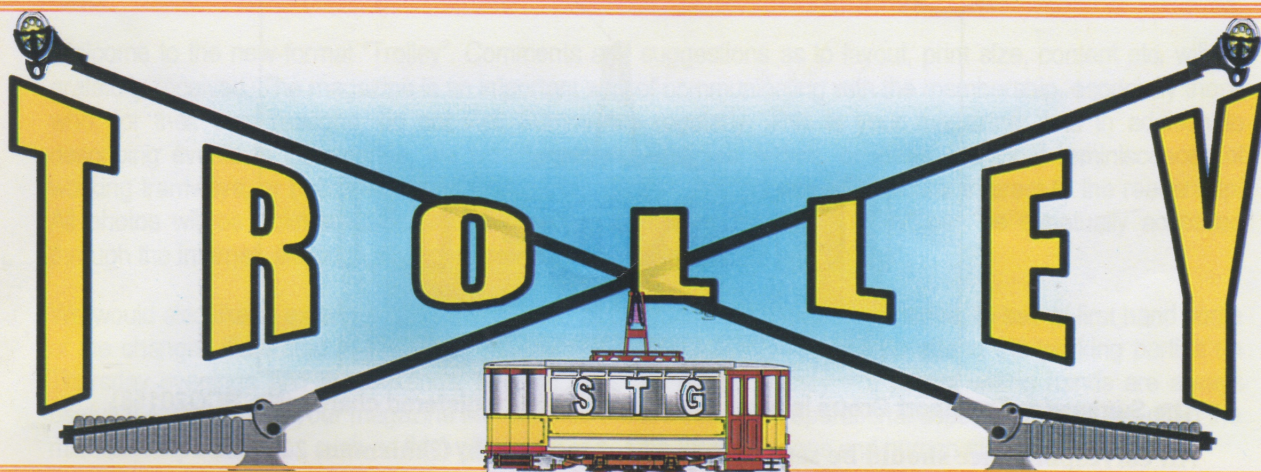
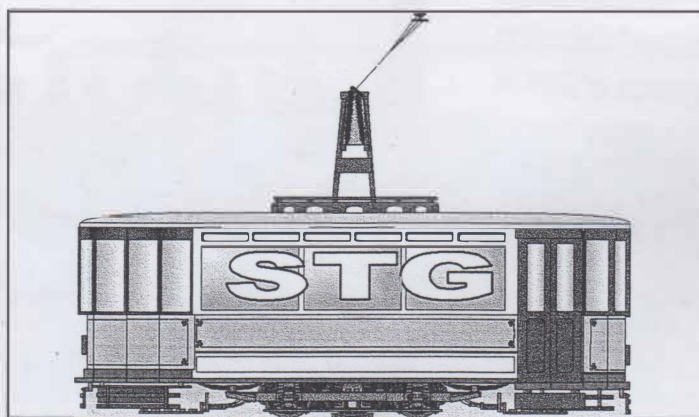


TROLLEY



The newsletter of the Summerlee Transport Group
👑 *Golden Jubilee Edition* 👑





The Summerlee Transport Group is a voluntary group and a registered charity (No. SCO20158)

All correspondence should be sent to Brian M. Longworth, Chairman, ** ***** ***,
*****, Cumbernauld G68***.

Committee Members:

Chairman	Brian M. Longworth
Secretary	Brian Quinn
Treasurer	Robert N. Sutherland
Membership Secretary	Ronnie E. Maclean
Sales Officer	George Broom
Restoration Co-ordinator	Brian Quinn
Modelling Officer	Duncan R. White
Maintenance Officer	Doug Michael
Trolley Editor	Bob Docherty.
Ordinary Committee Member	Bob Connor
Ordinary Committee Member	Jim Wilson

The Committee would like to welcome the following new members:

J.A. Hampton of Edinburgh	D.R.H. Gillies Falkirk
H. Clark of Ayr	R.A. Heron of Glasgow
G. Kirkwood of Glasgow	H. Stevens of Bearsden
Dr J. Shaw-Dunn of Glasgow	I.J. Simpson of Livingston
A. O'Hare of Coatbridge	I. Fleming of Surbiton
J.S. Blyden of Glasgow	L. M.Tennant of East Kilbride
D. Hendrie of Helensburgh (rejoined)	B. Docherty of Glasgow (rejoined)

The Committee would like to thank the following members who have made a donation with their membership renewal.

W. Wilson	I Blandford	F.A. Shine	G.A. Foulger
B. Longworth	T. Caldwell	J. Kennedy	D. McVicar
R. A. Connor	J. Harkins	J.P. Ricord	C. Lees
B. Quinn	R. Loudon	G.C. Train	D. Boyle
Dr I.D.O. Frew	M.J. Lea	J. Geraghty	M. Denman
D.S. Brown	E. Bailey	H. Higton	J. M. Riddel
S.M. McNaught	R. Logan	K. Sinclair	K. Darroch
C. Macrae	A.S. Brown	I. Teaz	J.A. Hampton
D.P. Deegans	E.J.P. Brown	I.C. Martin	B. Docherty
G. Ewing	A. Jamieson	Dr J Shaw-Dunn	W. B. Smith
Dr S.J.T. Robertson	Rev. E.J. Hart	F. Landery	I.J. Simpson
J. Wislon	A. Kyle	D. Rennie	J.M. Walker
R.G. Dickson	D.R. White	J.B.C. Nisbet	D. Plunkett
E. Duthie	Dr P. Geissler	G. Broom	S. Cavanagh
R.E. Maclean	A. Hill	N.K. Stewart	K.S. Mason
R. Sutherland	J. Stewart	G.W. Price	G.P. Murray
Rev. A.J. Cherry			H.J. Milligan

From the Editor.

Welcome to the new-format "Trolley". Comments and suggestions as to layout, print size, content etc. will be gratefully received. The magazine is an important way of communicating with the membership, especially those who, for their own reasons, do not visit Summerlee regularly. This is your magazine, and in addition to describing events in Summerlee, we would welcome articles, letters, or ideas. Personal reminiscences of working tramways, or holidays abroad where tramways are visited, are of particular interest to the readership. All photos will be acknowledged and returned. It is also hoped that "Trolley" can be eventually accessed through the Internet, although it is appreciated that not all members are "on line".

We would also like to extend a warm invitation to all our members to visit Summerlee, to see at first hand some of the changes illustrated in these pages, and also to swell the numbers who attend the working parties on Thursday evenings and at weekends. Specific skills are not necessary – a pair of willing hands are always useful. It is hoped that your magazine can balance the technical and operational aspects of trams (so often the mainstay of publications such as this) with a mix of personal recollections and human stories.

Summerlee has witnessed a number of important events since the last magazine appeared, not least the fact that after some nine years of restoration, Glasgow Motor School car No. 1017 reached the stage when it could be tested under its own power. A short description of its initial test is included in this issue. The volunteer workforce were also able to undertake the significant refurbishment of the upper deck of Lanarkshire 53. This was commissioned in time for its re-entry into traffic during the Easter weekend.

Also, after many years of negotiation, it was possible to organise the transport of Coronation 1245 from its storage in Blackpool to Summerlee, also the subject of an article in the following pages. The car arrived the day before an important visit, that of the Scottish Tramway & Transport Society, who were able to inspect it and also ride car 1017, thus providing it with its first full load of passengers for over forty years. The S.T.T.S. generously showed their appreciation by presenting the Group with a cheque for £500.

Another significant event took place when H.M. Queen Elizabeth celebrated her Golden Jubilee. The Park enjoyed a successful holiday weekend in her honour, and record crowds were experienced, over 7,000 visitors passing through the gate on the Sunday. The front cover illustrates scenes from this enjoyable weekend.

After several false starts, the Railway Heritage Committee and Railtrack finally agreed the terms for the donation of a historically significant electric multiple unit train, class 311 103 to North Lanarkshire Council. This train, while not coming from the original batch built by Pressed Steel of Linwood, effectively dates from the time of the "Blue Trains" (1967) and has an original interior, escaping the refurbishment of the 1980s. It is fitting that a "Blue Train" will be preserved in Summerlee for future generations, as the initial electrification scheme (which passes our boundary fence) played such a significant role in transforming urban transport in the Clyde Valley, but also that the implementation of the Inglis Report favoured the electrification of the local rail network at the expense of the trams. It is ironic that the train is static and the trams continue to run.

