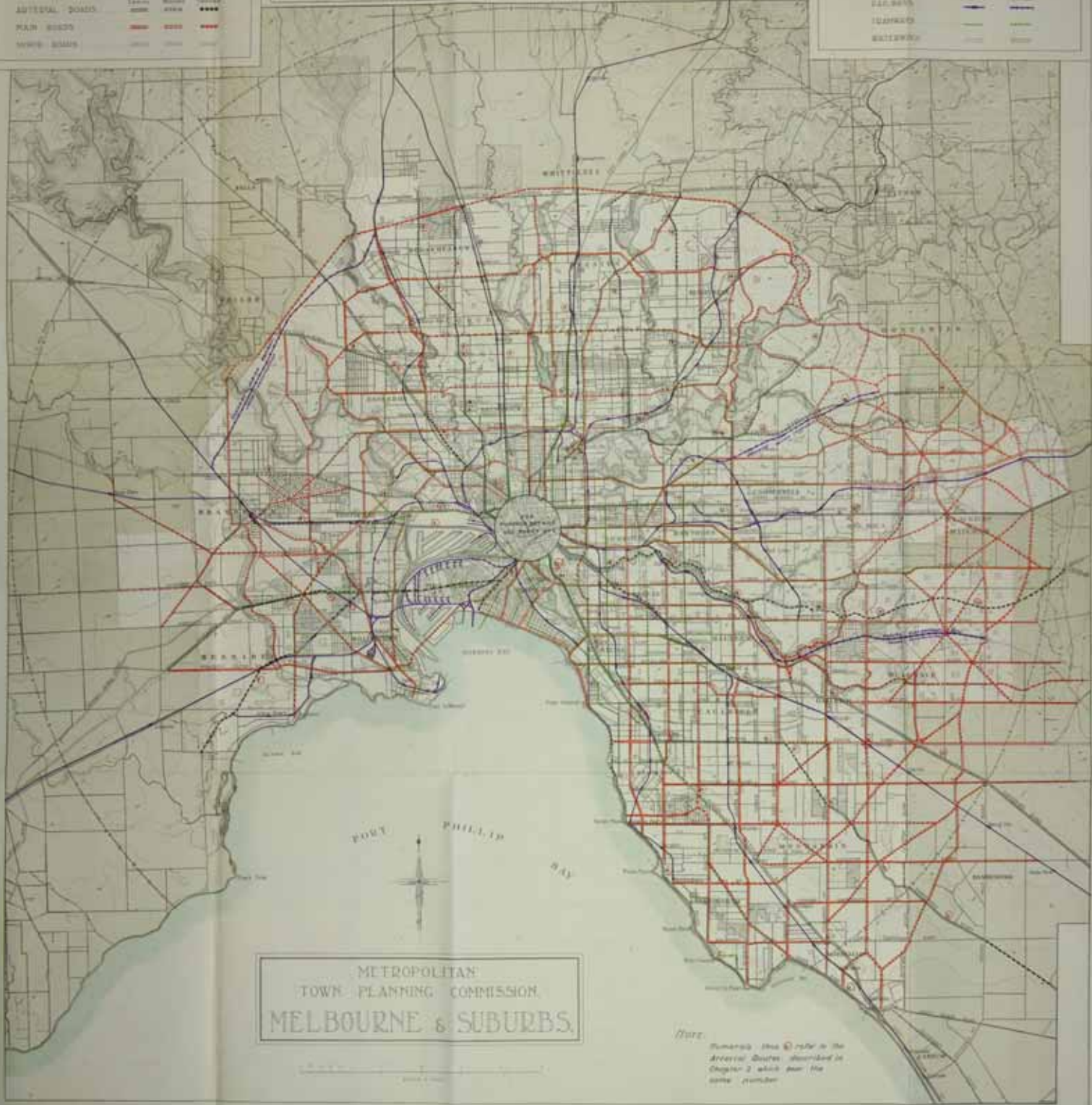


# TRANSPORTATION SYSTEM

ARTERIAL ROADS	10000	5000	2000
MAIN ROADS	1000	500	200
LOCAL ROADS	100	50	20

STREET	1000	500	200
ROADWAY	100	50	20
ENTRANCE	10	5	2



METROPOLITAN  
TOWN PLANNING COMMISSION  
MELBOURNE & SUBURBS.

Note: Numbers in circles refer to the Arterial Routes described in Chapter 2 which bear the same number.



with beneficial results to all concerned. There is no doubt that traffic regulations are required to obtain the greatest degree of efficiency and safety in any street system. Progressive improvements, both in the regulations and the street system, become necessary, but neither should be developed at the expense of the other. Each improvement should be of such a character as to secure the maximum of freedom and safety of movement.

