

## **CONFERENCE 1990**

WELLINGTON, NEW ZEALAND



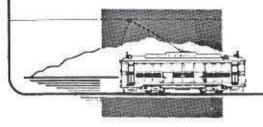
# Proceedings of the Joint Conference of the

# Council of Tramway Museums of Australasia

and the

# National Federation of Rail Societies Incorporated

1st - 8th June 1990



WELLINGTON TRAMWAY
MUSEUM INCORPORATED





#### ACKNOWLEDGEMENTS

On behalf of the Wellington Tramway Museum Inc., organiser and host Museum, I would like to acknowledge the support and contribution of the large number of people which made Conference 1990 a success.

I am especially grateful to the following persons who gave their time freely to lead a workshop session or present a paper:

Tim Borchers, Bendigo Trust
Bruce Gamble, MOTAT
Richard Gilbert, Ballarat Tramway Preservation Society
John Le Cren, former Staff Photographer, New Zealand Railways
Peter Rendall, Wellington Tramway Museum
Alan Smith, past Deputy National Librarian, National Library of N.Z.
Roger Toleman, Ministry of Transport
Craig Tooke, Melbourne Tramcar Preservation Association

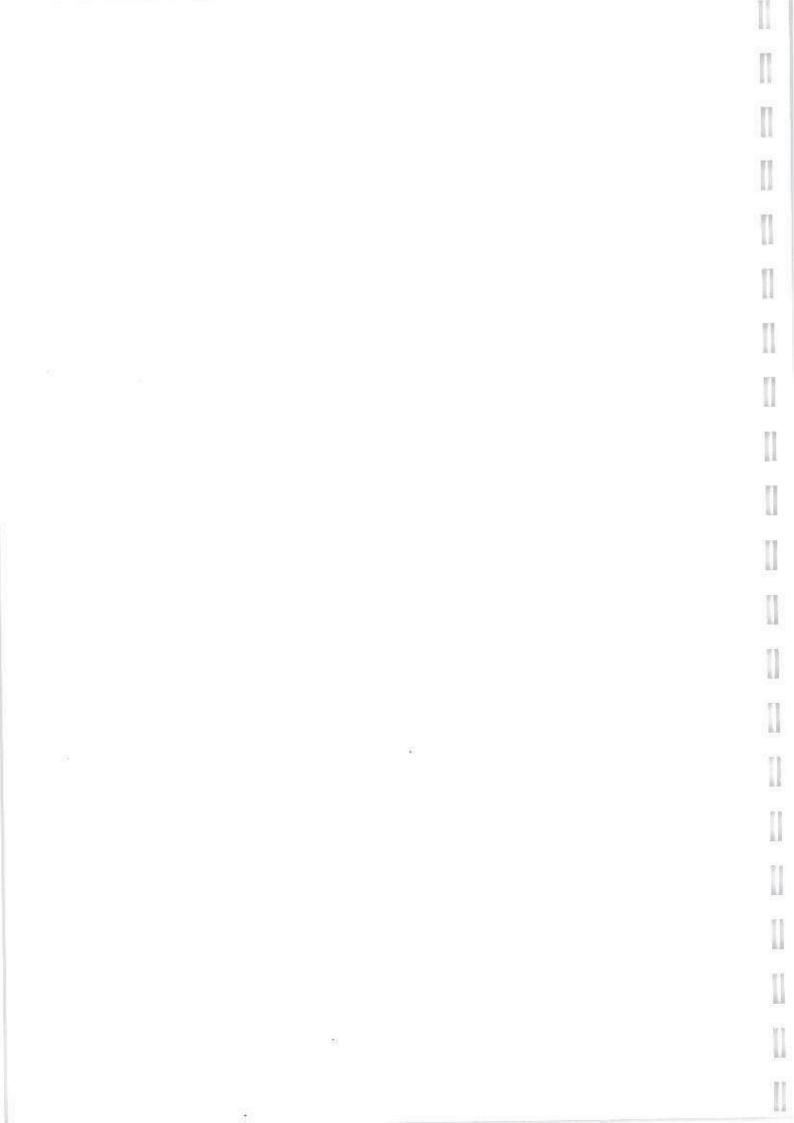
The Organising Committee valued the support and guidance of Bill Kinsley, Executive Officer, Council of Tramway Museums of Australasia and Paul Dillicar, President, National Federation of Rail Societies, throughout the two years of planning and organising that went into Conference 1990.

Thanks are also due to Peter Rendall and the Omnibus Society for organising a very enjoyable trolley bus tour of Wellington.

