

UNITED STATES BUREAU OF EDUCATION  
BULLETIN, 1913, NO. 26 . . . . . WHOLE NUMBER 536

---

# GOOD ROADS ARBOR DAY

SUGGESTIONS FOR ITS OBSERVANCE

Compiled by  
SUSAN B. SIPE



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1913

## CONTENTS.

	Page.
Letter of transmittal .....	5
Preface .....	6
A word to teachers on Good Roads Arbor Day .....	7
Office of public roads .....	9
History of roads in America .....	10
Road building in history .....	11
MacAdam and his principles .....	12
Planting trees by the roadside .....	13
Suggestive program for Good Roads Arbor Day .....	18
Suggestions for, before, on, and after Good Roads Arbor Day .....	19
Roadside gleanings from prose and poetry .....	24
Bibliography .....	20

## ILLUSTRATIONS.

	Page.
Plate 1. Cedar Grove School, near Knoxville, Tenn. ....	Frontispiece.
2A. White birches, Rochester, N. Y. ....	12
2B. Magnolias, Rochester, N. Y. ....	12
3A. Boulder Bridge, Rock Creek Park, District of Columbia .....	12
3B. Ginko trees, Washington, D. C. ....	12
4A. Sugar maples planted along a well-built road .....	16
4B. A State road in Connecticut .....	16
5A. Construction lesson, second-grade practice school, Normal School, Washington, D. C. ....	16
5B. School children attending a lecture on the Good Roads Train of the Southern Railway .....	16
6A. The old and the new location .....	20
6B. Gravel road near Savannah, Ga. ....	20
7A. An unimproved western road .....	20
7B. A school near Knoxville, Tenn., before the road was improved .....	20
8A. Road in the Black Forest in Germany .....	24
8B. A Vermont highway .....	24
9A. Bushy Park, England .....	24
9B. A road in The Bosch, Holland .....	24

## LETTER OF TRANSMITTAL

DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION,

Washington, D. C., April 5, 1913.

SIR: One of the greatest needs of our country is good public roads. The reason we do not have them wherever needed is not primarily because of the cost of building them, for in the last quarter of a century we have spent more money for other things not half so valuable or half so much needed than would be required to pay for the building of good roads to and through every place having any considerable population. Our annual mud tax is greater than would be the tax necessary to pay the interest on bonds to build good roads. The roads are not built, because the people do not understand their value nor comprehend how much beauty they would contribute to the country and how much pleasure to life. It is largely a matter of sentiment and ideals. These are most easily created in childhood. What one would have in the State of to-morrow must be put into the schools of to-day. Not only should we build good roads, we should also make them attractive and comfortable to travel over. In many European countries this is done by planting the roadside with rows of trees. On some of the broader and more important public highways there are double rows of trees on either side. The eye follows the road across country not as a broad white band, with heat shimmering above it or dust hovering over it, but by rows of stately trees covered with foliage in the summer, their bare branches silhouetted against the sky in winter. On many of the roads fruit trees are planted. These add to the fruit supply of the people and to the resources of the State for the upkeep of the roads. This tree planting by the roadside has not yet become common in this country, as it should. To call the attention of children in the schools to the importance of good roads, and to this means of protecting them and beautifying them and making travel more comfortable and attractive over them, I recommend that the accompanying manuscript be published as a bulletin of the Bureau of Education. It contains brief statements about the importance of good roads, the history of road building in this and other countries, the custom of planting trees on the roadside, and other material that can be used in observing Good Roads Arbor Day.

Respectfully submitted.

P. P. CLAXTON, *Commissioner.*

The SECRETARY OF THE INTERIOR.

### PREFACE.

The sections in the first part of this bulletin should be read by the children, or the teacher should read them to them and let them give back their substance. The program for the observance of Good Roads Arbor Day is intended only to be suggestive. Each child should commit to memory a good number of the quotations in prose and verse. The suggestions for "Before Good Roads Arbor Day" and "After Good Roads Arbor Day" will be helpful. Of course, every thoughtful teacher would be able to add to these and adapt them to the particular needs of the school. The organization of junior highway improvement leagues, as suggested, should have many valuable results both for the roads and for the children. Every teacher in the rural schools in which Good Roads Arbor Day is observed should have a copy of this bulletin. Copies of it can be had from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents per copy.

## A WORD TO TEACHERS ON GOOD ROADS ARBOR DAY.

"The Road and the Schoolmaster are the two most important elements in advancing civilization."—Charles Sumner.

The material in this pamphlet is about equally divided between good roads and tree planting. The people must be educated on the subject of roads before much tree planting can be done. A rural teacher writes that her pupils know nothing of the characteristics of a good road or its upkeep, and the parents know nothing more, except that they pay a road tax. She adds "people object to trees by the roadside; for they prevent roads drying quickly after wet weather." This is strictly true of poorly built roads. Nothing could bring more discredit to the Good Roads Arbor Day than planting trees along roads not ready for them. It is passing from bad to worse. A well-built road is benefited by planting shade trees. Government reports show that only 8.6 per cent of the roads of the United States were improved when the statistics were compiled in 1909. Schools located near these improved roads may find it feasible to obtain permission to plant on both sides of the road running some distance either side of the schoolhouse. But the schools located in sections that contain the 91.4 per cent of unimproved roads will find it wiser to help the whole community to more knowledge of the advantages of good roads.

It takes some time to educate a community. A German proverb puts it: "Whatever you would have appear in the nation's life you must put into the public schools." A tree nursery started on this day with exercises to impress the children that they are starting young trees for roadside planting is more feasible for a first celebration than the unwise and unstudied planting of many trees. It should be the work of the school, while these trees are growing, to educate the community through the children and the business of the community to see that the road is ready for the saplings when the saplings are ready for the road. Proceed slowly. Plant with a purpose in the minds and hearts of the children as well as along the roadside. There is much of interest along this road of Good Roads as you travel. There are the birds by the roadside, the weeds by the roadside, the community life so closely depending on the roadside. These are all of interest to children.

## GOOD ROADS ARBOR DAY.

---

It was found that trees in their intimate relation to animals and man could not stand alone in the schools. The meaning of Arbor Day was scarcely understood before it became Arbor and Bird Day in many States. Now the roads, neglected in location, poorly built and bare of shade, clamor to share the name, and it becomes Good Roads Arbor Day. The forests will have no less attention by the change; the birds will have more fruit trees to feed upon; the children, "to whom the world belongs," will so learn to "mend their ways" as to relieve our country of this stigma of having the worst roads of all civilized nations.