#### UNIFORMITY IN TRAFFIC REGULATION.

With the multiplicity of executive authorities in this metropolis, it frequently happens that the methods of traffic regulation vary considerably in different municipal districts. The first essential to the proper regulation of traffic is to secure uniform by-laws, street signs and markings, and methods of observance. The Commission believes that the only satisfactory way of achieving this is by the appointment of a central governing authority for the metropolitan area, or the appointment of some authority with overriding powers in all matters of this kind. A recommendation in this regard is made on page 143.

In order that drivers of vehicles may be kept informed of traffic rules, it is recommended that the regulations be consolidated and kept up to date in printed form and issued free with the annual licence renewal. The booklet should be of convenient pocket size. Press announcements of changes should also be made as required.

#### THE RIGHT OF WAY AT INTERSECTIONS.

The necessity for the adoption of rules governing the movement of vehicles at and across intersections is obvious, but in a large metropolis where so many different types of street intersections exist, and where the volume of traffic on the intersecting streets is so variable, many simple rules cannot be applied satisfactorily over the whole area. It is apparent that no general formula can be devised to meet all conditions, but it is believed that if a general system of roadways such as is now recommended were adopted, whereby vehicles on certain routes would have the right of way over those on other routes, improved conditions would be established in a short period. The immediate application of rules to the existing conditions could be made with the knowledge of improvements to follow, so that they would not be subject to change when such improvements took place.

**The question of rights-of-way has been considered in relation to the general roads scheme, and the Commission has concluded that some method of denoting to drivers of vehicles the importance of the street, in which they are travelling, with relation to a cross street which they are approaching, so far as the right of way is concerned, is the only satisfactory method of ensuring safety and uniformity.**

A scheme should be devised so that traffic on any defined arterial route will have precedence over all other traffic, where control is not in operation by Signals. Subject only to the arterial routes, the traffic on all defined main routes should have the right of way over all other intercepted thoroughfares. Drivers, however, could not be expected to know or to memorize the relative values placed on all the thoroughfares of the metropolis by the responsible authority. For instance, the Commission has avoided tramway routes, as far as practicable, in defining the arterial and main roads, yet the tramway routes have, by custom, become the most popular vehicular routes for the majority of drivers.

The methods adopted by many other cities in giving effect to such a scheme, have been studied. It is recommended that, as all streets are lighted, particularly at crossings, the standards supporting the lights and the lights themselves should be used for the attachment of distinguishing marks of uniform design. The posts might have a neat coloured band painted on or attached to them for daylight observation, whilst a similarly coloured band could be painted on the light or used as a reflector in the same way as now obtains to denote tramway stopping places. These marks should be placed at all intersections. It is preferable that red colours be used on the signs on a secondary road to indicate to a driver that he is approaching a major thoroughfare. This rule would operate without difficulty, so far as the approach streets to the arterial road are concerned, because all cross or intercepting streets would be inferior in importance. In a great majority of other cases there should also be little difficulty in distinguishing the relative importance of the streets; but where two defined main routes or where all other ordinary roads cross or meet each other, the authority would define the route on which the right of way is given.

The indication on the highway in white paint or by bright metal studs of such words as "Stop," "Slow," &c., would also be an effective method of warning.



The Commission considers that it is essential that any scheme propounded should be uniformly adopted and gradually developed.

#### PROHIBITIONS OF TURNING TRAFFIC.

The Melbourne City Council has found it necessary to make frequent extensions to the restrictions in respect to the turning of traffic into and out of Swanston-street from the streets running east and west across it. It is clear from a study of the traffic censuses that these restrictions have caused much traffic to follow other routes. The opening of Batman-bridge, which is to connect Spencer and Clarendon streets, will assist traffic in crossing the Yarra, but, as stated elsewhere, the full effect of that outlet will never be realized until its southern approaches are perfected.

The regulation whereby right and left hand turns are prohibited is not as attractive as appears at first sight, for, though the movement of vehicles is freer in the streets which it is designed to assist, its effect is to cause large numbers of vehicles to travel longer distances and, in many instances, for much longer lengths through the street which the regulations intended should be avoided. The first prohibition of turning to the right in Swanston-street, Melbourne, commenced at the Flinders-street and Collins-street intersections as from 10th July, 1924. Whilst this facilitated traffic in Swanston-street at those intersections, its operation had the effect of causing obstruction at the next northerly crossing, at Bourke-street, so that the operation of the regulation was extended northerly over Bourke and Lonsdale streets on 12th October, 1925, thus making Latrobe-street the first crossing of Swanston-street northerly from Prince's-bridge at which right-hand turning is permissible during busy hours. This is half a mile distant from the bridge.

