

PROCEEDINGS OF
THE THIRD
CONFERENCE
OF
AUSTRALASIAN TRAMWAY
MUSEUMS
ADELAIDE

APRIL 23-26 1977.

EDITED BY
J. C. RADCLIFFE



**PROCEEDINGS OF THE CONFERENCE OF AUSTRALASIAN
TRAMWAY MUSEUMS.**

Continues : Proceedings - Conference of Australian
Tramway Museums ISSN 0313 - 2595.
ISBN 0314 - 8246.

1. Street - railroads - Museums - Australasia -
Congresses - Periodicals.

388 46074

ISSN 0314-8246

Published by the Council of Tramway Museums of Australasia
135 Through Road
Burwood, Victoria 3125
AUSTRALIA



Member organisations of the Council are listed on page 139 .

CONTENTS

	<u>Page No.</u>
Conference Participants	5
Programme	8
PAPERS:-	11
1. Scrafton, D., "Transport Museums - a Professional's View"	12
2. Williams, D.J., "Obtaining community funds for developing museum operations"	18
3. Speirs, G., "The future for the specialist museum"	26
4. Fenner, L.M., "Construction and maintenance of museum overhead"	35
5. Emery, R.S., "Practical Fire Prevention in Museums"	59
6. Moulds, R., "Safety programmes for museums"	63
7. Breydon, G. and Cooke, A.C., "Exhibitions - A lesson in professional museum practice"	67
8. Kingsley, W.J., "About people"	73
WORKSHOPS:-	81
1a Management of Employed Labour	82
b Management of External Funds	83
c Preparation of Assistance Submissions	84
2a Archival materials	85
b Transport Bibliography	87
c International Communications	87
3a Per-way maintenance	88
b Tramcar maintenance	89
c Horsecar operation	90
4a Member safety standards	91
b Operating safety standards	92
c Prevention of damage to exhibits	93
5a Fire safety	95
b Electrical safety	99
c Construction safety	100
6a Publicity	101
b Role of static displays	103
c Bookshops	104

CONTENTS (Contd.)

	<u>Page No.</u>
7a Training and managing operating crews	106
b Membership	107
c Public charges	108
REPORTS:-	111
(a) Expert Panel on Tramcar acquisitions and spare parts	112
(b) Expert Panel on Tramway Museum Safety Standards	118
(c) Publishing Report - SPER	134
(d) Publishing Report - WTM	137
(e) Second Annual Report of COTMA	139
(f) Minutes of Second Annual Meeting	145

CONFERENCE PARTICIPANTS

<i>Australian Electric Transport Museum</i>	Mark Skinner Christopher Steele Roger Wheaton John Pennack Chris Andrews Ron Jenkins Ron White Robert Magnussen
<i>Ballarat Tramway Preservation Society</i>	Bill Jessup Richard Gilbert Graham Jordon
<i>Brisbane Tramway Museum Society</i>	Bill Daniells Tom Carter Tim Atherton Bob Deskins John Hudson Dennis Parry Phil Smith Noel West Gary Ford Anthony Smith Andrew Cook
<i>Haddon Tramway Workshops</i>	Anthony Smith Andrew Cook
<i>Museum of Transport and Technology, Auckland</i>	Ian Stewart Ian Mison
<i>South Pacific Electric Railway Co-operative Society</i>	Peter Kahn Mal McAulay Tony Griffen Bob Merchant
<i>Tasmanian Transport Museum Society</i>	David Verrier Noel Woodrow
<i>Tramway Historical Society, Christchurch</i>	Ray Silcock Greg Harris David Hansen Malcolm Giles Peter Rendall
<i>Tramway Museum Society of Victoria</i>	Tony Cooke Keith Kings Keith Stodden Tony Sell Noel Gipps Brian Weedon
<i>Wellington Tramway Museum</i>	Colin Perfect Barry Ollerenshaw Michael Boyton

CONFERENCE PARTICIPANTS (Contd.)

West Australian Transport Museum

Lindsay Richardson
Ric Francis

*Council of Tramway Museums of
Australasia*

John Radcliffe (Chairman) Adelaide
Bill Kingsley (Executive Officer) Melbourne

Observers

M.H. Thompson (Australian Railway Historical Society)

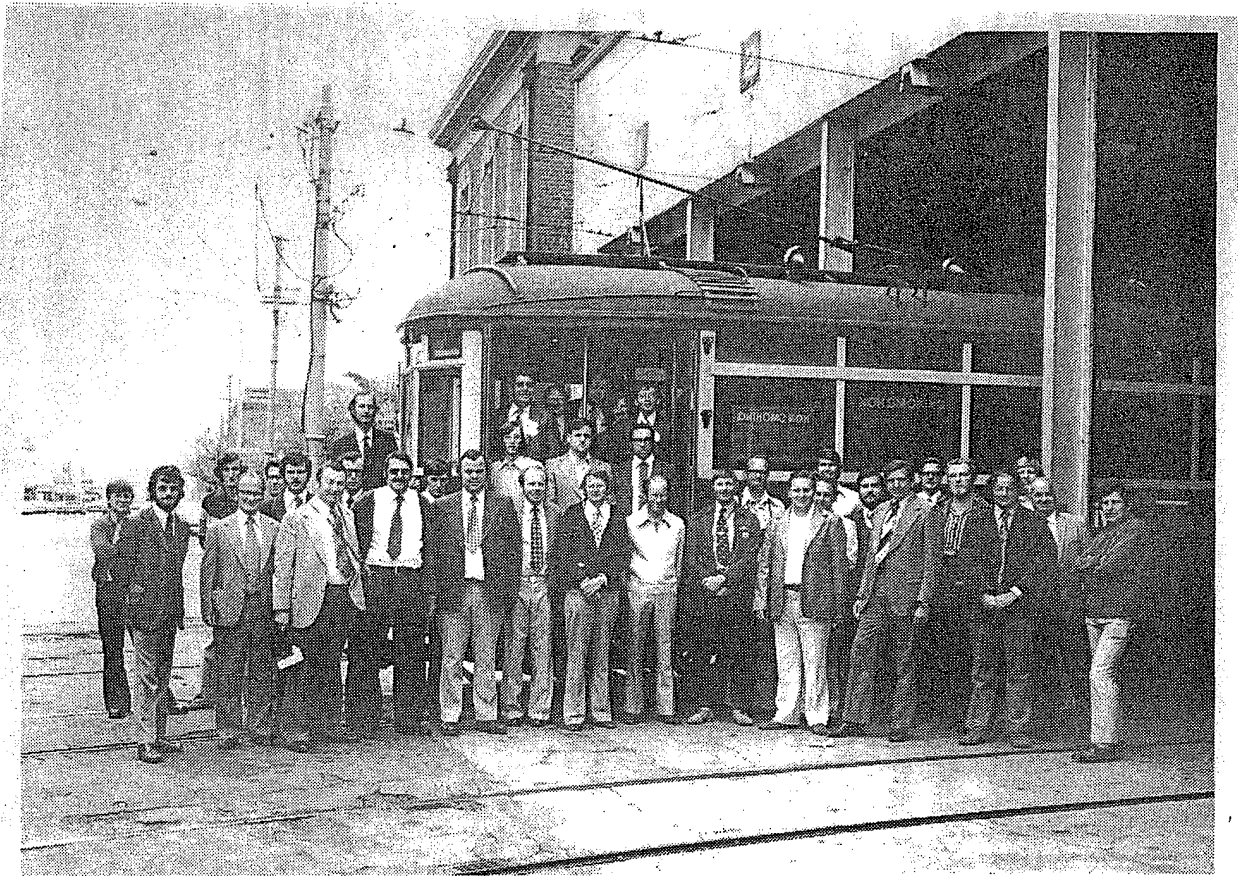


PLATE 1 - Conference delegates assembled during inspection of facilities, City Depot, State Transport Authority Bus and Tram Division, Adelaide. April 26 1977.

Front (left to right): A. Cook, M. Skinner, A. Smith, I. Stewart, I. Mison, D. Hansen, N. Gipps, R. Silcock, D. Parry, G. Harris, N. West, R. White, J. Hudson, M. McAulay, W. Kingsley, R. Merchant, W. Daniells, T. Carter, T. Atherton, A. Sell, L. Richardson, B. Weedon, K. Stodden, C. Perfect, M. Boyton, J. Burke, P. Rendall

Rear (left to right): J. Radcliffe, G. Jordan, R. Deskins, P. Kahn, D. Verrier, M. Giles, B. Ollerenshaw, N. Woodrow, G. Ford.

PROGRAMMESATURDAY APRIL 23 1977

12 noon Commencement Smorgasbord - Enfield Hotel

Chairman: John Radcliffe

1.00 Opening Paper: Dr. Derek Scrafton, (S.A. Director-General of Transport, Adelaide)

Transport Museums as viewed by the Transport Professional

1.45 Domestic announcements

2.00 Paper: David Williams (Deputy Town Clerk, Salisbury)

Obtaining community funds for developing museum operations

3.00 Afternoon Tea.

Chairman: Peter Kahn

3.20 Workshop 1 (a) Managing employed labour
(b) Managing external funds
(c) Preparing assistance submissions

4.00 Paper: Geoff Speirs (S.A. Museum)

The future for the specialist museum

4.50 Workshop 2 (a) Maintenance and exchange of archival material
(b) Development of an Australasian Transport Bibliography
(c) Furthering international communications

5.30 Close

Dinner - Own Arrangements

8.00 Individual Presentations

Progress of the Museums (10 mins each)

SUNDAY APRIL 24 1977

Chairman: Lindsay Richardson

9.00 Paper: Max Fenner (Operations Manager, A.E.T.M.)

Erection and maintenance of museum overhead

10.00 Workshop 3 (a) Day-to-day and long term per-way maintenance
(b) Routine tramcar maintenance
(c) Horsecar operation

10.45 Morning Tea.

Chairman: Tony Cooke

11.10 Report: Expert panel on car acquisitions and spare parts

11.40 Reports: Publishing Depts., SPER, WTM.

12.00 Close.

12.15 Bus to AETM, St. Kilda - Lunch en route

2.00 Traffic Operations, St. Kilda Tramway

5.00 Special Operations, St. Kilda Tramway

SUNDAY APRIL 24 1977 (Contd.)

- 6.00 Chicken Barbecue
8.00 Evening Operations, St. Kilda Tramway

MONDAY APRIL 25 1977

Chairman: Ian Stewart

- 9.00 Paper: Ray Emery (Fire Prevention Adviser, Public Bldgs. Dept.)
Practical fire prevention in museums
9.45 Paper: Ron Moulds (S.A. President, Safety Inst. Australia)
*Safety programmes for museums (a) the members
(b) the public*

10.30 Morning Tea

Chairman: Colin Perfect

- 10.50 Report: Expert Panel on Museum Safety Standards
11.15 Workshop 4 (a) Enforcement of member safety standards
(b) Establishment of operating safety standards
(including First Aid)
(c) Prevention of damage to vehicles and exhibits
by visitors
12.00 Workshop 5 (a) Fire Safety
(b) Electrical Safety
(c) Construction Safety

12.45 Sandwich Lunch

Chairman: David Verrier

- 2.00 Paper: Graeme Breydon and Tony Cooke (T.M.S.V., Melbourne)
Exhibitions - a lesson in Professional Museum Practice
2.45 Workshop 6 (a) Development and use of publicity
(b) The role of static displays before and after
operation begins
(c) Bookshops - their design and operation
3.30 Afternoon Tea.

Chairman: Bill Daniells

- 3.50 Paper: Bill Kingsley (Executive Officer, COTMA)
About people - overseas ideas for Australasian Museums
4.30 Workshop 7 (a) Training, rostering and managing operating crews
(b) Membership - Recruitment, communications, rights,
responsibilities.
(c) Public charges - their equitable determination
5.15 Proposed arrangements for Christchurch Conference

TUESDAY APRIL 26 1977

- 9.00 Bus transport to Airline Offices and Railway Station, North Terrace.
Suggest catch Bee-line bus to Victoria Square.
10.00 Inspection of Maintenance facilities, City Depot, Angas Street.
12.30 Formal luncheon with civic guests
Chesser Cellars, Chesser Street, Adelaide
Guest Speaker: Hon. T.M. Casey, M.L.C., Minister of
Tourism, Recreation and Sport.
2.15 Meeting - Council of Tramway Museums of Australasia, Lecture Room
South Australian Museum, North Terrace.

PAPERS

TRANSPORT MUSEUMS - A PROFESSIONAL'S VIEW

Derek Scrafton

Director-General of Transport, South Australia.

INTRODUCTION

Thanks to the Chairman and members of the Council of Tramway Museums of Australasia to give this opening paper to the Third Australasian Tramway Museums Conference.

I am sure that the Honourable Tom Casey, the Minister for Tourism, Recreation and Sport, will make you formally welcome to South Australia on behalf of the State Government when he joins you for lunch on Tuesday. However, as that will be almost your closing session, let me take this opportunity of welcoming you all, particularly the interstate and New Zealand members, to Adelaide and to wish the best of success in your technical sessions, good fellowship and enjoyable visits to top off your stay in South Australia.

THE ROLE OF A DGT

Before moving to the formal topic which was allocated to me by your Chairman, I would like to make a few introductory comments on my own situation here in South Australia, particularly for those of you from interstate and New Zealand.

The Director-General of Transport is charged with four major responsibilities:

- a) Maintain an overview of all transport in South Australia and make recommendations to the Government, through the Honourable Minister of Transport and Local Government, on such things as finance, investment, closures and innovation.
- b) Co-ordinate all forms of transport in the Minister's portfolio i.e. basically land transport.
- c) Undertake and sponsor transport research and education.
- d) Permanent Head of the Department of Transport, which includes such diverse divisions as Motor Registration, Transport Planning, Road Safety, Government Garage and Local Government Office.

I do not have day-to-day involvement with the bus and rail operations except when problems arise. I used to be Chairman of the former S.A.R. Board but withdrew from that task when we integrated the M.T.T., S.A.R. and T.C.B. into the State Transport Authority, on the principle that we would like to keep separate our transport policy and operations. However, that has not worked out quite as well as we hoped

and a Bill has been introduced into Parliament just this week to increase the S.T.A. membership from 7 to 8 and permit me to increase the links in the portfolio.

In some ways, I am not an appropriate person to give this talk, as I am one of a minority of professionals who are also enthusiasts for and about the transport business. It is probably unfortunately true that many professionals in the transport world consider enthusiasts to be naive at best and idiots at worst; but you shouldn't feel too bad as they tend to pin similar brands on politicians, planners and users!

My enthusiasm for transport started in my very young years as I was born in Darlington, England, just two minutes from the L.N.E.R. main line near to the works of Robert Stephenson and Hawthorns, a major locomotive builder where my grandfather was erecting shop foreman. During my school days, Darlington was a trolley-bus town and I have many memories of the journey to school on centre entrance single deckers, and later of new double deckers limited by their size and so transferred to Doncaster and Bradford. As I grew older my university training spilled over into transport and I was able to write my doctorate thesis on the development of public passenger transport in West Yorkshire, a major British metropolitan area.

When time came and I had to earn a living, I concentrated initially on rail closures in the Canadian prairies and on the inter-city motor coach industry in Canada. Gradually my horizons were broadened to include trucking, ferries and the relationship between transport regulation and policy. As a result of this background, it is sometimes not easy to separate my enthusiasm from my professional responsibilities, though of course it is necessary to be able to do so.

It was an interesting exercise to look at my memberships when I was thinking about this talk; whereas one's curriculum vitae is expected to include academic and professional qualifications, chartered institutions etc., I thought I would look at my qualifications as an enthusiast: life memberships of the Gresley Society and the Bradford Trolleybus Association, membership of the Omnibus Society, Railway Correspondence & Travel Society, National Trackless Trolley Association, National Association of Timetable Collectors etc. etc. The periodicals and newsletters I receive at home on subscription from overseas still surprise me, while our Departmental library subscribes to a great range of enthusiast journals as well as the technical, professional and learned journals. Above all, I try to be a transport man - not a professional, not an enthusiast, not a rail man, bus man, tram buff, LRT advocate or whatever.

MY THOUGHTS ON TRANSPORT MUSEUMS

So much for my personal interests in the transport scene and my prejudices which will obviously affect the subject of my talk. When your Chairman asked me if I would talk on the subject of transport museums, I wondered how to tackle it. I have visited a few transport museums in my time, but have never given a lot of thought to what I might expect when I get there. So I apologise in advance if my thoughts are somewhat jumbled. By way of definition, I will use the word 'museum' in my talk to cover a range of preservation activities.

ADVERTISING & ACCESS

The first thing that I think is important is the ability of the visitor to determine where there is a transport museum or preserved railway in a particular city. Is it accessible? When is it open? Can I see if I stand outside the fence? Perhaps the transport collection is part of a national city or regional museum and cannot be separately identified. Whatever your status, make sure the existence of your museum is visible to the public. If they don't know about it, they won't get to visit. Secondly, tell people how to get to the museum.

I know this problem of visibility, advertising and access are easier to identify than to solve, as it is a subject of discussion at workshops at successive COTMA conferences. At the minimum, I suggest you aim to inform your own clientele - for example, Modern Tramway printed an article a couple of years ago (May 1974) during the petrol crisis on how to get to the Tramway Museum at Crich by public transport from major British cities. Puffing Billy, the Mile End Railway Museum and the Lithgow Zig-Zag, are examples of museums in Australia which are reasonably accessible by public transport, but unfortunately, most of you and most museums in North America, have to rely on auto traffic. Curiously, this is a feature of the land use/transport interface which is common to many would-be major attractors: schools, sports grounds, hospitals etc. Other location factors such as cheap land are much more important than access by public transport.

The other side of the publicity and access aspect which is obviously important in Australia, is to tie the museum to some related tourist venture if possible. Most importantly, it gives you a ready-made flow of travellers on which the museum can at once both rely on and contribute to e.g. Pichi Richi Railway, Beamish Museum, Yakima Valley, Kingston Flyer. These four examples are seasonal or permanent tourists fixtures, but on a smaller scale a museum can do itself a favour if it is allied to a festival or convention. A good example is the combination of the Old Midwest Threshers Reunion of which the Mount Pleasant preserved tram museum is the link between the camp ground and the display area.

There are also obvious advantages from a financial point of view to be affiliated with some tourist or heritage interest, but other speakers, such as your museum Treasurers and Mr. Williams, are better equipped to speak on that subject. For the same reason, I won't attempt to comment on the level of entrance fees, except to say to remind you that many of your visitors will be family groups. There is a parallel with public transit - if we want to attract families out of their automobiles we will have to give special concessions.

WHAT DO I EXPECT TO SEE?

If I have a preference, it is for the complete transport museum such as the Swiss Transport Museum or the St. Louis National Museum of Transport which "attempts to preserve the history of the technology and design of the implements of transportation and communications" with their array of trams, trains, rolling stock, telephones, buses and trucks. For the same reason, I liked the Clapham museum - not only for the big exhibits but the little things - nameplates, models, tickets, posters, paintings, seats, lampposts, notices, weigh-scales, bus stops and so on. Perhaps the purist welcomes the dispersion of that collection to York, Syon Park and elsewhere, but I prefer the complete museum concept. On a smaller scale, the Museums of Technology at the Smithsonian and in Ottawa, I

find equally attractive.

However, we have to accept that all museums cannot be such wide ranging and there is a need to cater to the live steam and live traction enthusiast. So somehow the community has to sustain both the large collections geared to a variety of interests and to maintaining history and heritage, and the smaller specialised museums: the preserved line, tramway museum, bus museum, model builders group and so on.

In the specialised area, I have four interests - one is the very specific preserved line where there may be only a handful of units but it is the trip which counts as much as the motive power.

Puffing Billy and the East Troy museums come to mind as examples. Secondly, I like the specialist museum which runs live service as an integral part of the collection e.g. St. Kilda. Thirdly, I can enjoy the heritage park concept where historic transport is presented in its natural setting e.g. S & D (NER) steam and Gateshead trams at Beamish, steam trams at the Kimberley Museum, electric trams at Ferrymead, horse trams in Calgary's heritage park. On a smaller scale is the Eccleshill industrial museum. Of course the perfect historical setting situation is San Francisco where the cable cars continue to provide regular public transit as well as preserving and demonstrating the role of cable technology in providing cheap travel. We believe the Glenelg Tram has some potential in demonstrating the advantages of the old interurban in the 1970s, while Detroit is using ex-Lisbon cars on its restored Washington Boulevard trolley line. Fourthly, I like the special trip behind live steam or an older diesel or electric loco or multiple-unit on routes no longer open to passengers - it is surprising how much scope there is for this type of trip, though it is inevitably expensive.

WHAT DEGREE OF ACCURACY?

I'm not a great purist when it comes to technical or historical accuracy. I think it is more important that the cars are clean and tidy, than whether they are painted and finished exactly as they ran in 1900 or 1937 and I don't believe the average visitor cares much either. In any case, many items of rolling stock probably went through two or three different livery schemes in their lifetime.

I think it is important for the museum to provide some variety in the types of vehicle exhibited. Try to produce a sequential history and add colour with contemporary posters and humour with amusing notices - I have one in my office from an 18th Century canal saying "The Punishment for Tampering with these Works is Transportation". In other words, if you finger the goods you will be shipped off to Australia!

Try to provide informative items such as headcodes, roller blinds, old timetables and tickets, fare equipment etc. Don't be ashamed to use models to fill up your blanks, or cutaways to explain how a thing worked! As a child, my indicator of a museum's success was how many things can I touch, turn, walk on, dabble with or drop a penny in to make it go. In many ways, it still is a major criterion - working apparatus is a great attractor. At the same time I guess from a management point of view, you have to avoid spreading your resources too thinly, and you also have a big investment in items which are not readily appreciated by the average visitor - track, overhead, spare parts, poles etc.

Perhaps this is where your Australasia-wide conference comes in. Instead of each museum trying to do everything, I hope your organisation will encourage the benefits of specialisation. Like North America, the great distances between cities mean that each museum has to be as comprehensive as possible, yet there are obvious geographic specialisations to be adopted by your regional museums, also some climatic ones e.g. use of open cars where the climate permits. But again, you are experts in this area so I will pass on with the final thought that Pichi Richi and the Zig-Zag demonstrate that a narrow specialisation need not limit success.

GENERAL ATTRACTIVENESS

The last general topic I want to talk about is the significance of the attractiveness and general appearance of your museum. In this sense, there is another parallel with the transit industry: it is no good trying to market your product unless that product is worth marketing!

Setting is important. Some museums are obviously better located than others in this respect. The Syon Park collection is housed in a pavilion in a beautiful location, while the Utrecht railway museum, particularly the tram extension, shows what can be done with good design. But I think perhaps what you do with your setting irrespective of the location and facilities is even more important. Try to achieve a sense of space. I for instance, am always a bit unhappy when I arrive at a museum to find absolutely everything jammed in and under cover, even though I recognise the significance of security and of climate - what is suitable for the Mile End Railway Museum would be useless for the Canadian Railway Museum at Delson.

A couple of small suggestions. I am one of these who is an inveterate book buyer - if you have a small shop or counter, keep it open as much as possible. To others the ability to get tea or coffee is vital, while ice-cream and soft drinks are always winners with the children, particularly if the museum is some distance from a major settlement or is the ultimate destination of a specially-made outing. Incidentally, don't begrudge or belittle any way of furthering your interests - the tram in the Old Spaghetti Factory chain of restaurants is a regular reminder of the tram to every diner - to children it may be the first time they ever ask the question "What is a tram?"

A descriptive booklet is also a useful asset. It need not be too expensive or complex, the Crich or St. Kilda brochures are adequate. Such a booklet serves a multitude of purposes - a guide to the museum, reminder of the trip, public relations document, something to be able to acquire if you didn't have time to visit or the museum wasn't open, and so on. Lastly, label your exhibits simply and clearly - it is very important if you are to increase your share of the casual visitor market.

CONCLUSION

I mentioned earlier that being a transport man by interest and profession, I have a preference for the comprehensive transport museum. It would be a wonderful achievement if Australia could merge its professional and enthusiast transport interests in the way the Swiss have with their Museum of Transport being an integral part of the headquarters of the Swiss Institute of Transport and Communications at Lucerne, with adjacent library, archives, lecture hall and conference centre, which has many of the advantages I spoke of earlier: location in a tourist centre,

beautiful site on the lake and in sight of the Gotthard railway, accessible by trolleybus or motor-launch and most importantly a great variety of exhibits.

But given the constraints of distance and resources, I think we must lower our horizons a little, and acknowledge that the efforts of your member museum organisations in Australia and New Zealand are tremendous. Bendigo and Ballarat are every bit as impressive as Berlin or Brno, St. Kilda is a step ahead of Seaton, and Christchurch has something to aim at in Crich. If I can quote from an early edition of the latter's guide book: "your achievements are the result of tremendous loyalty, hard work and sacrifice by your members'. There is limited support from outside - in unemployment funds, heritage grants, material and items made available at scrap or less, but the finance usually has to depend on subscriptions, gate-takings and donations.

As a professional on the transport scene, I salute you. You never seem put off by the "It won't work" or "It can't be done" or "We tried it 30 years ago and it didn't work" syndrome that I have to fight every day in my job.

If I can close on a parochial note: As a South Australian, I am proud of and happy with the St. Kilda and Mile End Museums, which together with the private ventures such as Birdwood and the model-making organisations add to the excitement that is transport past, present and future. When we achieve the same public support and enthusiasm for the present day and future systems that you have generated for the past, I will be able to retire. We are making progress, as the Glenelg Tram and the Bee-line Bus show, but it is awfully slow and heavy going.

To those of you from interstate and overseas, I repeat my opening welcome. Have a successful conference and enjoy your stay in what we believe to be a tramway and museum oriented State.

OBTAINING COMMUNITY FUNDS FOR DEVELOPING
MUSEUM OPERATIONS

D.J. Williams

Deputy Town Clerk, Corporation of the City of Salisbury,
South Australia.

Introduction

In this paper, I want to describe two key administrative concepts: (a) the notion of "environment" and (b) the notion of "advantageous exchange".

In describing these concepts, I wish to ask the following questions:-

- How do you find out what is on?
- How do you get on the queue?
- How do you get heard?
- How do you get the goods?
- What do you do when you have them?

Since the answers to these five questions all have something to do with relationships with local government, the paper concludes with some notes on how to deal with your local government council. These notes might be conveniently subtitled "If you are going to sup with the devil, use a long spoon".

I was much impressed by the paper given by Mr. Wymond* at the COTMA Conference in 1975 and I think it would be useful to recall what was said then, both in the paper and in the workshop discussion which followed because whilst I may have some minor dissent at the edges, I agree substantially with the major propositions discussed:-

1. There is a timely warning that museums cannot continue to operate without injections of funds for both new capital works and recurrent expenditure.
2. There is the perplexing problem of being penalised for success. Because a museum has been able to capture funds for a specific project, it is unable to get more.
3. There are difficulties doing an "Oliver". That is to say, funding agencies do not like organisations like museums coming back and asking for more, especially if they did not ask for enough in the first place or came unstuck in the process of using the funds they were given.
4. There is a need for good documentation by the museum.
5. There is a need for caution about lobbying in case the funding agency adds grant conditions that were not envisaged by the applicant museum.
6. There is a need for caution about hitching your museum to the "local government star", very largely also related to the problems of tied grants.

*Wymond, A.P. (1975).- Financing the Railway/Tramway Operating Museum
Proc. 1st Australasian Tramway Museum Conference, Ballarat p. 12-16

7. Museums should always be informed as far as possible of the advantages and disadvantages of funds from government agencies and the best method of staying informed is to maintain good contacts with the Town Clerk of your local Council.

8. It is important to spend within the grant.

9. It is important to have a good presentation in the museum's dealings both with the public and with funding agencies.

These are the sorts of things that were discussed two conferences ago and I am not sure that there are any further principles I could add to increase that listing. However I would like to build on that as a foundation and suggest some techniques that might help you manipulate your way to best advantage around those points:

"Environment" and "advantageous exchange"

Professor Fred Emery, now of the Australian National University, Canberra, has made something of a name for himself amongst administrative theorists in developing the concept of "environment" and he suggests that organisations tend to move through four fields - a placid randomised field, a placid clustered field, a disturbed reactive field and a turbulent field. The latter is characterised by complexities as well as rapidity of change.

In the museum context, the complexities deal with agencies and with the relationships between and around agencies. These factors are not part of the museum's operation but impinge upon it and make up its environment for it e.g. legal constraints, government policies, operations of government departments, availability of supplies, competition with other organisations for the same funds, manpower, finance, and public relations. It is a paradox that museums preserving the past tend to be placid randomized organisations, highly stable in a placid randomized field (save and except for the usual ups and downs, including the leadership and management committee struggles that always go on within any organisations). However, museums are themselves subject to externally induced turbulence.

The linking pin between our operation which seeks to preserve the past and yet has to relate to the turbulent present is the notion of "advantageous exchange". The success of an organisation increasingly depends on its ability to establish symbiotic relationships with other organisations. Extensive "advantageous exchanges" take place. Museums are active pieces of the past operating in the present. By operation, I do not mean running up and down the track.

As you all know, an operating museum involves a whole range of manpower, skills, equipment, tools, money and insurances. We can call this the organisation. Within the organisation there are a number of subsystems. The objective subsystem - viz. sorting out what you are about; the co-ordinative subsystem - making things fit together; the planning subsystem - how you intend to go about it; and the operating subsystem - actually going about it. If you see your museum as an organisation with subsystems, you can see that in order to service the organisation, the subsystems within it must relate effectively to each other. Differing

forces generated by differing emphases in differing subsystems will tend to make your museum change direction from time to time.

The organisation is influenced by forces outside it in much the same way. Environmental forces can change in intensity and impinge upon the organisation. These forces can include the attitude of governments towards funding, availability of parts, public awareness, and technological change in operating procedures.

Emery's suggestion is that the environment in which organisations exist is itself changing at an increasing rate. More things have happened for good or ill in transport museums in the last five years than occurred in the preceding fifteen years. Organisations of the future will be subject to even more external forces and must be able to adapt and live with change. If the organisation does not adapt, it will atrophy. In a changing environment, any organisation must learn to cope with a changing environment as a natural state rather than as a temporary aberration.

The coping mechanism is "advantageous exchange" which is a nice way of saying "setting up easy-going working relationships with all the forces which impinge upon the organisation".

How do you find out what's on?

Tapping into information systems is the key. Firstly go to your local government council. Its officers usually know what's on because frequently they are used as agencies of government departments with funding programmes. Frequently also they may keep these funds to themselves and do not make loud noises about it. If however they are pushed, in the nicest possible way, a wealth of information will be revealed to you. Many councils have community development officers whose job it is to be the village anarchist. Their purpose is to break down the institutional structures of councils to make them more open and responsive to community requests like those from museums. So seek out your local community development officer.

Many councils either on their own or jointly run information centres. They may not have the information in a "hand-out" but keep leaning on them to find out for you because they are used to dealing with governments and government departments. They can often crack through the bureaucratic front line that people not used to dealing with governments sometimes find intimidating. Members of Parliament have research officers - go to your local M.P. and exploit his research officer. This person will have good access into government bureaucracies. State Governments have information offices - you can go there and find out what is available. But a word of caution. In preparing this paper, I thought I would practise what I preached and went to the South Australian State Government Information Office to enquire about sources of funds for museums. I was given information that was appropriate to the previous Australian government. (There was, you will recall, an election in December 1975 and some of us may have noticed there has been a change in Government).

In the Eastern States, Australian Assistance Plans are operating, albeit greatly reduced, and have been able to set up shop front agencies where you can find out what's on. You can obtain local community information broadsheets that are also often inserted in the local suburban newspapers. In N.S.W. and Victoria in particular, local councils indulge

in Area Improvement Plans, and whilst this money is drying up under the present government's policy directives, there may still be some residual funds available. These can be found out from the local government councils.

Councils themselves often have capital assistance programmes - i.e. they lend money to local groups in whom they have sufficient confidence that the repayments can be met.

The local government council often plays an agency role for unemployment relief schemes. Some State Governments have unemployment relief schemes of various types while the Commonwealth Government has the National Employment and Training Scheme, and the Apprentice Training Scheme. All these can provide labour at a net cost rather lower than any museum could do so operating under its own budget employing its own people. One council I know put on a research officer under a government funding scheme with the sole job of finding out what other funding schemes were available to put on more people to provide assistance for more programmes.

How do you get on the queue?

Not by writing the following kind of letter received from a special interest group - a tennis club - to the local government council seeking financial assistance:-

"The Town Clerk

Dear Sir,

I am writing this letter on behalf of the Elbow Bend District Tennis Club for which I am secretary. The Netball Club and ourselves spent last Tuesday and discussed the possibility of having a shelter shed erected on our courts at the corner of Father and Christmas Roads. After our discussions, at this meeting we felt the person to approach was yourself and we hope council will see their way clear to erect a shelter shed at this location.

Thanking you in anticipation,

.....Secretary"

Council officers, contrary to popular opinion, are usually very busy, and a letter like this involves them in even more work. It is likely to go to the bottom of the pile. Had the letter set out in some detail where they wanted the shelter shed, how much it was going to cost, what it was to be built out of and included sketch plans, it would have had a much better hearing in the Council Chamber and a much better introduction into the Council Chamber from the council staff.

It is important to keep in touch with the agencies mentioned in the previous section. The Council, your local M.P., the Australian Assistance Plan office and your local community development officer and so on help you get on the queue. It is very important, especially when new schemes are established, to have "shelf plans" available. If you are planning to

increase the standard of the permanent way, build a new toilet block, or increase the canteen, but have no hope of doing it in the next couple of years - prepare the plans anyway and put them on the shelf. If a government funding scheme "falls out of the sky" as increasingly I think they will in most states when it comes around to state election time, and if you can take your plans off the shelf, rush them into the council or other agency involved with the grants, you will find that you will be well placed.

You can also get on the queue by paying attention to timing. Traditionally, government departments work on annual budgets and around May each year there is a big push to get the funds voted for each department fully expended as otherwise the funds for the following year may be reduced by the amount unspent. Frequently, local government councils and other organisations that may be geared up to do projects in say, September of a financial year are unable to take up their funds. The next thing that happens is that they have to write to the government agency such as the Tourist Bureau or the Department for the Environment and say - "Dear Sir - I regret we cannot take up our programme" and therefore these funds stay in the bottom of the barrel and are forgotten by the bureaucrats until the big spend is on around May. If you go to the departments around May, all geared up with a good presentation and good track record of previous grant expenditure and a realistic proposition, the chances are that you will be looked upon as a "blood brother" and those unallocated funds can come your way.

By having shelf plans and paying attention to timing, you can see the notion of "advantageous exchange" coming into play. You are exchanging an advantage to the funding agency by saving the bureaucrats work. You can get their programme off the ground with something tangible to show for it by being first in the queue with a well thought out proposition and thereby help departments meet their expenditure votes. In exchange you receive the advantages of funds for your own purposes.

How do you get heard?

