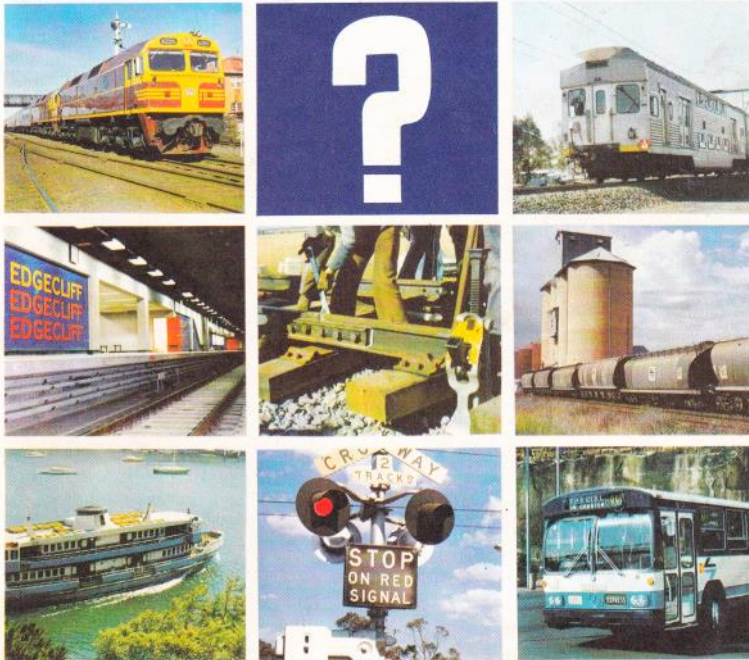




Public Transport Commission of NSW

TRANSPORT QUIZ



From Tuesday, January 28, 1975, the "Blue Arrow" express will give a new style of travel to our passengers in North Balgowlah who commute daily between their homes and the City.

An Atlantean express bus Route 167 will leave North Balgowlah terminus every weekday morning at 7.30 a.m. It will collect passengers at all stops along Kitchener, Myrtle, Woodbine and Bangaroo Streets and Brook Road with a last take up in Brook Road approaching Frenchs Forest Road then non-stop to Wynyard, all in a little over half an hour.

In the afternoons, you can join the "Blue Arrow" express from Stand 5 in Carrington Street, near Wynyard, at 5.00 p.m., again with non-stop travel over most of the journey. The first stop will be in Brook Road near Vatama Street, Seaforth, then as required to the terminus at North Balgowlah.

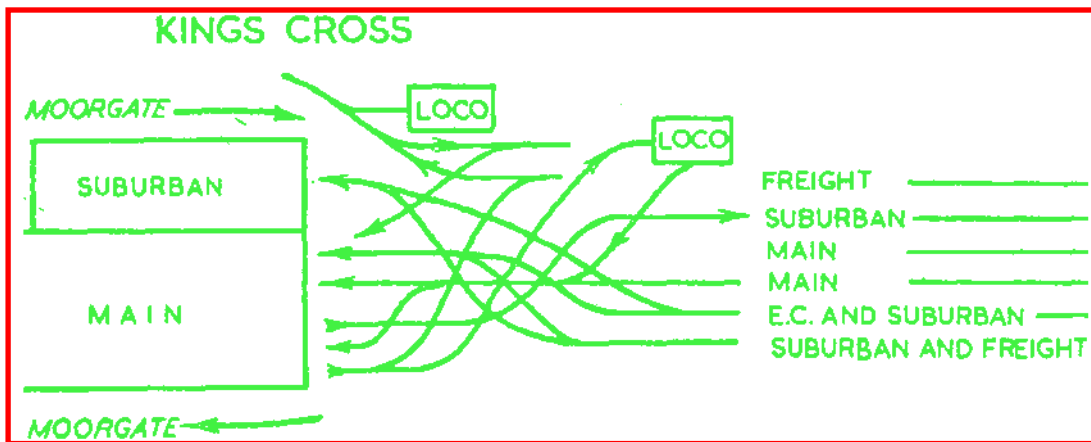
There is one cash fare only - 60 cents each way with no concession travel. Weekly tickets for the "Blue Arrow" which may also be used on Route 168 and other alternative services will be \$5.00. Next week contains one Public Holiday, and because of this the cost will be reduced to \$4.50.

If you already use weekly tickets on the ordinary Route 168 service, call in to Travel and Tours Centre, Ground Floor, Transport House, 11-31 York Street, City (near Wynyard Park) between 8.30 a.m. and 5.00 p.m. on any weekday and have your ticket book endorsed "Blue Arrow Express Route 167". You may then purchase a \$4.50 coupon for next week (\$5.00 in ordinary weeks) or change any coupons for non-express travel you may have purchased in advance. If you do not have a weekly ticket, you can obtain one by completing the attached application and calling at the Travel and Tours Centre where an immediate issue will be made. Alternatively, the application can be processed by post.

The "Blue Arrow" expresses will replace ordinary Route 168 journeys leaving North Balgowlah at 7.31 a.m. and Wynyard at 5.00 p.m. Note that the "Blue Arrow" service has been extended to a terminus near West Street, North Balgowlah.

No alteration will be made to the remainder of the ordinary Route 168 morning and afternoon service.

We trust this new service will be of benefit to you. Leave the driving and the worrying to us - simply relax, read your paper and enjoy the trip to town.



Inside: Unpunctuality—the cause and the cure
South Australian S.E. Rides
The Paperwork, part 9

RRP \$4.95

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Unpunctuality—the cause and the cure

GERALD (GERRY) FIENNES—*from the April and May, 1960 editions of “Trains Illustrated”*

THIRTY-ONE YEARS ago, I joined a railway in rather a hurry. My father’s sudden death had just released the Metropolitan from the most persistent, accurate and belligerent critic of its unpunctuality. We were brought up in the belief that all trains ran to time before the war — the Kaiser’s war.

It was not the Metropolitan’s fault that my father died or that I joined a railway: nor is it evidence of the inheritance of acquired characteristics that my brothers are now the most persistent and belligerent critics of railway unpunctuality. Our children are being brought up—by them—in the belief that all trains ran to time before the war—Hitler’s war.

Both of these propositions are unproven. In a world ridden by statistics and soon to be made even more hideous by universal computers, railways have been unaccountably shy of figures about punctuality. There are no records to show, although there is a wide belief to that effect, that Mussolini’s rise to power was accompanied by an improvement in punctuality (and look how quickly a war followed). But here, for what they are worth, are some statistics. In 1955 86 per cent of the expresses on the Swedish Railway as a whole were not more than five minutes late; on Canadian National the results in 1957 and 1958 varied from 43 to 84 per cent; for August, 1955, the Dutch Railways were 68 per cent to time and in 1952 the Norwegian Railways were 55 per cent to time on their main lines. The French said that in 1957, 96 per cent of all their trains were less than 15 minutes late. You will see how many gaps there are in the figures, how they differ in the basis, and how late many of them are. British Railways published figures in their staff magazine for many months but discontinued them in December last year.

What concerns us here is not so much

the results, as the general approach and method. What is our standard? How important do we think it? How do we set about it?

There is no argument about the first question. We are either punctual or we are not. We cannot be fairly punctual, or nearly punctual, or more or less punctual. Figures, therefore, such as the French published of trains up to 15 minutes late, are no test whatsoever—rather the reverse, since they raise a suspicion of concealing a low proportion of trains actually to time. We must aim for the Gold Standard only —*To Time*.

On the other hand, to put punctuality in its order of importance, among the other principles of good service, leads to argument. Shall we start confidently with “Safety first”; or shall we, in order to save delay, recommend a signalman to accept an express when he has a light engine inside his clearing point? No, *nem. con*.

For second place, the runners are “Punctuality”, “Frequency”, “Speed” and “Cheapness”. For me there is no difficulty. Punctuality is second only to Safety. We should restrain the frequency and the speed of a service to the point at which it can be operated to time — and we should pay the cost of whatever equipment will ensure its reliability. The timetable should be a promise, not a hope.

There will be very few readers who will not agree with that at first sight; but let them search their consciences. Punctuality is an attitude of mind. Very few people get up to time in the morning [a Times proofreader disagrees!]. Go to church, or a theatre, or the Festival Hall and see the late-comers, sorry to be missing some of what is going but by no means ashamed of themselves. Give me my favourite railway character; an old porter years ago at Rayleigh. “It’s time to go, Joe (or Harry or Alf)”, he would observe, “*there’s two —s running down the hill. Right Away!*” [author’s

self censorship?].

Any railway officer responsible for a time-table receives every year scores of letters, visitors, deputations, and demands in the press for more stops in the middle of bottlenecks, for more trains on lines already crowded, for more speed out of equipment already worked hard. In this matter, British Railways are not entirely masters in their own house. In their capacity of public servants they do not always shrug off the representations of M.P.s, the T.U.C.C., County and Local Councils, Associations of Ratepayers and Season Ticket Holders, persistent and belligerent individuals—nor for a matter of that, Mr. Editor, now and again your own journal.

It is a paradox that the person to whose alleged indifference, malpractices and mismanagement the unpunctuality of trains is generally attributed, namely, the railwayman, has the greatest interest in punctuality. First, it is the bread of life to him. To carry people safely and without fear of being late is to carry them without the anxieties which afflict them in a car, and they will go on travelling by rail. Second, it is a matter of professional pride, which in their own interest the nation at large would do well to foster.

Let us go on to consider what we must do if we all, public and railwaymen, mean to run a service to time. We can divide the study into four main heads: **the first:** long-range requirements such as the lay-out of the track, design of stations, signalling and traction; **the second:** medium-range needs such as the production of standard running times, negotiations with the Civil Engineer and design of timetables; **the third:** the immediate operation on the day; and **the fourth:** the post-mortem and corrective measures.