The Commission recognizes that, in the present circumstances, the greatest need has been to secure the maximum flow of traffic in Swanston-street, which is the only direct through route from north to south across the City, and which street is required to receive into 99 feet between building lines the outpourings of an attractive 198-foot road. **It is, however, the opinion of the Commission that by carrying out its recommendations, particularly those for City by-pass routes, further restrictions will be unnecessary for many years, whilst some of the existing regulations might be removed.**

Notwithstanding the present necessity for prohibiting turning traffic at some intersections of Swanston-street, it is certainly desirable to facilitate, to a greater degree than is now permitted, the turning traffic at less busy intersections.

#### DANGEROUS CURVES, SUBWAYS, ETC.

In a number of instances the municipalities have had lines marked on roadways at dangerous curves, awkward intersections, under subways, &c., to indicate to drivers the lanes and directions of travel. At many such points throughout the State, flashing beacons have been erected, and there is no doubt of their great value.

#### SLOW AND HEAVY TRAFFIC.

In 198 feet roads the diagram of cross-sections, as recommended on page 61, makes provision for separate roadways for slow and heavy traffic. This segregation cannot be achieved, however, in roads of appreciably less width. It is important that slow and heavy traffic be compelled to keep as close as possible to the kerb, so as to allow the faster and lighter vehicles, which comprise the larger proportion, to move more rapidly than a horse-drawn or other slow-moving vehicle. The latter class of traffic should also not be permitted to pass along any thoroughfare two or more vehicles abreast.

#### ONE-WAY ROADS.

In wide roads, where plantation strips separate the roadways, or where streets are wide enough to permit of it being done, it is most desirable that the side roadways be used for one-way traffic only. One-way avenues of travel are a great benefit. Even though the actual area of the one-way street may be less than the area of half a road where there is two-way movement, its capacity is increased by reason of the lesser conflict obtaining. With all vehicles going the same way, passing is safer and easier, speed is invited with safety, the intersection problem is greatly simplified because of the 50 per cent. reduction in turning traffic, and pedestrians have only one line of movement to contend with. The plans of the Commission make provision for wide roads wherever practicable, and the segregation of roadways by plantations in roads 99 feet wide or wider has been advocated.

One-way traffic rules could also be applied to narrow thoroughfares, especially where they are paralleled by other streets. The Melbourne City Council has declared the "little" streets as one-way routes, and greatly improved movement along them has replaced the chaos which previously existed. The illustration on page 55 of the parking of vehicles in Little Flinders-street shows the orderly conditions of the traffic in that one-way street.

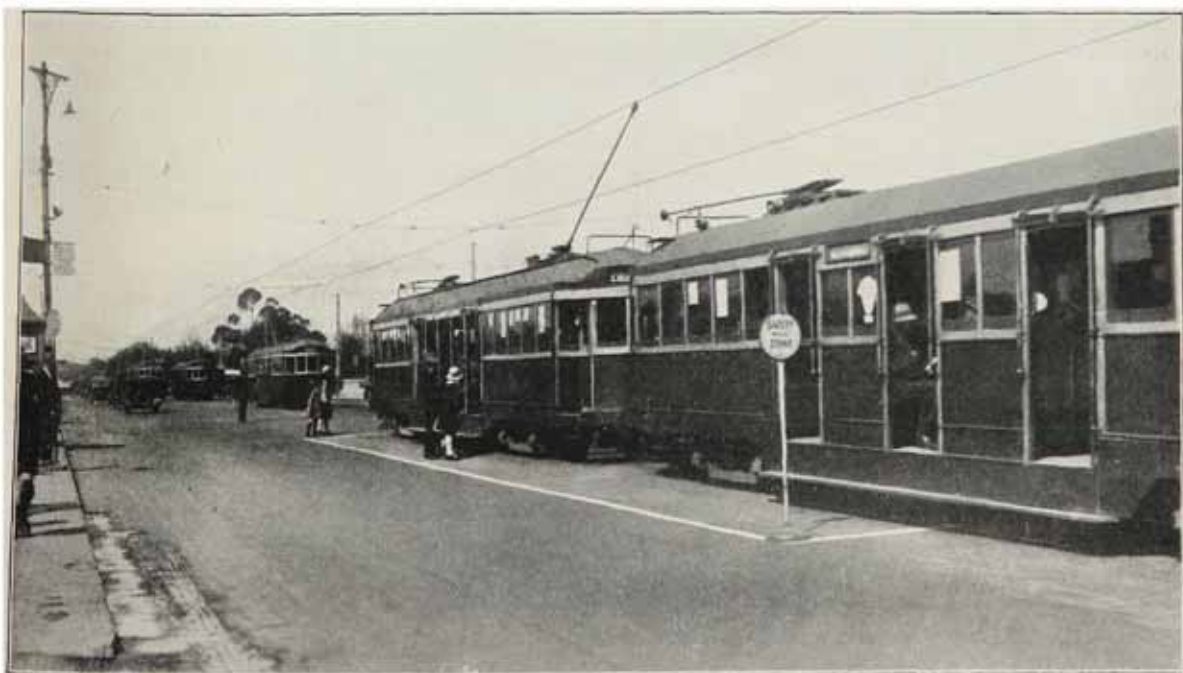
It may become necessary to declare certain approach streets near the central business area as one-way roads for "inward" traffic during certain hours of peak loading in the morning, and similarly for "outward" traffic in the evenings. In such cases, and also in narrow thoroughfares, any regulations as to one-way movement should be conspicuously indicated at suitable places, as a warning to drivers.