At the time of going to press, it is hoped that the Group will be allocated space in one of the coaches, which eventually can be opened to the public, enabling the model layouts and other items to be visited in a pleasant but historic environment. In the meantime, there is much work to do, and working parties are currently being organised to tackle this. A feature on the train, its historical significance and its arrival at Summerlee will be included in the next issue of "Trolley".

The Summerlee Website is currently being updated and should appear in its new form shortly. We are hoping to include some of the colour images featured in the centre spread, the majority of which have been taken from video. Many of the site events and journeys abroad are now covered extensively by Group members using high quality digital video cameras. It is proposed that these could be made available through the Group in an edited form. Details of this will be carried in the next issue of "Trolley".

Finally, the team have been working away to try and solve the electrical problems that have plagued the Graz car, resulting in it being out of traffic for some years. It was found that the asbestos flash guards inside both controllers had perished, allowing stray current to form a short circuit to earth in a most spectacular fashion, and explained the flashes, bangs, smoke and blown fuses which had occurred dramatically every time the car was tested. The asbestos was removed and replaced, and the car will now be able to return to service after it receives some general cosmetic refurbishment. As we go to press, this is taking place.

From the Chairman.

As advised on the recent flysheet, there were a few changes made to the Committee at the AGM. Robin Loudon did not seek re-election and was replaced by Jim Wilson. Duncan White resigned as Trolley Editor but took over as Model Club Co-ordinator from Ronnie Maclean. The post of Trolley Editor was given to Bob Docherty whose efforts you are about to read. Thanks goes to Robin and Duncan for all their hard work, and to John Kennedy who assisted with the last couple of editions of Trolley.

Continuing on the personnel side, we welcome Seanaid Cavanagh and Craig Martin who have become junior conductors. The Assistant Manager, Isobel MacDonald took up a post with Glasgow University and Group members took her out to a farewell dinner on Friday 29th March. One of our hardest working members, Jim Wilson has been incapacitated with an ankle injury (not sustained at Summerlee) but has still managed to supervise and is well on the way to recovery.

Work is continuing on 1017, the bow tower and bow having been fitted along with the seats. The compressor has been overhauled and fitted and the lifeguards are almost finished which will then allow us to complete the air system. There is still some minor woodworking jobs outstanding, which, when completed, will allow us to finish the painting of the vestibule windows.

The brass work has still to be fully fitted and we are awaiting the number boxes from the contractors. The main job outstanding is to make up a new resistance box to the original dimensions after which we can run the car in properly. It is intended to launch the car in the summer and the Group will have its share of the work completed in good time.

Davie Plunkett and Bruce Discombe have been trying to cure the faults on 225 and have replaced the damaged insulators under the pantograph.

There has been slow progress with 392. Carol Haddow, Bob Docherty and I went to London to put our case for exemptions from the Rail Vehicle Accessibility Regulations to the committee and as a result we had a combined visit from the Railway Inspectorate and the officials from the Department of Transport, Local Government & the Regions on 14th May. This has clarified the additional safety requirements and by the time the legislation is complete we should have carried out the necessary modifications which should also mean a summer launch.

Considerable progress was made with 1245. After seeking further advice it was agreed the safest (and cheapest) option was to split the car. Brian Quinn and Bob Docherty went to Blackpool for Bob's first viewing of the car and they agreed with Blackpool Transport Services that a small party of Group members would go to Blackpool to clear the car and bring back as much material as possible and that Blackpool would split the car shortly after.

A party consisting of Bob Connor, Bob Docherty, Doug Michael, Brian Quinn, Jim Wilson and I went down to Blackpool on the evening of 22nd March, most of us having spent that afternoon refitting the seats to 53 and painting the railings. The next day we reported to the Depot around 8 a.m. and soon set to, unfastening the seats, bulkheads, handrails etc. Everything went extremely well and we astonished ourselves (and the Blackpool staff) when the work was completed by lunchtime.

While the apparently elastic sided van was being loaded by some, the others decided to remove the 4 upper deck saloon corner windows to make room for the lifting beams. After a tidy up and a brief look round the depot we had a leisurely high tea on the Promenade then headed back to Summerlee. We got there around 10p.m. and got all the seats etc. into Bob's office.

It had been agreed that the bottom deck would come to Summerlee as that would require more detailed examination. It also made sense to put the two decks together as the most effective use of space. Bob Docherty, Brian and Jim went down to Blackpool on 24th April in order to see and film the loading which was due to start at 9am the next morning. They arrived just in time to see 1245 being shunted round the yard but the hauliers did not appear till 9.

After resolving difficulties of loading the lorries they eventually set off at 2pm. I went down to Southwaite and managed to get a few photos of the convoy which arrived at Summerlee around 5.30. Thanks to Bob's powers of persuasion, the drivers agreed to unload that night and with the top deck placed back on the bottom deck, 1245 was safely housed in the depot by 8 pm. Already there appears to have been a lot of interest expressed in the car.

The following evening the Scottish Tramway and Transport Society paid their second annual visit to Summerlee. Their members were suitably impressed with all the changes since their last visit and were able to enjoy controlling various cars. The evening concluded when their Chairman, Ian Stewart, presented me with a cheque (for the Group) for £500. We are very grateful for this generous boost to our funds which are rapidly becoming depleted by evermore expenditure. As part of the increasing co-operation between the two groups, their meetings are being made jointly with ourselves and SITA and details of the next session starting in September are enclosed.

We are also working harmoniously with the National Tramway Museum. Two of their instructors have visited Summerlee during the past year and have been given the red carpet treatment. We have had increasing co-operation with the Engineering Dept and hope to be able to help them with assistance from Doug Michael.

A party of 10 members went to Crich on 11th/12th May in order to exchange ideas and to let some of our newer members see what can be done. While some members were able to discuss various technical matters, others were given a very warm welcome by Instructor Neil Lomax who gave shots of the controls of 1055 (masquerading as Liverpool 869), Chesterfield 7 and Berlin 3006. The visit resulted in two members joining the TMS and 1 re-joining. The weekend was completed by stopping off at Sheffield where some of us sampled the route to Halfway for the first time and eventually resulted in most of us getting home between 2 and 3 am with work later that morning.

9062 continued to soldier on until mid May when another compressor fault occurred rendering it inoperable. The faulty compressor removed last year has now been being repaired and the car has returned to service. This little drama also features in a short article later in these pages. Unfortunately 53 suffered a dewirement at the same time, resulting in a broken trolley pole. This has been repaired and our members have been working all hours to get the car functioning properly.

Lanarkshire 53 was suitably decorated for the Queen's Jubilee and will retain some of the decorations for the rest of the year. The Jubilee weekend broke Park records for recent years and gave the group its biggest income from an internal event. Thanks go to all for a magnificent effort.

From the Sales Officer.

The Queen's Golden Jubilee has given the group even more reason to celebrate, as Marjory (assisted by her usual volunteers), May Wilson, and some "pressed men", managed to raise £911.80p all of which will be used to improve the tramway infrastructure, thus directly benefiting the Park and the North Lanarkshire ratepayer.

On the Sunday, we ran our stall from the depot fan using the Dusseldorf tram as a backdrop, which was unfortunate as the weather proved unpredictable. The wind and rain prevented the stock from being displayed properly and in the event some was damaged. Our volunteers suffered more than a degree of discomfort, and it is a credit to their commitment that they manned the stall until closing time, long after the Park had abandoned their outdoor activities. On the Monday we were allowed a second stall in the main hall (but only in the afternoon), and a second stall was set up on the previous day's location.

The stalls we have run in the Park are to entertain the visitors as well as give them good value for money. Our events take considerable time to organise, as Marjory and other members of the Group use their contacts to obtain most of the prizes for our stalls, thus allowing us to give away spectacular prizes for a very small stake. This, I believe, adds real value to the visitors' experience of the Park.

Although we have received an invitation to attend next year's Model Rail exhibition, it is not considered profitable enough for us to attend, however members may wish to participate through SITA, who are considering a stall there. If so, I will gladly give every assistance.

Working to improve Scotland's only working tramway.



(Above) Members of the S.T.G. enjoy the delights of Amsterdam during a trip organised by the S.T.T.S.

(Left) Isobel MacDonald bids farewell to Summerlee in the company of Carol Haddow and 1017 on its first daylight trip.



The two groups of enthusiasts merge seamlessly in front of Amsterdam 3-axle car No 533, specially hired on the Amsterdam museum line. The group went on to enjoy a first class meal in a restaurant a short walk from this spot.