To lay out track is, in essence, to avoid conflicting movements. Movements conflict if one crosses the path of another or if one overtakes another. A primary object is, of course, to reduce

the number of movements required to move a given traffic. Therefore, there must be as few light engines as possible swanning around; and in pursuance of this, double-heading is barred. "One train, one engine" said Patrick Stirling. We must build adequate power for the job—and down with diesel locomotives in multiple. More than that, we must not employ multiple-unit trains up to the point where they become uneconomic, because they force us into building a separate fleet of locomotives for freight at night.

The second object is to segregate movement according to speed on each track. There must be "lane discipline" and as little overtaking as possible. On double-track railways, this means raising the speed of freight trains to as

near to the speed of passenger trains as possible—hence the success of the "windcutters" which worked out and home between Annesley and Woodford on the G.C. On quadruple track the formula is: *express passenger and Class "C" and "D" freight on the fast track; and stopping passenger and other freight on the slow.*

The third object is to lay the track out physically, so that movements between fast and slow lines, between up and down lines, across junctions and at terminals are parallel. Take a trip on the Great Northern and test the large places by these principles on some sketches greatly simplified (Fig. 1, left). If the Kings Cross diagram of the series looks complicated and a mess, it is because it is complicated and a mess.

Four years ago, when I started to have something to do with the Great Northern, it became obvious why Great Northern signalmen had the best reputation in the country: without regulators of the highest quality the thing is unworkable. It was less obvious why, at Newark Midland, trains crossing the G.N. main line had priority over East Coast expresses in selected but still frequent circumstances. Historians tell us, with the crashing logic which leads directly to the madhouse, why all these places were laid out as they were and why nothing else could possibly have been done. "History", said Henry Ford, "is Bunk".

For punctuality we want to get back to simplicity. In the open country "lane discipline" demands fast and slow tracks side by side, so that movements between them are possible without affecting traffic in the opposite direction (Fig. 2, page 5).

At terminals, the in-and-out working of the same train or engine must be parallel. Since sets of carriages and engines usually stick to the same sort

of work through the day that means segregation of each service on one adjacent pair of tracks (Fig. 3 page 5).

To convert the "Down-Down-Up-Up" formation best for the open country to the "Down-Up", "Down-Up" arrangement best for the terminal approach is simple enough, as Fig. 4 (page 5) demonstrates. One flying or burrowing junction does it. Busy country junctions are arranged easily enough with a flying or burrowing junction (Fig. 5 page 5).

In the terminal itself intelligent segregation of engine diagrams coupled with good lay-out eliminates all conflict. The West Side at Liverpool Street is a good example (Fig. 6, page 5). The engines of trains in and out of each platform, work independently; the movement to and from the engine docks is under cover of signals and takes place without any conflict with approaching trains. The only other important point about the design of stations is that platforms must be of sufficient length, and this needs no elaboration.

Lastly, marshalling yards are important. Variations on the theme illustrated in Fig. 7 (page 7) are being installed up and down the country, the variations depending on the lay-out of the lines and junctions in the approaches.

Shall we need money for all this? Yes—and quite a lot. But, if we want punctuality, these simplifications are essential on busy lines.

Signalling for punctuality means three things—headway, speed and visibility. Like most of our equipment, signalling is very expensive, lasts for very many years and is very cumbersome to alter. To re-signal a line requires a considerable gift of prophecy about the frequency and structure of the service many years ahead. From that we arrive at the head-way. For speed it is not a simple matter of putting out the first warning aspect at a given braking distance, because braking distances vary enormously. An electric multiple-unit fitted with electro-pneumatic brakes requires 450 yds. on level track to stop from its service speed of 60 m.p.h.; a Class "C" freight train fitted with vacuum brake needs 1,250 yds.; and a "Deltic"-hauled

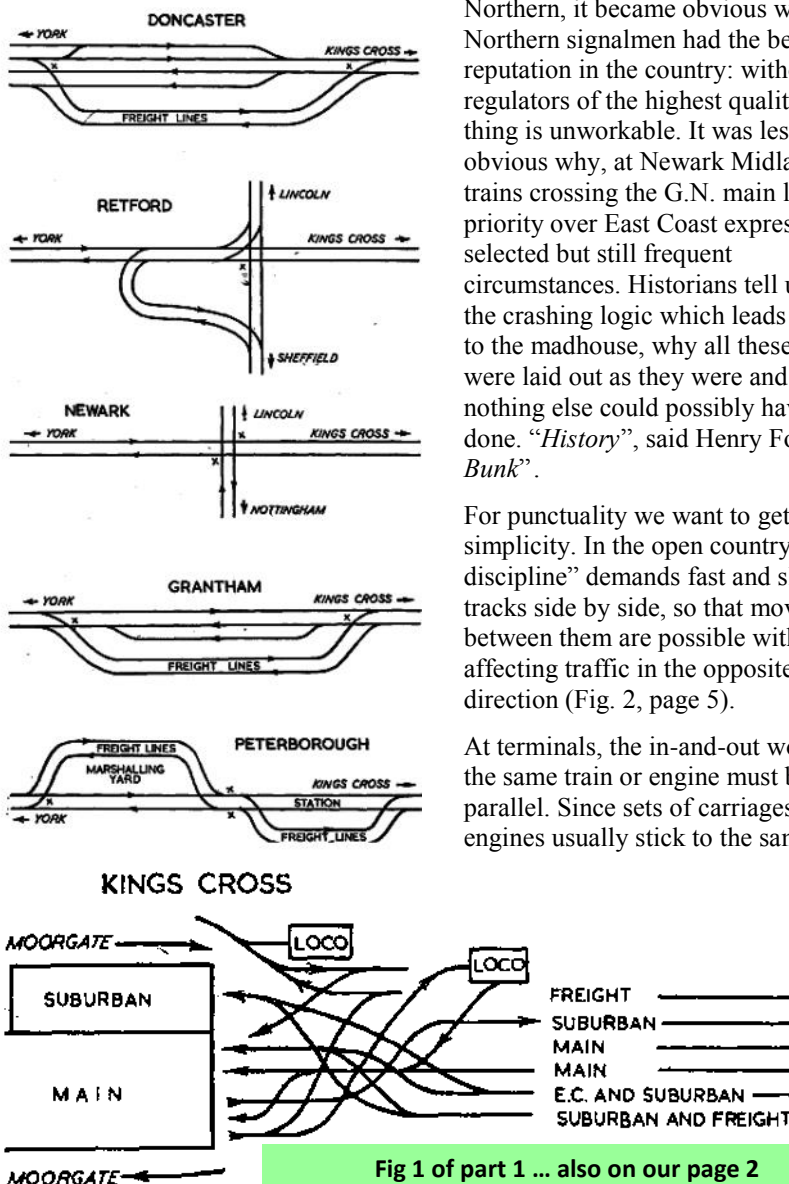


Fig 1 of part 1 ... also on our page 2

express, from its service speed of 100 m.p.h., demands 2,200 yds. There are wise men working on this ... and have been for some years. The solution is not—repeat not—the one which we suffered at the introduction of the Shenfield electrification, namely the restriction of locomotive-hauled trains diverted over the electric lines to 30 m.p.h.

The visibility of signals in fog or falling snow, and indeed after dark, is highly important to punctuality. Good siting is part of the solution; a generous supply of banner signals to help drivers when they pass a distant at caution is another. But it is very evident that on lines equipped with semaphore signalling the running after dark by many drivers is less confident than in daylight. The solution for the time being must be colour-light signalling, aided, on high-speed lines, by the automatic warning system. In the very long run, it may be economical to do away with lineside signals altogether in favour of cab signalling, worked by track circuits; and in the far distant future is the Trix-