By telling people what they want to hear! It is important to speak clearly and precisely. The real life example of the tennis and netball club (only the names were changed to protect the innocent) was not an effective communication, because it had to be translated into a concept plan. Remember that bureaucrats are busy. New schemes are a burden. Designers of schemes want their works to be seen, so they want things to happen fast. This is where shelf plans can be so useful.

I know of one council who had an approach from a community group for an expenditure of \$100,000 that was a Godsend. The council was under very heavy pressure to spend unemployment relief money. There was so much money it appeared beyond the ability of the council to gear itself up and spend it in time. Along came an enterprising group with a project which required very little administrative effort. The council was able to spend its money and the community group got \$100,000 worth of project.

I know of another local group which, when a report was being prepared for the Register of the National Estate, wrote up a short descriptive outline of its operation, complete with photographs and sent it onto its Council. Council bureaucrats were busy - they read the submission

which was expressed in exactly the terms they were using to describe other aspects of the "built environment" worthy of presentation. Consequently they inserted the group's submissions into their report exactly as it was written. The bureaucrats classified it at Division II status. Since the museum had kept its contacts at the Councillor level in good order and condition (discussed below), the end result was that when the report got to the Council Chamber, the Council changed the classification to Division I status because the group had developed a favourable image.

You can also be heard by always writing your reports succinctly. If a report needs technical information to back it up, it must be there, but put it in an appendix. The decision-maker will not be interested in the technical information but he may pass it on to a technician who works with him.

I think it is common knowledge that executives read all the first page, half of the second page and none of the rest of a multi-page report.

Again, I think you can see the "advantageous exchanges" in the sorts of transactions involved in getting heard.

How do you get the goods?

By having a favourable image - but not of course too favourable otherwise you may miss out. The image can be developed through well presented annual reports sent off to your local council, various government departments, M.P.'s and so on. Further aid can come from using the suburban "throwaway" newspapers. Their editors tend to fall over themselves if you provide them with copy, and frequently they will print up everything you give them, though they will not necessarily get it right.

Make yourself available for such things as council inspection days. Most councils tend to rush around their district on one day per year inspecting past achievements and almost always have "heavies" from government departments on board. Museums have done well in grant submissions to state government administrators who had previously inspected the museum while in town with the Council. They would never had done so otherwise and therefore would not have been aware of the museum's activities.

Have a good professional stance and demonstrate management competence. It is also important to avoid intense response situations such as television advertising unless you are carefully geared up for it as otherwise you may get your fingers burnt through being "snowed under" with people. Again there are opportunities for "advantageous exchange" in these sorts of transactions.

What do you do when you have got the goods?

Do what you said you would do! Your staff work must be good. Do not over-commit yourself and get in too deep. When you have finished a project, invite the fund-givers out to declare it open. If they happen to be local M.P.'s and especially at Ministerial level, the public relations apparatus will come out too and set up a favourable "advantageous exchange" to enable you to tap into the next lot of funds that becomes available.

Dealing with your local government council

Each of the questions I have asked and tried to answer has had some connection with local government. People may feel ambivalent towards their Council and with some reason, but the fact of the matter is that in the quest for community assistance, you are most likely to be dealing with local government. Here are a few suggestions based on observations of how organizations have or have not succeeded.

Councils operate at two levels - the elected level and the operational level. Leave aside academic arguments about who runs the place. In the quest for financial assistance you need to tap into both.

Always work through the Town Clerk. Write to him or make an appointment to see him. He may not be the person to do all the work that your group wants done, but he is the person who calls the tune and allocates the priorities. He may pass you on to the City Engineer or the Electrical Department or whatever, but the important thing is that he supplies entrée to the right people. Once you have an operational contact - keep using it, but always look after the Town Clerk. Always address your correspondence to him for the attention of the technical officer. That way, the Town Clerk keeps getting a progress report on the project as part of his routine because he sees information flowing past. Always work to deadlines. Almost all reports by council officers to their council are put out under great pressure and frequently up to two weeks before discussions take place in the Council Chamber. You will never get the council officer to work for you unless you work for him by providing the information he needs to use without difficulty.

At the elected level, councils tend to work on either a portfolio system or a ward system: With a portfolio system, one councillor is responsible for say, tourism or community development and this is the person you must keep informed. He is the person that you advise that you have written to the Town Clerk for assistance, that you keep in touch with about progress, that you invite to your A.G.M., or you may even try to make an honorary member. The same goes for councillors in a ward system. Most councils running a ward (i.e. an electoral district) system run two to three members for each ward. The rest of the Council tends to let them have wide discretion for pet projects within their ward as long as it is within the council's overall framework. It is surprising the number of Ward Councillors that adopt community groups like museums and tend to help push the business on. Let your elected member know the current "state of the play".

You should also let the Town Clerk know, or the officer he may have referred you to know about the current state of the play. Never try to play the officer off against the Councillor for the ward because your project will only be the loser. The combined forces of the people at the operational level and at the elected level provide a very strong tide and it is very handy to swim along with it.

Summary

I have described the "environment" and how your group must be interactive with rapid changes taking place externally to your group. Success increasingly depends on "advantageous exchange" with groups in the external environment. Of these, the local government council is probably the most important in the infrastructure of the operational systems of your province, state or region. Dealing with the Council or any other government agency is not without its frustrations. It demands patience, a capacity for disappointment and much hard work. From my own knowledge of Museum operations, there is an enormous range of skills available in each operation. If you can harness up these skills and start working on the agencies that make community funds available, with luck, patience and perseverance, you should be able to tap into funds to enhance the undoubted historical and operational qualities of your respective museums.

THE FUTURE FOR THE SPECIALIST MUSEUM

Geoff Speirs

Museums Extension Officer, South Australian Museum

'When you wake up to the promise of your dream world coming true
 With one less friend to call on, was it someone that I knew -
 Away you will go sailing in a race among the ruins,
 If you plan to face tomorrow, do it soon.'

Gordon Lightfoot

In this paper I'll largely be discussing a sample range of specialist museums I've visited in South Australia, in the expectation that their future prospects will be paralleled elsewhere. Information concerning these museums is tabulated below:

TYPES OF MUSEUMS	No.	ADMINISTRATION
Telecommunications	1	Government department
Pioneer village	2	1 private; 1 local
Nautical	3	Voluntary
Transport	1	Voluntary
Agricultural machinery	2	1 private; 1 voluntary
Police station and Courthouse	2	Voluntary
Vintage vehicles	1	Government Statutory Commission
Paddle steamers	2	1 voluntary; 1 government
Miner's cottage	1	Voluntary
Settler's hut	1	Voluntary
Whaling	1	Private
Gemstones	1	Private
Dolls	1	Private
Shells	1	Private

It is debatable whether pioneer villages can be defined as specialist museums, but there are some comments I'd like to make about them in the course of the discussion which are pertinent to the general argument.

Some descriptive assessments of these museums:-

A. <u>Display</u>	<u>No.</u>	<u>Total</u>	<u>% of Total</u>
Adequate protection from theft	9	20	45
Suitable lighting	9	20	45
Exhibits grouped logically	12	20	60
Related to central theme	12	20	60
Sufficient number, variety of items	15	20	75
Adequate educationally	11	20	55

B.	<u>Documentation</u>	<u>No.</u>	<u>Total</u>	<u>% of Total</u>
	Bound, waterproof Register, stored in a safe place on the premises	1	20	5
	Complete, up to date record	1	20	5
	Satisfactory cataloguing system	1	20	5
C.	<u>Storage</u>			
	Workshop and storage facilities, with storage space exceeding half total display space	3	20	15
D.	<u>Conservation</u>			
	Most items adequately protected against dust, weather, handling	10	20	50
E.	<u>Restoration</u>			
	Items carefully restored, in sympathy with origins	8	11	73
F.	<u>Admissions</u>			
	Open 0-10 hours per week	7	20	35
	Open 10-35 hours per week	9	20	45
	Open 35 hours per week or more	4	20	20
	Charge 50¢ or less per adult	14	20	70
	Charge 50¢ or more per adult	6	20	30
G.	<u>Income (excluding Government subsidies and supplementary earnings)</u>			
	Under \$1,000	11	20	55
	\$1,000-\$5,000	2	20	10
	\$5,000-\$15,000	6	20	30
	Over \$15,000	1	20	5
H.	<u>Museums which have received substantial Government grants (\$5,000 or more)</u>			
		10	20	50
I.	<u>Administration</u>			
	Private family enterprise	6	20	30
	Voluntary association or trust	10	20	50
	Local Government	2	20	10
	State or Commonwealth Government	2	20	10

A few general comments concerning the data presented in these tables:-

(i) Documentation is the most glaring deficiency. For whatever reason, museums have not approached this area systematically. The South Australian Museum is acting promptly to remedy this situation. At the moment, it is having a number of Registers produced, and when these are ready, they will be distributed free of charge to all museums in the State, together with a guide to using them. Hopefully, this will encourage systematic documentation of items already held, and provide a uniform code of procedures for future accessions.

(ii) Another deficiency can be found in the lack of adequate provision for safe storage. There seems to be an almost irresistible impulse to put the entire collection on display, making for less variety, a shorter life span for some items, and less space for administrative and research work.

(iii) Minimal standards have been set for the assessments of conservation and educational presentation. Items have been deemed to be adequately conserved if they are under shelter, behind glass, or protected from handling. It is interesting to note that only half the museums studied meet even this requirement. There is a lot of important historical material rotting in the sun.

(iv) With regard to educational standards, eleven museums have taken some trouble to use their exhibits as educational tools by displaying them in meaningful order, or by taking steps of some kind to engage the interest of their visitors: printed labels and signs, special displays, blow-ups, dioramas, transparencies, tapes, and guides who conduct visitors through, to name a few. Some of the museums are excellent in this regard. One thinks, for example, of the International Gallery of Dolls at Victor Harbor. On the other hand, some of the twenty museums have not given much attention to the problem: objects are left to speak for themselves, or to support dusty, hand-written placards bearing such information as: "Teapot. Donated by Mrs. V. Smithers." (Incidentally, this information makes the job a lot easier for second-hand dealers). Clearly, a number of specialist museums are still a fair remove from the philosophical and educational imponderables currently bedeviling preparators and curators in the major State museums.

(v) Finally, a word about administration. There are three principal types:-

(a) Private museums. These are all small family concerns. In four of the six museums involved, museum activities are the main income earner. As for the other two, one is run as a sideline hobby to a restaurant business, at a loss, while the other is integrated into an all-round programme of farming activities. In all instances, income from the museums is marginal only - especially when the amount of work put into them is considered.

(b) Voluntary associations or trusts. There are ten of these. Six are branches of the South Australian National Trust; two are formally constituted incorporated associations; and two are run by local historical societies. The distinguishing characteristics of these museums are that they are voluntary, run by committees, non-profit organizations. Their operations are generally not on a large scale.

(c) Government -backed. Of the remaining four museums, two are administered by local government, one through a State Government, and one through a Commonwealth Government agency. Two have permanent staff, although their salaries are met from admission fees. The Commonwealth agency - part of a large government department - has the benefits of a free building for display purposes, provision of storage facilities, and unofficial part-time work from staff enthusiasts.

The Future of Specialist Museums

The past performance of these museums gives some guide as to their futures. Also, these museums will be receiving varying degrees of Government help, and this may have some effect on their futures. I shall discuss these two variables within the context of the aims of the different types of museums.

1. Private Museums

The motives people have in setting up private museums vary. For some, it is a means of fully indulging in a long-term hobby; for others, a way to maintain independence, meet people, or to keep the family together. From general observation it is evident that the proprietors take great pride in their collections. They work hard, for long hours - some only close on Christmas Day - cleaning and restoring items, improving their displays, communicating with visitors. There can be no mistaking their zeal in wishing to educate their customers - they will take school groups through at reduced prices, and nothing pleases or stimulates them more than discussing their exhibits. Indeed, some make a practice of personally guiding all their visitors through, and never seem to tire of going through the same patter, time and time again - a habit irritating to some.

The aims of private museums proprietors might be summarised as:-

- (i) to keep on with what they are doing at present, hopefully with a reduction in the time they spend at it. They are all overworked, and look as if they could do with a bit of a break!
- (ii) to expand their collections and displays.
- (iii) to bring about improvements in their museums.
- (iv) to increase their income, preferably by boosting numbers of visitors.

One of the museums is shortly to scale down its operations greatly, because it has been unable to attract sufficient visitors to make the proprietors' efforts worthwhile. This seems to present a psychological problem, not an economic one. The managers are quite well off, and retired five or six years ago to Victor Harbor to set up a museum. They feel they have failed, because not enough people have come along to visit their gallery, which is an excellent one. I think the other five museums will keep going, pretty well in their present form, as long as their present proprietors stay alive.

During this period, the South Australian Museum's extension service will be available to these museums. The State Government might also be able to offer some financial assistance, with certain stipulations as a *quid proquo*. For example:-

- (i) that a proper Register of all items currently held be compiled, supplied to the South Australian Museum for record purposes, and stored in a safe place on the premises when returned.
- (ii) that money be spent for consolidation, rather than expansion. There is an abundance of material for display in all of these museums.

The assistance could take the form of:-

- (i) expenditure for short-term labour assistance, e.g. through unemployment relief schemes. This would allow proprietors to undertake more research and documentation, which have been neglected to date.
- (ii) expenditure for capital works, particularly storage facilities.
- (iii) funds to be used for promotion purposes.
- (iv) It is unlikely that money would be spent for permanent staff because of State probate requirements. In fact, the long term future of these private museums is under a cloud, because of these requirements. As things now stand, if the museum is to be inherited within the family, probate must be paid, based on the market value of the collection. The only alternative is to bequeath the property to a State public gallery, such as the Art Gallery or the Museum. It would then be up to this body to determine the fit and proper disposal of such a collection.

I am yet to be convinced that there is anything disastrously wrong with this policy. What it means in theory (I don't know about the practice) is that one of the public galleries would be in a position to decide whether or not the collection should pass on to the family. But it also means that no private collection in this State can be regarded as being permanently secure.

2. Voluntary Museums

What are the aims of the voluntary specialist museum enthusiasts? There is generally less evidence of the hobbyist than is the case with private museums. In part, this can be attributed to a bias in the sample: six of the ten museums in the survey are branches of the S.A. National Trust. The Trust suggested themes to local branches which had inherited sites or buildings suitable for museum purposes. Hence the Police station and Courthouse museums, the paddle steamer, miner's cottage and two of the nautical museums. In any event, I have generally found a concern to relate the chosen theme to wider historical developments in the voluntary museums.

The primary motivation seems to have been to conserve some tangible relics from the past - often because they were under threat. This appears to have remained as the sole endeavour for some. It is in the voluntary museums that some of the most relaxed thinking on matters of museology

can be found. For example, of the ten voluntary museums in this survey, only five have managed to confine their displays largely to their chosen topic. This indicates some woolly thinking on collecting and acquisitions policy, and indeed, policy is normally to accept whatever is offered, on the terms most suited to the donor/lender. The same general criticism can be made of the educational content of the displays.

In conversation Dr. David Ride, from the Western Australian Museum, told me he believed the essential ingredient in making for a good local museum is the dynamic personality. He is regarded as a crank; he rubs people up the wrong way; he storms out of committee meetings; but he gets things done. Without him, these museums muddle aimlessly along. Applying the same criterion to the specialist voluntary museums in the survey, I have looked for this person, and found him in four of them. The trouble is, two of them belong to the "she'll be right mate" school of thought when it comes to displays, and so two of the displays are something of a disaster. The other two museums have very good displays, which stick to their chosen topic, and I think they will develop into museums of some importance. Certainly it would be true to say that the other six museums, which lack such a personality, appear to be content to muddle along somehow, and I agree it would take a dynamic personality indeed to lift them out of their rut.

What sort of help could the Government offer these museums?

Firstly, professional advice and information would be available through the South Australian Museum's extension service: workshops, seminars, discussion papers and the like on the various facets of museology they will be confronting in their day to day experience.

I think the Government could also adopt a regional approach, with voluntary museums in mind. The experience of the Western Australian Museum is worth considering in this context. Briefly, what it has done is to institute a structure whereby regional museums have been upgraded, and have become either branches of the Western Australian Museum or 'recognised' local museums. It selected regions throughout the State which would benefit most from having strong regional museums: some six or seven regions in all. It then established a set of criteria by which it would 'recognise' museums within each of these regions, waited for applications, and then selected one in each region to develop to professional standard. Preparators went to the museums to set up displays; curators advised on collection, acquisition, research, storage etc. The honorary curator from each of these museums came to the Western Australian Museum for a short, intensive training session. To date, about eight or ten museums have been recognised and they have been financed jointly from Treasury and local government funds.

The Western Australian Museum has found this programme to be very successful, and is now receiving a large number of applications from other museums for 'recognition'. The overall effect of this has been to force a re-appraisal among all local museums in their approach, and given them a model to emulate, or compete with, in each region. Some museums will, of course, fall by the wayside, while others will develop into permanent institutions which will, in time, be able to offer assistance to

other local museums. While this programme has applied to local government museums only to date, there is no reason why it could not incorporate voluntary organizations as well, and indeed, amendments along these lines are shortly to be made to the relevant Museum Act in Western Australia.

The effects of such a policy, adapted to South Australian conditions, would probably be much the same as in Western Australia. If such an approach were adopted, I would imagine that the two museums with dynamic personalities (and good displays) are the sort which the Government would be looking to for development as regional museums.

3. Government or Local Government Museums

(a) Local Government

The aims of the two local government museums differ so widely that I will discuss each in turn.

One is a pioneer village. It attempts to reproduce the atmosphere of a village along the Murray during the period 1890-1920. Originally a branch of the National Trust, it broke away three or four years ago. It appointed a managing committee under the authority of the council, and is now run as a Council venture. The committee's aims coincide largely with those of the Council, i.e. to make the museum a viable economic proposition.

Its future is fairly well assured. Through the participation of the Council, it is felt to be a community project, and the council is at present considering the possibilities of making additional land available to it. The admission charge is \$1 - fairly high, although cheaper than most other pioneer villages in Australia. Standards of display in the museum are good, but protection of exhibits overall is not. Storage is inadequate. However, these problems will be overcome in time, being largely a matter of professional advice. The managing committee has a great deal of drive and enthusiasm. It has already approached the South Australian Museum for the loan of some dental exhibits, and the items are now on display.

The other local government venture is a paddle steamer on the Murray. The boat was restored from funds supplied by the State Government, on condition that continuing maintenance of the vessel be met by the local government authority. There the matter seems to rest. The boat is open to the public for about twenty hours a week. For 40¢ you can look over the boat, and a collection of photographs on the wall of one of the cabins. A debate is currently raging as to whether or not the boat should be converted to a 'living museum', which would take tourists for trips along the Murray. However, this would involve installing a new boiler, and employing a captain and crew. In short, your guess as to its future is as good as mine.

(b) State and Commonwealth Governments

Again, I will discuss each of these in turn.

(i) State Government

This museum, formerly a private company, was recently taken over by the State Government Industrial Commission. It is a museum specialising in vintage vehicles, with a considerable interest in other technological artifacts.

The State Government spent a large sum of money - in excess of \$300,000 - to take over this museum, which was going bankrupt. It now wants to avoid paying further large sums. A professional manager has been appointed, the present staff retained, and a Museum Board is being formed. Dr. Inglis, Director of the Department for the Environment and formerly Director of the South Australian Museum, is on this Board. A very large aspect of the manager's job will be concerned with keeping the museum afloat financially.

In brief, I believe the Government will not allow this museum to collapse. Perhaps, in the long term, it will relax its attitude on making the museum pay its way.

(ii) Commonwealth Government

This museum deals with telecommunications, and has a small display in a building in the city. The display is well set out, attractive and interesting, and is open to the public from 11a.m. to 4p.m. during the week.

With the unofficial benefits the museum is receiving - to which I referred earlier - it should have no difficulty in continuing to survive. It is possible, of course, that a Director hostile to the concept could greatly scale down its activities, but I am told that the museum is well received throughout the Department, and that Directors' Reports stress its value and importance.

Conclusion

To repeat my general conclusions on the future of the three types of specialist museums:-

- (i) the future of private museums is clouded because of probate requirements.
- (ii) the future of voluntary museums, and also local government museums, is linked to the personalities responsible for them.
- (iii) the future of State and Commonwealth-backed museums seems reasonably secure, even if this is largely due to the vested interest Government has in them.

References

Burcaw, G.E. - Introduction to Museum Work, The American Association for State and Local History, Nashville, U.S.A., 1976.

Economic Research Unit, - A Study of Man-made Tourist Attractions, Department of Industry and Commerce, Middle Park, Vic. 1976.

Piggott, P.H. *et al.* - Museums in Australia 1975. Report of the Committee of Inquiry on Museums and National Collections, Canberra, 1975.

The Western Australian Museum - Annual Report, 1966-67, Perth, 1967.

Kalori, May 1976.

CONSTRUCTION AND MAINTENANCE OF MUSEUM
OVERHEAD

L.M. Fenner

Australian Electric Transport Museum (S.A.) Inc., Adelaide, South
Australia.

The techniques described in this paper are based mainly on experiences at the St. Kilda Tramway of the Australian Electric Transport Museum, though some mention of current practices of the South Australian State Transport Authority (STA, formerly MTT) and the Melbourne and Metropolitan Tramways Board (M. & M.T.B.) occurs.

Description - St. Kilda Tramway

The AETM line, of approximately 1.9 km length, is constructed largely on swampy soil and beach front. The track runs close to salt water for much of its length and both salt spray and salt laden dusts settle on the wires and fittings.

Vehicles use the tramway principally on weekends, and corrosion of fittings can occur for up to five days before they are traversed again by tramcars. Formation and breaking of corrosion crusts occurs, being significant on unprotected and painted steelwork.

The museum overhead can be divided conveniently into two sections: the depot and fanwork, which presently includes 4 wired tramroads, and the main line, which includes a passing loop near its mid-point.

The bulk of the complex curve and junction wiring occurs on the fan, which, together with the overhead inside the car depot, is strung in 7 strand 12 gauge galvanised steel wire of 26/33 tensile strength. Museums wishing to use such wire should make certain that the tensile strength is that quoted (G380 is the metric standard). High tensile strength wire is very difficult to handle and snaps easily if nicked. Our stranded wire is supported by span wires on the fan and the cross-timbers within the depot.

The main line is strung in 4/0 BSW gauge grooved cadmium-copper wire, supported mainly by bracket arms, but using span wires on two sharp curves and at the entrances to the passing loop.

Most of the specialised fittings were obtained second-hand (though unused in some cases) from the MTT/STA (Adelaide), the MTT (Perth) or the M. & M.T.B. Other tools and equipment are standard workshop items. The support poles are all ex-MTT tubular steel ones, and date from 1910.

Equipment Required

The following is a list of essential tools and fittings with their functions (where appropriate). These are the minimum necessary for a two-man construction and maintenance team. Many of the items are useful in the workshops as well, so they will not lie idle when overhead work has been completed.

- Spanners (a) - ring and open ended types.
 $\frac{1}{2}$ ", 9/16", 5/8", 3/4" BSW (others are useful for smaller fittings and clamps e.g. $\frac{1}{4}$ ", 5/16", 3/8" BSW)
- (b) - adjustable types, 2 medium sized (12"), since paint layers often prevent specific sizes from fitting properly.
- (c) - socket type, with extension arms. We have used these mainly while removing old fittings from poles *in situ*.

"Penetrene" - or similar rust-permeating lubricant. Mainly used for removal of old brackets, strain insulators (q.v.) and other fittings.

Mallets - Plastic faced or wooden. Very useful for tapping fittings into place. (Hammers tend to damage wires and gunmetal, and are unsuitable for work with porcelain).

- Hammers (a) - Claw
- (b) - Light sledge. Used in conjunction with hardwood blocks, for loosening collars, bases and finials on scrap steel poles.

Files - (a) - Mill saw type. Triangular and flat. For trimming cuts in wire, threads etc.

(b) - Round type.

Scrapers and Wire Brushes - Mainly used when salvaging old fittings. A narrow wire brush will be found very useful for cramped work.

Extension Ladders (2) - The height of these will depend on the overhead height used. 18ft wooden ladders have been adequate for our own work, due to the low overhead on most sections. They are light enough to be worked easily by one man.

We also have a 25 ft ladder for our taller (normal sized) poles. This ladder needs two men for safe and easy handling.

Aluminium ladders, though light, are very expensive and offer no insulation from earth.

Unless rectangular section poles are used, the ladders as purchased require modification to enable them to be used safely. This consists of removing the top rung of the upper section and replacing it with a clamp and chain. This system will wrap around curved poles and hold the ladder steady.

Safety Belt (2) - Our own belts are of the older leather type. More modern belts are made of synthetic webbing. These are essential for safe working, since when correctly tied, both hands are left free to work on fittings. (see later).

"Come-along" clamps (2) - These grip stranded steel and copper wires strongly without causing damage. They release rapidly when not under tension, and their use speeds up straining and handling of wire enormously (Figure 1).

Shackle bolts - $\frac{1}{2}$ " and $\frac{5}{8}$ " for suspension work and clamp links. $\frac{3}{16}$ " for anchor ears (q.v.).

Turn buckles - Various sizes from $\frac{7}{8}$ " thread (for heavy tensioning) to $\frac{1}{2}$ " thread for adjusting pull-off wires. Used for permanently variable tensioning.

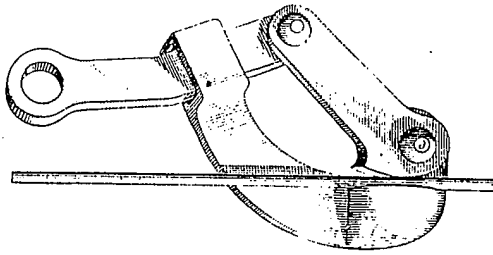
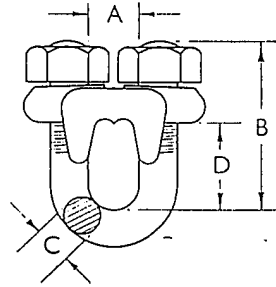


Fig. 1 "Come-along" clamp



WIRE SIZE (s.w.g.)	DIMENSIONS			
	A inch	B inch	C inch	D inch
7/10	$\frac{1}{2}$	$1\frac{5}{8}$	$\frac{3}{8}$	1
7/12		$1\frac{3}{8}$	$\frac{5}{16}$	$\frac{7}{8}$
7/14	$\frac{3}{8}$	$1\frac{3}{8}$	$\frac{5}{16}$	$\frac{7}{8}$

Fig. 2 "U" clamp

U-clamps ("Crosbie" clamps) - For quick gripping of wire when setting up curves, and also for use when later adjustments are to be made (Figure 2). Can be used instead of "come-along" clamps, but are much slower for working. Several sizes will be required on layout.

Chain Hoist (1.5 tonne) - This is expensive but speeds up tensioning of trolley and spanwires since it can draw up a metre or more of slack using one clamping operation and is able to be used much more rapidly than a turn-buckle. (Such hoists are also useful for general lifting in the workshop).

Taps and Dies - Mainly used for reclamation work. Many fittings have special bolts or tapped threads which are difficult to replace and must be restored. Thread burring often occurs during removal of such items and appropriate taps and dies are required. Most useful sizes are $\frac{5}{8}$ " and $\frac{3}{4}$ " BSW, though each group will need to examine the threads on second hand material available to it to determine requirements.

Pliers - Several pairs are useful, including at least one pair of long-nosed, and one pair of Fencing and Telegraph pliers. The latter incorporate a strong wire cutter, but their special feature is the bluntness of their grip grooves. This enables them to manipulate wire without nicking it or cutting of the zinc coating.

Angle Cutter and End Cutter - Both of these will be very useful for trimming and tidying after tying hitches, attaching feeders.

Bolt Cutters - These are expensive, but if large numbers of cuts have to be made in trolley or heavy stranded wires, they save a great deal of time, taking about 5 seconds for a cut which takes a minute or more using hacksaws. The cutters cannot be used for trolley wire cuts if the profile must remain undistorted. Our particular cutters have

24" arms, can cut up to 3/8" mild steel rod and make very short work of all cuts in overhead gear. If an overhead collapse occurred and speed was of the essence, bolt cutters would be an essential overhead tool.

Hacksaw and Small portable vice - These make the best cut for trolley-wires in which preservation of wire profile is required. A small portable vice to hold items being cut is a useful fixture on a tower wagon.

Insulation Tester - "Megger" or similar. The working voltage of these will depend on standards (if any) of local electricity authorities. Our own Megger is a 500v unit. These are essential for checking insulation on old fittings to be reclaimed, and also for testing overhead fittings *in situ*. If two long connecting wires are made, one worker can make the necessary contacts up on a ladder while another, on the ground works the machine. Although these are costly items, they are almost essential. They are also necessary for checking insulation on vehicles. Second hand units are sometimes available and in our experience should be perfectly satisfactory.

Mechanical Screwdriver - These units make fitting and removal of overhead ears very simple (Figure 3). If they are not available, a large conventional screwdriver will do, but the mechanical type is much safer to use and will undo even the most obstinate machine screw without burring the slot badly (unless the screw breaks under the strain).

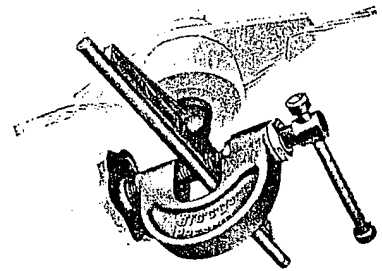


Fig. 3 - Mechanical screwdriver

G-Clamps - Various sizes. Useful for holding fittings or forcing obstinate items into place.

Graphite grease - Bolts lubricated with this remain workable for a long time. We found, when removing ex MTT fittings, that those whose threads had been greased were held firmly but could be removed easily, whereas ungreased units were generally corroded tight and sheared off.

Tool Bag - A canvas tool bag with rope loops, for hooking to ladder tops, and a cane upper rim to hold the top open will be found useful for ladder work. If tools are being used where public are passing nearby, fixing cords are desirable. These consist of stout cords, with one end fixed to the body belt and the other to the tool in use. If the tool is dropped accidentally, much time is saved in not having to climb down to get it, and the risk of striking persons below is minimized.

Safety helmets - These are essential if ground crew are working near

where overhead work is being done, and would be required by law in many places. We have found that the type with a "V" notch on top is advantageous since the "V" is able to be used to support wire, leaving both hands free for working.

Safety Cones, Flags and Signs - A supply of "Witches'hats" of the fluorescent type is useful for fencing off areas above which work is occurring. At our own museum, where several public road crossings occur, the cones can be used to divert traffic around tower wagons. Appropriate warning signs of "Half Road Closed- Drive Slowly" and other types are also desirable, though approval for their use may be required.

Safety Vests - Fluorescent vests are useful for ground crews working near traffic. As with all safety equipment, one must not assume that the wearing or placing of such items is a fail-safe action. A dictum "The best safety device is a careful man" has much to commend it.

Eye Protection - Goggles should be worn during wire work to offset risks of eye injury if wire ends whip.

Other specialized fittings may be acquired from local transport authorities, or they may have to be made. It is difficult to buy new items, and they would probably be very expensive. Items in this category include kink removers, clamps for grooved fittings; frog pan clamps and cap-and-cone grips.

Design

When preparing for overhead construction, it is desirable to have a detailed track map upon which the proposed overhead plan can be superimposed. Make sure sufficient poles are provided on curves, loops and termini. It is desirable that pairs of poles be located on either side of road crossings so that they may take most of the tension on each side of the crossing. Should a road vehicle foul the wire above the crossing, risk of a major fall of overhead is minimised, especially if the trolley-wire is fixed with joining ears in such locations. Larger poles may be required on curves to take the additional strain of a complex suspension system. If the suspension system is designed first, the appropriate poles can be installed, rather than trying to design a suspension system to make the most of whatever poles have already been erected. An example of part of a designed reverse curve is shown in Figure 4.

Designing pole locations depends, to some extent, on the type of current collection to be used. If swivel headed poles are in use, the wire can be well off track centre, though most Australian tramway systems used fixed heads, which require the wire to follow the track centre except on curves. It is important to allow as much clearance as possible between car sides and poles, to cut the risk of contact between passengers and poles. A minimum clearance standard of 4' beyond the widest car was adopted by AETM.

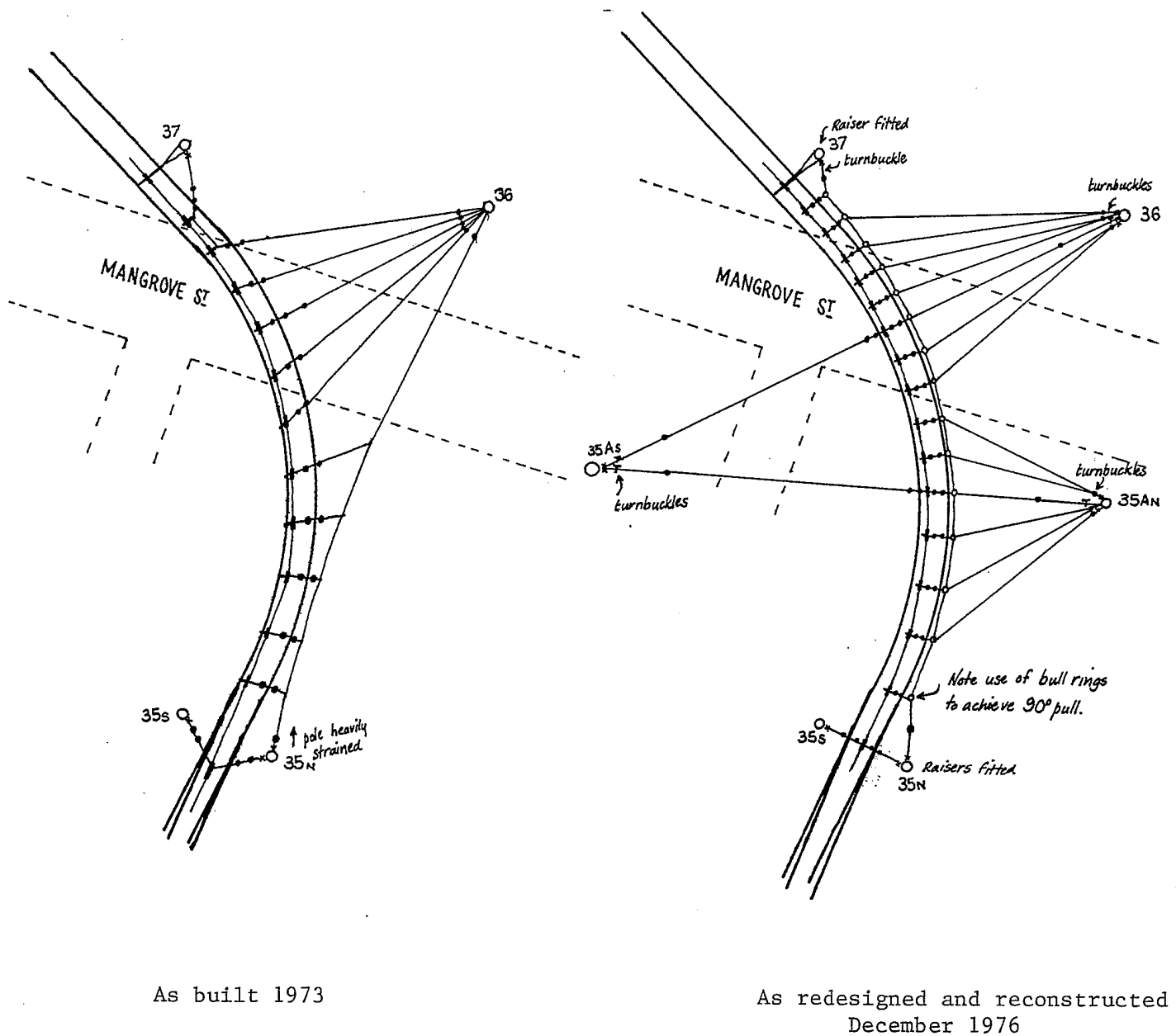


Fig. 4 - Example of designs for curve at Mangrove St., St. Kilda. As originally constructed, excessive load was placed on poles 35N and 36. Subsequently two additional poles (35AN and 35AS) were installed, and a raiser added to poles 35N, 35S and 37 to allow the load to be better distributed and the overhead height to be raised. Curve radius 73 ft.

