

# SNOW CLEARANCE IN THE VICTORIAN ALPS

The purchase by the Country Roads Board of two new snow blowers for trials on roads leading to Mt. Buller, Mt. Buffalo and Mt. Hotham should result in improved access for holiday makers.

The clearance of snow from roads is not simply a matter of pushing it off the pavement and so making a passage for wheeled vehicles. The efficient clearance of snow results from detailed research into the qualities of snow which are astonishingly variable. The physical properties such as density, internal friction and plasticity of snow vary over a wide range and although all snow is white and cold, no fewer than 200 different types exist which themselves change with the varying air temperature and wind.

Australian snow tends to be wet and has the unfortunate characteristic of being up to three times as heavy when freshly fallen as European snow. As the snow lies on the ground its density further increases so that within a month its weight per cubic foot may have increased three-fold.

## BOARD'S OBJECTIVES

The aim in snow removal is to make the road trafficable. There are four basic methods of doing this:

- Compaction to make the snow firm and capable of supporting vehicular traffic.
- Heating to melt the snow.
- Pushing the snow off the road surface.
- Throwing it clear of the road.

The first two methods are very inefficient and expensive. The Board has for many years used, and improved, blades attached to roadmaking machinery such as graders and bulldozers to push the snow off the road surface. In the early 1950's clearing of the Alpine Road to Mt. Hotham was carried out using a "V" blade mounted on a Matador 4-wheel-drive truck. Since 1950 constant experiment has evolved the equipment used today which consists of graders and bulldozers with specially-designed blades to clear the snow and to remove the "windrows" of packed snow from the roadsides.

With the progress of the snow season the "windrows", formed when pushing the snow off the road, cause considerable obstruction to further snow-clearing operations.

To overcome some of the problems of snow removal, including



Rolba R400 Snowblower for use in Victorian Alps.

"windrow" removal, machines which throw the snow clear of the road surface are now being used by the Board. "Snow Blowers" as they can be called are of three types:

- Frontal turbines which are effective in deep fresh dry snow;
- Milling machines which cut old compacted snow but cannot deal satisfactorily with light fresh snow;
- Turbo-millers which are effective on all types of snow as they combine the actions of the first two types.

The new machines purchased by the Board are of the turbo miller type. The trials in 1967 follow on the use last year of a Swiss machine known as the Rolba R400. The success of the trial in 1966 led to the purchase of a second R400 and a larger R1500 which has two engines developing a total of 375 horsepower and which has a capacity to clear 1500 tons of snow each hour, clearing a path 8 ft. wide.

With these additional blower units the Board expects to clear snow more efficiently which will result in roads being open earlier in the day following snowfall.

## ROADS CLEARED

### Mt. Buller Road

Snow ploughs will operate as far as the top of 'Skating Rink' car park and provide clearing for 4-wheel-drive vehicles from there to the village.

### Mt. Buffalo Road

The road will be cleared to Cresta car park.

### Alpine Road

The road to Mt. Hotham will normally be cleared to the Diamentina Hut car park on the northern approach two miles from Hotham Heights and to Slaty Cutting, two miles south on the Omeo side.

### Mt. Donna Buang Road

Clearing will be carried out as far as the 10 mile turntable and car park.

## KEEP VICTORIA'S ROADS TIDY

The Country Roads Board spends considerable sums of money in the provision of facilities for travellers, not only in its attention to maintaining and developing roads and attractive roadsides but also in the construction of parking bays, roadside fire places, scenic lookouts and fully-developed rest areas. At these locations litter bins are

provided and cleared regularly by the local municipal council or the Board's road patrols. Notwithstanding this, litter is still thrown into the nearest bush or alongside the road pavement. Not only is this litter an appalling eyesore and a danger to others, but clearing activities divert road patrols from their main

factor of caring for and maintaining our roads.

The Board asks everyone to do all they can to help spread the idea that the practice of leaving litter on roadsides is unnecessary, and should be eliminated. Please use litter bins whenever possible and take your litter home for disposal when bins are not available.

