# ECCLES STATION NEWS

## MARCH 2016

*Welcome to windy and wintery March. It has been a slog to get this issue ready in time, with the completion of the local history article on Worsley, and the polishing of a simple model for comparing modes of transport. The model uses the idea of a time penalty to allow for service (in) frequency.*

## NEWS

In December it was announced that **John Cridland is to be the Chairman of Transport for the North (TfN)**. This body is to coordinate transport strategy for the northern counties and cities covering railways, roads, trams, goods and air. It will also have some responsibility for ticketing: at the meeting it was announced that an aim would be to have a northern version of **Oystercard** by 2018. Much is now happening on paper and in terms of appointments and budgets. See: http://transportforthenorth.com/

*Mention of Oystercard brings to mind **'Get Me There'** which was to be 'smart ticketing' for buses, trains and trams in the Greater Manchester **(TfGM)** travel area. This now seems to be trams only with touch card points at platforms, following withdrawal of the developer of the system. It is not known how much compensation TfGM received for this withdrawal. Nevertheless '**Get Me There' is now available as a free mobile phone app** available from Android and Apple stores. The app enables purchase (via Apple Pay) of day, weekend and week tickets for the tram network, but it is hoped to extend it soon to include single tickets. **ESN** hopes most sincerely that readers understand what all this means.*

ESN was highly amused by the reported adventures of geeky Jordon Cox who is so thrifty that he will travel via Dublin or Berlin to get between two destinations in England if it will save a few pounds cash. Of course cash is much more valuable than time for most young fellows. How valuable to you is time saving though? If you missed this amusement see: http://www.bbc.co.uk/news/uk-england-essex-35482102

## ***OUT AND ABOUT...***

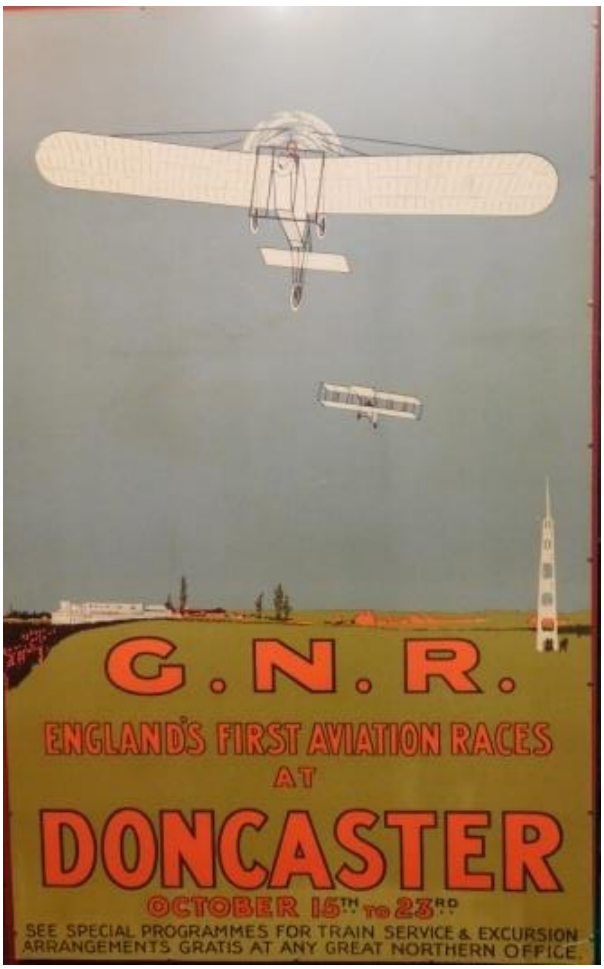
A visit to Doncaster on a day of uninspiring weather, and the train passed along the Don Valley. A small percentage of the industry that was along this valley is still a large amount of industry! The scale of the remaining Sheffield Forgemasters plant is remarkable, and the views from the train included a number of 66 class diesels hauling substantial goods trains.

At Doncaster Station and there is the footbridge across to 'The Plant' where many famous steam locomotives were built. There is always unusual rolling stock in the sidings for Doncaster works.

