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“ROADSIDE BEAUTIFICATION
IN NEW ZEALAND”

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ROADSIDE BEAUTIFICATION IN NEW ZEALAND

By M. R. Skipworth *B.Sc* (Forestry), N.D.H. (N.Z.)

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INTRODUCTION.

NOMENCLATURE NOTE: Native species are named according to the authority of Dr. L. Cockayne in "The Cultivation of New Zealand Plants," and exotic species according to the Kew Hand List.

There is at present, widespread interest throughout New Zealand, in the subject of roadside beautification. For the greatest benefit to the country it is essential that all this effort and enthusiasm should be directed along the most fruitful course. Although it at first appears simple, the subject is a particularly complex and difficult one, owing to the numerous factors which have to be taken into consideration. For success, skilled direction is a necessity, but is extremely difficult to obtain, owing to the scarcity of people qualified to give expert advice, and the absence of any literature on the subject as it affects this country. To assist in some measure to supply this advice, and to outline a scheme for the national development of roadsides, this study has been written, with the hope that it will prove useful to the many enthusiasts who desire to see their country made more beautiful. By wise preservation and carefully-planned planting, we may hand down to posterity a land of tree-garlanded beauty, instead of a countryside of treeless landscapes, bush-denuded slopes, and rotting stumps.

Naturally, the primary purpose of every road is for the accommodation of traffic, a traffic which is rapidly increasing in speed and numbers every year. There is no doubt, however, that roads should also be belts of natural beauty wherever possible. This can be achieved by rigid prevention of further roadside despoliation, and by planting attractive trees and shrubs along suitable stretches of roadside. The number of motorists using the roads for purely touring purposes, especially in the vicinity of main towns, is rapidly increasing, one of their main pleasures being the beauty of the countryside. To this beauty, skilfully-planted roadsides can contribute much, and even areas devoid of rural beauty, such as industrial areas on the outskirts of cities, can be made much more attractive. Besides accommodating traffic a road can also offer something of beauty. Correctly carried out,

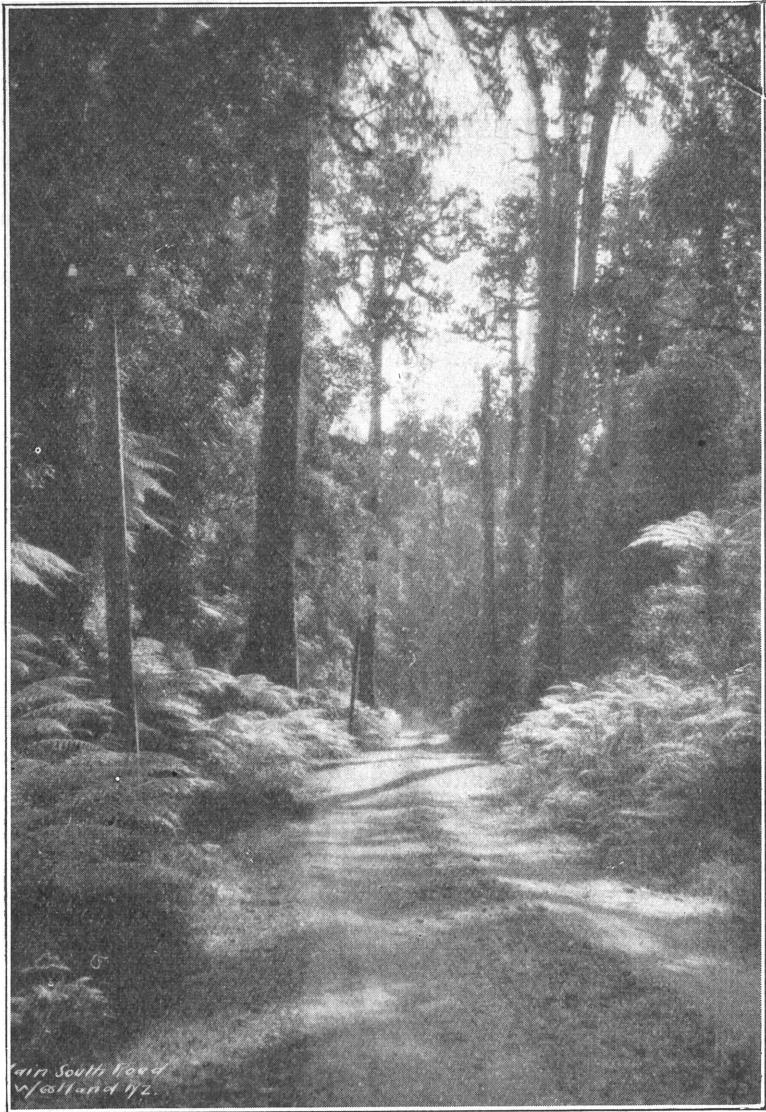
roadside beautifying need not interfere with the interests of traffic, stock-droving, road-maintenance, overhead wiring or adjoining properties.

HISTORICAL.

In Europe, the importance of roadside beautification has been recognised for many years and there has been considerable development in France, Germany and Switzerland. The first French regulations on the subject date back to the year 1552. In these countries all classes of the community combine to protect and preserve the beauty of the roadsides, this respect for the public property being implanted in young people as part of their general upbringing and education. The British races lag far behind in this point of character and, although indifference and lack of organization have been the main causes of there being so little attempted in the past in English-speaking countries, the vandalistic habits of the public, have also been a deterrent factor. The movement has made considerable progress in the United States in recent years, and in many States has come to be considered an important point in highway engineering. Especially has the shade tree become an important consideration in roadside development, and it is now extensively cultivated.

The tremendous development of arterial roads in England in recent years has caused considerable public attention to be directed towards roadside beautification. By the Roads Improvement Act of 1925, power is given to County Councils to plant trees and shrubs and generally beautify roadsides. A society, called the Roads Beautifying Association, has been formed under the aegis of the Ministry of Transport, and on its various committees are eminent horticulturists, foresters, landscape architects, road engineers, and traffic experts. This voluntary body offers its help to local bodies in advising them how to develop their roadsides to the best advantage. It is not an entirely successful arrangement and it will be further discussed when considering the best type of organization for New Zealand.

In our own country, past attempts have been spasmodic, unorganized and frequently unsuccessful. A considerable amount has been accomplished by the preservation of bush areas along roads, but much more could have been done and much still can be done, in furthering and strengthening this very desirable type of activity. Most of the attractive landscape effects which have been achieved by planting roadsides are the haphazard outcome of casual planting, rather than the afore planned result of well laid schemes. Comparatively little has been attempted, but successful results are few, being greatly outnumbered by schemes which have been failures. Many of the latter were foredoomed to failure, through the wrong thing being attempted in the first place. A pathetic illustration of this may be found in the line of memorial oaks planted on the main road between the Waitaki Bridge and the North entrance to Oamaru. A few survivors still struggle on in an attempt to keep green the memory of the fallen in whose honour they were planted. Unfortunately, too, they have been



Ferguson's White Pine Avenue, Main South Road, Westland, N.Z.

planted in individual memory instead of as a grove in collective memory, and the site chosen for the planting of oak is an extremely unsuitable one. Future, precipitate action, undirected by skilled advice, will also prove a failure. What we do attempt, let us do it well, and give our schemes every possible chance to succeed. There is nothing more discouraging than the miserable spectacle of a few unsightly trees dragging on an unhealthy existence, example of what should not be.

PRESENT POSITION.

To-day our roadsides still retain a certain amount of natural beauty and some attractively planted areas, but this beauty is gradually disappearing, with little attempt in recent years, to preserve or extend it. To have beautiful roadsides two courses of action logically present themselves :—

(1) Preservation of what beauty at present exists, and (2) Extension.

(1) PRESERVATION.

Many of our roads, particularly in bush districts, retain along their verges attractive vestiges of their former flora. In some instances, where the original bush has been cleared, it has been succeeded by so called second growth, often quite attractive from the roadside beautification viewpoint, but, unfortunately, the change has usually been to bare, or noxious weed infested roadsides.

Much of this natural beauty is already vanishing or being greatly damaged, by the extensive programme of road improvement at present in progress in all parts of the country. An increasing volume and speed of traffic demand wider road surfaces, elimination of small radius curves, reduction of grades, extension of range of vision etc. All this cannot be done without greatly interfering with any existing roadside beauty. The most ardent enthusiast would not criticise the roading authorities for any such essential destruction or interference, no matter how much he regretted the necessity for it. As an example, there are the improvement operations on the Whangamoia Hill of the Main Nelson-Blenheim road. Many attractive groups of natives, which stood on roadside points or spurs, or in gullies, are disappearing through the widening of the road and the elimination of sharp curves. At the same time, it is thought by many people, that a proportion of this destruction could be avoided, by the exercise of a little forethought and consideration on the part of the constructing engineers. Further means of protecting our existing roadside beauty will be dealt with under the general subject of Protection.

(2) EXTENSION.

Types of extension come under two main headings :—

(a) RESERVATION of attractive areas bordering public roads.

Roadside beautification should not be confined merely to the narrow strips of public road verging the carriage-way ; but should

embrace any suitable land bordering the roadside. There are numerous cases where attractive pieces of bush, and sometimes exotics, are present on land abutting on to public roadsides, such land often consisting of steep banks or gullies, or other land of low productive value. Where such areas are public lands, they could be set aside for Scenic Reserves, if not required for other purposes.

(b) ESTABLISHMENT.

Extensive planting is the greatest necessity for adding to the beauty of our roadsides. This should immediately follow the adequate preservation of our existing roadside beauty, and then both types of areas should be carefully maintained. Before deciding on any roadside planting scheme, however, it is essential that certain factors be taken into consideration. Lack of sufficient forethought will frequently result in the failure of the planting to fill the desired purpose. The object of roadside planting is to beautify the road, without in any way interfering with the other utilities which the road provides. Minor objects may also be the provision of shade protection to the traveller, both while in transit and while at rest, the provision of a wind-break, assistance in the prevention of snowdrifts, and to help in cooling and purifying the air. Various important factors to be considered before planning any planting scheme, be it for trees, shrubs or creepers, are as follows.