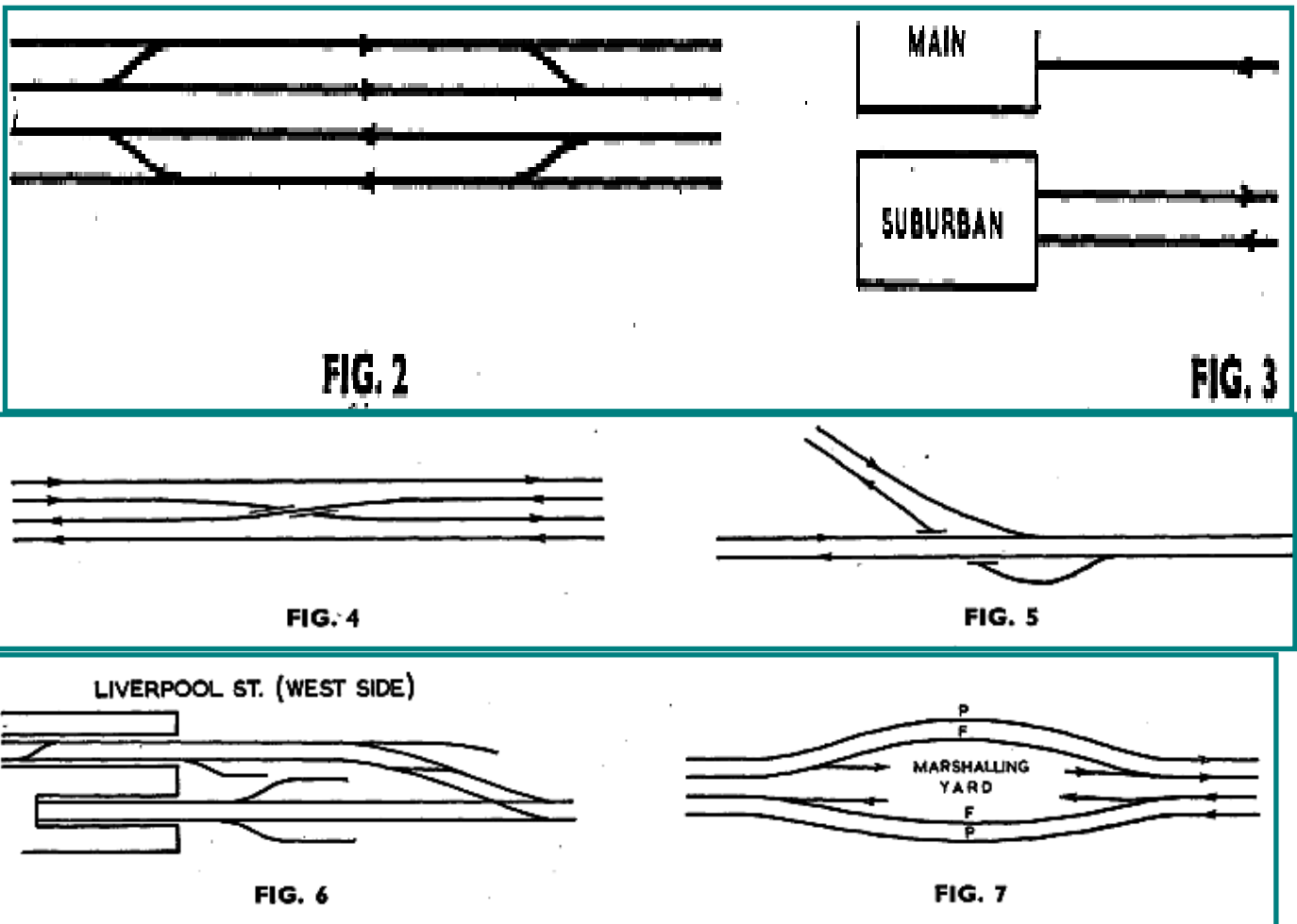
Twin railway, fully automatic, with your punctuality guaranteed by computer.

The ordering of suitable traction is a subject in itself; here we are concerned with traction as it affects punctuality—as so often it does. On experience in this country so far, few people will argue with my order of preference—electric, diesel, steam. And no more need be said except to those who will tell us that in F. V. Russell's day the "Jazz" steam suburban service into Liverpool Street gave perfect punctuality. If so, why did the Great Eastern institute Head Control to keep it in order?

Having chosen the form of traction, we must establish Standard Running Times. They must take account, on the one hand, of the overall speed demanded by the facts of life—public demand, competition by other forms of transport, economical use of rolling stock and crews; and, on the other, of the loads to be hauled, the gradients, curves, sections of track unsuited to the highest speed, the time required for

decelerating for stops and accelerating after them—and, last but not least, a margin for recovery. From these factors we can deduce the horsepower required—or rather the boffins can. With a rare and beautiful ease, one can now ring up a boffin, as I did the other day, and say: "As a price for not opposing our Parliamentary Powers for a new marshalling yard, the Council at X demands that the bridge over X Lane shall have 16 ft. 6 in. headroom. This means steepening our gradient from 1 in 70 to 1 in 65 for half a mile on a 20-chain curve. What difference will this make to the loads of Type "2", "3" and "4" diesels, please?" Back comes the answer. No more, as with steam, does one have to search the countryside for gradients of 1 in 70 and 1 in 65 and conduct a series of Rainhill Trials—not, of course, that Rainhill Trials aren't (a) fun and (b) publicity, but they are now also (c) eyewash.

The margin for recovery in standard running times has not necessarily



anything to do with the recovery time for temporary restrictions. In this context it is the spare time allowed for the locomotive that is not up to the designed standard on any day, by reason of coal, mechanical condition, driver, fireman, or weather. Note that of these five conditions all may apply with steam, two with diesel and one with electric traction. The only universal factor is weather. In winter steam contributes a fairly high proportion of its tractive effort, say 15 per cent, to heating the train. Diesels have at the moment separate oil-fired boilers which are somewhat chancy affairs, and only electric locomotives grab unlimited power for heating, that does not affect their punctuality.

In winter also, whatever the traction, the effort required to overcome the rolling resistances is greater and must be compensated in time in some way. The choice lies between having a margin for recovery in the summer, or on the other hand publishing a different and slower timetable in the winter. On the whole our choice not to alter standard running times, arrival and departure times and connections at junctions twice a year seems to be right. True, good coal, mechanical condition, driver, fireman, weather, plus perhaps a sight of Cecil J. Allen on the platform at the start, does account now and again for someone clipping half an hour off a five-hour run. But to produce a timetable on that basis would ensure not only consistent unpunctuality but also, to quote one section of the press, "*chaos*".

Part 2—May 1960.

The next stage in the fight against unpunctuality is the production of the timetable. The standard running times may have no regard to the activities of the Engineer, who, when he opens out the track before, and then consolidates it after relaying, when he is dealing with colliery subsidences, bridge renewals, sewers, or drainage, imposes temporary restrictions of speed varying from 5 to 40 m.p.h. These restrictions affect, first, running times and second, headways.

In theory it is simple to make adequate allowance for these jobs. The Engineer should keep the amount of work within the limits agreed between him

and the Traffic Department from time to time (and remember, please, that we have to settle such matters in February, 1960, for a timetable running until June, 1961), for which suitable time has been incorporated in the schedules. He must maintain an even flow of work in each timing section. He must prophesy what Acts of God, or Acts of Councils demanding sewers or bridge widenings, will affect his own calculations. In this imperfect world, we know, life does not fulfil every prediction. But let it be said that by dint of taking thought and by various persuasions from Cecil J. Allen the weekly analysis of the running of expresses on the G.N. main line has shown a progressive decline in the proportion of delays due to engineering work, from some 40 per cent three years ago, to less than five per cent today—and this in spite of an increase in engineering work.

The effect of a temporary restriction on headways is illustrated by Fig. 1 (of part 2, page 7—top). Three expresses are running at minimum headway in (1). In (2), the Engineer has a restriction of 20 m.p.h. for half a mile of relaying. The leading train is three minutes late, the second is at a stand at B's section signal and will probably be five minutes late passing D. The third train is passing A's distant at caution and will be about seven minutes late at D. The remedy for this unpunctuality is to open out the headways by three minutes, even at the cost of a major revision of the timetable.

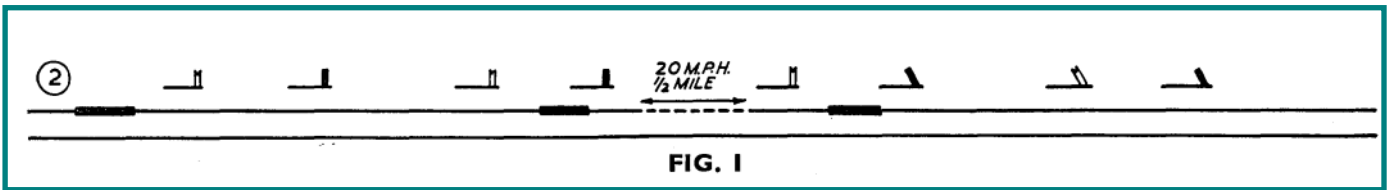
Having arrived at standard running times and overcome the temporary speed restrictions by enlarged headways, there still remain other potential causes of unpunctuality to be considered by the timetable people. The first principle towards which we are moving—the Southern have gone furthest—is that a time-table which repeats itself is easily memorised by staff of all grades. For that reason alone interval timetables are more likely to run to time. The second principle is that, in spite of stipulated running times and headways, there is room for judgment in their application. To leave every so often the odd minute or so in headway at the approach to flat junctions and busy intermediate

stations and terminals is an art, not a science; but is often the difference between a successful and just another not-so-good timetable. At places where movements in the station of parcels vans, light engines and the like are frequent and are not under the cover of acceptance signals, it may be prudent to allow more than the odd minute.

Time at stations is occupied by unloading and loading passengers, luggage, mails, parcels; by changing engines or crews; by taking water; and by attaching or detaching sections of the parent train. Of these activities the changing of engines and crews diminishes as the electric and diesel age emerges. Engines, by and large, will run from the starting terminal through to the destination of the train. Crews who now run from Kings Cross to Newcastle will be able to reach Edinburgh in almost the same time. If they do not go through, it will be the result of a study of fatigue which is now in progress. Taking water will be a thing of the past when electric heating is fitted to rolling stock. The speed of attaching or detaching sections of trains will improve, with an altered design of buckeye coupler which will avoid raising or lowering the two very heavy loose heads at each operation.

The limiting factor in the calculation of station time then becomes parcels and mails. It is a frequent and plausible thought that we should, in the future, carry passengers and luggage only on expresses and run a separate service, which would also convey the freight sundries, for the other traffic. Some move in this direction is not only possible but necessary. On the other hand, some of the business is geared to express speeds and is vulnerable to road competition over medium, and to air over long distances. Mails, newspapers, fruit, flowers are worth several million pounds a year to us. It is most unlikely that we shall find it possible or profitable to run a separate express service for them as a general rule.

For punctuality at stations, therefore, the timetable section can envisage some reduction in the present times without danger. Engine changing,



taking water, division or coupling, is a matter of six minutes or so, depending on the lay-out at the particular place. The time taken for parcels and the rest is as long as a piece of string; but always assuming that the parcels flow is fairly constant—and, of course, it is not Christmas—a suitable allowance can be assessed by a time study of a particular train over a period, or in many cases it can be imposed by booking a certain time and restricting the traffics to be carried. One of the questions asked at interviews for operating jobs is: “How long should a train take at a station for parcels and mails?” The answer is simple: “No longer than the booked time”.