A good road is beautiful in all seasons, for it is properly built. There is no mud in wet weather, nor dust in dry weather, on a good road. Bordered by pleasant shade trees, so planted that one does not travel in the gloom of a forest, but in alternating shadow and sunlight, a good road gathers to itself many travelers. They pass with pleasant greetings. Feeling no discomfort, they are friendly toward all mankind. The good road draws to its neighborhood good farms and good homes. It is worth while to raise large crops where they are easily taken to market. The resulting prosperity shows itself in the homes men build. The good road fills the country churches. It stands for neighborliness, and, best of all, it leaves good schools all along its line. It calls the city boy to the country, not to live, perhaps, but for pleasure, to teach him to walk and to know the birds and God's out-of-doors. It keeps the country boy with it. The good road is a sign of the culture, knowledge, and civilization in a county, a State, or a Nation. Does your community stand the test?

"If a country is stagnant, the condition of the roads will indicate the fact; if a people have no roads, they are savages."

### OFFICE OF PUBLIC ROADS,

United States Department of Agriculture.

*History.*—In March, 1893, a petition signed by the governors of many States, by the chambers of commerce of many cities, and by universities, was presented to Congress asking that a Road De-

partment, similar to the Agricultural Department, be established at Washington for the purpose of promoting the construction and maintenance of roads. Before the end of the month the Office of Road Inquiry was established by an act of Congress as a part of the Department of Agriculture, with an appropriation of \$10,000 to be spent in investigation of the best systems of road making and road management and for the education of the people on the subject of good roads. The name was changed to the Office of Public Roads in 1905.

*Nature of its work.*—The office has been most systematic and assiduous in presenting object lessons to the people of well-built and well-maintained roads. A recent increase of appropriation allows it to build short experimental sections of road. It endeavors to cooperate with States, so that the road building may be along uniform lines within a State and that each State may know of the progress and methods used in every other State. An excellent photographic laboratory has been established, as pictures are frequently more valuable than words in the education of the people. Over 3,000 lantern slides and 6,000 negatives have been prepared illustrating every phase of the road problem. The slides are used not only by the lecturers from the office, but the privilege is extended to teachers for schoolroom use and to responsible individuals and institutions. A road-material laboratory tests materials sent to it from every State in the Union for their value in road building. The office cooperates with various railway companies in the operation of a Good Roads Train, usually composed of three coaches attached to regular trains over their lines. One is a lecture coach provided with a stereopticon. In another are models of all standard types of roads and bridges and miniature models of a stone-crushing plant and a road roller actually in operation. This Good Roads Train is a school of instruction in road building. The publications of the office to the number of 180 are most valuable, and may be had by teachers on request made to the Office of Public Roads, Department of Agriculture, Washington, D. C.

#### HISTORY OF ROADS IN AMERICA.

There is no doubt that the first road builders were animals in search of food and water. Road making in large sections of the country began when the buffalo, searching newer feeding grounds and fresh salt licks, plunged rapidly through the forest. The great weight of their bodies made a compact "beaten road," frequently lower than the level of the adjoining land. The Indian found it most convenient to follow the buffalo trace. Walking in single file, each stepping in the tracks of the one ahead, the road widened none. Daniel Boone was employed in 1775 to lay out the Wilderness Road,

and with his usual keenness used a buffalo trace part of the way. Great floods in the valleys caused the animals, the Indians, and the white man to take to the hilltops; so our early highways were the highest ways as well. They were the driest courses. The winds swept them of snows in winter and of leaves in summer and they were excellent outlooks from which to spy upon foes or to signal friends. When the white man went west, he more frequently traveled over old Indian trails than by water. Blazed trees along the old trails are an interesting proof of their use by the white man. An Indian never blazed a trail, though he is charged with it. Why the white man should have done so, on such well-defined pathways, is a mystery. The wily Indian imitated it and led a band of pioneers to the fatal Battle of Blue Licks, for the white men thought, because of the fresh marks on the trees, that the Indians were fleeing from them.

There was no thought of comfort in the early roads. The shortest way to one's neighbors, to the meeting house, to the village, or the line separating tracts of land became the road. In many parts of the country we are still patiently enduring this early engineering.

The first great American highway, the Old York Road, extending from New York to Philadelphia, was laid out in 1711. The first macadam road in America was laid in 1792, from Philadelphia to Lancaster. In the last quarter of the eighteenth century private companies began to build turnpikes or toll roads. Washington and Jefferson furthered the cause of good highways, and by 1810 appropriations were being made for national highways. Fourteen million dollars was spent for this purpose between 1810 and 1837. Because of the panic of 1837 and the development of railroads, none were finished, except the Old Cumberland Road.

Not much Government recognition was given the subject of good roads until 1892, when the first national good roads congress was held at Chicago during the dedication of the World's Fair. From this meeting came the National League for Good Roads, which concentrated its efforts in obtaining congressional appropriation for the establishment of the Office of Road Inquiry, which has now become the Office of Public Roads under the Secretary of Agriculture.

#### ROAD BUILDING IN HISTORY.

*The Romans.*—The Romans were the greatest road builders of ancient times. The Appian Way, named after the censor Appius Claudius, was the first road they built and, on account of its excellence, was called the "Queen of roads." In the zenith of Roman glory 29 imperial highways radiated from the golden milepost in Rome to the uttermost limits of her empire. Thus came the proverb, "All roads lead to Rome." The surfacing of these roads was 8 feet thick, and, while the roads were but 5 yards wide, they could not

now be duplicated for less than \$50,000 per mile. They were practically indestructible. Many of them still remain, forming the bed for some of the modern roads and in a few instances the surface as well. These roads ran in straight lines, always taking the shortest distance between two points. If a hill were in the way, it was leveled; if a ravine, it was filled. The longer hills they climbed. A huge trench was dug, a foundation of heavy stones was put in, and then layers of stone in mortar, and finally huge blocks of stone set in mortar. The road in places was elevated above the adjacent land and was then protected by stone parapets. No trees decorated the roadsides. Their decorations were stone mounting blocks for the convenience of the cavalry, milestones showing the distance from the Roman Forum, and great monuments, gifts of conquerors or rich merchants. Roman roads were the best and only roads in Europe for nearly two thousand years. No later nation had the cause, the army, the wealth to build such roads; so with the passing of the Romans the era of road building ended.