ROAD MATURITY.

Before planting, the state of development of the road must be considered. Has the road reached the visible limit of its development, and therefore, will its sides retain their present form permanently? Or will future widening and improving operations destroy the roadsides as they are at present? Obviously, this is a most important matter, for there is no use planting a roadside bank which is likely to be cut off, a hollow which may be filled in, or a verge which may become carriage-way in a few years' time. This does not mean to say that there is not room for a certain amount of planting on these immature roads, on such portions of the roadsides as will probably always remain intact.

In close proximity to towns or country centres, the possibilities of the future use of portions of the roadside for footpaths, under-ground sewers, electric light poles etc., should always be kept in view.

TRAFFIC.

The greatly increasing numbers and speed of modern traffic make it essential that roadside planting should in no way interfere with safe travelling. To be of the greatest service to the public, a good road should, however, be beautified wherever suitable. An increasing percentage of road users, especially on roads adjacent to main towns, consists of people who are motoring for pleasure. These people, in particular, will greatly appreciate any work done to preserve and extend our roadside beauty. Beautiful roadsides create a favourable impression of the locality through which the road passes, while dilapidated ones give an unfavourable impression, no matter how good the road

surface may be. In no way must planting interfere with the necessary vision of motorists. Nothing should be planted to reduce the clear line of sight to under 300 feet. The inside of curves should not be planted, nor the outside either, if such planting would hinder the view of the next or future curves. In order to aid night traffic, the outside of a curve has sometimes been planted with silver birch (*Betula alba*), so that a motor-car's headlights may impinge on the white stems and so delineate the curve. An even better tree for this purpose would be the Paper Bark Birch, *Betula papyrifera*, on account of its whiter trunk, a tree which grows successfully in most part of the South Island. Trees should not be planted within 200 feet of important road intersections or within 500 feet of railway crossings.

The danger of skidding, in the autumn, on accumulations of wet, fallen leaves has also to be considered. Skidding is most likely to occur at curves and on steep grades, but is usually impossible from this cause on gravel surfaces. Tar-sealed surfaces provide a more likely medium for skidding than concrete surfaces, and the larger the leaves, the greater is the danger of skidding. The rate at which leaves fall from the tree has also an important bearing on the problem. The elm has a comparatively small leaf but loses its foliage very quickly, and therefore is more likely to cause danger than the larger leaved oak, which drops its leaves very slowly. This danger can be reduced to vanishing point, however, by careful planning. This would include no planting of large-leaved, deciduous trees, such as the horse-chestnut and the London plane, near curves or steep grades, confining most of the planting to the leeward side of the road, wider espacement of trees in order to reduce leaf accumulation, and the planting of the trees as far back as possible from the road surface.

Objections are sometimes raised to roadside tree-planting on account of the danger of a motorist accidentally leaving the road and crashing into them. Especially in the dark is this dangerous, because if the motorist could see the trees plainly he might be able to avoid them. This danger is overcome in Germany by the use of tree-protection stones (Schutzbaumstein), which consist of painted or white-washed stones or blocks of concrete set in the ground on the road side of the trees. The painting or white-washing of the trunks of trees on the outside of a curve is also practised, particularly in France. It is not a beautifying measure, but necessary on account of its usefulness. Where the road surface has no curb, trees should not be planted closer to the road than a minimum distance of 5 feet. On unimproved roads, trees should be planted as close to the property line as practicable, in order to allow for possible widening in the future. There are sometimes suitable portions of hill roads in New Zealand, where the danger of serious accidents could be reduced by the correct planting of steep slopes falling away from the highway. It would, of course, be necessary to avoid interfering with traffic vision or making the road too wet and shady. A good stand of established trunks on a steep slope would prevent a vehicle from falling further than a few yards below the road surface, with a consequent reduction in damage to the vehicle and its

occupants, than if it had fallen perhaps hundreds of feet to the bottom of the cliff or slope. Portions of several hill roads in Canterbury and Otago could be made much safer, as well as beautified, by such plantings, Japanese or European larch frequently being the most suitable species for this purpose. A well bushed or tree clad slope also gives a nervous motorist a feeling of security.

ENGINEERING CO-OPERATION.

Normally, the road engineer's interest is confined to the efficient formation and maintenance of the road surface. To maintain and improve the beauty of our roadsides however, it is essential to have the engineers' full-hearted co-operation. It is work for an expert, not for a road engineer, but it is essential that there be harmonious co-operation. Road engineers can do much to assist and protect beautification work, and when such work is properly done, there will be nothing to interfere with the engineering activities.

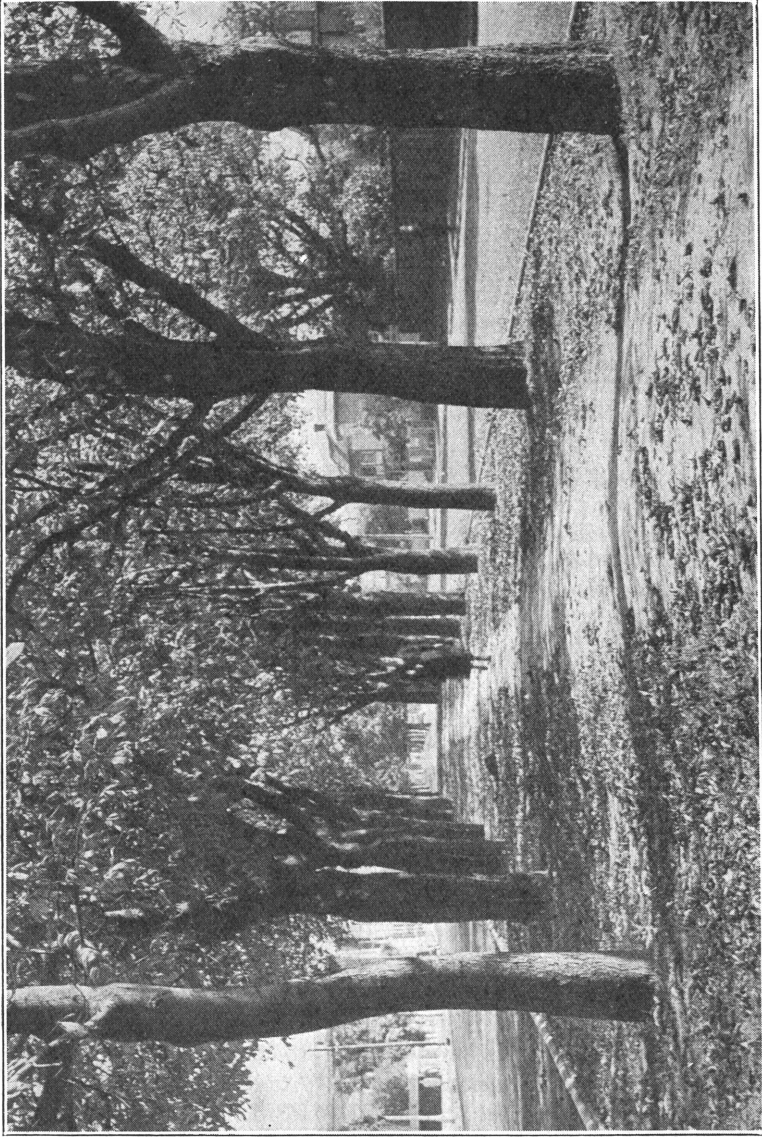
In any planting scheme, there are numerous points which affect the road surface that should be carefully considered. Some of these are the effect of heavy shade and leaf drip on road surfaces, possible choking of water-tables or culverts, if heavy rooting trees are planted too close to drainage utilities etc.

On his part, the engineer should do all in his power to protect the beauty of the roadside, especially by reducing the cutting back of attractive, roadside growth, to the bare minimum necessary. In the formation of new roads through bush areas, the engineer can frequently make or mar the scenic beauty of the roadside. Especially along roads which are mainly for tourist traffic, should the roadside cutting of bush be reduced to a minimum.

ADJOINING PROPERTY.

Care must be exercised not to plant anything that will injure the rights of adjoining land holders. Trees which have long-running roots, which throw up suckers, should be avoided, as they may become a nuisance on adjoining private property. Species which may harbour insect or fungoid pests, which affect agriculture in any way, should not be used. *Berberis* should not be planted in wheat growing districts as it is the secondary host of wheat rust.

Trees should not be planted so as to cast a dense shade, especially winter shade, on adjoining property. On the other hand, some farmers might find a beneficial effect produced by roadside planting, in the way of summer shade for stock and added protection from wind. In rural-urban areas, a successful scheme of roadside beautifying, would probably increase the values of adjoining properties, as an attractive landscape would probably add to the desirability of the area for subdivision purposes. In many parts of the world, concern is expressed at the much-deplored urban drift and attempts are being made to make rural life more attractive. One method is to make the countryside more beautiful, and good trees and shrubs along the roadsides can do much in this direction.



(Photo by courtesy of the Director, Botanic Gardens, Christchurch.)
Avenue of Horse Chestnuts, Bealey Avenue, Christchurch.

STOCK DROVING.

Considerable use is made of our roads for stock-droving purposes and nothing should be planted which would, in any way, interfere with this important utility of roads. Trees should not be planted where they would unduly narrow the road width available for travelling stock, especially at approaches to bridges or culverts. The effect of fencing any planted areas has also to be considered. Trees or shrubs with poisonous foliage, such as the yew, should be eliminated from planting schemes. It should also be a duty of the roadside authorities to remove any tufts found growing in protected or established patches of bush, which are accessible to stock. Roadside shade trees may be of some value to travelling stock on hot days, particularly in such areas as the Canterbury Plains.

NOXIOUS WEEDS.

