* qualify? The list shows (Mt) Victoria (Park) (St).

Does Goodwood and Goodwood Road* (both in SA) qualify?

Oaklands Adelaide, NSW

* now closed.

Foreign names in SA;

Abbeville France (Siding at 124 miles on the Gladstone line.)

Clare Ireland

Kilkenny Ireland

Virginia Ireland

Wilmington Although a British name, the town was apparently named after the place in USA.

All except Kilkenny now closed.

Manning's Place Names in South Australia is the authoritative text on the origin of place names in SA. There may be others I have missed.

Regards, Roger Wheaton

From Jim Stokes

The What's in a Name exercise (Times March 2005) should keep us all happy for years, although nobody has yet been brave enough to tackle names found in both Australia and the UK or Eire. However we may need some rules about tolerance of minor variations. For example New Town and Campbell Town have always been two words in Tasmania and in the working timetables Showgrounds was always Elwick Show Ground. Bellevue Racecourse was between Cornelian Bay and New Town.

Jerusalem (later Colebrook) is another Tasmanian name from Palestine. I doubt however whether Lower Jerusalem (later Woodlands) could be found in the Bible.

The following names occur in both Tasmania and at least one other state

or New Zealand:

Abattoir (Abattoirs in NSW, Qld, SA)

Apsley (NSW)

Ascot (Siding) (Qld)

Ashley (NSW, NZ)

Avoca (Vic, NZ)

Ayr (later Telita) (Qld)

Blythe (Blyth in SA)

Botanical Gardens (Vic)

Branxholm (Branxholme in Vic)

Breadalbane (later Relbia) (NSW)

Bridgewater (Vic, SA)

Brighton (Vic, SA)

Burnley (Vic)

Bushy Park (Macquarie Plains) (Vic, Qld)

Cambridge (NZ)

Campbell Town (Campbelltown in NSW)

Claremont (WA)

Clarendon (NSW, Qld, NZ)

Clayton (Vic)

Cleveland (Qld)

Coniston (NSW)

Deep Lead (later Williamsford) (Vic)

Dolomite (Qld)

Don (Qld)

Dundas (NSW)

Dysart (Vic)

Emu (Siding) (Vic)

Epping (NSW, Vic)

Frasers (Qld)

Gawler (later Methanga) (SA)

Glenorchy (Vic)

Griffith (NSW)

Guildford (NSW, Vic, WA)

Hamilton Road (later Hayes) (Hamilton in Qld, NSW, Vic, NZ)

Henty (NSW)

Howard (Siding) (Qld)

Ivanhoe Gates (Ivanhoe in NSW)

Kings (Qld)

Leslie (Qld)

Lilydale (Vic)

Little Hampton (Littlehampton in SA)

Mackays (Mackay in Qld)

Maitland Road (Maitland in NSW)

Mangalore (Vic)

Melton (Vic, SA)

Montrose (Qld)

National Park (NSW, SA, WA, NZ)

Nelsons Creek (Nelson Creek in NZ)

Newstead (Vic)

New Town (Newtown in NSW, Vic)

Perth (WA)

Pinnacles (Pinnacle in Qld)

Ravenswood (Vic)

Richmond Road (Richmond in Vic, Qld)

Riversdale (Vic)

Riverton (SA, NZ)

Ross (NZ)

St Leonards (NSW, SA, NZ)

St Marys (NSW)

Selma Gates (Selma in Qld)

Sheffield (NZ)

Somerset (NSW)

Stanley (Qld)

Stony Creek (later Llewellyn) (Stoney Creek in Qld)

Summit (The Summit in Qld)

Ringwood (Vic)

Waratah (NSW)

Watts Road (Watts in Qld)

William St (Qld)

Wynyard (NSW)

From Alf Trumper

A few more additions to the list.

Goodwood Qld

Inglewood Qld

Stratford Qld

Woodend Qld

Sandgate Qld/Newcastle

Clifton Qld/NSW

Bunda St Qld(Cairns)/Qld(Bundaberg)

Jewell(s) Newcastle/Melbourne

Fassifern Qld/Newcastle

Regards, Alf

Buses in Buffalo Road, Ryde

JIM O'NEIL resumes his series of Sydney's regional bus timetables, with another route feeding the Main Northern railway line

When I was exploring Sydney's private buses in the late fifties, moving outwards from my home near Chatswood, one of the groups which attracted my interest was the Hunter's Hill Bus Co., which not only operated into Chatswood and Crow's Nest, but had quite a few routes in Ryde and Hunter's Hill municipalities. One I discovered, which wasn't operated by the standard 44-seat REO/Syd Wood buses, was Route 126, which carried on its side-boards (all Hunter's Hill buses had sideboards in those days) 'Gladesville to Ryde via Buffalo Road'. I acquired my first timetable for the 126 in 1961, if I remember correctly. It was printed on one side of a sheet of orange-coloured paper. It is dated, but I can no longer recall in what year before 1961 the 3rd of March was on a Friday (1950-Ed).

When we look at the timetable (right) we can see that a single bus can cover the whole timetable. It takes a little under twenty minutes to run between the two terminals - the last run leaves Gladesville at 6.34 and arrives at Ryde at 6.52. There doesn't seem to be a break for the driver to take lunch in the middle of the day, so it seems unlikely that a single driver was on duty from 6.48 a.m. until 6.52 p.m. There was no evening service on the 126, but Saturday mornings are covered, once again requiring a single bus. Apart from the heading 'Buffalo Road' and the names of the two terminals, there is no information on how and where the bus ran. If you needed to catch it, you already knew.

My next timetable (page 9, top left and right) is dated 18th November 1966 and has been typed on a stencil, not printed professionally. There is still basically a single bus, now identified as Shift 14, but there are also several school specials which run partly on the 126 and partly in areas beyond it. How you got back from Ryde High School in the afternoon is not indicated. The regular bus starts a little later, and ends a little earlier than in the 1961 timetable. Most

notably, the off-peak times are more predictable. The bus leaves the two alternative terminals at the precise twenty minute intervals. There is still Saturday service, to be seen on the reverse side, but it no longer runs to Gladesville. Instead it runs in a loop from Top Ryde along Quarry, Aitchandar and Buffalo Roads, back to Top Ryde. Ken Butt has replaced C. Paull as manager, and the timetable has also provided a list of the streets the bus follows. This was the first I learnt that the 126 actually left Buffalo Road and diverted to the north at the Ryde end of the run.

This may be clearer if you look at the map on page 10, which I have copied from a Collin's Sydney Street Directory, also undated but published a little later. The 126 starts at Wharf Road in Gladesville (you can see the number below the terminal, indicated by a flag). For the first third of the route, it follows Victoria Road, just as the 500 (the government bus from the City to Ryde) does. At Monash Road it turns north for two blocks then west into Buffalo Road. For the next third of the route it is not far from the 500 to the south and the 75 to the north, though there are few cross streets on this section, and not many houses, since this area is mostly industrial. It is the last part of the route, where it turns north along Aitchandar road, that the 126 has the most productive territory. It moves away from the 500, but once on Quarry Road it draws near to another Hunter's Hill route, the 205, from Top Ryde to North Ryde. On Woodbine Crescent the 126 is only two short blocks from Lane Cove Road where the 205 runs (the Collin's map shows the 126 against both the Woodbine and Lane Cove routes). This is the area where the Saturday bus made its loop. The 126 was in an older, more developed area of Ryde, with little chance for expansion and too close to other bus routes for a prosperous future.

The next timetable, (see pages 9 and 10, bottom) commenced on Saturday 5th January 1974. There is still a single shift, the 14, operat-

HUNTER'S HILL BUS CO.
1-3 Monash Road, Gladesville
C. PAULL, Manager, WN1601

BUFFALO ROAD
Commencing Friday, 3rd March

Route 126

TIMETABLE
Mondays to Fridays

Depart GLADESVILLE	Depart RYDE
6.48	7.50
7.32	7.58
8.16	8.26
9.00	9.22
9.44	9.50
10.28	10.28
11.12	11.02
11.56	11.54
12.40	12.42
13.24	13.30
14.08	14.08
14.52	14.52
15.36	15.36
16.20	16.20
17.04	17.04
17.48	17.48
18.32	18.32

Saturdays

Depart GLADESVILLE	Depart RYDE
8.00	8.00
8.44	8.44
9.28	9.48
10.12	10.32
10.56	11.16
11.40	12.00
12.24	12.44

Gladesville 500

Times Print, Gladesville - WN2608

Route 126, Buffalo Road current 1961

ing on Mondays to Fridays, with one School Special provided by Shift 20, but the off-peak service runs only in the first half of the day. Only alternate runs go to Gladesville in the off-peak, with the others going to the Dress Circle Estate, East Ryde. You won't find it on the map, but Moncrieff Drive can be found north of the Field of Mars Cemetery. As we can see, this was still 'North Ryde' in the late sixties. This area was also served by the route 75 from Gladesville. The 126 operated in opposite directions along Aitchandar Road coming out of Top Ryde, depending on whether it was going to Gladesville or East Ryde. There is still Saturday service, but only to Dress Circle Estate and it is run, not by the route 126's bus, shift 14, but other shifts out of Top Ryde.