Poles

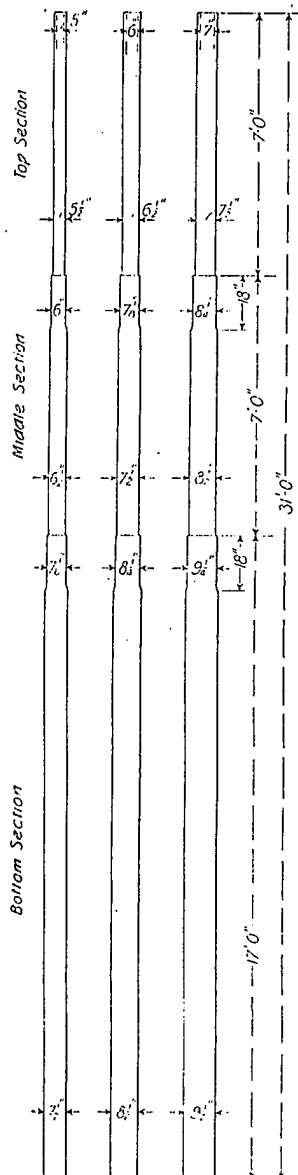


Fig. 5 - Pole types

The type of poles to be used is influenced by a number of factors, the chief ones being initial cost, ease of acquisition, ease of erection, ease of maintenance and historical links. Though some tramway systems used wooden poles throughout, most used some form of tubular steel pole with finials, collars and ornamental bases.

Unless termites, fungal attack or fires are likely to cause problems, properly treated wooden poles are probably the best items for museum work. If they are properly ferruled and capped to prevent soaking and splitting, they need little maintenance, and their initial cost is lower than that of new steel poles. Second-hand steel tramway poles were adopted for the St. Kilda tramway due to availability at low cost, and due to their historical interest when fully decorated.

Steel poles come in 3 main sizes. They are usually about 31" long, and the size difference is in the pole diameters. Strainer poles for use on curves, wide spans and at termini are of about 9 1/2" external diameter in the base section. Medium weight poles for long bracket arms and shorter spans are 8 1/2" external diameter in the base section, while light weight poles, which in Adelaide were used almost exclusively for centre pole construction are of 7 1/2" external base diameter (Figure 5).

If maintenance is to be minimized with steel poles it is essential that they be well treated against corrosion before erection and touched up thoroughly afterwards. Before beginning any treatment the poles must be checked for rusting and straightness and defective ones rejected.

If possible they should be completely chipped back to the metal, using scrapers and hand tools if the worst comes to the worst, though a needle gun or a sand blaster will do a quicker and better job.

Finials, collars and bases should be removed, tapping with a mallet or a hardwood block and hammer. Since such fittings are usually of cast iron, hammering must be avoided, because the fittings may be smashed. If so, the risk of flying iron chips is high and they can cause a lot of injury.

Eye protection should be worn at all times during chipping and cleaning.

Following this treatment, a final examination for any weaknesses in a pole is needed. Welds should be examined again, and the areas which were beneath bases, collars, clamps, bracket arms and finials need to be checked especially thoroughly, since the worst corrosion usually occurs there.

Having been pronounced sound, the pole should be primed carefully and undercoated. The final coat of paint can be applied before or after erection, but touching up will be necessary in the former case.

Having restored poles it is necessary to find as cheap a way of erecting them as possible. The system used during the construction of the AETM line required a crane, welder/cutter and the provision of concrete. Reject asbestos cement pipes from a local works were used as caissons, and an auger truck was used to bore the holes. As a section of the tramway was to be constructed on a causeway, the poles on this section were erected before the track was laid in order that the augers and cranes could work from the track bed.

To erect the poles, the locations were first accurately fixed and the holes dug with an auger. The caisson was then inserted and the surrounding soil packed back with a "Whacker". The poles had a pair of 3/4" holes cut in them some 6" from the top, and a steel loop was fitted to this to enable them to be picked up easily by a crane and suspended in position. They were lowered into the caisson, checked for height, trimmed if necessary, repositioned and then held while concrete was poured in around their bases. Finally they were raked slightly and held while the cement set. They were imbedded to a depth of about 6'.

Where cast iron ornamental bases were available, these were wired onto the poles with cables before erection so that they were well clear of the bottom and, following setting of the concrete the cables were loosened and the bases carefully lowered into position.

It is desirable to dome off the concrete above ground level so that excessive moisture build up around the base of the pole is avoided.

Finally, when the poles had settled, collars, bracket arms (where required) and finials were fitted.

I have expressed reservations about steel poles because of their maintenance requirements, and the time needed for this is considerable if the abovementioned pretreatment cannot occur. In our case, circumstances did not permit as thorough a checking of poles as we could have wished, so rust spots and even a few holes are causing us some concern.

Where we have been able to do so, we have tried to fit the poles out completely with bases, collars and finials. The bases and collars can be cut in half if they are to be fitted to poles *in situ*. The halves can either be strapped together or machine screwed with metal plates. (Some of our acquisitions have included a number of two-piece bases which simply bolt together).

We have made a simple crane which bolts to the poles using standard insulator brackets. Its chief use is in the placement of finials, which weigh some 30 kg or more each. Though it is possible to drag these up using a rope, the crane is much safer and quicker, and is considerably less exhausting to use. We have also used it to erect raisers on some poles in order to increase their height, (Raisers were often added to tramway poles by electricity and telephone authorities).

Maintenance of poles *in situ* consists of an annual check of each pole for rusting and mechanical damage. Areas where rust is most likely to occur are those where moisture is able to be trapped - chiefly under

bases, collars, bracket arm bosses and pole clamps. Bases and collars should be kept loose so that water can run away easily. Clamps and bossheads should be checked carefully and shifted if necessary to enable scaling and repainting to occur. Finials should be moved around in an effort to stop them from rusting into position, because once they do so it is extremely difficult to shift them and the tops of the poles can corrode through, creating a hazard to persons down below. If finials are not available straight away, a loose fitting galvanised cap can be used. These keep rain out of the poles and, in our case, prevent birds from nesting in them and building up a corrosion threat in the form of sodden nesting material in direct contact with the steel inside.

Suspension Fittings

Suspension fittings are often difficult to obtain, but in many cases poles along former tram routes may still have many salvagable items years after the tramway has ceased. The AETM was able to obtain many fittings off the scrap poles it purchased, and was able to salvage others from poles being scrapped by local authorities. The fittings included steel straps and bolts, giant strain insulators and insulator brackets.

The steel straps were examined for corrosion and, if at all weakened, they were scrapped since a considerable surplus existed. Sound straps were chipped or ~~burred~~ back to metal and treated with hydrochloric acid to remove rust. This usually required immersion for about 15 minutes in a 1:1 solution, followed by a scrub down with sodium hydrogencarbonate solution and air or oven drying. Finally a coat of zinc paint was applied and a new galvanized 2½" x 5/8" BSW bolt attached. It usually pays to put a coat of micaceous paint over the zinc, otherwise there is a risk of flaking and consequent corrosion.

As with other fittings which use composition insulation, giant strain insulators (Figure 6) often crack slightly and allow moisture in to where metal parts can corrode. While this rarely caused loss of strength in any of our insulators it frequently resulted in a considerable drop in resistance. We therefore tested all of the giant strain insulators which we salvaged and baked any defective ones until they had an "infinite" resistance. We dismantled one of the more severely corroded ones to see what mechanical damage might have resulted from corrosion, but found that the slight internal corrosion had not affected the strain castings at all. Following baking and retesting, the fittings were given several coats of tarpaint. We found that fittings could be soaked in water for a week, dried off and be unaffected following the painting. After three and a half years in use the fittings are still all sound.

On most of the earlier tram routes, turnbuckles were permanently fixed to one side of the span wire, presumably to allow for retensioning of spans. We retrieved about 40 of these and, despite a very rusty appearance, they proved very easy to restore, probably because, like most of the old bolts encountered, they had had a good coating of graphite grease applied. In most cases a quick wire brushing of the exposed threads followed by a light oiling enabled the turnbuckles to be unscrewed by hand.

Though the AETM was not able to obtain hangers, ears, frogs or section insulators from the main Adelaide system at the time of its closure, we were fortunate in securing a large number of porcelain loop insulators (Figure 7). Generally these can be put into service with nothing more than a dust-off, but if it is thought necessary to remove all street-grime and wire-corrosion marks, a short boiling in caustic soda solution (\approx 500g flakes in 15 litre of water) followed by a rinse in water and dilute hydrochloric acid will be found to be a very effective cleanser. Rubber gloves, a face mask and some form of protective clothing should be worn when using caustic soda.

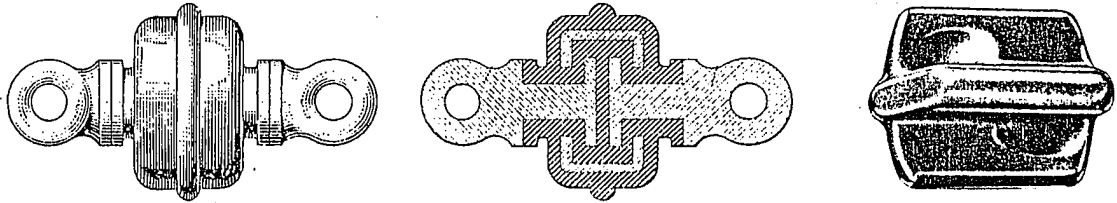


Fig. 6(a) - Giant strain insulator

(b) In cross section

Fig. 7 - Loop insulator

Ideally, one should try to secure a supply of straight line, double pull-off and single pull-off insulated hangers for suspending the ears and trolleywire (Figure 8), though it may be noted that much of

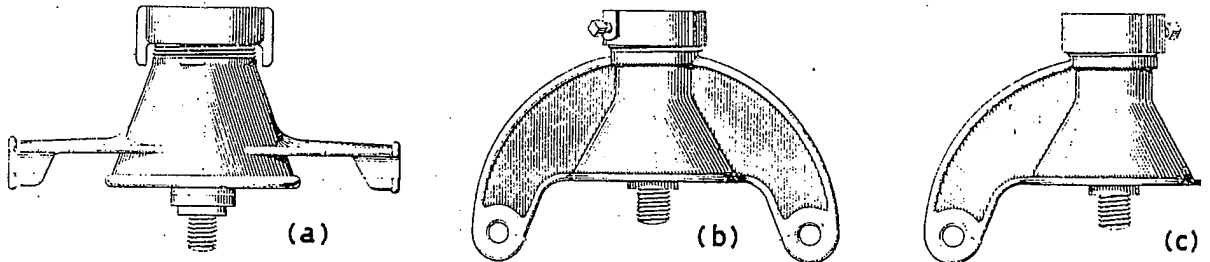


Fig. 8-Hangers

(a) Straight line

(b) Double pull-off

(c) Single pull-off

Melbourne's overhead is suspended by simple non-insulated hangers. Although the AETM was unable to obtain any conventional hangers for its overhead work, it was able to adapt a number of porcelain hangers which had been obtained from the BHP electric railway at Iron Knob. These had been designed to hold a special variety of steel non-fouling ear, of which we had only twenty or so, leaving a surplus of some 150 hangers. An experimental adaptation of one of these "german helmets", as they were dubbed, consisted of welding a 3/4" BSW nut to the iron pedestal, protecting the porcelain from sputter by covering it with tinplate. A mechanical test was applied and, after a violent twisting, we eventually broke off part of the pedestal without being able to break the weld.

The service hangers were wirebrushed after welding and well coated with zinc paint. Corrosion of the pedestals has proved to be a minor problem in service, since it is virtually impossible to scour off the rust *in situ*. However, by keeping half a dozen spare units, we have been able to take down corroded ones and bring them back for chipping and repainting, following which they become the spares.

We have made the units in two forms. One has a 3/4" BSW nut on the pedestal and is suitable for ex-MMTB non fouling ears, most of which

are male fittings. On the few female ears of this type (Figure 9) we have used a brass grub screw for a sex-change operation.

Since most of the ex-MTT fittings which we obtained were 5/8" BSW females, we produced a second type of hanger with a 5/8" bolt welded on.

The ex-BHP steel ears mentioned above were not very suitable for our purposes outside, since they corroded badly. We have retained a number of them in the depot where weather does not affect them. (They are such coarse fittings that they can grip stranded steel wire satisfactorily without any adaptation).

When the permanent depot fan and main line wire was strung, it was necessary to obtain suitable ears. As mentioned in the introductory paragraphs, we used stranded steel wire in the fan and grooved cadmium copper on the main line.

A visit to the (then) MTT scrap bins at Hackney resulted in our obtaining a considerable number of partly worn fouling ears and several kg of countersunk-head machine screws (5/16" BSW). These have been very useful in supporting our stranded wire, and we continue to visit the stores in an effort to build up a good reserve of ears against the day when the Glenelg line overhead is converted to non-fouling fittings. We have also been able to obtain a considerable number of non-fouling ears of various designs from the STA. These are in use on the portion of the line running from the loop to the beach terminus.

During the original main line construction in 1973-74, it was apparent that there were not sufficient ears available in Adelaide for our purposes. In addition, we had no suitable frogs available for the enlarged depot fanwork and the wiring at the loop.

Here we were fortunate to receive assistance from the M. & M.T.B. in the form of some 60 support ears, 6 joining ears and five steel frog frames and pans; all for some \$60. Since a new ear cost about \$10 at the time, the low cost of the second-hand items can be appreciated.

The various fittings described are illustrated in figures 10 and 11.



Fig. 9 - Short ear

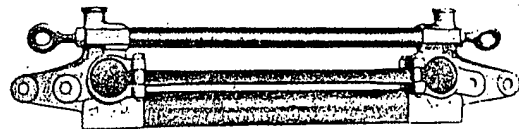
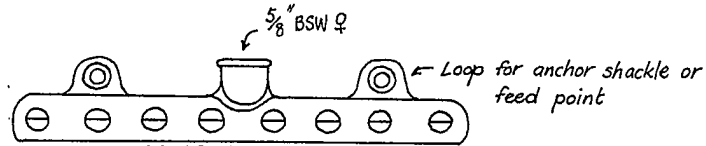
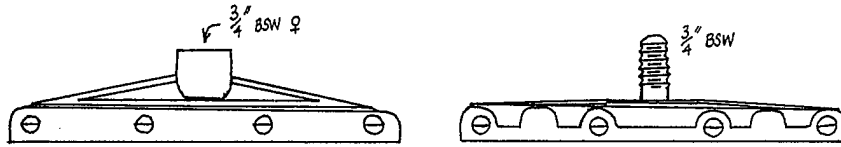


Fig. 12 - Section insulator with clevis end fittings

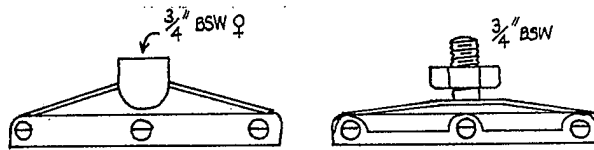
Some years previously when the Perth trolley buses closed, we had purchased an unused trolley bus turnout. The BICC type section insulators (figure 12) and joiners from this were used to isolate our depot wiring from the fanwork and the fan from the main line. In addition, the main line was divided into three sections for possible cutting back of services in an emergency. Since we do not use a feeder system on the main line, it is not possible to work sections on the beachward side of a break. The main line section insulators are presently bridged over with a long track band, but we have some heavy insulated knife switches which we intend to install so that a section can be switched out from the ground using a long pole with a window-opening attachment. When using section insulators to isolate a section



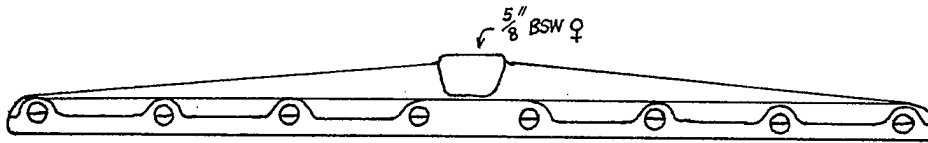
MTT non-fouling ear, suitable for support, anchor or feeder purposes.



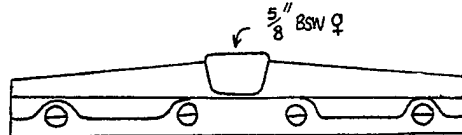
M. & M.T.B. 10" non-fouling ears. Male ears used with "L" brackets on straight or curved work. Female ears used with insulated hangers.



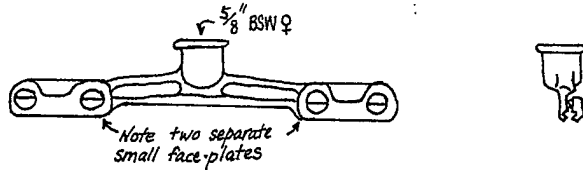
M. & M.T.B. 7" non-fouling ears (female and male).



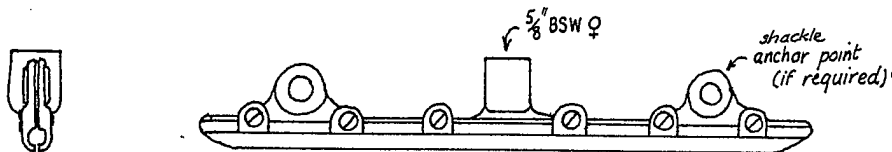
MTT 24" "Brisbane" type non-fouling ear for use on curves.



MTT 12" ear, cut down from 24" size ear.

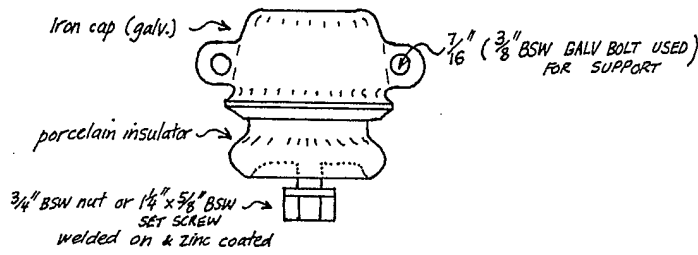


MTT Two face-plate female non-fouling ear.

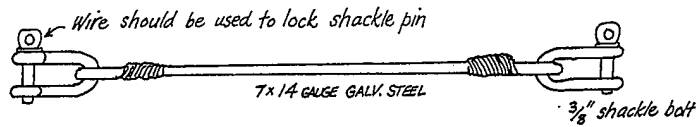


MTT fouling support ear, suitable for use as anchor ear.

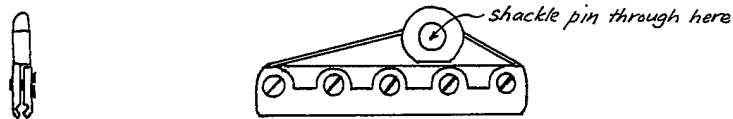
Fig.10 - Types of ears used in construction of overhead for St. Kilda Tramway (Scale 1:5).



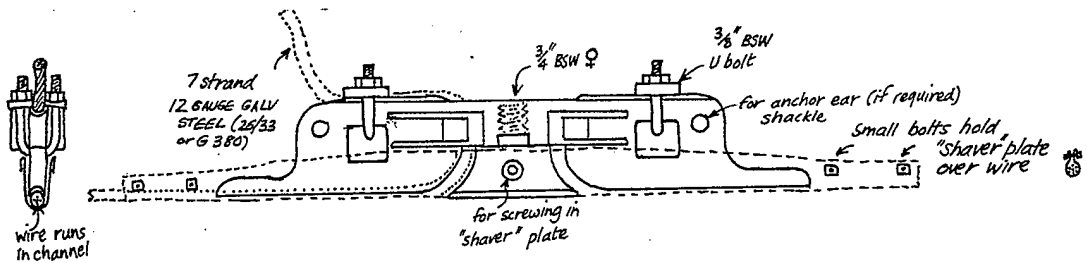
Ex-BHP type "German Helmet" type insulated hanger.



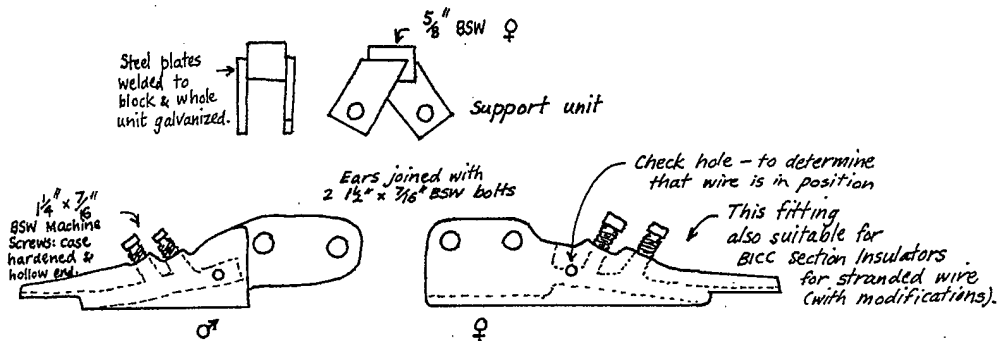
AETM anchor wire for section insulators, frogs or joining ears.



M. & M.T.B. non-fouling anchor ear.



M. & M.T.B. Joining ear, convenient to use with stranded steel wire but difficult to use with copper trolley wire.



MTT Joining ear, suitable for all types of work.

Fig. 11 - Special fittings used in construction of overhead for St. Kilda Tramway (Scale 1:5).

of line, there is a risk of a two-pole car being driven under an insulator and bridging across it, electrifying the supposedly dead section. We use two systems to minimise this risk, the first being that the switches are so arranged that the knife section is swung across to an earthed contact when opened. We also use a heavy fluorescent stop sign which fits into a socket in the track in such a position that a car would need to demolish the sign in order to pass the insulator. By restricting the number of motormen to those persons who are aware of the risks involved in bridging out insulators, as well as by putting up notices informing workers that overhead maintenance or construction is in progress down the line, the risks are reduced to a minimum.

Where possible the power is switched off completely during such work, but where electrical maintenance or car shunts are necessary, provision has been made to feed or isolate all sections of the overhead, viz. workshop, car shed, depot fan, main line.

Since the STA uses clevis fittings appropriate to BICC type section insulators, we were able to obtain a considerable number of good second-hand ones of both fouling and non fouling types. With the appropriate male fitting, these can also be used for joining copper wire, though the use of a machine screw grip precludes them from being used for holding stranded wire. Here the M. & M.T.B. joining ears mentioned earlier are valuable, because they use a U-clamp to hold the wire. They are awkward to use with copper, but work very well with stranded steel which is more flexible. For smooth traversing the M. & M.T.B. joining ears need to be fitted with a shallow galvanised iron "envelope" which covers the gap between wire and fitting. If envelopes are not fitted, arcing and hammering causes the wire to be scalloped and severely weakened.

Bracket Arms

The next step is to put up either bracket arms or span wires for the support system. Since most of our line is single track, single bracket arms were selected for most of the suspension, span wires being used only near the loop, on the two sharpest curves, at a tensioning point and on the depot fanwork.

We had only two complete sets of bracket arms from the MTT system, both being twin-arm units which had been on centre poles. These were used at the loop. The other arms were manufactured by AETM members.

In Adelaide there had been very little clearance between the sides of cars and the centre poles, and we were determined to have a four foot clearance on our system. Accordingly our single arms were designed to achieve this, but the two double arms had to be lengthened and their wrought iron scrollwork slightly modified.

Our manufactured arms were all built to a standard design from salvaged street light brackets purchased from the Electricity Trust of S.A. The bracket arms consisted of the 2" galvanised tubular arm itself, a cast iron cap (mainly for a tidy end fitting), an eyebolt, a truss rod collar, a small iron plate (for wire support), two 5/8" truss rods, an angle iron and U-bolt and a main support collar. (Figure 13).

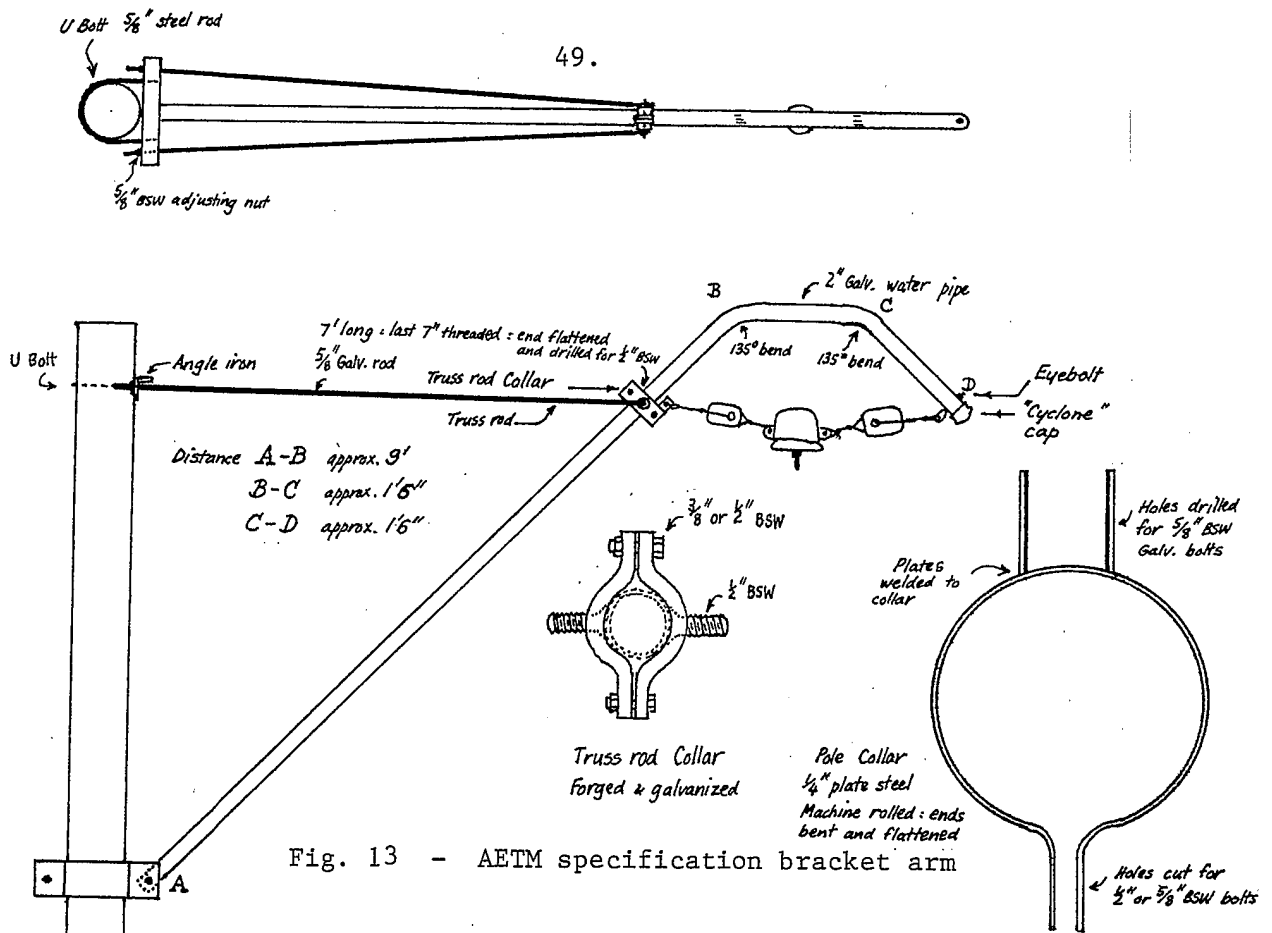


Fig. 13 - AETM specification bracket arm

Since the arms were built to a standard design it was possible to prefabricate the wire support units as well. Each required the cutting of two standard lengths of span wire, some two hundred cuts being required. In these situations a bolt cutter really saved time.

About 100 porcelain loop insulators were also required to be cleaned, and three tramway hitches had to be tied. As with the bracket arms, a team of four or five members made the units, which were designed for use with a special type of wire hanger originally used by the BHP on its Iron Knob and Rapid Bay electric ore railways. With the aforementioned modification, these support all of the ears and fittings.

The completed units - two short support wires with insulators and a "german helmet" - were put in position by two members using a tower wagon. (The bracket arms had previously been put up by the line construction gang, using a ladder and the tower wagon). The insulator units were attached to the helmet using two $1\frac{1}{2}$ " x $\frac{3}{8}$ " BSW galvanised bolts. While one member of the construction team held the "helmet" at track centre (marked on the wagon top) the other tied two tramway hitches, one through the collar plate and the other through the eyebolt which was then screwed tight. This left the system with a slight amount of slack. It is important to allow this when using non-fouling fittings with trolley wheel collection, otherwise hammering and excessive wire wear occurs at the ears. At the ex-MTT centre poles it was necessary to use conventional insulated double pull-offs, and we were grateful for the donation of these by the Sydney and Brisbane Tramway Museum groups.

The bracket arms are able to be used on gentle curves, though our lack of insulated double pull-off units was a problem at the time of construction, since there was not sufficient room to fit two loop insulators and a pull-off unit of the type which we made.

Our single and double pull-off brackets were made of $1\frac{1}{2}$ " x $\frac{1}{4}$ " mild steel strip. After being cut to a suitable length, the metal was bent cold, though we did hot-bend one or two fittings when time permitted. A $\frac{5}{8}$ " or $\frac{3}{4}$ " hole was drilled 1" from the other end (for single units) or in the middle of the arch for double units. The iron was then cleaned, using the hydrochloric acid treatment, and one or two coats of zinc paint were applied. The end holes were fitted with cable thimbles (Figure 14), chiefly to avoid the cutting which occurs if the pull wires are used straight onto the fitting.

Where necessary inside bracket arms, a single pull-off was installed between the hanger and ear, insulation being provided by two loop insulators. All pull-offs used 7/16 SWG, G380 low tensile stranded wire. A small strap of the same design as that used for span wire support is clamped onto the bracket arm to provide the anchor for the pull-off.

Span Wires

Where span wires were used, we put these up using the steel collars salvaged from steel tramway poles. A giant strain insulator was put onto the collars, which were attached to the poles at the appropriate height. The span wire (7/14 SWG, G380 low tensile galvanized steel wire) was measured out on the ground by laying it between the two poles. About $1\frac{1}{2}$ metres out from each pole a porcelain loop insulator was provided so that triple insulation existed between pole and wire. (We decided not to depend on the strain insulators for insulation, hence the use of the porcelain loops). Having measured off the wire and tied the tramway hitches to the insulators, a slight excess of wire between the loop insulators and the ends was allowed. Having put up one end of the span (usually holding it with a "U" clamp first, to allow for adjustment), the other end of the wire was attached to a rope or a piece of light 7/20 SWG wire and taken up the ladder. It was pulled as tightly as possible by hand, and either turnbuckles or the chain hoist used for final tensioning.

Where pull-offs occur in a span, the wire between the loop insulators should be left long and held with "U" clamps. It can then be put up as for an ordinary span and the required position of the pull-off marked on. The excess wire can then be shifted back from the loop insulators and tramway hitches tied. The wire is then cut between the positioning marks and the pull off wired in using bull rings (Figure 15), after which it can be slung in position. If some doubt about the pull off's final position exists, the pull off ties should be made with "U" clamps and the unit bridged over by a turnbuckle. Very accurate positioning is then possible, and the hitches can be tied from the tower wagon. The complete pull off unit is shown in figure 16. The technique for tramway hitches is shown in figure 17.