As the property owner is responsible for the control of noxious weeds on the roadside adjoining his property, the effect of any roadside planting must be considered. The farmer's usual method of control is by ploughing, where possible, or by burning, both methods usually being fatal to any roadside plantings. Where the problem of noxious weeds is likely to occur, a definite agreement should be entered into with the adjoining landowner before any roadside planting is commenced. It is essential that the adjoining landowner should not be able to make roadside planting an excuse for failing to clear noxious weeds along his roadsides. It is also necessary that the roadside planting organization should not be loaded with the heavy burden of clearing noxious weeds from planted roadsides. Clearing all noxious weeds within several yards of plantings, would be a justifiable practice on cultural and fire protective grounds, but to extend this clearing to the full area of all road frontages planted, would mean a large amount of maintenance work for the planting authority.

ROADSIDE POLE LINES.

In this country practically all power and telegraph lines are situated along roadsides. Power lines are under the various authorities of the Public Works Department, Power Boards, and other local authorities, while telegraph lines are under the control of the Post and Telegraph Department. Many of our main roads carry both power and telegraph lines, thus leaving very little room for any roadside tree planting. There is often scope on such highways, however, for considerable beautification work by selecting the correct sites for suitable low-growing trees and shrubs, without in any way interfering with the value of the roadside for pole line purposes. Pole lines thus greatly limit the scope of the work, but as they are a public necessity, and except for high tension lines, the roadside is the sensible place for them, any improvement scheme must make the best of them. At certain points, pole lines may leave the road in order to cut a corner and reduce distance. Such parts of the road may offer openings for the beautifier, other factors being suitable. No attempt should be made

at a long-continued line of planting ; but rather should those portions which lend themselves most favourably to beautification be concentrated upon.

No one would dispute the rights of the various authorities to utilize public roads for pole line purposes (except for high tension lines) nor yet to cut back or remove such growth as endangers the safety of their lines, but there has been much unnecessary and destructive work in this direction. The pruning back of roadside or overhanging trees by line authorities nearly always is crude in the extreme, unnecessarily severe, and frequently liable to encourage insect attack. Where trees overhang from adjoining property, the line authorities may retort that the property owner should not allow them to overhang the boundary, and also that he is served with notice prior to the linesmen trimming them, and could thus trim them himself if he desired to do so. Very many pole line authorities, however, including the Post and Telegraph Department, definitely fail to serve this notice. A certain amount of trimming is undoubtedly necessary, but there is no justification, and frequently no legal right, for the excessive slaughter so often practised.

NATIVE VERSUS EXOTIC.

Whenever the subject of roadside planting is discussed, argument usually arises as to the relative values of natives and exotics. Some would plant all natives, while others none but exotics. The " native " supporters state that we should plant our own New Zealand trees and shrubs and that anything else is not in keeping with this country's landscape, exotics creating an unnatural effect. Those in favour of exotics argue that we should not confine our choice to natives but choose the best that is suitable from all over the world, thus greatly widening the range of beautiful subjects available. Particularly then would deciduous trees be able to be used, a type very useful for roadside planting work. They also add that much of our landscape, especially in the environs of the main towns, has already lost its New Zealand character, and that the planting of exotics, therefore, is not out of place.

To the qualified, but unprejudiced person, and also to the average intelligent member of the community, there is an obvious place for both types, but with a strong bias in favour of natives, wherever suitable. We should undoubtedly make use of the best of each type, but being careful not to employ exotic trees or shrubs, where natives would give the same service and merge with the surroundings more successfully. Exotics should never be planted in entirely " native " surroundings. This has been done in the Waipori Gorge, Otago, where roadside poplars have been planted in a bush-filled gorge, producing an entirely incongruous effect.

Neither should the plantings of natives and exotics ever be mixed. Some people often suggest a compromise between the two schools of thought and recommend the planting of exotics on one side of the

road and natives on the other. This and similar schemes would be most unnatural and ridiculous. There is ample room for both, each in its separate place. A feature of the landscape in many parts of our country is the large number of exotic pine plantations. Where bordering roadsides, the dull green of a monotonous, straight line could be much improved by planting of some more ornamental types of exotics. In autumn, the golden yellow of the Lombardy poplar is much enhanced by a background of dark green pine.

LANDSCAPE ARCHITECTURE.

The present, tremendous activity in highway construction and improvement, offers a wonderful opportunity for large-scale planting work. To ensure its success, the planting must be planned so as to produce the best landscape effects in future years—a very difficult task. Landscaping is an art and, when applied to the roadside, a particularly difficult one.

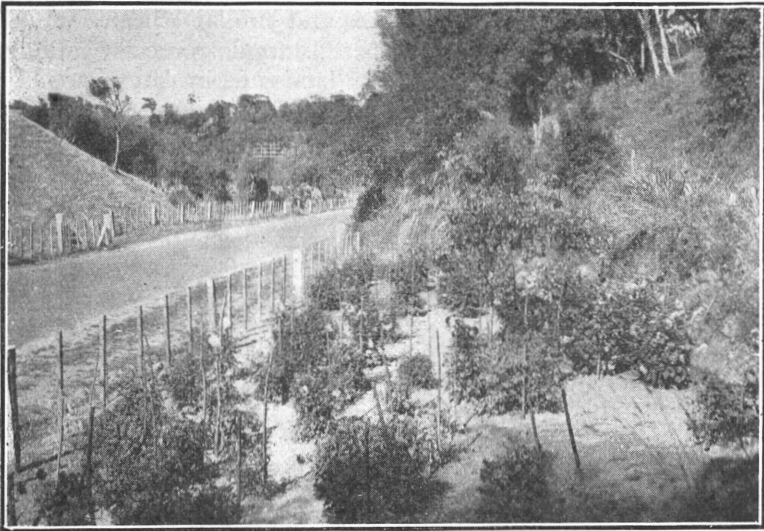
The general principle, in this landscape work, should be to produce an effect which blends with the surroundings, rather than a too ornate and formal appearance, as if a bed of flowers had been transported from the garden to the roadside. Well-planned, formal planting, however, can produce an appropriate effect at the approach to a city. In the open countryside, where traffic is moving rapidly, the motorist usually has no time to appreciate the individual beauty, such as that of a flowering shrub, but is impressed by the general effect. Consequently, under such conditions, the length of road planted should not be too restricted, the aim being to produce a beautiful stretch of road rather than individually ornamental shrubs. To produce these beautiful stretches of road requires unity of idea and expression over reasonable distances. The plantings should be types rather than incongruous mixtures of species.

Some writers on the subject have roughly divided the systems of planting into three main divisions :—

1. The balanced line.
2. The unbalanced line.
3. The parkway system.

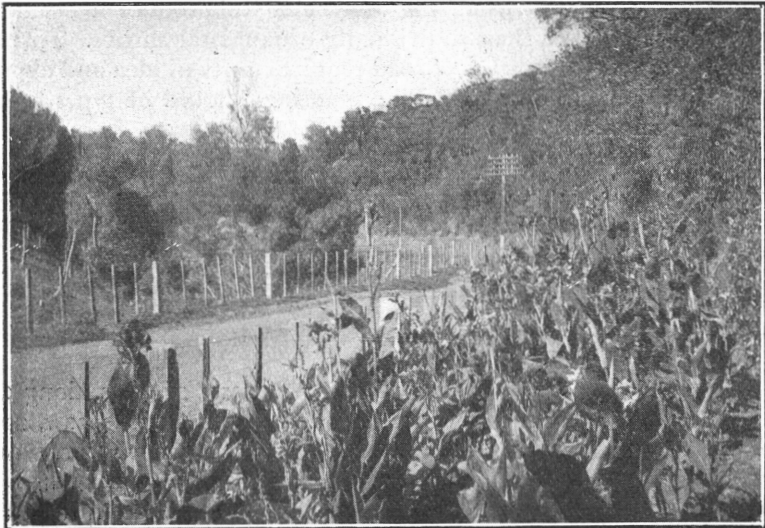
1. THE BALANCED LINE.

This method consists in the planting of rows of trees along the roadside. It has been the one most frequently used in the past, as it requires the least artistic ability and is the easiest to carry out. Although many people dislike this arrangement on account of its lack of artistic merit, it should be remembered that the very nature of the problem often leaves no other choice. The very limited width of the roadside available, along the majority of our roads, presents a difficult problem to any landscaper wishing to break away from formal lines. Formal planting, however, can produce impressive effects when suitably employed in appropriate surroundings. Such places may be at the entrances to towns or parks, or where a straight road converges on



C.S.C. Photo.

A plot of Dahlias, planted by Mr. T. Dix, Engineer, Waitotara County Council, growing on the No. 11 Hawera-Wanganui State Highway, near Maxwell.



C.S.C. Photo.