My last timetable for the 126 was

Hunters Hill Bus Co. 1 Monash Road, Gladesville		K. A. Best Manager phone 89.1631	
B U S T I M E - T A B L E			
ROUTE NO. 126		ROUTE NO. 126	
GLADESVILLE to RYDE			
via Buffalo & Quarry Rds, Woodbine Cres.			
DEPART GLADES- VILLE	Depart Buffalo & Cressey Roads	ARRIVE R Y D E	DEPART R Y D E
Depart Buffalo & Cressey Roads	ARRIVE R Y D E	DEPART R Y D E	Depart Buffalo & Cressey Roads
ARRIVE R Y D E	DEPART R Y D E	ARRIVE GLADES- VILLE	DEPART R Y D E
TO RYDE		TO GLADESVILLE.	
Mondays to Fridays			
14	a.m. 27.0	a.m. 7.3	a.m. 7.15
14	7.36	7.42	7.52
14	8.15	8.21	8.32
17	Depart Monash & Buffalo Rds 8.25B via Rt.126 to Lane Cove Road thence Quarry Rd, Smalls Rd to Ryde High School, arrive 8.35am		
26	Depart Buffalo & Malvina St 8.25B via Rt.126, Quarry & Lane Cove Road to Ryde, thence to St. Charles Catholic School, arrive 8.42am		
14	9.0	9.6	9.16
14	9.40	9.46	9.56
14	10.20	10.26	10.36
14	11.0	11.6	11.16
14	11.40	11.46	11.56
14	12.20pm	12.26pm	12.36pm
14	1.0	1.6	1.16
14	2.10	2.16	2.26
14	2.50	2.56	3.6
22	Depart St. Charles Catholic School 3.38B via Victoria Rd, Ryde Primary School, arrive 3.50B		
14	3.38B	3.45	3.57
14	4.28	4.34	4.44
14	5.15	5.21	5.31
18	5.55	6.1	6.11
14	a.m. 7.27	a.m. 7.33	a.m. 7.40
14	7.55	8.6	8.12
14	8.40	8.52	8.58
14	9.27	9.32	9.38
14	10.12	10.17	10.23
14	10.52	10.57	11.03
14	11.32	11.37	11.43
14	12.12pm	12.17pm	12.23pm
14	12.52	12.57	1.03
14	1.42	1.47	1.53
14	2.32	2.37	2.43
14	3.10xx	3.26	3.32
14	3.38B	3.45	3.57
14	4.17	4.23	4.33
14	5.2	5.8	6.3
14	5.46	5.51	6.01
14	6.27	6.32	6.38

Time-table continued...

Depart Ryde.	Depart Woodbine Crescent & Quarry Road	Depart Aitchandar & Buffalo Roads	Arrive Ryde
S A T U R D A Y S			
14	a.m. 8.22	a.m. 8.26	a.m. 8.31
14	8.48	8.52	9.1
14	9.28	9.32	9.31
14	10.18	10.22	10.26
6	From Monash Rd Depot 11.19 11.21 11.26		
14	11.30	11.32	11.38
14	12.5	12.9	12.13
14	12.29	12.29	12.33
14	12.40 via Buffalo Road direct to Monash Road Depot		
NOTE On SATURDAYS Buses operate from Ryde via Lane Cove Rd, Buffalo Rd, Greene Ave, Woodbine Cres, Quarry Road, Gardiners Ave, Bidgee St, Aitchandar Road, Buffalo Road, Lane Cove Road and return to Ryde.			
No service Sundays-Holidays-Good Friday-Christmas Day			
Abbreviations used in this time-table			
B Denotes - Runs on School days only.			
V Denotes - Runs to or from Gladesville School			
Z Denotes - Runs to or from Monash Road, Depot.			
xx Denotes - Runs via Lane Cove Road to Ryde High School, and exits Woodbine Crescent on school days			
ROUTE OF THIS SERVICE			
From GLADESVILLE: via Victoria Road, Monash Road, Buffalo Rd, Aitchandar Road, Bidgee Street, Gardiners Avenue, Quarry Road, Woodbine Crescent, Greene Avenue, Buffalo Road, Lane Cove Road to RYDE.			
This time-table commences on 18th November, 1966			

Above: Route 126, Gladesville to Ryde, 18th November 1966

Below: Route 126; Gladesville to Ryde Saturday 5th January 1974 (page 1)

HUNTERS HILL BUS CO. PTY. LTD. 1 Monash Road, Gladesville, NSW. 2111		B U S T I M E - T A B L E		Telephone 89-1601 ROUTE NO. 126	
RYDE to DRESS CIRCLE ESTATE, EAST RYDE and GLADESVILLE					
R U N No.	DEPART GLADESVILLE (Victoria Road near Jordan St)	DEPART DRESS CIRCLE ESTATE, East Ryde	Depart Aitchandar & Buffalo Roads.	Depart Woodbine Cres & Bambi St.	ARRIVE R Y D E (Devlin St opp Grace Bros.)
					DEPART R Y D E (Devlin St opp Grace Bros.)
					Depart Woodbine Cres & Bambi St.
					Depart Aitchandar & Buffalo Roads.
					ARRIVE DRESS CIRCLE ESTATE East Ryde.
					ARRIVE GLADESVILLE (Victoria Road near Jordan St)
TO RYDE			TO DRESS CIRCLE ESTATE and GLADESVILLE.		
MONDAYS to FRIDAYS					
14	a.m. 7.0	a.m. 7.4	a.m. 7.8	a.m. 7.13	a.m. 7.15
14	7.34	-	7.40	7.44	7.52
14	8.11B	-	8.23B	8.27B	8.37B
14	8.20*	-	8.26*	8.30*	8.40
26	Depart Buffalo & Malvina St. 8.13am via Route 126 to Quarry Road, thence Lane Cove Rd, to Ryde, thence Blaxland Rd, Victoria Road to St. Charles Catholic School, arrive 8.37am				
14	9.7	-	9.13	9.17	9.25
14	-	9.37	9.43	-	9.51W
14	10.8	-	10.14	10.18	10.26
14	-	10.39	10.45	-	10.53
14	11.11W	-	11.17W	11.21	11.29
14	-	11.41	11.46	-	11.53
14	Z 2.59QQ	-	3.20Q	QQ	3.19QQ
14	Z 3.11*	-	3.14*	via Buffalo Rd	3.19*
14	Depart St. Charles Catholic School 3.35pm via Victoria Road, Princess St, Argyle St Blaxland Road.....3.45B				
14	3.40V	-	3.46	3.50	3.56
14	4.30	-	4.36	4.40	4.55
14	5.15	-	5.21	5.25	5.37
					a.m. 7.21
					a.m. 7.25
					a.m. 8.2
					a.m. 8.50
					a.m. 9.31
					a.m. 9.36
					a.m. 10.0W
					a.m. 10.33
					a.m. 10.38
					a.m. 11.3
					a.m. 11.35
					a.m. 11.41
					a.m. 12.3pm
					a.m. 3.32
					a.m. 3.38
					a.m. 3.55B
					a.m. 4.15
					a.m. 4.21
					a.m. 5.5
					a.m. 5.51
					a.m. 5.47
					a.m. 7.32
					a.m. 8.8
					a.m. 8.56
					a.m. 10.6W
					a.m. 11.9
					a.m. 12.9pm
					a.m. 3.38
					a.m. 4.21
					a.m. 5.11
					a.m. 7.50
PLEASE NOTE WHERE EACH JOURNEY STARTS AND FINISHES Abbreviations alongside departure times, indicates that such journeys are CONDITIONAL, OPERATE ON CERTAIN DAYS ONLY, OR DIVERT FROM THE NORMAL ROUTE, for details see General service information.					
THIS TIME-TABLE COMMENCES ON SATURDAY 5TH JANUARY, 1974					