*Middle ages.*—During the middle ages the old Roman roads were regarded with terror. Robbers lurked along them ready to kill, as well as plunder. In 1285 a law was passed in England directing that all bushes and trees along roads leading from one market to another should be cut away 200 feet on either side to prevent robbers hiding therein.

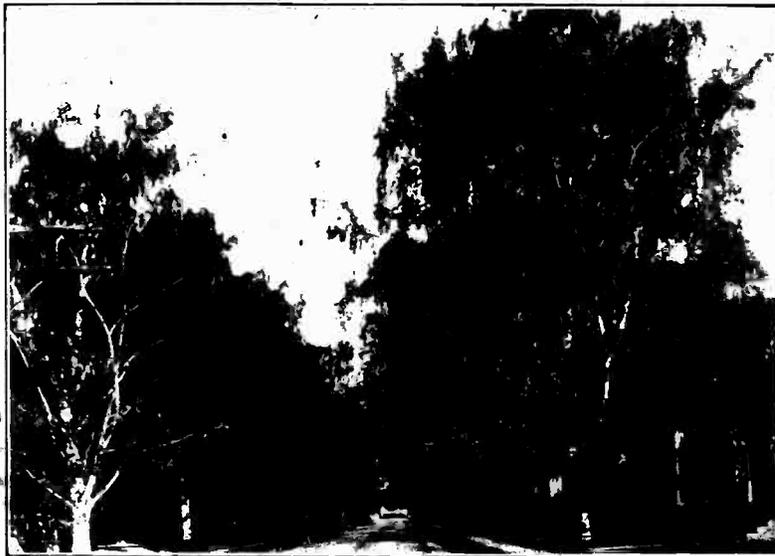
*Incas.*—The Incas in Peru built roads that compared well with the Roman roads, and that at an elevation of 12,000 feet. Their roads were bordered by shade trees and running streams.

*Modern times.*—Tresaguet, a French engineer of the latter part of the eighteenth century; Telford, an English engineer of the early part of the nineteenth century; and MacAdam, an observing Scotchman with no training as an engineer, were the originators of modern methods of road building.

#### MACADAM AND HIS PRINCIPLES.

Telford and Tresaguet modified the old Roman road building, but they both retained the idea of using large stones in the foundation of the road. MacAdam came forward with the principle that the natural soil is able to support traffic, and while it is dry it will sustain any weight.

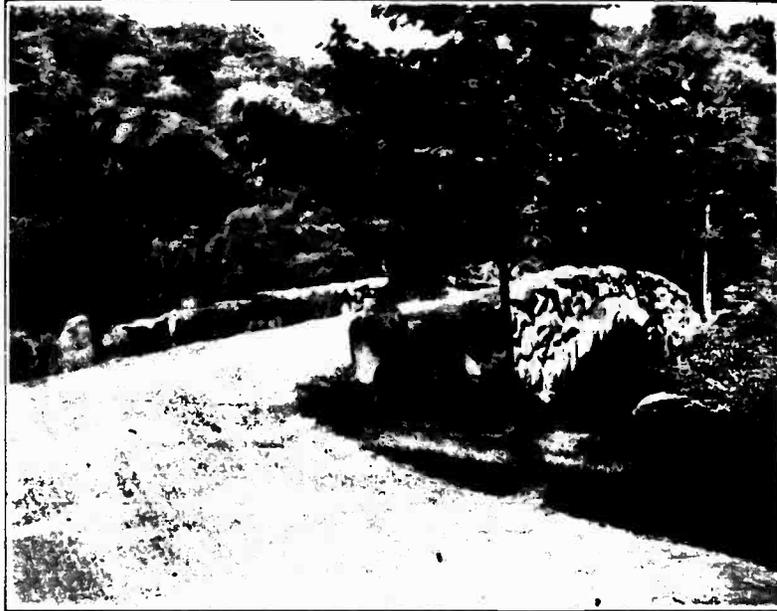
Drainage and a waterproof covering were all he asked for a good road. Simple, isn't it? A house with water in its cellar and a leaking roof is not a good investment, for it is neither pleasant nor a healthful habitation. A road with an undrained foundation, inviting every rain to soften it, every frost to heave it, is not a good investment. People avoid it. MacAdam raised roads in the middle so the water would drain to the gutters on the sides, and then he put



A. WHITE BIRCHES, ROCHESTER, N. Y.



B. MAGNOLIAS, ROCHESTER, N. Y.



A. BOWLDER BRIDGE, ROCK CREEK PARK, DISTRICT OF COLUMBIA.  
Hard, smooth, comparatively level, and fit for use at all seasons.



B. GINKGO TREES, WASHINGTON, D. C.  
These trees taper at the top, thus allowing the sun and wind free play on roads bordered by them.

on a covering of tiny angular stones that by the pressure of travel became a compact waterproof covering. All roads so built are known as macadam roads.

Charles Dickens wrote: "Our shops, our horses' legs, our boots, our hearts have all been benefited by the introduction of MacAdam."

#### WHAT I SHOULD KNOW ABOUT ROADS.

That the middle of the road should be higher than the sides, to let the rain run into the gutters.

That loose stones should never be allowed to lie in the road. They are a source of danger.

That a rut or hole should not be allowed in the road. It should be filled with small stones from the stone heap.

That only small stones should be used in repair. MacAdam's rule was that no stone should be placed in a road which the workman could not put in his mouth.

That dust becomes mud after the first shower.

That mud forms a blanket that prevents the road from drying.

That every owner of land should pay a road tax that will employ road laborers to mend the roads.

That trees and bushes along well-built roads make traveling pleasant for horses and men.

Children should be taught such simple principles of road building as the above, that they may be intelligent as to the road conditions under which they live.

#### PLANTING TREES BY THE ROADSIDE.

##### REASONS FOR PLANTING.

One has only to pass from the glare of the dust and heat of the long stretch of unshaded road on a hot summer day to the relief afforded by trees to know the value of roadside planting. This same physical comfort comes to horses as well as to man. The effect of trees on the road itself is seldom thought of, except to the disadvantage of the trees. "They keep the roads from drying out after wet weather," is the usual charge. On a poorly built road this is true. They are an aid on a well-built one, if not planted too close. Roots constantly taking in water assist in drainage. That which is a protection from the sun is also a shelter from rain. The tree tops break the force of driving rains, thus preventing washes in the road. This more than counterbalances the occasional drip marks that are seen.