Last, but not least, special thanks to all the members of the Organising Committee - Phil Austin, Diana Berry, Peter Berry, Marlene Burling, Trevor Burling, Richard Gray, Keith McGavin and Bryce Pender - who, while continuing with their usual Museum duties, worked hard to ensure Conference 1990 was a success and to record the event in these proceedings...

Les Stewart Chairman, Conference 1990 Organising Committee Wellington Tramway Museum Inc.

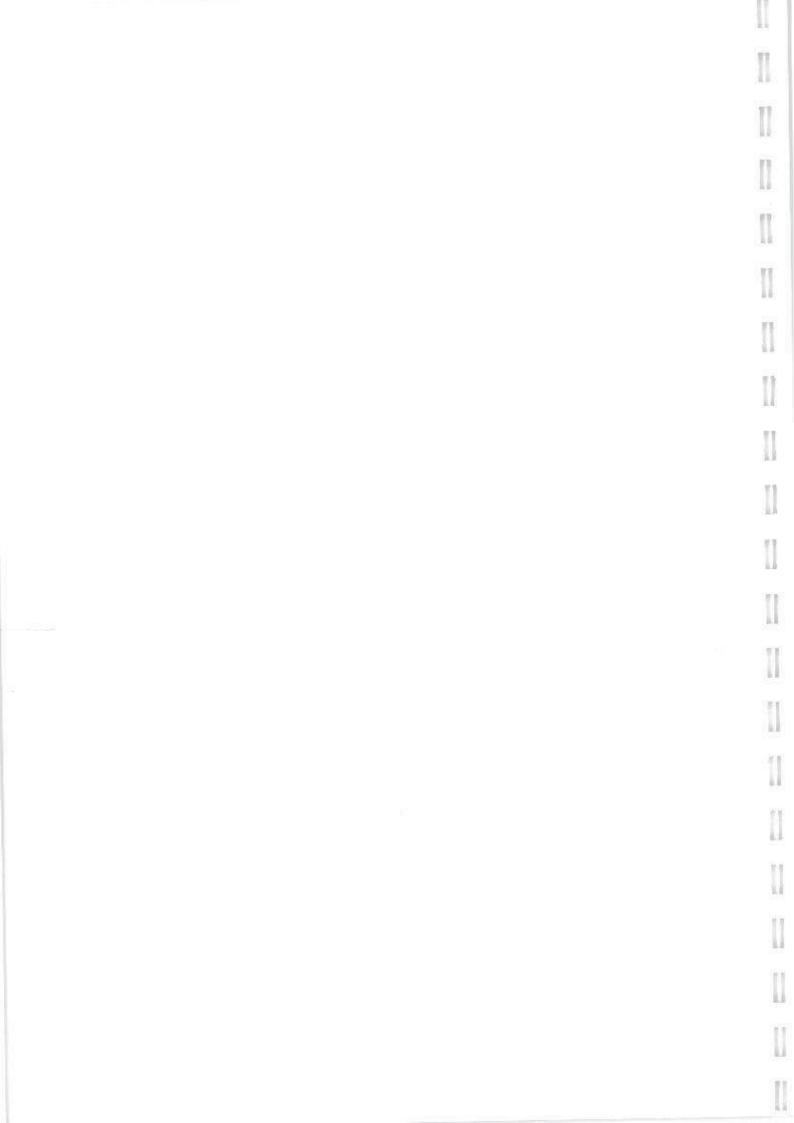
January 1993





# **CONTENTS**





## PROCEEDINGS OF CONFERENCE 1990

#### CONTENTS

Section 1	Participants and Programme
Section 2	Workshops
Section 3	Field Trips and Social
Section 4	Council of Tramway Museums of Australasia General Meeting
Section 5	National Federation of Rail Societies Incorporated

# PARTICIPANTS AND PROGRAMME

#### CONTENTS

	Page
Forward - The 1990 Year	1 - 1
Council of Tramway Museums of Australasia	1 - 2
National Federation of Rail Societies Incorporated	1 - 3
Wellington Tramway Museum Incorporated	1 - 4
Conference 1990 Participants	1 - 5
Conference 1990 Programme	1 - 10
Opening Address - Hon, Margaret Shields	1 - 13
1990 ICI Paints/NFRS Terminals Award	1 - 16
A. & G. Price Locomotive Restoration Award 1990	1 - 17
Key Note Address - Dr. Bruce Gamble	1 - 19