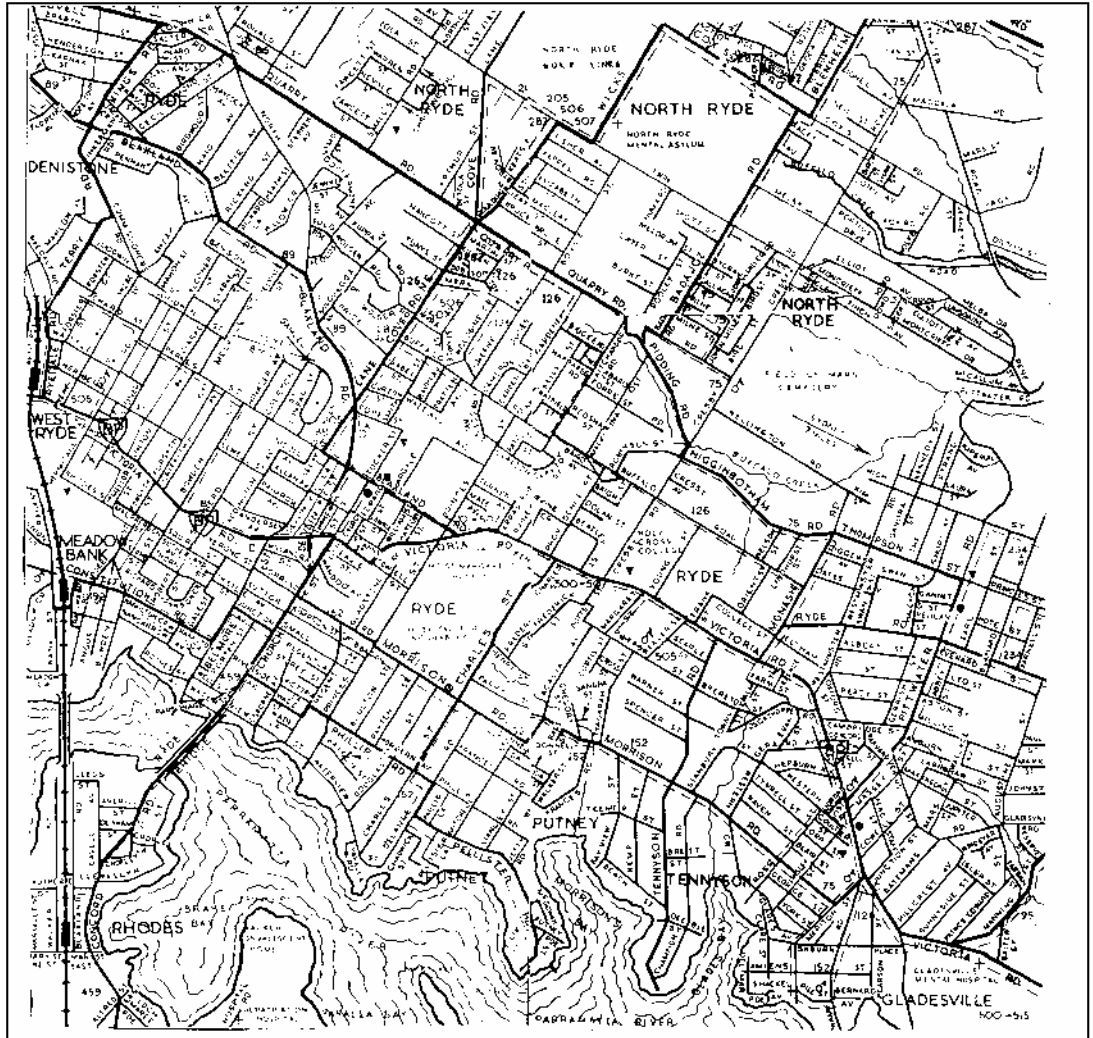
issued on Monday 25th August 1980 (page 11). The service has again been reduced. The Ryde to

Dress Circle Estate has been dropped, and the off-peak service runs only to the Aitchandar loop.

The service in the peak hours are either school specials or buses going to or from West Ryde Station,

Right: The area round Ryde and Gladesville, showing the Route 126 and other bus routes. Collins Sydney Street Directory

Below: Route 126; Gladesville to Ryde Saturday 5th January 1974 (page 2)



ROUTE NO. 126 ----- R Y D E to DRESS CIRCLE ESTATE, EAST RYDE.						
Run No.	DEPART DRESS CIRCLE ESTATE, East Ryde.	Depart Aitchandar & Buffalo Roads.	ARRIVE R Y D E (Devlin St opp. Grace Bros.)	DEPART R Y D E (Devlin St opp. Grace Bros.)	Depart Aitchandar & Buffalo Roads.	ARRIVE DRESS CIRCLE ESTATE, East Ryde.
	TO RYDE →			TO DRESS CIRCLE ESTATE →		
	SATURDAYS					
3	a.m. 9.0	a.m. 9.6	a.m. 9.10	a.m. 9.17	a.m. 9.21	a.m. 9.27
3	9.30	9.35	9.40	10.17	10.21	10.27
3	10.28	10.34	10.38	-	-	-
6	-	-	-	11.30	11.34	11.41
6	11.42	11.48	11.52	-	-	-
4	-	-	-	12.5pm	12.9pm	12.10pm
	NO SERVICE ON RYDE TO GLADESVILLE SECTION OF THIS SERVICE ON SATURDAYS.					
	GENERAL SERVICE INFORMATION					
	Abbreviations used in this time-table					
B	Denotes - Bus runs on school days only					
V	" Bus runs to or from Gladesville Public School					
*	" Bus runs during SCHOOL HOLIDAYS ONLY.					
QQ	" On school days, runs via Route 126 service to Quarry Road, thence Lane Cove Road, Bridge Road, Smalls Road, Quarry Road, Lane Cove Road to Ryde, calling at Malvina & Ryde High Schools.					
Z	" Runs to or from Monash Road, Depot.					
W	" Bus runs via Monash Road, Thompson St, Westminister Road or vice versa.					
BB	" This Bus starts from Ryde P.O. in Blaxland Road					
	ROUTE OF GLADESVILLE SERVICE.			ROUTE OF DRESS CIRCLE SERVICE.		
	From Ryde:- Devlin St, Blaxland Rd, Devlin St, Lane Cove Rd, Buffalo Rd, Greene Ave, Woodbine Cres, Quarry Rd, Gardiners Ave, Bidgee St, Aitchandar Rd, Buffalo Rd, Monash Rd, Victoria Rd to Gladesville.			From Ryde:- Devlin St, Blaxland Rd, Devlin St, Buffalo Rd, Aitchandar Rd, Bidgee St, Gardiners Ave, Quarry Rd, Boyce St, Twin Rd, Mancrieff Drive to Sagar Place.		

NO SERVICE ON SUNDAYS HOLIDAYS GOOD FRIDAY and XMAS DAY

NORTH & WESTERN BUS LINES PTY. LIMITED,
1 MONASH ROAD,
GLADESVILLE, N.S.W. 2111.

ROUTE 126

GLADESVILLE to RYDE.

Telephone: H 6-2622

(Certain journeys extend to West Ryde)
via Buffalo Rd., Quarry Rd., Woodbine Cres.

Bus No.	DEPART GLADESVILLE Victoria Rd near Jordan Street.	Depart Aitchandar & Buffalo Roads.	Depart Boyce St & Quarry Road.	ARRIVE RYDE Devlin St opposite Grace Hosp.	Arrive St. Charles & Holy Cross College.	Arrive West Ryde Station West Parade.	Depart West Ryde Station West Parade.	Depart Holy Cross College & St. Charles.	DEPART RYDE Devlin St opposite Grace Hosp.	Depart Boyce St & Quarry Road.	Depart Aitchandar & Buffalo Roads.	ARRIVE GLADESVILLE via Jordan Street.
	TO RYDE AND WEST RYDE →						← TO RYDE AND GLADESVILLE					
SUNDAYS TO FRIDAYS												
31	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.
3	5.24	5.28 via Buffalo Road	5.31	5.31	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34
6	6.30	6.34 via Buffalo Road	6.38	6.38	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45
7	7.00	7.04 via Buffalo Road	7.08	7.08	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14
11	7.34	7.40	7.44	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
13	8.14 Bxx	8.13 G	8.18 B LC	8.28 B	8.37 B	8.37 B	8.37 B	8.37 B	8.37 B	8.37 B	8.37 B	8.37 B
14	8.20*	8.26*	8.30*	8.37*	8.37*	8.37*	8.37*	8.37*	8.37*	8.37*	8.37*	8.37*
15	9.05	9.12	9.16	9.22	9.22	9.22	9.22	9.22	9.22	9.22	9.22	9.22
17	-	9.40 xx	9.44	9.49	9.49	9.49	9.49	9.49	9.49	9.49	9.49	9.49
18	-	10.26 xx	10.29	10.34	10.34	10.34	10.34	10.34	10.34	10.34	10.34	10.34
19	-	11.26 xx	11.29	11.34	11.34	11.34	11.34	11.34	11.34	11.34	11.34	11.34
20	-	12.26 xx	12.29	12.34	12.34	12.34	12.34	12.34	12.34	12.34	12.34	12.34
21	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
22	-	12.26 xx	12.29	12.34	12.34	12.34	12.34	12.34	12.34	12.34	12.34	12.34
26	-	3.05(1)	3.09(1)	3.19(1)	3.19(1)	3.19(1)	3.19(1)	3.19(1)	3.19(1)	3.19(1)	3.19(1)	3.19(1)
28	-	3.14* via Buffalo Road	3.19*	3.19*	3.19*	3.19*	3.19*	3.19*	3.19*	3.19*	3.19*	3.19*
28	-	3.55 via Buffalo Road	4.02	4.02	4.02	4.02	4.02	4.02	4.02	4.02	4.02	4.02
17	-	-	-	-	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
14	-	-	-	-	4.04 xx	4.04 xx	4.04 xx	4.04 xx	4.04 xx	4.04 xx	4.04 xx	4.04 xx
12	-	-	-	-	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.17
27	-	-	-	-	5.29 PO	5.29 PO	5.29 PO	5.29 PO	5.29 PO	5.29 PO	5.29 PO	5.29 PO
3	-	-	-	-	5.36 xx	5.36 xx	5.36 xx	5.36 xx	5.36 xx	5.36 xx	5.36 xx	5.36 xx
10	-	-	-	-	5.40 PO	5.40 PO	5.40 PO	5.40 PO	5.40 PO	5.40 PO	5.40 PO	5.40 PO
32	-	-	-	-	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
32	-	-	-	-	9.30 (1)	9.30 (1)	9.30 (1)	9.30 (1)	9.30 (1)	9.30 (1)	9.30 (1)	9.30 (1)