The planning of time at stations, therefore, is an assessment of the longest factor among those mentioned. A broad guide for heavy expresses would be:—

- Passengers 3 minutes
- Luggage 3 minutes
- Water 4-6 minutes
- Changing engines 5-6 minutes
- Changing crews 3 minutes.
- Division of train 3 minutes first section away, 6-7 minutes—second section.
- Coupling of train 5-6 minutes from arrival of second section.
- Parcels, etc. ... as assessed.

* *Two minutes less with multiple-unit stock if the signalling allows.*

Mark that no time should be allowed (or taken) for drawing up long trains twice. The formation of the train should be arranged to bring to the platforms all the brake vans requiring service and the train ticket collector or guard should marshal the passengers suitably. Nor should time be provided for gassing restaurant cars, watering lavatories—or having a “Pinta Milka” in the “refresh”. This is no way to beat the car. Let us get along the road.

The next stage is the production of the ancillary documents—engine and crew diagrams, carriage workings, loadings of parcels vans and platform workings.

Earlier we have ordered engines of ample power; it remains to allot them firmly to the trains according to the latter’s weight and speed. Where the outward leg of a diagram is a light train but the inward is heavy, it is better to send a man on a boy’s errand outward than to risk consistent unpunctuality on the return. Secondly, should we plan cyclic diagrams or straight out-and-home working? If we get into that argument we shall be here till Christmas, so let us agree that we will never diagram an engine into a depot which will not look after it. And always, if possible, diagram a train from start to finish with the same engine and with never more than two crews if the power is steam; this latter proviso is immaterial if the traction is electric or diesel.

To diagram crews successfully is a fine art. The finest diagrammer on the Eastern Region was never a diagram clerk and is now far removed from current punctuality, planning electrifications. He knew instinctively—which means from long and sometimes sordid experience of human nature—whether a diagram would result in bad punctuality. It is very true that if a train with an apparently good path is consistently unpunctual, the first question to ask is: “What is wrong with the men’s diagram?” There are so many ways, if you know them, of ensuring punctuality by this means. But the interplay of opinion between rival depots, even between links at the same depot and individuals in the links, is complex in the extreme.

There are one or two general rules. A tough job—unless it is too tough—is a challenge which is usually accepted. Relief on arrival at the terminal is an incentive. So are mileage turns. In this the change to diesel or electric traction is a great boon. Starting times are important in the morning and finishing times in the evening. Watch particularly your Sunday evening starts and your Saturday finishes.

There was one March driver who, with 70 coal empties behind him, would show his heels to any express between Bishops Stortford and Cambridge when March Town were playing at home. But you have to know when factors like that are at play, and it becomes very complicated to keep track of them, so that it would be an advantage to overlay them all with a bonus for punctuality. Until we have that, a popular finish means a punctual diagram.

In carriage and platform workings, it is important not to tie it all up too tight. This is part of the price we pay for apprehended unpunctuality and it is a very heavy price indeed. In the Shenfield electric service which runs—and can be relied on to run—about 90 per cent to time, 21 trains an hour are booked into four platforms. The component in the turn-round to allow for unpunctual running in the up direction is only one minute. On the other hand, at most steam-operated terminals the component for unpunctuality amounts to several minutes for suburban services, and can be reckoned often in scores of minutes for medium- and long-distance expresses. The cost of this in terms of paths lost and of extra engines and crews used, amounts to a very large sum every week.

Now we have the Plan—running times, allowances for known interferences with running times, headways, station time, platform workings, engine, crew, guards and carriage workings, and overall a pattern of service. Next, it goes into operation. Usually the transitions from winter to summer timetable and *vice versa* are not a great matter. When radical changes are in prospect, however, it is better to see that everyone — staff and public — are well-primed in advance. The staff usually have been represented at meetings discussing the formation of the Plan. If changes in lay-out have taken place, they will have received diagrams and instructions.

Even so a new timetable, like a new car, takes a little while to run in. Early on the first morning of the Shenfield electrification, half an hour after the new signalling at Liver-pool Street lit up, I was standing on the south end of Stratford station. A train rolled up to me. "I want a pilotman", said the motorman. "I don't know the road". "Nor does anyone else", said I ... and on he went. But naturally, for a few days he and everyone else were threading their way somewhat gingerly; punctuality came only after some weeks.

Now to the operation of the Plan. First, it is important to define our attitude to some occasional but vital points. They lie at the root of the strength of supervision, because they involve our own integrity. They concern connections, special stops and overloading. Ask yourself, would you:

- Hold a branch connection for an express running late for 30, 15, 10, 5 or no minutes: (a) if there is another train in 2, 1, 1/2 | hour ? (b) if it is the last train at night ?
- Hold an express for a branch connection for 30,15, 10, 5 or no minutes: (a) if there is another train in 2, 1, | hour ? (b) if it is the last train at night ?
- Stop an express specially to set down or pick up:
 - a) The Prime Minister?
 - b) The Leader of the Opposition?
 - c) Your favourite football side?
 - d) Your boss?
 - e) 100, 50, 20, 10, 5 people delayed at an intermediate station?
 - f) A doctor called to an urgent case?
 - g) Someone taken ill on the train?
- Would you attach coaches to an express above the engine load or platform limit in order to avoid people standing?

Your attitude to these things is important because, if you do not make the right decisions in them, you are yourself incapable of inculcating the right attitude in your staff at large. Punctuality is not a do-it-yourself job. It is a do-it-the-lot-of-us job.

Morale and supervision are subjects too big for treatment here. Morale among the Operating staff is a

compound of the attitude of mind among the officers, of a feeling among the staff that Management knows what it is up to and has produced a good plan (timetable diagrams and so on), and that they are sharing in the success of the service. Supervision is partly an unremitting attention to detail and partly a readiness to jump to the responsibility when things go wrong.

To illustrate current operation here is one of the analyses which we do each week of the performance of expresses on the Great Northern main line. It is a week in January, 1960— not the best, but not the worst. The overall result was 50.4 per cent to time (or, if we adopt the French standard of up to 15 minutes late—which we shouldn't— just over 90 per cent, which for a week in January with two days' fog is at least as good as their 96.3 per cent for summer and winter).

You will see that the time lost owing to temporary speed restrictions is negligible. Signal delays were naturally much heavier in the up direction than the down. Trains coming to us after journeys from Aberdeen and Edinburgh run many of their risks of delay before we see them; and running out of course

usually incurs signals. Bad regulation at only 3 per cent was creditable, but includes only the cases detected. The remainder are less defensible things. Distant not pulled off in time, mainly at level crossings—although on the day when Hoole really opened up the "Deltic" for the first time between Werrington and Stoke we got two adverse distant because we were running right on top of the block bells. A great deal of signal delay is the result of freight trains not running to booked section times ahead of expresses. Overtime at stations was small. Over 30 per cent of all delays was debited to motive power; of that, 60 per cent was loss of time in running, 30 per cent failures and the rest taking water at stations and other causes. The Type "4" diesels were not exempt and one was responsible for a crashing 122 minutes on the 11.20 p.m. down sleeper at—of all places— Hougham.

Perhaps even more serious than the big failures are the small irregularities in running which give the signalmen difficulty in regulating and so lead to much of the signal delay. Some years ago we did a study of two trains running under clear signals from

ANALYSIS OF THE TIME LOST							
				DOWN		UP	
				Minutes	Per-centage of total time lost	Minutes	Per-centage of total time lost
Permanent	Way	Re-					
restrictions	..	..	..	10½	0.4	—	—
Signals	..	..	..	311	10.6	652	33.4
Bad Regulation	..	..	..	91	3.1	—	—
Station Overtime	..	..	..	112	3.8	115	5.9
Locomotives:							
Direct	..	..	..	573	19.5	367	18.8
Indirect	..	..	..	341	11.6	259	13.3
OTHER CAUSES							
Signal and Track							
Failures	..	..	..	179	6.1	223	11.4
Carriage and Wagon							
Defects	..	..	..	125	4.3	17	0.9
Civil Engineers' Work	..	..	..	179	6.1	42	2.2
Others	..	..	..	1,012	34.5	275	14.1
				<u>2,933½</u>	<u>100</u>	<u>1,950</u>	<u>100</u>

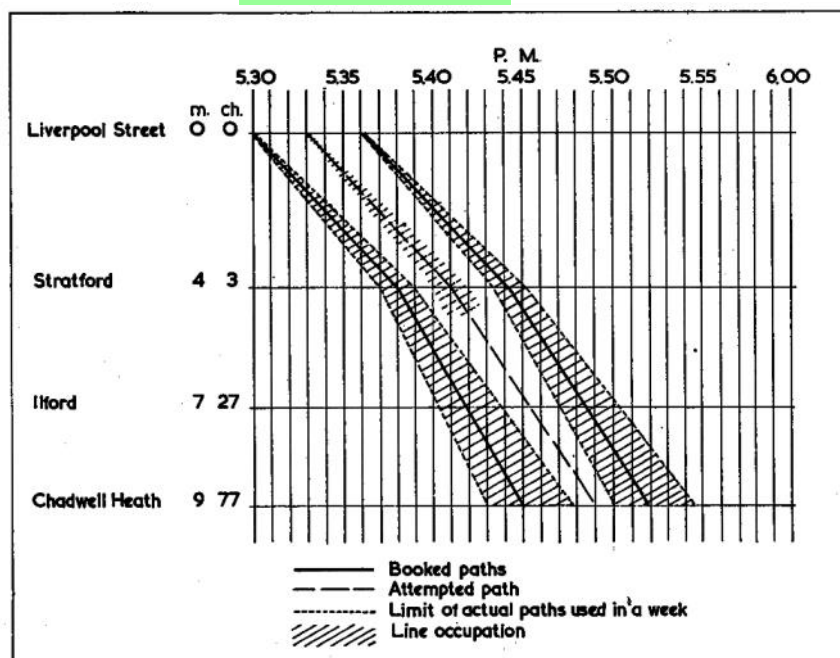
Figure 2 [of Part 2]

Liverpool Street and Chadwell Heath to see whether we could introduce a 5.33 p.m. to Southend between the 5.30 p.m. Norwich and 5.36 p.m. Clacton. In one week the line occupation by those two trains by early and late running was as shown in Fig. 2 (right).