#### SAFETY ZONES.

As a means of reducing vehicular and pedestrian conflict, the safety zone is of considerable value and is most necessary at tramway stopping places in congested areas. Several types of safety zones are being used in this City, and illustrations of two of them appear below :—



The raised and railed safety zone with beacon now being more generally constructed in the City business area.



The paint line zone as used at less congested points.



The type of safety zone illustrated which is not raised, or at least elevated at the end facing oncoming traffic, is regarded as dangerous. People locating themselves on such zones are liable to have a false sense of security, especially at night. It is considered most important, wherever the traffic warrants the provision of safety zones, that they should be of the raised and solid type, at least at the end facing onward vehicular traffic, where a distinguishing light should be erected. At night, and on wet streets, a weak or inconspicuous light may be indistinguishable, and it is at night that the greater danger exists so far as the tram passenger is concerned.

In roads wide enough to allow of plantation strips to separate the roadways, safety zones are automatically incorporated, and an extension of thoroughfares of this class will be brought about if the recommendations in the Commission's road scheme are carried out.

#### AUTOMATIC TRAFFIC SIGNALS.

At intersections where a number of roads meet and cross, the Commission has made suggestions for their more efficient operation by gyratory or rotary movements (see page 127).

At intersections where the traffic is heavy and continuous, and where only two routes directly cross each other, automatic signalling has proved advantageous, and there is little doubt that this system is capable of extension with even more satisfactory results.

The Commission is of the opinion that wherever automatic signalling is installed it should make provision for an amber light to denote imminent change of direction. This halt between the "Stop" and "Go" signals gives pedestrians the opportunity of clearing the crossing before the halted vehicular traffic moves on. It is essential that both vehicular and pedestrian traffic should be compelled to observe the rule that immediately the green light changes to amber, all further movement across the intersection from that direction must be confined only to those who are actually crossing at the time the change is signalled. Likewise, traffic on the opposite road should not commence to move across the intersection until the green light appears.

These automatic three-light signals have been installed recently in Swanston-street, Melbourne, but their success would be much greater if this interpretation of the "amber" light were more rigidly enforced. The Police Department has expressed certain objections to the system of automatic signalling, but it is the opinion of the Commission that any disadvantages it possesses are much less than those of manual control. Most of the difficulties at first encountered have been overcome by the greater experience gained. It is considered that definite regulations, governing the passage of vehicles and pedestrians past regulated points, and education of the public by more experience and extensions of the system, will overcome almost every objection.

Where all streets run at right angles and where the flow of traffic along a particular street and its cross streets is reasonably evenly balanced, a synchronization of the traffic control signals throughout the principal street has great advantages. Instead of the clearance being given only from block to block with each intersection operating independently, a much greater volume of traffic could be handled expeditiously by synchronized control and by the traffic maintaining a reasonable and even speed. The Commission supports the development of this form of traffic regulation, and considers that when more parallel routes of flow are provided by the construction of additional bridges, an extension of this system will increase greatly the traffic capacity of the existing streets.

Unless there is an approximately similar volume of traffic in the respective streets at the intersections where synchronized signals are to operate, it would not be wise to install them. Where there is large variation in the traffic volume on the cross streets, synchronized signalling would cause unnecessary delays to the traffic, because the fixed time cycle would not coincide with the differing quantity of traffic desiring to cross or connect with the main thoroughfare. The Commission favours the automatic signal installations being located on each corner kerb, as adopted by the Melbourne City Council.

At an intersection equipped with light signals, where the traffic is heavy and the flow is uneven, the alteration of the lights by a traffic officer in an elevated position, with a view in all directions, will save considerable delay.

In cities which have adopted a successful system of automatic signalling, the numbers of police engaged on traffic duty have been reduced, and the men utilized on patrol or entirely different police work, thereby assisting to offset the cost of installing the machines.