ESN took a walk out along the road towards the racecourse. This was interesting for the 18th century buildings. Part of it was elegant and part of it tried to be a square with a raised road and old cross on one side and the main though road below in the middle. The rain which threatened much of the time was fortunately light and brief (just long enough to get one's rain coat on and walk a few paces). The weather then improved for a look at a municipal park that must have been a large garden for the big house that is in it.

Walking back along the road on the other side of this park, and still a little way from the town centre, was the Doncaster Museum: still open and still not charging, and very much a local museum of some quality with local geology, wildlife and archaeology and so on. There was an excellent display on the operation of a Duck Decoy: something of an eastern England and Dutch speciality, and an almost industrial method of harvesting ducks to eat.


There were some interesting railway items on display but not as much as one might expect for such a famous railway town.




Upstairs was the art gallery and this was rather impressive. A large part of the decent sized gallery was given over to the annual art prize selection which was on display and for sale. Despite the large number of works on display the paintings, sketches, watercolours, sculptures, ceramics, installations etc all vied for one's attention because they were all of good execution and imaginative interpretation. In the next two rooms the permanent collection of (interesting) paintings was on display.

In the centre of the first room was a large oval table made in the pattern shop at The Plant in 1905 and later used in the British Railways boardroom at Euston House. At Doncaster this table was used for the locomotive design team meetings, so plans for locomotives such as Flying Scotsman and Mallard will have been discussed around this. Chairing the meetings would have been Sir Nigel Gresley and later Edward Thompson then Arthur Peppercorn.

***Was this Sir Nigel Gresley's seat at The Plant design meetings?***

*All photos by JER*

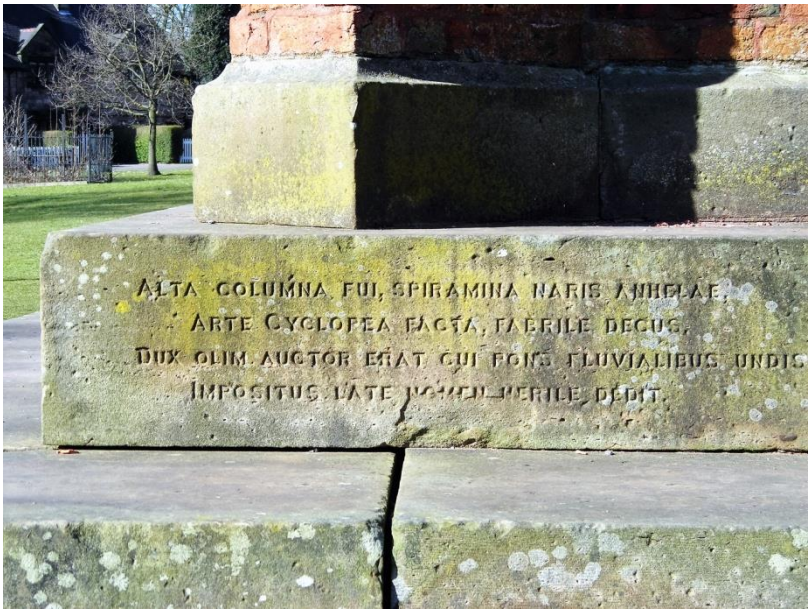
ESN took a look round the rather splendid church near to the railway station, followed by a visit to the market square. Some by now necessary sustenance was taken in the pleasant Wetherspoons on the square and then onto a train back to Manchester.