Before the new tunnels at Potters Bar came into use, we booked ten trains only through Greenwood at the height of the evening peak, although in theory there were fifteen paths. We left, therefore, a 30 per cent margin because of the irregular running of the expresses. Most of them were "Right Time" at Hatfield. On the other hand, you can book and work an electric service to half-minute margins. Roll on electrification.

In the case of a major failure, the technique is a fascinating one. For the failed train itself, the remedy is, of course, a fresh engine. If the failed engine can be moved, well and good; if not—and the driver must be sure to report at the outset to that effect—then another engine, fitters and tools must be summoned. The fresh engine may come off a nearby freight train or from a depot; if it is the former, then fitters, where required, must come by a second engine or by road. In any event, it is vital to keep the line clear. There was a case on the L.T. & S. some years ago where they filled the road behind the obstruction with trains. It took four hours to get the relieving tackle to the spot. Meantime, the engines on the trains standing behind the obstruction began to run short of water. Out came the fire brigade, helmeted, booted and galloping to the rescue—only to find they had hoses of different bores. Result (evening papers please copy): chaos.

For other trains behind the obstruction the Control has three choices: to let things go as they are; to put in single-line working past the obstruction; or to divert by an alternative route. Normally it takes 25 to 45 minutes to put single-line working into force. Delays to trains passing over the single line in the right direction are between 8 and 15 minutes, and in the reverse direction between 15 and 25 (more if traffic is heavy). Therefore, if the failed engine can be moved and there



is a relief engine handy, normally it is quicker to clear the line, rather than put in single-line working. If the obstruction is likely to last over (say) 50 minutes, the choice is between single-line working and diversion. This choice is a balance between the delays likely to both directions of traffic over the single line on the one hand; and, on the other, the time which diversion will cost in running and getting conductors for the drivers where they do not know the road. A very broad guide is:

- Clearance of the line by pushing or pulling ... 25-30 minutes.
- Delays by single-line working ... 35-50 min. to first train, diminishing or increasing according to weight of traffic approaching.
- Diversion ... 50 minutes to 2 hours.

For the first time in the proceedings Control has come into the picture. Normally, Control does not regulate passenger trains. There has been some controversy in the past over this. Main Line Control at York used to do so. But an intricate passenger service goes too fast for remote control from box to box. On the other hand, when things go badly awry, the scope of the signalmen is too limited. Prompt decision on diversion or allowing stopping trains to fill the line behind a failure must be taken at several points, some perhaps many miles in rear. Carriage workings, engine and crew diagrams must be altered. Connections many miles ahead must be replanned

and (maybe) engine crews and stock ordered for specials. The service must be reduced to the level at which the single line or the diversion route can handle it. Those are the jobs for Control. And their reaction must be imaginative, decisive and immediate.

Lastly, comes the post-mortem. As the day wears on the performance is collated in the Controls and offices from the reports of signalmen and station inspectors, from guards' journals and delay slips. Some delays call for immediate action. Drivers are seen before they go off duty. District inspectors descend on stationmasters.

On the following morning, the officers hold a conference by a telephone hookup between the Districts on the line, at which the serious delays are discussed in detail. Letters follow on individual cases not cleared at the conference. Regular meetings review general statistics of performance and any persistent difficulties. The whole effort put into the cure for unpunctuality is very large indeed. It is in the main a grinding attention to detail, but it is highly rewarding when it leads to operation of an intricate service to time.

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S.A.R. SE rides

IAN MANNING *relates his train trip experiences on the Blue Lake Mixed*

DAVID HENNELL'S ARTICLE on the post-1945 evolution of SAR passenger services to Kingston SE brought to mind the three trips I made on the SAR SE lines, now lamentably all closed.

The first was part of a through journey from Melbourne to Adelaide. On Wednesday 10 February 1965, I travelled from Melbourne to Port Fairy by VR and connected onto the privately-operated bus to Mt Gambier. After camping the night in a quiet corner of Mt Gambier station yard, on Thursday 11 February I caught the 0710 Bluebird to Adelaide. It being a Thursday there was no connection from Kingston at Naracoorte and the complete three-car set worked the whole trip. There was, however, a refreshment stop at Wolseley. The refreshment room, one of a series of narrow buildings along the centre of the island platform, had doors only on the side which faced the SE line. The Bluebirds certainly hadn't dawdled on the line from Mt Gambier and once they were on the interstate main they cruised at 70 mph (113 km/h) between stops, slowing only for the Adelaide hills.

The second trip was a day/night return from Adelaide to Kingston. On Friday 21.7.72 I caught the 0800 Bluebird from No 1 Platform, Adelaide, comprising three cars, a second class car leading a composite and a second second -- the first two for Mt Gambier and the last for Kingston SE. At Belair, while we waited for the Overland to emerge from an Adelaide Hills mist, a refreshment girl boarded the Kingston car, opened the one-bay kitchenette at the van end of the car and sold coffee to such as wanted it. At Naracoorte the car detached and, once the Mt Gambier cars had gone their way, proceeded westwards to Kingston with me as its sole passenger.

Returning from Kingston at 2115, I was again the sole passenger, but at

Lucindale was joined by an old lady. At Naracoorte we transferred to the up Blue Lake mixed, which arrived from Mt Gambier as locomotive 901, van, second-class sitting car, first-class sitting car (neither air-conditioned, both provisioned with foot warmers), sleeper 'Finniss' and van. The loco shunted to add the following to the consist: a string of bogie cattle wagons (the cattle lowed all night), a further van and a further second-class sitting car (without foot warmers). Though it was open for passengers, the lights in this car remained off all night, while those in the cars from Mt Gambier remained on. I curled up in the dark car and slept so soundly that I did not notice a 2½ hour delay till dawn occurred at Tailem Bend instead of Aldgate -- 901 had failed and been replaced by a 930. At Mitcham we took the back platform and, after the Overland had overtaken us, the freight portion of the mixed was uncoupled and the train engine took it to the Pooraka cattle-yards. A second 930 then appeared, coupled up and forwarded the passenger portion of the train to Adelaide.

The third trip was again a day/night return, this time from Melbourne. On Friday 7.1.83 I patronized the morning down Warrnambool, worked by B-class and N-set carriages. The buffet was going strong but this did not prevent us from making a 10 minute refreshment stop at Colac. At Warrnambool I transferred to a South Western Roadways bus to Mt Gambier. Some of the passengers on the bus had through rail tickets and others had road tickets. A mid-afternoon arrival at Mt Gambier gave time to buy a rail ticket back to Melbourne. A SAR goods arrived from Millicent and a double-T VR goods left for Heywood.

On returning to the station in the evening I found the up Blue Lake mixed made up as locomotive 966, two wagons of sheep which had arrived on the goods from Millicent,

sundry louvre vans, a CD van, an AD sitting car and a final CD van. The AD had been built at Islington for the East-West service between Adelaide and Port Pirie and was around twenty years old. It had 68 reclining seats and attracted around 40 passengers. Though the carriage was air-conditioned, as we headed north it was permissible to open the top half of an exit door and listen to the dry grass swish as we passed. We made several stops, obliging the conductor-guard to sell tickets. He also took orders for tea or coffee at Naracoorte, which he radioed ahead at Coonawarra. As noted by David Hennell, the connection from Kingston SE had been withdrawn in 1978 but we still stopped for some time at Naracoorte, during which a tray of coffees arrived, then a tray of teas, each with packet of biscuits. It was then time for lights-out.

Heading north, we slowed for a couple of speed restrictions but even so had trouble restraining ourselves to the timetable. At 0025 the lights of Serviceton appeared to our right and at 0030 we drew into the back platform at Wolseley, ten minutes early. It was a clear, warm night and I was one of three passengers connecting to Melbourne. The refreshment room had long gone so we waited by the station office. A light on the stationmaster's console indicated the presence of the Blue Lake beside us at the platform. At 0040 further lights lit up, first the approach, then the points, then the main platform road and straightway the Melbourne-bound Overland was stopping for us, all 13 carriages, two vans and two Motorail wagons of it. The connection made, we achieved an on-time arrival at Spencer St.

Comment on this article – [Letter to the Editor](#)

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Paperwork 9 – the Public Transport Commission

DUNCAN MACAUSLAN looks at the documentation produced by the NSWPTC

THE PTC CAME INTO EXISTENCE on 17 October 1972.

However, no-one seems to have told the people who produced timetables under the DGT title for several weeks.

The first known PTC timetable is HB319, December 1972, for Bondi routes 389, 390 and 392, which has both DGT and PTC in the banner.

The design was unchanged from DGT days, with the NSW State coat of arms and inside matrix

layout with trips read across. The times were typewritten (**FIG01, lower left**).


Issued with the same date was HB329, for the Church Point routes 157, 185 and 186, with only PTC in the banner. This was a folded sheet 113mm by 208mm expanding to three pages (**FIG02, lower right**).

By January 1973, the Atlantean appeared in the bus hiring

advertising. The word ‘modern’ disappeared later in the year (**FIG03, page 12, top left**).