## SPEED OF VEHICLES.

One of the most debatable aspects of traffic regulation is that of speed. Whereas in many cities, especially in America, traffic officials are endeavouring to prevent slow movement through busy streets, most cities have prescribed limitations. Although the question of speed is a matter of concern in road construction by reason of the damage caused by excessive speeds, it has also to be considered in relation to safety and congestion. In thoroughfares where frequent points of control are maintained, the rate of movement is likely to be reduced. This results in the banking up of traffic. If greater speeds were possible in these streets, their capacity would be increased considerably. It is contended by many that with modern brakes, and by more efficient control over the issue of drivers' licences, as recommended elsewhere (subject to any necessary restrictions from the point of road surface protection), there should be no defined maximum, but that the regulations should be based on a speed compatible with safety, the responsibility being placed on drivers to prove in the event of accident that their speed was safe. Any fixed rule for speeds are rendered less necessary by the improvements which are being continually made to motor vehicles.

Varying regulations limiting the speed of vehicles are in operation in different parts of the metropolitan area, and are intended to ensure greater safety in congested or dangerous streets. The Commission is of the opinion that within the 10-mile radius of Melbourne a speed greater than 25 miles an hour should not be permitted. This restriction could be extended beyond the 10-mile radius where local conditions were such as to warrant its adoption.

## PASSING STATIONARY TRAM CARS.

The municipalities of this metropolis have debated individually and collectively, from time to time, the question of prohibiting vehicles from passing stationary tram cars, and in several instances regulations to this effect have been instituted. The regulations issued by the Governor in Council under the authority of the *Motor Car Act 1915* provide, *inter alia*—

- "3. (a) . . . In passing a tram car proceeding in the same direction he shall keep the motor car on the left or near side of such tram car as close to the kerb or gutter as is practicable . . .
3. (b) The driver of any motor car . . . overtaking any such tram car which is about to stop or is stationary for the purpose of allowing passengers to alight or for any other reason, shall reduce the rate of motion of the motor to a speed so low that he may be in a position to stop the car immediately in case of sudden danger, and shall not increase such speed until he has passed a reasonable distance beyond such tram car."

The Commission considers that these provisions, if observed and enforced, are more satisfactory than the regulation which prohibits any vehicle from passing a stationary tram in any circumstances.

It has been stated in earlier pages that the Commission's plans provide for arterial and main roads to be independent of tramway routes as far as possible, or else for the tramway routes to be wide enough to allow of the "parking" of the trams. Wherever practicable, tramway routes in streets less than 84 feet wide have been avoided. **The strict observance of the Governor in Council's regulations should have the desirable effect of discouraging through traffic from using the narrower tramway thoroughfares and of diverting other than local traffic into the paralleling main routes.**

Where trams have been placed in special reserves, and where raised safety zones exist, the regulation of vehicular traffic in relation to tramway stops does not apply.

## REGULATIONS AS TO LOADING AND UNLOADING OF VEHICLES.

Of all classes of standing vehicles, those that are stationary at the kerbs for the actual purpose of taking up or setting down passengers, or transferring goods, should be given the greatest measure of preference. Nevertheless, there are certain places where the stopping of vehicles for any purpose must be prohibited during certain hours. In many cities, it has been found necessary to regulate the hours at which the loading and unloading of goods can be permitted at the more important corners and in main thoroughfares. The Commission believes that a gradual application and extension of this form of regulation will become necessary in important business centres. In view of the probable serious interferences that may be occasioned to the commercial interests, any such regulations must be justified by the still greater necessity for a clear thoroughfare.



No doubt the ultimate solution of the loading and unloading problem is by the use of lanes or the establishment of loading docks within building lines. In new large premises on very important thoroughfares, steps should be taken to insist on some provision being made in this regard.

"The additional facility with which such transfers can be made within the buildings, and the release of street and sidewalk space for potential customers should, to a large degree, compensate the occupants of buildings for the cost of interior drives and loading platforms." (Miller McClintock, in *Street Traffic Control*, page 156.)

#### ADVERTISING VEHICLES AND DISTRACTIONS.

Excepting in authorized processions, the streets which are intended for transportation purposes should not be used by vehicles or persons merely for publicity. Such vehicles in most cases move slowly in order to secure the greatest attention, and in so doing obstruct the more important elements of the traffic stream. Moreover, they create a nuisance by reason of the fact that the attention of drivers and pedestrians is distracted, often with serious consequences. The City of Cleveland in America operates a by-law which says—

"The driving of vehicles to and fro upon the public highways within the city for the sole purpose of advertising is hereby declared to be a nuisance and unlawful."

The Commission considers that this is both reasonable and desirable.

#### BELLS, HORNS, ETC.

The Commission recommends that the use of bells on any other than authorized vehicles, such as trams, fire and ambulance vehicles, &c., should be prohibited. By the limitation of the use of bells to urgent services, the public and the police would know at once that the right of way must be given to vehicles so equipped.