***...By TRAIN from ECCLES STATION.***

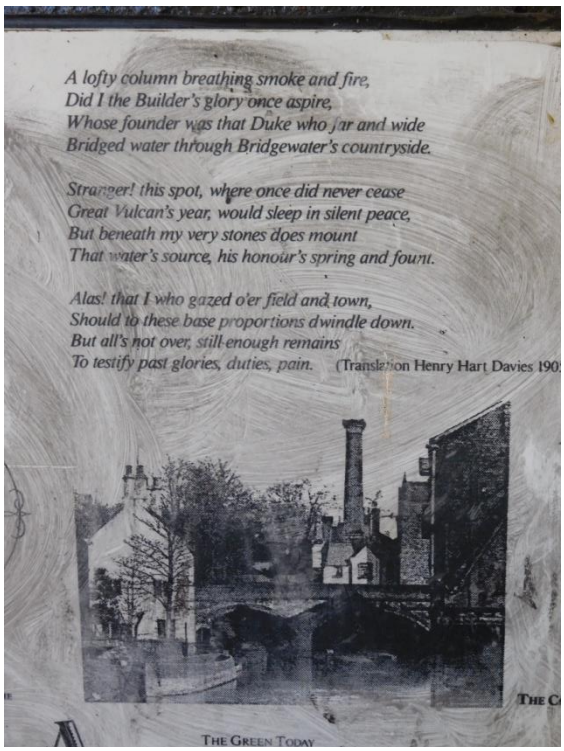
**ARTICLES**

# *Some Local History*

**What a loss! What a decline in status!** The Green at Worsley is now a half moon area of grass and trees with a defunct monumental fountain, and by its side a crescent of 1900s arts and crafts cottages. These were done to a high standard as befits the estate village of the very wealthy Earl of Ellesmere, whose New Hall residence was a short way up the hillside on the Leigh Road. Yet there had been a railway on The Green with a little engine shed in the middle of the half moon: the monumental fountain was once the base of a large industrial chimney!




The wordy inscription on the base refers to ‘anhelae’ and ‘arte Cyclopea facta’ or ‘exhausts’ ‘ made for Cyclopean art’ i.e. smoke from foundry work.




The fact is that Worsley, while being tasteful, was also a highly industrialised productive and profitable estate village that capitalised on the fact that the Bridgewater canal ran (scenically) through its centre.

The coal mined from the Duke's colliery emerged at the Delph from 40 miles of tunnels and underground canals in skeletally narrow 'M' boats or (as you could see their ribs,) also known as 'starvationers.'. The mine and these barges provided much employment in Worsley.
http://www.penninewaterways.co.uk/bridgewater/worsleydelph.htm

Workers' cottages in the estate village of Worsley.

The large impressive Victorian church of St Mark is a typical feature of such an estate village. It was designed by George Gilbert Scott.

By the canal side where the Delph branch meets the main canal is a building with buttresses that was the oil store but is now grade II listed homes. Next along is the boathouse that held The Earl of Ellesmere's Barge. Both are shown on the photo below.

On the same side and stretching from this towards Monton was a sizeable boat building yard, docks and works area covering what is now The Green.

According to 'Visit Salford' website "……it included a boat building yard, motor mill, timber yard, nail makers, wheelwrights, basket makers and a warehouse"