To help in establishing a corporate image, the PTC unveiled its new NSW logo in early 1974¹. Over the next eighteen months, most timetables were issued as booklets, 104mm by 165mm. In April 1974, the PTC introduced a new cover style for its booklet timetables, with a curved border and with the

FIG 01 No. 319


PUBLIC TRANSPORT COMMISSION OF N.S.W.
DEPARTMENT OF GOVERNMENT TRANSPORT

BUS TIMETABLE

ROUTE 389
CIRCULAR QUAY - NORTH BONDI
via St. Vincent's Hospital, Five Ways, Paddington
and Bondi Junction

ROUTE 390 (MONDAYS TO SATURDAYS)
CIRCULAR QUAY - WAVERLEY (GIBSON ST)
via St. Vincent's Hospital, Five Ways, Paddington
and Bondi Junction

ROUTE 390 (SUNDAYS)
BONDI JUNCTION - WAVERLEY (GIBSON ST) -
CLOVELLY

For details of service between Waverley and
Clovelly, see ROUTE 329 timetable

ROUTE 392 EXPRESS
CIRCULAR QUAY - NORTH BONDI
(Page 9)

DATED DECEMBER, 1972

ISSUED GRATIS
(Crown Copyright Reserved)

FIG 02 No. 329

**PUBLIC TRANSPORT
COMMISSION OF N.S.W.**

BUS TIME-TABLE

ROUTE 157
MANLY WHARF - CHURCH POINT
(via Warriewood)

ROUTE 185
WYNYARD - CHURCH POINT
(via Warriewood)

ROUTE 186
WYNYARD - CHURCH POINT
(via Pittwater Road, direct)

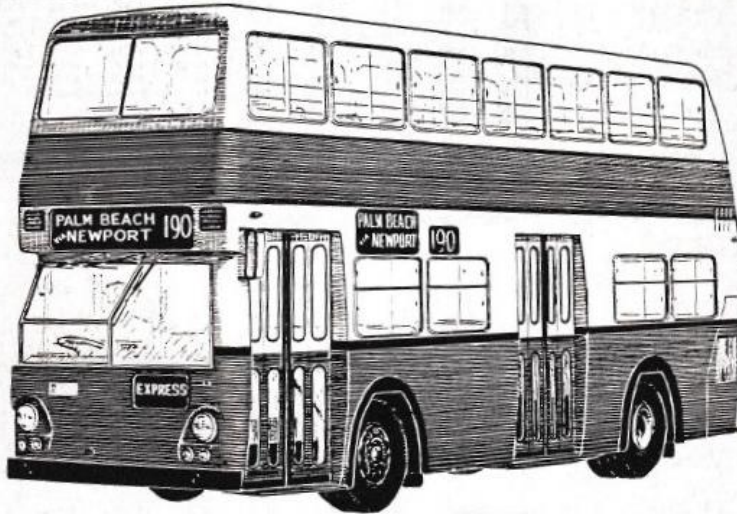
DATED DECEMBER, 1972.

Times of Buses.—The times stated in the Official Time-tables are those at which it is intended, so far as circumstances will permit, that the buses should arrive at and depart from the various termini; but the Commissioner does not guarantee the departure or arrival of buses at the times stated nor will he be responsible for delay or any consequences arising therefrom. The Commissioner reserves the right to cancel, wholly or in part, any of the bus services shown in the Official Time-tables or to vary the routes over which the buses will operate and the times of arrival or departure as shown in such time-tables must be taken to be subject to such right.

(Crown Copyright Reserved.)

BUS HIRING SERVICE...

FIG 03



MODERN SINGLE AND
DOUBLE-DECK BUSES ARE
AVAILABLE FOR HIRE

FOR

PICNICS,
DANCE PARTIES,
SPORTING FUNCTIONS,
WEDDING RECEPTIONS, &c.

CALL AND DISCUSS YOUR PLANS WITH THE BUS HIRINGS OFFICER, CHALLIS HOUSE, 6 MARTIN PLACE, CITY. PHONE: 25-2281; 20961 - Ext. 8080, OR WRITE TO BUS HIRINGS OFFICER, Box 1943, G. P. O., SYDNEY.

LOST PROPERTY OFFICE

The Lost Property Office is located at Central Railway, 490 Pitt Street, City. Phone 211-1176. Hours:- 8.30 a.m. to 5.0 p.m., Mondays to Fridays only (Public Holidays excepted).

PTC's NSW logo. Inside was unchanged. The NSW logo began to appear on buses around June² (FIG04, page 13).

Until the formation of the PTC, the department's attitude to customers had verged on contemptuous. One of the PTC's successes was to establish a single open phone line, 27 9111, taking callers direct to the Customer Service Bureau which supported buses, ferries and railways (FIG 05, below left).

The PTC established a customer facing marketing team to promote



use of public transport. The new marketing team faced resistance from long term employees who had run the services and were averse to new ideas (FIG06, page 14, upper left).

In May 1974, the PTC published a footy calendar – no image has been found but it contained Rugby League fixtures and how to get to the grounds by public transport.

The introduction of Blue Arrow expresses, using Atlanteans on route 167, in January 1975, was designed to generate increased patronage from suburbs north of The Spit. Using a logo based on the NSW logo, the introductory brochure was verbose and in a difficult to read italic font. The flat fare was 60c and a weekly ticket cost \$5.00 (FIG07, front cover; FIG08 page 15, upper left).

A later handbill for expresses on

route 500 was much clearer (FIG09, page 14, upper right).

In early 1975, the logo was found to be out of favour. Some said it was pulling NSW in different directions. So, a second logo, inspired by British Rail's double arrow logo was introduced. This became known as L7 and, in May 1975, it appeared on a timetable, HB115, for route 412 (FIG10, page 15, upper right).

In February 1976, the PTC published a newly-designed, very colourful, map titled "Sydney Bus Train Ferry Guide". The cartography was a mix of geographic and diagrammatic with lines at all angles, with some compression around the CBD. Print size was 57mm by 406mm. The area covered was that in which PTC's buses operated, leaving large gaps where private operators provided services. In Carlingford a strange rail line appeared from the map's border (FIG01, rear cover, upper>

A revised map appeared in 1980, with a much clearer CBD map, but still no private services.

The failure of the Port Jackson and Manly Ferry Company, and its subsequent acquisition by the Government, resulted in the January 1978 "Manly bus ferry coordination plan". A new design of timetable appeared, which showed all bus – ferry connections and separately the hydrofoil timetable (FIG12, page 14, lower left; FIG12A, page 14 lower right).

The long delayed opening of the ESR allowed the PTC to do some more effective designs, with a family of brochures and timetables. Inside, the table's layout showed bus and rail times for services coordinated at either Bondi Junction or Edgecliff (FIG13, page 13, lower right; FIG14, page 15, bottom).

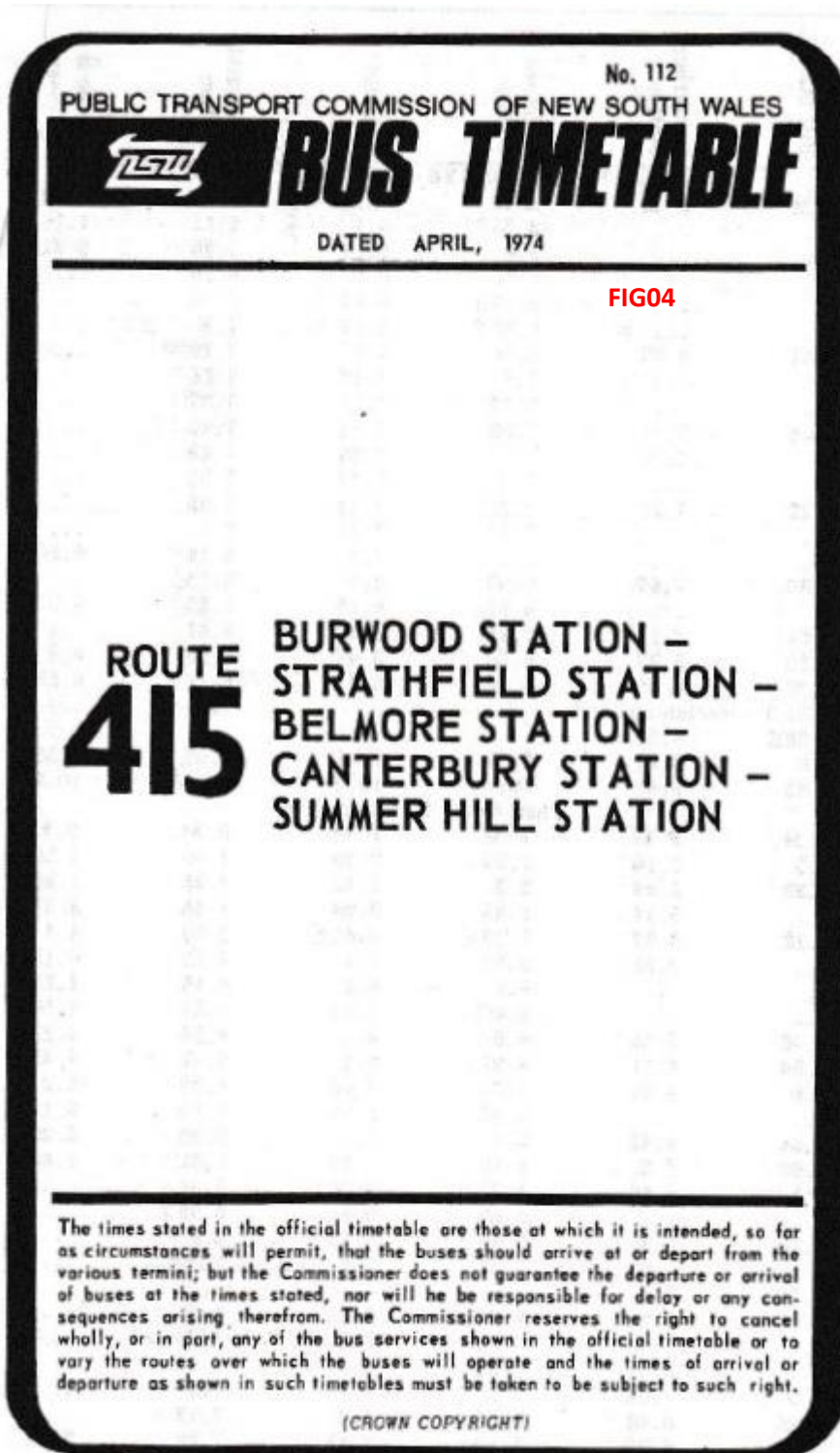


FIG04

how bright thou shineth!' (Front cover, upper left).