Occasionally some irresponsible person appears on the streets with some screeching or peculiar sounding instrument in place of the customary motor horn. This is offensive, and may be dangerous, and the police should have power to stop these nuisances immediately they appear.

#### DRIVERS' LICENCES.

The human element is the most important in the whole field of traffic regulation. It is therefore a matter for regret that the licence given to people to drive vehicles is not made of much greater value, not only in regard to its issue, but in its withdrawal in cases of serious offences. If that small proportion but not inconsiderable number of drivers, who are inclined to recklessness, knew that there was a distinct likelihood of their licences being cancelled, if only for a year or two, there is no doubt that they would exercise more care.

At present no person can obtain a licence until it has been shown to the satisfaction of the Police Department that he or she is capable of handling a motor vehicle reasonably well. The Commission considers that this examination is not sufficiently stringent, and that an investigation into the physical attributes of the applicant is of no less importance and should be carried out before the licence is granted. A person may be able to satisfy completely the inspecting constable as to his fitness to drive a vehicle, but the same person may have defective eyesight or hearing, may be subject to fits, or be mentally, physically, or in some other way incapacitated.

Another serious omission in our present laws is that a person who obtains a licence does not have to appear before the authorities again in securing annual renewals. It is obvious that, although at the time the licence was first granted the person may have suffered no disability, his or her fitness to continue driving must depend upon a maintenance of that condition. It may be unreasonable to require reconsideration of all cases annually, but a triennial period could not be regarded as unduly short in the interests of public safety.

Sir Henry Segrave, who recently visited Berlin, where very severe tests are made of all potential motor drivers, has asserted that the standard of driving is excellent, and that its traffic is managed better than in any other city in the world. He wrote as follows:—

"The candidate has to pass a stiff examination in traffic regulations and the rule of the road. The car is provided by the Government Department concerned. One part of the test is high-speed driving. An official sits by the candidate and insists on a burst of high speed, and watches to see if the driver can judge his distances when pulling up.

An elementary knowledge of the mechanism is also required. The official puts the car wrong and asks the driver to put it right. The result is that every beginner starts on the road with a reasonable knowledge of how to drive, road courtesy, and traffic rules."

#### PEDESTRIAN CONGESTION IN PRECINCTS OF FLINDERS-STREET STATION.

In its First Report (page 14) the Commission expressed its disapproval of the various schemes, which had been advanced from time to time, for the construction of subways under Flinders-street to give pedestrians direct and safe access into the Flinders-street Railway Station. A scheme was submitted, and strongly recommended by the Commission, which provided for the construction of additional bridges over the River Yarra, and for a wide road parallel to Flinders-street on the south side of the river. Further studies and additional data have emphasized the Commission's view that the greatest need at this congested centre is to supply facilities elsewhere which will attract away from this point much of the traffic which is now compelled to pass it. The Commission has also examined proposals for the undergrounding of Flinders-street so that it may pass under Swanston-street. An analysis of the advantages and disadvantages of this scheme has convinced the Commission that such very expensive palliative works should only be undertaken when no other means of relief can be obtained. They are also liable to invite still greater concentrations of traffic, and thus nullify, very quickly, any advantages that might have been gained. It is believed that the carrying out of the Commission's proposals for additional city railway stations and for additional roads and bridges will bring about the desired distribution of the traffic, and result in a reduction of the congestion now experienced in the precincts of the Flinders-street Railway Station.

#### ROAD CROSSING BY PEDESTRIANS.

The increase in motor transport has necessitated the enforcement of restrictions upon the crossing of roads by pedestrians in business areas. Unless officials are permanently stationed at the kerbs of the sidewalks some difficulty is experienced in educating pedestrians to observe manual or automatic signals, and also to cross city streets only at the authorized places at regulated times. Where the left turn for vehicular traffic is allowed at busy intersections, vehicles must perforce pass through the body of pedestrians who are crossing the road. It is not desirable that left-hand turning be prohibited or that a vehicle turning to the left should as a rule be required to stop before moving into the intersecting thoroughfare. Consequently there does not appear to be any really satisfactory way of overcoming the conflict that must occur between left-turning vehicles and those pedestrians for whom the road crossing is opened. The Commission considers that this conflict is not sufficiently serious to warrant the construction of expensive subways or elevated passageways, &c.