The most important use of trees by the roadside is the prevention of dust. Dust is the cementing material in macadam roads, and if it is loosened and blown away, the road suffers. Properly planted,

they form windbreaks and prevent snowdrifts. They make the road cooler by day and warmer by night and serve at night to mark the road.

#### HOW TO PLANT TREES BY THE ROADSIDE.

One of the mistakes of roadside planting has been that of too close planting. The size of the mature tree should be the standard for planting. Fifty feet apart seems a long distance for saplings, but it is the approved minimum distance. On long country roads experts plant 100 to 150 feet apart, alternating the trees and the sides of the road. With such distances there is both sunshine and shadow. From the artistic side one is as necessary as the other. In New York the law specifies that elms must be planted 70 feet apart and maples and other forest trees not nearer than 50 feet, except locusts, which may be planted 30 feet. Fruit trees are required to be 50 feet apart. Quickly growing trees are sometimes planted alternately with one of more permanent character, but experience has shown this to be bad practice. That the former will be removed when the latter are well grown is the theory, but in practice it has not proven satisfactory. No one cuts the quick grower down. In time the shade is too dense and the valuable trees injured. Clay roads require much sun and wind to keep them dry, so trees and hedges should not be planted within 200 feet of such a road. Sand and gravel roads can stand much shade.

No directions for the actual planting of trees need be given. Government bulletins, nature study textbooks, and Arbor Day annuals are replete with such information. The holes should be thoroughly prepared, so thoroughly that men are needed for this work. Children may plant the trees, but the preparation for their planting is beyond their strength.

#### KINDS OF TREES TO PLANT.

In the selection of shade trees for roadside planting a careful study of the native trees should be made. The trees should be hardy, rapid growers with abundant foliage. Trees transplanted from nurseries to places not having the same climatic conditions frequently die, while the same trees grown from seeds in the locality where they are to be planted grow well. Young trees of the right kind may easily be supplied by a school nursery. Failure often comes from transplanting a tree from the deep woods to the open road, changing its environment. Some native trees, as birches, alter their form when thus transplanted and are not suited for roadside planting. In Germany many roadsides are planted with fruit trees, which are carefully tended, and the same idea has been advanced for American roads. The apple trees are best suited for roadside

planting in most of the United States. Fruit trees require steady and careful attention. Therefore, if fruit trees are planted, provision must be made to have them cared for, otherwise they will not only bear no fruit, but they will become breeding places for insects and fungi.

Wild cherry and mulberry have no such serious drawbacks and are particularly attractive to birds. Nut trees are frequently mentioned for roadside planting. The only objection advanced against nut trees for this purpose is the American boy's fondness for nuts, but boys can be trained to respect roadside property, especially if they are made responsible for the care of the trees from the seed. With the larger abundance of nuts and fruits the temptation to take them would be largely removed. In proof of this, note the unmolested flowers and orange trees of California and the roses of Portland. The hickory, walnut, and butternut are well adapted to the eastern United States; the black walnut to Nebraska, Kansas, and South Dakota; the English walnut on the Pacific coast, and the pecan to the Gulf States.

Shade trees are, however, best for planting, if care is taken in selecting native trees. Sugar maple, red oak, pin oak, and elm are magnificent in eastern United States as the pepper tree is in California. But, unquestionably, failure would come if one should try to reproduce in the far-away State of one's adoption the beautifully elm-bordered roads of one's birth.

#### ROADSIDE PLANTING IN FOREIGN COUNTRIES.

*France.*—In France the narrow roads have single rows of trees planted on each side; the wider roads have double rows on each side. Every mile of road is inspected every day by road laborers or cantonniers, who inspect not only the trees planted and owned by the National Government, but also those owned by private individuals. Especially are they instructed to straighten young trees bent by the wind.

*Saxony.*—Apple, pear, and cherry trees are planted 30 to 40 yards apart on the roads in Saxony. In this little State there are 800 road guards who care for the trees, watering them and removing the insects. The fruit trees on the State road are leased to the highest bidders and the money received is turned into the State treasury. Ladders are used to get the fruit down and any battering of trees with clubs or poles is punishable by a fine.

*Belgium.*—In 1908 the fruit trees along the public roads in the little country of Belgium made a return to the Government of \$2,000,000.

*India.*—In India many of the roadside trees are fruit trees. The Government encourages private individuals to plant trees by the

roadside, and pays for the same according to results. Adjoining cultivators are allowed to take the fruit in exchange for their care of the trees. The following extracts from the account of his travels by Marco Polo show that the planting of trees by the roadside and elsewhere in India is not a recent custom alone:

The Great Khan (of Tartary) now reigning [1298] by the name of Cublay Khan. Khan being a title which signifieth "The Great Lord of Lords," or Emperor. And of a surety he hath good right to such a title, for all men know of a certain truth that he is the most potent man as regards forces and lands and treasures that existeth in the world, or even hath existed from the time of our First Father Adam until this day.

The Emperor moreover hath taken order that all the highways traveled by his messengers and the people generally should be planted with great rows of trees a few paces apart; and thus these trees are visible a long way off, and no one can miss the way by day or night. Even the roads through uninhabited tracts are thus planted, and it is the greatest possible solace to travelers. And this is done on all the ways where it can be of service. (The Great Khan plants these trees all the more readily, because his astrologers and diviners tell him that he who plants trees lives long.)

#### CHAPTER X.—THE PALACE OF THE GREAT KHAN.

Moreover, on the north side of the palace, about a bow-shot off, there is a hill which has been made by art (from earth dug out of the lake); it is a good hundred paces in height and a mile in compass. This hill is entirely covered with trees that never lose their leaves, but remain ever green. And I assure you that wherever a beautiful tree may exist and the Emperor gets news of it, he sends for it and has it transported bodily with all its roots and the earth attached to them and planted on that hill of his. No matter how big the tree may be, he gets it carried by his elephants; and in this way he has gotten together the most beautiful collection of trees in all the world. And he has also caused the whole hill to be covered with ore of azure, which is very green. And thus not only are the trees all green, but the hill itself is green likewise; and there is nothing to be seen on it that is not green; and hence it is called the Green Mount; and, in good sooth, 'tis named well.

The following edict is graven on the Delhi pillar, which dates from 250 B. C.:

Along the highways I have caused fig trees to be planted, that they may be for shade to animals and men. I have also planted many trees; at every half-cross I have caused wells to be constructed and resting places for night.