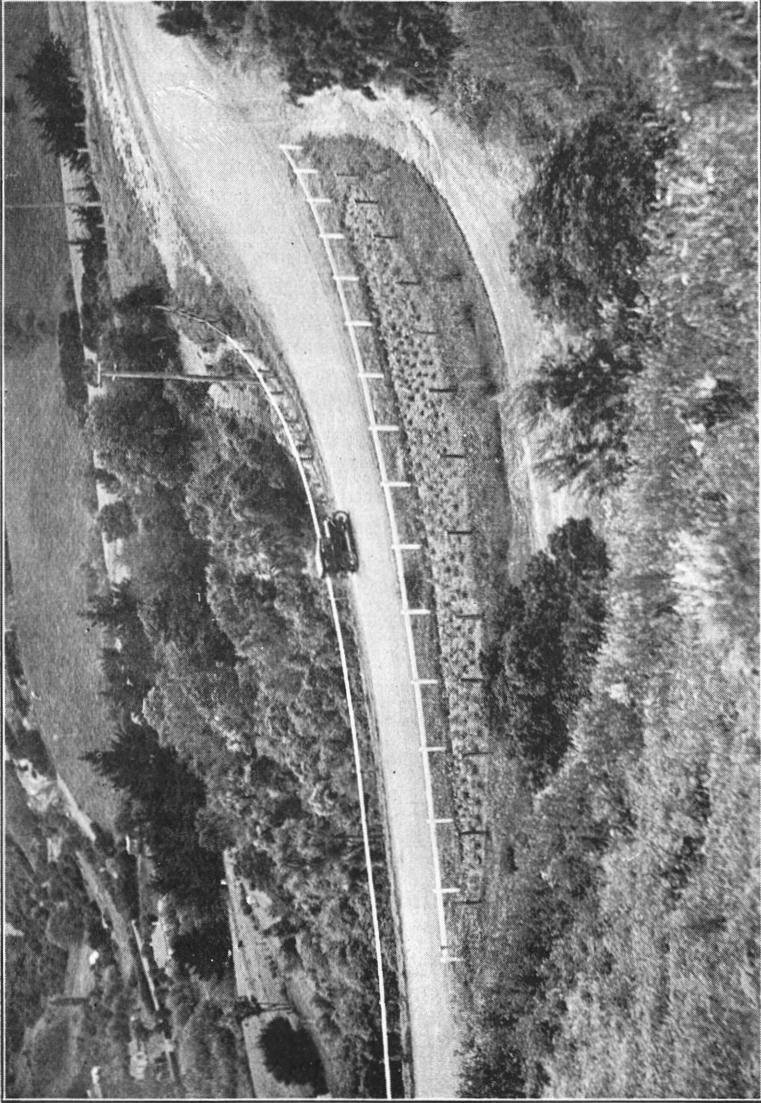
A plot of Cannas, planted by Mr. T. Dix, on the same Highway, near Maxwell. The native bush on the left was donated by two Maoris, Hoani Hakaraia Uawari and Retiu Ti Weka, in commemoration of an ancestor, Mai Ika.

some prominent point, such as a church spire. Formal rows along straight roads on flat country are also frequently in keeping with the general landscape, especially where fences run at right angles to the road, producing a chequer-board type. Formal rows are not suitable along a road which twists and bends, as the lines have to be broken too frequently in order not to interfere with the vision of traffic. It is not suggested, however, that formal rows on straight roads should be continued for long distances. Half a mile to a mile at a stretch should be the maximum unbroken distance, otherwise a monotonous effect will be produced. The lines of Lombardy poplars bordering the road to Kairaki Beach, Kaiapoi, present a splendid example of formal planting, but if they were continued unbroken for some miles the, at first, impressive effect would give way to a weary monotony. One serious drawback to the successful establishment of an avenue, is that several trees usually fail or succumb in later life, often detracting from the general effect of the avenue. Where a plantation presents a face parallel to the roadside, is a suitable location for establishing a roadside avenue. A plantation of pine appears much more attractive when bordered along the roadside by a well spaced line of *Eucalyptus amygdalina*, golden wattle or Lombardy poplar. If a wide strip of land is available between the road surface and the plantation edge, it is often required for a ploughed firebreak and will seldom be available for making a more informal type of group or scattered planting. To sum up, avenues should only be planted in selected areas and for restricted distances, and not in the open countryside unless other systems are impracticable.

2. THE INFORMAL TYPE.

This system attempts to produce a natural effect in keeping with the surrounding countryside. Straight lines and formal designs should be avoided and the trees and shrubs should be planted so as to appear as if they had grown there naturally. The planting, however, should not be a mere jumble, but should be naturally arranged in a harmonious manner. This system is particularly appropriate for the open countryside and for hilly or winding roads. It offers far greater scope for the employment of small flowering trees and shrubs, and demands a much higher standard of expert knowledge and artistic ability.

Although avenue planting is an impossibility along most of our roads, there are few which do not offer some scope for informal planting. Portions of the roadside, suitable for this purpose, may be at some distance apart, but this is often a desirable feature as any general scheme of informal planting should be more or less broken up. Frequently, there are stretches of road which are better left untouched, especially where plantings would block views of the surrounding countryside. An abrupt break in the planting may be made to suddenly disclose a beautiful vista, which may be framed by suitable planting. Where the view is not of interest and the break in the planting is merely made for the informal effect, the merging into open country could be long and gradual, with several small gaps in the



A suitable portion of roadside for planting operations—the re-alignment of the road has resulted in an “island” of old road. A part of this has been fenced and planted with Kowhais, with a temporary ground cover of annuals.

planting before reaching the main break. In low, rolling, hilly country a good effect may sometimes be attained by planting the tops of the hills with tall-growing trees, and leaving unplanted the valleys and slopes or perhaps, if desirable, using low-growing shrubs. The result of such a planting will be to heighten the skyline and so produce a greater contrast. Usually, however, it will be necessary to leave the summits of hills unplanted, if any interesting outlook can be obtained from the locality. It is also necessary to leave unplanted any portion of the roadside which is likely to be used as a parking area. At the summits of hills and other vantage points, where motorists stop to enjoy the view, and near water courses, are two such places where portions of the roadside suitable for parking should not be planted.

When a road is reformed, there are usually loops of the old road cut off by the straightened new road. These loops or "islands" frequently offer excellent opportunities for informal planting, as there are fewer restrictions to be observed in planting such isolated portions than in planting along the roadside.

3. THE PARKWAY SYSTEM.

This American system consists in widening and developing the roadside to such an extent that the highway, besides being of its normal value for traffic purposes, also provides definite recreational facilities. Such a system naturally requires very wide and highly developed road margins. It is not necessary that such an area be continuous, as a parkway may often be a highway merely connecting a series of parks. It may pass through natural wooded country or the area may be artificially planted or a combination of both natural and artificial may be used. Ample grassed margins and pathways, separated from traffic surfaces, are provided. There is probably little, if any, scope for such an elaborate and expensive system in this country, except perhaps in a few park or picnic areas adjacent to main towns. At the very least a fifty foot margin is required, such an area being seldom available. The adjoining land is usually in private hands, and its purchase for such a purpose would entail considerable expense. Occasionally, the adjoining land is publicly owned, but the road areas, suitable for conversion into parkway, are so limited that the likelihood of such road areas being bordered by publicly owned land is extremely remote. It should be noted that, in any parkway system, all wires are placed underground.

WHAT TO PLANT.

The relative merits of natives and exotics have already been discussed in a general way. Natives have the disadvantage that there are few species capable of being grown as individual specimens with a single trunk, often a very desirable feature for roadside planting. Deciduous trees are sometimes preferred and the choice must therefore go to exotics, although the kowhai, with its thin, winter foliage, should always be considered as a possible substitute for a deciduous exotic species. Autumn colour can be made an outstanding feature of certain

plantings but, where this is desired, one is naturally restricted to exotics.

Trees and shrubs, that flower attractively in the spring, are probably appreciated more than those that flower at any other season, except winter. Spring-flowering trees can produce a beautiful display and they should be planted extensively in the cities, approaches to towns, and motor-drives close to the centres of population. Suitable native trees and shrubs for this purpose are few, although the kowhai is a brilliant exception, worthy of every effort to extend its planting.

In choosing both exotics and natives, the possibility of providing food supplies for our native birds should be kept in view. They are a source of interest to many people and every effort should be made to foster them. A list of suitable food-producing plants, both native and exotic, is appended.

Instead of listing a long range of possible species, some of which would be of very limited scope, the choice has been narrowed down to those species which should be most generally used. In the main, these are the most desirable ones which are suitable for the purpose. For the best results, the planting should not be spread over a large number of species, although a considerable variety will be required to provide for the varying conditions throughout New Zealand. It should be restricted, where possible, to certain lists of the choicest of each type, sufficient in numbers of species to avoid monotony, but not so numerous as to lose all character of landscape. The following lists are offered as general guides, but it should be remembered that the best indication of what to plant, will be found by observing what species already flourish in the district on the same type of site it is intended to plant. The lists are by no means meant to be exhaustive, especially the exotic list, and there may frequently be other species which would give excellent results in restricted localities.

NATIVES.

Before considering the various species of natives suitable for group planting, and this is the type of landscaping they are most suitable for, attention should be directed towards another type of planting of great importance. Along many of our roads we may find banks with a few thin patches of natives. These few natives could frequently be made the nuclei of attractive groups of natives. Noxious weeds or other interfering growths should first be removed and the area planted with quick-growing, broad-leaved natives such as *Nothopanax Colensoi*, *Griselinia littoralis*, or the broadleaved coprosmas, such as *C. grandifolia*, *C. lucida* or *C. robusta*. The object of this planting would be to produce a ground canopy, to provide more natural conditions for the natives already growing there, and, most important of all, to provide suitable conditions for the future establishment of more desirable and more difficult species. Such a ground canopy would result in the natural establishment of other native species, from seed borne by wind or birds, or from the plants present. Under proper control, the broad-



"Evening Post" Photo.

Waikaremoana-Rotorua Highway.

leaved shrubs originally planted would act as suitable nurses for those natives requiring more shade and shelter in their young stages. Young rimu could be advantageously grown under such conditions and the native clematis would soon festoon the shrubs and trees, if young plants were planted and cared for under such conditions. Where such rehabilitated patches were below the road, especially where in a creek bed, young tree-ferns could be introduced, and if protected, would form a most pleasing feature in future years.

This restoration of pieces of roadside bush should be one of the most important activities of any scheme for roadside beautification in this country. The quick-growing, broad-leaved shrubs, which play such an essential part in the scheme, are all easily raised en masse from seed or cuttings under ordinary nursery conditions. For natives, they are quick-growing, especially the coprosmas, and they transplant reasonably well.

1. KOWHAI—*Edwardsia microphylla* and *E. grandiflora*.

The Kowhai is one of the best if not the best, native tree for roadside beautification purposes. With its graceful, feathery foliage, it is at all times beautiful, but more particularly so in spring, when covered with golden blossom. It requires a sunny position and is at its best when sheltered from cold southerly winds. It is not particular as to soil.