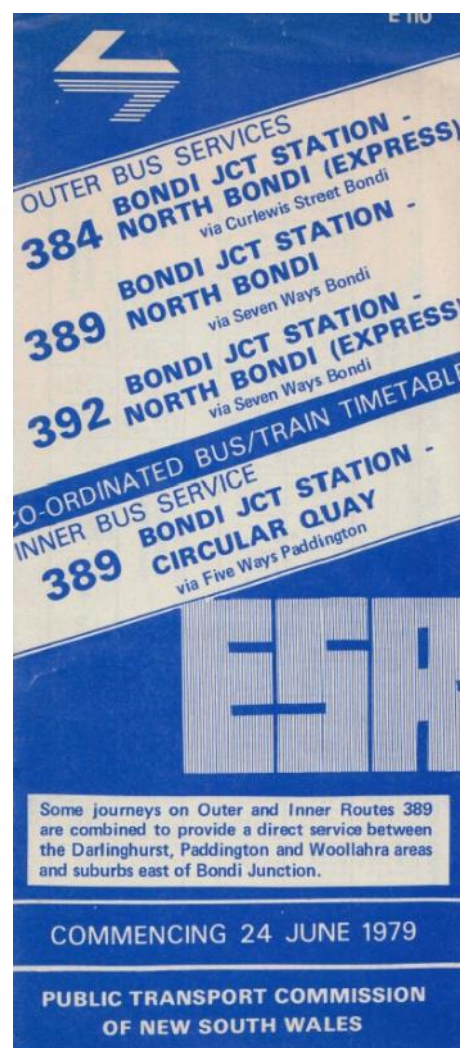
The PTC also published brochures on excursions and other promotions. It also upgraded the brochures published for new vehicles (FIG16, rear cover, bottom).

Footnotes

1 The BR logo was introduced in 1965 and still remains in use, despite privatisation, and is still printed on railway tickets and used to denote railway stations, including usage on street signs pointing to them. Like London Transport's rondel, it is immediately recognisable.

2 It had appeared on HB103 but the archive copy is too poor to illustrate.

FIG13



As far back as 1946, the NSW Railways had published *Railway Quiz*, with questions and answers only on railways. In 1978, with responsibilities for buses and ferries, the PTC revised the Quiz, to cover trams, trolleybuses, buses, ferries, and hydrofoils. *Transport Quiz* was a 56-page illustrated A5 book with colour covers. Questions

included 'What is a tram?' and 'When did double-deck buses commence running?' The answer to the latter ("1933"), was incorrect because private operators began operating them soon after 1918. An interesting answer was the translation of NSW's Latin motto on the coat of arms – 'Newly risen,

FIG 06
**your problems -
 are our problems**



**please
 let us hear
 about them**

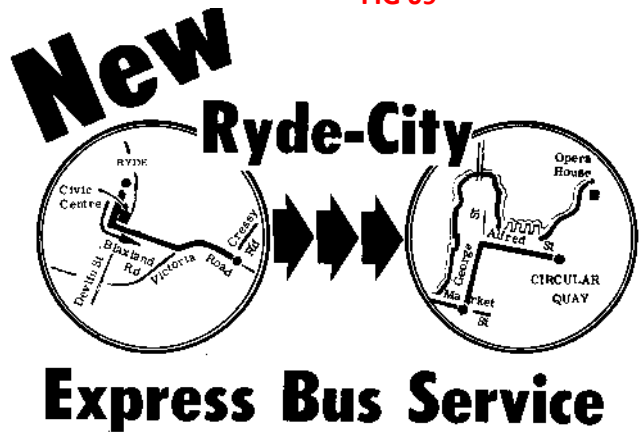
OPEN LINE TO

**PUBLIC TRANSPORT COMMISSION
 Customer Service Bureau**



27-911

FIG 09



On and from Monday, 12 June 1978, two Express journeys will be provided from Ryde to Circular Quay on Route 500. These buses will be on trial and are intended to further help in meeting the needs of the increased number of passengers using buses since the opening of the Transit Lane.

These expresses will depart Top Ryde terminus at 7.30am and 7.50am and will take up passengers at all stops along Route 500 up to and including Cressy Road. From that point the expresses will operate non-stop to the first set down stop in Market Street at George Street. They will then set down as required to Circular Quay where they are due to arrive at 8.06am and 8.26am respectively.

Ordinary fares including concessions will apply.

TIMETABLES

DEPARTS RYDE	CESSY ROAD	MARKET & GEORGE STS	ARRIVES CIRCULAR QUAY
7.30am	7.35am	EXPRESS → 8.00am	8.06am
7.50am	7.55am	EXPRESS → 8.20am	8.26am



**PUBLIC TRANSPORT COMMISSION
 OF NEW SOUTH WALES**

COMMENCING 9TH JANUARY, 1978

FIG 12

No. M101

**Co-ordinated
 Manly Ferry-Bus
 Timetables**

Serving:
 Balgowlah Heights
 Clontarf
 Seaforth
 Bantry Bay

Bus Routes:
 130 Manly-Clontarf
 131 Manly-Seaforth
 132 Manly-Bantry Bay
 137 Manly-Seaforth