This Timetable commences Monday, 25th August, 1980

ABBREVIATIONS USED IN THIS TIME-TABLE:-

- B Denotes - Runs on School days only.
- xx " - Departs from northern side of Victoria Road near Pittwater Road and operates via Pittwater Road, Ryde Road, Park Road, Princes Street, Thompson Street, Monash Road regaining normal route in Monash and Buffalo Roads, calling at Malvina High School.
- LC " - Runs via Lane Cove and Quarry Roads in lieu of Woodbine Crescent and Buffalo Road.
- * " - Bus runs during School holidays only.
- 100 " - On School days, bus runs from MALVINA HIGH SCHOOL via Route 126 to Quarry Road, Lane Cove Road, Bridge Road, Swales Road, RYDE HIGH SCHOOL, Quarry Road, Lane Cove Road to Ryde. Picks up as required.
- xx " - Buses run from RYDE via Lane Cove Road, Buffalo Road, Aitchandar Road, Budge Street, Gardiners Avenue, Quarry Road, returning back to Ryde via Woodbine Cres. and Buffalo Road, Lane Cove Road, with the exception of the 6.04pm and 5.36pm journeys, which extend to MACQUARIE UNIVERSITY and EASTWOOD.
- 0 " - Terminates at Dreesy and Buffalo Roads.
- PO " - Bus departs from RYDE POST OFFICE, omits Devlin Street bus stop.
- ft " - Bus runs 10 minutes later on late shopping nights.
- † " - Bus extends to Boronia Park.

ROUTE OF THIS SERVICE:-

From GLADESVILLE... via Victoria Road from Jordan Street, Monash Road, Buffalo Road, Buffalo Road, Aitchandar Road, Budge Street, Gardiners Avenue, Quarry Road, Woodbine Cres., Greene Avenue, Buffalo Road and Lane Cove Road to RYDE.

Certain journeys extend to WEST RYDE STATION via Victoria Road, Bernacchi Road, Herbert Street, Ryedale Road, Marlow Street Overbridge, West Parade to the Bus Station. Also via Victoria Road to St. Charles School and Holy Cross College.

Route 126; Gladesville to Ryde, 25th August 1980

where they operate on other routes as well as the 126, starting from Gladesville rather than the depot in Monash Road, travelling along Buffalo Road and picking up any passengers on offer. The shift 14 has almost disappeared, but if you look closely, you will see it still runs the 8.14 a.m., School Days Only (and the 8.20 in School Holidays) and 9.05 from Gladesville and the 5.04 p.m from Ryde, which goes on to Macquarie University and carries route 85, Top Ryde to Macquarie via Midway.

The 126 disappeared as a bus route thereafter, but it did not van-

ish without any trace. If we look at the 30th June 1986 Timetable for the Route 228, Eastwood to Ryde via Midway (see page 12 of this issue and page 12 of the September 2001 issue of The Times for an earlier 228 timetable), we see against the morning off-peak runs leaving Ryde, and those leaving Quarry and Lane Cove Roads for Ryde, the letters X or XJ. These abbreviations show that these buses diverted via Buffalo, Aitchandar and Quarry Roads. The new service, which started in the 1960's to service new houses in the area between Eastwood and North Ryde, still provides some service

around Aitchandar Road. But even with the greater area from which the 228 can draw, it provided only an hourly service, contrasting with the forty-minutes the route 126 had once managed. And if you were wondering about the buses which run only one way in the off-peak, with different shifts in opposite directions, they operated the 85 form Eastwood to Top Ryde via Macquarie University on the missing legs to provide an hourly service on both routes.

NORTH & WESTERN BUS LINES PTY. LIMITED

1 MONASH ROAD,
GLADESVILLE NSW 2111

TELEPHONE: 816 2622

ROUTE 228

EASTWOOD STATION TO RYDE

VIA MIDWAY - NORTH RD. & BRIDGE RD.

PLEASE NOTE WHERE EACH JOURNEY STARTS AND FINISHES
Abbreviations alongside departure times indicate that such journeys are
CONDITIONAL, OPERATE ON CERTAIN DAYS ONLY, OR DIVERT FROM THE NORMAL ROUTE.

Run No.	DEPART RYDE (Devlin St (Car Park))	Arr/Dep Quarry & Lane Cove Roads	Arr/Dep Threlfall St & North Road	Arr/Dep Midway (Lovell & North Rds)	ARRIVE EASTWOOD STATION (Ethel St)	DEPART EASTWOOD STATION (Ethel St)	Arr/Dep Midway (Lovell & North Rds)	Arr/Dep Threlfall St & North Road	Arr/Dep Quarry & Lane Cove Roads	ARRIVE RYDE (Devlin St (Car Park))	
	TO EASTWOOD STATION →					TO RYDE →					
						MONDAYS TO FRIDAYS					
6	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	
2	-	-	5.41	5.44	5.50	-	6.06 via Watts Road	-	6.12	6.15	
2	-	-	6.09	6.12	6.18	-	-	-	-	-	
10	-	6.36	6.41	6.44	6.50	7.00	7.07	7.10	7.17	7.20	
29	-	7.03	7.10	7.13	7.20	7.23	7.30	7.33	7.40	7.43	
10	7.23	7.28	7.35	7.38	7.46	7.47K	7.56K	7.52K	-	-	
10	-	-	7.52	7.56	8.04	8.06	8.14	8.18RHS	8.28	8.32	
25	from East Ryde	-	-	7.58B	8.04B	8.06B	8.14B	8.18B	to Peter Board High School.	-	
29	7.45	7.52	8.00	8.04	8.12	8.13K	8.22K	8.19K	-	-	
29	-	-	8.19T	8.30T	8.45C	9.04X	9.12K	9.09K	-	-	
10	8.35	8.40	8.48	8.52	9.00	9.02	9.09	9.12	9.19	9.21	
29	-	-	9.1D	9.13	9.20	9.22	9.29	9.32	9.39XJ	9.47	
2	9.59X	10.07	10.14	10.17	10.24	-	-	-	-	-	
29	-	-	-	-	-	10.22	10.29	10.32	10.39X	10.47	
2	10.59XJ	11.07	11.14	11.17	11.24	-	-	-	-	-	
29	-	-	-	-	-	11.22	11.29	11.32	11.39X	11.47	
2	11.59X	12.07pm	12.14pm	12.17pm	12.24pm	-	-	-	-	-	
29	-	-	-	-	-	12.22pm	12.29pm	12.32pm	12.39X	12.47pm	
2	12.59XJ	1.07	1.14	1.17	1.24	-	-	-	-	-	
29	-	-	-	-	-	1.22	1.29	1.32	1.39	1.42	
2	1.59	2.07	2.14	2.17	2.24	-	-	-	-	-	
29	-	-	-	-	-	2.22	2.29	2.32	2.39	2.42	
10	2.26	2.31	2.38	2.41	2.48	2.50	2.57	3.00	3.07	3.10	
10	3.12	3.17RHS	3.25	3.29	3.37	C3.45	3.53	3.56	4.03	4.07	
29	From Peter Board High School at 3.25pm B	-	-	3.50B	3.58B	C3.45B	3.53B	3.57B	-	-	
29	-	-	H3.56	H3.53	4.02	4.06	4.14	4.17	to Small's Rd	-	
29	-	-	-	-	-	4.30	4.37	4.41	4.48	4.52	
10	4.15	4.20	4.27	4.30	4.37	4.51	4.58	5.01	-	-	
10	-	-	H5.01	H4.58	H5.06	5.12	5.19	5.22	5.29	5.32	
29	4.55	5.00	5.07	5.10	5.17	5.35	5.42	5.45	-	-	
29	-	-	H5.45	H5.42	H5.50	5.55	6.02	6.05	6.12	6.15	
10	5.38	5.43	5.50	5.53	6.00	6.10	6.17	6.20	-	-	
10	-	-	H6.20	H6.17	H6.25	6.33	6.40	6.43	6.50	6.53	
29	6.18	6.23 via Watts Road	-	6.28	-	-	-	-	-	-	
	-	-	-	-	-	6.53M	7.00M	7.03M	-	-	
	-	-	-	-	-	7.30M	7.37M	7.40M	-	-	
	-	-	-	-	-	8.30M	8.37M	8.40M	-	-	
	-	-	-	-	-	9.30M	9.37M	9.40M	-	-	
						SATURDAYS AND EASTER SATURDAY					
1	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	
1	7.43	7.47 via Quarry Road	7.51	7.51 via North Rd,	8.30	8.30	8.37	8.40	8.46	8.49	
2	-	-	-	-	-	-	-	-	-	-	
1	8.36	8.41	8.46	8.49	8.56	9.30	9.37	9.40	9.46	9.49	
1	9.36	9.41	9.46	9.49	9.56	10.30	10.37	10.40	10.46	10.49	
1	10.36	10.41	10.46	10.49	10.56	11.30	11.37	11.40	11.46	11.49	
2	11.36	11.41	11.46	11.49	11.56	12.30pm	12.37pm	12.40pm	12.46pm	12.49pm	
2	12.36pm	12.41pm	12.46pm	12.49pm	12.56pm	2.00M	2.07M	2.10M	-	-	
3	-	-	M 2.37	M 2.40	M 2.47	3.00M	3.07M	3.10M	-	-	
3	-	-	M 3.37	M 3.40	M 3.47	4.00M	4.07M	4.10M	-	-	
3	-	-	M 4.37	M 4.40	M 4.47	5.00 via Fiveways, North Rd to Midway, Quarry Rd to Depot.	-	-	-	-	