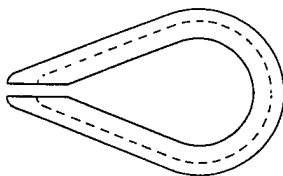


Fig. 14 - Cable Thimbles

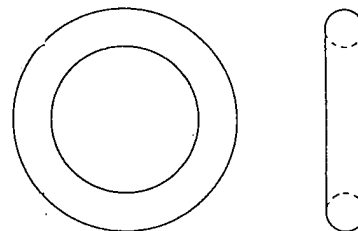
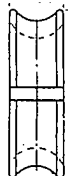


Fig. 15 - Bull rings

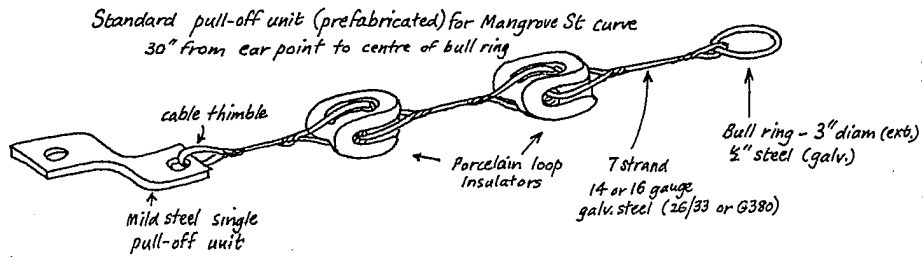


Fig. 16 - Prefabricated pull off unit

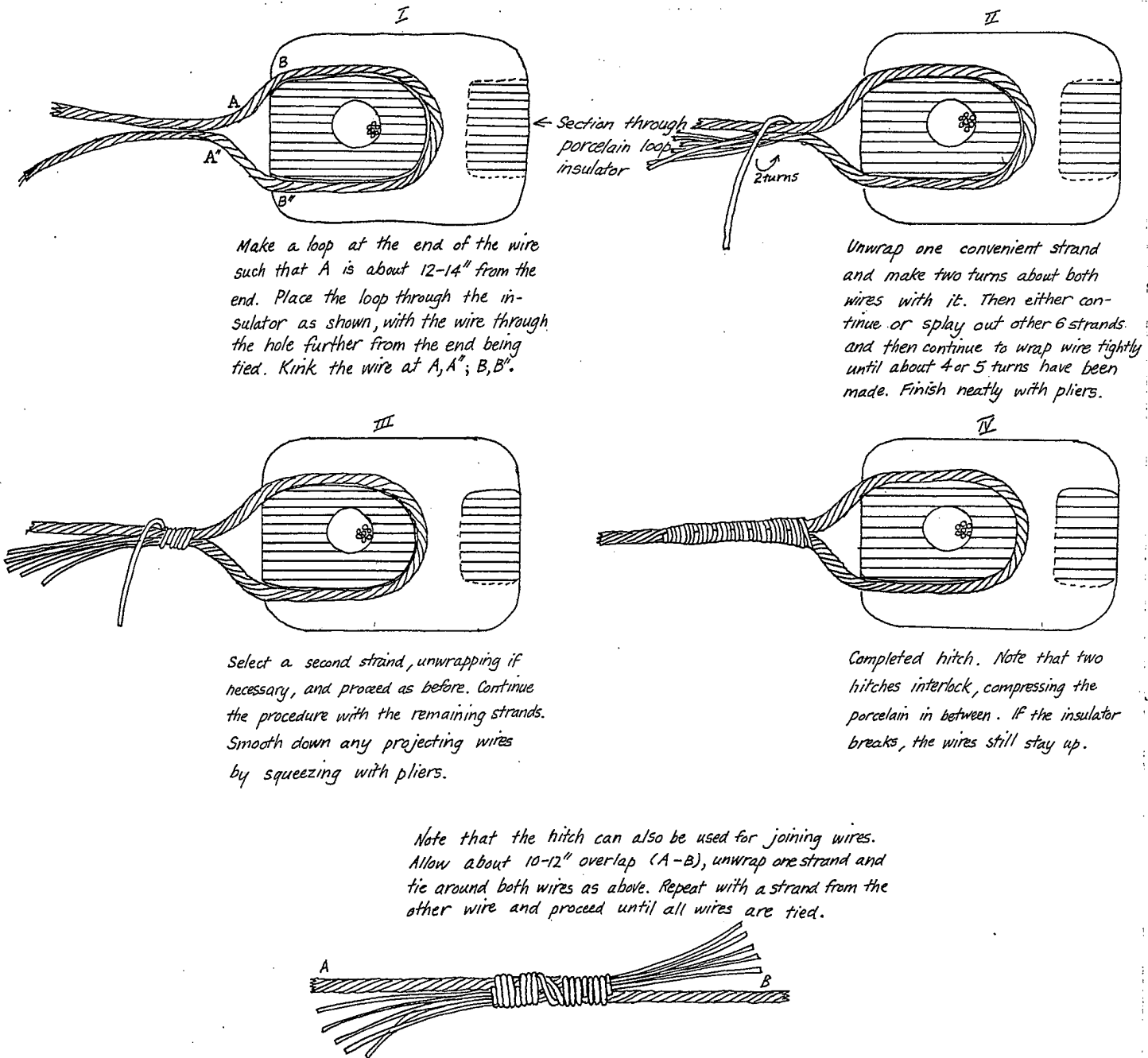


Fig. 17 - Technique for tying a "Tramway Hitch"

Pull off units for use between the span poles were put up after the trolley wire on the St. Kilda tramway.

The final item of construction before putting the trolley wire in position was the manufacture of several stout wire hooks, which served to support the wire while it was being tensioned. These were made either as hooks from $\frac{1}{4}$ " steel rod, or as loops from pieces of 8g fencing wire containing a reel insulator which served as a roller and allowed wire to move freely along.

Steel Trolleywire

Though all of our main line overhead was put up in 1973-74, we had had stranded steel wire on our depot fan and in two roads of the running shed for a little over a year before-hand. Provided that low tensile wire (26/33 or G380) is used, stranded steel is much easier to work with than copper, especially on curves. Having put up the span wires on the depot fan, we simply reeled out the steel trolleywire, lifted it up using either the tower wagon or a ladder and, having tied it off to a support wire at the back of the first running road, tensioned it at a strainer pole.

When tensioning the wire, we took up the tension on two poles using a "V" shaped 7/14 SWG wire. A turnbuckle was hooked to the "V", and a triple insulated straight wire attached. The end of the trolley wire was clamped to this using three "U" clamps, with one road being erected at a time.

A number of factors must be allowed for when tensioning the wire, the chief ones being the day temperature and the distance of the span to be covered. It pays to consult a wire manufacturer's specification if an accurate sag is to be left.

Once the wire was strung and partly tensioned, the pull-off bridle wires were put up and the requisite pull-off ears attached. The wire should be set slightly towards the inner rail on curves if fixed head trolley wheels or skids are to be used for current collection. We simply put up the pull offs with plenty of spare wire to allow for adjustment, and ran cars under the wire. Where adjustments were needed they were made until the smoothest possible tracking was obtained. Final tension was made at the turnbuckle, and the positioning of section insulators and frogs could then be made.

We standardized the positioning of section insulators just outside the car shed doors - some two feet from the front of the depot. These insulators were provided so that power could be on in the shed but off on the fan or vice-versa.

The BICC pattern section insulator is very easy to fit, though its end support units must be drilled out to allow stranded wire to be attached.

We simply positioned the tower wagon below the place where the insulator was to go and carried the insulator fitting aloft. While one member held the fitting in its final position, another marked the exact spot where it was to go on the wire. The trolley wire was then bridged over with a turnbuckle and come-along clamps and tension taken up. A cut was made half way between the two marks on the trolley wire and the end pieces attached so that they corresponded exactly with the wire marks. Finally the insulator was bolted on and the turnbuckle loosened.

A small eyebolt was put through the timber door beam of the depot and the insulator unit was supported using a double insulated guy wire between this eyebolt and the eye of the insulator unit. It is necessary for these wires to be tight enough to hold the section insulator upright, but not so tight that the trolley wire is pulled out of the horizontal. If roll-a-doors or any other fittings which will not permit a continuous wire to be strung are used, this suspension system will not work. We have found it to be very suitable for use with paired wood framed swing doors, though it was necessary to make sure that no metal shed components came anywhere near the wire. The insulator support relied on two porcelain loop insulators and with our outward-opening doors care had to be taken that enough clearance was available between loop insulators and door edges.

Frogs

Since we originally had only two wired roads on the fan, only one frog was required. At this stage we had not obtained any MMTB frogs (which are actually of the type used by the DGT on the Sydney Tramways and, in fact, had pans pressed by the DGT who own the dies). No tramway frogs were available in Adelaide, so we used a galvanised iron, single piece trailing frog from the MTT trolleybus system. Though there was little free running space in which wheels could adjust their tracking, it worked quite satisfactorily and is still in service.

If possible, frogs which do not require that the main wire be cut should be used, because a fair amount of shifting around is possible without much damage to the trolley wire. Proper positioning is vital, otherwise dewirements due to wrong tracking will occur. In our case, where trams in public service run onto and off the depot fan all the time, a minimum of dewirements is desirable, though members of the public seem to find them entertaining. However the risk of a wildly-flexing pole smashing insulators, bringing down wires or tearing a catwalk or trolleybase loose from a car is too great to permit imperfect frog installation.

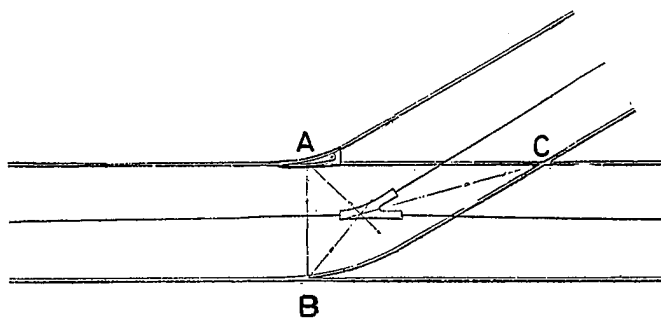


Fig. 18 - The Frog pan should be located at the intersecting point of the lines bisecting the angles of the triangle A B C.

Figure 18 indicates one way to position the frogs, though the units which we obtained from the MMTB were symmetrical rather than directed to the left or right, and they need a little more displacement to work properly than would a directional frog.

The M & M.T.B. frogs are of the more conventional tramway type, with a steel frame which is clamped to the wire permanently, and a pan which fits over the top and is able to be replaced when it wears out. Since we have experienced corrosion problems with the plain steel pans, we have had the next set zinc plated, but none of the latter have yet been installed, so a comparison of corrosion effects of plated or unplated pans is not possible as yet. The significant wearing agent however, seems to be running through the frogs under power, which causes severe arcing away of the edges of the pan and also pits the edges of the trolley wheels.

(The M. & M.T.B. use gunmetal frogs on all of their permanent work, and the steel units are only used for temporary track, since they damage the carbon skids which are used in Melbourne. The gunmetal frogs require that the wires be cut, so very accurate positioning is necessary, and this is not practicable with temporary track).

The steel frog frames have four support eyes on them, and the number of supports required depends on the position. It is usually possible to use a single span wire, with a short spur leading to the other support eye, on each side of the frame. The frog angle can be varied using a permanently attached turnbuckle on each side of the frame. However, where three or four span poles are nearby as at a passing loop, separate wires can be led to each corner of the unit, allowing for more flexibility in positioning.

Copper Trolleywire

Copper trolleywire is customarily used on all commercial tramways, 3/0 or the heavier 4/0 SWG being the main gauges adopted. Historically round wire with envelope ears was used, but modern practise is to use grooved wire with non-fouling ears. Standard details of BICC grooved 4/0 trolleywire are given in table 1.

The erection of copper wire requires more care than is needed for stranded steel. The St. Kilda main line uses 4/0 SWG cadmium copper wire, which came on three spools - two holding 0.5 miles and one smaller spool of some 600 yds. Though the copper overhead may seem to be flexible and thin when viewed from the ground, it proves to be very stiff and heavy when one works with it.

We began by carefully unreeling about 10 metres of wire and attaching one end to our stranded steel using a section insulator. A team of three members then began rolling the cable drum along between the rails, leaving a trail of overhead. This was carried back over the tray of the tower wagon which was pushed slowly along the track and thus acted as an automatic lifting device. Each time the wagon reached a span wire or bracket arm it was chocked in position, and the wagon gang climbed aloft and suspended the wire using the aforementioned insulator loops. Since the unreeling process involved moving under the 415V electric lines, the trolley wire was earthed to the rail using some clamps and a section of cable near the crossing point. A rope was also held over the line to stop any flexing and looping which might have caused the trolleywire to contact the mains.

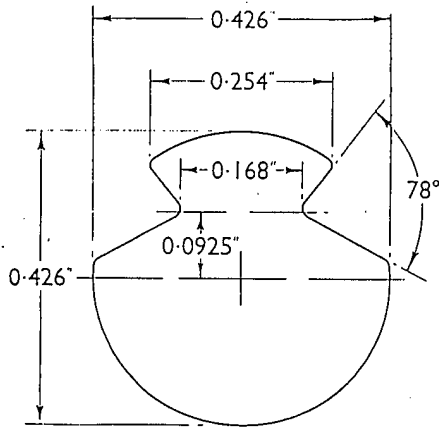


FIGURE 5

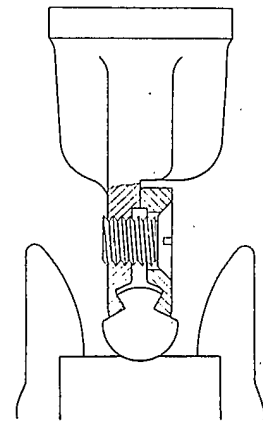


FIGURE 6

(Left) Dimensions 0.125 sq inch (4/0 s.w.g.) standard grooved trolley wire
 (Right) The clamping groove of the standard trolley wire ensures adequate clearance between the trolley head and line fittings, even with maximum wear

TABLE 1: Standard Grooved Trolley Wires—Data

	0.125 SQ INCH (4/0 S.W.G.) (B.S. 23 : 19-9)	
	COPPER (HARD-DRAWN)	CADMIUM- COPPER
Cross sectional area sq inch	0.125	0.125
Diameter inch	0.426	0.426
Minimum tensile stress tons/sq inch	22.5	26.5
Breaking load lb	6335	7400
Maximum working load at minimum temperature lb	2000	2500
Elongation on 10 inches per cent	3.0	3.0
Minimum number of turns in 10 inches	6	6
Maximum resistance at 60 F (15.6 C) ohm/1,000 yd	0.198	0.228
at 68 F (20 C) ohm/1,000 yd	0.201	0.231
Weight (approximately) per foot lb	0.482	0.485
per 1,000 yd lb	1445	1454
per mile lb	2544	2559

Basic Data

	Copper (hard-drawn)	Cadmium- copper
Modulus of elasticity lb/sq inch	18×10^6	18×10^6
Coefficient of linear expansion between 32°F and 86°F (0°C and 30 C) per °F	9.222×10^{-6}	9.222×10^{-6}
Density at 60°F (15.6°C) gm/cc	8.89	8.945
Conductivity per cent	97.3	84 (minimum)
Resistivity at 60°F (15.6°C)		
lb/mile-ohm	886.4	1024
ohm/sq inch/1,000 yd	0.02468	0.02876
Resistance temperature coefficient (constant mass)		
at 60°F (15.6°C) per °F	0.00212	0.00169
at 20°C per °C	0.00381	0.00300

Copper which has a resistivity at 20°C of $\frac{1}{58} = 0.017241$ ohm/mm²/m is said to have a conductivity of 100 per cent

Since the first section insulator on the main line was required on the edge of the museum's leased land, and the team had begun by using the smallest lot of wire, a cut was allowed for in the appropriate place, which left some 200m of wire on the drum. The wire was not yet cut however. The tower wagon approached to within one pole length of the insulator position and stopped while the museum tractor was connected to the wire. (As the wagon had passed, the trolleywire had hung down in large loops behind it, so a lot of tension needed to be taken up). The wagon was now pushed up to the section pole and chocked in position. The tractor took up the tension slowly until the wire was hanging in loops with perhaps 1 metre sag between poles. A tensioning wire was run

from the next support pole back to the wagon position and clamped tightly to the copper with "U" clamps. The tractor was released and the wire leading to the drum slackened and held with a rope while being cut. As mentioned previously it pays to wear eye protection when making cuts just in case the steadying provisions fail and the wire whips.

Finally a second tensioning wire, with double insulation, was attached to the temporary strainer pole and the chain hoist used to draw the overhead to its correct tension. Our spans are of approximately 90 feet, and we allowed a sag of some 9", which is sufficient to permit cars to pass below the wire without a very obvious lifting of the wire at mid-span.

The tower wagon was now run back to the start of the wire and pushed along steadily with one man aloft watching the wire to make sure that no twists had occurred. Any twists were turned out of the wire before attaching the support ear, so that at the end of the run a twist-free overhead with ears permanently attached was at hand. Two bays of pull-offs were attached where the wire rounded a gentle curve, and our first long power run was possible. Accordingly, once the earth clamps and other superfluous fittings had been removed, the power was connected and car No. 1 made a number of trips to pole 11 and back.

The most tedious part of the process had been the unreeling from the cable drum, so a workshop's dolly was modified to act as a cable car. A stout iron frame was bolted on and a 2" waterpipe axle fitted. The axle could be lifted out, pushed through the cable drum and the drum in use mounted on the frame.

It was a simple matter to attach the end of the wire to the previous overhead end and trundle the cable car off down the track, leaving a trail of wire behind. Our copper wire was eventually put up on five working sessions; viz. museum fan - pole 11, pole 11 - pole 17 (end of first cable drum), pole 17 - pole 35 (loop), pole 35 - pole 41 (end of second cable drum, and including two sharp curves), pole 41 to pole 57 (terminus) including a long curve, and finally the 'D' of the loop, which required the installation of two frogs.

The terminus was tensioned against only one pole initially but we have subsequently had an extra pole put in and tied the wire off to a V-support with turnbuckles. Another improvement has been the rehangings of the sharpest curve on the system, which also required the erection of two poles.

One source of concern to us had been the relatively low height of the overhead across roadways. This was due mainly to the fact that the Electricity Trust, when removing steel poles, simply held them with a crane and cut them off at ground level, thus leaving poles of about 26' length instead of the usual 31'. Since we had imbedded them to a depth of about 6', the maximum overhead height attainable with span wires was only about 17'6". We therefore recreated some 31' poles by using offcuts from bent or rusted poles in our store. These pieces were inserted into the bases of the 26' poles and welded on. With the addition of raisers to three of the existing poles, we have been able to achieve an overhead height of 21' at the road crossing, and this allows sufficient clearance for yacht masts and other over-height loads.

Telephone Line

Another overhead item which we intend to install shortly is a telephone line. This will allow the tram crews to contact the despatcher more satisfactorily than they can with the present set up of using two-way radios, especially with the impending legalization of competing C.B. radios. We have an abundance of "U" brackets, insulator spikes, cross arms and insulators and the steel poles are very easily able to be fitted with them. It would also be possible to provide a feeder wire if necessary, but we have no plans for this at the moment. Since the capacity of our power unit is small, a feeder wire is superfluous and, in any case, the low capacity of the sub station prevents high speed running with its consequent effects of track and vehicle strain and associated dangers.

Routine Maintenance

Maintenance of the overhead is carried out as required. Firstly, by having a "hard ticket" policy on appointing motormen, it is possible to have all regular tram drivers aware of what constitutes wire defects, and these are reported to despatchers or repair staff when they occur. One of the desirable habits to develop in motormen is the looking ahead at both track and overhead so that defects have a better chance of being seen and avoided.

In addition to this reporting system, which takes the place of weekly routine inspections from the ground, a 6 monthly check of the entire system, including car sheds, feeders, fan and main line wires is made using the tower wagon and tractor.

The main work which has been required so far is the tightening of plate screws on ears, the varnishing of fibre components on section insulators and the cleaning of hangers. In addition the zinc painted steel pull offs have needed recoating. Because of the piecemeal construction of the pull offs, it was not possible to have them zinc plated at the time of manufacture. Other museums who use such fittings and can make them in advance of requirements could well consider the worth of having them galvanized or zinc plated.

On the depot fan section, we have kept a careful watch on the stranded wire and the fouling ears. As yet no significant corrosion has occurred, though the running side of the wire has been worn down to some extent, probably by the severe arcing which occurs.

Wear on the non-fouling ears has been unnoticeable so far, and no significant thinning of the wire beneath such fittings has occurred, though the STA has experienced problems with this on the Glenelg tramway.

Vandalism has been minimal - three loop insulators have been smashed - probably by rocks. Fortunately all of these insulators were on the one pole and were replaced as part of rehangng of the Mangrove Street curve.

Reference works

Manufacturers catalogues, electrical engineers' handbooks from the period 1900-1930 and tramway construction texts from this period provide useful additional information.

Lightning Protection

Some form of lightning protection should be provided on the overhead and feeder system (Figure 19). Solid state power supplies usually have a protection system incorporated in the rectifier, but we have provided further protection in the form of a tramway-type choke coil and spark gap. This is connected in the feeder line from the sub-station, the equipment being located within the station itself. The coil is wound in a heavy (19/064) double insulated cable on a wooden former, and a GE spark gap from a tramcar is connected on the overhead side of the coil, the earth side being run to a number of earth stakes.

We intend to install further spark gaps along the line, possibly with choke coils at section insulators.

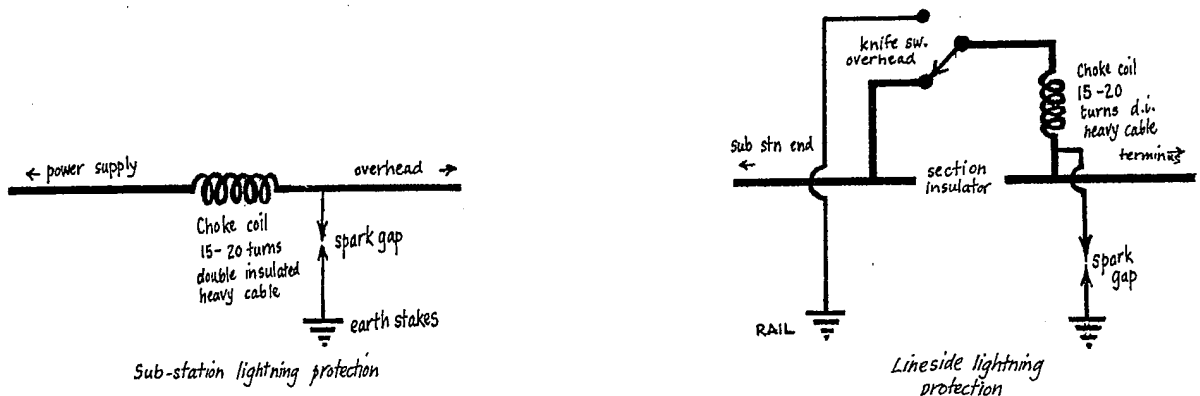
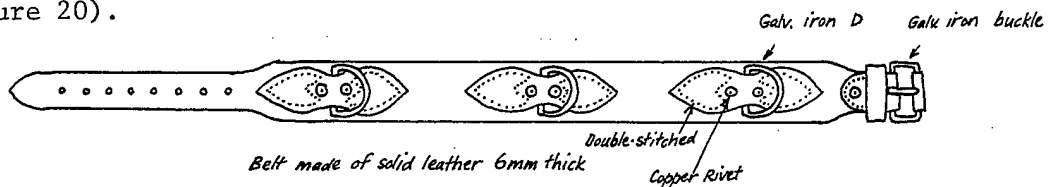


Figure 19. - Lightning protection circuits

Safety belt use

Safety must be the keynote of any overhead construction, and the greatest safety aid is to learn the correct use of the safety belt (Figure 20).



Heavy rope 2-8 metre long: 30mm circumference with loop spliced at one end runs through Ds. Belt is put on firmly and rope is taken around pole, adjusted for working length and a sheet bend tied. Once this has been tested and found safe, linesman has both hands free for work.

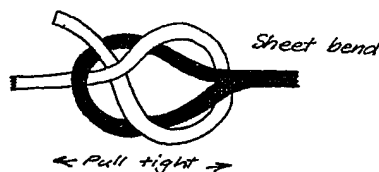


Figure 20 - Correct use of safety belt

Conclusion

Not only must the overhead be structurally and electrically sound in design and construction, but it is desirable that as much effort as possible be put into achieving a tidy and aesthetically pleasing job as the overhead is always visible whether the tramway is operating or not.

PRACTICAL FIRE PREVENTION IN MUSEUMS

R.S. Emery

Public Buildings Department, Adelaide, South Australia.

Many times one has been asked "What is the main cause of fire?" Inevitably, the answer must be - humans.

For instance, we build buildings of reinforced concrete which are almost indestructible before occupation, then we set about filling them up with flammables of all kinds, including human beings. Latest reports of main causes of fires are smoking in bed, electrical faults and arson - all human factors. So, being pretty smart humans, we who are left set out in a humanised way to find ways to stop fires that we humans cause, and at present, according to reports, we are still losing our fellow humans in fires.

There are many types of buildings that contain a variety of combustibles. Museums, for instance, are institutions in which objects of permanent interest are collected, preserved, studied and exhibited. Most of the objects are irreplaceable and they form an important part of a man's national heritage. They are especially vulnerable to damage by fire, smoke and water. Museums range in size from a single room to a complex of buildings and, although they are characteristically urban, many smaller ones operate at a distance from organised fire fighting services.

The trustees and their staffs bear responsibilities for the preservation of the objects under their control. They must provide them with continuous and adequate protection from many hazards other than fire, such as adverse humidity, dust, polluted air, insects, mould, theft, vandalism and arson. The last mentioned subject is increasing on a world-wide basis, and it is sad to note that during a ten year period arson has increased in America by 285%!

Fires in Museums

Museums are also vulnerable to the wide varieties of common occurrences responsible for most fires, - careless smoking, malfunction of furnaces, faulty wiring, improper use of a cutting torch, etc. Fires have occurred in museums with fire-resistant construction, in structures largely of wood, in large fully staffed institutions and in smaller undermanned ones. Fires have broken out in museums during the day when they were often filled with people, and at night when they were closed. Experience shows that the hazard of fire is increased when a museum is being renovated or when a new exhibit is being installed.

Some examples of fires that have occurred suggest two reasons for their having spread beyond the point of origin. One, of course, was the presence of combustible material which, too often, was in unnecessarily large quantities or lacked protective measures; the second reason was the delay in discovering and reporting fires. The first moments are critical - it takes only a few minutes for a small fire to grow to a big one. Yet, in the absence of automatic fire detection, discovery has been left to chance. Costly delay has also occurred when people finding a fire

have tried to extinguish it before giving the alarm. This is a cardinal sin of fire safety.

Some illustrative fires that have occurred in America are:-

National Museum of History and Technology, Smithsonian Institute, U.S.A., 1970 - probable electrical short-circuit in the exhibit, \$100,000.

Henry Ford Museum, 1970 - probable cause an overheated hair curling iron in the dressing room. Loss over \$2 million.

Other fires have occurred with considerable losses.

In the planning of a new museum building the site selected should have public fire protection and an assured water supply for fire fighting. Consultation with fire officials at this stage is necessary to obtain full benefit from the recognised authority on fire safety.

Other important points that continue on from the embryo stage include:-

- planning
- security
- Lighting
- gallery flexibility, such as moveable walls, etc.

Protection against outside exposure fires

If a fire breaks out nearby, will it spread to the Museum? Location is of prime importance, and isolation such as a site in a city park is ideal. If this is lacking, the greatest possible distance from neighbouring buildings should be maintained. This also contributes to museum security.

All combustibles such as dried grass, rubbish, etc. are to be removed and a clean, clear space maintained on the outside of the building.

In addition to this point, other facets need to be implemented, such as planning, construction, layout, lighting, air conditioning, means of egress and distance from neighbouring buildings in relation to possible damage from radiant and convected heat in the case of fire.

Fire protection equipment

Quote:- "Sprinkler systems cost about the same as carpeting, but the former is a necessity, the latter a luxury".

So states Mr. Charles Morgan, President of National Fire Protection Association in America. Automatic sprinklers have continually proved their value in the reduction of fire losses throughout the country, and their value should not be overlooked for museums. Automatic sprinklers perform several functions:-

1. Detect fires at the point of origin
2. Cause the sounding of alarms
3. Control or extinguish the fire
4. Can and should be connected directly to a central station to summon Fire Department assistance immediately.

Special fixed systems using carbon dioxide, halon agents, etc. can provide needed protection for specimen store-rooms or other areas where especially valuable contents would be irreparably damaged by water.

Portable extinguishers are important items of fire protection and should be installed for the class of fire anticipated. They should be properly located, identified and inspected regularly so they will be in working order when needed.

Housekeeping

Time does not permit discussion of all other problems, but to mention the main points in housekeeping control -

Appoint a Building Control Officer whose duties would include prior consultation with Fire Brigade Officials on -

1. The selection, location and maintenance of all fire equipment such as automatic sprinklers, smoke detection systems, portable fire extinguishers, etc.
2. Instruct all employees on the importance of fire safety and the necessity for complying with smoking regulations. Each employee should be carefully instructed in the event of fire or other emergency.
3. The assignment of the best qualified personnel to assist the Fire Brigade in the protection of museum collections.
4. Employ a night guard system if possible.
5. Restriction of smoking by visitors and employees to designated areas.
6. Regular inspection and maintenance of fire doors and exit facilities to ensure that they are in working order and unobstructed.
7. Daily inspection to ensure that rubbish, flammable packing materials, rags and scraps, paint and oily cloths which are liable to ignite spontaneously are disposed of immediately.
8. Supervision of the installation and use of all electrical appliances and the storage of flammable liquids.

9. Maintain contact with specialists such as the Fire Brigade and fire protection engineers.

If a fire occurs, the Building Control Officer should see that:-

1. The alarm is sounded.
2. Call the Fire Brigade.
3. Evacuate the building if deemed necessary.
4. Account for all persons.
5. Co-operate with the Fire Department.
6. Institute the clean-up action with special attention to the safety and salvage of objects.

In conclusion, it is admitted that fire protection and security equipment costs money, but it is most necessary to ensure that irreplaceable items are safely guarded from all possible sources of damage.

SAFETY PROGRAMMES FOR MUSEUMS - (a) THE MEMBERS, (b) THE PUBLIC

Mr. R. Moulds

S.A. President, Safety Institute of Australia, Adelaide. S.A.

Accident prevention requires a planned approach. It requires an understanding of why accidents happen and, in particular, the relationship between human behaviour and the environment. The environment in the various museums in Australia and New Zealand will be different in every case. Therefore those in charge have the need to relate their accident prevention activities with their own particular circumstances.

Therefore let us look at some of the basic principles involved in accident causation.

What is an accident?

"An accident is any unplanned or unexpected event which may or may not cause injury to people or damage to property".

If you care to ponder over that statement you will see that accident prevention is a much deeper subject than merely the reduction or prevention of injuries to people.

Having defined an "accident", we can then start to look at a sequence of events to find out where preventative measures can be taken.

Firstly let us say that safety is the "prevention of injury or damage".

Then let us ask "Why does injury or damage occur?"

The answer is - because of accidents. At this point there are no obvious preventative measures so let us say "Why do accidents occur?"

The answer is - "because of unsafe acts and conditions caused by people".

This is an area where we can take some action. We can eliminate or reduce unsafe conditions and where we cannot do this, we protect by guarding or other similar means. We can also educate or regulate people so that they do not create unsafe conditions or perform unsafe acts.

But we can also ask the next question - "Why do people create unsafe conditions or perform unsafe acts?" The answer to this one is - because of the normal faults of human behaviour. If we can accept that all people have faults in the way that they behave, that these faults are quite normal, and that people ought not to be blamed because of them, then we can look at these faults as they relate to each one of us personally as well as to others and try to take measures to control or to guard against them.

Some of the more easily recognised faults are:- undue haste, laziness, impulsiveness, lack of forethought, lack of knowledge, irresponsibility, curiosity and, in some cases, lack of intelligence. Other faults are physical such as defective vision, poor sense of balance, faulty hearing and feeling "off-colour" due to perhaps a heavy cold, hangover or whatever.

We can then ask one further question:- "Why do these faults occur in people?" The over-simplified answer is because of their environment, hereditary background and up-bringing. There is little that we can do about this except in the area of bringing up children to be safety-conscious, and that is outside the scope of this paper.

To summarise, we are left with two areas where, with careful planning, effective action can be taken. They are:-

1. Reduction, elimination or guarding against unsafe acts and conditions.
2. Recognising and protecting against the normal human faults of people.

To apply these to your situations, I can only suggest broad guidelines to follow. They are:-

1. Protect the public from their own unsafe acts, (including those of children) and straight-out vandalism by predicting what they may do because of normal human behaviour.
2. Similarly, protect the public from the unsafe acts of your members.
3. Control unsafe conditions.

On the question of how to achieve this I put the following for your consideration.

1. Have an active safety committee, formulate museum safety rules, publish a safety hand-book to suit all situations and give safety training to all members with responsible jobs.
2. Restrict public access to areas which are safe and where they are visible to your supervising members.
3. Give maximum attention to steps, hand-rails and locks where necessary.
4. Use lock-out switches.
5. Have systematic traffic control - and I can only commend the one at St. Kilda to you.
6. Maximise the use of sign-posting.
7. Do not hesitate to control the actions of children - even when their parents are present.

8. Ensure always that emergency devices such as brakes, bells etc. are in first class order.
9. Keep first aid facilities adequate and ensure that trained first aiders are always on roster.
10. Do not economise on fire protection. Seek professional advice.
11. Do not neglect to have a comprehensive public risk insurance policy.

Your workshops should not be neglected in any safety programmes that you may establish. Perhaps in this area the main guideline to adopt is to "protect your members and property from the unsafe acts of your own members".

Some key points which are often overlooked because of lack of planning or good supervision are:-

1. Good housekeeping - especially in respect to fire prevention. Fire cannot burn without fuel, so reduce fuel to a minimum. Another good hint is to have suitably marked bins so that waste can be sorted as it is produced.
2. Make full use of personal protective equipment:- safety glasses, safety boots, welding gloves, respirators etc.
3. There are few second chances against electrical shock - invest in earth leakage relay units to suit all work with extension leads and portable electrical tools.
4. Materials handling can be hazardous. Use mechanical aids where possible - if not, lift with the legs and not the back. Do not put steel to steel when using jacks.
5. A broken grinding wheel can be a fatal missile. Do not let anyone except a genuine expert set up a grinding wheel.
6. Compressed air can enter the bloodstream through the skin at quite low pressures and has the same effect as divers bends - Control its use.
7. Pits are difficult to guard - a bright yellow band around their edges helps to make them more readily visible.
8. Work areas above ground level should have kick-boards and guard-rails.
9. Battery charging produces hydrogen which is highly explosive and lighter than air. Use a spark-free well vented area.
10. Hand and power tools in poor condition are hazardous. Consider the appointment of a suitably skilled member to take charge of these items.
11. When arc-welding, use screens for protection against ultra-violet flash. Insist on safety-glasses for eye protection during chipping off.

Conclusion

I opened this paper with an outline of some of the theory of accident causation which I hope will give you food for thought.

In the latter part I dealt with some more specific items that are worthy of attention but, I hope, will be seen only as examples of the variety of hazardous areas that require attention.

I trust that what I have said will give you the motivation and guidelines required to set up an effective safety programme. The good work that you are doing is too valuable to be destroyed either by accident or by the results of litigation brought about by a blame-worthy act of your organisation or one of its members.

EXHIBITIONS - A LESSON IN PROFESSIONAL MUSEUM PRACTICE

Graeme Breydon B.Com. A.C.A. and Anthony Culpeffer-Cooke

Tramway Museum Society of Victoria Ltd.

Introduction

Through the medium of the notes which we have compiled, we hope to show just what our society has achieved through becoming involved in exhibitions.

History

Firstly, a little history; The Tramway Museum Society of Victoria became involved in exhibitions almost by accident when the Melbourne Model Railway Society asked if we could display some model tramcars for the International Convention of Railway Modellers in March 1970, to coincide with the Annual Moomba Festival. The project mushroomed into a public display which ran for five nights and attracted over one thousand visitors. In 1971 we returned to the same hall in Malvern with an expanded collection and by 1972 had raised the standard of presentation considerably as we built up a stock of display aids. After our next presentation in 1973 it was felt that a change was required and so the following year we moved to a new venue at Kew.

The display aids were not left idle between Moomba exhibitions. The photographs, models and relics were utilised at other functions such as historical rallies, fetes, and shopping centre promotions.

The horse car operation at South Melbourne in March 1975 filled the traditional exhibition weekend in that year, but presentation of smaller displays continued.

By 1976 we were growing tired of the mammoth effort in mounting our own functions which involved organising halls, publicity, etc., as well as the contents of the exhibition. The decision was taken not to run our own exhibition, but by drawing on the experiences of the previous six years we were able to present our most effective venture of all, containing our most popular items presented professionally in just 150 square metres, and seen by over twenty thousand people instead of our usual two or three thousand, and with less effort than any of our previous major exhibitions. We refer to the society's display stand at the Australian Model Railway Association's 1976 exhibition at Camberwell. A.M.R.A. had also commenced its exhibition in 1970 for the international convention of railway modellers and has built it up as a popular event on the Moomba festival week-end in Melbourne. The tramway museum stand won the prize for the best club display in 1976 and since writing these notes our 1977 stand has been mounted and came within half a point of winning the same award this year.