# Important Country Roads Board Projects Completed

The financial year ended 30th June, 1967, saw the completion of a number of major road and bridge works, progress on others and a start on many more.

To the general public, the completion of a new road or bridge and its opening to traffic is a most significant event and the Board is pleased to report that during the year the mileage of dual carriageways was significantly increased, 175 new bridges were opened to traffic and 4 railway level crossings were eliminated. Many of the important works were financed from the Roads (Special Projects) Fund.

## COMPLETION OF DUAL CARRIAGEWAYS ON STATE HIGHWAYS

### Hume Highway

Special Project No. 2 — 4.4 miles between Craigieburn and Kalkallo.

Special Project No. 8 — 2 miles north and south of Tallarook. Seymour township — 1.1 miles.

### Western Highway

1.1 miles from Kororoit Creek to Deer Park.

Special Project No. 5 — 7 miles constructed between Deer Park and Rockbank together with two duplicate bridges and dual carriageways between Djerriwarrh Creek and Coimadai Creek.

### Princes Highway West

0.5 mile between Robbs Road and Somerville Road in the City of Footscray.

### Princes Highway East

Special Project No. 6 — 2 miles between Doveton and Hallam completed.

1.6 miles between Morwell and Morwell East.

### Nepean Highway

0.4 mile of six-lane dual carriageways and a new rail-over-road overpass at Mordialloc.

Special Project No. 13 — 2.1 miles between the intersection with Humphries Road and Mt. Eliza.

### Burwood Highway

1.8 miles of six-lane dual carriageways between Greenwood Street in Box Hill to east of Blackburn Road in the City of Nunawading.

## OTHER IMPROVEMENTS ON STATE HIGHWAYS

### Hume Highway

The bridge at Seven Creeks, Euroa, was widened to 28 feet between kerbs.

Additional lanes were constructed at the junction with the Murchison-Violet Town main road to provide 4 lanes and channelisation of the intersection.

Four new bridges were built over the Goulburn River and adjacent flats at Seymour. The road approaches are under construction.

The bridge over the Ovens River at Wangaratta was completed and a new bridge over the adjacent floodway constructed.

### Western Highway

A new bridge 28 feet wide between kerbs with realigned approaches was built over the Hopkins River at Dobie.

### Princes Highway West

The bridge over the Barwon River at Geelong was widened to provide four traffic lanes.

The highway was reconstructed and realigned through Stony Rises, 106 miles west of Melbourne.

### Princes Highway East

Special Project No. 10 — 5.5 miles of two-lane roadway and new bridge at Hospital Creek, near Orbost, by-passing two railway level crossings were completed.

The reconstruction and sealing of the section near Mount Drummer completed the sealed pavement between Melbourne and Sydney.

### South Gippsland Highway

2.25 miles of highway was reconstructed and regraded near Grassy Spur east of Meeniyan.

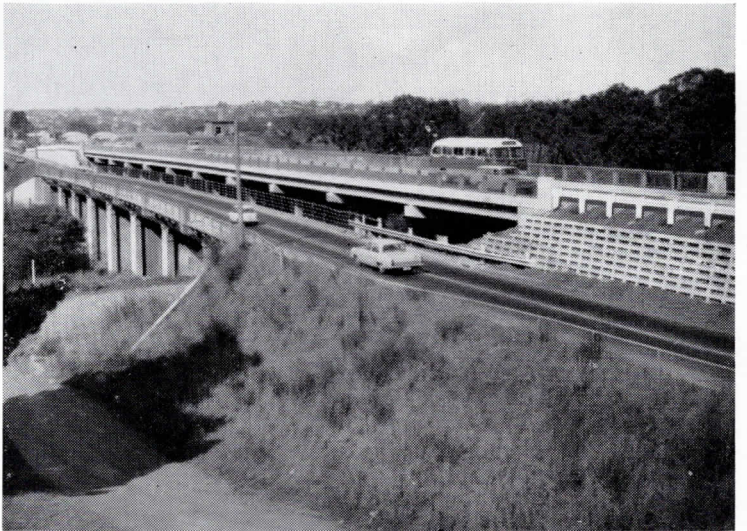
1.75 miles of the Foster deviation was constructed.