THIS TIME-TABLE EFFECTIVE FROM 12.01am MONDAY 30th JUNE, 1986.

ABBREVIATIONS USED IN THIS TIME-TABLE:-

- K....Denotes runs to or from Eastwood Station via North Road, Fiveways and Balaclava Road.
- C....Denotes runs to or from Eastwood Schools on School Days only.
- B....Denotes operates on School Days only.
- M....Denotes operates via Pickford Ave, Lovell Rd and North Rd joins Route 85 bus and extends to Macquarie Shopping Centre.
- X....Denotes operates via Buffalo Rd, Aitchandar Rd and Quarry Road or vice versa.
- RHS....Denotes diverts via Ryde High School.
- T....Denotes runs via Buffalo Rd, Aitchandar Rd and Quarry Road this journey also diverts via Jones St.
- H....Denotes join bus for Eastwood on outward journey, bus returns to Eastwood via Lovell Road, Midway, North Road and Fiveways.
- T....Denotes operates to St Therese School via Bridge Rd, Small's Rd and Lovell Road.

Route 228: Ryde to Eastwood via Midway, Monday 30th June 1986, showing runs via Aitchandar Road.

Indian Railway Atlas

VICTOR ISAACS reviews an interesting new atlas and timetable for India. A timetable page from it appeared in our April edition.

The India Railway Atlas offers an overview of this huge passenger and freight travel system.

The book commences with overview maps of the locations of Indian tourist sites and Indian highways and airways, then a larger overview map of the Indian railway system, showing the headquarters of each of the Railway Zones. Then there are pages about the "Royal Trains", i.e. luxury trains offering all-inclusive travel for tourists, and the "Toy Trains", i.e. the narrow-gauge lines to mountain resorts.

The main part of the volume comprises maps occupying one or two pages for each State or group of States clearly showing the railway lines, plus a description of the States' attractions written in a hyperbolic style, plus a few sentences about transport. These maps are clearly drawn, but are very basic. Unfortunately they miss a great opportunity. They show neither

the Railway Zones, nor whether the railways are electrified or not, nor whether they are duplicated or not, nor even the gauge of the lines.

There are also maps of the Metros in Delhi, Kolkata (Calcutta), and the suburban railways in Chennai (Madras) and Mumbai (Bombay). The two maps of Mumbai are particularly good - the best in the book.

The volume also includes sections devoted to "Indian Railways - Some Fascinating Facts" and "World Railway Facts". These include a good deal of useful and interesting information. From the Indian list, especially, we can glean some quirky facts, such as (taken at random) the first vestibule train, the first air-conditioned train, the first police station on a train, the stations with the shortest (Ib) and longest (not for publication here!) names, the first Indian woman diesel locomotive driver, the world's busiest narrow-gauge junction,

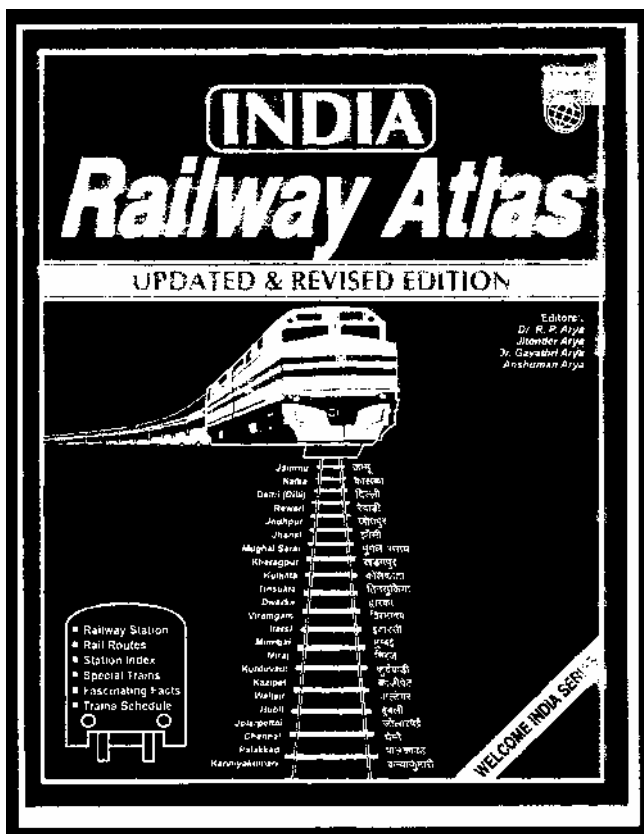
tallest viaduct, longest bridge, and so on.

The book concludes with an index of major names.

Inserted into the middle of this volume is Indian Map Service's "Railway Time Table Sept 2004 to June 2005". This commences with summary timetables of the super-express trains. Most of this timetable is arranged in a peculiar and not particularly helpful fashion. This is arranged by State, then major cities in each State. For each, the express trains are listed in train number order, with summaries of departure time and arrival times in each subsequent city.

Recommended if you are interested in India, or planning travel there, or a railway map enthusiast.

INDIA RAILWAY ATLAS, 52 pages, colour, published by Indian Map Service, \$20, available from Mercury Travel Books, PO Box 192, Botany NSW 1455, mercury-



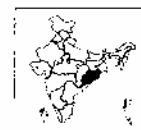
ORISSA 30

Orissa - The "Land of Many Splendours", or can be aptly named as a "Land for All Reasons". The god must have been very lavish in his bounty whilst creating it. Orissa is a simply irresistible destination with historic monuments and architecture, traditions, Hindu, Jain and Buddhist shrines, colourful fairs and festivals, exotic handicrafts and hand woven textiles, mouth watering cuisine, art, dance, music, sporting fairs amidst majestic peaks, shimmering sands and sparkling waves, adventure sports, the enthralling flora and fauna, above all the lush green country side.

Orissa was known as Kalinga in ancient days. Emperor Ashoka (273 - 232 BC) sent a powerful army to subdue Kalinga. He won the war but the carnage which followed, struck Ashoka with remorse and he turned towards Buddhism.