Lessons

The basic lesson from the past seven years has been that any display must be presented in a professional manner and must be aimed at the general public rather than at the enthusiast who may be prepared to overlook untidy surroundings. Incidentally, these comments apply equally to the museum premises and off-site exhibitions. Consequently, we are now engaged in a programme of up-grading the small exhibits presentation at Bylands utilising the ideas and equipment for our exhibitions.

Let us look at some of the specific matters concerning exhibit presentation:-

Models

Scale models are an excellent way of illustrating, in three dimension, those things that are too big to bring into the hall. (However we did have a complete cable-car end at Malvern one year). At the museum they can serve to fill gaps in the collection of full-size tramcars (for example - steam trams in Victorian collections). Although all scales are popular the general rule seems to be "the bigger the better". We have noted that our 1:24th scale cars, and to a lesser extent the O scale models don't carry the "toy train" stigma of their OO and HO counterparts.

Reliable, varied operation adds to public appeal. The oversize hand looming over the backscene to give the stubborn car a prod only encourages the viewer to poke his fingers at the cars too. Obvious differences between operating tram models should be maximized. The general public will not notice the difference between a W2 and W3 operating a shuttle service together but run out a Birney and an open-top double-decker and the crowds soon gather!

Decor

All layouts and tables on a stand must have adequate skirting to hide the forest of legs and heaps of empty boxes and other rubbish which invariably accumulates underneath. It is advisable to hang such curtains about 10cm above the floor to prevent careless smokers from sending the lot up in flames. (It may be mentioned here that some large ash trays and bins in the hall encourage tidiness too). Drapes can also be used to hide other unsightly fittings in the hall, but do not block access to switchboards, fire extinguishers or alarms. Pot plants may seem to be out of place at a tramway exhibition but we have found shrubs useful for camouflage and decoration. If possible a common colour scheme should be adopted for all signs, drapes, and display cases.

Lighting

Adequate lighting is perhaps the key to a well presented display. Forget about desk lamps or flourescent tubes and get some decent lighting. Lights on our 1976 Camberwell stand totalled 2½ kilowatts, mostly borrowed from a TV station, and as a result the stand caught the eye of each visitor as soon as he or she entered the hall. An adequate power supply is essential for this sort of undertaking.



Plate 2 - The display must be presented in a professional manner and be aimed at the general public
TMSV Exhibit, Kew, 1974

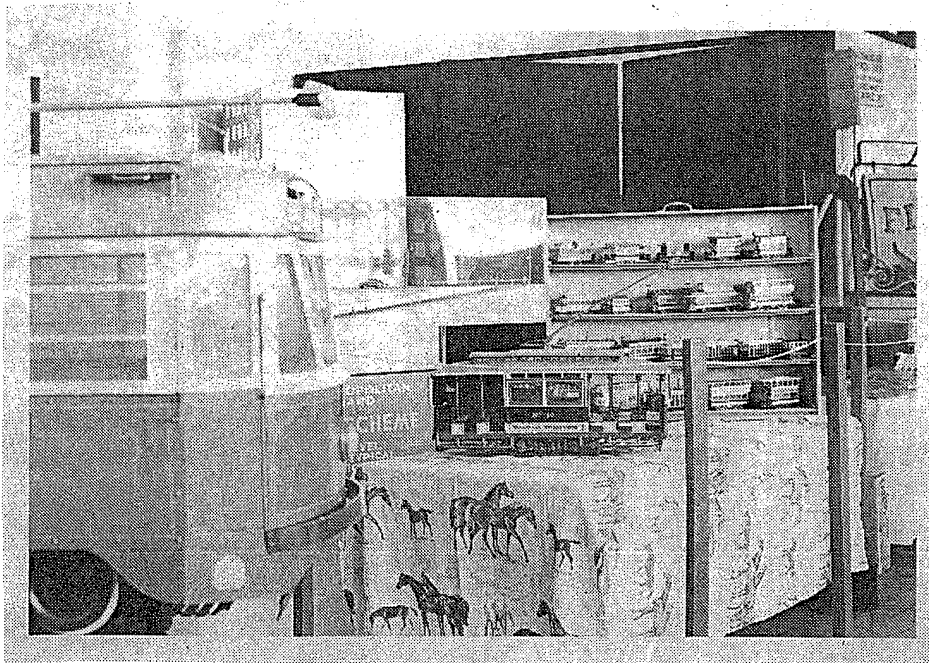


Plate 3 - Scale models are an excellent way of illustrating those things too big to bring into the hall.
Picture shows $\frac{1}{4}$ scale model of M. & M.T.B. 980, $\frac{1}{12}$ scale model Bendigo 10 and a selection of "O" scale U.K. trams.

Railings

Do not rope-off your stand, fence it off! All railings should be solid and braced so that they will not slide towards the displays as the crowd banks up. Although rows of chairs tied together are not ideal they are available in most halls and are hidden once the visitors gather in front of the stand.

Relics

A tramway museum is a lot more than just a collection of tramcars. Exhibitions are a good opportunity to overhaul and use some of the other items stored around your museum site. We have used uniforms, a bundy clock, signs, controllers, destination boxes and many other small exhibits over the years.

Labels

Relics, models and photographs all need labels. They must be neat and with relatively large print. Do not use typewritten signs; most people won't be bothered reading them. Keep your messages simple and short. With any more than one or two sentences, you will lose the attention of the reader. Avoid uncommon abbreviations, in particular the initials forming the name of your organisation. S.P.E.R., T.M.S.V., or B.T.M.S. are all just alphabet soup to someone outside our movement.

Insurance

Insurance could form a topic by itself. Most exhibition organisations obtain marine cover for models and equipment but check that it is adequate to cover the commercial value of hand-built items and the market value of antiques such as ticket punches and badges. See if your own museum public liability cover extends to off-site activities and extend it if necessary.

Time and Place

With limited resources we have learnt to be selective in accepting invitations and carefully balance the set-up/dismantle effort against the expected patronage. Generally we decline to mount displays at one or two day fetes unless there are special circumstances. We prefer functions at which we are permitted to sell publications but we never let the commercial aspect dominate our display stands. It is advisable to clarify any profit/expense sharing arrangements before accepting an invitation to participate in a function.

Benefits

Perhaps it is useful to list our reasons for becoming involved in off-site activities:

Income is the prime motivation, both from door takings and sales.

Secondly comes the inducement of visitors to call at our museum. For this reason large signs with the society's name, maps, and boxes of leaflets feature prominently whenever we appear.

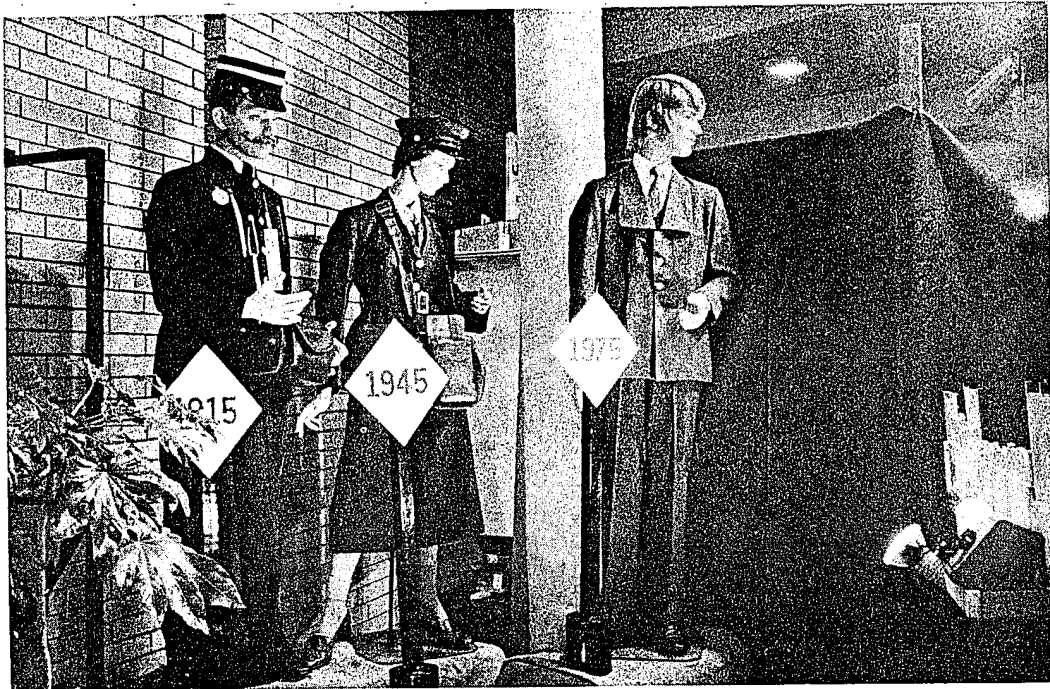


Plate 4 - Uniforms displayed on store dummies give an exhibit greater variety. TMSV Exhibit, Camberwell 1976.



Plate 5 - Models must be operated to maximise viewer interest. The novelty soon wears off for the operator.

Finally the mounting of exhibitions is in itself achieving our prime objective of promoting interest in the Victorian Tramway Heritage. There are two noticeable absences from the foregoing list:

We no longer consider exhibitions as major membership recruiting opportunity as the audience generally has only a minor interest in our hobby.

We do not run exhibitions to play trams. Driving models during open periods is conducted to maximise viewer interest and fun-operation is strictly an after-hours activity. Besides, the novelty of operating a two-minute shuttle service wears off after three or four hours.

Conclusion

In summary, the Tramway Museum Society of Victoria has found that presentation of special displays both at the museum premises and off-site is a worthwhile activity but to get maximum results a professional approach which considers the interests of the general public rather than the enthusiast is necessary.

We urge interstate museums to consider expanding their activity in this field and also to apply the techniques described to their permanent museum displays.

ABOUT PEOPLE

W.J. Kingsley, B.C.E., Dip. Ed., Grad. I.E. Aust.

Executive Officer, Council of Tramway Museums of Australasia.
Engineering Manager, Ballarat Tramway Preservation Society Ltd.

It was Abraham Lincoln who, at Gettysburgh, Pennsylvania in 1863, promised a government "...of the people, by the people, for the people". I doubt whether the sixteenth President of the United States could have been a tramway fan or a transport museologist (Frank Julian Sprague pioneered the American "Trolley" two decades later), but I do know that his words are very apt and timely for us as operators of tramway museums to consider, applaud and apply this day to our own field of particular endeavour.

Let us look separately at those three "people" statements but please allow me to change the order.

"Of the people" - The purpose of a functional, operating street tramway has always been to carry people. To commute to work, to take people shopping, to transport people to the cinema, to bring people visiting. Tramcars do not grace the streets just to improve the aesthetic environment, they are there to carry people. Tramways are people. This is the way that it has been. This is the way that we must preserve it.

"For the people" - You are dependent on people, the people who will come and visit your display, the people who will ride on your tramcars. Surely you do not lovingly restore your trams just so that they can glisten at each other in the gloomy depths of a padlocked depot. No. You restore them so that people will look, admire and appreciate them. Surely you do not operate your tramway just so that you can play trams or pretend that you work on the real tramway. No. You operate so that people will ride, the oldies will get lost in nostalgia and the youngies will thrill to the ride.

"By the people" - You yourselves are people. Your workers are people. Your contacts are people. Your donors are people. You are in a people business.

This then is our task, to preserve the tramways of the people in museums for the people by volunteers from the people.

As you know, one of my many responsibilities in life (the one that I get paid to do) is that of teaching. Try to imagine just what it is like to return to your school or college, its corridors, its classrooms during term holidays. Your last lesson is still on the blackboard but the chairs are all upside down on the desks, the cobwebs have appeared and everything is still, quiet and ghostly. Only the smell of hydrogen sulphide from the chem. lab. lingers on. A week before the walls echoed with chatter, laughter, movement, noise. Not now, without people, the school is nothing.

Have you ever been the last one left in your tram depot at night? The place has been a hive of furious activity all day, service trams going in and out, derelict trams being restored, track being repaired. People activity and voices everywhere, sometimes panic. But now you are left alone in an eerie silence to lock up. The possum has not yet snuck in. Everything is still. Life has gone. The trams are there, yes, but without people it is all so unreal.

I remember a whimsical discussion of theological (or perhaps not so theological) matters once which emanated from the story of the well-to-do lady who, on departing this life, was led by an angel to a most beautiful and elaborate mansion on a hill. "It is yours" indicated the angel. "Oh how wonderful", exclaimed the jubilant recipient, "I never realised that Heaven was like this". There was silence for a minute before the angel explained quietly, "This is not Heaven, this is the other place. Your punishment is to live eternity alone, for no people can ever visit you here".

Our discussion group (I must admit that they were not tram fans) then thought up other possibilities for "the other place". A golf player, alone on an endless golf course, whose every shot is a hole-in-one. A cook alone in a kitchen, preparing endless delights for which there are no eaters. May we now add the tramway museologist in charge of the most beautifully restored collection of tramcars but which no one will ever come to see, or perhaps driving on that endless tram track in a world devoid of people.

Truly, without people we are nothing.

All this because I visited Branford last year.

The Branford Electric Railway and Trolley Museum, New Haven, Connecticut, U.S.A., operates from the suburb of East Haven along a former interurban type right-of-way to the neighbouring suburb of Short Beach on the Atlantic seashore. New Haven is the northern terminus of the e.m.u. railway interurban from New York, a Gosford from Sydney situation.

"The Flyin' Yankee", an early morning Amtrak train had rattled and bounced me southwards from Boston to New Haven (well, I did have to try a turboliner). As I tumbled out of the carriage in pursuit of my luggage which the porter had already placed on the platform, a rather large fellow with an even larger smile ambled up to me and asked, "Are you Bill Kingsley?" (Obviously Australians are easy to recognise). "I'm Bill Riccitelli, Welcome to the Branford Trolley Museum".

Think about that last sentence. I was not yet at Branford, I was on the platform at New Haven. But the sentence is correct. Bill was part of Branford because Branford is people.

I had already read the fine Branford book "Ride Down Memory Lane" before leaving Australia. In fact it was the magnetism of that publication which had made Branford a must in my itinerary. The book had told me all about the track, the bridges, the tramcars, yet I was not at all prepared for the real Branford, the people Branford.

Join me now in spirit and the present tense as Bill drives me to my first "trolley" museum.

From a large sealed car park we enter Sprague Building. This is an impressive museum of artifacts and historic photographs. There are also two counters. At the first counter straight ahead is the smiling face of Louis Iasillo who sells the tickets. Above Louis is a large and easily read timetable and an equally large clock. At the other counter to the right is another smiling face, for here are the souvenirs. Everyone wants to talk with me. They also want to talk with everyone else. It is quite amazing.

"Bill, I'm Garry Hartman. I'm the motorman for the next tour. Would you like to come with me?" Then, turning around and addressing himself to 360° of people, "Our next tour leaves in two minutes. Would those for the tour care to follow me now".

The car park door being the back door, we now exit by the front door. A beautifully restored and maintained tramcar stands in the street. We join those already on board. From the motorman's position but with his back to the track ahead Gary introduces himself to all on board. "I'm Gary Hartman. Welcome to the Branford Electric Railway. I am going to drive you for the full length of our route. Please do not lean out of the trolley. I hope that you enjoy the ride".

We do. Over bridges, past the car barns, through a forest, around an S-bend, across the plain. Meanwhile the conductor is checking tickets and talking to people. He is interested in them and wants them to be interested in Branford. He is establishing rapport between his passengers and the museum. They are people. They are important.

Gary alights at the terminus to change the poles, i.e. "turn the trolley". The conductor quickly takes the position that the motorman has just vacated and tells us about the vehicle, the track that we have just ridden over and the imminent extension of the per-way. Everyone is interested in what he is telling them because he is interested in telling them. He concludes with "When we return to the car barns, Gary, your motorman, would like to take you all on a guided tour".

So we return to the car barns. Gary alights before the first passengers, collects his flock together, and walks and talks us through the depot area. We see actual restoration being done. We take photos. We listen eagerly. At the conclusion, "It's been great to be your guide. You may now catch the next car back to Sprague or if you wish to stay here awhile you are very welcome. There are refreshments at the observation car and over there in the grove is a picnic area. Your ticket is an all-day ticket and you may ride as many cars as you wish for as long as you wish. Thanks for coming to Branford. We hope you'll come again".

But his work is not over. There are still questions. People want to chat, to photograph him with their grandmother, to ask him about his uniform.

I spent the next few hours walking the track, lunching and taking photographs.

About 2 in the afternoon (1400 hours) I was chatting at Sprague with Ray Crapo who was the O.I.C. for the day. Gary came in and apologised with "Ray, I just can't do any more today. I'm worn out. Something's wrong with me". Really I was not surprised. The mental effort that the staff put into making Branford a success would stop many of our Australian counterparts: stone dead.

As Ray concerned himself with Gary's condition I was to be introduced to the other side of Branford. Until now it had been "for the people". Now it was "by the people". I was seeing the real concern of management for its own staff, its own people.

How does Branford get its own people?

Press advertisements and person-to-person contact lure potential staff with the "come and drive a trolley" theme. Not only is this a proven magnet, but Branford believes that you can't understand a tramcar until you have driven it. (Australians maintain that you can't drive it until you understand it).

So the applicants are enrolled in the Level I Operators Training Programme. This is a most thoughtfully and thoroughly conceived and executed programme of four full-day sessions. The first session introduces the tramcar (for some enrollees may not even have seen one before) and gets everybody out driving to experience that undoubted thrill of electric traction.

The theoretical side of the first day's training includes topics such as the D.C. circuit, responsibilities of museum operators, how to efficiently and inoffensively deal with visitors and their many questions, rails and overhead, controllers.

Bill Kerrigan, a Level I trainee of 1976, reported in the Branford Journal that the instructors "... did much to relieve the apprehension of the newcomers. When I look back on all this, years from now, I'll recall that never for a moment did I feel like an outsider... and that's a good feeling to get after only a few hours in a place you've never seen before". To me that is real "by the people".

Bill continues "We were reminded that, as members, we were to consider ourselves not as potential operators of trolley cars but as potential operators of a museum, and, as such, many of our duties would be outside the ribbons of steel". Now it is "for the people".

Each student receives a manual. It is a loose leaf folder containing booklets to assist all phases of the programme. One booklet is called "The Environment of the Traction Era". It is aimed at giving the trainee a feel for the part which the "trolleys" played in the evolution of transport in the United States and in the development of the communities so served. This is the "of the people".

The booklet on "Tour Dynamics" brought home to me the full depth of the "people" thinking at Branford. This booklet recognises three types of people in each tour group:-

- a) the eager followers,
- b) those following those who follow,
- c) the disoriented at the rear.

It then describes in detail how the accomplished tour leader can successfully cater for his eager to not-so-eager group. It talks of establishing leadership, tour continuity, movement motivation. It strives towards the ultimate reward when a tour leader is spontaneously applauded at the end of the circuit.

Now, the alert reader will have noticed another practice opposite to ours in Australia. The new staff member is put into traffic before he is put into works. The Australian theory is to have the new member work (slave) in the background until he has "served his time". He has by then been sufficiently indoctrinated and brainwashed to develop a feeling for his museum and his co-workers and is then given the privilege of joining the traffic staff. The Branford theory is that the new member will get so enthused about the trolleys (by driving them) and the track (by driving over it) etc., that he will want to help in the works programme. They are encouraged but not coerced.

Attached to this Paper as an appendix is a notice from the Track Department to the new trainees. Read it, for it is a good example of how "old" people should communicate with "new" people.

Obviously, if there is a Level I Operators Training Programme, there must be further levels of training, and so there is, for Branford believes that in the fields of technical understanding, traffic techniques, administration and "people" relations only the best will do.

It was Begonia Festival 1977 and the old lady alighted from number 40 at the Gardens Loop on the Ballarat Tourist Tramway. There were real tears of joy in her eyes as she was moved to tell us. "The begonias are beautiful, the gardens are lovely, the procession was interesting, but it was your tram. The memories that it brought back to me. Oh, you have made me so happy".

Tramway museums are, indeed, people.

References

1. Branford Electric Railway Journal, Volume XXII, Number 1, January-February 1976, p.4.

BRANFORD ELECTRIC RAILWAYTrack DepartmentTO ALL PARTICIPANTS IN THE 1976 LEVEL I COURSE

Hi! We're glad to have you joining the operating staff here at Branford Electric Railway. You will learn the essential information that will make you a fine representative of the museum and its program of operating historical electric-railway equipment. Operation of cars is the life blood of the Association's financial being, and your efforts to provide a safe, pleasant, and educational visit to every one of our visitors will help ensure an even greater Branford in years to come.

Your work as a car-crew member and tour guide will expose you to all aspects of the museum. We in the Track Department would like to point out some notable items concerning the museum's track, and to ask your help in certain areas.

First and foremost, when guiding tours around, emphasize that people must step over rails, not on them -- this is a standard safety rule in the railroad and transit industries. Discourage as actively as possible the practice of walking along rails trying to balance on the railheads. If you are aware and stop people from doing these seemingly-harmless things, we might well be spared an injury and possible lawsuit. And follow these rules yourself!

Certain portions of the trackage are extra-greasy. These will be the sharp curves, curves with guardrails, and switches. The grease is a special compound developed for the high-pressure, high-abrasion application of railroad guardrails. It is also high in graphite content. This grease will stick readily to skin, or clothes, and is pretty difficult to wash out of clothes. We will try and keep deposits of excess grease to an absolute minimum; however, guardrails, switch frogs, and the cast points and mates of single-point switches such as those in Farm River Road yard will be greasy out of necessity. If you can steer your groups around such areas, dirty clothes and possible slips and falls will be avoided.

Occasionally, there may be ties or track hardware piled up in areas where you are escorting visitors. We will try and keep these piles neat, but children like to climb on ties -- try and discourage this, for obvious reasons. We'll try and keep the exposed hardware to a minimum. You can mention that there is or will be track work going on, and tell the people what the stuff is that they see -- ask us if you don't know. If we're working where you bring your groups, we'll try and say hello and give a short brief about what we're doing. Emphasize to visitors that we must follow standard practices: our track is normally 4'8½" gauge (same as railroads), parts of it do wear out even at a museum-type operation such as ours, and none of it is "special" because we're a museum instead of the Penn Central.

When you're operating cars, if you experience any rough-riding stretches of track, or get any bumps and hear loud clunks as you pass over a certain place in the track, tell us about it -- we can't be everywhere at once, and perhaps some part of the track is in need of attention and

has escaped our notice during periodic inspections. We'll try and clear up the problem -- and you're invited to come help us some day when you're not assigned to car operations!

We hope to get to know you better as you become more active in the affairs of the museum. Glad to see you here!

Bob RICE, Supt./Bill YOUNG, Asst. Supt.

WORKSHOPS

Workshop 1(a)

MANAGEMENT OF EMPLOYED LABOUR

Chairman and Recorder - C.J.M. Steele (AETM)

Individual Museum Experience

Each museum was invited to describe its experiences in managing employed labour. Comments may be summarised as follows :-

AETM has carried out about 12 projects, mainly maintenance under the R.E.D. Scheme. Special tools, equipment and labour skills were required. Supervision was attempted on a part time basis and this proved difficult. Projects involved such activities as painting the depot, installing irrigation system, painting cast iron etc. It was found the time of three months was insufficient for the tasks planned. It is difficult to carry out intricate tasks without a foreman. The foreman should ideally be a museum member. It was important that the foreman could also handle the necessary paper work. Employing members also runs the risk among the remaining membership of some dissent about the rates of pay, and can also involve considerable strains among the committee due to the additional administration. It might be concluded that work done by a conscientious member is likely to be more valuable than that done by casually employed labour.

MOTAT has an unemployment scheme proceeding. The employed labour is used for general activities such as carpentry etc. Expert supervision is required, and tasks must be well defined. Some labourers do not wish to work. Unemployment labour is not used on car restoration work. Prisoners on light sentences have also been used for certain activities such as excavation and cement work. These have been successful, probably because a gaol supervisor is in charge.

SPER has used unemployment labour for track lifting on the former Sydney tram system. Several members were able to spare time to check on activities. The gang consisted of 4-5 men, with the most able being appointed foreman. The gang was paid by a self-employed member who was able to find time to carry out this function. Lessons were learned and the effort felt to have been worthwhile. Some tax, insurance and administrative difficulties were experienced.

THS have run a labour scheme at Ferrymead. The foreman was selected on a merit basis, but the Ferrymead manager was available to provide general oversight. Despite this, detailed problems still existed. Members could work on the scheme to ensure better supervision. Advantages were considered to outweigh disadvantages.

WTM had considered the merits of entering an unemployment scheme but had decided not to proceed because of the cost. In this case, labour only would have been provided and WTM would have had to pay for tools and equipment.

TIMS described use of labour from a court system in which minor sentences given to delinquents in Tasmania can be expiated by working in community schemes on Saturday mornings without pay. Security can be a problem in such schemes.

TMSV indicated that it had had work carried out by the CMF as an exercise. In those circumstances, good supervision by a representative of the museum was still required.

BTMS is aware from Brisbane City Council experience of the difficulties it would have in supervising unemployed labour. They have a resident caretaker who would be able to assist with supervision.

BTPS has had experience only with Ballarat Council employees in having work carried out.

Conclusions

The following conclusions were summarised from the discussions:-

- (1) Museum committees should clearly define the nature of tasks to be performed in a given time.
- (2) Outside employed labour should only be used on "heavy" or "rough" jobs.
- (3) If members can be employed somewhat more detailed and intricate work can be performed, as workmanship and security will be better.
- (4) As close as possible supervision of outside employed labour is necessary, preferably by a museum member with both technical and administrative competence.

Workshop 1(b)

MANAGEMENT OF EXTERNAL FUNDS

Chairman - R.T. Wheaton (AETM)

Recorder - C. Andrews (AETM)

Four basic questions were considered in the analysis of this topic for discussion. The first task was to consider the functions of the manager. It was agreed that essentially a manager was the individual who could proverbially be called the "meat in the sandwich" in that he was responsible to the authority providing the funds and also to the members and employees of the Museum with the consequent possibility of conflicts of interest.

The next question raised related to the additional legal and or moral responsibilities that could be involved as a result of receiving such funds compared with the use of "normal" museum funds. It was thought that the main problem here concerned the need to ensure that the funds were used efficiently, and the work carried out was of adequate quality. Also it was probable that all accounting work associated with such a project would need to be subject to some degree of additional external audit to the normal requirements of the museum. As an example reference was made to labour employed under the R.E.D. scheme and the responsibilities associated with the preparation of pay packets, wages records and workmen's compensation premiums.

The issue of problems arising from the control of such funds was raised and the concensus of opinion in this regard was that the control would depend a great deal on the particular purpose for which the funds were allocated. In one example cited the project was completed subject to prior approval and an account for the costs involved forwarded to the financing authority which remitted the amount accordingly. Some difficulties were encountered in respect to part subsidies where moneys had to be spent before receiving the allocation, and there was also the liquidity problem of interim finance due to the administrative time-lag before the receipt of the reimbursing cheque. A question also raised related to who should be ultimately supervising the project, the museum society or the financing body.

The final question considered the additional organisational skills that would be required as a direct result of the receipt of external funds. In the use of such funds for employing additional labour, there was the need for adequate supervisory expertise to ensure that all work was carried out in a practical and efficient manner. There was also the need for professional expertise on the management side, in the administration of finance and the preparation and planning for specific projects i.e.: accounting, engineering etc. If such skills were lacking from an organisation they would need to be obtained at additional expense, which could prove prohibitive in some instances.

Workshop 1(c)

PREPARATION OF ASSISTANCE SUBMISSIONS

Chairman - I. Mison (MOTAT)

Recorder - T. Atherton (BTMS)

This subject had been very ably spoken on only minutes before the workshop by Mr. David Williams, Deputy Town Clerk of the Salisbury Corporation, therefore not leaving a great deal to be discussed by the workshop.

It was unanimously agreed that all applications for subsidies or grants must be very well documented and that the main points must be established in the first few pages otherwise the reader would probably lose interest and dismiss the whole proposition.

Invitations should be issued and periodically followed up to members of councils and/or boards and governmental agencies to inspect either sites or present facilities. Plenty of publicity and back-up material must be available to support claims of respective applications.

Also noted was the fact that there seemed to be a general drying up of available money all around the world for our type of projects and that what money was available was subject to increasing competition for its distribution. BTMS advised that in Queensland there were government subsidies ranging from 33-1/3 to 50% depending on the project.

BTPS advised that they had recently obtained a \$50,000 grant for their new barn and workshop facilities from the Victorian Government.

The subject of bequests was raised by WTM and THS said that their members were encouraged to make provision in wills etc., and noted that this had borne fruit in one instance. Other COTMA members indicated that they had not received bequests.

The need to show prospective funding authorities that something was under way and that the respective societies are willing and prepared to help themselves was noted. Schemes on paper only were not viewed with much favour.

Workshop 2(a)

MAINTENANCE AND EXCHANGE OF ARCHIVAL
MATERIAL

Chairman - K. Stodden (TMSV)

Recorder - B. White (AETM)

It was generally accepted that archival collections included both documents and photographs and objects of tramway significance.

The collection of each museum was usually related to the aims and objectives of the particular museum (e.g. the B.T.P.S. has material mostly to do with the Ballarat tramways).

Present Policies

Representatives of individual museums were asked to summarise the current state of archival activities. Comments are summarised as follows: -

- BTMS : Anything to do with tramways and railways is kept. A copy of the archives list is sent to the Public Library.
- WTM: Anything from any N.Z. tramway is retained. An archivist is appointed. A filing system is being set up.
- SPER: Has an archivist who collects anything Australian - some materials have been transferred to more relevant museums. It is intended to microfilm documents on microfiche. It is aimed to copy all photos - to hold reserve copies. Considers its present role partly as a "receiving depot" for later distribution to regional museums.
- AETM: Has not organized inventory in great detail.
- THS : Material not of particular relevance is immediately sent to the appropriate group. Originals of photos and documents go to a government authority and two copies are retained.
- TTMS: Government tramway records have been lent for photocopying by the museum. The mammoth archival job lacks continuity of one single archivist.
- WATM: Gathers all bus and tram information.
- BTPS: Has S.E.C. records locked away until good, secure display can be arranged. Publicity about the museum usually produces a response of items from the public.

Types of Collections

Two categories of items were recognised, those of interest to the general public and those of interest to the historian.

It was considered that an archivist should be appointed with control of access and safety of the collection.

The Archivist should consider the uniqueness of an item. Is it as important as having a good general example? From public point of view the unique is very little known, whereas a common item has greater significance.

The question was raised as to whether museums should allocate funds for buying archival materials. None do so at present.

Safety of Collections

There is a serious risk of vandalism, theft, fire and water damage. Initially items may be stored in various members' homes to avoid excessive concentration of materials in one location. Ideally, items should be maintained in an on-site air conditioned environment which was waterproof, dustproof, sunproof and theftproof. Museums would find this very difficult to achieve.

Photographs are very hard to preserve. It is important to use copies for display and to have back-up copies in case of loss. Changes of displays will contribute to longer life of items.

A warning was noted that forwarding items to State archival or museum organisations did not necessarily ensure preservation. Lack of storage space has meant that some have either selective or random sampling accession policies. Their policies should be checked before making material available.

Insurance companies are probably not interested in cover of archival material. There is probably little point in insuring it anyway.

Exchange of Archival materials

It was considered desirable to set up a library system for lending archival material. An inventory of materials could be available for the information of other museums.

It would be well to follow the guidelines of the Museums Commission for future action.

Display of Archival material

It was agreed that Museums had some responsibility to try to put representative archival materials on display. It seemed inappropriate to hide everything from view of the present generation for the sake of preservation for the future.

Workshop 2(b)

DEVELOPMENT OF AUSTRALIAN TRANSPORT
BIBLIOGRAPHY

Chairman - K.S. Kings (TMSV)

Recorder - R.T. Wheaton (AETM)

It was considered that the listing prepared by M. Breydon (TMSV) should be upgraded by the inclusion of the two returns which had been received as a result of it having been circulated. The result should be circulated by means of a COTMA Memorandum for all member societies for perusal and elaboration.

The listing should be initially restricted to books, booklets and magazines and that the memorandum request that all replies to be received by a date to be fixed to enable an amended compilation to be tabled at next years' conference.

The question of microfilming records and the indexing of photographic records etc., should be subject to further discussion at the next Conference. A similar position would also apply to general archival material i.e. drawings etc.

The field of parliamentary papers, Hansard references, University theses, pamphlets etc., was considered to be an extensive one and it was decided that the matter would be referred for further discussion next year as to how they could be indexed. In addition, it was also decided to investigate during the year, for reporting to the next conference, the means by which the location and availability of material could be indicated by a coded index.

Workshop 2(c)

FURTHERING INTERNATIONAL COMMUNICATIONS

Chairman - W. Kingsley (COTMA)

Recorder - G. Jordan (BTPS)

Discussion was circulated around the International Association of Transport Museums (IATM). This organisation was formed in 1968 when it was formed as a branch of the International Association of Museums which affiliates museums throughout the world. IATM has 128 museum members around the world. In addition to meetings and/or conferences (similar to COTMA), it also acts as an exchange between different organisations.

The IATM appears to produce publications on a similar basis to Trolley Wire, Tramway Topics etc., but covers wider varieties of topics. If COTMA were to join IATM, news in our abovementioned magazines could be sent to IATM for inclusion in their publications. Before this can be done publishing and copyrights must first be checked out.

Do Transport Museum Specialists overseas want to know what developments are occurring in Australian Tramway Museums? The workshop came to the conclusion that they would.

MOTAT are members of IATM. SPER were uncertain whether they were at the present time, but have been Representatives of both these

organisations felt it is worthwhile to belong to IATM.

Consideration was given to whether COTMA or the separate COTMA affiliated museums should join IATM.

It was recommended that only COTMA join IATM on behalf of all its affiliated museums. COTMA will find out how it will be possible to obtain enough copies of IATM publications to distribute to its members. MOTAT representatives stated that through IATM publications their museum has acquired some technical gains and skills.

In conclusion, the affiliated COTMA museums would stand to gain a great deal from membership of IATM, and would become better known throughout the world.

Workshop 3(a)

DAY-TO-DAY AND LONG TERM PER-WAY
MAINTENANCE

Chairman - T. Atherton (BTMS)

Recorder - W. Kingsley (COTMA)

Delegates to this workshop discussed a wide range of technical problems. The following points were noted as being of special importance:

1. Track needs to be on good ballast, lifted well above sub-grade and be well drained.
2. In concreted track there is no electrolysis problem if concrete completely surrounds the rails.
3. Regular inspection of the whole length of track, looking for joint failures, subsidence of subgrade, loose bolts, is essential.
4. Where new subgrade is placed across boggy or high water table ground, heavy compaction only brings water to the surface.
5. Good level track provides a better (smoother) ride for single-truck cars (less oscillation) and for bogie cars (less twisting).
6. Old sleepers under bitumen must fail and can best be repaired by complete excavation by hand around the rails, removing the old sleepers if possible, realigning the rails, and re-setting in concrete of 25 to 36 MPa strength vibrated with many hands on star stakes or by sausage vibrators.
7. Lack of tie-bars, especially in special work, can be overcome by using old rail welded transversely across the gauge.