THE NEW MOTORMAN by Douglas Boyle

It's half past nine on a Monday morning, I'm 'wearing the green' and trying to get one of the keys I have been given to fit the depot door. I'm sure I've tried them all but one more try and the lock turns to let me in. During my drive to Summerlee I've gone over the Depot checks in my mind at least 10 times, but I have never been alone in the depot before. It so quiet, I think hard, I know the routine almost backward, but there is no one to check that I am doing it correctly.

Two deep breaths and "Get on with it lad, this is what you went through the training for". All seems fine as I do the checks, but I have lost some time filling the sand reservoir on 9062. It was quite low and I carried it shovel by shovel (8 lots in all) from the sand bin.

The weather is fine and my confidence rises as I momentarily engage first notch and glide the car past the open depot doors. Depot power off, doors closed and I command the world as I trail through the points onto the main line. I reset the points to the main and begin my test run. A cheery wave from one of the guides as I pass the cottages means I am not totally alone. The tracks are clear, the overhead wire seems OK, I settle down to ease myself into my first solo runs as the car coasts toward the main gate.

Panic ahead! It seems the world is waiting at the terminus. It is just 10.a.m. but a school party is ready for their journey by tram. Stay calm lad, you might as well jump in at the deep end. Doors open and on they come 24 kids (ages around 10 or 11) and 3 teachers. "We have a question," says one teacher and a young lad steps forward. "When you drove up you were sitting at one end now you have moved to the other end! Why?"

I inwardly scream "It's my first day! I don't know what to say!" However, I do manage to explain. "A tram only follows the track and like a train, rather than turning it around, it can be driven from either end". The ticket issuing ceremony and welcome chat goes Ok. It would have been perfect if I had picked up a clipper from the depot to punch the Summerlee tickets. A wee tear by hand will do.

With kids parked two to a seat the run to the lower terminus is smooth. I deliver an abridged spiel about this tram and the restoration work then fend off a barrage of questions which I am sure had been pre-prepared by the teachers. My mouth is dry with the tension of the solo effort, but I contentedly sigh as I motor away from the cottages and the happy kids wave goodbye.

Back to the main gate, empty, and find 6 adults at the stop. I have picked up a punch for the tickets. My first encounter with the visitors is over. I am now settled and confident. "**Tickets Please!**" I'll look forward to seeing the kids again later and hear what they thought of the mine.

Not too many customers until lunch time. A few ferry trips for the centre guides going on and off duty for lunch breaks etc. "Which of them are motormen?" (do we talk of 'motorwomen?'), and are they watching my every move? "No!" I think I am paranoid, they are only thinking of their lunch. Just a few visitors in the afternoon, altogether a leisurely day (school party excepted) to launch my new career.

Slip 9062 back onto its lie in the depot, fill out the paper work and lock up. Just before I drive off, I re-enter the depot, just for a final check that I have closed down everything as I should.

Trams in the air – the movement of trams by road. Bob Docherty.

Moving trams around by road is a risky and expensive business, especially if the cars have to be craned on and off the lorries involved. Long distance tram movements in this country are relatively infrequent, and finding contractors who are experienced, have the kit, or even the wish to become involved, is quite a difficult task. There are also plenty of "cowboys". My first brush with this "art" was when a consortium of museums (including Summerlee) purchased a job lot of tramway equipment in Lisbon, which had to be transported to various sites in Britain.

Although there were no car bodies involved, a large quantity of trucks, controllers, spare motors, and lots of other bulky, but extremely delicate items required to be put into a number of containers, all in a foreign country, using local contractors. Enter the most important players in this business – the crane operators and hauliers. I soon learned a most important lesson in dealing with them.

Now these guys have a hard life, having to work in all weathers, often to tight deadlines, and with long hours involved. They earn probably more than most of the readers of this article, but if you get them on your side at the beginning, and keep them sweet throughout the process, then your chances of success are considerably enhanced. (Or at least there are less chances of something being dropped or damaged through carelessness).

Soon after the bulk buy, I found myself working in Portugal, and woke up to the fact that many other people world-wide had become aware of the large quantities of traditional tramway equipment becoming available for purchase in that country. I seemed to be much in demand as "our man in Portugal", with a long list of enquirers and purchasers beating a path to my phone or fax machine from all over the world.

In particular, I was asked on many occasions to co-ordinate and supervise loading of trams destined to all points of the globe, and staff at the Santo Amaro tram depot in Lisbon began to think that this was my full-time employment. Instead of earning anything from this part-time obligation, I was obliged to make lots of journeys to the cigar shop and the equivalent of the off-licence, in order to pander to the whims of crane operators and lorry drivers.

The principal problem is that most carriers there were used to carting obsolete trams off to the scrapyard, and could not visualise anyone ever wanting their charges to arrive undamaged and in working order. The other problem was that many overseas deliveries had height restrictions, and stripping off trolley bases, destination boxes, resistances, etc. and ensuring a safe descent to the ground for them, posed considerable difficulties if working alone, as I often found myself.

The process of slinging (attaching chains or cables around a heavy object in order to lift it safely off the ground) is a very precise art, and in the case of trams requires some specialised equipment. When lifting a tram, great care has to be taken to keep the lifting cables clear of the bodywork, as there is always a tendency for them to come together with considerable force and crush the tram structure. The use of "spreader bars" is essential to keep the cables apart, and I had a set specially manufactured and kept in case any haulier omitted to bring them, such was their importance.

Also, suitable lifting points have to be chosen, so as not to cause damage. Generally, lifting by the wheels or truck frames is preferable, but in the case of bogie cars, this can be complicated, and in the case of maximum traction cars (almost the entire fleet of Lisbon bogie cars), a nightmare.

I once witnessed some real cowboys attempt to pick up an open sided car by lifting it at each end using the fenders. The weight of the truck, motors and wheelsets (comprising over 75% of the car weight), caused the structure to bend along its length until the sills broke with a loud crack and a large cloud of dust. The distortion of the carbody warped and bent many of the handrails, seat frames and other internal items which were all relying on the tram remaining square. Restoration of the car was considerably more expensive as a result. Experience and common sense goes a long way to avoid this type of mindless, professional vandalism.

Trams in the air – the movement of trams by road. (continued)

So, with the prospect of Coronation 1245 returning north to Coatbridge, the road transport had to be considered very carefully. The National Tramway Museum at Crich use a company who have a special low trailer with roll-on, roll-off facilities. They also have a specially-constructed ramp which locates into the track grooves, enabling the tram to be winched smoothly on and off at each end of the trip. This firm was asked to quote to move the Coronation, but it was found that the height of the car plus the trailer restricted the route to a long detour up the East Coast, and consequently they quoted a very high price for the job.

It was decided to separate the decks and transport them up on separate trailers, neatly avoiding the height problem, and also considerable reducing the overall cost. The reduced weight of the component parts also allowed use of a vehicle with its own crane. The day dawned and a small group travelled to Blackpool to supervise the loading, and to capture this and the subsequent journey on film and video. On route to the depot, a small, conventional trailer was spotted heading toward Rigby Road depot.

"That won't be our machine" was the general consensus, ours being much more specialised. We arrived just in time to see Balloon 717 shunt our tram around the track fan, leaving it ready for their unimog (a kind of road/rail tractor) to push it round onto the unwired track at the back of the body shop compound. The Chief Engineer was there, and he pointed out a large gentleman who introduced himself as being in charge of the loading.

It was then that we noticed that the selfsame lorry noted earlier was parked up in the yard, and a creeping unease set in that all might not be well. It appeared that the appointed haulage firm had encountered a problem at their previous lift, and that our special trailer booked to soft-soap 1245 back to its native country was stuck in Newcastle somewhere. Furthermore, the haulier announced that he had been given the wrong information regarding the length of the tram, had not seen the job before taking it on, and had not brought any spreader bars.

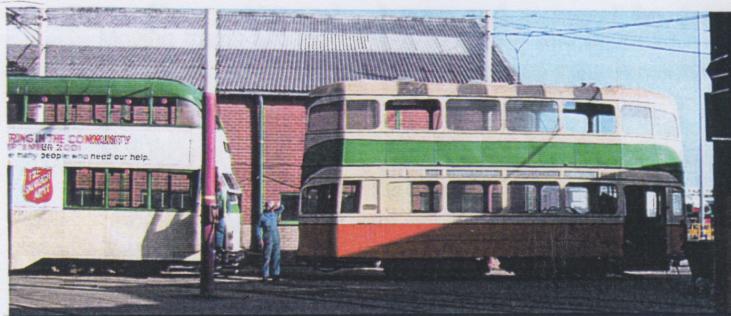
A decision had to be made whether to postpone the move until the appropriate kit was available, or press ahead with what we had (or could acquire locally) and take a chance that the car would not be seriously damaged. A quick word with the Blackpool Chief Engineer established that they would prefer that the car was taken away there and then, but agreed to help, and provided two long, stout, wooden sleepers to act as spreader bars.