Page ii

#### WORKSHOPS

#### CONTENTS

Workshop	Page	
Development of the Volunteer Worker	2 - 1	
New Zealand Railway and Tramway Safety Regime	2 - 7	
Code of Electrical Practice for COTMA Groups	2 - 12	
Archives	2 - 15	
Photography as an Aid in the Museum	2 - 16	
Tram and Railway Carriage Roof Coverings	2 - 20	
Handy Hints and New Ideas for Restoration and Maintenance	2 - 23	
Trolley Buses	2 - 27	
Is Your Museum Dying?	2 - 30	
Brill 21E Truck and Other Tram Bogie/Truck Requirements	2 - 35	
Overhead Construction and Maintenance	2 - 38	
Melbourne and Metropolitan Tramways Board Instructions in Overhead Construction	2 - 39	
Facts and Data on Overhead Trolley Wire Construction	2 - 45	
Trolley Wire Renewal	2 - 53	
Wellington Tramway Museum 1990 Projects	2 - 55	

Contents

# FIELD TRIPS AND SOCIAL ACTIVITIES

#### CONTENTS

Item	Page
Sparks, Sparks and Sparks Trolley Buses, Electric Locomotives and a Steam Train	3 - 1
The Great Debate "That Railways are Overgrown Tramways"	3 - 7
Re-Commissioning of Wellington Double Saloon Tram 159	3 - 12
Southwards Car Museum	3 - 16
1990 Illuminated Tram	3 - 18
The Royal New Zealand Police College Museum	3 - 19
Wellington's Trolley Buses and Cable Car	3 - 22

Page iv

# COUNCIL OF TRAMWAY MUSEUMS OF AUSTRALASIA

## ANNUAL GENERAL MEETING

#### CONTENTS

Item	Page
Directory	4 - 1
Chairman's Report 1990	4 - 3
Executive Officer's Report	4 - 10
Treasurer's Report	4 - 15
Annual Accounts for the Year Ended 31 March 1989	4 - 16
Annual Accounts for the Year Ended 31 March 1990	4 - 20
COTMA Uniforms and Spare Parts Officer's Report	4 - 24
Trolley Wire Report	4 - 25
Tramway Topics Report	4 - 28
Minutes of the Ninth General Meeting	4 - 30

Contents

# NATIONAL FEDERATION OF RAIL SOCIETIES INCORPORATED

## ANNUAL GENERAL MEETING

## CONTENTS

Item	Page
Directory	5 - 1
1990 Annual Report	5 - 5
Treasurer's Report	5 - 8
Annual Accounts for the Year Ended 31 March 1990	5 - 10
Broadening the Membership Base of the Federation	5 - 15
Tramway Convenor's Report	5 - 17
Boiler Convenor's Report	5 - 19
Report on RM 56	5 - 20
Minutes of the Annual General Meeting	5 - 21