Edwardsia microphylla is a larger growing tree while *E. grandiflora* is really only a large shrub. The latter has larger leaves and flowers, but not the fine, feathery appearance of *microphylla*. The latter has the disadvantage of a long-persisting, entangled, juvenile form, but this stage may be hastened by gradually pruning to one main leader. The caterpillar of the native kowhai moth (*Mecyna maorialis*), sometimes becomes epidemic and may completely defoliate kowhais in summer. At such times, kowhais are very gaunt and unsightly, but they gradually regain their foliage, although they often flower but poorly the following season.

Both species are readily raised from seed, but large plants are not easy to transplant. To ensure success, they may be grown in large pots and, when of sufficient size (5 to 7 feet high), planted in their permanent positions with the minimum of root disturbance.

2. POHUTUKAWA—*Metrosideros tomentosa*.

Although confined naturally to the northern half of the North Island, the pohutukawa may be planted in coastal districts at least as far south as Dunedin. It is the most easily cultivated and most rapid growing of our rata group. Although frost tender when very young, once the leaves develop their white tomentum on the under side, they will stand ten degrees of frost or more. It is at its best when planted in groups on coastal banks, and commences to bear its dark crimson flowers when quite young. In coastal planting in particular, the claims of the pohutukawa should always be considered, as it is certainly one of the most attractive natives.

3. RATA.

Both the northern and southern ratas form shapely bushes of bright, glossy green and bear abundant, showy blooms in mid-summer. They both remain at the shrub stage for many years, but flower at this stage, the northern rata—*Metrosideros robusta*—having dark scarlet flowers—and the hardier southern rata—*M. lucida*—bright crimson flowers. Unfortunately both species are much slower growing than the pohutukawa but are worthy of every effort to establish. Planting should not extend to districts with an average rainfall under 40 inches per annum and should only be made in good soil, well drained. Both species should be planted in groups, the southern rata being used in Otago and Southland, although there are many magnificent examples of both species in private gardens in Dunedin.

4. KARAKA—*Corynocarpus laevigata*.

The karaka is an excellent tree for coastal situations but, owing to the danger of children eating the poisonous fruits, it is thought advisable to warn people of the danger of planting it for roadside purposes.

5. NGAIO—*Myoporum laetum*.

The Ngaio is another useful small tree for coastal purposes. It is easily raised but difficult to transplant, and for best results should be raised in pots and transplanted to fairly good soil. It will grow in localities which are too cold for pohutukawa and makes a suitable group on coastal spurs or along the inland side of sand dunes.

6. BEECH—*Nothofagus*.

In the hilly and mountainous country of the South Island, there are many localities where *Nothofagus fusca* or *N. Menziesii* could be suitably planted, especially where it was native to the locality. Both species may be planted either as specimen trees or in groups.

7. *Hoherias*.

The several species of this genus make an excellent group of small, summer-flowering trees of easy culture. They are not particular as to soil and the two species recommended are rapid growers. *Hoheria sexstylosa* is usually the most suitable species to grow and has the advantage of flowering while quite young.

H. populnea is also suitable and both species will stand trimming well. Under favourable conditions both species may seed in naturally, and they are also good nurse trees for more tender species. *H. glabrata* is also beautiful with its cherry-like blossoms, but it requires a moister climate, is slower and more difficult to grow, and is more subject to insect attack.

The *Hoherias* should be planted in groups or drifts, but are also suitable for avenues or informal lines of low growing trees, branched nearly to the ground.

8. *Cordyline*.

Our three main species in this genus can be used to excellent advantage in landscape work. Much rolling tussock country could be greatly improved in appearance, from the traveller's point of view, by the effective planting of *Cordyline australis* on selected spurs or knobs. Sand dune swamps alongside roads could be similarly improved, for this species is particularly accommodating as to soil requirements.

C. indivisa is one of our finest ornamental trees, having a striking tropical appearance. It requires a moist climate, semi-shade and a well-drained soil. For informal planting on bush edges, or as a dot plant in low shrubbery, it is excellent. It also makes a fine, low-growing avenue when planted in a sheltered situation.

The more slender *C. Banksii* is also useful for bush edge or gap planting.

9. REWAREWA—*Knightsia excelsa*.

This tree makes a splendid specimen of somewhat fastigiate habit and most striking foliage. It is suitable for North Island planting, but does not thrive on stiff clay soils. It stands wind well and is a moderately quick grower.

OTHER TREE SPECIES.

Of value for restricted localities in the North Island the following species are also suggested :—

TAWARI—*Ixerba brexioides*.

PURIRI—*Vitex lucens*.

WHAU—*Entelea arborescens*.

TITOKI—*Alectryon excelsum*.

SHRUB SPECIES.

From the wealth of native shrub species available, an attempt has been made to list the most desirable. Other species should only be considered when none of the listed species thrives in the district, or where it is desired to confine planting to some particular native of the district which is not listed. Species for restoration work have not been included.

1. *Carpodetus serratus*—Quick growing. Will grow in open situation but requires good soil.

2. *Glianthus puniceus*—Excellent for sunny banks, but not where frosts are severe.

3. *Fuchsia excorticata*—Suitable for planting on creek edges, and in colder districts provides autumn colour in bush.

4. *Leptospermum scoparium*—The pink and red varieties of this species make excellent shrubs for group planting. Will grow in almost any soil or open situation.

5. *Myrtus bullata*—An excellent bushy shrub for fairly good soil. Not in districts with severe frosts ; suitable for exposed or sheltered conditions.

6. *Olearia*—In southern coastal districts with a moist climate, *O. angustifolia*, *O. chathamica* and *O. semidentata* are excellent, but are not always easy to grow. A general selection may be made from *O. arborescens*, *O. ilicifolia*, and *O. macrodonta*. The latter species tolerate wind, require full sun, and will grow in most well-drained soils. *O. Traversii* is useful for coastal shelter.

7. *Pittosporum eugenioides*—An excellent bushy shrub with most attractive foliage. Quick grower.

8. *Pseudopanax*. Both *P. crassifolium* and *P. ferox* should be extensively planted in almost every patch of roadside bush or group of shrubs. In many cases they will come in naturally and they are much to be desired, particularly on account of their fascinating juvenile forms.

9. *Senecio*. Both *S. Greyii* and *S. laxifolius* are excellent for covering banks; they require full sun and will tolerate wind. Grey foliage and yellow flowers. *S. rotundifolius* is a useful shade and shelter shrub for southern coastal districts as is also *S. Huntii*.

10. *Veronica*—From the numerous species available the following might be suggested: *V. salicifolia* var *Atkinsonii* is suitable for planting, or even sowing, on dry clay banks. *V. speciosa* and *V. Hulkeana* are excellent flowering species, while *V. diosmaefolia* and *V. macrocarpa* are among the best of the remaining species.

OTHER SPECIES.

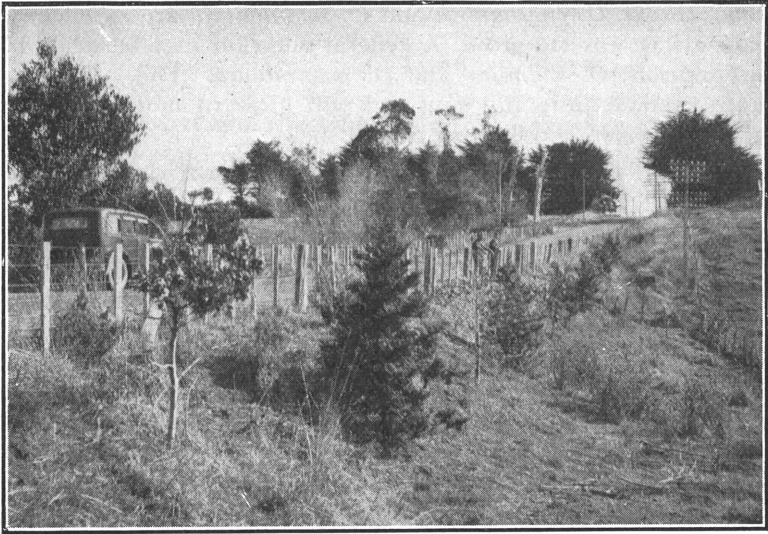
Of value in the warmer districts are *Meryta Sinclairii* and *Pimelea longifolia*, while for dry banks in Marlborough and elsewhere *Notospartium Carmichaeliae* might prove useful.

In addition to the trees and shrubs, there are other native species which should be included in roadside beautification work. For tree-ferns, the mamaku, *Cyathea medullaris*, should be used in warm districts and the ponga, *C. dealbata*, in the colder parts. The value of flax and of toi-toi should not be overlooked, especially for swampy situations, where it may be impossible to establish any other desirable species.

Above all, should the merits of *Clematis indivisa* be kept in view. If well protected, much beauty could be created with this lovely climber. For covering steep banks *Rubus parvus* and *R. Barkeri* will be found useful. If a fairly sure method could be evolved of making mistletoe (*Elytranthe*) berries grow on their respective beech hosts, what marvellous displays of bloom could be produced in future years.

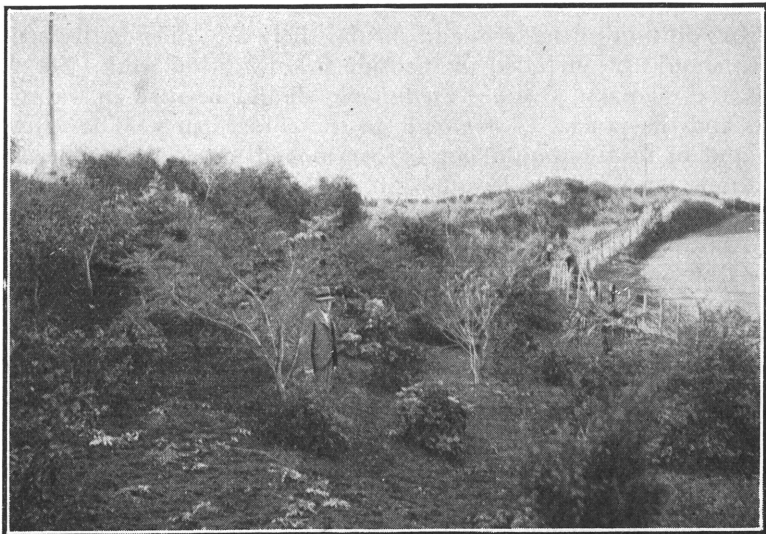
EXOTICS.