Workshop 3(b)

ROUTINE TRAMCAR MAINTENANCE

Chairman - M. McAulay (SPER)

Recorder - R. Gilbert (BTPS)

Air Systems

Recognising the importance of braking and the dependence in the majority of cars on the air system for this function, attention was initially given to air system maintenance.

Inspection requirements for reservoirs were observed to vary between museums. MOTAT, observing that one of their tanks had recently failed a pressure test, indicated that tanks below 5 cubic feet were not subject to inspection. In N.S.W., most regulations affecting trams had been deleted and tanks were not inspected. Air tanks in service stations are noted to be inspected annually in New South Wales and South Australia. WTM hydrostatically tests air tanks before trams enter service after overhaul, and indicated this worked out to be about a two year cycle. AETM indicated that as its trams had been restored, the tanks had been hydrostatically tested by the State Transport Authority at Hackney Depot. BTMS stated its equipment was subject to inspection by the Machinery Department and some items have failed their test. They advanced the Queensland standard as a good starting point for consideration.

It was resolved that consideration should be given to establishing standards for museum air systems at the 1978 Conference.

Subsequently, frequency of drainage of tanks was discussed. MOTAT and SPER advised that they drained their tanks at the end of each day. The AETM drains its tanks in the much drier St. Kilda environment bimonthly. Cars owned by the THS are fitted with automatic drains and lubricators.

Maintenance equipment

The desirability of acquiring specialised tools for maintenance purposes was discussed. SPER representatives observed that they had carried out a wide range of activities without specialised tools and suggested that heavy investment in specialised tools was unwarranted. Where specialised tasks were to be attempted, it was important to obtain the tools before the job was tackled. One museum drew attention to circumstances in which the tools had not ultimately been secured until the work was virtually completed, rendering them redundant. WTM suggested that if a short term specialised job is to be done and special tools are required, it may be better to contract the job out.

It was agreed that the matter basically revolved around the need for good work planning and hence good equipment planning for its implementation.

Car wiring

It was agreed there was a need for a good standard of wiring in trams as in other parts of the museum. Reference was made to the electrical section of the Expert Panel on Museum Safety Standards, published elsewhere in these Proceedings. It was resolved to request further discussions of this topic at the next conference.

Maintenance discussions

It was suggested that a greater proportion of workshop time might be set aside for maintenance discussions at the 1978 conference.

Workshop 3(c)

HORSECAR OPERATION

Chairman - A. Cooke (TMSV)

Recorder - P.C. Kahn (SPER)

Operating Experience

Initially, delegates who had horsecars were asked to summarise the experience of their organisation.

THS - had a problem obtaining a horse. However, once obtained it was fairly simple to train. The horse can be affected by other vehicles in the early stages of service. The future operations of THS at Ferrymead will include horse vehicles as part of the scene. The horsecar is currently being restored.

BTMS - had difficulty obtaining horses for two occasions of special operations on former Brisbane tram track, capable of walking on hard pavements and pulling a loaded car. The two occasions proved successful both in patronage and publicity, particularly from passing motorists. The BTMS had not considered use of horsecar at Ferry Grove but could possibly do so subject to suitable ballast, etc.

TMSV - found that the horses became very well trained and anxious to go, being milkman's horses. TMSV first trained horses with a long harness, then graduating to a standard length harness. One problem has been to train the horse to ignore bell sounds, as it tends to move automatically. The TMSV originally considered horsecar operations as a substitute function prior to full electric operation, but now would continue horsecar service after electrification.

The TMSV found the Bylands operation very successful - one to two man operation with a half hourly service, fares 40¢ adult, 20¢ child. It was felt that there could be a 25% increase in persons visiting the museum through horsecar operation rather than static museum.

AETM - displayed a horsecar at St. Kilda but did not own it. As it had very fine wheel profiles it was readily inclined to leave the track. The brake rigging was missing. It was not intended to operate the car.

WTM expected to obtain ex-horsecars from the Kelburn cable car line when new cars are delivered.

Care of the horse

At Bylands the caretaker looks after the horse, food costs not known. Information is readily available on care of horses. A local veterinary surgeon checks the horse every six weeks. Food is varied (not all grass). Advisory information on horses is available from local officers of the Department of Agriculture.

The attitude of the R.S.P.C.A. was usually quite agreeable to horsecar operation, however fringe animal protection groups can be a problem.

Operation away from the museum

If the opportunity is available to use the horsecar on existing tramway trackage, it may be worthwhile to do so. Transport costs can be very high for the horse and car. Horsecar service can be distracting to passing motorists as both TMSV and BTMS found with street operation on reserved track, and vehicle accidents were observed as a result. The TMSV advised the local police and local council about proposed operations - BTMS took similar action. BTMS had to clean grooves and surrounding area of track for car and horse and also evidence of horse after operation ceased.

Other details

It was suggested that it is cheaper to own one's own horse - much cheaper. One matter to watch in operation is the grades. Various brake shoes are available, cast iron, cast brass, wood. TMSV found that brake shoes were wearing as the shoes on the car were only holding-brakes in cable-car days (having been a cable trailer).

Emergency procedures particularly if the horse gets out of control were discussed. TMSV suggested the need for a quick horse release system, whereby the driver could pull a pin to let the horse go.

Workshop 4(a)

ENFORCEMENT OF MEMBER SAFETY
STANDARDS

Chairman - W. Daniells (BTMS)

Recorder - T. Atherton (BTMS)

COTMA - enforcement of standards

The workshop commenced by considering whether COTMA would be able to oversee or enforce safety standards upon member museums. It was agreed that COTMA had been set up as a consultative co-ordinating body rather than an administrative one. However, any accident within one museum reflects on the remainder. There is a need for a moral commitment to safety standards and it would be helpful to move towards standardisation of procedures. It was agreed that enforcement of standards by COTMA was impractical, but constructive criticism between museums could be helpful.

Effect of local regulatory standards for safety

Some aspects of museum operations are already well controlled by local safety regulations, but actual tramway operations may not be. Where there are no adequate local standards, it may be worthwhile for COTMA museums to draw up uniform standards and then if necessary they can be submitted to relevant local authority. It was suggested the Expert Panel on Tramway Safety Standards might examine this in more specific detail.

It was noted that SPER had drawn up its own rules for operation after Sydney tramway operation ceased as rules which had formerly controlled the NSWDT had lapsed. It was indicated that regulatory bodies had not expressed interest in perusing these rules.

It was agreed there were three levels of safety responsibility -

- (a) Broad policy guidelines which could be encouraged by COTMA
- (b) Specific standards relating to each museum operation and
- (c) Individual understanding of standards by members at each museum.

It was agreed to draw up and submit to the Council a policy statement for adoption by COTMA (see minutes elsewhere in the Proceedings), and that individual museums should agree to draw up standards and instructions to meet their own circumstances as a matter of moral obligation.

Museum Member Compliance - Role of Safety Officer

It was agreed to recommend that each museum appoint a Safety Officer to oversee safety standards. WTM already has such an officer responsible to the General Manager, with the power to enforce compliance with established standards. It was felt such an officer should have the back-up of a committee who cover all the relevant areas of museum operations.

Education of members is essential. It is not possible for the safety officer to continually oversee all operations, and motivation of members towards safety should be encouraged. Lectures from outside bodies on aspects of safety were seen as essential. It was felt that once museum management had a well developed respect for safety standards, the remaining members would follow the example set by their officers.

It was agreed that the Safety Officer must have the power to stop a dangerous operation. Choice of personality should be one factor considered in appointing an effective Safety Officer.

Workshop 4(b)

ESTABLISHMENT OF OPERATING SAFETY STANDARDS (INCLUDING FIRST AID)

Chairman - M. Skinner

Recorder - R.L. Jenkins

Safe-working of cars

It was agreed that safe working procedures were essential
(a) to avoid collision and (b) to avoid confusion amongst the public.

Timetables and despatchers can be used to avoid confusion amongst the public. Telephone, radio, signal and staff systems can be used to avoid collision.

An operating handbook is considered desirable. While it is not practicable to have universal handbook for all museums, uniform minimum standards could be incorporated into a handbook.

All operating museums represented were using a system of penalties (including suspension from traffic duties) to back up safety measures.

A lengthy discussion took place on who should drive trams. A very vocal group (consisting principally of delegates from operating museums) insisted that only members who have spent time working on vehicles, track, overhead etc., should operate trams. It was felt by these delegates, that by working on these items, members became more aware of the condition and the operational characteristics of the exhibits. This, they felt, was particularly important if faults developed during operating periods.

This scheme was also considered to act as an incentive to encourage non-active members to become more active.

Safe operation amongst the public

In addition to previous comments (above), it was felt that each museum group should give careful specific consideration to safe operational standards amongst the public in the light of conditions that exist at their own museum site. Questions that need to be asked include whether the public is well informed as to proceedings and practises at the site. If not, consideration should be given to the need for a public address system and the adequacy of information signs.

First Aid

Delegates felt that ideally all traffic staff should be trained in First Aid. First Aid training is readily available, but many people seem apathetic towards it.

Conclusion

Quote from BTPS delegate:- "The key to safety is vigilance".

Workshop 4(c)

PREVENTION OF DAMAGE TO EXHIBITS AND VEHICLES

Chairman - R. Gilbert (BTPS)

Recorder - P. Rendall (THS)

This workshop looked at five major areas -

1) Static Displays of archival and small relic material

It was thought that modules of photographs and other material should be displayed where appropriate. The emphasis was thought to be

best directed at simplicity and clarity, and, where possible the display should be behind glass or perspex to give maximum viewing with least risk of physical damage. It was also suggested that the application of a feather duster on a regular basis would improve the displays.

2) How far do we let the public go in the Depot?

It proved hard to come to any consensus of opinion, largely due to the varied uses our depots get put to (e.g. restoration, storage of derelict vehicles, storage of valuable equipment) and the size and space available for access. It was thought by some that guided tours of the area usually provided the public with valuable insights into the condition of unrestored vehicles and the maintenance and restoration of exhibits.

3) Trams - Do we permit public access to static vehicles?

It was thought that in some cases it was worthwhile to permit visitors to examine non-running vehicles, particularly when these were notably different to cars in service. Delegates thought that signposting and labelling could assist in public appreciation of vehicles.

4) Trams in Traffic

Do we adopt normal traffic practices, or do we develop a guided tour approach? It was thought that crews should adopt the "guided tour" approach, which has advantages from 3 major view points. Firstly the public relations approach since people who are "involved" by the crews are less likely to cause thoughtless damage. Secondly people are able to ask and have answered questions and be told the history of the museum and vehicles. Thirdly, an involved crew is able to keep a closer watch on the travelling public.

5) The Benefits of Guided Tours

As is seen in the comments on the use of crews, the involvement of the public by using guides and crews is seen as a good thing. It gives the museum some control of the visiting public, it enables us to inform them more personally, and it is often safer to have people guided through some areas e.g. power houses (where practical) depots and workshops.

General Discussion

In the general discussion, there was emphasis that museum members should not hesitate to discipline children, particularly when they are engaging in dangerous or destructive behaviour.

It was suggested that there be an orientation point somewhere in the museum e.g. AETM's entrance bookshop and signboard - slides or videotape - to introduce people to the museum and to inform them about some of the do's and don't's. A good museum handbook may be helpful as explanation sometimes stops unwanted investigations. Exhibits should be rotated - variety lessens boredom. The provision of some operable displays (destination blinds, gongs, non-powered controllers) enables people to push, pull and wind, hopefully without damaging more valuable exhibits.

By involving people through personal contact and clear signs we may manage to minimise the extent of damage.

Workshop 5(a)

FIRE SAFETY

Chairman and Recorder - R. Silcock (THS)

Initially the workshop examined the following draft safety programme for tramway museums, prepared by delegates from the Tramway Historical Society, Christchurch :-

" FIRE SAFETY PROGRAMME FOR TRAMWAY MUSEUMSSTAGE ONE : Fire Prevention

Ban smoking - explain to members why.

Improve housekeeping - regularly clean out work areas - remove waste, particularly oily rags, from buildings e.g. waste takers - remove shavings from around woodworking machines or have machines vented.

Welding practice should be developed to minimise hazards from slag, molten metal, sparks etc. Develop practice of maintaining a fire watch for at least 30 minutes after work has been completed.

Do not overload electrical wiring - Turn off at switchboard all appliance points when building not in use.

Dangerous goods i.e. petrol, kero, meths, paint etc. should be removed from buildings where trams are housed or restored and kept in special inflammable liquids stores detached at least 30 feet from other buildings.

Fire load to be reduced. The fire load of a building is the amount of combustible fuel stored therein. Old newspapers for fund raising drives and combustible wood and upholstered tram parts should not be stacked or stored in tram barns with tramway vehicles.

STAGE TWO: Spreading the Risk

Do not put all your "eggs" (trams) in one "basket" (barn) unless the "basket" has adequate fixed fire protection i.e. an automatic sprinkler system. Until tram barns are sprinkler protected trams should be spread out and kept in separate buildings, in this way fire damage will not necessarily close down operations. Consult insurance company for fire separation of buildings.

STAGE THREE:

First Aid Fire Fighting Appliances should be provided. These are hand extinguishers, bucket pumps and hose reels. These provide basic fire protection for small fires discovered soon after ignition by persons in occupation in the building. In commercial premises they give basic protection for 25% of total time - much less in the case of weekend operated museums. Appliances should be clearly marked, easily accessible and in sufficient numbers to be within close range of all parts of the building (N.Z. - 1 x 10 litre extinguisher per 250 m²; 1 hose reel or bucket pump per 500 m²).

STAGE FOUR: Fixed Fire Protection

There are two basic forms of fixed fire protection.

- a) An automatic fire alarm system
- b) An automatic sprinkler system

How do you decide which type of system is suitable for your operation? Automatic fire alarms in the simplest form are considerably cheaper than automatic sprinkler systems. However, from New Zealand experience (see attached chart) it has been found that automatic fire alarms are only suitable in buildings where slow fire growth is likely to be experienced. Unfortunately this does not include tram way museum operations which generally include buildings which will experience very rapid fire growth. For an automatic fire alarm to be effective it must have a connection to a local fire brigade and have an adequate water supply for the fire brigade to take water from for fire fighting operations. Without these an automatic fire alarm is a waste of money. Automatic fire alarm systems may be suitable for museum operations where the museum is in a stage 2 situation and has spread its risks by placing its assets in a number of different buildings. In such buildings where it is appropriate to place an automatic fire alarm system, it is strongly recommended that roof vents and curtain boards be used to divide the building up into areas not greater than 180 m². Curtain boards pond the heat beneath the roof and the roof vents open to allow heat, smoke and gas to escape to atmosphere. This assists the fire brigade by limiting the internal spread of the fire and aids fire fighting by clearing smoke and gas from the building.

It would be appropriate to mention here that hydrant and hose systems attached to a substantial water supply are by themselves considered merely first aid although they may be considered as an adequate water supply in buildings protected by automatic fire alarm systems.

WARNING

Do not be sucked in by smooth talking fire protection salesmen who advocate smoke detection as a means of fire protection. In New Zealand this is approximately 10 times more expensive than protection by conventional heat detectors. In addition, they are unsuitable for tramway museum operations as they have to be de-sensitised to the point where they are little faster than the conventional fusible heat detector (see Figure 21).

Automatic sprinklers are undoubtedly the ultimate in fire protection for tramway museums. Automatic sprinkler systems give 24 hour protection and ensure that all your fires are little ones. At worst in a sprinkler protected tram barn it could be anticipated that one vehicle will be seriously damaged by fire with minor damage to adjacent vehicles. An automatic sprinkler system consists of a network of pipes with regularly spaced outlets which are operated by the actuation of a heat sensitive device - the sprinkler head. There is one sprinkler head to approximately every 100 sq. ft of floor space. The sprinkler system for a tram barn is classified as ordinary hazard group III and requires a water supply of not less than 135,000 litres. This water may be taken from a towns main supply, elevated tank supply or pump and tank supply and is fed through a sprinkler alarm valve into the sprinkler system pipework.

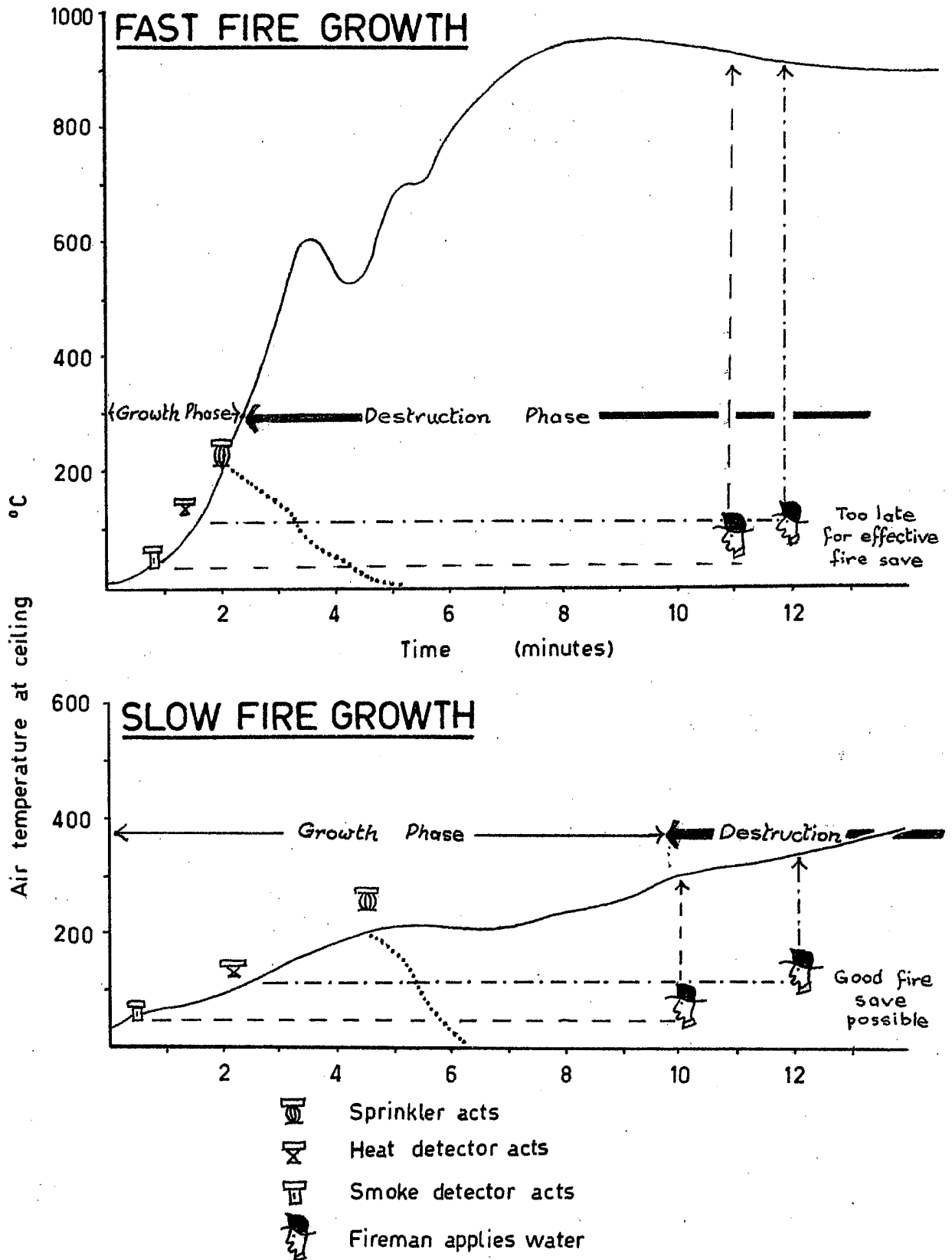


Fig. 21 - Effect of differing responses of fire detection equipment in situations of fast or slow fire growth.

Sprinklers are costly. It has been suggested that the cost of an automatic sprinkler system is roughly equivalent to carpeting a building. At Ferrymead, we have to some extent got around this problem by removing old sprinkler pipe work from buildings which are about to be demolished. Sprinkler pipework consists of range pipes i.e. those pipes up to 50 mm in diameter which have the sprinkler heads and distribution pipes - those pipes which lead back to the valves and from which the range pipes are fed. At Ferrymead we carefully measured all range pipes and numbered them and then pieced them together like a jigsaw. So far we have only needed approximately 100 ft of special distribution pipework to be fabricated commercially. All this sounds easy, however, a sprinkler system is a complicated piece of engineering and the pipework must be designed hydraulically, therefore, it is strongly recommended that museums canvass sprinkler companies' drafting offices for new members!

It is understood that the method in New Zealand of extracting sprinkler pipework from abandoned buildings is not possible in Australia. This matter should be very carefully explored with the sprinkler companies emphasising as has been done in New Zealand that although tramway museums are run on a commercial basis all labour is voluntary and what profits are made are used to defray running costs and further preservation work. All possible methods including the use of the news media should be used to relax sprinkler companies attitudes towards the re-erection of old sprinkler pipework in tramway museums.

Failing success in this area, it is physically possible for all sprinkler pipework and alarm valves to be fabricated from readily available pipe fittings, check valves and stop valves. It is only the sprinkler heads that are of a special nature.

Remember only an automatic sprinkler system with an adequate water supply will give your tramway museum the degree of fire protection which will ensure that your venture is not destroyed by fire."

Discussion

A fire within any COTMA museum would almost certainly result in the museum becoming a total loss in present circumstances.

Considerable discussion ensued on the possibility of installing automatic sprinkler systems. It became evident that at least in Australia, these remain the property of the sprinkler firm. Installation by other than these firms would negate insurance advantages, even if the system were correctly designed and the fittings could be obtained and fitted to the appropriate standards. Where a mains water supply was not available, an additional cost for tanks, pumps and motors would be incurred. It was suggested that COTMA seek advice from local Australian sprinkler installation firms on behalf of all museums to investigate the possibility of securing a system suitable for their needs.

Delegates agreed that regular fire drills were necessary, that the correct type of extinguishers should be on hand and members should know how to use them. All operating vehicles should be fitted with fire extinguishers.

It was suggested that each museum invite a representative of their local fire authority to the museum for an inspection. Apart from any useful advice, it can be helpful if fire officers have some idea of the layout of the museum in case they are called to it.

Workshop 5(b)

ELECTRICAL SAFETY

Chairman - N.H. Gipps (TMSV)

Recorder - J. Hudson (BTMS)

As a result of the workshop discussion, the following guidance standards were developed :-

1. A.C. SUB-BOARDS

Circuits on sub-boards should be identified and also fuse ratings and type of fuse. Each sub-board should have a main control switch.

2. LIVE LINE WORK

Working on live conductors is not considered to be safe practice in a museum situation, and the section to be worked on should be isolated and earthed between the point of supply and the work site. It is necessary to earth both sides of the work site if there are live conductors beyond it, or A.C. conductors passing above the trolley wire.

3. ROLLING STOCK ELECTRICAL WORK

Work on rolling stock should involve primary and secondary isolation i.e. isolation of both car and power supply. The car should have notices fixed at both ends identifying the man in charge of work on the car.

If two separate sections e.g. electrical and mechanical are involved, both names should be given.

SUB STATION OPERATION

It is desirable to separate operating staff from the sub station equipment by using remote control equipment. Only properly trained operators should be employed within the sub station itself.

When isolation of feeders is carried out, locks should be used and the operator identified on the danger notice attached to the switch or circuit breaker.

PERSONNEL TRAINING - ELECTRICAL WORK

Anyone working on electrical work should be as highly trained as possible.

Workshop 5(c)

CONSTRUCTION SAFETY

Chairman - C. Perfect

Recorder - P. Rendall

Discussion on this topic was based on the broadest meaning of construction, that is covering track laying, overhead erections and did not solely relate to buildings.

It was apparent from comments made that whilst outside contractors had been used for some works such as the erection of the structure of buildings and earthmoving, most of these tasks are handled by museum members, often inexperienced, because of economic constraints imposed by limited funds.

In initial stages of building a museum, this "do it yourself" requirement has resulted almost universally in "improvisation" both in construction systems and type of equipment and methods used.

Whilst improvisation could be managed in a safe manner the group felt that there was a danger of less safe procedures and equipment being used than would have been the case if the right machinery for the job had been used.

As museums continue to expand the nature of tasks to be undertaken increased and the likelihood of any techniques being reused in a short time becomes more remote. This leads to difficulties in museum personnel becoming familiar and experienced in that area of work, particularly where improvised methods are used.

It was considered by the group that each museum should have its own safety standards perhaps based on safety procedures set by COTMA.

However, it was also agreed that this type of rule has to be promoted by the executive of the museums both by their own actions and by the publication and enforcing of them.

Various individual systems of signs and methods of providing security to power supplies was commented on including standardisation of warning systems where necessary.

In conclusion it was felt that in the initial stages of museums, safety emphasis was extremely important in view of the inexperience of members and type of methods and materials used in construction.

This situation tends to change with age as members become used to working together, with better equipment and better qualified personnel. However, safety training was needed at all stages of development.

Workshop 6(a)

DEVELOPMENT AND USE OF PUBLICITY

Chairman - R. White (AETM)

Recorder - G. Ford

The workshop discussed four topics as follows:

Is there a danger of over-publicity generating more traffic than a museum can handle?

It was generally agreed that there is no danger in over-publicity provided that it is planned for. To have a large number of people descend on a museum and have no operators is both bad public relations and dangerous to the exhibits and the public.

It was also agreed that publicity leads to requests for charter operations. BTPS reported that they already operate such services during the week quite successfully. Other museums also reported on successful week day charters, however it was stressed that it is important that adequate preparations and precautions be taken - these to include actions to be taken in the advent of a derailment i.e. special team of members; hire of local crane etc., local crane hire company to be given details of equipment needed to rerail each type of tram.

Should all aspects of operations be advertised? How?

Discussants concluded that in paid advertisements, you are required to get your message over in the way that appeals most to the public eye and at minimum costs. The advertisement should not be crammed with information but simply put over the message of where and when the trams operate. This method is the best for most advertising.

Secondary advertising such as publicity brochures, leaflets etc., can give more information about the museum, static displays etc. For special display, an advertisement including this fact should be used instead of the normal one and should be larger.

It was unanimously agreed that word of mouth is the best publicity, therefore the publicity brochures visitors take with them are also most important.

SPER drew attention to its "Thank you for visiting brochures" given to visitors to the museum. The BTMS also presented their information brochure, given to all visitors to take away. Advertising of phone numbers in the telephone book and elsewhere was discussed. Some museums preferred members' numbers to be prominently shown and others the museum's number. The BTPS said they have had no problems caused by advertising the museum phone number on brochures while the BTMS said that for security reasons, members' numbers were promoted, but that the museum number is still listed in the phone book. It was agreed that this facet of advertising is up to each museum.

Other methods raised involved advertising the museum on the back of tickets, and letter box distributions of brochures in selected areas. Informing schools towards the end of the year is a good way of obtaining week day visits as the teachers are usually looking for places to take children at that time of the year. The participation in "Services Booklets" sold by "Lions" and other groups, to raise monies for charities is good,

although it means that the museum is required to give free rides to people who buy the books and only receives publicity in return. The BTMS pointed out that these are illegal in Queensland and AETM pointed out they were under investigation in S.A.

Is there an inexpensive, but effective way of advertising?

The BTMS said that it is easy to obtain all the free publicity you require from the press simply by treating the press correctly. Their method was borne out by the fact that in 10 days in January 1977 the BTMS received coverage by more than 14 media outlets just for the handing over of a cheque at the opening of a small display.

They pointed out that it is important that a press release be short, and written in simple language and in such a way that it can be used "as is" without the necessity to rewrite or edit it. Releases for events which will have occurred by the time the publicity is used should be written in 3rd person, past tense. Pre events publicity should be 3rd person, or 2nd person, future tense. An important requirement is to get the press on your side by providing good refreshments for them and inviting the "News Editor" in the case of radio and T.V. stations and the "Chief of Staff" in the case of large newspapers, or their representatives. In all cases of publicity, these are the people you send the press release to inviting them to send a representative if they themselves cannot attend. It is only on very important occasions Editors and Managers are invited to attend. These invitations would be additional to those to the Chiefs of Staff etc. It is also advisable to build up a list of reporter contacts - usually one per outlet - who can be contacted anytime (obtain unlisted home numbers from these people when they offer them to you. Do not ask unless you are sure you will not offend!). These people will be useful if you need publicity in a hurry. Always send them press releases, as well as to their chiefs. They will then usually get the job. Send them personal invitations to functions also.

At "press" functions always provide plenty of everything even though all might not be able to stay. Excess food and drink can always be sold to members so there will be no loss. Running out of supplies however, creates ill will.

Suggested ways of obtaining press coverage for operations generally

- (a) Letters to the Editor, (possibly being reinforced by an article or photo elsewhere in the paper. Your "tame" reporter will arrange this!)
- (b) Radio and T.V. stations - community services.
- (c) Local free papers - these people are always after items of local interest.
- (d) Company newsletters etc.
- (e) Social clubs/notice boards etc.
- (f) Human interest stories for newspapers.
- (g) Having a gimmick is always a good method of obtaining instant publicity.

How can we relate publicity methods to the interests and abilities of members?

It is important to find out what skills and special interests members have and then use them to the museum's advantage. Any press contacts members have are vital advantage.

Examples of skills used well are those of the TMSV members who prepare exhibitions and displays and the AETM's use of members' drafting ability for signs etc. Questionnaires and personal visits with inactive members are the best way of finding out about their skills.

It is also important that the public be made aware of the fact that we, the operators, are not professional transit people. It is important that the voluntary aspect of our museums is stressed. The BTMS pointed out that they have found that meeting the visitors at the gate, introducing yourself and giving a brief run down on the museum first is the most effective way of achieving this. Their special circumstance of having only guided tours of the museum lends itself to this.

In conclusion, the best way to get publicity is to appoint a member interested in this field as a publicity officer.

Workshop 6(b)

THE ROLE OF STATIC DISPLAYS BEFORE AND AFTER OPERATION BEGINS

Chairman - J.C. Radcliffe (COTMA)

Recorder - L. Richardson (WATM)

It was considered essential for displays to be prepared and erected on some suitable site before museum operation physically commenced. It is vital to show the history of tramways utilising special skills of members. Security of exhibits is important.

After operations commence, the public is less likely to view the display material but it was considered to be a museum responsibility to continue maintenance of displays.

It was generally considered that displays at outside functions were not worthwhile based on return for effort.

SPER - has given up displays at model railway exhibitions.

WIM - has arranged display in a city Savings Bank office which was well lit at night. This generated great interest with free handouts. WIM will continue to arrange annually this type of display.

BTMS - has arranged an exhibit at ARHS Railway Museum with good return through money and interest by people.

It was considered that a single display could be used interchangeably before and after operation commenced and at outside functions with basically the same exhibit with some simple alterations appropriate to each particular venue. Generally it was considered one-day displays were not worth the effort.

TMSV arrange displays to cater generally for all age groups, whereas AETM has attempted to present displays to appeal to both adult and child groups.

Animated displays were considered to be very desirable for best results with static displays. An animated display for operation by public e.g. working of controllers - needs great care to avoid injury.

Desirably, someone should be on duty to supervise viewing of exhibits but it was realised this can be labour intensive. Some suitable form of fencing was considered essential for protection of static display material although it was thought that this may cause an unsatisfactory reaction by the viewing public due to restrictions. This in fact can be minimised by:-

- (a) Displaying exhibits in sliding glass door display case fitted with quality lighting.
- (b) Ensuring that exhibits, particularly photographs, are of good size with clear labelling, and
- (c) Avoiding excessive use of photographs.

Construction of exhibits should be very sound to avoid injury to public. Drapes made of dyed hessian have been found to be suitable.

Mounting of photographs on board - e.g. caneite - should be by use of tacks of approximately 20mm length to avoid dropping out at a later date. Other methods of mounting include use of rubber cement, milliners glue and double sided cellulose tape.

It is essential for quality professional lettering to be used. Captions should be brief but fully descriptive. Additional support information may be used in a supporting brochure.

Workshop 6(c)

BOOKSHOPS - THEIR DESIGN AND OPERATION

Chairman - I. Stewart (MOTAT)

Recorder - R.T. Wheaton (AETM)

It was considered that the bookshop should ideally be situated at a natural congregating point and be available for ready access by visitors during their visit to a museum. It should also be located adjacent to the exit to encourage visitors to obtain a memento of their visit. Use of a flow-through principle of visitors was considered desirable.

Books and other publications should be protected against damage by persons inspecting them whilst deciding whether they would make a purchase. It was noted that one museum has one copy of a magazine in a plastic cover for perusal, whilst keeping the other copies separately where they cannot be handled by the public. Similarly books of a more expensive price or limited market are kept behind the traffic and made available for inspection only on request. It was considered essential to have books above the mauling hands of young children.

The counter was considered to be primarily a cash and wrap area with a glass cabinet being used for small items e.g. tie-pins.

It was also considered desirable to have a completely separate rack for free give-away materials which would be clearly marked "free".

Advertising of books on vehicles, including possible use of roof boards was considered essential. Such advertisements could be in appropriate period style.

The recording of book sales could tend to be unduly complex involving a lot of work with little net results. The ideal method of recording sales was to use a cash register and have periodic stock-takes as required. Bin cards would be the basis of determining the point of reorder and quantities ordered.

The extent of goods offered for sale would be determined by experience and observation of clientele. This would vary between museums. Drinks and limited sweets (prepacked, non-perishable) were a desirable additional line.

Finally, it was observed that -

- (a) The building may be best built initially without windows for purposes of security, but this depends on location and general security of the museum as windows could allow display.
- (b) Visitors should be encouraged to enter the bookstore.
- (c) The bookstore should be provided with a feather duster to clean books etc.
- (d) Bulk storage of books, drinks etc., should be separate from public sales areas.
- (e) If the bookshop can be merged with the public display area, it could be advantageous from an operational view point as well as achieving the object (b) above.

Workshop 7(a)

TRAINING, ROSTERING AND MANAGING
OPERATING CREWS

Chairman - P.C. Kahn (SPER)

Recorder - R. White (AETM)

Current Practice - Crew Training

SPER - A chief driving instructor is in charge of training crews. On-road driving instructors train individual drivers. Conductor and theory examiner uses the SPER handbook as the basis of instruction for a written examination. Training sessions are held twice a year. Drivers have to be 21 years and have one year's service as a conductor. Conductors have to be 18 years. They work 3 trainee days under supervision. Specific training is given in methods of working from the footboard.

AETM - Training is done in outside hours as well as "on the job" Conductors are required to be members for 6 months before training: Motormen, who are restricted in number, are invited to train after considerable working experience in the museum, with a minimum of 2 years. The Operations Manager is in charge of the training scheme and decides when trainee conductors and motormen can go solo on permanent roster. Practical training of motormen usually extends over at least six months. Written exams for all conductors and motormen are set biennially for license renewal to cover the museum both morally and legally. The State Transport Authority does not wish to accept responsibility for training tram crews, arguing that its own operations in this area are now so restricted that it is unlikely to have any more expertise on the older AETM cars than the AETM itself does.