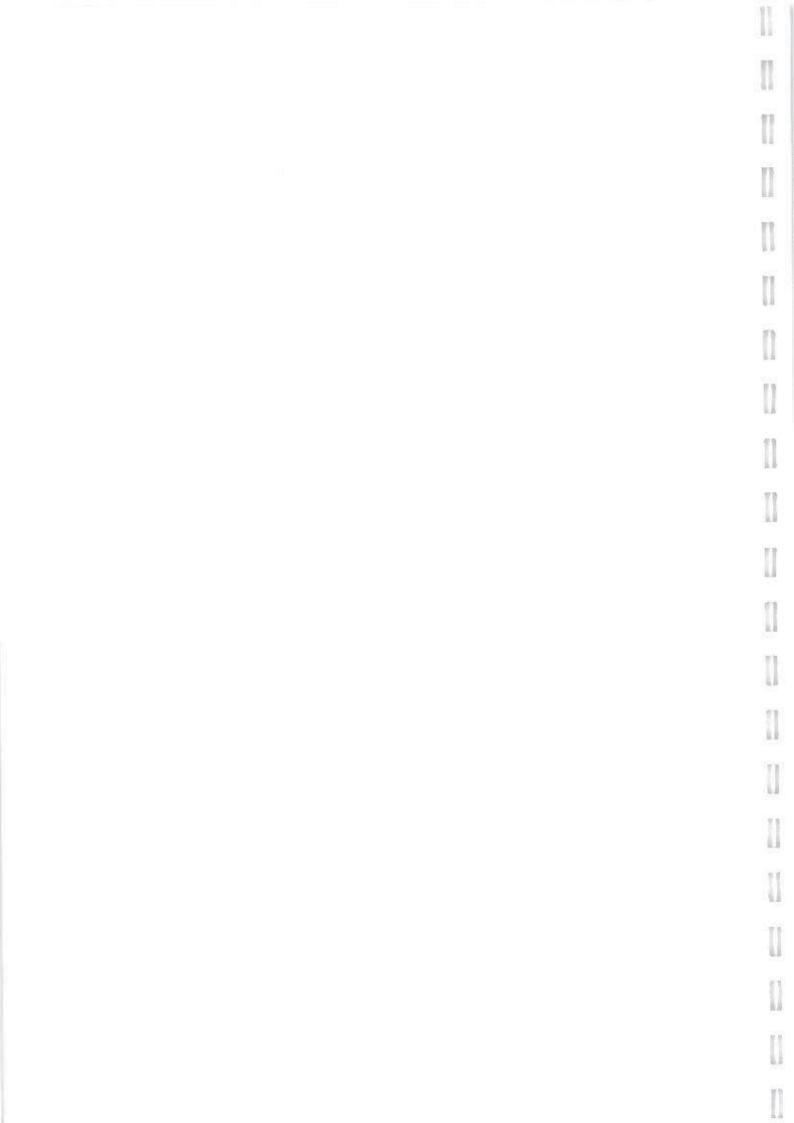
Page vi

Contents



# PARTICIPANTS AND PROGRAMME





# PARTICIPANTS AND PROGRAMME

#### CONTENTS

	Page
Forward - The 1990 Year	1 - 1
Council of Tramway Museums of Australasia	1 - 2
National Federation of Rail Societies Incorporated	1 - 3
Wellington Tramway Museum Incorporated	1 - 4
Conference 1990 Participants	1 - 5
Conference 1990 Programme	1 - 10
Opening Address - Hon. Margaret Shields	1 - 13
1990 ICI Paints/NFRS Terminals Award	1 - 16
A. & G. Price Locomotive Restoration Award 1990	1 - 17
Key Note Address - Dr. Bruce Gamble Light Rail Transit - Dreams, Nightmares and Reality	1 - 19

li II H []

# FORWARD THE 1990 YEAR

The 150th Anniversary of the signing of the Treaty of Waitangi was the Central Focus of the 1990 year in New Zealand. It was also a milestone year in the history of New Zealand, for a number of other important anniversaries. These include:

- 1,000 years of known habitation of these islands
- The 150th anniversary of both Auckland and Wellington cities
- The 100th anniversary of New Zealand's modern electoral system one man, one vote - and the 97th year of one woman, one vote
- 100 years of the establishment of solidarity of the Union movement through major legislative reform providing worker protection and rights
- 100 years since the beginnings of the welfare state, with the first legal acknowledgement of the role of Government in providing health services
- The 75th anniversary of the Anzac Gallipoli landings

1990 was also a milestone year in the history of the Wellington Tramway Museum with the celebration of 25 years public tramway operations at the Museum in Queen Elizabeth Park, Paekakariki.

In the spirit of 1990, the Wellington Tramway Museum Incorporated was pleased to be the hosts for the first ever joint conference of the Council of Tramway Museums of Australasia and the National Federation of Rail Societies.

# COUNCIL OF TRAMWAY MUSEUMS OF AUSTRALASIA



The Council of Tramway Museums of Australasia (COTMA) provides a forum and means of communication for all museums in Australia and New Zealand dedicated to the preservation of the Australasian tramway heritage. COTMA also has a role in representing them and furthering their interests.

By encouraging co-operation between its member museums by facilitating the sharing of experience, expertise, materials, skills and information, COTMA enhances the preservation of the Australasian tramway heritage and assists member museums attain their own goals.

COTMA facilitates mutual contact and assistance between the member museums and their members. This enables individual members of COTMA's member museums to widen their experience, skills, knowledge and to participate more effectively, fully and enjoyably in the preservation of the Australian tramway heritage.

COTMA held its first conference in Ballarat, Victoria in 1975 and conferences were held annually until 1978. Since 1980 conferences have been held biennially. Members museums are kept informed of events, issues and other matters affecting them through a newsletter published at regular intervals.

An area that COTMA has been very successful in has been coordinating, on behalf of its member groups, the aquisition and distribution of surplus vintage tramway equipment from tramway operators in Melbourne, Adelaide and Brussels.

# NATIONAL FEDERATION OF RAIL SOCIETIES INCORPORATED



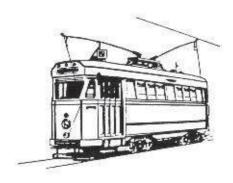
In 1972 a meeting of representatives from New Zealand's railway and tramway preservation groups met in Wellington to discuss ways in which they could work together to further their mutual interests. As a result of that meeting, the National Federation of Rail Societies Incorporated (NFRS) was formed.