There is a tremendous range of material available, but suitable species which have proved successful over any range of country are fairly limited in number. An attempt is made to list only these. There will, doubtless, be numerous other species, many of them excellent in certain localities, which will occur to everyone, but to list such would produce an unnecessarily long list of species of limited application.



C.S.C. Photo.

Ornamental trees planted on the No. 11 Hawera-Wanganui State Highway at Westmere. The persons are Messrs. Hope Gibbons and T. Dix.



C.S.C. Photo.

Plot of Ornamental trees and shrubs near Waitotara on the same Highway, planted by Mr. T. Dix, Engineer, Waitotara County Council. (Mr. Hope Gibbons, President, Wanganui Beautifying Society, is in the foreground.)

Acacia.

Some of the species of this genus are useful for planting along the edges of conifer breaks or plantations, especially in drier districts. They have the disadvantage of sprouting from the stump and suckering, and may prove aggressive and difficult to eradicate when not required. *Acacia decurrens* var *mollis* is a very strong-growing, round-headed tree of attractive form producing beautiful yellow flowers in spring. At maturity it forms an open head, casting a pleasing but not too dense shade.

Some of the lesser known species will probably prove suitable for North Island conditions.

Acer.

A. palmatum, the Japanese maple, of which there are numbers of beautiful varieties, is one of the finest autumn colouring shrubs or small trees. Planting sites should be chosen carefully and should be sheltered from severe winds and spring frosts. They are best suited for city and suburban planting.

Aesculus.

As the horse-chestnut develops into a large tree, it should be planted at some distance from the road surface. This will keep the majority of the leaves from falling on the road surface, for as they are large and fall rapidly, they are apt to form a greasy surface during wet weather. It is an easy tree to transplant and will grow in almost any well-drained soil, but should not be planted where the subsoil is dry, as under such conditions the leaves brown very early in hot weather. *Aesculus carnea* is an attractive species, with pink flowers, and it does not grow to such a large size as the common horse-chestnut. To obviate damage from boys or the possibility of nuts and capsules falling on the highway, it may be desirable to grow the sterile, double white variety.

Arbutus Unedo.

The strawberry tree is a small, evergreen species with handsome, red fruits of value to birds in winter. It may prove useful where an evergreen tree of limited height growth is required.

Berberis.

The common *Berberis vulgaris* should not be planted as it acts as a host to the fungus which produces rust in wheat. Many of the species are extremely beautiful, both for autumn colouring and richly-coloured berries, but it is suggested that their planting be restricted to urban districts at present. Some of the species give the impression that they could become aggressive under suitable conditions, and it would be unwise to plant them extensively in rural surroundings, without further inquiries into the possible behaviour of the several species.

There are many excellent species for roadside beautification work, and they are particularly valuable in that they will grow in full sun on banks of clay or poor soil.

Berberis Wilsonae is one of the best on account of its extensive, spreading habit and numerous, coral-red berries. *B. Thunbergii* and *B. orthobotrys* are also excellent, and with *B. Wilsonae* give a sufficient choice of first class species.

Betula.

The silver birch is a particularly graceful tree and will grow successfully under a wide range of conditions. It does not cast too dense a shade, and the white trunks are attractive when seen amongst or on the outskirts of, evergreen exotic trees. The *verrucosa* variety of the silver birch (*Betula alba*) is the taller and more graceful tree, with a more weeping habit than the *pubescens* section. In this country, the silver birch is liable to suffer very severe damage from snowfalls, the whole crown often being completely smashed.

Although not of such a graceful habit, the canoe birch, or paper bark birch, *Betula papyrifera*, is particularly attractive on account of the smooth whiteness of its bark. It should be planted, when suitable, wherever this particular characteristic is desired, but it should be noted that it is not well adapted to dry situations.

Castanea.

The Spanish chestnut, *C. sativa*, is a large growing tree suitable for sheltered localities, which are free from severe frosts. It requires a warm, well-drained soil.

Cistus.

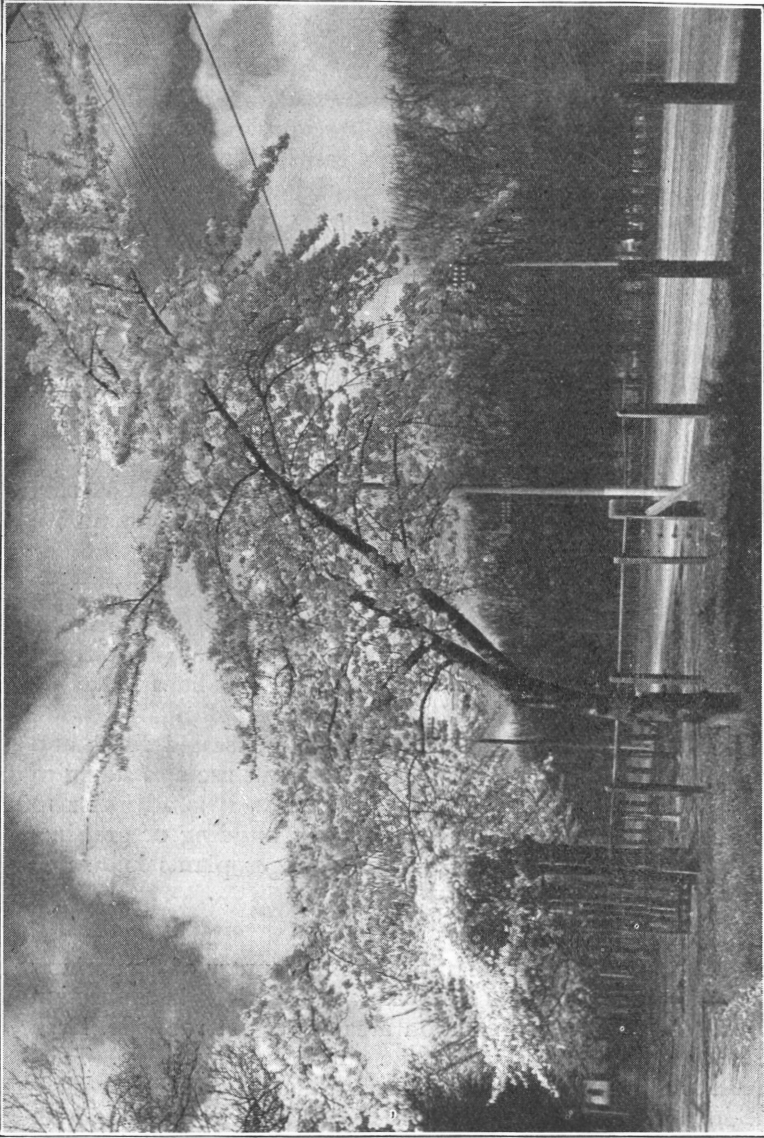
C. Silver Pink is an excellent rock rose for planting on dry, sunny banks, even of poor soil. It is a dwarf, compact shrub producing soft pink flowers throughout the summer. It should not be planted where there are heavy frosts. The flowers would prove very attractive to passers-by, and it is doubtful whether the public has become sufficiently self-respecting, to leave such blooms untouched.

Cotoneaster.

These are excellent winter, berry-bearing shrubs, which are not particular as to soil or site. *C. Henryana* is an evergreen, producing rich, crimson berries. *C. horizontalis* is a spreading prostrate shrub, bearing crimson berries throughout the winter. It is excellent for banks, growing flat against the surface, but is not quick-growing. *C. serotina* is an excellent, tall, evergreen shrub with beautiful red berries.

Eucalyptus.

Some species, such as *E. viminalis* and *E. amygdalina* are useful for bordering coniferous plantations in order to relieve the monotonous, green line. A number of species will grow under hot, dry conditions, where it is difficult to establish any other attractive tree. If the public would leave the blooms untouched, the crimson flowering gum, *E. ficifolia*, would be worthy of every effort to establish in localities free from severe frost. It should be adequately protected from frost while young.



(Photo by courtesy of the Director, Botanic Gardens, Christchurch.)

Clothing sides of roadways running through park lands with small flowering trees backed by main planting of Oaks, Ash and Sycamores, etc.

Flowering Cherries in Riccarton Avenue, Christchurch.

Euonymus europaeus.

The spindle tree is very accommodating as to soil or situation. It should be planted in groups and is particularly valuable for its autumn colour and deep pink fruits.

Fagus sylvatica.

It is doubtful if the common European beech is useful for roadside work in this country. It is slow growing, particularly on clay soils, and is difficult to establish in open or windy situations. While young (up to twenty feet or more in height), it retains many of its dead leaves throughout the winter, presenting a rather dilapidated appearance. The copper beech is more attractive, particularly when planted as a contrast to the light greens of other deciduous trees.

Forsythia.

This is a hardy, deciduous, spring-flowering shrub of value for covering banks. *F. intermedia var spectabilis* is the most useful species and will grow freely in almost any soil. Its planting should probably be confined to closely settled districts, otherwise the shrubs, when in flower, would have much of their beauty stolen.

Fraxinus.

The ashes make suitable avenue trees, but should not be planted on dry soils. The common ash, the golden ash and the manna ash are all suitable.

Ginkgo biloba.

The maidenhair tree is a beautiful slow-growing tree, which has the additional advantage of withstanding severe winds. Some excellent specimens of this deciduous tree, which is absolutely hardy, may be seen in Canterbury and Otago. The fleshy, ill-smelling fruits are reported to be dangerous where they may fall on sealed roads and cause a slippery surface. For some people, the fruits are also stated to be poisonous to touch. To avoid these difficulties, it is advisable to plant only the staminate form, propagating by budding or grafting, from the mature staminate form, or from younger plants known to have been propagated from same.

Larix.