Orissa is a kaleidoscope of past splendours and contemporary expression. The Sun Temple at Konark, north of Puri, is in itself enough for a trip to India. The Lord Jagannath's Temple at Puri is one of the four holiest Hindu pilgrim centres - "Char Dham". The Rath Yatra (Chari Festival) in the month of June / July, is the world famous festival at Puri, with millions of devotees coming from all over the world. The other important festival is the Konark Dance Festival featuring the best of Odissi and other dance forms by renowned artists.

Area	156,707 sq km.
Capital	Bhubaneswar
Population	3,87,06,920 (2001)
Languages	Odia
Literacy	63.61
Density	236
Districts	30
Crops	Rice, Mesta
Minerals	Coal, Iron Ore
Industries	Iron & Steel



TRANSPORTATION

Railways : Orissa had 2000 km. of total rail length by end of 1992 including 1,858 km. broad gauge and 142 km. narrow gauge. A new Railway Division is functioning at Sambalpur from March 1990. Teltcher Angul Railway has been opened for traffic.

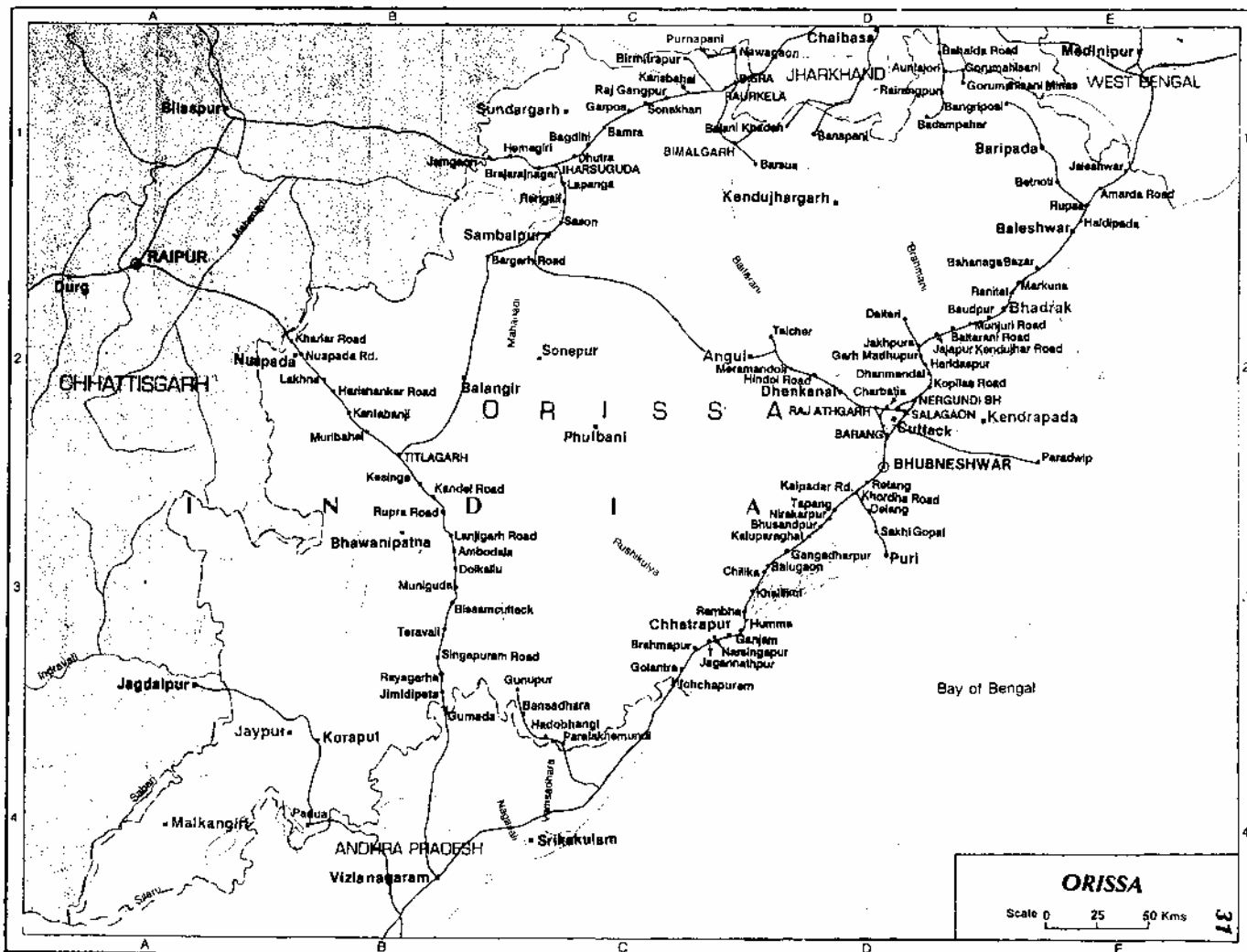
Roadways : Total road length 1,22,246 km.

Airways : The airport at Bhubaneswar connects with regular scheduled services to New Delhi, Varanasi, Calcutta, Nagpur, Hyderabad, Mumbai and Chennai. There are 17 other air - strips and 16 heliports in the state.

Ports : Paradeep was declared major port in 1966. There are minor ports at Gopalpur and Bapatpur.

SOME PLACES OF TOURIST INTEREST & NEAREST RAILHEAD

Place	Distance	Railhead	Famous for
Balangir	---	Balangir	Temples
Berhampur	---	Berhampur	Ancient Forts, Temples, Tribals
Berhampur	---	Berhampur	Handicrafts, Handloom silks
Bhubaneswar	---	Bhubaneswar	Temple City (over 500), Museums
Chika	---	Chika	Island dotted lake, Boating, Fishing, Birdlife
Cuttack	---	Cuttack	Handicrafts, Gateway to tribal territories, Fort, Muslim shrine
Jaypur	---	Jaypur	Old palaces, Antiques, Tribals, Handicrafts
Koraput	---	Koraput	Forests, Tribal villages, Pilgrim centre
Konark	33 km	Puri	13th century Sun temple is a marvel of architecture, Beaches
Paradeep	111 km.	Cuttack	Major Indian Port
Puri	---	Puri	One of the four most holy places of Hindu pilgrimage, Temples, Beaches
Raurkela	---	Raurkela	Steel plant, Askiene dam and Khandadhar Waterfalls are nearby
Sambalpur	---	Sambalpur	Temples, Textiles, Handicrafts
Simlipal	---	Berhampur	National Wildlife Park, Waterfalls, Scenic beauty
Taptapani	48 km.	Berhampur	Hot water springs, Picnic spot



Orissa—The ‘Land of Many Splendours’ and a ‘Land for All Reasons’, is featured on page 31 of the atlas. The map unfortunately doesn’t show it, but there are lines of 2 different gauges here— broad and narrow.

Bus timetables for Broome—by day and night

JIM STOKES and JUDY LAMBERT have each returned home from the tropical far North West, clutching some interesting timetables.

I thought you might be amused by the Broome bus timetable (opposite, top)—not at all a bad effort, really

Not many urban bus routes include a Crocodile Park—in the old days, the relevant Traction Publications book about this one would have been titled “Destination Crocodile Park..”

My favourite was the one-way scenic to Gantheaume Point, with a note on the back extolling the virtues of a 5 km walk back to civilisation (don’t forget your hat and water bottle). They are right about that; it was 41 degrees in Broome and 43 degrees for our 3 days at Fitzroy Crossing.—*Jim Stokes*

Opposite Bottom: Chinatown is where all the after-hours action happens in

Broome during the tourist season, but whether you are a backpacker or a resort guest, Cable Beach is the place to stay. It’s a long walk from one to the other after dark, so even though Broome’s Nightrider bus is not frequent, it is a good option.—*Judy Lambert*



TOWN BUS SERVICE

BROOME - 7 DAYS A WEEK

Enquiries
9193 6585

Valid from 19th Oct 2004 - May 2005

TO CABLE BEACH

MONDAY - SATURDAY (All times)
SUNDAY & WA PUBLIC HOLIDAYS:
(First service 10.23am)