The Federation's principle activity is the facilitation of the exchange of information and materials between member groups. Every year, over Queens Birthday Weekend, representatives gather for a conference where delegates meet formally and informally to discuss a range of matters affecting rail preservation in New Zealand. A regular newsletter between conferences keeps member groups in touch during the year.

One of the Federation's other principle activities is to represent and further the interests of its member groups at a national level. The Federation is in regular discussion with Government departments and agencies over regulatory issues that affect its members and it is involved in facilitating and negotiating a range of commercial contracts on behalf of its member groups.

The Federation has had a number of success stories in its brief history. Among them is the successful negotiations with New Zealand Railways Corporation which enabled member groups, firstly, to operate their own passenger rolling stock on New Zealand Rail's tracks and then to operate vintage steam and diesel locomotives.

# WELLINGTON TRAMWAY MUSEUM INCORPORATED



The Wellington Tramway Museum Incorporated (WTM) was the organising and host museum for Conference 1990. The Museum is a member of both COTMA and NFRS.

The Wellington Tramway Museum was formed in 1964 when Wellington's tramway system was in its last days. A small band of dedicated enthusiasts decided to build a working tramway to preserve Wellington's trams for future generations. Although there were a number of sceptics at the time, with the contribution of many hours of effort by numerous individuals over the years, the dream of that small group and those who followed has been accomplished - a 2 km working tramway at the Museum's site in Queen Elizabeth Park, Paekakariki.

Today, with the Museum in its second quarter century, it is working on developing tramway displays comparable with the best museums of its type in the world. To achieve that goal, the Museum is planning to build a new workshop building and then develop the existing multi purpose tram barn for display facilities.

The Museum is an incorporated society, membership of which is open to all persons interested in furthering the Museum's aims. It is a non-profit organisation and all surplus funds are reinvested in the development of the Museum. Tram fares and membership revenues are the main source of funds.

#### **CONFERENCE 1990 PARTICIPANTS**



Delegates to Conference 1990, the combined conferences of the Council of Tramway Museums of Australasia and the National Federation of Rail Societies Incorporated.

#### CONFERENCE 1990 PARTICIPANTS

Australian Electric Transport Museum (South Australia) Inc.

Chris Andrews Mark Skinner

Ballarat Tramway Preservation Society

Carolyn Dean Richard Gilbert Chris Jacobson John Phillips

Bendigo Trust

Dennis Bell Tim Borchers Denis O'Hoy

Brisbane Tramway Museum Society

Peter Hyde

Bush Tramway Club Inc.

Bob Mann

Canterbury Branch, N.Z.R. & L.S.

(Ferrymead Railway)

Frank Rowlands Allan Spooner

Council of Tramway Museums of Australasia (Officers)

Bill Kingsley John Radcliffe

Friends of the Fell Inc.

Noel Meek Graham Murrell

Gisborne City Vintage Railway Inc.

Ron Scott Graeme Trim

Glenbrook Vintage Railway Trust

Julie Pointon Ted Pointon John Stichbury

Goldfields Steam Train Society Inc.

Ron Brown

Maitland Tramway Park and Museum Ltd

Jack Nyman Lewis Nyman Melbourne Tramcar Preservation Association Inc.

Dean Filgate Craig Tooke

National Federation of Rail

Societies Inc. (Executive)

Paul Dillicar Ken Henderson Russell Paul

New Zealand Railway and

Locomotive Society Inc.

John Clayton Glen Summers

Opua and Kawakawa Railway

Preservation Society Inc.

Ian Cranston

Otago Excursion Train Trust

Chris Northover Arthur Rockliff Clark Simmonds

Otago Railway and Locomotive Society Inc.

(Ocean Beach Railway)

Cecil Bachop Peter McCallum

Perth Electric Tramway Society (Inc)

Noel Blackmore Martin Grant Barrie King Kevin Parker Scott Parker Barrie Peacock Lindsay Richardson

John Shaw

Railway Enthusiasts Society Inc.

Michael Austin Paul Heigton

South Pacific Electric Railway

Co-operative Society Ltd.

Don Campbell Anthony Cody Richard Jones Bob Merchant Don Parkes

Bruce Worthington

Steam Incorporated

Steve Porter Richard Taylor Tramway Historical Society Inc.

Larry Day
Trudi Day
Wendy Day
Frank Doherty
Dave Hinman
Graeme Richardson

Alan Roi

Murray Sanders Barrie Shakes John Shanks

Tramway Museum Society of Victoria Inc.