The larches are excellent trees for the hill country of Canterbury and Otago, and can be used to great advantage, especially in connection with plantations. Where a plantation area skirts the roadside, larch blocks are particularly useful along the adjoining plantation. They are deciduous, which is a valuable point in a plantation tree for roadside planting, and needle-fall is light, being unlikely to interfere with the paved surface or block water-tables or culverts etc. Their shape is conical and they do not develop large limbs which are likely to spread into overhead wires. One point that appeals particularly to forest authorities, is that a well-kept larch plantation, after its first twelve years approximately, is practically immune from fire damage, especially in the summer months. This is a most desirable characteristic of a roadside species.

Instead of keeping to the long, and usually straight line, of the plantation block, further larch should be planted in groups, or as single specimens, between the road surface and the plantation face, if land is available. Groups of larch are also suitable for planting on the road side of pine plantations or windbreaks, the autumn foliage appearing to best advantage against a dark green background.

The larch prefers a sunny, well-drained slope but is not suited for the hot, dry, conditions of the Canterbury Plains. It is easily and cheaply raised and transplants well, even as a five or six foot tree. Both the European larch *Larix decidua*, and the Japanese larch, *L. leptolepis*, are suitable, the latter, with its more highly coloured autumn foliage and red winter twigs being the more ornamental. On the average, there appears to be little difference in growth between the two species.

Liriodendron tulipifera.

The tulip tree is a large growing species which should only be planted where there is ample room for development. It is of fine shape, produces good autumn colour and is long-lived. It requires ample shelter and is difficult to transplant.

Platanus.

The planes require ample room for their full development. They should not be planted alongside sealed road surfaces, as the large leaves may cause a greasy, skiddy surface, when the fallen ones accumulate in autumn. In general, more suitable species can usually be chosen.

Populus.

The Lombardy poplar, *P. nigra var italica*, is probably the only one of importance for New Zealand conditions, although *P. alba* may be used to advantage in parts of Central Otago. The fastigate form of the Lombardy poplar is a familiar sight in Central Otago, Canterbury and Marlborough, where it frequently grows under conditions where it would be difficult to raise other large deciduous trees. For avenue planting, they should not be planted closer than thirty feet between trees. A single specimen is often well placed on the skyline at the top of a rise in the road, and groups are very effective along watercourses or against a background of pine. Any tendency to overplant with this species should be avoided, although there are still many places, especially in Central Otago, where they could be planted with beneficial results.

Prunus.

This genus includes the most beautiful of all flowering trees. They are, therefore, particularly desirable where they can be employed in localities, which are devoid of any distinct native character. For beautifying a district or an otherwise featureless drive, the best species of this genus are more attractive than any other exotic. They are most suited for suburban areas and drives adjacent to cities, but also make excellent avenues or groups at the approaches to country towns. At

flowering time, the best species would probably require protection from thieves, until the general public becomes sufficiently educated to respect public property.

Most of the species produce small rounded heads and may be raised on clear, six-foot stems. They succeed in all ordinary soil, stiff clay least of all, and require full sunlight. The following selection should provide ample good material :—

Prunus Persica var Clara Meyer.

P. Persica var flore roseo pleno.

Both these flowering peaches have attractive double pink blossoms. Of the plum group the three most useful are :—*Prunus cerasifera var Pissardii*, *P. Bliveiana* and *P. Moserii*.

The most suitable flowering cherry is *Prunus serrulata var sekiyama*.

Pyrus.

In *Pyrus malus* are the flowering crabapples. They are hardy, spring-flowering trees of moderate size, similar to *Prunus*. For beautifying work they are very attractive and the most suitable variety is *P. malus var aldenhamensis* which has red flowers and purplish leaves.

The sorbus section of *Pyrus* contains the mountain ash, *Pyrus Aucuparia*, a well-known tree which grows to great advantage in most parts of the South Island. It produces magnificent clusters of orange-scarlet berries and the foliage also colours well in the autumn. For group or individual planting it is excellent, but is not ideal for avenues, as unfortunately some individuals are usually short-lived. It is not particular as to soil. In view of the liability of these to pests and diseases e.g. codling moth, fireblight, black-spot, etc., the Department of Agriculture does not recommend their inclusion.

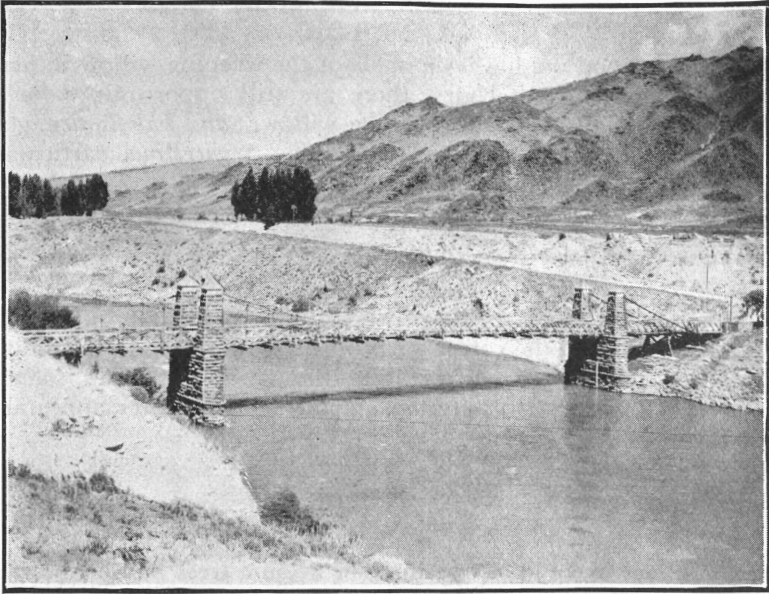
Quercus.

The oaks are slow-growing but finally develop into large-crowned trees requiring considerable space. They are all attractive specimen trees and some also have brilliant autumn tints. For their best development they require a deep, rich soil. They are particularly long-lived, a desirable feature in trees for roadside planting.

Quercus Cerris, the Turkey Oak, is a more suitable species to plant than the common oak, in most parts of the Dominion. It is a quicker grower, freer from insect pests, and more suited to a heavy clay soil than the common English oak.

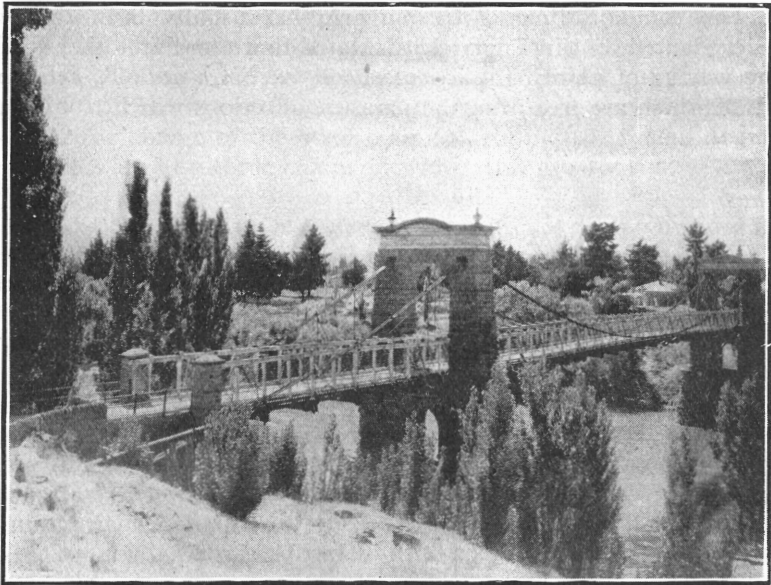
Q. coccinea, the North American Scarlet Oak, has large, bright green leaves which turn to vivid shades of red in autumn. The variety *splendens* is stated to have even more brilliant autumn foliage than the type.

Q. rubra, the North American Red Oak, does not always colour well in autumn and is not as brilliant as the Scarlet Oak. It prefers a sandy soil and is comparatively free from insect attack.



G. Simpson Photo.

A barren Central Otago Landscape considerably improved aesthetically through the planting of exotic pine shelter-breaks.



G. Simpson Photo.

Where Lombardy Poplars and exotic Conifers beautify the landscape—
A Central Otago Main Highway.

Salix.

Although good use has been made of the weeping willow in many districts, especially Canterbury, there are still opportunities for its extension. In addition to the weeping willow, *Salix babylonica*, good use could also be made of the golden willow, *S. vitellina*, particularly of its weeping variety *pendula*.

Stranvaesia Davidiana (salicifolia).

This is an excellent, easily-grown shrub or small tree, suitable for the South Island and the colder parts of the North Island. It produces abundant clusters of red berries, and although an evergreen, some of the leaves turn scarlet in autumn, enhancing the winter appearance of the shrub.

Tilia.

The Limes make good specimen or avenue trees and are suitable for any ordinary soil. They are noted for their sweet scented flowers which are produced in early summer. In America and Europe their planting has been urged by apiarists and orchardists, as their flowering prolongs the food season of the bees which are required to pollinize the fruit flowers. It is a favourite tree for bees in this country and is stated to produce very good honey.

The common lime, *Tilia vulgaris*, has usually been the only species planted, but in England it is stated that there are other species more worthy of planting, particularly *T. euchlora* and *T. petiolaris*, both of which are free from the parasitic affections which trouble the common lime.

Ulmus.

The elm has the bad reputation in Britain and the Continent of suddenly shedding large limbs without warning. On account of this characteristic, it has been thought advisable to omit it from the list of selected trees for roadside planting purposes.

PLANTS OTHER THAN TREES AND SHRUBS.

Along marine roads much work could be done to beautify clay banks and rock faces by planting the brilliant flowering mesembryanthemums. If the right species and site were chosen, many uninteresting banks could be draped with attractive carpets.

The planting of daffodils in grassland should only be attempted where the areas are fairly constantly under the eyes of many people. Only in a very few well-protected areas does there appear to be any chance of the flowers being left untouched.