Vacation Village	7.10			11.10				1.10		3.10		5.10
Hunter St. Depot	7.18			11.18				1.18		3.18		5.18
Shell House	7.20			11.20				1.20		3.20		5.20
Forrest St (Fong's)	7.23	8.23	9.23	10.23	11.23	12.23	1.23	2.23	3.23	4.23	5.23	
Palms Resort	7.24	8.24	9.24	10.24	11.24	12.24	1.24	2.24	3.24	4.24	5.24	
Museum/Tropi	7.25	8.25	9.25	10.25	11.25	12.25	1.25	2.25	3.25	4.25	5.25	
Mercure Inn	7.26	8.26	9.26	10.26	11.26	12.26	1.26	2.26	3.26	4.26	5.26	
Matso's	7.27	8.27	9.27	10.27	11.27	12.27	1.27	2.27	3.27	4.27	5.27	
Moonlight Bay	7.27	8.27	9.27	10.27	11.27	12.27	1.27	2.27	3.27	4.27	5.27	
Mangrove Hotel	7.28	8.28	9.28	10.28	11.28	12.28	1.28	2.28	3.28	4.28	5.28	
Chinatown:												
(Dampier Tee)	7.30	8.30	9.30	10.30	11.30	12.30	1.30	2.30	3.30	4.30	5.30	
Visitor Centre	7.33	8.33	9.33	10.33	11.33	12.33	1.33	2.33	3.33	4.33	5.33	
Kimberley Klub	7.35	8.35	9.35	10.35	11.35	12.35	1.35	2.35	3.35	4.35	5.35	
Boulevard Shops	7.37	8.37	9.37	10.37	11.37	12.37	1.37	2.37	3.37	4.37	5.37	
Ocean Lodge	7.40	8.40	9.40	10.40	11.40	12.40	1.40	2.40	3.40	4.40	5.40	
Reid Road	7.41	8.41	9.41	10.41	11.41	12.41	1.41	2.41	3.41	4.41	5.41	
Charles Road	7.41	8.41	9.41	10.41	11.41	12.41	1.41	2.41	3.41	4.41	5.41	
Gubinge Road	7.42	8.42	9.42	10.42	11.42	12.42	1.42	2.42	3.42	4.42	5.42	
Willie Creek Pearls/Zoo Cafe/												
(Seashells)	7.45	8.45	9.45	10.45	11.45	12.45	1.45	2.45	3.45	4.45	5.45	
Cable Beach	7.48	8.48	9.48	10.48	11.48	12.48	1.48	2.48	3.48	4.48	5.48	
Gantheaume Point	7.54											

~ Great for an early morning walk ~ No return service ~



FREE
15 min. pearling
history video -
Now showing in
airconditioned
comfort at the
Willie Creek
Theatrette - on
the Town Bus
route at Cable
Beach
(see over)

FROM CABLE BEACH

MONDAY - SATURDAY (All times)
SUNDAY & WA PUBLIC HOLIDAYS:
(First service 10.45am)

Willie Creek Pearls/Zoo Cafe/												
(Seashells)	7.45	8.45	9.45	10.45	11.45	12.45	1.45	2.45	3.45	4.45	5.45	6.15
Cable Beach	7.48	8.48	9.48	10.48	11.48	12.48	1.48	2.48	3.48	4.48	5.48	6.18
Crocodile Park	7.49	8.49	9.49	10.49	11.49	12.49	1.49	2.49	3.49	4.49	5.49	6.19
Divers Tavern	7.50	8.50	9.50	10.50	11.50	12.50	1.50	2.50	3.50	4.50	5.50	6.20
Gubinge Road	7.59	8.52	9.52	10.52	11.52	12.52	1.52	2.52	3.52	4.52	5.52	6.22
Charles Road	8.00	8.53	9.53	10.53	11.53	12.53	1.53	2.53	3.53	4.53	5.53	6.23
Reid Road	8.01	8.53	9.53	10.53	11.53	12.53	1.53	2.53	3.53	4.53	5.53	6.23
Ocean Lodge	8.02	8.54	9.54	10.54	11.54	12.54	1.54	2.54	3.54	4.54	5.54	6.24
Boulevard Shops	8.03	8.55	9.55	10.55	11.55	12.55	1.55	2.55	3.55	4.55	5.55	6.25
Broome Motel	8.04	8.57	9.57	10.57	11.57	12.57	1.57	2.57	3.57	4.57	5.57	6.27
Visitor Centre	8.04	8.58	9.58	10.58	11.58	12.58	1.58	2.58	3.58	4.58	5.58	6.28
Chinatown:												
(Carnarvon St)	8.06	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00	5.00	6.00	6.30
Mangrove Hotel	8.07	9.02	10.02	11.02	12.02	1.02	2.02	3.02	4.02	5.02	6.02	6.32
Moonlight Bay	8.08	9.03	10.03	11.03	12.03	1.03	2.03	3.03	4.03	5.03	6.03	6.33
Matso's	8.08	9.03	10.03	11.03	12.03	1.03	2.03	3.03	4.03	5.03	6.03	6.33
Mercure Inn	8.09	9.04	10.04	11.04	12.04	1.04	2.04	3.04	4.04	5.04	6.04	6.34
Museum	8.09	9.05	10.05	11.05	12.05	1.05	2.05	3.05	4.05	5.05	6.05	6.35
Palms Resort	8.10	9.06	10.06	11.06	12.06	1.06	2.06	3.06	4.06	5.06	6.06	6.36
Forrest St (Fong's)	8.11	9.07	10.07	11.07	12.07	1.07	2.07	3.07	4.07	5.07	6.07	6.37
Vacation Village		9.10		11.10				3.10		5.10		
Shell House		9.20		11.20				3.20		5.20		



★ ★ ★
See
over
for fare
and
other
import
-ant
info

Timetables downloadable from: www.broomebus.com.au

NIGHTRIDER BROOME'S NIGHT TOWN BUS SERVICE

CHINATOWN >>>> CABLE BEACH >>>> CHINATOWN

CHINATOWN	6.30pm	6.55	7.30	7.55	8.30	8.55	9.30	9.55	10.30	10.55	11.30	12.00
Kimberley Klub	6.31	7.00	7.31	8.00	8.31	9.00	9.31	10.00	10.31	11.00	11.31	12.01
Ocean Lodge	6.33	7.03	7.33	8.03	8.33	9.03	9.33	10.03	10.33	11.03	11.33	12.03
Reid Road + Cable Beach Road	6.34	7.05	7.34	8.04	8.34	9.04	9.34	10.04	10.34	11.04	11.34	12.04
Charles Road & Cable Beach Road	6.35	7.10	7.35	8.10	8.35	9.10	9.35	10.10	10.35	11.10	11.35	12.10
Sayonara Road / Sunset Park	6.37	7.11	7.37	8.11	8.37	9.11	9.37	10.11	10.37	11.11	11.37	12.11
Cable Beach Backpackers / Blue Seas	6.38	7.13	7.38	8.13	8.38	9.13	9.38	10.13	10.38	11.13	11.38	12.13
Sanctuary Road / Zoo Cafe	6.39	7.14	7.39	8.14	8.39	9.14	9.39	10.14	10.39	11.14	11.39	12.14
CABLE BEACH	6.40	7.15	7.40	8.15	8.40	9.15	9.40	10.15	10.40	11.15	11.40	12.15
Divers Tavern / Palm Grove Caravan Park	6.45	7.17	7.45	8.17	8.45	9.17	9.45	10.17	10.45	11.17	11.45	12.17
Cable Beachside/Broome Beach Resort/Bali Hai	6.46	7.18	7.46	8.18	8.46	9.18	9.46	10.18	10.46	11.18	11.46	12.18
Gubinge Road Roundabout	6.48	7.19	7.48	8.19	8.48	9.19	9.48	10.19	10.48	11.19	11.48	12.19
Charles Road & Cable Beach Road	6.49	7.20	7.49	8.20	8.49	9.20	9.49	10.20	10.49	11.20	11.49	12.20
STAFF	6.50	7.21	7.50	8.21	8.50	9.21	9.50	10.21	10.50	11.21	11.50	12.21
Broome Recreation & Aquatic Centre	6.51	7.22	7.51	8.22	8.51	9.22	9.51	10.22	10.51	11.22	11.51	12.22
Last Resort / Broome Motel	6.53	7.23	7.53	8.23	8.53	9.23	9.53	10.23	10.53	11.23	11.53	12.23
CHINATOWN	6.30pm	6.55	7.30	7.55	8.30	8.55	9.30	9.55	10.30	10.55	11.30	12.00
Mangrove Hotel	6.29	7.00	7.29	8.00	8.29	9.00	9.29	10.00	10.29	11.00	11.29	11.59
Matso's / Moonlight Bay	6.28	7.01	7.28	8.01	8.28	9.01	9.28	10.01	10.28	11.01	11.28	11.58
Murphys / Mercure Inn/Continental	6.27	7.02	7.27	8.02	8.27	9.02	9.27	10.02	10.27	11.02	11.27	11.57
Pindan Blue / Tropicana Inn	6.26	7.03	7.26	8.03	8.26	9.03	9.26	10.03	10.26	11.03	11.26	11.56
Palms Resort / Redneck Caravan Park	6.25	7.04	7.25	8.04	8.25	9.04	9.25	10.04	10.25	11.04	11.25	11.55
Cafe Carlotta	6.24	7.05	7.24	8.05	8.24	9.05	9.24	10.05	10.24	11.05	11.24	11.54
Guy Street / Shell House	6.23pm	7.06	7.23	8.06	8.23	9.06	9.23	10.06	10.23	11.06	11.23	11.53
Reid Road - BP - Hay Rd - Fong Way	-	7.07	-	8.07	-	9.07	-	10.07	-	11.07	-	-