Keith Kings Len Miller Bob Serle Keith Stodden

Waikato Branch, N.Z.R. & L.S.

**David Cumming** 

Weka Pass Railway Inc.

Geoff Allen Allan Campbell

Wellington Tramway Museum Inc.

Trevor Burling
Mike Flinn
Richard Gray
Keith McGavin
Morris Moller
Barry Ollerenshaw
Bryce Pender
Peter Rendall
Les Stewart

West Coast Mechanical and Historical Society Inc. (Shanty Town)

Barbara Tibbles Ian Tibbles

Western Springs Railway, MOTAT

Jim Savage

Western Springs Tramway, MOTAT

Jack Brewerton Bruce Gamble Ian Stewart In addition, Conference 1990 welcomed the following family members travelling with out of town delegates:

Ballarat Tramway Preservation Society

Stuart Dean Timothy Dean

Goldfields Steam Train Society Inc.

Judi Brown

Otago Railway and Locomotive Society Inc.

(Ocean Beach Railway)

Alma Bachop

Perth Electric Tramway Society (Inc)

Winifred Blackmore Lorraine Parker Michelle Parker Margaret Peacock Robin Richardson

#### CONFERENCE 1990 PROGRAMME

Unless times and places are indicated meals and coffee breaks were taken at convenient times during the day.

#### Friday 1 June 1990

7.00pm Registration and Drinks

#### Saturday 2 June 1990

8.30am Day long field trip to:

- \* Foxton to visit the Foxton Trolley Bus Museum and to ride some of the buses.
- Palmerston North for a look over the North Island Main Trunk electrification facilities
- Woodville travelling through the Manawatu Gorge behind steam locomotive F 163.
- 7.30pm Debate "That Railways are Overgrown Tramways"
  Dr John Radcliffe, Chairman of COTMA, lead the COTMA team arguing the affirmative, while NFRS President, Paul Dillicar's NFRS team did their best to outwit the tramway followers.

#### Sunday 3 June 1990

- 8.45am Welcome and opening announcements.
- 9.00am Development of the Volunteer Worker. John Burrows of Human Resource Development lead delegates through an "experiencial learning exercise" which highlighted issues relevant to the management of our volunteer work-forces.
- 12.00 noon Lunch with opening address from M.P. for Kapiti, Hon. Margaret Shields.
- 2.00pm Continuation of the morning session.

3.30pm

Parallel Sessions Group 1.

Regulatory framework for New Zealand Railway and Tramway Museums - Mr Roger Toleman, Ministry of Transport.

Code of Electrical Practice (COTMA groups).

4.30pm

Parallel Sessions Group 2.

\* Archives - Alan Smith

Photography as an Aid in Museum Work - John Le Cren

 Tram and Carriage Roof Coverings - Chaired by Les Stewart

7.30pm

A time for delegates to catch up on what has happened at the various museums since the last conference with slides, videos etc.

#### Monday 4 June 1990 - COTMA Programme

9.00am

Parallel Sessions Group 3.

 Handy Hints for Restoration Work - Chaired by Trevor Burling.

\* Trolley Buses; What Requirements do Groups Have?; What is COTMA's Role? - Chaired by Peter Rendall.

10.15am

Parallel Sessions Group 4.

\* Is Your Museum Dying? - Richard Gilbert.

\* Brill 21E Truck and Other Tram Bogie/Truck Requirements - Tim Borchers.

11.15am

Parallel Sessions Group 5.

Overhead Construction and Maintenance - Craig Tooke,

 Wellington Tramway Museum 1990 Projects - Les Stewart.

11.45am Conference Photograph.

1.00pm

Afternoon and evening field trip incorporating

Wellington Tramway Museum for the Official Re-Commissioning of Wellington Double Saloon Tram 159.

\* Southwards Car Museum where not is there a wonderful collection of vintage and veteran cars but also a Wurlitzer Organ. Drinks and dinner followed a demonstration recital on the Wurlitzer and an opportunity to view the museum's car collection.

\* Wellington Tramway Museum for some evening tram rides on the 1990 Illuminated Tram and other trams.

## Monday 4 June 1990 - NFRS Programme

NFRS Annual General Meeting - all day. 9.00am

Conference Photograph. 11.45am

Delegates transported to Railway Station, Ferries and Airport. 5.00pm

#### Tuesday 5 June 1990

COTMA General Meeting - all day. 9.00am

Evening Address - Guest Speaker Dr Bruce Gamble. 7.30pm

#### Wednesday 6 June 1990

All day trolley bus tour of Wellington taking in as many routes as 8.30am possible, using a variety of trolley buses and including a tour of

the Kilbirnie Workshops (originally built for trams), a ride on the Cable Car and a look through the Cable Car winding room.