#### LAWS IN REGARD TO TREE PLANTING IN VARIOUS STATES.

*Massachusetts.*—In 1896 the Massachusetts Legislature established for the first time the office of tree warden. This office is still in force. It is the duty of the tree warden to preserve trees from injury by insects and to make proper regulations for their protection. He is given considerable authority. He expends all money appropriated for setting out and maintaining public shade trees. Outside the residential part of a town no person but the tree warden or his deputy



A. SUGAR MAPLES PLANTED ALONG A WELL-BUILT ROAD.



B. A STATE ROAD IN CONNECTICUT.

Bordered by pleasant shade trees, so planted that one travels in alternating shadow and sunlight. A good road attracts many travelers.



I. CONSTRUCTION LESSON. SECOND GRADE PRACTICE SCHOOL. NORMAL SCHOOL, WASHINGTON, D. C.

The figures are freehand cuttings from poses by children. The setting for the figures is rapid water-color sketching by normal students.



B. SCHOOL CHILDREN ATTENDING A LECTURE ON THE GOOD ROADS TRAIN OF THE SOUTHERN RAILWAY.

has any right to cut or remove in whole or part public shade trees. Within the residential portion the tree warden may trim the trees, but nothing more without a public hearing, notice of which must be given by posting in two public places and on the tree itself. (Laws of 1899, chap. 330, secs. 1 and 3.)

The Revised Law of Massachusetts provides for a fine of not less than \$5 and not more than \$100 for the man who allows any animal driven by him or belonging to him to injure, deface, or destroy a tree on the highway. This is done to prevent hitching a horse to any and every tree that seems convenient. (Sec. 6.)

*New York.*—A law of the State of New York enacted in 1869, and still in force, provides that any inhabitant liable to highway tax who shall plant by the side of a public road "any forest shade trees or fruit trees" shall be allowed in abatement for his highway tax \$1 for every 4 trees set out.

Penalties are prescribed for anyone who shall injure a tree or shall hitch a horse to a shade tree or leave one standing near enough to injure it at any "schoolhouse, church, public building, or along any public highway."

The common council of Albany passed an ordinance in 1871 providing that—

No person shall maintain or plant in the city of Albany any tree of the species commonly called Cottonwood, and any person who shall maintain or suffer any such tree to remain after reasonable notice by the street department to remove it, shall be guilty of a misdemeanor and shall incur a penalty not exceeding \$10 a day for each day such tree shall remain after notice to remove, or by imprisonment in the Albany County Penitentiary not exceeding three months, or both at the discretion of the court.

All cottonwoods in Albany were cut down. The ordinance is still in force.

The revised law of 1899 provides for a fine not exceeding \$50 for anyone who affixes to any tree in a public way or place, a play bill, picture, announcement, notice, advertisement, or other thing, whether in writing or otherwise, or cuts, paints, or marks such tree, except for the purpose of protecting it and under the written permit of the tree warden. (Sec. 5.)

*Connecticut.*—Every person planting, protecting, and cultivating elm, maple, tulip, ash, basswood, oak, black walnut, hickory, apple, pear, or cherry trees, not more than 60 feet apart along any highway in Connecticut may be paid 10 cents a year for every such tree, but for not more than five years. (Laws 1902, chap. 244.)

*Pennsylvania.*—Any person liable to road tax in Pennsylvania who shall transplant to the side of the road on his own premises any fruit, shade, or forest tree of suitable size shall be allowed \$1 on his

road tax for every 2 trees set out. (Chap. 306, Laws 1901, secs. 1, 2, 3, and 4.)

Any tree growing naturally by the side of a highway running through cultivated land shall be allowed for in the same manner.

Trees planted on highways in place of trees that have died shall be allowed as provided in the first section.

No person may be allowed for the planting and care of trees more than \$4 of annual road tax.

#### SUGGESTIVE PROGRAM FOR GOOD ROADS ARBOR DAY.

##### 1. Song—Tree Plantings. (Tune—America.)

Plant trees by stream and way,  
Plant them where children play,  
And tollers rest:  
In every verdant vale,  
On every sunny swale:  
Whether to grow or fall  
God knoweth best.

—SAMUEL F. SMITH.

##### 2. Roll call—Answered by Selections from Roadside Gleanings.

##### 3. Reading—Meaning of Good Roads Arbor Day.

##### 4. Reading—History of American Roads.

##### 5. Recitation—The Open Road. BLISS CARMEN.

##### 6. Recitation—The Song Sparrow. VAN DYKE.

##### 7. Motion song—Planting the Tree. RUTH BARNES. (Small children.)

##### 8. Reading—Tree Planting in Foreign Countries. (Saxony, India, Marco Polo in Tartary.)

##### 9. Recitation—Some Interesting Law Points.

##### 10. Dramatization of Applesced John, by small children, or debate on assigned subject by older pupils.

##### 11. Song.—(Selected.)

##### 12. Brief reports of observations:

The Condition of the Roads of Our Country.

The Shaded Roads.

The Beautiful Trees on the Way to School.

##### 13. Recitation—The Heart of the Tree. H. C. BUNNER.

##### 14. Song.—(Selected.)

##### 15. Outdoor feature.

##### 16. Song—America.

#### SUGGESTIONS.

The above program is suggestive. One made by the school, as an outgrowth of the work before the day of celebration, will be more pleasing to the school.

Every child should take some part in the exercises.

The program should move rapidly. One that is too short is far better than one that is too long.

Children have remarkable ability in dramatization. Several days before the celebration, read the story of Applesseed John, in *The Child's Hour*. Talk about it. Let them know he actually lived, and may be found in the *National Cyclopædia of American Biography* as John Chapman. Suggest that the children dramatize the story, and show them how they can do it simply. Little thought should be given to costuming. It is the play of the imagination that is needed to see the action in the story and to reproduce it. One or two rehearsals will be all that is necessary. Decorate the blackboards and the room. Be thoroughly prepared for the outdoor feature.

All readings and recitations relating to roads are embodied in this bulletin. Any other standard poems on birds and trees may be substituted for the ones suggested.

#### SUGGESTIONS FOR BEFORE, ON, AND AFTER GOOD ROADS ARBOR DAY.

The matters of greatest importance to the teachers are the things to be done before and after Good Roads Arbor Day to keep alive the interest in the community through the children. A few suggestions are offered that may lead teachers to originate others that fit their varying conditions.