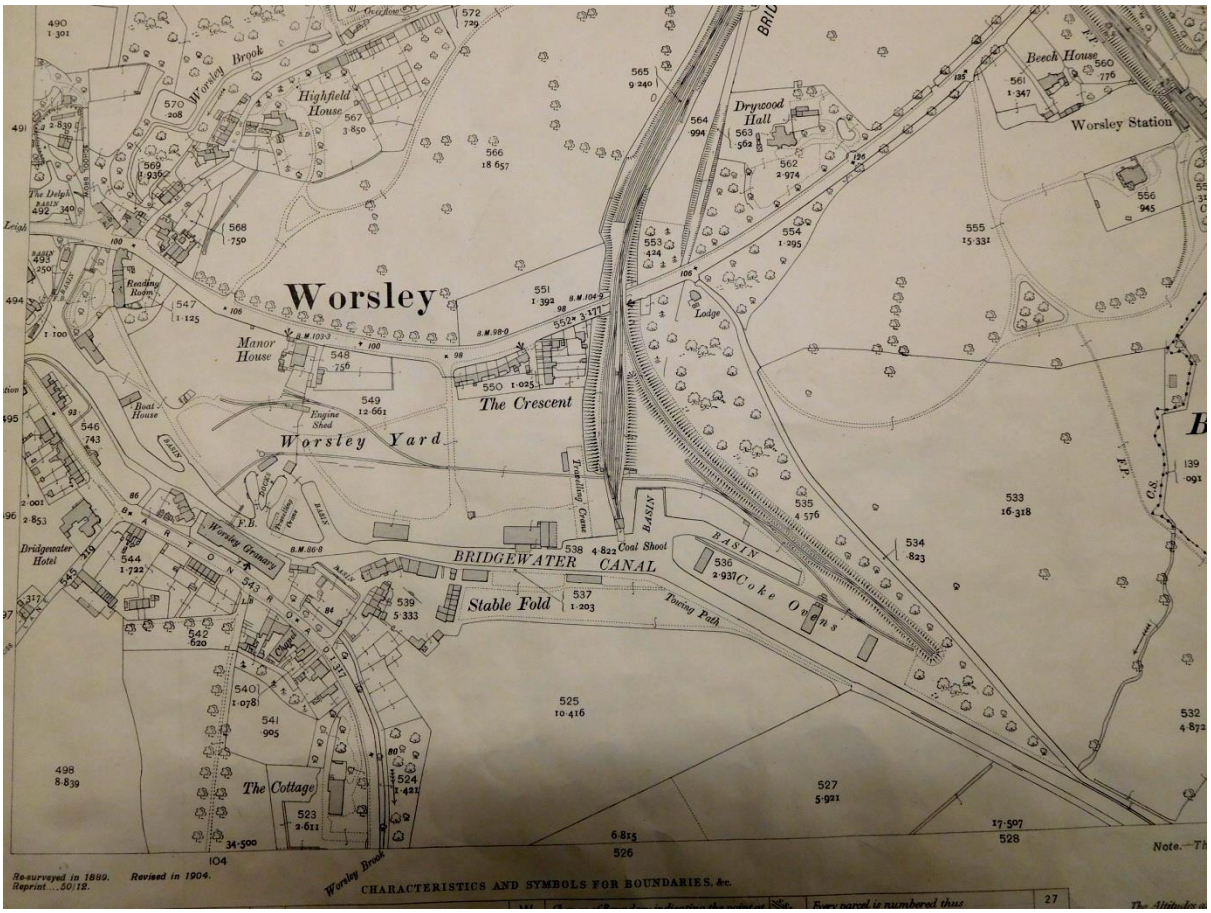
This boat yard stretched as far as the point where two separate railway lines approached the canal at right angles to it. They brought coal overland from other collieries. So at one time there were two railway bridges over Worsley Road at the far end of the Green. The lines came from Sanderson Sidings. The first of these lines was at high level and terminated in a coal chute/tip to fill the barges where the canal bends to the right. There are now new houses built where this once stood. The second of these lines appeared to drop to canal level and there was a basin. This line was removed quite early on.

Beyond this point the north side canal embankment is widened significantly. It is flat to form a plateau above the fields behind it: a linear development of modern houses makes this area conspicuous. It was here that three large coke ovens were built in a line. The smoke from these was probably vented into the air creating a lovely industrial atmosphere. To serve them the basin was enlarged behind them and a railway line was built. It curved down from the coal chute line (just after it crossed Worsley Road) to form sidings parallel to the canal: the head shunt was at the end of the plateau. A line kicked back from here to go under the coal chute and give access to the boatyard and works area. (There was not a line on the level across Worsley Road as speculated in a previous article.)

Across the canal from these ovens there the stone base of a large lime kiln(s?) between the old granary building and the newish Barton Arms. Again the smoke from this would have contributed to the atmosphere. This would have needed coal from the mines and limestone from Derbyshire: both of these bulk materials probably came by canal, because there was a basin next to it. ESN will hazard a guess that though some of it may have been used in mortar for construction; most will have been used agriculturally for liming the fields of this extensive estate.

Returning to the railways in Worsley village: a coal chute, sidings, three coke ovens and a boat yard, all served by rail would need a shunting locomotive. **This locomotive was called 'Tor'**. It was a delightful little vertical boiler loco with open sides and a ramshackle corrugated iron roof. It passed the night in a small engine shed located centrally on what is now The Green. The 1889 surveyed Ordnance Survey Map shows this brilliantly but leaves the mystery of why a later one inch OS map should show the old two lines arrangement.

Looking at successive maps shows layout changes some of which are still obvious in the landscape.




"Tor" was built by Alexander Chaplin of Glasgow: there is a splendid posed 1890 picture of it on page 174 of 'Collieries of The Manchester Coalfield' by Geoffrey Hayes, a copy of which is held at the Peel Park Local History Library.