### Burwood Highway

The highway was widened between Warrigal Road and Edwards Street in the City of Box Hill.



South Gippsland Highway. — Newly completed deviation at Foster.



New duplicate bridge over Yarra River at Burke Road — Cities of Camberwell, Kew and Heidelberg.

## METROPOLITAN ROADS AND BRIDGES

### Burke Road

Completion of a duplicate bridge over the Yarra River between the Cities of Camberwell, Kew and Heidelberg.

### Albert Park

Reconstruction of Queens Road Drive and the southern end of Aughtie Drive to complement the St. Kilda Junction project.

### Canterbury Road

Completion of the intersection at Springvale Road in Nunawading City.

### High Street Road

Completion of the intersection at Springvale Road in the City of Waverley.

### North Road

Completion of dual carriageways between East Boundary Road and Tyrone Street in the City of Moorabbin.

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# RESEARCH LEADS TO GOOD ROADS

Behind the scenes of every road and bridge construction job are the engineers and scientists who are specialists in the quality control of materials used in these works. There too are the men who carry out research and applied research to add further knowledge in road engineering.

To the layman, roads fall into simple categories such as gravel, bitumen or concrete though it may be noticed that in different parts of the State there are marked changes in colour of the materials. In fact, there are not only changes in colour but also in the quality of the stone used for road construction and in the ability of the natural earth to carry the load. These differences may result in great variations in the cost and durability of the final road surface.

Road research has led to techniques to improve the sub-soils of a road by adding small quantities of cement or lime which would have an effect far greater than would appear at first sight, and similar methods may be used to strengthen actual pavement materials which do not meet the required standards. It is also a fact that a material can be too durable, in that instead of wearing gradually under traffic it merely polishes to a slippery surface which can be very undesirable. The Board's research engineers use special equipment to study this problem.

## The "Roughometer"

The "Roughometer" is another specialised instrument which is used, as its name implies, to measure the roughness of a road. The machine is towed behind a vehicle and, as its wheel bumps up and down its vertical movements are recorded and added to produce a coded result which indicates the serviceability of the road from the roughness point of view. Developments in the field of roughometer technique may provide far-reaching results in the measurement of road deterioration over a period of years.

Petrologists in the Board's service have for many years employed methods of microscopic examination of rock to establish the structure and quality of stone. Somewhat similar microscopic techniques are used by the Board's metallurgist in the examination of specimens of steel obtained in the course of investigations of welding procedures.

## Field Work

Over and above the work which is carried out in the Board's laboratory building, there is the work of men in the field. This work includes geologists searching for new deposits of road materials or making investigations of sub strata using seismic apparatus; other operators boring to test the foundations for bridges; engineers testing the strength of road pavements, and scientists measuring the quality of paint used for traffic line marking. All these and many other activities make up the work of the Country Roads Board Materials Research Division.



The "Roughometer"



New C.R.B. Divisional Laboratory at Bendigo.

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## ROADS OF TOURIST INTEREST

### Acheron Way

Completion of Signs Bridge at the junction with the Warburton Highway at Warburton.

### Mount Buffalo Road

Reconstruction and realignment to provide a 20 ft. wide sealed pavement between the 13 and 15 mile posts.

### Ocean Road

Construction of a new bridge over Aire River and the reconstruction of a sealed road between Aire River and Ford River.

Widening of the steep, narrow road near Cinema Point.

Construction of 1.5 miles west of Yuulong.

### Mount Donna Buang Road

Extension of widening between Cement Creek and the ten-mile turntable.

### Taylor Bay Road

Special Project No. 12 — A new road for tourists has been completed between Taylors Lane and Haines Saddle near Lake Eildon.