##### BEFORE GOOD ROADS ARBOR DAY.

###### I. Subjects for debate by older children:

- Resolved:* That fruit and nut trees are suitable for American roadsides.  
 That railroads take the place of wagon roads; so roads are not always the test of progress.  
 That trees are a benefit to most roads.  
 That the sugar maple is a better tree than the American elm for roadside planting.  
 That working out a road tax is a wasteful business method for a county or State.

The assignments should be made in sufficient time before Good Roads Arbor Day to allow the debaters to prepare themselves with argument. Three judges should be appointed and the debate conducted by simple parliamentary rules. The general opinion of the class on the question might be taken by vote after the judge's decision is rendered.

###### II. Investigations by children:

- Do you travel on an earth, sand, gravel, or macadam road on your way to school?  
 Does the water run off easily? Is the road higher in the middle than on the sides?  
 Is it a hard road on the horses? Why?  
 Do you see a way that a steep hill could be avoided?

## II. Investigations by children.—Continued.

Compare two sections of the road, one bordered with trees, the other not, for sufficient length of time during different kinds of weather to draw correct conclusions. How many days is the road bordered by trees worse than the others? How many days as good? How many days better? Does the effect of the trees extend much beyond their immediate location? How far? What is the difference between these two stretches in frosty weather? In drifting snow? In dust in dry weather? Is there any difference in temperature? (Teacher should record reports daily, if possible, and let children later make conclusions from reports.)

Are the trees planted too close on the road you are observing?

The most economical width of any road is some multiple of 8 feet.

How many roads in your neighborhood are so laid out?

Compare a good road and bad road in your county. What makes the difference? How could the bad one be improved?

## III. Experiment I.—Ruts in the road.

**Object**—To determine why a gravel road is better than an earth road.

**Material**—Two quart cans, one two-thirds full of gravel, the other two-thirds full of clay.

Make the surface of each saucer shape, so it will hold a half teacupful of water; compact firmly; fill nearly full of water and let stand. Which road—a clay or gravel—holds water in its ruts? Why?

## Experiment II.—A road after a rain.

**Object**—To learn to work an earth road.

Knead wet clay and wet gravel. What quality has the clay that the gravel has not? (Stickiness.) When clay is nearly dry, smooth surface with stick. Note ease with which it is worked. Put aside to harden. An earth road should be worked after a rain to prevent ruts and harden the surface. Implements to be used: either a rake, harrow, or split-log drag. (Adapted from Bull. 1, Dept. of Agr., University of Minnesota.)

## Experiment III.—Sand-clay.

Examine a bit of sandy clay with a magnifying glass. For a good sand-clay road the particles of sand should be in contact, with enough clay—the binding material—to fill the spaces.

A rough estimate of the amount of clay needed may be made as follows: Two glass tumblers of the same size are filled to the brim, one with dry sand and one with water. Pour the water into the sand to the point of overflowing. The amount of water used is the amount of binding clay needed.

An appropriate percentage is easily calculated. Too much clay will make a muddy road. Too much sand is better than too little. Send for Farmers' Bulletin 311, Sand-Clay and Burnt-Clay Roads. From directions given, children can make sand-clay path from schoolhouse to road. It will serve as an excellent object lesson to the community and will make an immediate change in the cleanliness of the schoolhouse.

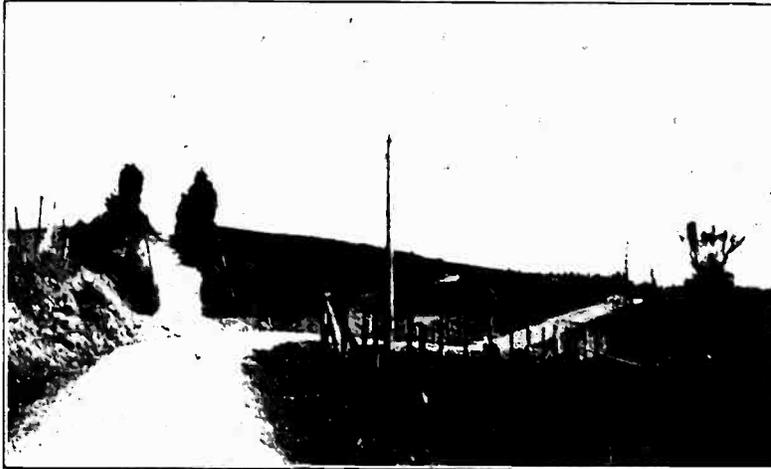
## IV. Composition subjects:

The Land Beyond the Turn of the Road.

The Old Cumberland Road.

What the Old Horse Thinks on the Bare Earth Road.

Paths Through the Woods.



A. THE OLD AND THE NEW LOCATION.  
The long way round is often the shortest way home.



B. GRAVEL ROAD NEAR SAVANNAH, GA.



A. AN UNIMPROVED WESTERN ROAD.

If a community is stagnant, the condition of the roads will indicate the fact.



B. A SCHOOL NEAR KNOXVILLE, TENN, BEFORE THE ROAD WAS IMPROVED.

## IV. Composition subjects—Continued.

- Birds by the Roadside.
- How I Can Help the Birds in Winter.
- Foreign Roads.

## V. Construction work:

Let a few children pose for paper cutting lesson, such poses to be those that represent work along the road that children could do. Mount cuttings on cardboard and draw or paint scenery that would complete the idea. (See illustration of work by second-grade children, Practice Schools, Washington, D. C.)

Make bird shelves to be fastened to trees to hold food for birds during the winter.

Make simple bird houses to be placed in the trees at home.

Make model of split-log drag. The older boys can make one after directions in Farmers' Bulletin, No. 321, that can be used on the road near the schoolhouse if it is an earth road.

## VI. Collections that may be made for school museum:

- Specimens of native road materials neatly labeled.
- Tree seeds suitable for school nursery.
- Pictures of beautiful roads well shaded and of bare ones.