The following give you an idea of its appearance (especially the last one):

https://www.bing.com/images/search?q=alexander+chaplin+locomotives&qpvt=alexander+chaplin+locomotives&qpvt=alexander+chaplin+locomotives&FORM=IGRE

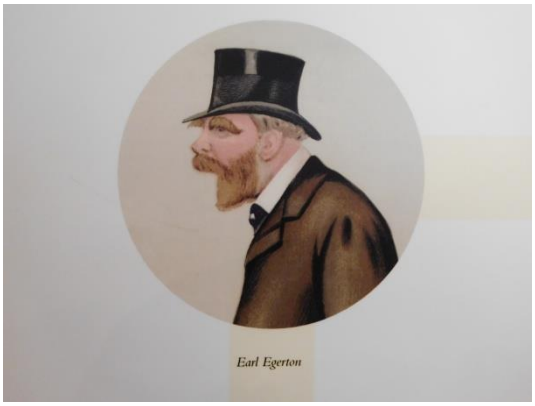
http://www.gracesguide.co.uk/Alexander_Chaplin_and_Co

https://en.wikipedia.org/wiki/East_London_Harbour_0-4-0

Here is the line from the centre of The Green curving to the right to get nearer to the canal and go under the coal chute to the coke ovens area.

Was the route across it just the path that crossed the works yard as on OS map? Or were rails laid on this too? There are spots where it looks as if there might have been sleepers on its route.

Incidentally Francis Egerton was also Baron Salford, and Ordsall Hall was part of that estate.




For now that ends the local history connected with one of the wealthiest coal owners in the UK. Next month we shall have some not so local history along a similar vein.

## ***Transport for Eccles (XIV).***

In the last article we looked at possible extra trains to stop and serve Eccles station in the daytime off peak. Would an increase in frequency make rail travel more attractive?

There are many ways to answer this question: in this edition ESN proposes a simple model for the effect of service frequency on the time cost of a journey and resulting choice of transport mode. The thinking is based on tried and

tested chemical kinetics theory. It is worth bearing with what is of necessity a dry argument.

For a journey between two points there are various possible modes of travel and most travellers are usually settled in a particular mode, whether by habit or convenience does not matter. What is of interest for this model is those who try a change of mode (why?) or are new to travelling between the given two points. These transitional travellers are few and far between, and difficult to observe but they must exist as there is no other way for a mode of transport to show an increase in usage. A few will have researched the change to decide it is worth trying (and in our IT age that proportion will increase) but many transition travellers will be ignorant of the times and speeds of services on first approach to a new mode. It is worth noting that lacking information is itself a barrier to mode change.

**So ESN posits that transition-state travellers exist; are small in number; their transition-state is brief (they will decide for or against fairly quickly) and they will be relatively ignorant of the merits or drawbacks of the new mode they are trying.**

The argument is general but let us particularise it for Eccles to Manchester by train. Firstly working as a volunteer with Freccles one occasionally meets the rare transition-state traveller. Examples have included local people who are wondering if they can travel by train to places further afield, and also recent immigrants from European countries, who arrive at the station assuming that trains run very frequently to the local major city centre!

The experience of a transition-state traveller is to arrive at the station randomly and look for a train time to Manchester. Some will find the train is in a few minutes' time, and others will find that it is 58 minutes to go. On average the transition-state passenger will find a wait of half the service interval: 30 minutes with a one train an hour service. This is quite a chunk out of a busy day and will reduce the mode conversion rate of transition-state passengers. The average first experience is not good and they will become or remain regular patrons of an alternative mode!

Two trains an hour make this average wait 15 minutes for the transitional passenger and this is likely to improve the conversion rate to rail as it is a less significant loss of productive time. By four trains per hour the waiting time is 7.5 minutes – a length of time that most people do not seem to mind. This is possibly because it is shorter loss of productive time, but more significantly the

transitional traveller would lose much more time than this in walking away to use another mode of transport. One could speculate about there being a 'capture' time for Eccles station transitional travellers whereby they would nearly all be content to wait for the next train and find the first experience satisfactory so to return as regular service users.