The "jay walker" is, however, the cause of much trouble. Drivers, in avoiding pedestrians who appear on the road at unauthorized places, are forced to swerve and thereby possibly foul some other vehicle. It is not reasonable to expect the motorist to maintain a fair rate of movement and at the same time to be compelled to weave a devious route through transgressing pedestrians. It is not only the crossing of streets at wrong places, but their failure to observe the signals, and wait their turn to cross at the proper time and place. The consequent hold up of traffic, at the moment when it is most important that it should have every facility for rapid clearance, is a matter of increasing concern. Another fault is the crowding on to the roadways while waiting for the traffic signal. This causes a reduction in the area available for the vehicular traffic, and is frequently responsible for a single file of vehicles proceeding over intersections capable of accommodating two lanes abreast. Prosecution and the infliction of a salutary fine appears to be the only way of overcoming offences in this direction.

#### WEAR OF ROAD SURFACES.

In its First Report the Commission made certain recommendations with respect to the preservation of road surfaces. As no action has been taken to give effect to the advice tendered in 1925, the recommendations are quoted below, and the Commission urges that the appointment of the Committee of Inquiry referred to in the "Legislation" sub-heading be given prompt attention—

"*Speed.*—For heavy traffic a limit of speed is essential to preserve the road. If a vehicle with a certain maximum load and suitable tires exceeds the speed suitable to the road, damage rapidly occurs, especially if the appointed speed is much exceeded. Not only is the surface, when slightly out of repair, subject to serious damage by excessive speed of a heavy load, but much more are the foundations seriously damaged, entailing greater expense for repair than the earning power of the vehicle causing the damage.



*Weight.*—To be reasonably possible and within the limit of sound financial administration there must be some restriction upon the weight of the vehicle and its load.

Assuming that some form of concrete road with or without a carpet is desirable to meet modern conditions—and the Commission considers that it is—there must be a limitation of the load carried per axle, otherwise even such a road will be expensive to maintain.

*Axle Load.*—The distribution or spread of the total load over the road surface as much as is possible is essential, and in this respect there must be a maximum allowable which shall not be exceeded.

In some cases, to distribute the load properly, more wheels than four should be provided. If the load borne by any one axle is greater than that which the road is designed to carry, damage will inevitably occur. Vehicles economical to users may now be constructed of such a weight and size that it is obvious that their use must be prohibited. There is a limitation upon the practicability of raising the standard type of road construction to meet the wants of classes of vehicles continually increasing in weight.

*Tires.*—For anything but the lighter traffic a prescribed width of tire is essential. This has been recognized in the Width of Tires Act, which, however, admits of varying standards in adjoining municipalities, causing confusion and uncertainty. Any legal provision therefore on this subject should be uniform for the whole State.

The use of projections on the surface of tires which come into contact with the road should be prohibited. The materials of which the tires are made may vary according to the other conditions of the load. Hard rubber tires, for instance, may be used with less damage to the road than hard metal tires, though having an equal load. Metal tires with rounded edges are not objectionable if the other conditions of the use of the road are complied with.

It is well recognized that vehicles with hard metal tires without limitation of load and rounded edges are very destructive to all types of road.

The diameter of the wheel should also influence the width of tire.

*Legislation.*—The Commission, having laid down the essentials of regulation, is, however, not prepared without further investigation to suggest the exact details of the standards requisite for reasonable restriction. These are matters which should be decided by, say, three competent engineers, and their decision made the subject of an amendment of the law."

## ROAD AND INTERSECTION IMPROVEMENTS.

### OBSTRUCTIONS ON FOOTWAYS.

The use of footpaths and kerbs for the erection of pillars and encasements of various kinds, whilst not so serious a matter in outer areas, should be restricted in busy commercial streets. These obstructions take many forms, such as electricity switch pillars, postal pillars, verandah posts, tramway, telegraph, light and other poles, petrol pumps, &c.

Every effort should be made to locate such of these as are necessary as far away from street intersections as possible.

It is pleasing to note that the Melbourne and Metropolitan Tramways Board has avoided placing poles in streets where it has been possible to attach its wires to buildings. Recently the Postmaster-General's Department has removed a number of street postal pillars from busy street corners, and this policy is to be commended and encouraged. The undergrounding of telephone wires has done much to enhance the beauty of the streets and to facilitate pedestrian movement. The opening up of pavements for the purpose of access to these and other underground services, however, is most undesirable, and recommendations in this regard are contained on page 57, *et seq.*

During recent years the erection of kerbside petrol pumps has proceeded apace, but still more recently the State Legislature passed an Act empowering local authorities to control the erection of these pumps. The Act specifically states that "a licence shall not be granted to any

person in respect of any petrol pump which, in the opinion of the council (of a municipality) unduly obstructs or will unduly obstruct the thoroughfare." **The erection of petrol pumps on footpaths is a usurpation by private individuals of a part of the public highway and should not be permitted.**

Verandah posts unnecessarily obstruct footways and should be replaced by modern cantilever verandahs. In most new buildings provision is made for the cantilever type. The question of the abolition of shop verandahs altogether does not come within the scope of traffic regulation. (See page 276.) The verandah post, however, is to-day a distinct obstruction to pedestrian traffic, and its removal would be a decided improvement in busy streets, both from the aesthetic and traffic points of view.