Dinner at the St. George Hotel. 6.30pm

## Thursday 7 June 1990

All day visit to the Wellington Tramway Museum, an opportunity 8.30am

for delegates to "play" trams without having to worry about fare

paying passengers.

#### Friday 8 June 1990

Delegates transported to Railway Station, Ferries and Airport. 8.30pm

#### OPENING ADDRESS

#### Hon Margaret Shields Minister of Consumer Affairs Member of Parliament for Kapiti

Thank you for the opportunity to speak at this conference.

I bring you the greetings and best wishes of the Minister of Transport, Bill Jefferies, who regrets that other commitments prevent him from being with you today.

A special welcome also to those of you who have travelled here from Australia.

It is important that people with similar interests can come together to share ideas and experiences at events such as this.

Railway links have always been important to the development of this country.

New Zealand's long, narrow shape helped promoted the place of the railway in our history.

Your efforts guarantee a continuing place in our lives for those early engines.

The opportunity to experience the feeling of rail provides important educational opportunities for all our children.

The formation of preservation societies during the 1960's ad 70's ensured the survival of many locomotives, tramcars and carriages, equipment that would otherwise be left to rot in sidings throughout the country.

The fact that commercial railway operations must function in the midst of stiff competition underlines the continuing importance of historical and enthusiast operations to provide services that would otherwise disappear altogether.

Commercial rail operations in New Zealand have undergone a massive change in recent years to place them on a proper commercial footing.

A Bill before Parliament at the moment will place the Railways Corporation's core business in a fully commercial framework.

But no matter what the nature of the operation - historical, enthusiast or commercial - all must operate in a safe manner.

A fundamental goal of the government is to ensure that the public can have confidence in the safety standards of all rail or tram transport.

Currently before the House, the legislative moves to a more commercial structure for Railways has prompted the need to look closely at the safety regime covering all railway operations, and to define standards operators must keep.

The recent tragedy in Australia is evidence of the scale of disaster that can occur when things go wrong.

The Ministry of Transport is working in association with Railways operators and other government departments to establish a safety regime applicable to all operators including historic and enthusiasts to whom existing legislation does not easily apply.

In line with current developments in other transport sectors the basis of the safety regime will be the safety audit.

As such all operators will be required to meet set standards of quality and safety.

This will be guaranteed through audits of each operator's management system rather than an over-emphasis on direct inspection.

Such a system provides the best means of ensuring that technology across a broad spectrum - from the earliest steam locomotive to the most up-to-date mono-rail or light rail transit system - meets the appropriate safety standards.

Under such a system the continued operation of all soundly managed ventures is unimpeded.

It is envisaged that the New Zealand Federation of Rail Societies will be a major player in the co-ordination of safety issues among its members.

Roger Toleman, the newly-appointed Manager of Corporate Policy in the Ministry of Transport will be speaking on the proposed safety regime later this afternoon.

This will give you an opportunity to discuss the proposals with an official who has played a large part in their development.

		1990

The Government acknowledges the wealth of knowledge resident in your groups and hopes to be able to continue to draw on that in the future.

I wish you well for the remainder of this conference and for the future.

At the conclusion of her address, Mrs Shields presented two awards on behalf of the National Federation of Rail Societies. The Public Terminals Award was won by the Pleasant Point Railway Museum and Historical Society Incorporated and the A & G Price Locomotive Restoration Award went to Friends of the Fell Incorporated, Featherston for their restoration of Fell locomotive no. 199.

## 1990 ICI PAINTS/NFRS TERMINALS AWARD

ICI Paints Decorative Division has great pleasure in joining the National Federartion of Rail Societies in congratulating the Pleasant Point Railway and Historical Society as winners if the 1990 ICI Paints/NFRS Terminals Award

In recognising the outstanding achievement of the Society in the concept, presentation and sheer hard work put into their Pleasant Point Museum Station Terminal, the judges were unanimous in their praise for the volunteers responsible. We are pleased to announce that in accordance with the sponsorship arrangements, 100 litres of ICI Decorative Paints, to be chosen by the Society, will be supplied upon request.