Interestingly the above model allows us to quantify this for Eccles station. How long does it take to walk home and get the car/cycle out? How long does it take to walk down to the bus station or tram stop and then wait randomly for a bus or tram? The answer for this mode change time is about 15 minutes (8 minutes walk and 6 minutes wait) so a service of two trains per hour should give 50% capture of transition-state travellers and four trains per hour would give 100% capture.

**Therefore our model gives us a time penalty* of half the service interval for a timetabled transport mode and a capture time based on local transport characteristics.**

**Time penalty* = ½ x service interval**

**Capture rate = 100 x mode change time/service interval**

| Projected capture rates for Eccles Station to Manchester | | | | | |
|---|---|---|---|---|---|
| trains per hour | 1 | 2 | 3 | 4 | 5 |
| Capture rate | 25% | 50% | 75% | 100% | 100% |

If you think this model stretches credibility to an unreasonable degree and at best would apply to very few people please note that <u>we all become similar to the transition-state passenger</u> in the following circumstances:

## When we change trains at a hub

We might not be ignorant of the connection time but the timetabling can be ignorant of our desire if we are using a less important connection. Hence you will arrive randomly for the next stage of the journey.

## When we change mode part way through a journey

It is likely that the timetable of the second stage service has been set without regard to (ignorant of) the arrival of the first mode at the interchange. Hence you will arrive randomly for the next stage of the journey.

## When our first stage mode runs late to a change point

It is likely that the connecting service you were hoping to get will have left and you will be dependent on the second service frequency. Hence you will arrive nearly randomly for the next stage of the journey.

## When we commute to or from work

If your work starts and finishes at set times it is likely the employer will have set the times to suit the employing organisation and not the timetable of your transport mode. Hence you will arrive randomly for the start of work, and randomly for the transport home.

## When we wake up late for work or an appointment

Again the interval between waking and the departure time becomes random.

In all the above circumstances travellers using timetabled modes of transport face an average time penalty* of half the service interval. If you walk, cycle, or drive there is no time penalty* involved but with the latter two there is a fixed time (to get the vehicle out and then park securely) that needs adding to the actual travel time.

We now have a way of comparing the time cost of a journey using different modes of transport:

| Time costs (minutes) for Eccles to Manchester journeys. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mode: | ^train | ^tram | ^bus | drive | cycle | walk | ^taxi |
| Travel | 15 | 35 | 25 | 15 | 30 | 120 | 15 |
| Penalty | 30 | 6 | 3 | 0 | 0 | 0 | 0 |
| Parking | 0 | 0 | 0 | 10 | 5 | 0 | 0 |
| **TOTAL** | **45** | **41** | **28** | **25** | **35** | **120** | **15** |

^What about the time taken to walk to the points served by these modes? Here is a reason why a greater frequency of a timetabled service is needed, or a faster journey, or a lower fare, or a combination of a bit of each of these. What about productive use of time on train or bus?

This table is based on current daytime off peak service frequencies and conditions. It ignores the complexities of needing to arrive in different parts of a large city centre. The taxi must be from the black cab rank or else there is the unpredictable wait for it to pick up. To avoid an infinite penalty a boat would have to be chartered and then would take about 90 minutes on the Ship Canal or 120 minutes on the Bridgewater. Likewise a helicopter would have an infinite time penalty unless chartered when it would take 5 minutes travel but you would need to add about 15mins other travel to Barton Airport. An aeroplane or swimming..... figure it out yourself.

From this table we can see that an hourly train service gives a lower time cost than walking but does not even beat the tram! A twice hourly service would be comparable in time cost to tram, bus, drive and cycle. A thrice hourly train service (15 minutes + 10 minutes penalty) would be beaten only by the taxi from a black cab rank. The propagation of the information of a thrice hourly

train service would promote the number of transition-state passengers and ensure the capture of a very high proportion of them (close to 100%).