The gentleman in charge of the lift on behalf of the haulage firm also admitted that he had been dropped in a tight situation, but seemed willing to help, and his honesty swung the decision. We would try with what we had. He also was able to extend his lorry by the length necessary to accommodate our tram – a feature that I had forgotten about. By the time the decision was made, it was slightly after 10 00.

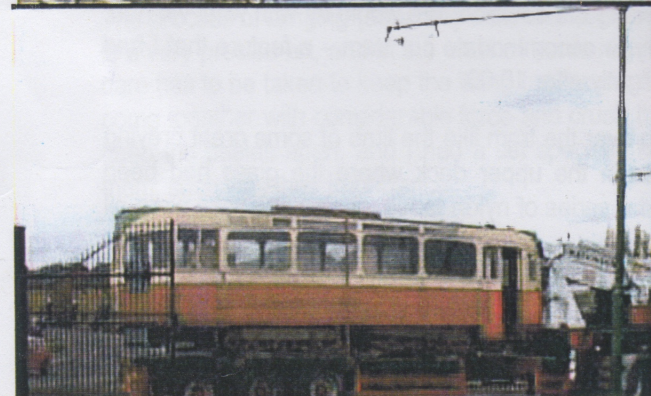
At the same time, the arm of the crane extended and swung over the tram like the limb of some great preying mantis. The timbers were slung into the window apertures in the upper deck where the glass had been removed by the Transport Group during a previous visit, and a series of nylon tapes, chains and links were all hung round the central hook.

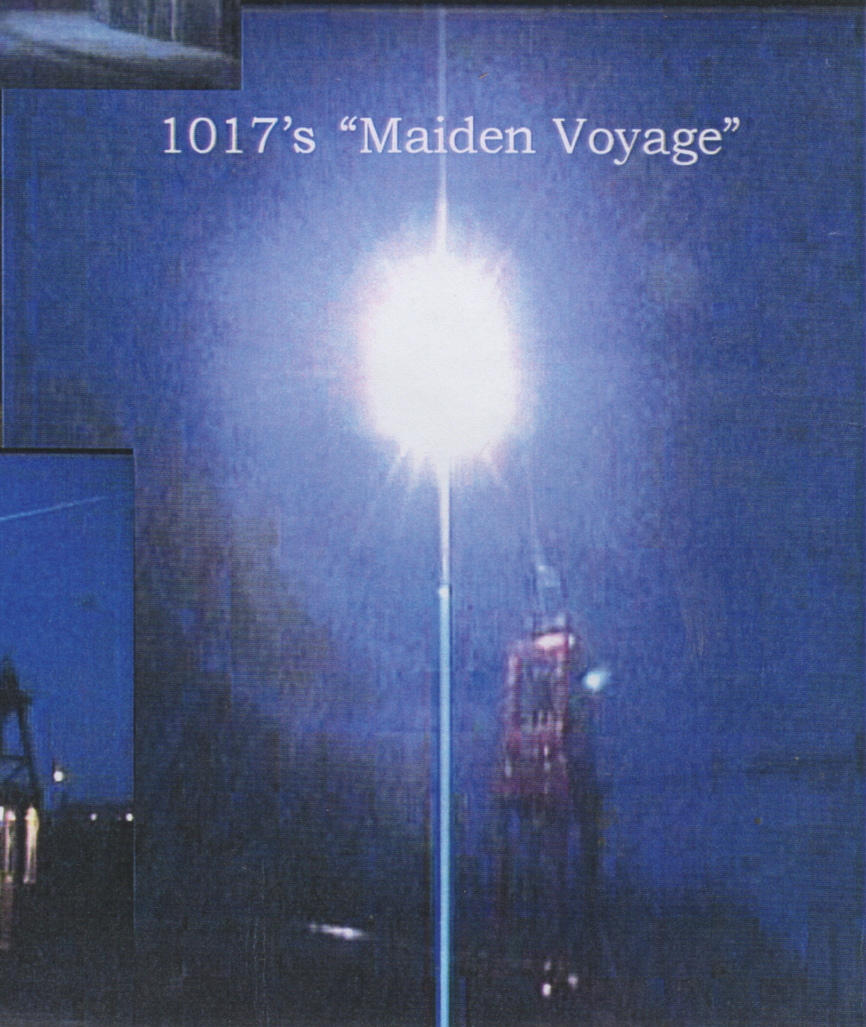
The tapes were attached to the timbers, and the crane slowly raised these to catch the window frames at their upper edges. The throb of the diesel engine changed slightly, indicating that it was beginning to take the weight of the structure, which slowly rose, swinging freely in the breeze. The jib began to swing the load round and over the waiting trailer, and half of 1245 (is that 622.5?) soon settled on its deck, its weight being supported by a series of timbers.

The crew seemed happy and began preparing the lower deck, the "business end" of the car, for its own levitation. This, by far, was the most difficult item to lift, principally because of the weight involved (around 13 tons) but also for the fact that the lifting chains had to be secured in such a way that the load was balanced and would lift level, without tipping either way. It was fortunate that the EMB bogies were attached to the underframe in such a way that the chains could be passed round them without damaging the structure.



1245's homecoming





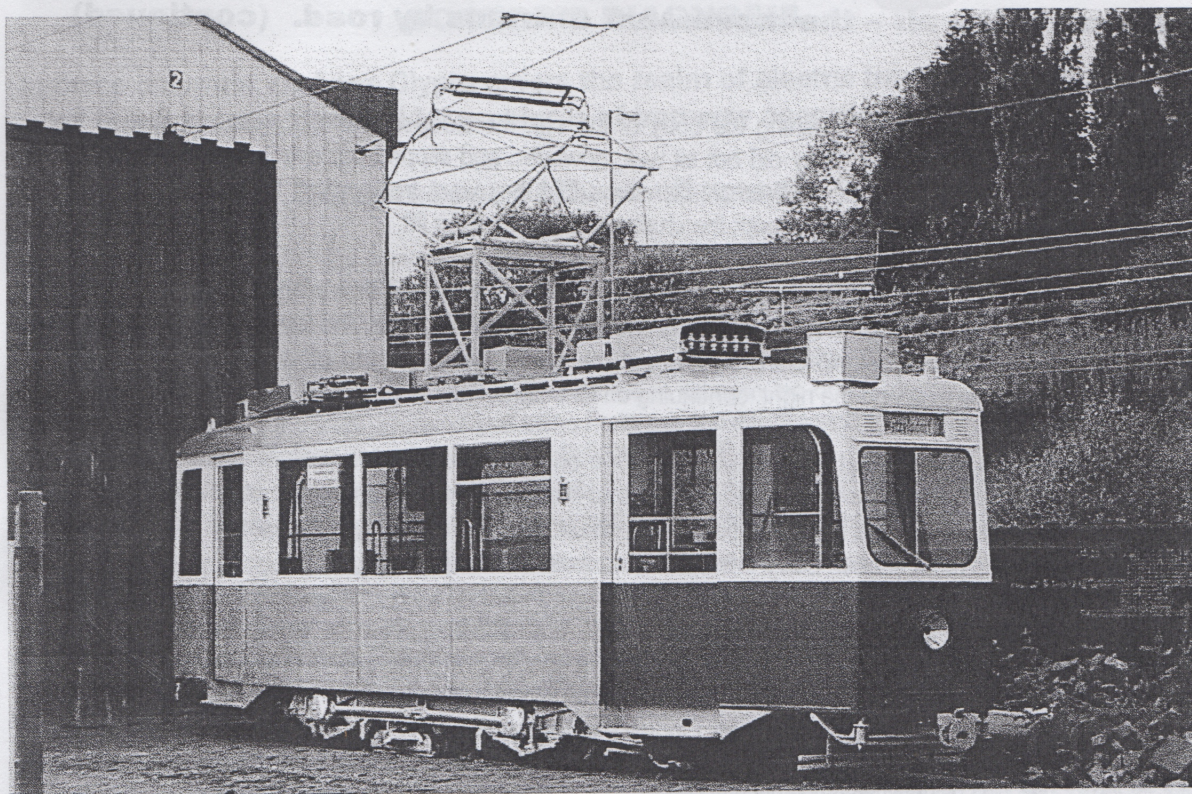
1017's "Maiden Voyage"