On more than one occasion Local Government Bills introduced into Parliament have incorporated clauses to enable local governing authorities to prohibit the erection of any but cantilever verandahs, and for the demolition of those other than the cantilever type after a ten years' period without the payment of compensation. The 1929 Bill, unfortunately, excludes these clauses. The Commission considers that legislation along these lines should be passed.

#### GRADES.

The Commission has endeavoured, in all its new road proposals, not to exceed a grade of 1 in 20, and in almost every instance this desirable object has been attained. Many of the old roads, however, which are now important thoroughfares, and are therefore incorporated in the general scheme, have grades steeper than 1 in 20, but owing to the present state of development along them any appreciable improvement is regarded as impracticable.

#### ROUNDING OF STREET CORNERS.

**The fixing of building lines or the rounding of the kerbs at street corners is advocated by the Commission as a simple improvement and one of the most satisfactory methods of facilitating the movement of traffic.** Where vehicles, especially those with a large turning radius, have to make a left turn at a right-angled corner, they frequently leave the kerb and encroach upon the next lane of traffic to the right. In narrow streets this seriously interferes with traffic.

In all new plans of subdivision it should be compulsory to provide rounded or splayed corners. Wherever new building construction is contemplated, the advisability of securing a rounding or splaying of the street corner should be seriously considered, having regard to local conditions. In streets where tramway turnings occur such action becomes imperative. At intersections not subject to control the better view given to drivers of approaching vehicles by rounded corners tends to increased safety.

The rounding of corners will necessitate pedestrian crossings being so defined that the least distance of roadway will be traversed. In an ordinary four-way intersection of roads at right angles, the crossing for pedestrians would be normal to the kerbs, so as to avoid the rounded portion. The pedestrian traffic would then be removed slightly further from the intersection, and a bay would be formed which would accommodate vehicles awaiting the turn. They would be out of the line of the moving traffic without encroaching on the pedestrian crossing.

#### GYRATORY MOVEMENT AT JUNCTIONS WHERE FIVE OR MORE STREETS CONVERGE.

At important road junctions where more than four streets converge, special treatment is necessary. In most cases the improvement of these junctions, from a traffic point of view, could be obtained by planning a circular or oval island in the centre of the junction. The diameter of the central feature, and the treatment of the corners and other details of the junction, vary according to the conditions obtaining, but the principle is similar in each instance. This method of treatment compels traffic to gyrate around the central island in one direction until it reaches and turns into the desired street of exit. At such a junction, there should be little need for any method of control. The introduction of this system would eliminate confusion at awkward and dangerous intersections, thus ensuring a much greater degree of safety than is otherwise possible.

It is desirable that, at all such junctions, the central feature should be as large as possible and free from any vision-obstructing buildings or trees. The larger the radius of curve obtained by means of the island, the safer and more rapid it would be for the traffic using the intersection.

The central feature would lend itself to ornamental treatment and would supply a much needed refuge for pedestrians, and possibly sufficient space would be available in most cases for the location of seats, conveniences, and other amenities.



Many of these gyratory centres could be obtained by the establishment of building lines which would ensure the necessary splaying of corners or setting back of buildings, so that when the buildings fronting these corners become due for reconstruction, the opportunity could be taken to see that they conform to the new scheme.

The successful working of the gyratory system in London is graphically stated by a correspondent writing in the *Melbourne Age* of 4th September, 1926, as follows, in describing its introduction at Piccadilly Circus :—

“ It began on Monday last, and now every vehicle that enters must join in the gyratory movement round the site of the old Shaftesbury memorial, until it finds its desired outlet in one of the half-dozen streets that radiate from it. It has proved an immense success in Parliament Square, Trafalgar Square, and Hyde Park Corner. Fears that were entertained lest it should break down at the Circus were dissipated after 48 hours' experience, and drivers are now learning to read and observe the directions which, in huge white characters, are painted on the roadway. ‘ Turn left,’ ‘ One-way street,’ are becoming familiar signs, and the straight arrows and arrows doing a left turn, and the series of broad white lines are apparently fully understood. For the pedestrian the new order of things is not an unmixed blessing.”

Similar methods have been adopted in various other countries.

Reference has been made in the First Report to several detailed recommendations of this kind, and on page 114 of this Report the Commission referred to the incorporation in the Spencer-street (Batman) bridge scheme of a gyratory centre at the southern bridgehead. On page 270, a city improvement scheme at Haymarket Junction, by means of the establishment of a central island and other features, has been submitted. In all other cases the Commission considers that the general principles outlined herein should be adopted, the actual details varying according to local conditions.