Estimates can be made based on service frequencies and mode travelling times rather than looking up specific journey times and averaging them (laborious)

Some other examples:

| Time costs (minutes) for Eccles to Patricroft journeys. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mode: | train | tram | bus | drive | cycle | walk | taxi |
| Travel | 4 | ∞ | 8 | 5 | 5 | 15 | 5 |
| Penalty | 30 | ∞ | 3 | 0 | 0 | 0 | 0 |
| Parking | 0 | 0 | 0 | 10 | 5 | 0 | 0 |
| **TOTAL** | **45** | **∞** | **11** | **15** | **10** | **15** | **5** |

Here a twice hourly service on the train would not be competitive. The time cost ranking remains the same, and the train would still have a time cost roughly double that of any other mode.

| Time costs (minutes) for Eccles to Liverpool journeys. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mode: | train | tram | bus^ | drive^ | cycle^ | walk^ | taxi^ |
| Travel | 55 | ∞ | 140 | 40 | 140 | 600 | 40 |
| Penalty | 30 | ∞ | 25 | 0 | 0 | 0 | 0 |
| Parking | 0 | 0 | 0 | 10 | 5 | 0 | 0 |
| **TOTAL** | **85** | **∞** | **165** | **50** | **140** | **600** | **40** |

Here a twice hourly rail service (time cost 70 minutes) would offer a better experience and promote some passenger growth but does not alter the time cost rankings. The ^ here indicate estimates.

| Time costs (minutes) for Eccles to Rochdale journeys. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mode: | train | tram | bus | drive | cycle | walk | taxi |
| Travel | 30 | 76 | 100 | 30 | 90 | 360 | 30 |
| Penalty | 38 | 12 | 8 | 0 | 0 | 0 | 0 |
| Parking | 0 | 0 | 0 | 10 | 5 | 0 | 0 |
| **TOTAL** | **68** | **88** | **108** | **50** | **95** | **360** | **30** |

In all of the above the travel times of the different stages are added together and the penalty times of each service frequency are added. Note that a twice hourly rail service from Eccles would make the time cost of rail comparable to that of driving thereby possibly attracting passengers from that form of transport.

A twice hourly service from Eccles station would knock 15 minutes off the rail figures making a significant difference. In this model, service frequency is a proxy for increased speed of the transport mode. The model indicates that rail travel from Eccles would be much more competitive in time cost terms

towards Manchester if the service frequency were to increase. From this we would expect the passenger numbers to grow, mainly on travelling eastwards.

If it were possible to make a reasonable estimate of the notional money value of one minute's travel cost to a traveller then the model could be used to calculate a money value for total journey cost for each journey for each mode of transport. Even without this we know that the money cost of the time element will be proportional to the time cost of the journey.

**Total cost of journey = money actually spent + time cost x constant**

For the timetabled modes of transport and taxi the money actually spent is the fare. For driving and cycling it is the total mileage cost where this includes an allowance towards, vehicle cost, insurance, wear and tear etc. For walking it is close to zero for wear and tear on shoes. If the total cost is in pence the units of the constant are pence per minute and the money actually spent must be in minutes. Similar if pounds sterling are wanted. Notice that frequency increase for a timetable service therefore corresponds to a reduced journey cost.

Assuming that the time cost constant is a very cheap 10p per minute (or £0.1), we get the following results for the above journeys:

| Total cost (£) for Eccles to Manchester journeys. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mode: | train | tram | bus | drive^ | cycle | walk | taxi |
| Time | 4.50 | 4.10 | 2.80 | 2.50 | 3.50 | 12.00 | 1.50 |
| Fare | 2.50 | 2.80 | 2.80 | 3.00 | 0.50 | 0.10 | 7.50 |
| **TOTAL** | **£7.00** | **£6.90** | **£5.60** | **£5.50** | **£4.00** | **£12.10** | **£9.00** |

^ What about parking charges in Manchester?