Special Project No. 14 — 7.7 miles of road for tourists has been completed between Marlo and Cape Conran in the Shire of Orbost.

## RAILWAY LEVEL CROSSINGS ELIMINATED

### Midland Highway

— at Gheringhap in the Shire of Bannockburn.

### Glenelg Highway

— at French Street in the City of Hamilton.

### Pyrenees Highway

— at Tuaggra Street in the City of Maryborough.

### Western Highway

— at Kaniva in the Shire of Kaniva.

# Western Highway — Special Project Near Pyke's Creek Reservoir



Western Highway at Pyke's Creek deviation looking west towards the spillway.

**Part of the special project on the Western Highway, which consists of realignment near the Pyke's Creek Reservoir, has been opened to traffic. The project which involves the movement of over half a million cubic yards of earth and rock will continue over the next eighteen months.**

Travellers on the Western Highway between Melbourne and Ballarat will notice the changes resulting from the Country Roads Board's programme of improvements which will ultimately form part of a divided highway from Melbourne to Ballarat. The elimination of the winding stretch of road approaching the five-span concrete bridge at the spillway of Pyke's

Creek Reservoir is one of the most significant new works on the highway. The old 20 ft. wide sealed pavement which skirted the shore of the reservoir and which had several sharp curves has been replaced by 1.75 miles of a new four lane divided highway on an easy alignment with an additional climbing lane on the uphill carriageway at its steepest part.

The Pyke's Creek project, which is being financed from the Roads (Special Projects) Fund at a total estimated cost of \$1M can be divided into two sections east and west of the bridge at the spillway and totalling 4.4 miles in all. The completed section opened to traffic on 6th June, 1967, is to the east of the bridge and traverses the high ground to the south of the old road. There is a succession of cuttings and rock fill embankments at a maximum height of 108 feet at the centre line of the road, this being the highest yet constructed by the Board.

To the west of the reservoir, where the roadway rises towards Ballan, the existing bridge and portion of the pavement will be used as part of the future west-bound carriageway. Work on the section west of the bridge is expected to start in July, 1967, and be completed by the end of 1968. This work will entail the construction of a second bridge 375 feet long and two miles of new road which will form the east-bound carriageway.

Access to the new road will be controlled and two vehicular underpasses have been provided in the eastern section to restore local access.

## Developing the Maroondah Highway

**The name "Maroondah Highway" conjures up in the mind's eye many different views — from its start at the end of the tramway at Union Road, Mont Albert, to its six lane section through Ringwood and Croydon North, the open stretches over the Yarra flats, Healesville and Black Spur and on to Buxton, Taggerty, Alexandra and Mansfield. This short article refers mainly to the section immediately north east of the Dividing Range.**

The Maroondah Highway is in many ways different in character from most of the arterial roads leading from Melbourne. Although it carries heavy commuter and industrial traffic in the Melbourne Metropolitan area and commercial traffic, the Maroondah Highway

is to many people the route to Healesville, Eildon and the mountains. It carries holiday makers, anglers and boating enthusiasts to the many townships and camping areas around Lake Eildon and Mt. Buller.

Six or seven years ago the highway, after passing through the forest eucalypts and tree ferns of the Melbourne and Metropolitan Board of Works water catchment in the Dividing Range, emerged over the Dom Dom saddle as a somewhat narrow uneven road with a design speed value of less than 30 m.p.h. in places. This was a road quite unsuitable for the satisfactory transit of trailer boats and caravans which were beginning to appear in significant numbers.

Although all of us can see a great deal of work which has to be done, it is well to pause for a moment and look back on what has happened over recent years north-east of the dividing range. Starting in 1960/61 when 1.6 miles of road at Narbethong was realigned and widened to provide a sealed width of 22 feet the whole section to Cerberus Creek has now been improved to a design speed of at last 50 m.p.h. and over nine miles has a 24 feet wide sealed pavement.