OPERATES SEVEN NIGHTS
A WEEK
"APRIL TO DECEMBER"

NIGHTRIDER ALSO
LEAVES CHINATOWN
"TUESDAY TO SATURDAY"
1:40am 2:10am 2:40am 3:10am
May to October

Please recycle this Timetable -
Give it to a friend or give it back

↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
TO CHINA TOWN	TO CABLE BEACH	TO CHINA TOWN	TO CABLE BEACH	TO CHINA TOWN	TO CABLE BEACH	TO CHINA TOWN	TO CABLE BEACH	TO CHINA TOWN	TO CABLE BEACH	TO CHINA TOWN	TO CHINA TOWN

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Timetable Oddity #9 – Long Ago & Far Away– but dead on time

DEAD ON TIME: Last January, following a split-second timetable that had been set 7 years before and a billion kilometres away, the European Space Agency's Huygens probe parachuted to a safe landing on Saturn's moon Titan. Were it that public transport could plan and execute its timetables to such precision. Using mathematical techniques that were first developed by Apollo 11's 'back-seat passenger' Michael Collins, NASA/ESA planned an intricate 2 billion mile journey via Venus (twice), the Earth, Jupiter and several of Saturn's own moons to deliver the spaceship on time. That it is possible to make such a timetable– and to make it work– we have to thank the insights of Isaac Newton and Albert Einstein who demonstrated that traffic on the interplanetary transit-lanes is ruled by only one law– that of gravity. The times in the table below are given in terms of Universal Time, California's Pacific Daylight time and the time at the spacecraft. It took just over an hour for the signals to reach the Earth. Like most commuters, Huygen's carried its timetable on-board and referred to it to perform its critical manoeuvres.



Huygens Probe Mission Timeline - 2005					
Colors: blue = geometric events; green = sequencing; red = Probe-related Orbiter UTC = time event takes place at the spacecraft; Ground UTC = time event is seen at Earth, a one-way light time later					
Orbiter UTC	Ground UTC	Pacific Time	Time wrt Entry	Activity	Description
006T11:53	Jan 06 13:00	Thu Jan 06 05:00 AM	Entry-07d21h	S07 background sequence A ends; spacecraft configured for Probe relay	All instruments except MAG are turned off
007T09:00	Jan 07 10:07	Fri Jan 07 02:07 AM	Entry-07d00h	Probe relay critical sequence begins	8 day quiet period of minimal spacecraft activity before relay begins; orbiter on thruster control
014T06:26	Jan 14 07:33	Thu Jan 13 11:33 PM	Entry-02h40m	Set Solid State Recorder pointers for Probe recording	
014T06:38	Jan 14 07:45	Thu Jan 13 11:45 PM	Entry-02h28m	Transition to thruster control for relay	
014T06:48	Jan 14 07:55	Thu Jan 13 11:55 PM	Entry-02h18m	Perform final recorder configuration for relay	
014T06:50	Jan 14 07:57	Thu Jan 13 11:57 PM	Entry-02h16m	Turn on Probe receivers	
014T07:02	Jan 14 08:09	Fri Jan 14 12:09 AM	Entry-02h04m	Turn orbiter to point to Titan	
014T07:14	Jan 14 08:21	Fri Jan 14 12:21 AM	Entry-01h52m	Turn to Titan complete	
014T07:17	Jan 14 08:24	Fri Jan 14 12:24 AM	Entry-01h49m	Disable X band downlink	
014T08:44	Jan 14 09:51	Fri Jan 14 01:51 AM	Entry-00h22m	Probe turns transmitters on	Low power mode
014T09:06	Jan 14 10:13	Fri Jan 14 02:13 AM	Entry+00h00m	Probe reaches interface altitude	Entry altitude = 1270 km
014T09:09	Jan 14 10:16	Fri Jan 14 02:16 AM	Entry+00h03m	Probe feels maximum deceleration	
014T09:10	Jan 14 10:17	Fri Jan 14 02:17 AM	Entry+00h04m	Pilot chute deployed	170-190 km altitude; Mach 1.5; pilot chute is 2.6m in diameter
014T09:10	Jan 14 10:17	Fri Jan 14 02:17 AM	Entry+00h04m	Aft cover released, main parachute deployed	160-180 km; Mach 1.5; 2.5 seconds after pilot chute deployed; main chute is 8.3m in diameter
014T09:11	Jan 14 10:18	Fri Jan 14 02:18 AM	Entry+00h05m	Probe begins transmission to orbiter	
014T09:11	Jan 14 10:18	Fri Jan 14 02:18 AM	Entry+00h05m	Release front shield; transmitters to high power; instruments configured for descent; measurements begin	152-175 km; Mach < 0.6
014T09:25	Jan 14 10:32	Fri Jan 14 02:32 AM	Entry+00h19m	Main parachute separation; deploy stabilizing drogue chute	110-140 km altitude; drogue is 3m in diameter
014T09:42	Jan 14 10:49	Fri Jan 14 02:49 AM	Entry+00h36m	Surface proximity sensor activated	60 km altitude
014T09:49	Jan 14 10:56	Fri Jan 14 02:56 AM	Entry+00h43m	Possible icing effects to Probe	50 km altitude
014T11:12	Jan 14 12:19	Fri Jan 14 04:19 AM	Entry+02h06m	Titan-C orbiter closest approach	Inbound 60,000 km flyby at 5.4 km/s, 93 deg phase
014T11:23	Jan 14 12:30	Fri Jan 14 04:30 AM	Entry+02h17m	Descent imager lamp on	
014T11:24	Jan 14 12:31	Fri Jan 14 04:31 AM	Entry+02h18m	Surface impact, end descent phase	May vary ± 15 min depending on descent time
014T13:37	Jan 14 14:44	Fri Jan 14 06:44 AM	Entry+04h31m	Orbiter stops collecting probe data	Total 4 hours and 36 minutes of data collection
014T13:39	Jan 14 14:46	Fri Jan 14 06:46 AM	Entry+04h33m	Write protect probe data partitions	Partitions A5 and B5 of Solid State Recorder are protected from further data writing
014T13:47	Jan 14 14:54	Fri Jan 14 06:54 AM	Entry+04h41m	Turn orbiter to point to Earth	
014T13:50	Jan 14 14:57	Fri Jan 14 06:57 AM	Entry+04h44m	Turn to Earth complete	
014T13:59	Jan 14 15:06	Fri Jan 14 07:06 AM	Entry+04h53m	Critical sequence ends; S07 background sequence B begins	
014T14:00	Jan 14 15:07	Fri Jan 14 07:07 AM	Entry+04h54m	Post-Probe tracking begins	Canberra 70m station receiving; 10 minutes for DSN lockup allocated
014T14:07	Jan 14 15:14	Fri Jan 14 07:14 AM	Entry+05h01m	First telemetry data sent to Earth	
014T14:10	Jan 14 15:17	Fri Jan 14 07:17 AM	Entry+05h04m	Playback of probe data begins	At Canberra at 66,360 bps
014T16:50	Jan 14 17:57	Fri Jan 14 09:57 AM	Entry+07h44m	End playback of first partition	First copy of probe data received at Earth
014T16:57	Jan 14 18:04	Fri Jan 14 10:04 AM	Entry+07h51m	Ascending ring-plane crossing	Distance = 18.4 Saturn radii
014T17:53	Jan 14 19:00	Fri Jan 14 11:00 AM	Entry+08h47m	Start tracking at Madrid 70m	Data rate upgraded to 142,200 bps
014T21:00	Jan 14 22:07	Fri Jan 14 02:07 PM	Entry+11h54m	End first full playback of all Probe data	Complete set of all copies probe data received at Earth
015T00:22	Jan 15 01:29	Fri Jan 14 05:29 PM	Entry+15h16m	First complete set of Probe data reaches Huygens Operations Center	No later than time listed; likely up to ~3 hours earlier
015T02:28	Jan 15 03:35	Fri Jan 14 07:35 PM	Entry+17h22m	Start tracking at Goldstone 70m	
015T11:00	Jan 15 12:07	Sat Jan 15 04:07 AM	Entry+01d02h	Power on of orbiter instruments	If orbiter is healthy and playback proceeding per plan
015T12:23	Jan 15 13:30	Sat Jan 15 05:30 AM	Entry+01d03h	End nominal playback of Probe data	