The table is based on travelling between 10.00 and 12.00 and uses estimated adult single fares, and mileage rates of 60p, 10p and 2p for drive, cycle and walk respectively. I t assumes single occupancy of a car which is the predominant way they are used. Note that with a twice hourly service the train total money cost would reduce to £5.50. Only cycling is cheaper than this! Hence we can expect that such an increase in service would attract many more passengers to travel in the Manchester direction. In all the following tables knock £1.50 of the rail total for a twice hourly service, or £2.00 for a thrice hourly. Knock even more off for cheap day returns and advance purchase tickets. In rush hours the train service is doubled and the fare is higher. In contrast the car travel time will be greatly increased.

| Total cost (£) for Eccles to Patricroft journeys. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mode: | train | tram | bus | drive | cycle | walk | taxi |
| Time | 4.50 | ∞ | 1.10 | 1.50 | 1.00 | 1.50 | 0.50 |
| Fare | 1.70 | 0.00 | 1.40 | 0.60 | 0.10 | 0.02 | 2.80 |
| **TOTAL** | **£6.20** | **£∞** | **£2.50** | **£2.10** | **£1.10** | **£1.52** | **£3.30** |

| Total cost (£) for Eccles to Liverpool journeys. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mode: | train | tram | bus | drive | cycle | walk | taxi |
| Time | 8.50 | ∞ | 16.50 | 5.00 | 14.00 | 60.00 | 4.00 |
| Fare | 12.30^ | 0.00 | 8.20 | 21.00 | 3.50 | 0.70 | £46.00 |
| **TOTAL** | **£20.80** | **£∞** | **£24.70** | **£26.00** | **£17.50** | **£60.70** | **£50.00** |

^But £3.00 if bought the day before!!!! . What about parking charges at Liverpool? Again only cycling is less costly.

| Total cost (£) for Eccles to Rochdale journeys. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mode: | train | tram | bus | drive | cycle | walk | taxi |
| Time | 6.80 | 8.80 | 10.80 | 5.00 | 9.50 | 36.00 | 3.00 |
| Fare | 4.30 | 4.70 | 4.20 | 10.20 | 1.70 | 0.34 | 25.00 |
| **TOTAL** | **£11.10** | **£13.50** | **£15.00** | **£15.20** | **£11.20** | **£36.34** | **£28.00** |

To Rochdale the train beats all other modes even with the hourly service time penalty.

Note that for longer journeys rail becomes more competitive and even more so if you value your time at 20p a minute or more. A highly skilled worker could well be paid 50p per minute by an employer and therefore the time saved soon justifies paying a premium rail fare on Virgin, chartering a small aircraft or providing an expensive car. You don't ask these workers to walk to London to save money: you get them there quickly!

A planned journey would eliminate the penalty time of the first stage of a journey hence saving thirty minutes (£3) on an hourly rail service. A recalculation of the above tables without the time penalty shows that rail travel is very good value for most planned journeys. It is even better value if the planning allows purchase of advance tickets.

**In summary the model is simple to use: it combines speed, service frequency and costs into a single figure for comparison purposes, and allows different scenarios to be evaluated. It indicates a level of service that should give a good capture rate for passengers trying a change of mode at a particular service point, and can indicate where an increase in frequency might not generate much extra traffic.**

Caveats:

It is a statistical argument so gives an average answer which might not match a specific journey.

Transport information is required of differing service frequencies, travel conditions and fares according to the time of week and class of passenger.

It does not predict the numbers that will change mode for a given change in offering; it merely indicates the relative attractiveness/cost of the offerings.

GIGO applies. The outputs are only as good as the inputs.

When an hourly service that meets a twice hourly service is itself increased to twice hourly the passenger does not benefit from a reduced travel time if the 30min interval is rigidly applied to both services! However the 15 minute reduction that is predicted by the model is a reflection of a more attractive service to the passenger. With two trains an hour it is more likely that one of the trains will be ideal for an appointment time.

**As a programme of action one could seek refined mileage figures and fares for different transport modes from reputable sources and also for the 10p per minute of time cost: it is likely that different categories of passenger value their time differently. A table of near, medium distance and longer destination money distance costs for different key routes and passenger could be prepared. Subtracting 15 minutes (£1.50) from each shows the effect of having two trains per hour from Eccles.**

**This article has been many, many months in gestation. ESN was therefore both pleased and miffed, on asking the question at the last FRECCLES meeting, to find out that this is the thinking applied by transport strategists and they call the half service interval a **time penalty**. So I have used the name here.*

**Eccles Station News** welcomes feedback from readers. Please do not hesitate to send in your own views, photos or snippets of news to the e-mail address below.


**FRECCLES**

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