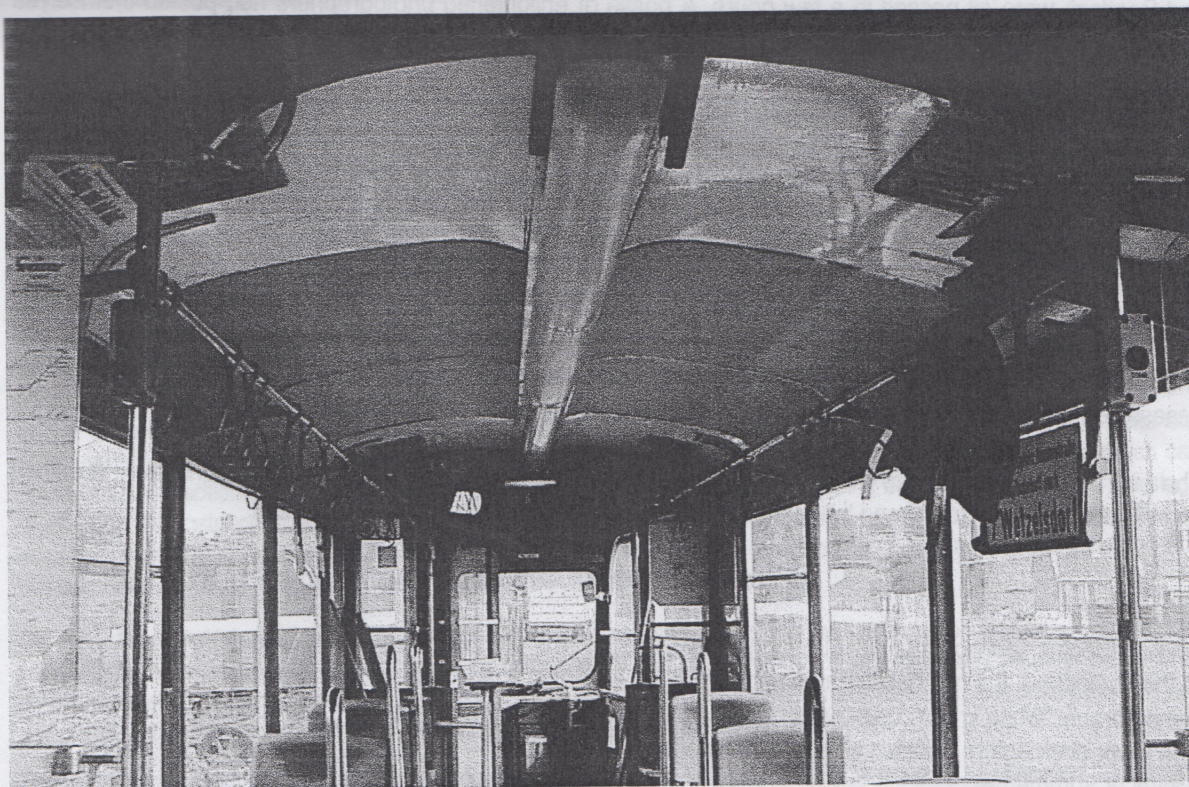
Proposed "masthead" for the new web page.

Once posted, additional click-on icons will allow entry into the traditional pages, such as photos, history, fleet, guest book, and other links.





Graz 225 is now receiving attention in preparation for its return to the operating fleet. Leaks in the roof have been identified, repaired, and sealed, and the exterior rubbed down, prepared and undercoated. The car will appear in a special Jubilee colour scheme, based loosely on Leeds 602.



Replacement of the pantograph insulators also required removal and substitution of several ceiling panels. Fortunately the Group is well endowed with tall members, which proved a boon during this awkward task.

Trams in the air – the movement of trams by road. (continued)

In order to keep the chains from crushing the body of the car, the sleepers were positioned between them, above the car, close to the hook. They did not sit well, however, and slipped out every time the chains were tightened. A quick word with Blackpool Transport ensured that they were trolleyed off to the carpenter's shop, where notches were cut in the ends to accept the chains and stabilise the lift.

These sleepers were of stout oak, and recently cut, and the bandsaw blade broke while trying to cut the first one. It took a good half hour to fit a new bandsaw, and time was running out. The haulage crew had decided that, if everything went according to plan, they would meander north and stop off at the Hamilton services station on the motorway to spend the night, continuing on to Summerlee the next day, and unload that morning.

I was trying to persuade them that it would suit everyone on site in Summerlee (including the local Press) if they could arrive that evening. The carrot was the fact that there would be a large group of potential helpers for the unloading process, and that a meal and some beer would be thrown in for good measure. I had taken care to ascertain their exact taste in beer. Lorry drivers are the same the world over.

After what seemed an eternity the sleepers were ready, and slid into place between the chains. Another attempt was made to lift the car. This time the throb of the engine changed dramatically, as the chains tightened and the whole ensemble seemed frozen for a tantalising second. After a few tense moments, the wheels began to lift off the rails, and slowly Mr Findlay's creation nosed into Blackpool's sea breeze, swinging gently. Once up to a prescribed height, the load (slightly over the crane's upper limit, it transpired later) was swung on board the deck of the flatbed trailer and secured. So far so good.

The journey north began almost immediately, at around 1345, both vehicles making good time along the motorway. They averaged about 55 – 60 mph, and looked quite spectacular, dodging in and out of the more pedestrian heavy goods vehicles. The north Lancashire plain, the scenic Lune Gorge, and the inclines of Shap and Beattock were all passed in a few hours. A posse of enlightened photographers had posted themselves along the route, and the most scenic locations were sought out by the video photographers.

Arrival at the Coatbridge Fountain was at 1735. A few heads turned as the two "artics" snaked one behind the other around the tight curves bearing their unusual load. The low bridge was cleared without a problem, and the lorries swung into Summerlee using the bottom gate. A large crowd of volunteers awaited the arrival of the latest addition to the fleet, and the unloading took place in record time, the top deck being located provisionally and secured to permit the car to be shunted into the depot.

Brussels 9062 hooked up to the Glasgow car and the unusual combination rolled down the track towards the depot. Car 1245 joined her stablemate 1017 where she now awaits her turn in the queue. It is envisaged that once 1017 is commissioned and launched, then work can begin stripping down the panels to permit an assessment of her structural condition, and a restoration plan based on this formulated.

The entire operation to move the car took almost exactly 12 hours, and a few relieved sighs were breathed once the doors were closed and the team retired for a well-earned meal and refreshment.

Key to illustrations in centre spread.

English Electric "Balloon" car No 717 shunts 1245 into the rear compound at Rigby Road depot.
In the compound, the two decks part company for the four-hour road journey to Summerlee.
A memorable "white knuckle ride" was necessary to capture the convoy speeding North on the motorway.
The lower deck enters Scottish air space once again.
Arrival at Summerlee.
Members of the Group assist in the unloading.
The car is shunted into the depot.

DOCTOR'S DIAGNOSIS

In these columns, Dr Anna Glypta enters the realm of electric traction, and explains in lay terms some of the trickier problems of tramway operation and their solutions.

Compressor Failure – Brussels 9062

"Operators of this car reported the compressor slow to build up air pressure, followed by the compressor fuse blowing consistently. The car was failed on Thursday 16th May." - so reads the incident report, which although in itself did not appear a significant event, was to trigger a substantial panic equally with volunteers and management staff at Summerlee.

The tramway operation within the Park relies on Brussels 9062 to provide all-weather service, as, to quote a letter to the Railway Inspectorate at the time, "the alternative car available is an open top double decker, which is unsuitable for everyday operation due to the small number of staff trained in its use and the inescapable fact that the climate in the West of Scotland has changed significantly since the car was designed and built."

On this subject, a quick call to the former Summerlee "Traction Superintendent", (who is now employed full-time monitoring weather details) confirmed that in the first five months of this year - 150 days, it rained on 106 of them.

Negotiations with H.M. Railway Inspectorate to allow temporary use of the Dusseldorf car proved fruitless, as still more procedures and alterations were insisted upon before authorisation would be considered. There were no "quick fixes" in sight. Firstly we would crave the reader's indulgence to consider what a compressor is, and its importance to the tram which carries it. In the early days of electric traction, when higher road speeds and loads were being contemplated, superior forms of braking were evolved, the most widespread being the use of compressed air. Let us look at the compressor itself.