PUBLIC TRANSPORT COMMISSION OF NEW SOUTH WALES

FIG 12A

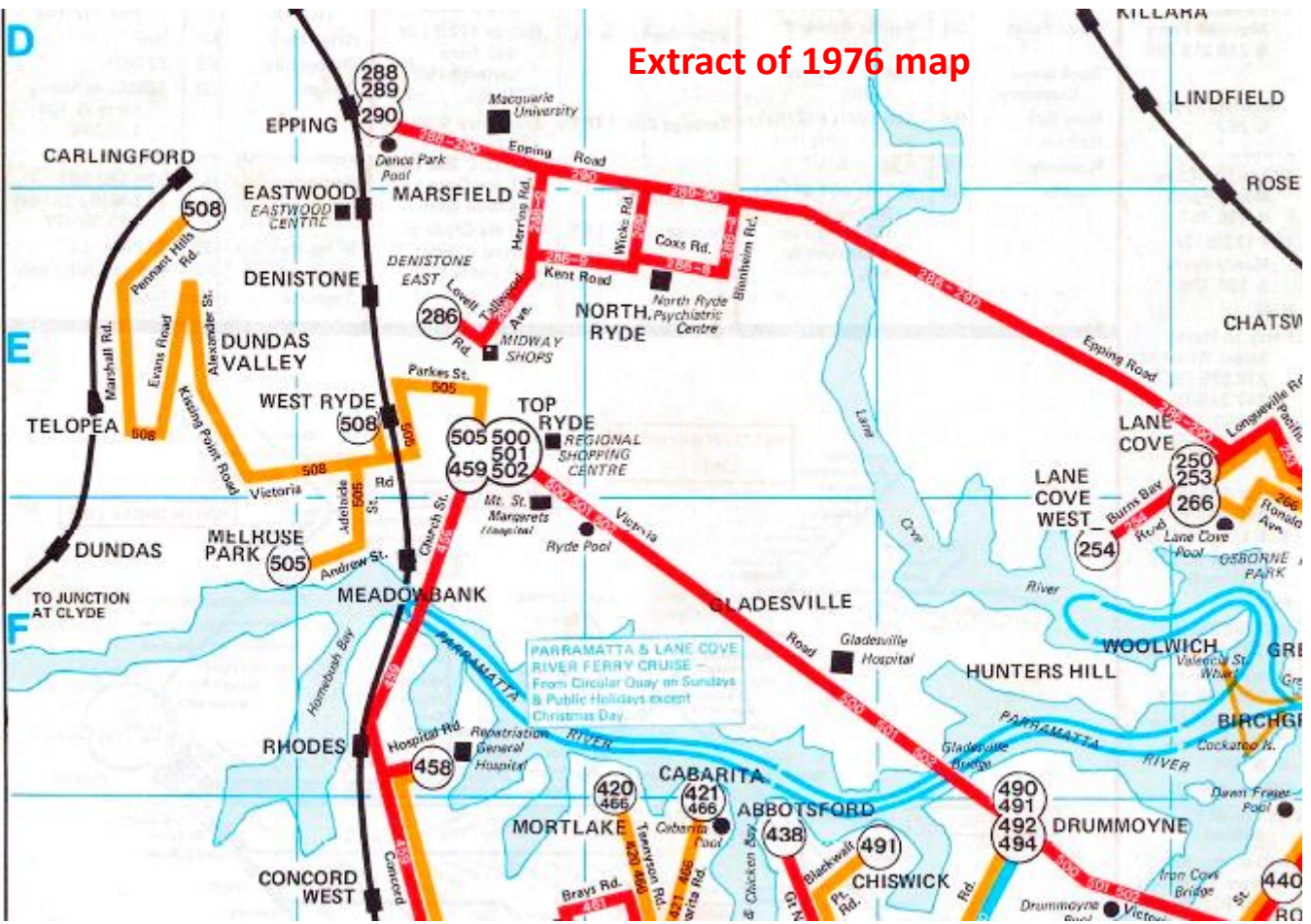
ROUTE No.	INWARD JOURNEYS							
	BUS						FERRY	
	CLONTARF	BANTRY BAY	THE BLUFF	SEAFORTH SHOPS	BALGOWLAH SHOPS	CONDAMINE & WHITE STS	MANLY WHARF	CIRCULAR QUAY
MONDAYS TO FRIDAYS								
137	AM	AM	AM	AM	AM	AM	AM	AM
137
137	6.32	...	6.15	6.20	6.50
137	7.4	...	6.42	6.47	7.0
137	7.24	...	7.14	7.23	7.30
132	...	7.40	...	7.48	...	7.44	7.53	8.0
132	...	8.1	...	8.9	...	7.58	8.7	8.15
137	...	8.39	...	8.38A	...	8.19	8.28	8.45
132	...	9.10	...	8.47	...	8.48	8.57	9.15
131	...	9.41	9.45	9.56	...	8.57	9.6	9.15
132	...	10.10	10.18	10.28	10.37	9.18	9.27	9.45
131	...	10.40	10.44	10.55	10.56	9.15	9.16	9.48
130	10.45	...	10.56	10.56	11.5	9.28	9.37	9.45
131	...	11.10	11.14	11.25	11.26	10.56	11.5	11.15
131	...	11.40	11.44	11.55	11.56	11.25	11.35	11.45
131	...	PM	PM	PM	PM	12.5	12.5	12.15
132	...	12.10	12.18	12.28	12.37	12.5	12.5	12.48
131	...	12.40	12.44	12.55	12.56	1.5	1.5	1.15
131	...	1.40	1.10	1.14	1.25	1.26	1.35	1.45
132	1.48	1.58	2.7	2.15	2.15	2.48
131	...	2.10	2.14	2.25	2.26	2.35	2.45	3.18
131	...	2.40	2.44	2.55	2.56	3.5	3.15	3.48
132	...	3.13	3.21	3.31	3.40	3.45	3.45	4.18
131	...	3.40	3.48	3.58	4.7	4.15	4.15	4.48
132	...	4.4	4.12	4.22	4.31	4.35	4.35	5.8
131	...	4.38	4.42	4.52	5.1	5.5	5.5	5.38
132	...	4.40	4.48E	4.55E	5.1E	5.5	5.5	5.38
131	...	5.10	5.14	5.24	5.33	5.40	5.40	6.13
132	...	5.53	6.1	6.11	6.20	6.30	6.30	7.3
132	...	6.23	6.31	6.41	6.50	6.55	6.55	7.28
132	...	7.3	7.10	7.18	7.25	7.30	7.30	8.3
132	...	7.41	7.48	7.56	8.3	8.10	8.10	8.43
132	...	8.21	8.28	8.36	8.43	8.50	8.50	9.23
137	9.8	9.15	9.23	9.30	9.30	10.3
137	9.48	9.56	10.3	10.10	10.10	10.43
132	...	10.21	10.28	10.36	10.43	10.50	10.50	11.23
132	...	11.1	11.8	11.15	11.23	11.30	11.30	12.3
SATURDAYS								
132	...	6.38	6.46	6.56	7.5	7.15	7.15	7.48
132	...	7.10	7.18	7.28	7.37	7.5	7.5	8.33
131	...	7.34	7.38	7.48	7.57	8.0	8.0	8.33
131	...	8.10	8.14	8.24	8.33	8.45	8.45	9.18
132	...	8.40	8.48	8.58	9.7	9.30	9.30	10.3
131	...	9.10	9.14	9.25	9.35	9.30	9.30	10.3
132	...	9.40	9.48	9.58	10.7	10.15	10.15	10.48
131	...	10.10	10.14	10.25	10.35	10.45	10.45	11.18
131	...	10.40	10.44	10.55	10.56	11.5	11.5	11.48
131	...	11.10	11.14	11.25	11.25	11.45	11.45	12.18
132	...	11.40	11.48	11.58	12.7	12.15	12.15	12.48

A - Departs The Spit at 8.32 am and operates via Route 144 to Seaforth, then via Route 131
 E - Passengers set down but not taken up between Seaforth Shops and Manly.

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Extract of 1976 map



THE MERCEDES-BENZ BUS

- Model:** 0.305
- Length:** 10.67 metres (35 feet)
- Width:** 2.5 metres (8 feet 2 1/4 inches)
- Height:** 2.97 metres (9 feet 9 inches)
- Engine:** Rear underfloor horizontal 6 cylinder 4 stroke diesel with direct fuel injection.
- Capacity:** 11.1 litres.
- Power:** 147 kilowatts @ 2 200 rpm (200 developed horsepower)
- Maximum torque:** 637 Newton metres @ 1 300 rpm
- Governed speed:** 2 200 rpm, equivalent to 80 kph (50 mph).
- Gearbox:** Fully automatic three speed hydraulic torque converter type with inbuilt hydraulic auxiliary retarder.
- Braking:** Dual circuit air type on both axles. Fail safe spring operated parking brake on rear axle.

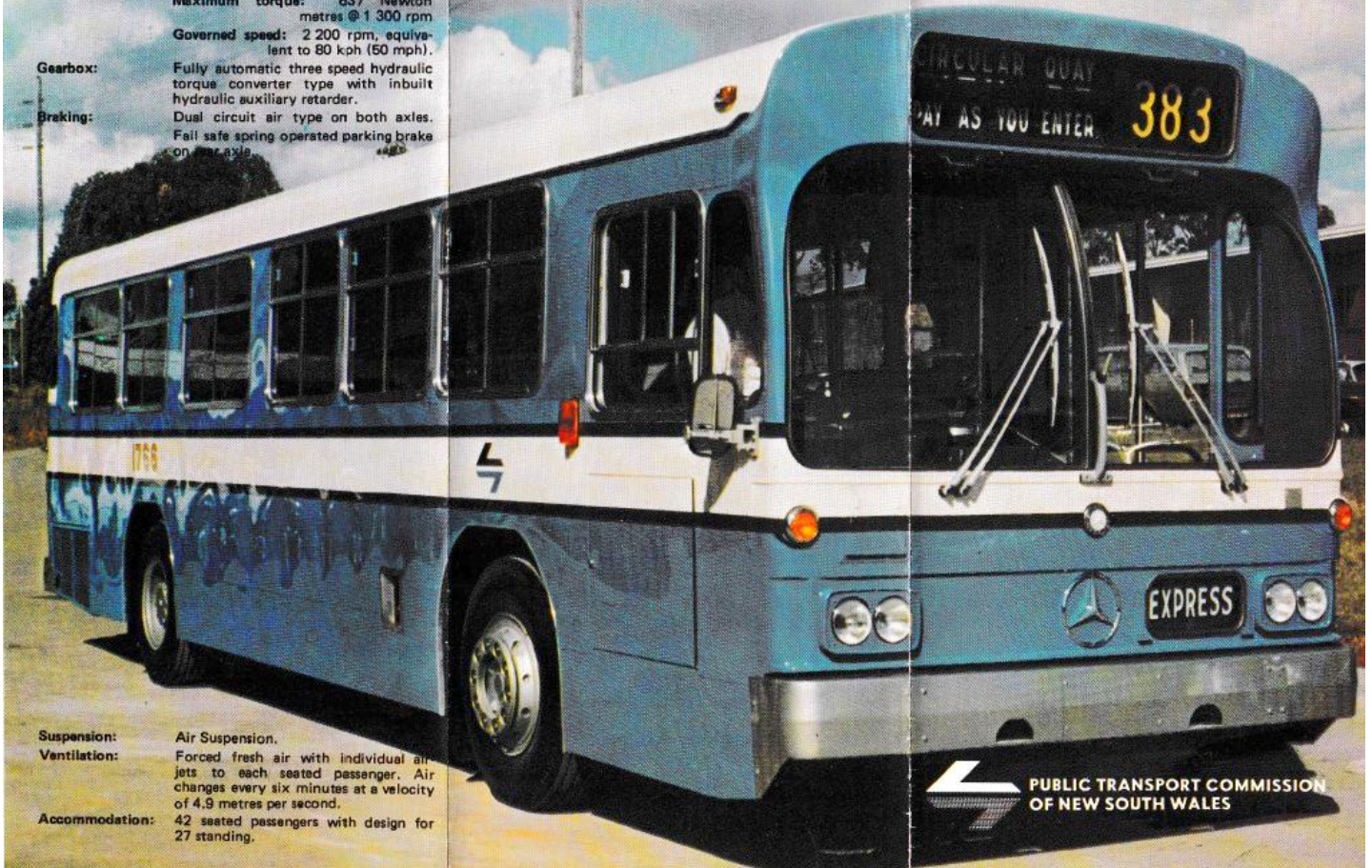
PUBLIC TRANSPORT COMMISSION BUS OPERATION IN SYDNEY & NEWCASTLE

Statistics for Year to June 1976

Passengers carried	182 702 000
Kilometres travelled	63 908 000
Total length of routes	998 km

Number of Buses in Service	Sydney	Newcastle
Forward engine single deck	24	5
Underfloor engine single deck	1285	197
Double deck	239	-

NEW MERCEDES-BENZ BUSES FOR SYDNEY



- Suspension:** Air Suspension.
- Ventilation:** Forced fresh air with individual air jets to each seated passenger. Air changes every six minutes at a velocity of 4.9 metres per second.
- Accommodation:** 42 seated passengers with design for 27 standing.

PUBLIC TRANSPORT COMMISSION OF NEW SOUTH WALES