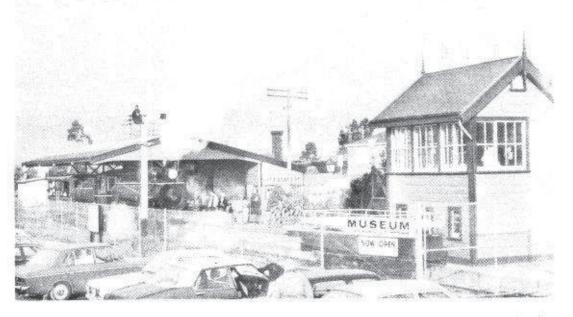
D.D. Hinman

P.G. Gattley

P.J. Dillicar

Judges

27 May 1990.

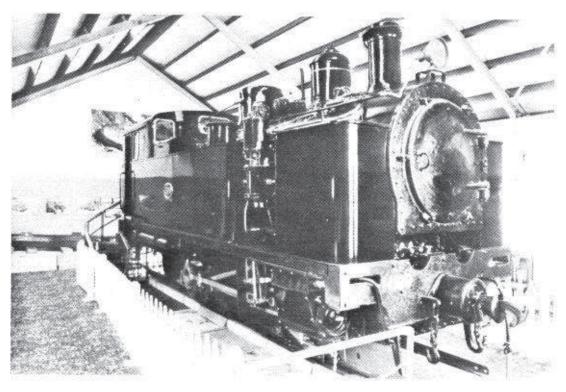


The Pleasant Point Museum and Railway, South Canterbury. Photograph: Bryan Blanchard

## A&G PRICE LOCOMOTIVE RESTORATION AWARD 1990

As always, the judges have been faced with a difficult task in choosing which groups should receive the A&G Price Locomotive Restoration Award for 1990. After careful deliberation however, they have unanimously chosen Friends of the Fell Incorporated of Featherston for their excellent restoration of the unique Fell type incline locomotive No. 199, the original of the New Zealand Railways' "H" class.

Although it was not practicable to restore this locomotive to a steamable condition, arrangements were made so that the operation of the wheels and valve motion can be displayed to visitors to the Fell Engine Museum at the press of a button. It is also possible for visitors to step down into the pit beneath the engine to inspect the arrangement of the inside engine with its horizontal driving wheels arranged for gripping the centre rail.



H Class Fell Locomotive No. 199 on display in Featherston. Photograph: Friends of the Fell.

"H" 199 is the only surviving example in the world of a locomotive built according to the patents taken out in the 1860's by John Barraclough Fell, an Englishman who was born in 1815. It was the first of a batch of four 0-4-2 type tank locomotives built by the Avonside Engine Company of Bristol, England, in 1875 for use on the Rimutaka Incline on the Wellington and Masterton Railway, which was then under construction. It commenced regular service when the railway was completed to Featherston in 1878, and remained in service until 1955, when the Incline was by-passed by a deviation through the 8.8 kilometre Rimutaka Tunnel.

Subsequently "H" 199 was placed on display in a Featherston park, where it remained exposed to the weather for more than 22 years. In 1980, when the organisation known as Friends of the Fell Incorporated was founded, it was decided to attempt to retain, house and restore the locomotive in Featherston. Actual restoration work began in March 1981, and the team was fortunate in obtaining the services and advice of a former Fell engine fitter, who had helped to service the locomotives at Cross Creek for eight years.

That the efforts of this dedicated group have been eminently successful was plain for all to see when the Fell Engine Museum was officially opened on 16 April 1989. It has been estimated that at least 8500 to 9000 hours of voluntary labour went into this project. Congratulations are due to all who have been associated with this task.

R.J. Mann

T.A. McGavin

D. Black

Judges

#### KEY NOTE ADDRESS

## LIGHT RAIL TRANSIT - DREAMS, NIGHTMARES AND REALITY

#### Bruce Gamble

Until returning to New Zealand in 1985 to join Beca Carter Hollings and Ferner, Bruce Gamble was Professor of Civil Engineering at the University of Calgary in Canada. He now has senior responsibility for building diagnostics and forensic engineering at BCHF, but also manages to maintain a major involvement in urban transport planning.

Bruce has been active in the debate over public transport in Auckland since 1981. His studies then, while on leave in Auckland, convinced him that Light Rail Transit (LRT) had a major role to play in Auckland. Since that time, he has undertaken several studies, the most recent being a social and environmental impact assessment of the proposed LRT system in central Auckland.

Bruce has always been a railfan, although trams are his weakness. He is a member of MOTAT and the Western Springs Tramway where tram restoration is his major activity.

For the Key Note Address of Conference 1990, Bruce provided delegates with an entertaining review of his experiences and involvement with light rail in Calgary, Canada and, closer to home, the planning for light rail in Auckland, New Zealand.

U U