A conventional tramway/railway air compressor comprises of a conventional DC (direct current) electric motor which drives a number of pistons through a cranked shaft. The pistons are housed in chambers, along which they can travel, air-tight seals being maintained around them by a ring, sprung outward, and acting on the chamber wall. As the motor-driven cranked shaft turns, each piston is forced into, and then out of, its chamber, compressing air, drawn through a series of one-way valves. The compressed air is then stored in tanks under the car, ready for use for braking, door operation etc.

The motor unit of a compressor is formed from the armature (a revolving cylinder made up of a series of wire coils wound sequentially around an iron core) and the stator (a hollow barrel within which the armature revolves). This contains what are known as field coils, usually four, wound around what are known as pole shoes. When electricity is passed through these coils, the pole shoes become strong magnets, two attracting and two repelling, in alternate sequence.

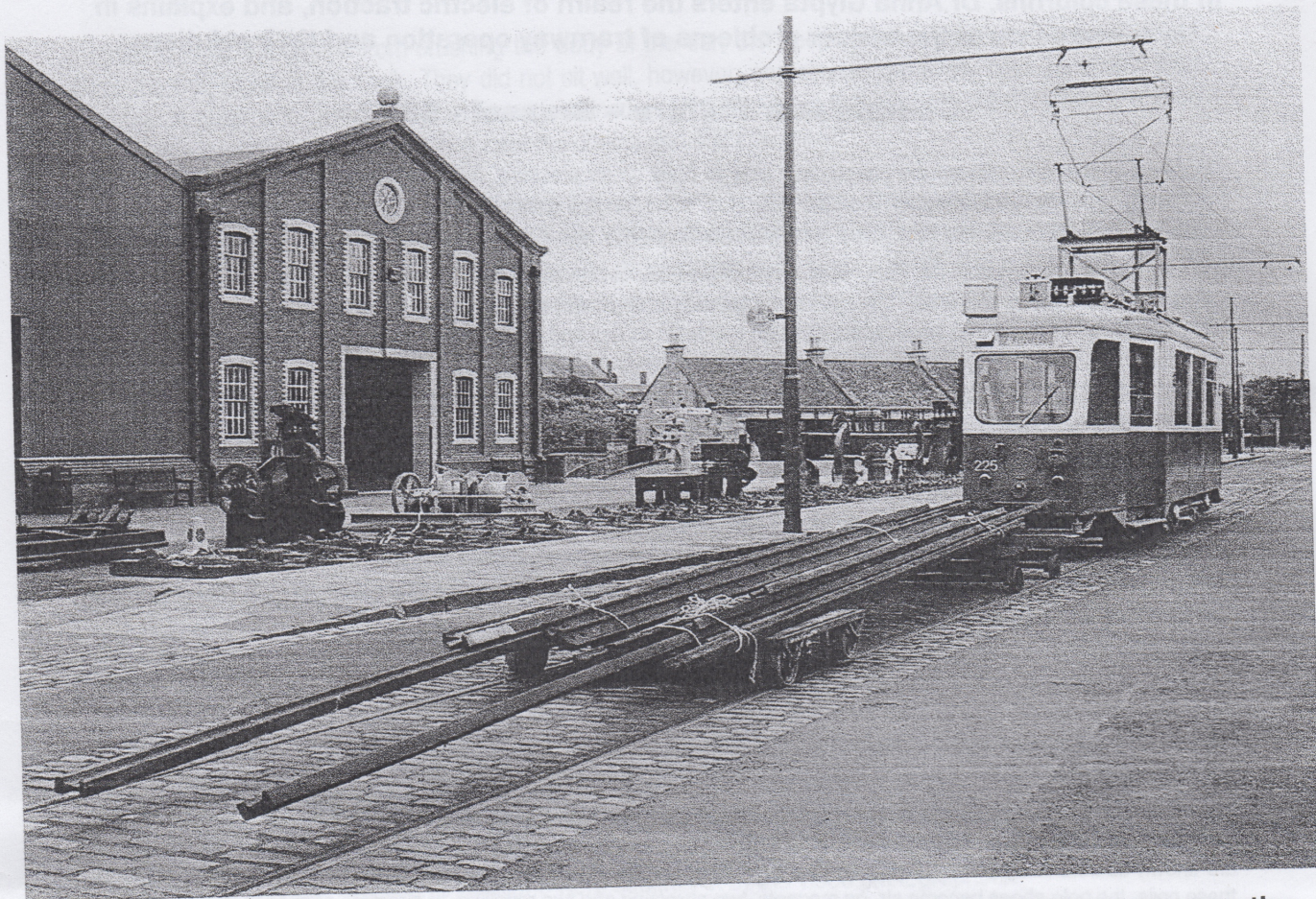
Attached to the outer end of the armature is the commutator, which is made up from a series of copper segments, each one insulated from its neighbours, the whole forming a smooth, cylindrical surface. Each segment is wired to a corresponding coil in the armature, each one wound in such a way as to form a wave within it, and insulated from its neighbours to form complete, individual circuits. The compressor on 9062 has 118 such separate circuits.

A DC electric motor converts electric energy into movement by energising each of these armature circuits in turn, which are alternately attracted and repelled by the magnetic forces set up within the pole shoes, forcing the armature to revolve within the stator. This is achieved by means of the brushes, two small carbon blocks which are held and sprung against the commutator at a given location on its circumference. As the current is passed through the brushes, they activate the particular circuits within the armature which interact with the forces set up in the field coils. Revolution is maintained, as the brushes come into contact with new segments, and lose contact with the former ones.

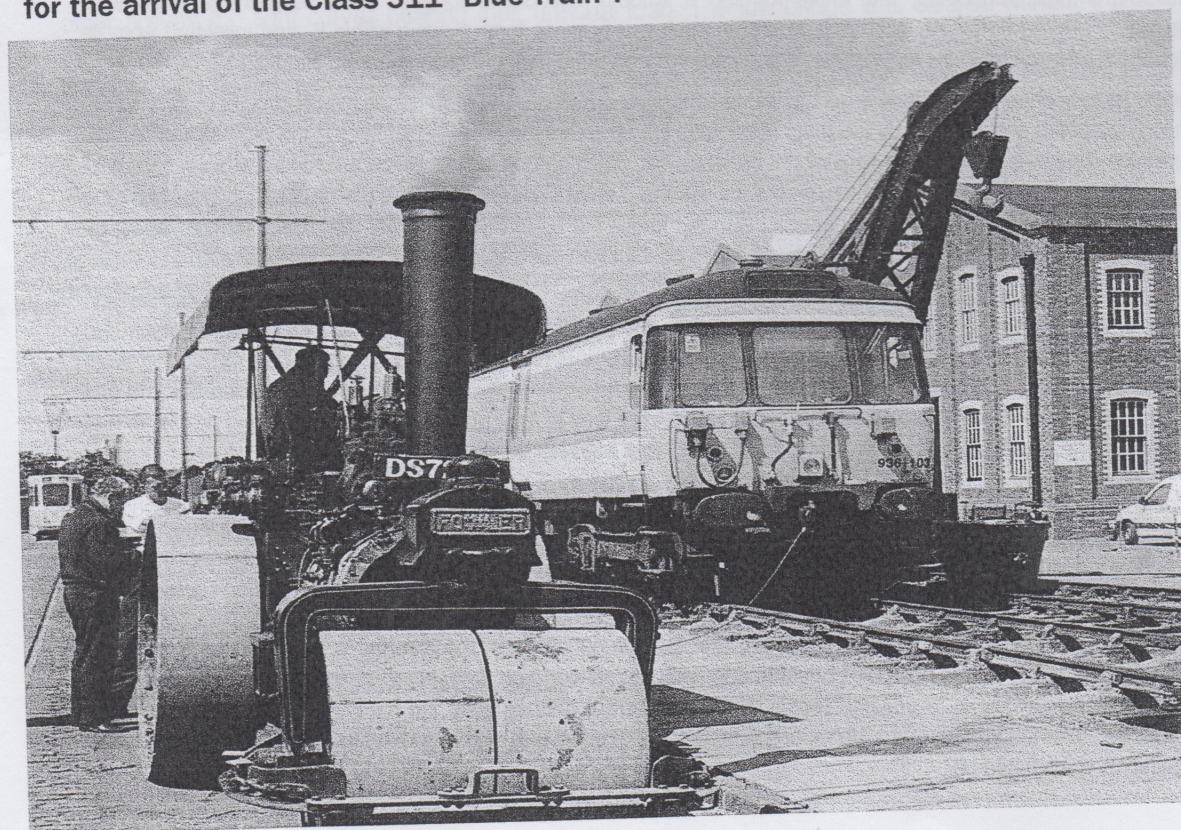
In any electric motor, all components require to be clean and dust-free, and insulation between individual circuits and components is vitally important. Dampness, faulty insulation and physical damage all lead to motor failure, which can manifest itself in spectacular fireworks, blown fuses, slow operation, or simply a smell of burning, depending on the stage reached. In this instance, members of the volunteer group responsible for routine maintenance considered that the first response should be to replace the brushes (which wear down from time to time, and can cause this type of problem), and this was done on Friday 17th May. The compressor fuse continued to blow.