TMSV - Horse car driving is learned by doing it in public traffic.

Ferrymead - Trainees are conductors for 6 months before motorman training. Trainees drive in public traffic under supervision. Theory is examined orally. A medical certificate of fitness is required every two years. Examined orally by Ministry of Transport.

BTMS - To be trained by the B.C.C. with the endorsement added to the driving licence. Rules and Handbook being written. B.C.C. rules for minimum ages of 17 for conductors, and 21 for drivers. Likely to be two classes of driver: handbrake, and airbrake classes.

WTM - Does not insist on previous service as conductor, for driver training.

MOTAT - Time spent by the trainee in the workshop is regarded as a test of interest. Emergency stopping of trams is given important priority in training. Drivers are not encouraged to touch electrical equipment unless properly qualified.

BTPS - Conductor training - a practical one-day course. Driver training - motor licence required, minimum age of 21. Driver training with MMTB in St. Georges Rd. 40 hours at Ballarat under supervision, then examined in Melbourne.

MMTB - 3 days in driving school
 12 days on road under supervision
 2 days in school for conductors
 6 days on road under supervision
 3 months on probation.

No practical exam in cutting out motors etc.

WATM - Intend using Perth Tramways training notes. Hard work to be a prerequisite to driver training.

Rostering of Crews

AETM - 3 monthly roster; attempt to consider individuals
 Ferrymead - Attempts to keep crews together on steam tram.
 WTM - 3 monthly roster
 BTPS - Monthly roster
 SPER - 6 monthly roster. Traffic officer, 2 crews, 1 bookshop attendant.

Uniforms

SPER - Uniforms are a conscious attempt to be different from the former D.G.T. or the present P.T.C.

Conclusion

It was acknowledged that there should be a desire to have an air of professionalism, but there is a need to keep bureaucracy subdued. There is also a need to have as high a standard of competency as possible for safety's sake. Where there is no formal authority to lay down standards, it is in the museum's own interest to set its own high standards rather than risk having them imposed by an unsympathetic and unrelated authority at a later date.

Workshop 7(b)

MEMBERSHIP - RECRUITMENT, COMMUNICATIONS, RIGHTS, RESPONSIBILITIES

Chairman - W. Jessup (BTPS)

Recorder - R. Merchant, (SPER)

The comments expressed by participants can be summarised as follows :

Recruitment:

Membership is not pushed but is available to all persons showing interest in the museum and first contact is by brochure or personal visit to museum.

Concession membership is not general but junior, student, pensioner and/or family membership is offered by some groups.

Communications

Member communication is usually by local newsheet. Three groups have Board meetings which are open to members. Copies of Board meeting minutes pinned to a depot notice board or summarised in the newsheet are communications methods used by two museums.

Board decisions and the reasons for these decisions should be communicated to members.

There must be an opportunity for interested workers who may not desire to hold office to express opinions.

Although the governing body must approve programmes and set work schedules, there must be suitable communications to pass the required information to the working member.

Rights

Members should be given as much information and consulted (where practicable) as much as possible, subject to the rules, etc., of the group. Disciplinary action (where applicable) should be taken with extreme care subject to civil law and museum rules and regulations. Circumstances warranting disciplinary action are quite limited in a voluntary organisation.

Responsibilities

These are dependant on the individual member. Membership surveys are a good method of obtaining feedback from members not often seen or heard. All members, however, must acknowledge that they have responsibilities to the visiting public, and should be cognisant of their responsibilities towards their fellow members. Some members occasionally appear to consider their involvement in the museum as one of proprietary interest without regard to others, an attitude of mind which can lead to unnecessary unpleasantness.

Workshop 7(c)

PUBLIC CHARGES - THEIR EQUITABLE
DETERMINATION

Chairman - J. Carter (BTMS)

Recorder - T. Atherton (BTMS)

Current charges

Panel members were asked to detail the April 1977 charges. These are set out as follows:-

AETM, Adelaide - (Operating)

Charges \$1 Adult - 40¢ child - entrance and unlimited
number of rides inclusive.

BTMS, Brisbane - (Not operating but guided tour)

Charge 40¢ Adult - 20¢ child - \$1 family ticket
(any number of children)

BTPS, Ballarat - (Operating)

All day \$1.00 - 30¢ Adult - 20¢ child
(Recently increased from 20¢ adult - 10¢ child.
Soon to be increased again?)

MOTAT, Auckland - (Operating)

\$1.00 entry - Rides 10¢ Adult - 5¢ child.

STRPS, Sydney - (Operating)

40¢ Adult

THS, Christchurch - (Operating)

Adult \$1 Admission general area
Children 60¢ Admission general area.
Then extra small charge for ride on tram.

TMSV, Melbourne - Horse Tram Operation

40¢ Adult - 20¢ Child - Admission and Ride.

TIMS, Hobart - (Not Operating)

No charge.

WTM, Wellington - (Operating)

30¢ Adult - 15¢ Child per ride.

SPER, Sydney - (Operating)

25¢ Adult - 15¢ Child per ride - \$1 all day ticket -
also 50 cents family trip.

WATM, Perth - (Not Operating)

No charge.

What the money is used for

Delegates were then asked to consider whether they had to charge, why they did so, and what the money was used for.

TMSV - "Sunday Entertainment Act" requires that they must pay fee of \$5.00/Sunday to charge, rather than accept donation for a ride. Some patrons do not pay on the strength of this - Could cause difficulties in respect to fines and loss of face if Inspectors of Act were to receive complaints.

SPER - Similar situation - need to charge admission fee to include fare on tram. In the unlikely event of a government grant stipulating that entry fee be free, a charge could still be made to ride to cover operating costs. Estimate approx. \$1 per trip to cover costs. This is calculated on previous year's financial figures, then charges are set, including per-way and long term maintenance provisions.

AETM - Accounting System determines charges in effect - have several accounts which cover a wide range of museum activities with surplus going to capital works. A notional cost of \$5.00 per round trip covers inputs to deferred maintenance provisions such as track work, vehicle maintenance etc. Costs revised at time of annual budget.

WIM - Set up yearly budget and channel profit into capital works.

BTPS - 25% of revenue goes to tramcar maintenance - need 25¢ only per trip to cover costs.

Comparisons with other types of museums

Delegates considered that our museums, because of the different kind of display presented justified the charges such as they are. Museum patronage (or lack of it) is a good indication of value for money (or otherwise).

Participation of visitors in the museum's activities (e.g. riding trams) alone presents advantages of value above other museums with static or glass cased exhibits.

An explanation of where the money goes to the public goes a long way to making the public part with their cash without complaints and with a sense of purpose. It also helps in extracting donations once the public realises the costs involved.

REPORTS

REPORT (a)REPORT OF THE EXPERT PANEL ON TRAMCAR ACQUISITIONS AND
SPARE PARTS

Presented at the Third Australasian Tramway Museum Conference, Adelaide
1977.

Introduction

We have pleasure in presenting our report on the rationalisation of requests to the M & MTB for trams and equipment for preservation. During the year Mr. G. Cargeeg left the panel and you appointed Mr. M. McAulay in his place. Other members were Messrs. K. Kings, G. Breydon and R. Prentice.

Questionnaires

During January 1975 the panel sent questionnaires to Australasian museums requesting details to aid its deliberations. These comprised a policies and objectives section and an electric rolling stock data sheet. Replies were not received in time for consideration at the 1976 conference but have been used in the compilation of this report.

Museum Objectives

The results of the policies and objectives section are summarised in the attachment to this report. The panel found these useful when evaluating conflicting requirements but was concerned that the stated objectives of some groups appeared to be a rationalisation for what they had done rather than a policy basis for determining what they should attempt to achieve.

M. & M.T.B.

The panel then addressed itself to the question of what Melbourne trams may be required by various groups. It noted with concern the failure by several groups⁺ to accept prompt delivery of trams already allocated to them by the M. & M.T.B. and the possible effect this could have on future relations between the Board and the museum movement. It also noted the growing commercial interest in obsolete tramcars and the effect this may have on the availability, timing and cost of Australasian museum acquisitions. The panel does not expect trams, other than W2 series cars, to become available from Melbourne in the near future, however it has set out below its recommendations on the allocation of cars in the event of this estimate being incorrect. It has not prepared detailed recommendations on the allocation of W2 cars as the long-term supply of these cars and related equipment is considered adequate for museum purposes.

W3 and W4 Classes

The allocation of these trams and related equipment was considered at the 1976 conference.

⁺It may be noted that the groups which have failed to take delivery of trams allocated to them are not COTMA members.

L Class (101 - 106)

The panel understands the demand for these cars, and the 77E trucks, to be as follows:-

Complete cars - 1 - TMSV (104)
 1 - BTMS (106)
 1 - SPER (106)
 1 - BTPS (no. unspecified)

Set of trucks - 1 pair THS (for Christchurch 178)
 1 pair TMSV (for Victorian Railways 34)
 ½ pair BTMS (spare for above car)

6½

In addition there is a possibility that the M. & M.T.B. may wish to retain one car. The panel does not concur with the BTMS proposal to obtain a spare bogie as it considers the likely need for spare truck components to be low and the motors involved are common to other trams thus opening up alternative sources for motor spares. Nor does it consider an L class tram appropriate in the Brisbane collection as a comparative car. A comparative car should be of a design which is typical of a city, not a unique car or an intermediate step. For similar reasons the panel is concerned by the proposed SPER acquisition, however it does acknowledge that the Sydney case can be distinguished from Brisbane's due to SPER's special emphasis on the development of the Australian drop-centre car. The purpose of the BTPS proposal is understood to be to relieve the pressures of operation from the Ballarat cars. The BTPS already has two relief cars and proposes to acquire more (see below). It was generally agreed at the 1976 conference that W2 trams would be the preferred relief car-type for Australasian museums. However in this case this would cause some difficulties due to the continued operation of similar cars in nearby Melbourne. The panel believes that the BTPS should re-assess its total acquisitions programme for passenger cars in the light of the above.

VR Class (52 and 700)

No 52 has been requested by the TMSV. Interest in a car of this class has been expressed by SPER and a private source. The panel considers that as one or both of the latter interests may lapse there will be no conflict in the allocation of the VR class cars when they become available.

Y Class (469)

This car has been requested by the TMSV. No other sources of interest in the car are known.

Y1 Class (610 - 613)

No 610 has been requested by the TMSV. One car each has been requested by the BTPS and SPER (preferably 613). It is possible that the Bendigo Trust may also apply for one car in the future as a one-man fully enclosed bogie car would be advantageous on their tourist service. Cars 611 - 613 have been re-equipped with No 15 bogies which the M. & M.T.B. would retain in event of disposal of the cars. It would probably be possible to fit No 1 trucks (from W2 class cars) in their place.

X2 Class (676)

The panel believes that this car is unlikely to become available for museum use.

Works Cars (6-11, 15-17, 19)

These cars are as follows:-

<u>No.</u>	<u>Type</u>	<u>Remarks</u>
6	Suction track cleaner	Bogie car, derived from W2 components
7	Flusher	Bogie car, derived from W2 components.
8	Scrubber/flusher	Requested by TMSV (as scrubber)
9	Scrubber	Has 21E truck
10	Scrubber - ex Sydney)	One car requested by SPER
11	Scrubber - ex Sydney)	
15	Sleeper transport	Has 21E truck
16	Wheel transport	Requested by TMSV (for restoration as passenger car)
17	Freight	Requested by TMSV (for restoration as passenger car)
19	Freight	Requested by TMSV (for restoration as passenger car)

In addition to the requests above the BTPS and the Haddon group are each understood to be seeking a scrubber car for functional purposes. Numbers 6 and 7 are not suitable for museum use and none of the above cars are expected to become available for some considerable time. Consequently the panel believes these groups should construct track cleaning equipment on a bogie frame to be propelled by an existing vehicle. This approach would be less costly, would save on storage space, and would provide a solution now rather than in the distant future. It should be noted that equipment for this may be obtainable from groups re-converting works trams for passenger use.

21E Trucks

From the previous paragraphs it is evident that only two single trucks will eventually be available from Melbourne. Other sources could be Brussels, as being negotiated by COITMA, or local fabrication (utilising components from M. & M.T.B. No. 9 trucks). The panel understands the demand, including Brill, Brush and Peckham trucks, to be :-

MOTAT	2 (inc. 1 unpowered)
WTM	2
THS	4
TTMS	2 (cars were 3ft 6in gauge)
AETM	1
WATM	3 (cars were 3ft 6in gauge but std. gauge trucks are suitable)

The panel is unable to make a recommendation on the allocation of the two Melbourne trucks due to the uncertainties involved. It does, however, wish to identify the following matters which may be relevant in reaching a decision at some future time :

- (a) One MOTAT request and one WTM request are for similar cars (from Wanganui)
- (b) One TTMS request is for a Hobart double-deck car which the panel considers to be of national significance.
- (c) The other TTMS request is for the only Launceston car to be preserved as a tram and therefore also of special significance.
- (d) The TTMS have not yet determined whether operation of its trams will be attempted. If not then unmotored replica trucks would suffice.
- (e) It would be preferable to use the Melbourne trucks on bodies which had Brill equipment.
- (f) Subject to the above, the groups which were allocated No. 9 truck components should receive a lower priority in the allocation of complete trucks.

Sundry Parts

The panel has not prepared detailed allocation recommendations for sundry items such as bells, line breakers, brake blocks, etc. It considers that requests for these items should not be made to the M. & M.T.B. individually by museums but that about once a year COTMA should present the M. & M.T.B. with a consolidated request. Accordingly we recommend that COTMA member-groups should direct their requests to the executive officer and not the Board.

General

We have not commented in the foregoing on situations where the anticipated demand does not exceed the available supply of a particular class although some of the proposed acquisitions do not seem appropriate in the light of the stated objectives of the museums concerned. The members of the panel have indicated that they are prepared to continue to serve COTMA in implementing this report and advising on other matters which may be referred to it.

K.S. Kings
G.S. Breydon
R.H. Prentice
M. McAulay

POLICIES AND OBJECTIVES OF AUSTRALASIAN TRAMWAY MUSEUMSResults of Questionnaire - Expert Panel on Car
Acquisitions and Spare PartsAETM - replied 15.1.76

Operating electric tramway, no other technological displays.
 9 electric trams, 1 horsetram, 3 trolleybuses, 1 motorbus,
 1 electric locomotive
 Primary area - South Australia (both in origins and/or operation)
 Vehicle sources - local and Melbourne
 Component sources - local, Melbourne and overseas.

BTMS - replied 8.4.76

Propose operating, limited other technological displays, 19
 electric trams, 1 horsetram, 2 trolleybuses, propose motorbuses.
 Locomotives belonging to Aust. Narrow gauge Railway Museum
 Society in temporary storage. Primary area - Brisbane.
 Outside cars may be acquired for comparative purposes.
 Hold patterns for some operational spare parts.

BTPS - replied 4.11.76

Operating electric tramway, no other technological displays.
 9 electric trams, primary area Ballarat. Other cars may
 be acquired for operational reasons.
 Cars and parts from Local and Melbourne sources.

MAAS - replied 3.2.76

Static technological museum with much other material.
 4 electric trams, 2 cable trams, 1 horsetram, 2 steam
 trams, 1 trolleybus, some motorbuses. Also railway
 shipping and agricultural exhibits.
 Primary area N.S.W.

MOTAT - replied 7.3.77

Operating electric tramway, numerous other technological
 displays, 15 electric trams, also cable, horse, steam trams,
 motor and trolleybuses, railway, agricultural and shipping
 exhibits. Primary area Auckland. Securing other
 exhibits for comparative purposes. Parts ex-Melbourne.
 Considering W-2 type cars.

SPER - replied 9.2.77

Operating electric tramway, 24 electric trams, 1 cable tram,
 motorbuses, 1 railmotor. Primary area N.S.W. Acquisitions
 from outside primary area for comparative purposes with
 special emphasis on development of Australian Dropcentre design.
 Vehicle and Parts sources Melbourne, Adelaide and overseas.

STRPS - replied 7.4.76

Operating steam tramway. No other displays. 4 steam trams,
2 electric trailers. Primary area N.S.W., steam only.
Liaison with MOTAT for brake block patterns.

THS - replied 2.2.76

Operating steam electric trams, other technological displays,
14 electric, cable, 1 horsetram, steam tram, trolleybuses,
motorbuses, wide range of other transport equipment.
Primary area Christchurch, with limited representation from
other South Island tramways. Parts from Melbourne and
overseas. Holds some parts patterns and will make more
from Melbourne prototypes.

TMSV - replied 29.2.76

Operating horse, propose electric tramway. 14 electric,
3 cable, 1 horsetram. Two privately preserved tramway
buses. Primary area Victoria. One interstate car may
eventually be obtained for comparison after Victorian
acquisition programme completed. Local parts.

TTMS - replied 10.2.76

Operating future not determined. Other displays.
3 trams, trolleybuses, motorbuses, heavy and light railways,
vintage cars, fire engines, agricultural, coastal shipping.
Primary area Tasmania.

WATM - replied 12.3.76

Propose operating. No other displays. 7 electric trams,
trolleybuses, motorbuses.
Primary area W.A., other cars for comparative purposes.
Cars local and Melbourne, parts from Melbourne and Adelaide.

WTM - replied 11.3.77

Operating electric, no other displays, 13 trams, trolleybuses,
Primary area Wellington. 2 comparative cars owned (Brisbane).
No additions planned. Emphasis is post-1920.

REPORT (b)FIRST REPORT OF THE EXPERT PANEL ON TRAMWAY MUSEUM SAFETY STANDARDS
TO THE CHAIRMAN AND MEMBERS OF THE COUNCIL OF TRAMWAY MUSEUMS OF
AUSTRALASIAINTRODUCTION

The Panel was established in June, 1976 to investigate and recommend a Code of Safety for Tramway Museums in Australasia.

Members of the Panel are: D. Rawlings (Chairman), R. McKeever, P. Stock, with N. Gipps as a corresponding member, specialising in electrical matters and First Aid. The Terms of Reference were published in Memorandum No. 7 of September, 1976 along with a request for submissions. Written submissions were received from AETM, BTMS, STRPS, TMVS and WTM.

This is the first report of the Panel and apart from the electrical safety standards, does not detail specific safety standards for the sub-sections listed under Terms of Reference No. 3, as the low number of submissions made it difficult to propose a recommendation representative of all member museums. It is hoped that this report will form the basis for the 1977 Conference delegates to discuss this complex matter in greater detail.

Included is a copy of a report by Noel Gipps, titled 'First Aid to the Injured', and the Panel recommends that this report be used as the first step toward achieving a minimum standard in the field of First Aid in our Museums.

EXTENT OF LEGISLATIVE SAFETY STANDARDS COVERING THE OPERATION OF TRAMWAY MUSEUMS

By and large there are no specific legislative safety standards covering the operation of tramway museums, but in New Zealand as well as Australia there are local government regulations covering health, buildings, fire safety, parks, roads, works, sanitation, and garbage. One council, Brisbane, also controls public (street) transport, water and electricity reticulation. In most other cases, however, government departments control public transport, water and sewerage, electricity supply land, road transport, main roads, and planning and environment.

All of these departments could have a direct or indirect control on our type of activity. Apart from these controls, there are various Acts of Parliament and accompanying Regulations, such as Lifts and Scaffolding, Machinery safety, S.A.A. Wiring Rules and other statutory regulations, all of which demand adherence.

The Acts, Regulations and By-Laws are published by the relevant authorities and it is in each museum's interest to abide by them. Just as importantly, the COTMA image must be considered also, as the non-compliance with the rules by one museum may detrimentally effect another's chance of recognition acceptance.

NECESSITY OF ESTABLISHING MINIMUM MUSEUM SAFETY STANDARDS

Although each museum has, as a part of its constitution, various rules and regulations pertaining to the safety of its members and the visiting public the degree of these standards vary considerably and the panel believes that for the following reasons, a Code of Minimum Safety Standards be established.

1. Tramway Museums are unique in concept and operation and as such are not adequately covered by existing legislative requirements.
2. Even though our Museums are run by volunteers it is still necessary to have safety rules and regulations for the control of members. By using a minimum, but common, set of safety standards it may be easier to exercise controls by using the example of other Museums. An extension of this 'common' set of safety standards theme could be applied in the case of visiting members from other museums using the same standards. This could range from taking part in site works to being able to take the controls of cars.
3. The necessity of having acceptable standards that are recognised by insurance firms. BTMS added the comment that there may be the possibility of lower premiums for those museums adhering to them.

SPECIFIC SAFETY STANDARDS

As mentioned in the introduction, specific safety standards have not been detailed, but as a basis for discussion at the Conference several items are noted.

(a) Tramcar Operation Conditions

- i) regular electrical, mechanical and brake tests should be carried out
- ii) track and overhead wiring should be kept at a high standard
- iii) signs advising visitors of by-laws, dangerous situations and loading points should be displayed
- iv) each car to be operated should be tested prior to carrying passengers
- v) track and overhead wiring should be checked each day before services commence
- vi) all signals, both perway and tramcar, should be checked frequently
- vii) sand supply and lifeguards should be checked regularly
- viii) fire extinguishers should be carried on all vehicles and the traffic staff trained in their use

- ix) all traffic staff should be qualified and be authorised by the appropriate body
- x) traffic staff to be constantly made aware that visitor safety is paramount.

(b) Trackwork Physical Condition

- i) track should be laid in accordance with good practice at least equalling relevant state operator. Reference is made also to the paper presented at the 1976 Conference by Chris Steele entitled 'Track Construction'.
- ii) frequent inspection and maintenance of the tracks should be undertaken with emphasis on:-
 - a) condition of the sleepers
 - b) condition of the spikes
 - c) tightness of fish-bolt nuts
 - d) track gauge and geometry
 - e) curve and point greasing
 - f) operation of point mechanisms
 - g) weed and grass growth
 - h) welded track joints
 - i) condition of check rails
 - j) drains and drainage
 - k) condition of bonds
 - l) general condition of rail especially on curves
 - m) condition of ballast.

(c) and (d)

Physical Condition of Power Source and its Distribution/
Electrical Installations - by N.H. Gipps, Electrical Superintendent, TMSV

- A special report

ELECTRICAL SAFETY

As each member group of COTMA not only have their own electrical officer responsible for such requirements as traction supply, overhead equipment, light and power supply to workshops, etc., etc., but a large and varied range of electrical equipment of both manufacture and age to fulfil such requirements, I believe it would indeed be presumptuous of me to endeavour to lay down a set of definite guidelines applicable to every operation, however, after some thirty years association with both the Metropolitan Tramways Board substations and the State Electricity Commission of Victoria, I believe I may have something to contribute to our electrical safety proposals, in the form of suggestions and ideas for discussion at the Conference.

ELECTRICAL SUPERVISOR DUTIES

Before proceeding further, perhaps we should look at the responsibilities of the above position to get some idea where the safety organisation should commence.

SUGGESTED AREAS FOR DISCUSSION

1. Light and Power Supply to Workshops and Yard
 - (a) Sub boards
 - (b) Circuit identification
 - (c) Isolations and work on circuits
2. Overhead System
 - (a) Sectionalising running line and car shed
 - (b) Car shed protection and faults
 - (c) Lightning arrestors
 - (d) Isolations
 - (e) Linesmen's equipment
3. 600 Volt Lineside Equipment
 - (a) Welders, etc.
4. Substation
 - (a) Switching and access, Log Book
 - (b) Isolations
5. Training of Electrical Assistant to Electrical Supervisor
6. Rolling Stock
 - (a) Defective cars (electrical)
 - (b) Identification of defective or damaged cars, and work in progress.

Item No. 1(a), (b) and (c) - Sub Boards, Circuit Identification, Isolations and work on Sub Circuits

While most state authorities have their own light and power acts or legislation covering a similar area, safety precautions applying to 230 and 3 phase 415 volt sub-circuits are fairly standard throughout the Commonwealth.

Basically a sub board may supply a workshop complex, with separate switching and fusing of suitable capacity appropriate to the circuits or apparatus being supplied, the board itself fed by a sub-main from either the Substation or from the Supply Authority itself.

Such a board should be located where it is easily accessible, with both light and power circuits suitably numbered, and a reference giving circuit identification, with fuse or circuit breaker rating.

In industry, isolation of sub-circuits for work on same usually requires the complete removal of the fuse from the board altogether with a suitable tag attached to the fuse holder worded "MEN WORKING ON CIRCUIT" or "DANGER. CIRCUIT NOT TO BE RESTORED".

Loading on sub-boards and associated circuits should be kept under constant supervision to ascertain if additional supply is required, also excessive use of extension leads in workshop areas may be an indication that extra power outlets should be installed giving greater electrical efficiency, safety and reducing a familiar tripping hazard.

Item 2. Overhead System

(a) Sectionalising running shed and main line

While the supply requirements of overhead on both the running line and car barn are electrically similar, it is desirable to provide a separate point of isolation for car shed supply, with associated protection to sectionalise any fault condition, or alternatively provide a point of isolation to allow work to proceed in the area concerned independently. The section insulator and switchgear for this purpose should be located in the overhead structure so that the circuit in question cannot be accidentally made alive by adjacent tramway operations.

(b) Car Shed Protection and Faults

Car barn supply and protection is usually subjected to more serious fault condition due to a number of unavoidable circumstances: e.g.

- (1) Proximity to substation giving low circuit resistance and high fault current,
- (2) Double pole short circuits between cars or between car and shed structure,
- (3) Testing of 600 volt equipment and defective cars in workshop area

Generally, supply obtained direct from substation bus bar or from main line O.H. through a suitable circuit breaker with overload setting (hand reset). Car type breakers have been used for this purpose but are not recommended being unsuited to repeated fault operations, without the risk of explosion and frequently damage to substation plant. A solution to the problem would be to substitute a rewired car circuit breaker (contactor type) in series with a hand reset (or manual type) breaker, the latter placed between supply and the rewired car unit.

Electrically the contactor type breaker would serve as the overload protection being set to about 500 amps on a figure below the main substation setting, while the hand reset unit would be utilised as an isolating switch, capable of being opened manually in an emergency. It would be desirable to fit the hand breaker with some kind of locking device in the open position so that work parties would be safeguarded against accidental restoration of supply.

(c) Lightning Arrestors

Information from most manufacturers, i.e. G.E., Westinghouse and Ohio-Brass, recommend an average of 8 arrestors per mile, depending on frequency and severity of electrical storms in the area. Under Australasian conditions this standard may vary, for Museum conditions the following installation has been recommended as suitable for our use:

1. All terminal points,
2. Entrance to car barn,
3. at cables entering substation and
4. Passing loops or any point where cars may remain stationary for any length of time.

(d) Isolations

While some work on overhead equipment may be carried out under live conditions, there are occasions where complete isolation of a section may be required, Where such work is some distance from the point of isolation additional precautions may be necessary due to some of the following possibilities livening up the section under consideration:

1. Leakage across section insulators.
2. Inadvertant contact across insulation by moving trams,
3. Possibility of adjacent live mains falling across the overhead concerned, and
4. Inadvertant livening up of section from source of supply.

For improved safety of work party involved it is suggested:

1. Earth overhead to rail at site,
2. Install locking facilities on switchgear or circuit breakers in the 'open' condition, and
3. Identification on the apparatus in item 2 indicating 'isolation condition.'

(e) Linesmen's Equipment

Apart from safety aspects mentioned previously in this section, the following points for line work should be observed:

1. Linesmen's equipment bag, if used, should be attached to dry, non-conducting rope of suitable length and strength,
2. Platforms of O.H. waggons (road or rail) to be painted with special non-slip paint.
3. No metallic ladders of any description to be used and only wooden ladders without wire reinforcing and well coated with an approved insulating varnish to be used.
4. Approved safety helmets issued to all men involved in such work, together with suitable footwear (non-slip soles).

Item 3 - 600 volt Lineside Equipment

A number of Museums have acquired such items as portable welders, grinders, etc. In some cases the electrical condition of this often aged and worn equipment could render it dangerous (without thorough overhaul), particularly where 600 volt motors and their starting equipment is concerned. Where such apparatus is being used, particularly by those who use it infrequently, suitable warning signs should be attached, e.g. "DANGER 600 VOLTS", and "ATTACH EARTH LEAD TO RAIL FIRST".

Item 4 - Substation

(a) Switching and access to.

Access to substation building should be strictly limited to the Electrical Supervisor or those qualified. Signs such as "DANGER 600 VOLTS" and "UNAUTHORISED PERSONS KEEP OUT" should be installed.

The switching on of the D.C. should be carried out remotely from the substation itself or at least in a sealed and locked box outside the substation building.

The main D.C. breaker itself can be manually closed type or alternately a car contactor type breaker (as is being used by some museums) and perhaps incorporating automatic reclosure. Two types are generally used in practice:

1. 2 shot - auto reclose

As most traction faults are of a transitory nature (bad driving, etc.) a slight time delay of, say six seconds is allowed following the initial opening, after which a reclosure is made. If after two operations no clearance is affected, the breaker remains open locking out and shutting down the rectifier.

2. Short Circuit Detector (M & M.T.B. type)

In this installation after the initial opening a resistance is imposed across the open breaker; across the resistance in turn is placed a relay to measure the voltage drop associated with the fault (O.H. down or defective car). When, after clearance a reclosure is affected or alternatively 6 seconds elapses as in 1., lock out and shut down rectifier.

Generally type "2" equipment affords superior protection to the substation, plant, car equipment and the distribution system in particular.

(b) Log Book

In traction substations, in a central control room on a large system a log book is kept as a reference to system operations, the adoption of this system of recording is to be commended to our use for the following reasons:

1. Operating times and total number of hours run for rectifier or supply equipment,

2. Recording of automatic circuit breaker operations including reasons, i.e. substation plant fault, or system fault (O.H. and rolling stock faults).
3. Recording of system isolations and safety precautions.

In general the log book provides a check on operating conditions, through the electrical system, i.e. substation breaker openings due to poor driving standards or deterioration of car equipment.

(c) Isolations and General Switching

All isolations governing supply to the line or sub mains should be programmed and recorded by the Electrical Officer responsible, or in his absence delegated to a competent person who would supervise the work in hand and be responsible for restoration of plant to service. Normal car shed supply can be externally switched to suit rolling stock and workshop requirements.

As in lineside switching, main substation switchgear should be capable of being mechanically locked in a safe condition during outages.

Item 5 - Training of Assistant to Electrical Supervisor

If possible it would be desirable at an early stage to appoint and train an assistant to the Electrical Supervisor where a person of suitable qualifications is available.

Such a person should be capable of attending to substation faults and other requirements of Museum Management relating to the electrical system.

Item 6 - Rolling Stock

(a) Defective Cars (Electrical)

Apart from public safety considerations, electrically defective cars, particularly where any doubt arises as to the nature of the fault, should be removed from service for workshop attention as soon as possible. Constant re-applying of fault conditions to supply may cause damage to substation plant resulting in a complete shut down of the system.

Under some circumstances surging in the Supply Authority's mains can cause complaints by other consumers, particularly where radio and TV equipment is concerned.

(b) Identification of damaged or defective cars and work in progress

Any car out of service due to damage or defect should be positively identified by appropriate warning signs attached externally to both ends. e.g. "DANGER CAR NOT TO BE MOVED" (M & M.T.B. practice).

Cars receiving workshop attention should also have positive identification indicating work in hand (some museums already have their own system). For extra safety complete electrical and pneumatic isolation may be desirable.

I am of the belief that for the sake of safety and uniformity a standard system of signs be adopted by COTMA for the above-mentioned purposes, particularly in view of the fact that interchange of workers during interstate visits, could become more general in the future.

Noel H. Gipps.
TMSV 1977

Additional items for 3(c) and 3(d) from submissions.

- (c) regular inspection and maintenance of switchyard and substation equipment;
regular inspection and maintenance of steam boilers, safety valves and associated equipment;
regular inspection and maintenance of overhead system including poles, fittings, span wire, trolley wire and feeder wires;
- (d) all wiring to be carried out in accordance with the SAA wiring rules, or equivalent.
- (e) Pneumatic Installations
 - i) Installation and operation would be controlled by statutory authorities but general museum safety first regulations could include:
 - a) Do not use compressed air for any other purpose than that for which it is provided,
 - b) Never direct a stream of compressed air towards your body or the body of another person,
 - c) Do not use compressed air to cool yourself or to blow dust from the clothes or hair,
 - d) Never indulge in so-called 'practical jokes' with compressed air.
- (f) Depot, Buildings and Site

Statutory controls govern most buildings whether open to the public or not, but basic museum safety standards could be:

 - i) Fire extinguishers should be located at strategic points and all members should have basic training and knowledge of same,
 - ii) All buildings should be 'non smoking', with the possible exception of members' meal room,
 - iii) All inflammable liquids should be stored properly,
 - iv) All machinery to be adequately guarded,

- v) All pits to be adequately guarded,
- vi) All cranes to be locked to prevent unauthorised operation,
- vii) Lighting must be adequate; i.e. no shadows
- viii) All aisles, access points to stores, rooms, etc., to be clearly defined,
- ix) All hazards to carry warning signs.
- x) Visitors' access to machine shops, etc., to be prevented, but any visitors found in prohibited areas should be diplomatically requested to leave.

(g) Sales and Exhibition Facilities

- i) Visitor circulation areas to be signposted,
- ii) Sufficient space to enable easy circulation,
- iii) Heavy or unstable exhibits to be fixed so that they cannot tip over,
- iv) Any displays using electricity to be properly fenced and sign-posted (i.e., operable bogie)
- v) Restraints to keep children (and adults!) outside display areas,
- vi) Fire extinguishers to be located in convenient locations,
- vii) Use of synthetic materials (i.e. perspex) in lieu of glass for display cases, counters, etc.
- viii) Workshops not to be open to public unless by prior arrangement. In this case a museum member must accompany visitors and the number in the groups should be kept low: 5 to 10.
- ix) 'Temptations' (books, sweets) to be kept out of reach to reduce the incidence of shop lifting and associated action by members, which may be embarrassing for all concerned.

(h) Essential Public Facilities

- i) "You are judged by your toilet facilities" - quote from a tourist coach operator.
- ii) Have plenty of seating, preferably some under cover.
- iii) Have adequate, convenient parking for cars, coaches,
- iv) Have plenty of rubbish bins and see that they are emptied regularly,
- v) If possible, have playground facilities, bar-b-ques and (hot) water available,

- vi) Although refreshments are not necessarily an essential facility, the time is fast approaching when they will be. There are statutory regulations governing the sale of refreshments and now may be the time to consider them,
- vii) Adequate public risk insurance must be carried: a possible minimum of \$200,000 may be warranted.