## OUTDOOR WORK ON GOOD ROADS ARBOR DAY.

The outdoor feature of the program is the one of supreme interest to children. They must have it, but it must be followed to success. Estimates show that 1 tree in 5 has survived the planting ceremonies of past Arbor Days. This is largely due to the lack of knowledge on the part of the teacher of correct methods of planting and to the neglect of the tree afterwards. With all the free literature at the disposal of teachers, sent them by the Government and the State experiment stations, there is no excuse for the first reason, and surely he is failing in his duty to his State and his country who fails to teach persistency of purpose or who allows children to undertake work beyond their ability to accomplish. A very few schools with the aid of older people might successfully plant along the roadside if *the road is ready for planting*. One successful effort of children has been furnished by C. C. Laney, superintendent of parks in Rochester. Mr. Laney's report says:

Miss Emma G. Case, the principal, is entitled to the credit for the success of the planting at No. 36. At first she planted 100 poplar trees around the playground, and they were all destroyed. Then she decided to get the children interested, and she divided 200 children into 25 groups of 8 each, and gave each group 4 trees to call their trees. When the trees were planted I furnished experienced men to dig the holes properly, and under the supervision of the men the children put the trees into the holes and shoveled in the earth and were advised to see that the trees were not injured. Miss Case has just informed me that all the trees lived and not one was injured in any way. Of course, you can not expect children to plant trees properly alone, but if by letting them assist in planting the trees and feel that they are the owners of certain special trees, they will not willingly or carelessly suffer them to be

Injured. Children, or even grown persons without experience, could not plant trees properly, but it is important that they be interested in trees, so they will not destroy them by swinging round them or climbing on the tree guards or pulling them down. Many beautiful white birches have been marred by cutting strips of the white bark from the trunk of the tree. Most all beech trees are marred by cutting initials of names on the trunks of the trees. It is a man's work to plant trees well, and children can not be expected to do it. I think that a much better thing for children to do on Arbor Day is to visit some beautiful trees and learn to distinguish them and to admire them. A great deal of pleasure may be derived from the study of trees in winter as well as in summer, and from familiarity with the habit of trees, so that one may distinguish a species of trees from a distance. It is a great pleasure to me to look at trees when I am riding on the cars.

For the schools not so fortunate it is suggested that a tree nursery be started. The ground should be thoroughly prepared beforehand; the tree seeds should have been collected. Then, with sufficient ceremony, the garden lines may be stretched, the benches made, and the seeds dropped, every child having an opportunity to plant. The season of the year will regulate the kind of seed to be planted. Elm and silver maple may be planted at the first spring celebration. Nut seeds buried in sand in the fall will be ready for planting the second celebration. Write the Secretary of Agriculture for Bulletin No. 29, Washington, D. C.

The organizing of a Junior Highway Improvement League under the trees by the roadside can be made an impressive feature of the program; and through such an organization sentiment of the community should be aroused to furnish better roads and paths for the school children, and then better schools. There is great opportunity opened to the school-teacher here. Have you breadth of mind sufficient, altruism sufficient to seize the opportunity? You know that what you are interested in your school responds to. If your school seems to jog over the same road daily, it is largely due to the fact that you set the pace. Talk about the roads, the birds, the trees, and flowers by their sides. Get the cooperation of all the teachers in the building. Let the children know how much they are able to do by interesting the older people. Let them know how children have been benefited by roads elsewhere. A preliminary meeting should be held to appoint committees to nominate officers and to draw up a constitution. Simple parliamentary practices are especially pleasing to the boys and a good training for future citizenship. Insist upon their use. The following constitution is suggested. It should be modified to suit school conditions.

CONSTITUTION OF THE JUNIOR HIGHWAY IMPROVEMENT LEAGUE.

ARTICLE I.—NAME.

The names of this organization shall be the Junior Highway Improvement League of \_\_\_\_\_.

## ARTICLE II.—OBJECTS.

The objects of this league are (1) to learn all that we can about good roads and tell all that we learn to older people to the end that we may have better schools; (2) to do whatever is practicable for children to do in keeping the roads in repair; (3) to know the birds and to attract them around our schools; (4) to know the trees and to plant them along the roads when the roads are ready for them.

## ARTICLE III.—MEMBERS.

All pupils of this school are eligible for membership. All members who attend the meeting for organization are considered charter members. Thereafter members shall be proposed and elected. The teachers of the school are honorary members.

## ARTICLE IV.—MEETINGS.

Meetings shall be held twice a month at such times as may be determined.

## ARTICLE V.—OFFICERS.

SECTION 1. The officers of this league shall be a president, vice president, and secretary. (A treasurer if there are dues.)

Sec. 2. The president shall preside at all meetings. He shall name committees and assign such work that all members of a committee may be working members.

Sec. 3. The vice president shall preside during the absence of the president.

Sec. 4. The secretary shall record the proceedings of all meetings.

## ARTICLE VI.—COMMITTEES.

The committees of this league shall be: Committees on roads that need mending; committee on road pictures; committee on feeding birds in winter; committee on preventing weeds on the roadside; committee on school nursery; committee on school attendance due to roads. The league as a whole is a committee on the education of parents in regard to good roads and trees along the roadside.

## ARTICLE VII.—DUTIES OF COMMITTEES.

Duties of these committees shall be to collect information on topics assigned them and to report at meetings.

## SUGGESTIONS FOR PRACTICAL WORK FOR THE LEAGUE.

Learn the points of a good road; whether it is macadam, earth, gravel, or sand, and how to keep it in repair. Teach these points to some one older than yourself. A 10-year-old boy in the Van Vlis-singen School, Chicago, taught 15 grown people in his neighborhood to identify the tussock moth. The combined efforts of these people rid the neighborhood of the pests. *Your pest is bad roads.*

Watch the culverts along the road. If they are clogged, remove the rubbish.

See that the springs along the road are clean.

Remove large stones from the road.

Keep watch for bad places in the school road. Report them to the teacher, who will in turn report them to higher authority.

\*Straighten young trees blown over by the wind.  
Break the heads from the burdocks, cocklebur, and thistles along the road before they go to seed.

Feed the birds in winter around the school. Scraps of lunches, grain, fat meat will help them through the hard ice-bound days. Put a little grain in your pocket and scatter it along the road as you go to school.

Make bird houses for the trees around your home.

In consolidated high schools manual-training classes can make neat signboards for road crossings.

Keep a constant watch on the condition of all roads you travel and talk about them to older people.

#### ROADSIDE GLEANINGS FROM PROSE AND POETRY.

Set thee up way marks. Set thine heart toward the highway.—JEREMIAH 1, 21.

America pays more for bad roads than good roads would cost.

Good roads are neighbor makers and trade builders.

Bad roads belong to the log-cabin days, and log-cabin days belong to the past.

You can ship wheat at 3.3 cents a bushel from New York to Liverpool, but it costs you 5.4 cents to haul a bushel 9.4 miles from the farm to the railroad.

Mud tax and the taxes levied by ignorance are the most burdensome of all taxes.

When we wish to use descriptive terms fit to characterize great empires and the men who made those empires great, invariably one of the terms used is to signify that that empire built good roads.—THEODORE ROOSEVELT.