On Saturday 18th May, the compressor motor cover was removed, exposing the commutator and brush holders. All components were found to have a covering of carbon dust, and the commutator was unusually black in colour. The components were cleaned down, and the commutator cleaned, the excess carbon removed using fine emery paper. Then using a stout pin, the grooves between the copper segments were cleaned out, one by one.

The compressor was then operated with the cover off, enabling the behaviour of the brushes to be observed from a safe distance. Excessive arcing (bright flashing, both blue and white) continued from both brushes, the arc eventually going to earth on the compressor frame, inside the motor "carcass" (barrel), thus blowing the fuse. At the same time, it was observed that debris in the interior of the barrel of the motor was glowing red, and continued to do so for some time after the compressor was switched off.



Graz 225 was returned to operational condition in time to assist with tracklaying in preparation for the arrival of the Class 311 "Blue Train".



Once on site, the three-car train was hauled into its final position by the resident Fowler traction engine.

The irony is that the "Blue Trains" were designed to replace both steam and the trams in the West of Scotland.

A closer inspection found a build-up of carbon dust and grease in this area and around the field coils, considerably reducing the insulation values of all components. Because of the constricted location of the unit, slung under the car, it was not possible to investigate further, without considering the removal of the compressor to enable it to be stripped down.

This compressor was fitted 18 months ago, and by all accounts had been cleaned and overhauled prior to fitment. The excessive carbon dust deposits, building up within a relatively short space of time, perhaps point to the wrong grade of brush being used.

The surface of the commutator was not found to be particularly rough or worn. In addition, the visual aspect of the motor arcing and flashing suggested a failure of one of the internal components, such as a field coil. The former compressor, stored at the back of the depot, was inspected with a view to assessing its condition.

Conventional tramway operators normally have substantial workshop facilities to enable compressor removal and replacement. The weight of the unit requires to be supported from below (usually in the form of a wheeled jack) while the fastenings are loosened, and the unwieldy object manoeuvred into a position where it can be lowered gently into the pit. Needless to say, Summerlee does not possess such equipment, the alternative method being slow, difficult, requiring many strong hands, and with the possibility that the cargo may be dropped, resulting in hazards to both operators and equipment.

One of the strengths of our volunteer group is that, within the ranks, we have many specialist skills, who can assist with cases such as this. David Plunkett is such a man, unassuming and with an amiable disposition, who quietly took stock of the situation. He suggested that we inspect the stator from the former compressor. The barrel section was unbolted from the compression chamber and slid off the armature carefully, so as not to damage any of the close-fitting components.

Using a metering device, the field coils were measured for their insulation value, both together in their continuous circuit, against the frame which held them, and separately to find their condition relative to their neighbours. It was established that they were in reasonable order within themselves, save that one coil had burned where carbon had entered a join between wires, and that the insulation on all of them leaked more than it should.

David took the motor barrel, together with the four coils, away to his work, where (with his boss's knowledge and permission) they were cleaned down, baked in a special oven to drive out the dampness, then dipped in hot varnish, which enters the voids between the coils, to seal and secure them on drying out. The coils were then refitted to the frame, using new insulation material. The values were then metered and tested, and found to be as good as new.

Now came the hard part. The idea had been to remove the equivalent component on the faulty compressor under the car, and replace it with the repaired item. All this depended on there being enough room in the restricted space below to achieve this. Now in order to gain access to the compressor, loosen off the necessary nuts, bolts, wires and air pipes, and struggle with heavy items such as the motor barrel in the cramped conditions under the car, postures somewhere between Quasimodo and a Kama Sutra participant require to be adopted. Physical effort in difficult positions are required. Dirt, grease, road mud and other delightful substances are all encountered at first hand, and simply cannot be avoided.

Add to this that ever more sections of air piping and brake rigging required to be dismantled in order to gain space to gently prise off the motor barrel. As luck would have it, a member had decided to bring in his teenage daughter to observe the operation closely as part of her college studies, restricting the free expression of vocabulary which otherwise would accompany and embroider such an occasion.

Suffice to say, the combined efforts of half a dozen worthies, and their concentration of mind over matter, triumphed, and the unwieldy rings substituted, the process taking up most of the evening. The rigging and piping were all reconnected, clothes changed, hands and nails scrubbed, and the tired squad retired to the usual alehouse just before closing time to indulge in a well-earned refreshment.

The following day, the electric cables were re-connected, and the compressor tested. The beast chugged away purposefully, and once the joints in the air piping were sealed and tightened up, the air pressure nudged up the scale to working levels. The compressor governor (a switch which automatically measures the air pressure, and opens and closes the motor circuit to regulate the air pressure between set limits) was found to need minor adjusting to suit the new characteristics of the repaired unit, and the car was duly tested and declared fit for traffic.

The Brussels car was then available as back-up car to the Lanarkshire open topper over the busy Jubilee weekend, and stress-levels were significantly reduced as a result. In the event, both cars were pressed into service, the weather both allowing the use of the open car, and drawing in sufficient crowds to justify the use of 9062 to help shift the crowds. A report about the Jubilee weekend is found elsewhere.

1017's maiden voyage.

Young Brian Quinn crossed himself whimsically at the controller of car 1017, before setting out on the car's first trip under its own power for 43 years. Nine years had elapsed since the former summerhouse had been consigned to the womb of Summerlee, to be reborn into its former identity. Countless hours had been spent, carefully dismantling the old structure, making patterns, replacing timber, salvaging the original where possible and generally making good nearly a hundred years of use, of one sort or another.

Many new items were needed, and a great deal of ingenuity went into the sourcing of these parts. Contacts in the tramway restoration business are few but cherished, however many bits and pieces had to be built from scratch. At last the dream came together, and the Transport Group's biggest restoration project to date was ready to take to the rails.

The car edged cautiously forward, and the evening sky lit up, as the combination of old copper oxide and new paint on the bow collector ionised in a series of violent sparks. The wheels ground, the bearings groaned and the lights flickered, as she eased round the depot curve into the night.

Attention from the onlookers was divided, between recording the event on film and video, keeping an eye out for mishaps, and generally enjoying a spectacle that had not been witnessed in Scotland since the last Glasgow tram's lights flickered out for the last time, forty years previously. Some may claim that the Garden Festival trams opened up a brief period of nostalgia, but in truth, none of those cars were equipped with that most Glasgow of tramway institutions, a Fischer Bow Collector. And it was this that all eyes were on tonight.

The overhead contact wire had been strung in a compromise for the cars fitted with both pantographs and a trolley pole, and it was hoped that the narrower contact plate of the bow would still be within the wire's lateral limits as it slid along. As it turned out, the car maintained contact with its "umbilical cord" except where the wire height was out of the bow's vertical reach. This was much easier to solve as the bow had a facility to be lengthened slightly. In fact, the only section requiring re-aligning was the depot approaches.