(i) Emergency Facilities

- i) It is essential to have an adequate First Aid kit and as many trained personnel as possible; Refer to attachment A.
- ii) Preferable to have a telephone on site,
- iii) Well maintained fire fighting equipment is necessary,
- iv) A good fire alarm system should be installed,
- v) A fire sprinkler system is essential especially if there isn't an on-site caretaker,
- vi) Tramcar breakdown/rerailing equipment should be adequate and well maintained. If possible, a reasonable number of the(working) members should be versed in emergency procedures.

(j) Workshop Facilities

- i) Workshop should be closed to the public and only qualified members should operate machinery,
- ii) Must be kept clean and all rags, oils and solvents should be put away immediately after use,
- iii) Welding or oxy-cutting operations should be carried out using proper protective clothing, gloves, goggles and shoes.
- iv) Light and ventilation should be adequate,
- v) Storage and spare parts, etc., should be orderly and easily accessible.

(k) Operating Staff Training

This matter is largely dependent upon local conditions. Several museums have to have their staff trained, tested or authorised by statutory bodies, whilst others do not. SPER has produced a Handbook for the training of Traffic staff, based closely on Department of Government Transport practice, with additional local instructions. (A copy will be available at the Conference to illustrate how 'do-it-yourself' training can be achieved while still being comprehensive).

An interesting point was raised in the BTMS submission and that was the possibility of issuing a licence which would be acceptable in some instances to other museums as proof that the holder has attained certain proficiencies in, say, the driving of certain classes of tramcar or motor vehicle; i.e. 2 motor car, direct control, self lapping brake. This could then enable the holder to request to be able to drive when visiting another museum - (an international licence?).

(1) Security of Historical Collections

- i) Buildings containing historical items should have adequate burgular alarm, fire alarm and fire control facilities,
- ii) Adequate precautions should be taken to safeguard all items on display - damage can be accidental or deliberate.
- iii) All items of historical significance, including tramcars, photos, documents, uniforms, etc., should be catalogued consistent with good museum practice.
- iv) If items are lent to other museums (not necessarily tramway museums) proper records should be kept to ensure the return of those items; special insurances should also be arranged.
- v) All valuable items should be adequately insured against damage and theft.

TECHNIQUES FOR ENCOURAGING AND ENFORCING SAFETY STANDARDS

As our museums depend almost solely on their members to carry out their duties voluntarily, it will be difficult to enforce all safety standards. When statutory regulations over-ride museum regulations the task of enforcing is easier as it can be pointed out to the members that they have an obligation to obey such regulations: i.e., Wiring Rules, lifts and scaffoldings Act, etc.

Unsafe driving practice is probably one of the few examples where stiff penalties could be applied by Museum Management to keep a high standard of operations before the eyes of the Authorities.

The Panel believes that the adoption of Safety Standards by the managements of all COTMA museums will be an aid in itself to encourage members to accept the Standards and abide by them.

GENERAL COMMENTS

During initial investigations it became quite evident that there is a great deal of information dealing with general safety rules and regulations for industry and commerce. Booklets published by various government departments are freely available and although not totally fulfilling our needs could form the basis of a safety scheme.

Additionally, transport authorities have their own internal safety standards which, for the most part, are consistent with other statutory regulations, but as they are generally biased towards transport applications they could perhaps be more easily tailored to suit our needs.

Rules governing electricity supply and distribution are well covered as are steam boilers, building regulations, erection of scaffolding, etc. etc., and therefore it would appear that our main need for safety standards lies in the operation of our tramcars, the training of appropriate staff and the application of the standards.

The Panel realises that the implementation of a full safety programme is probably beyond most museums, as labour is scarce and it is not practical to have a permanent safety officer as there is a great possibility that he would become saddled with other, seemingly, more important jobs. Most safety programmes are designed for large organisations and industries but as this report went to press a paper entitled "Reducing Accidents in the Smaller Industries" was discovered. This paper, by Mr. J. Ellerton, Chief Safety Education Officer of the N.S.W. Department of Labour and Industry, and is aimed at industries where there are less than 50 employees, with 3 to 7 persons performing the supervisory or management function. This could well provide sufficient information around which a safety programme for our museums could be developed, and further investigations are under way.

Following on from this Conference it would be possible to produce a draft safety standard within six months and a basic safety programme within the following three months.

The Panel is prepared to continue its work on Safety Standards on the proviso that any requests for specific information concerning local regulations and conditions are supplied by member museums with a minimum of delay.

FIRST AID TO THE INJURED

When considering first aid as applied to Tramway Museums (particularly operating establishments) it must be taken into account that apart from those involved with day to day Museum activities, members of the public accompanied by children of various ages are also present both as passengers and visitors to the site.

In this report I am not so much considering site safety (a subject in itself) but the treatment of the patient after an incident has occurred, when until (if necessary) the arrival of medical aid, much unnecessary suffering and discomfort can be alleviated by common-sense, properly equipped first aid facilities and a person, or persons, trained in the various aspects of the treatment involved.

Perhaps I could do no better than to refer to the St. John Ambulance Brigade description of first aid as the emergency care of the injured and the sick where the first aider will:

- (a) Preserve life,
- (b) Promote recovery and
- (c) Prevent the injury or illness from becoming worse.

In the case of any accident a First Aider should summon other trained personnel and bystanders to assist where required.

While minor accidents can be coped with by a well equipped first aid cabinet and the average person, incidents where a patient may have collapsed or may be immobilised require a different approach.

THE SCOPE OF FIRST AID

- (a) Make a diagnosis of the case,
- (b) Decide nature and extent of treatment required, and commence treatment promptly,
- (c) Arrange for disposal of casualty

TREATMENT

- (a) Commence treatment appropriate to case,
- (b) Prevent conditions from being aggravated,
- (c) Promote recovery by giving relief to pain and reassurance to the patient. (Improvise if necessary to achieve any of these objectives).

GENERAL FIRST AID

The cause of all accidents should be carefully investigated and recorded with the objective of preventing a recurrence by personnel training and effective safety practices.

1. General Requirements

- (a) Well equipped First Aid Cabinet conveniently located near clean water supply and in a position affording some privacy for patients.
- (b) Stretcher (folding type) and 2 blankets with covered accommodation for same.
- (c) Light-weight First Aid Box for field work.

2. Training of Personnel

While some museum members may be qualified First Aiders, (St. John Ambulance Certificate) every attempt should be made, at least once a year, to encourage O.I.C.'s to attend a lecture on basic first aid, and resuscitation in particular. Local St. John Ambulance Brigade personnel are only too happy to assist both on the form of approved courses or periodical lectures, while in the case of large public gatherings the Brigade will send both personnel and equipment to cope with any emergency. It is suggested that we avail ourselves of these facilities.

3. Communication

The phone numbers of fire brigade, police, civil ambulance and local doctor should be prominently displayed for immediate use. Standard notices demonstrating resuscitation and cardiac massage should be displayed in all work areas, substations and near main switchboards.

SUGGESTED FIRST AID CABINET REQUIREMENTS

<u>Quantity</u>	<u>Description</u>
4	Triangular bandages
2	Packets 38 x 1000mm dressing adhesive with medicated pad
1	50 ml bottle Proflavine
1	30 ml bottle Sal Volatile
6	25 mm Roller gauze bandages
4	51 mm Roller gauze bandages
2	76 mm Roller gauze bandages
1	454 g Packet Cotton Wool
2	packets of Gauze
4	28 g packets of Lint (plain)
4	25 x 2290 mm rolls of plaster adhesive
1	Bottle of Asprin tablets
1	120 ml bottle Dettol
1	Tube Ung-Vita (Nicholas ? - 35.5 g)
1	Plastic tumbler
1	pair of surgical scissors - 125 mm
1	pair of Dressing Forceps
2	Kidney bowls - 210 mm
1	graduated medicine glass
2	120 ml bottles of Calamine Lotion
1	Current St. John Ambulance Brigade First Aid Book
2	boxes of Band Aids of various sizes

And other items as may be deemed necessary under the circumstances.

The Field First Aid Box should contain a selection of supplies appropriate to the application of the work.

Noel H. Gipps (Bronze Medallion)
St. John Ambulance Association
of Australia

REPORT (c)REPORT FROM PUBLISHING SECTION OF SOUTH PACIFIC ELECTRIC
RAILWAY CO-OPERATIVE SOCIETY LTD.

Presented at the Third Australasian Tramway Museum Conference, Adelaide
1977.

Firstly, let me apologise for not being here today, but due to circumstances beyond my control, it was not possible to attend.

Trolley Wire occupies a large proportion of the Publishing Group's time, so I shall dwell at length on the problems, and how we can overcome them. I shall then discuss books and other types of publications.

At the beginning of 1976, we changed both our printer and the format of Trolley Wire, due to the ever increasing costs. During 1976 our printer has experienced a lot of problems with the negative maker for the plates, and finally with the Silver Jubilee Issue he changed and the result was a far better magazine. We believe that the teething troubles are now over and all can look forward to a far better magazine.

There has been some muted criticism about the increased size, but it has allowed a more economic utilisation of paper, and consequently has helped to keep costs down. One problem that has arisen, is that the photos that are being submitted should now be a minimum 6" x 4" wherever possible, as the smaller photos do not reproduce as well.

The regularity of news is also a disturbing feature. Whilst some museums, viz. TMSV and AETM send their news regularly and on time other groups do not, and this does lead to a lot of problems. Two groups whilst paying lip service to Trolley Wire do have their own local magazine as well. Whilst we do not object to this, all effort appears to be going into the production of these local newsheets and very little effort is made to supply Trolley Wire with news. This does have the adverse effect of alienating subscribers in these states. They feel that Trolley Wire is ignoring them. It's important, that as Trolley Wire has been adopted as the official COTMA magazine, that all museums co-operate by sending their news and photos on time.

We have also received criticism about some of the topics that are covered in Trolley Wire. The criticism seems to stem from one group in particular, and whilst we don't feel that this criticism is always justified, we do thank them for letting us know their feelings. So many do not. We always welcome constructive criticism.

Whilst on the subject of articles, it would be appreciated if every museum group present, attempted to get one major article to the editors per year. This would relieve us of the time consuming and difficult task of deciding what should go in to produce a balanced magazine. We do not have the time to research, document and publish items of interest from all over Australia. If only one group submits articles, then, naturally, we are going to get an unbalanced magazine.

Problems with Subscriptions

In common with most organisations large and small, forms have been produced to help both our subscriptions officer, and your treasurer/secretary. A particular point of complaint is where one certain secretary sends in his changes of addresses on the same sheet of paper as new subscribers, deletions, news and notes etc. All these various items go to different people within SPER and if one piece of paper has to do the rounds, it can take anything up to a month or two to complete the circuit. This inevitably leads to delays, frustrations, complaints, etc. It is even more disturbing when they are all mixed up, and written on the back of a postage stamp in miniscule writing. Please help us and your members by using the correct form. If you have none, or run out of them, let us know immediately, and we will supply you with more.

Common Date for Subscriptions

Another method of helping us is to have a common date for subscriptions, within each particular museum. Let us look at a case example and see how simple it is for you, and us.

T.M.S.V.

This group's subscriptions to Trolley Wire all cease with the June issue. Renewal notices are sent out by TMSV during this month. This gives the TMSV treasurer some six weeks to collect the next year's money, and write out one cheque for the lot, which he sends to SPER. All changes i.e. deletions are notified at the same time. We check our records and delete those names from the lists. Late renewals, or new subscribers are notified separately.

When corresponding on Trolley Wire, would those people concerned please use the Trolley Wire Subscription No. This immediately identifies the person and allows us to take action immediately. Failure to use this number causes a lot of problems.

The above points simplify our workload, and allow us to give you better service.

If you have not already done so, please adopt these methods.

Whilst we do not make Trolley Wire compulsory, we would like as many people as possible to subscribe. This reduces the unit cost and also helps keep costs down.

New Zealand News is also welcome. Please address all correspondence to:-

The Editors
Trolley Wire
P.O. Box 103,
Sutherland. N.S.W. 2232

General Publishing

There was some confusion between SPER and BTMS about May last year over a book, but this has now been satisfactorily settled.

The general publishing guidelines adopted last year are defined on Page 58, Workshop D1, of the 1976 proceedings.

During the year SPER decided to produce a book on the Standard Australasian bogie car, the Drop Centre. The book was to be mainly pictorial, with a brief history and diagrams of the cars. Some initial work has been done, but rather than make it a SPER Publication we feel that it would be better to come out under the auspices of COTMA. The SPER Publishing Department is willing to handle the publishing work. Such a project will further illustrate the unity and strength of COTMA.

It is still possible to produce a 1978 Calendar for COTMA, but the immediate co-operation of everyone is required. A calendar was proposed after the 1975 Conference, but due to lack of co-operation nothing happened. The latest deadline would be the end of May for the submission of photos. Photos would need to be of a large size, and preferably of your museum. If this is not possible, one of a Museum car in regular service would do. It would also help if you could give an estimation of the number that you would require.

Again, I make the offer, that the SPER Publishing Group is always available to help you with any problems that you may have in the Publishing Field. The service is completely free, and without any obligation on your part.

David Cooke
Chairman Research, Publishing and
Sales Committee, SPER.

REPORT (d)REPORT ON PUBLISHING SECTOR OF THE WELLINGTON TRAMWAY MUSEUM

Presented at the Third Australasian Tramway Museum Conference, Adelaide
1977

General

WTM publishes the main tramway journal in New Zealand on behalf of the other New Zealand museums.

Tramway Topics has now been in production for some twelve years and has a circulation of about 650.

In addition, the WTM from time to time publishes newsletter for local members taking the form of cyclostyled broadsheets and has also been producing for about two years a throw-away multilithed guide sheet to the museum. This outlines our ways of reaching the museum by public transport, when it operates and what a visitor may expect to find on arrival.

As the main emphasis of our publishing area is related to Tramway Topics it is proposed to concentrate on more detailed aspects of its production.

Production of Tramway Topics

All voluntary organisations producing magazines, particularly periodicals, rely entirely on information fed into the editor for a successful production cycle. Topics has from time to time experienced difficulties in obtaining sufficient, not to say, suitable material for publication.

Undoubtedly this situation will occur in the future as there are many other areas which compete for a prospective scribe's time and energy. However even a single photograph with suitable captions can be sufficient if a person is not able to write an article or jot down notes.

WTM has recently had a re-arrangement of personnel undertaking editing of the magazine with the result that an "overseas" editor located in Wellington collates material received from abroad. This is combined in Christchurch with local news and articles by the Editor.

Printing, collation and distribution are all handled from Wellington.

This apparent long distance communication appears awkward but in fact works very well.

Content

The magazine is primarily devoted to Tramway and related interests. There have been moves to include bus articles but so far these have not extended past trolley buses.

The magazine normally includes detailed local and overseas museum notes plus a large section on overseas news gleaned from various sources abroad.

Photographs are liberally sprinkled throughout.

Advertising is used on a small scale with a long standing oil company advertisement. Various other efforts have been made from time to time to increase advertising but this often only gains an advertisement for 1 or 2 issues with little capital gain.

Distribution

This is now done in two ways -

- a) by posting single copy to subscribers
- b) by posting bulk orders to museums.

Commercial sales in shops were tried but by and large have not been successful, probably because of the limited range of interest covered.

Costing

Production costs, all up, at present break even with the magazine price of 35¢ per copy over 650 copies.

Production Difficulties

- a) Voluntary nature of organisational set-up can cause time delays in production, especially if material deadlines are not adhered to. This seems to be the constant problem.
- b) Production time at the printers is often erratic although a change of printer may cure this but at a likely higher charge.

Future

Topics policy is generally up to the Editor with broad guidelines set by WTM. Mainly in the financial area.

It is proposed in the future to include more varied material within the publication to try and increase its circulation and consequently sales.

However all aspirations rely on source information being provided.

Colin Perfect
President, WTM.

REPORT (e)SECOND ANNUAL REPORTOF THECOUNCIL OF TRAMWAY MUSEUMS OF AUSTRALASIACouncil of Tramway Museums of Australasia

Chairman: Dr. John C. Radcliffe

Executive Officer: Mr. W.J. Kingsley

Member Organisations as at March 31, 1977:

Australian Electric Transport Museum (South Australia) Incorporated
Box 2012, G.P.O., Adelaide, South Australia 5001.

Ballarat Tramway Preservation Society
Box 632, Ballarat, Victoria. 3350.

Brisbane Tramway Museum Society
2 McGinn Road, Ferny Grove, Brisbane, Queensland. 4055

Museum of Transport and Technology (Incorporated)
Western Springs, Auckland 2, New Zealand.

South Pacific Electric Railway Co-operative Society Limited
Box 103, G.P.O. Sydney, New South Wales, 2001.

Steam Tramway and Railway Preservation (Co-op) Society Limited
Box 108, Kogarah, New South Wales. 2217.

Tramway Historical Society Inc.
Box 1126, Christchurch, New Zealand.

Tramway Museum Society of Victoria Ltd.
Box 4916 Mail Exchange, Melbourne, Victoria. 3001.

Tasmanian Transport Museum Society Inc.
Box 687J, G.P.O. Hobart, Tasmania. 7001.

Wellington Tramway Museum Inc.
Box 2612, Wellington, New Zealand.

West Australian Transport Museum Inc. (Perth)
Box 33, Maylands, Western Australia. 6051.

Council Address:- 51 Lenna Street, East Burwood, Victoria. 3151.

Presented at: The Third Australasian Tramway Museum Conference
Adelaide, South Australia.

April 26, 1977.

CHAIRMAN'S REPORT

The Council of Tramway Museums of Australasia (C.O.T.M.A.) held its second meeting in Sydney on May 3, 1976. At this meeting, the constitution for the Council was ratified.

MEMBERSHIP

Two organisations which participated in the original conference held in Ballarat in 1975 but which had not formally joined the Council in the first year of its operation, have since completed these formalities, bringing the number of constituent member organisations to eleven.

Two organisations, Haddon Tramway Workshops and Newcastle Historic Vehicle Association, presented applications to join the Council at the Sydney meeting, but both were deferred pending further information regarding the aims, objectives and legal status of these organisations. However, the Council offered to service them with memoranda during this ensuing period and this offer was accepted by Haddon.

COMMUNICATIONS

Three memoranda were circulated during the year covering a wide variety of topics. In addition, the Executive Officer continued his practice of the previous year of visiting as many constituent museums as possible. Mr. Kingsley also visited North America, Britain and Europe during the year. He furthered relations developed by the Chairman in the previous year and developed contacts with a number of additional organisations.

EXPERT PANELS

Two expert panels operated during the year to advise the Council and their reports are being presented to the Adelaide Conference. Mr. K.S. Kings continued to convene the Melbourne-based Expert Panel on Tramcar Acquisitions and Spare Parts, a panel established in 1975. Mr. D.H. Rawlings convened the new Sydney-based Expert Panel on Tramway Museum Safety Standards established at the Second Australasian Tramway Museum Conference in 1976.

TRANSPORT AUTHORITIES

The principal development of the Council during the year was the establishment with the Melbourne and Metropolitan Tramways Board of procedures for making known the availability of surplus equipment to museum groups. The Board now notifies the Council Executive when material becomes available. The Executive then informs all museums by means of a memorandum and invites interested museums to notify the Executive Officer if they seek particular equipment. Where demand exceeds the quantity of equipment available, the Executive has promoted discussions between the various organisations to rationalise requirements. Subsequently the Council advises the Board of a suggested distribution for its consideration.

The Board then forwards specific offers of equipment to the individual museums after considering this advice. (It should be noted that ultimate responsibility for disposal of its assets still remains with the Board). The Board, for its part, has been very helpful in providing copies of the relevant correspondence for information of the C.O.T.M.A. executive. It is a pleasure to acknowledge the help and assistance received from the Board during the past year.

RESPONSE FROM MUSEUMS

I would be remiss if I did not draw attention to the fact that if the types of arrangements established with the M. & M.T.B. regarding parts availability are to be successful, the constituent museums in C.O.T.M.A. must make sure that they have administrative mechanisms to reply to offers by the due dates. As a matter of principle, the Executive has generally set a six-week reply date in memorandum deadlines. This has been based on allowing a week for the memorandum to reach the museum, a month during which the museum can work out its response, if any, and a further week for the reply to reach the Executive. Nevertheless, several museums do not seem to be able to effectively meet the deadline timetable. On number of occasions the Executive Officer has had to make expensive telephone calls to museums - calls the cost of which, in fact, are being jointly shared by all museums due to the administrative limitations of a few. We all have many other matters to deal with, but so do organisations such as the M. & M.T.B. If communications and liaison techniques are to be effective, they must be capable of being implemented with reasonable promptness.

FUND SOURCES

Funds for museum development have been restricted in both Australia and New Zealand in the past year due to prevailing economic conditions. The Commonwealth Government has spent some funds on inventory projects, but support of specific museum developments has not been forthcoming. No action has been announced on the Report of the Committee of Enquiry on Museums and National Collections. The Heritage Commission has released its initial listing of buildings for protection, but this does not extend to tramway equipment of the type preserved by constituent museums of C.O.T.M.A. Developments in all museums in the past year have been restricted to what could be done by members with their own resources.

Against this background, it is pleasing to report that C.O.T.M.A. itself received a grant of \$1600 from the Victorian Government for the construction of a former for rewinding GE201 motors held by several constituent museums. This project has been managed by the Executive Officer.

EXHIBITS

Melbourne cars of the W-3 and W-4 classes were disposed of during the year, and examples were secured by TMSV, BTPS, Haddon and WATM. It is understood that two other cars of the W-3 class are still being held in store awaiting transport to museums which are not C.O.T.M.A. members.

A notable event in August 1976 was the handing over by the Bendigo Trust of Bendigo Birney car 27 as Adelaide 303 to the AETM. The dispute over a Bendigo Birney car for the Adelaide museum had polarised museums for some years and satisfactory resolution of this matter is pleasing to record.

Much less pleasing is the need to record that in June, 1976, the THS Christchurch lost four exhibits in open storage as a result of a fire believed to have been lit by vandals. The WATM has also suffered fire damage from vandals on several occasions during the year. Their unique stepless car will be all the more difficult to restore as a result of these incursions. These events serve to highlight the importance of security as well as protection from the elements for the exhibits in our custody.

PUBLICITY

Perhaps the one area where C.O.T.M.A. and its constituent museums have yet to make progress is the area of publicity about C.O.T.M.A.'s activities to members of the individual museums. Many of these have heard little of C.O.T.M.A.'s activities, even though they have served to bring about a major improvement in co-operation and harmony between the museums over the last two years. This is an area which the Council itself should discuss at its meeting in Adelaide.

CONCLUSION

We believe we have made useful progress in developing the Council during the year, and look forward to further progress in the coming year. Most museums should by now have received tangible benefits from their membership of the Council, but any further ideas for additional activities would be welcome.

Next year the Council will be making a significant step forward when it meets in Christchurch. The THS is already making plans to make this event outstanding.

We thank you for a productive year.

W.J. Kingsley
Executive Officer

John C. Radcliffe
Chairman

April 26, 1977

K. L. Paroissien & Associates

Public Accountants . . . Chartered Secretaries

14 Wakefield Street, Hawthorn, 3122 (P.O. Box 226) Telephone: 81 0468

K. L. Paroissien, F.A.S.A., A.C.I.S., F.T.I.A.


R. G. Paroissien, A.A.S.A., A.C.I.S., A.T.I.A.

H. D. Paroissien, A.A.S.A. (Snr.), A.C.I.S., F.T.I.A.

A. K. Paroissien, A.A.S.A., A.C.I.S., F.T.I.A.

COUNCIL OF TRAMWAY MUSEUMS OF AUSTRALASIAAUDITOR'S REPORT

In my opinion the accompanying Balance Sheet as at the 31st March, 1977, and the Income & Expenditure Statement for the year ended 31st March, 1977 are properly drawn up to give a true and fair view of the affairs of the Council of Tramway Museums of Australasia.



R.G. PAROISSIEN, A.A.S.A., A.C.I.S.

Registered Company Auditor

20th April, 1977

COUNCIL OF TRAMWAY MUSEUMS OF AUSTRALASIABALANCE SHEET AS AT 31st MARCH, 19771976\$COUNCIL FUNDSAccumulated Fund

	Balance brought forward		574.94
575	Add Surplus for Year		286.04
			<u>860.98</u>
\$575			<u>860.98</u>
=====			=====

THESE FUNDS ARE REPRESENTED BY:-Current Assets

265	Australia & New Zealand Banking Group Ltd.	360.98	
-	Prepayments	500.00	
392	Members Subscriptions in Arrears	-	
		<u> </u>	
657			860.98

Less Current Liabilities

82	Creditors		-
			<u> </u>
\$575			<u>860.98</u>
=====			=====

INCOME & EXPENDITURE STATEMENT FOR YEAR ENDED 31st MARCH, 19771976\$Income

877	Members Subscriptions	433.60	
1	Interest Received	19.76	
-	Sundry Fees	28.65	
		<u> </u>	
878			482.01

Less Expenses

260	Printing & Stationery	79.86	
39	Postage & Telephone	56.11	
4	Bank Charge	-	
-	Sundry Expenses	60.00	
		<u> </u>	
303			195.97
\$575	<u>Surplus for Year</u>		<u>286.04</u>
-----			-----

REPORT (f)MINUTES OF THE SECOND ANNUAL GENERAL MEETING OF THE COUNCIL OF TRAMWAY
MUSEUMS OF AUSTRALASIA

Held Tuesday 26th April, 1977 at the South Australian Museum,
Adelaide.

Meeting opened by the Chairman.

- 1.1 P.R.E.S.E.N.T. : Dr. Radcliffe (Chairman), Messrs. Kingsley (Executive Officer), Skinner (AETM), Daniells (BTMS), Jordan (proxy, BTPS), Kahn (SPER), Richardson (WATM), Verrier (TTMS), Kings (TMSV), Perfect (WTM), Stewart (MOTAT), Silcock (proxy THS).
- 1.2 A.P.O.L.O.G.I.E.S.: Messrs. Stock (STRPS), Hinman (THS), Jessup (BTPS), Harnwell (Treasurer).
- 1.3 H.T.W. Moved Verrier/Richardson that "representatives of the Haddon Tramway Workshops be admitted as observers". Carried.
- 1.4 O.T.H.E.R. O.B.S.E.R.V.E.R.S. Moved Skinner/Perfect that "other members of constituent museums be admitted as observers". Carried.
- 2.1 M.I.N.U.T.E.S. O.F. P.R.E.V.I.O.U.S. M.E.E.T.I.N.G.: Sydney 1976

Moved Kahn/Daniells that "the Minutes be accepted subject to the following amendments". Carried.

1. That the heading "The Historic Vehicle Association" on p. 2 be amended to read "The Newcastle Historic Vehicle Association".
2. That the heading "Auditor" on p.4 be amended to read "Administration 1976-7" and the between the items "Executive 1976-7" and "Administration 1976-7" an additional item be included, viz : "AUDITOR. Moved Skinner/Kahn that Mr. R.G. Parroissien be Auditor to COTMA, 1975-6-7. Elected unopposed".

BUSINESS ARISING2.2 DIAMOND VALLEY RAILWAY MUSEUMS DIRECTORY

Executive officer to seek information from Museums concerning their involvement in the Directory, and from DVR on progress.

AGENDA ITEMS

- 3.1 I.A.T.M. Moved Jordan/Daniells that "COTMA seek to join the International Association of Transport Museums". Mr. Stewart spoke in support. Carried unanimously.
- 3.2 A.U.C.K.L.A.N.D. O.V.E.R.H.E.A.D. Moved Stewart/Perfect that "COTMA write to the Auckland Regional Authority seeking to obtain overhead material and that MOTAT secure same on behalf of COTMA and act as agent for distribution". Four museums indicated interest. Executive Officer to obtain samples and/or catalogue. Carried.

3.3 SPONSORSHIP OF PUBLICATIONS

Drop-centre book. Following comments by Mr. Kahn it was moved Kahn/Jordan that "COTMA approve in principle the publication of an Australasian Drop-centre book in its name subject to financial arrangements being made with member museums". Carried.

Postcard folder/map. Moved Kahn/Verrier that "SPER Publishing Dept. be asked to produce a viewfolder containing one photograph and a map from each member museum and the Executive Officer circulate all groups as to numbers required". Carried.

MMTB Poster. One poster from 50th Anniversary of Preston Workshops had been circulated to each museum. Mr. Kings spoke on the possibility of further production. Moved Kings/Kahn that "subject to informal enquiries regarding the continued existence of the plates, Mr. Kings formally approach the Board for re-production with a mutual decision as to rewording". Carried.

3.4 SAFETY POLICY STATEMENT

Mr. Daniells indicated that 3 levels of responsibility exist, viz.

1. COTMA. Broad policy guidelines.
2. Museums. Regulation and control.
3. Individual members. To be trained in safety appreciation.

COTMA cannot and should not enforce safety standards in individual museums but should prepare overall policy guidelines.

Moved Daniells/Kings that -

- "1. Members of COTMA recognise the need to develop and exercise maximum safety standards during development, expansion, maintenance and operations of their respective museums.
2. Members of COTMA seek guidance from safety authorities in their own area in order to develop their safety regulations and instructions.
3. Members of COTMA each appoint a safety officer, officers or authorities titled in accordance with appropriate Acts and regulations (ultimately responsible to the governing body of the Museum) who would be responsible for preventing unsafe practices and advising upon and then implementing safety procedures.
4. Progress in these matters be reported to the Expert Panel on Museum Safety Standards not later than 31 December 1977". Carried.

3.5 ENGINEERING RELICS COMMITTEES.

The Executive Officer spoke on the setting up by I.E. Aust. of a co-ordinating committee to preserve engineering relics. Moved Kahn/Skinner that "a letter be sent to the Institution of Engineers, Australia indicating our expertise and offering our assistance through our personal members." Carried.

3.6 STRPS BOILER

An informal letter from Mr. Stock was read in part by the Chairman. Member museums were asked to indicate to the Executive Officer knowledge of particular companies who could assist in boiler manufacture. Suggested starts to the investigation were Puffing Billy, Steam Rail, an Altona company of ex-Newport employees, and Mr. Silcock in Christchurch.

3.7 PUBLICITY

To a letter from Mr. Jessup, the Chairman commented that COTMA should not have to justify itself by self-publicising when it is the servant of its constituent museums. It was the responsibility of the museums themselves to justify their membership of COTMA to their own members. However, it was agreed that columns in Trolley Wire and Tramway Topics would be prepared more regularly.

APPLICATION FOR MEMBERSHIP

4.1 Haddon Tramway Workshops

Mr. Smith (HTW) speaking to the previously circulated conspectus, advised that the organisation was not yet incorporated, but proposed to incorporate as Limited Proprietary company under section 15(b) of the Victorian Companies Act. He indicated HTW had 6 members, its objectives were generally to restore Melbourne drop-centre cars, with one single truck car being obtained for comparative purposes. He stated that HTW already had its full fleet except for a scrubber car. To a questioner, he agreed that HTW "was doing its own thing", but did not wish to transgress upon other museums.

The Chairman expressed some concern about the proposed form of incorporation as it appeared that there was no provision to prevent the assets being realised rather than being preserved in perpetuity. He commented that it was important in his opinion that COTMA members did not have the appearances of having been set up for profit or personal gain. The Chairman, with the consent of the meeting, sought comment from an observer present, Mr. A. Sell, (a solicitor practising in Victoria).

Mr. Sell expressed the opinion that the proposed form of incorporation did not appear apt for the purpose, particularly as it allowed Directors to have complete control over the membership. There appeared to be no compulsion to transfer assets to a like group upon winding up.

Moved Daniells/Richardson that "the application be deferred for 12 months pending provision of full articles of incorporation". Lost 3/7.

Moved Jordan/Perfect that "due to problems with the type of incorporation, the application be rejected but that service continue until the next A.G.M. when re-application could be considered along with the articles of incorporation". Carried 7/3.

4.2 Newcastle Historic Vehicle Association

Moved Kahn/Jordan that "no further information having been received from applicants, the application be rejected". Carried.

5.1 CONFERENCE 1979

Moved Kahn/Verrier "that Conference continue annually as each year keeps contact and momentum going". Carried.

Moved Kahn/Jordan that "the 1979 Conference be held in Brisbane". BTMS had volunteered to host. Carried.

Mr. Richardson requested that Perth be noted as an applicant host for 1980.

5.2 JOINT RAILWAY/TRAMWAY CONFERENCE

The Executive Officer spoke on discussions with Mr. Coxhead (previously Secretary, Vic. Division, Australian Railway Historical Society) and Mr. Thompson (National Secretary ARHS). Moved Kahn/Jordan that "the Executive Officer initiate contact between BTMS and Mr. Thompson toward one day of the 1979 Conference being shared between COTMA and ALL railway preservation groups". The motion anticipated parallel railway and COTMA conferences simultaneously in Brisbane with the one shared day involving COTMA, PBPS, GSPS, PRRPS, Zig Zag, ARHS Museums, etc. but excluding the rail enthusiast groups. Carried.

6.1 ANNUAL REPORT

The Chairman spoke to the Report which had previously been circulated, and highlighted the co-operation with MMTB.

Moved Daniells/Skinner that "the Report be accepted". Carried.

6.2 FINANCIAL REPORT

The Executive Officer spoke to the Financial Statement. Moved Verrier/Richardson that "the Financial Report be accepted". Carried.

Moved Verrier/Kings that "the Auditor's Report be accepted". Carried.

Moved Verrier/Skinner that "Mr. Paroissien continue as Auditor for 1977/78". Carried.

Moved Daniells/Kings on recommendation by the Executive Officer that "the levy per museum member for 1977/78 be 20 cents". Carried.

6.3 ADDRESS LIST

Computerised address lists from the treasurer were distributed.

6.4 INVOICING

In future the Executive Officer will seek membership details from Museums through the Memoranda. This information will be used to invoice the Museums.

GENERAL BUSINESS

7.1 NARROW GAUGE TRACTION MOTORS

Mr. Griffin (observer, SPER) asked interested member museums to notify the Executive Officer of their possible requirements.

7.2 33" WHEELS

Executive Officer to obtain steel specification from MMTB for survey by SPER. Mr. Kingsley to seek information from SEC.

7.3 AUSTRALASIA

A motion by Mr. Richardson to change "Australasia" in COTMA's title to "Australia and New Zealand" lapsed for want of a seconder.

8.1 ELECTIONS

Moved Kings/Kahn that "Dr. John Radcliffe continue as Chairman of COTMA for 1977/78". Carried with acclamation.

Mr. Bill Kingsley had previously indicated his inability to continue as Executive Officer. Nominations received in writing for the position of Executive Officer were Messrs. Jordan (BTPS/TTMS) and Kings (MOTAT/WATM). By secret ballot Mr. Keith Kings was elected Executive Officer for 1977/78.

The Chairman thanked Mr. Kingsley for his dedication to the task and his unanimity of purpose. He was supported by acclamation.

The Chairman and the retiring Executive Officer both congratulated Mr. Kings on his election.

9.1 CONFERENCE 1977

Mr. Kahn thanked Dr. Radcliffe and Mr. Skinner for their excellent job in hosting the 1977 Conference. Dr. Radcliffe in reply expressed appreciation to Mr. Skinner and Mr. White for their assistance and formally closed the Meeting, thanking all for their participation.