LIST OF TREES AND SHRUBS SUITABLE FOR ROAD-SIDE PLANTING AND OF FOOD VALUE FOR NATIVE BIRDS.

NATIVES.

Clanthus puniceus.
Coprosma spp.
Cordyline spp.
Edwardsia (Sophora) spp.
Fuchsia excorticata.
Knightia excelsa.
Metrosideros spp.
Myrtus bullata.
Nothopanax spp.
Phormium tenax.
Vitex lucens.

EXOTICS.

Arbutus Uneão.
Berberis spp.
Cotoneaster spp.
Eucalyptus spp.
Euonymus europaeus.
Forsythia spp.
 **Pyrus spp.*
Stranvaesia Davidiana.

* Vide last paragraph on page 28.

ORGANIZATION.

Having discussed the necessity and possibilities of roadside planting, it now remains to plan how it could be put into successful operation. In England, as has been stated, the various County Councils have legal authority to do the necessary work, and expert advice is available from a voluntary body. Although much has been done, the scheme does not function smoothly, depending entirely on the enthusiasm, or lack of it, of the various Councils. In Victoria (Australia) where the State Highways are under one control, the activities of the controlling board are limited to maintaining any trees growing on the roads. A voluntary body of enthusiasts enlists public support for the financing of planting and, once they are established, their maintenance is under the charge of the State body controlling the roads. Many of their roads are also three chains in width, this greatly simplifying the problem.

In the United States of America, the matter is dealt with in several different ways by the various States. Some proceed similarly to Victoria, while others are extremely active and maintain special sections of their road commissions to deal with the problem. In other States, there is no official organization at all. It is necessary, in many States, for all pole line authorities to obtain permits from the road boards, before commencing to trim or remove roadside trees, or to alter lines, or erect new ones. These permits state the conditions and type of work, which must be carried out, and are a safeguard against unnecessary mutilation and crude methods. In some States, the highway controlling authority allocates a portion of its annual income to roadside planting and maintenance, regarding such expenditure as providing something of definite value to the public. One authority has suggested that one per cent. is a reasonable proportion of the total money annually spent on constructing and maintaining roads, which should be dedicated to roadside planting and its maintenance.

CHART OF ORGANIZATION.

Responsible Government Department.

HEAD OFFICER.

AUCKLAND Gardener and Youth. Truck. Nursery.

WELLINGTON Gardener and Youth. Truck. Nursery.

CHRISTCHURCH Gardener and Youth. Truck. Nursery.

DUNEDIN Gardener and Youth. Truck. Nursery.

DUTIES.

Raising of Nursery Stock. Planting within 60-70 miles of four main centres. Maintenance of Plantings. Protection of existing roadside beauty.

Liaisons with

Power Line Authorities
 Post and Telegraph Authorities
 Local Counties Cites and Boroughs
 Adjoining Landowners
 Local State Forest Service Organization.
 Local Public Works and Main Highway Authorities
 Road Patrols of Traffic Dept. and Motor Clubs
 Local Amenities Societies
 Scenic Reserves Authorities

If the job of roadside planting is regarded as being worth doing well in New Zealand, there is only one way of doing it. That is to place all matters concerning roadside beautification under the control of one Government authority and to set aside a certain annual income from the main Highways Fund for this work. Voluntary bodies are very good but much effort is often wasted through lack of expert direction and through want of provision for future maintenance. Every effort should be made, however, to encourage voluntary bodies and secure their co-operation and assistance in all roadside planting and maintenance.

The income of the Main Highways Board is mainly derived from petrol taxation and it would surely be the wish of all motorists, as well as the general public, that a very small portion of that money should be devoted to preserving and extending the beauty of our countryside. The following scheme, which is outlined, would require an initial outlay of some £3,700 and an annual expenditure of approximately £3,500, the majority of the annual expenditure being for cost of labour. It is suggested that extension work, at present, be confined to within sixty or seventy miles of the main towns, but that preservation be applied to all roads, throughout the Dominion.

ADMINISTRATION.

The work would require the services of a Roadside Planting Officer, to be responsible for all roadside preservation, planting and maintenance. His duties would include the inspection of every new roading or improvement project and, in company with the engineer, to decide what trees or shrubs may be preserved and the steps necessary to carry this out. He would also organize and supervise the work of each of the four units, centred on the four main towns. Other duties should include the educating of the general public to respect the plants of the countryside. Wireless talks, lectures to automobile associations, country women's clubs, and other interested organizations, could do much to help in this direction. With the help of pole line authorities, it would also be possible to instruct and demonstrate to pole line crews how to trim back trees efficiently.

The various amenities societies, interested in this work, could also be greatly assisted by expert advice. It would probably be best for such societies, who have finance available for this work, to nominate the stretch of road they desire to see beautified, and allow the roadside planting officers to carry out the work, the society contributing the planting stock or portion of the cost.

ORGANIZATION OF EACH UNIT.

In each of the four main towns would be situated an active unit for carrying out the work in the surrounding districts. The labour required for each unit would be a man, skilled in the handling of trees and shrubs, to be placed in charge of the work in the area, and a youth to act as his assistant. They would require to be equipped with the necessary tools and provided with a light motor truck, suitable for the transport of planting stock. The activities come under several main headings :—

NURSERY WORK.

It would be essential to maintain a small nursery at each of the four main centres. Willing co-operation would probably be forthcoming from the four main cities, and their Reserves Departments should probably be able to make available suitable nursery ground and render any other facilities within their power, free of charge. Various nurserymen, City Reserves Departments and others, would probably make donations of nursery stock, but in addition to this an ample stock of plants must be propagated. In exotics especially, the ordinary type of nursery stock for garden purposes is frequently unsuitable for roadside planting, so it is most important that ample supplies of the required type be raised. When not engaged in the actual work of planting or maintenance, the nursery provides ample work for the man and youth to attend to.

MAINTENANCE.

After-attention to plantings, at regular intervals, is absolutely necessary, the whole success of the scheme depending on this. Fortunately, maintenance gradually becomes less with increasing age and growth. The clearance of choking weed growth, from around the planted trees or shrubs, is advisable until they are of sufficient size to be free from this danger. The value of good-sized planting stock and quick-growing species is evident in this respect. For best results, an area, some four feet in diameter, should be cultivated around the newly planted shrubs or trees, for from two to three years. This is particularly so in grassland or dry situations and, where necessary, mulching should also be done in season. Where required, staking must be carried out and the ties should be inspected at regular intervals. Pruning also must be attended to, but should be of such a nature as to produce a tree of natural symmetry.

FIRE PROTECTION.

Most roadsides carry a certain amount of growth which, during dry seasons is often highly inflammable. Roadside plantings, therefore, may have to be protected from the danger of fire. To reduce the danger of fire, two courses should be pursued :—

1. To reduce the possibility of fires occurring.
2. To reduce the possibilities of damage from fire.

The first course can be accomplished by gaining the co-operation of adjoining landholders, and asking them to exercise care, if carrying out burning off operations on their land, so as to avoid firing any attractive roadsides. Road surfacemen should also be asked not to fire any parts of the roadside it is desired to preserve. The help of the public can also be enlisted, particularly by making them realize the danger of carelessly discarding lighted matches, cigarette butts etc. Instead of the indiscriminate lighting of fires along roadsides and at picnic places, regular fireplaces (made from a few second-hand bricks and iron bars) should be established at suitable spots.

To reduce the damage it is possible for fires to do, the most important point is the clearing of inflammable growth from around the trees, shrubs or bush, during maintenance operations. In some instances it may be possible to burn breaks, around particularly inflammable areas, which are impossible to clear of dry growth. If fires do occur, it is most necessary that they be suppressed as soon as possible, and steps should be taken to prearrange the support of all possible help in case of fire. Such helpers should include adjoining landholders, road surfacemen, forest authorities, traffic inspectors, motor-club patrols etc. With the co-operation of all these people, many fires would be suppressed in their incipient stages, and the same organization could also function in regard to fire protection of our Scenic Reserves, which are adjacent to roadsides. Early notification of a serious fire to a responsible authority, is of great assistance, and many of these helpers are in excellent positions to do this.

PROTECTION.

In addition to protection from fire, it may be necessary to afford protection against rabbits, hares or grazing stock. The main factor causing damage, however, is the human one. Vandalism is a most obnoxious practice and it should be rigorously eliminated. The most successful method of attempting to eliminate vandalism, is by educating the public and making them conscious of their duty in this direction. Mention has already been made of suitable channels through which public thought may be guided but, in addition to these, an excellent opportunity is available annually of enlisting the support of all school children. The observance of Arbor Day does much to educate the young mind. School teachers are also anxious to assist at all times in educating their pupils in this direction. To increase their knowledge of nature, is also a good method of encouraging respect for the beauty of natural things.

The same people who have been mentioned as of value in assisting against fire, could also be commissioned to help in protecting the plants of our roadsides from vandals. The various voluntary bodies, interested in this work, should also be encouraged to further public education, by providing speakers for Arbor Day ceremonies, and for lectures to various clubs etc. Many members would also be willing to act as honorary rangers and keep a watchful eye over the roadsides.

CONCLUSION.

Up to the present in this country, little consideration has been given to the preservation of natural beauty or its extension, especially as it affects our roads. Is this indifference to the lack of natural beauty in our surroundings going to continue, or are we going to make some concerted effort to restore and extend the beauty of our countryside? The time is now opportune for some official action to show that we have some civic self-respect. Let us hand down to posterity a heritage of beautiful roads and earn their everlasting thanks for our foresight.

SUMMARY.

1. There is considerable public interest at present in roadside beautification and scenery preservation.
2. The narrowness of our roads and their use for stock-droving and pole lines, render many portions of them useless for planting purposes.
3. There is ample scope for planting, however, along numerous suitable stretches. In addition, there are still remnants of natural beauty remaining, which should be adequately protected.
4. There are numerous good species, both native and exotic, suitable for the purpose.
5. It is recommended that the work be undertaken by Government authority and proceeded with on a well-organized basis.

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