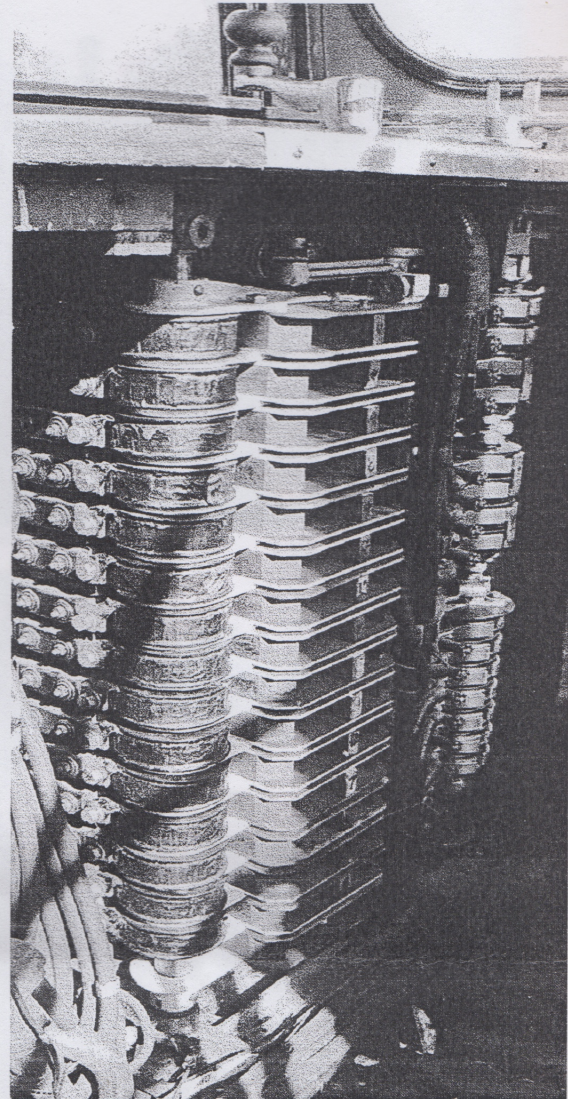
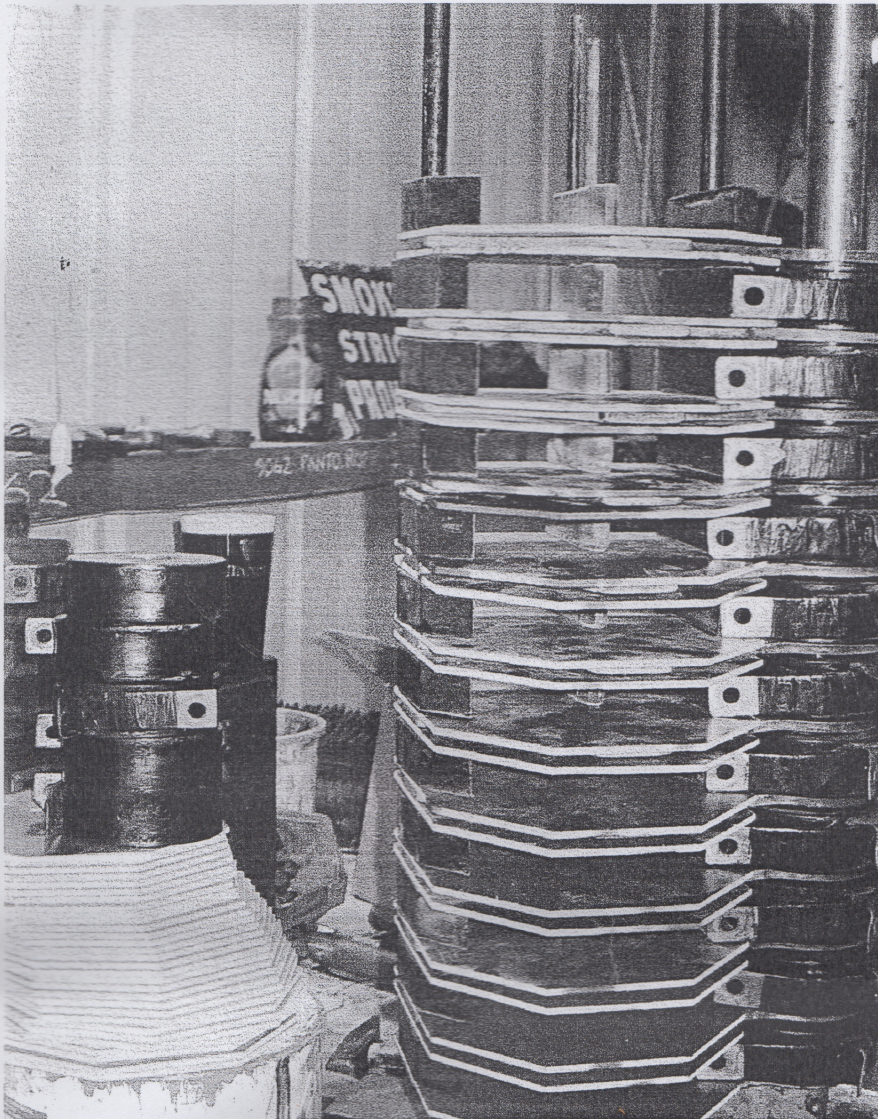
Returning to the nocturnal test, the first problem that was encountered was when the car "grounded", standing dark and lifeless as the bow rocked vainly in the fresh, evening air, out of reach of the wire. After some heroic efforts at physical persuasion, it was deemed sensible and timeous to summon the assistance of the Dusseldorf car, which swiftly pushed the car under a lower section of wire.

With the knowledge of where the "dead spots" in the overhead were, it was possible to continue with the "running in". The car ran well, and the new bearings, noticeably tight on the first run, eased off as the car passed to and fro. The cobbled setts, high between the rails on the bridge section, knocked off the errant tails of some small bolts securing the new timbers on the lifeguard tray.

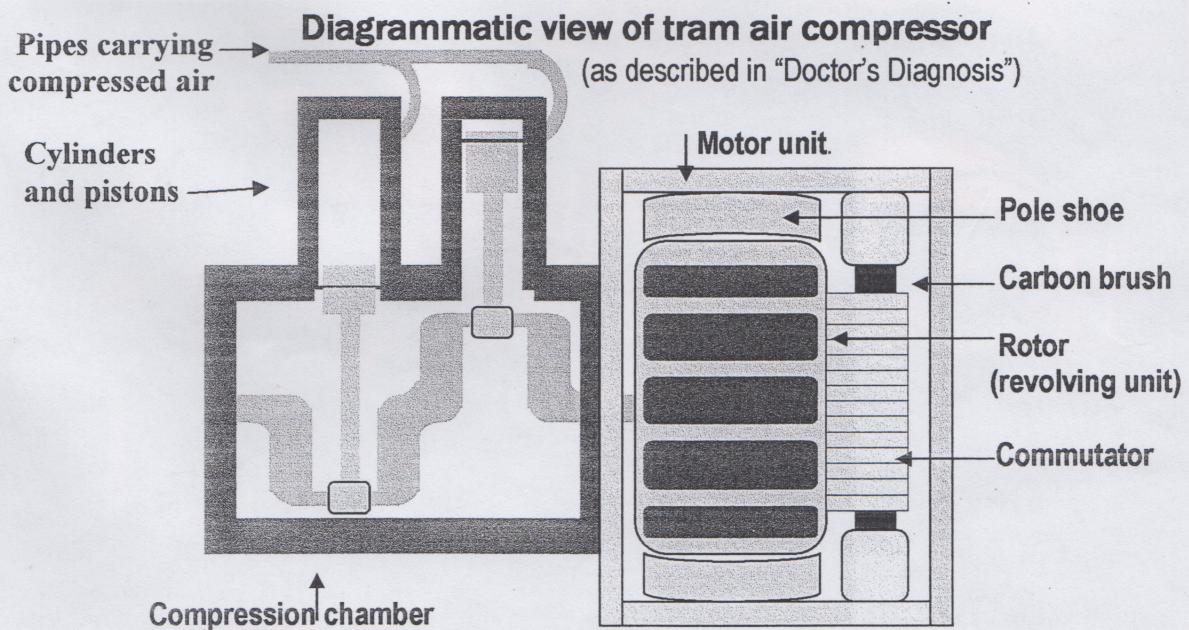
After a memorable, but important, step in the eventual commissioning of the car, the group members dispatched 1017 back to its resting place in the depot, and retired to their own choice of resting place for a well-earned refreshment.

Key to illustrations in centre spread.

- The first view (taken from a video frame) shows the car at the precise moment it took power from the bow for the first time – note the tiny bead of light on the wire.
- The car cautiously edges out of the depot for the first time.
- The Coatbridge evening sky is lit up by the ferocity of the flashes.
- The car crosses the canal bridge.
- Arrival at the top end of the site.
- Return to the mine area.
- General view.



Above left: Flashguards from one of Graz 225's controllers being re-assembled on the bench using new insulating components, and right, the finished unit as installed in the controller.





Sparkies Davie and Bruce with the refurbished motor barrel from 9062's compressor.

Annual midsummer barbeque



"Drive a Tram" group visit Crich.



Scottish Tramway & Transport Society visit and presentation of cheque.