The first and last commandment in the maintenance of earth roads is to keep the surface well drained.—L. W. PAGE.

Although I'm no with Scripture crammed,  
I ken, the Bible says  
That they most surely must be damned,  
Who dinna mend their ways.

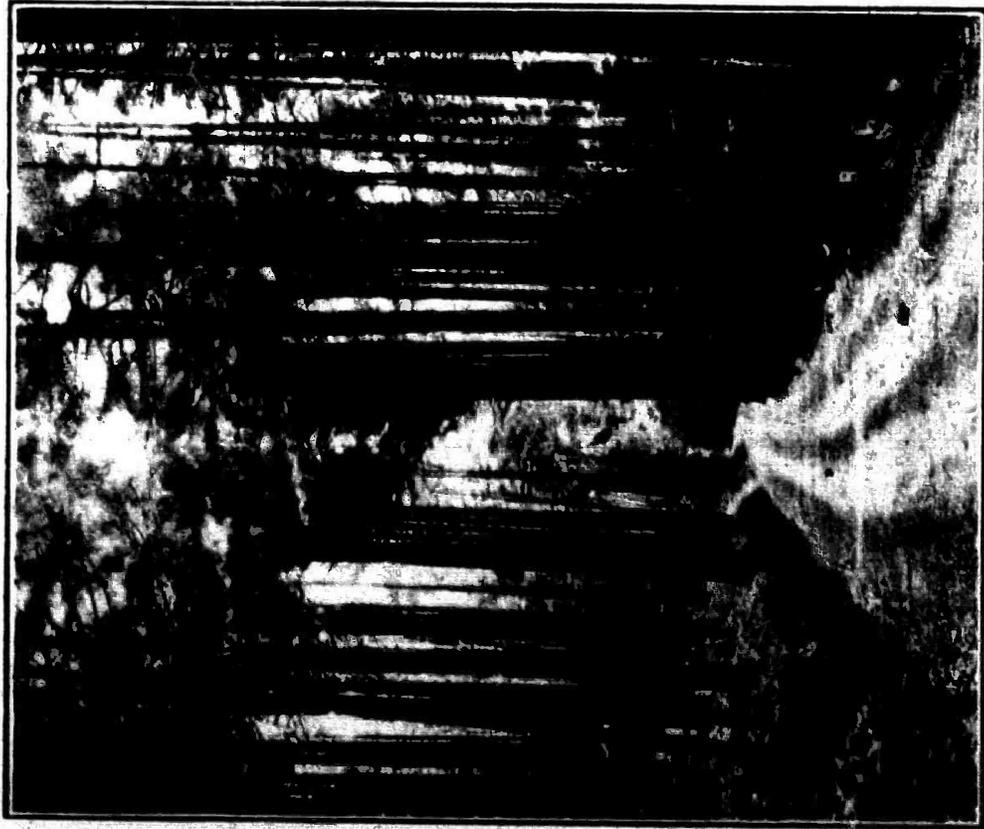
—ROBERT BURNS.

The two greatest enemies of roads are water and politics. Of these, politics is the worse, for water will only run down hill, while no one knows which way politics will run.—M. O. ELDRIDGE.

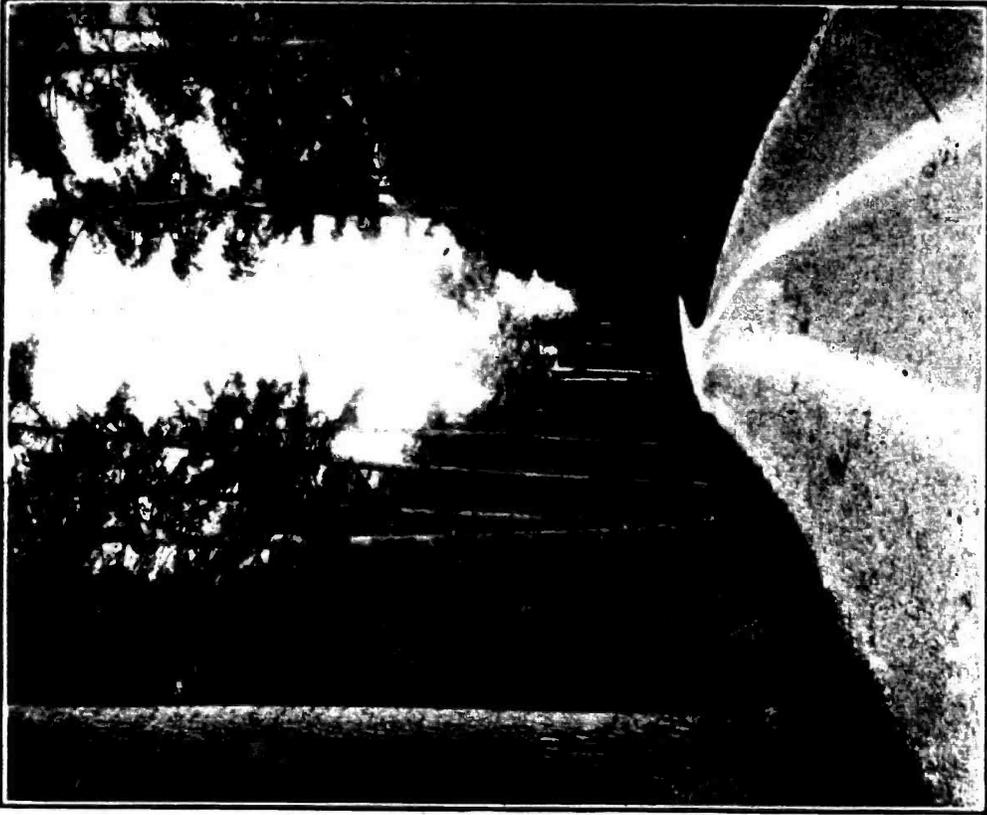
By furnishing better means of communication, good roads will add to the selling price of farm products and in every way will contribute to the comfort and happiness of the people. Then, furthermore, we can have a good system of consolidated schools only where we have good roads.—West Virginia Arbor and Bird Day Annual, 1908.

To man and beast alike the roadway that offers few obstacles to easy travel is a delight which shortens the journey by mitigating the pangs of fatigue.—BYRNE.

The foot that is familiar with grass usually belongs to a man of lighter heart than he whose soles seldom wander from the pavement.—LEO H. GIBSON.



A. ROAD IN THE BLACK FOREST, IN GERMANY.

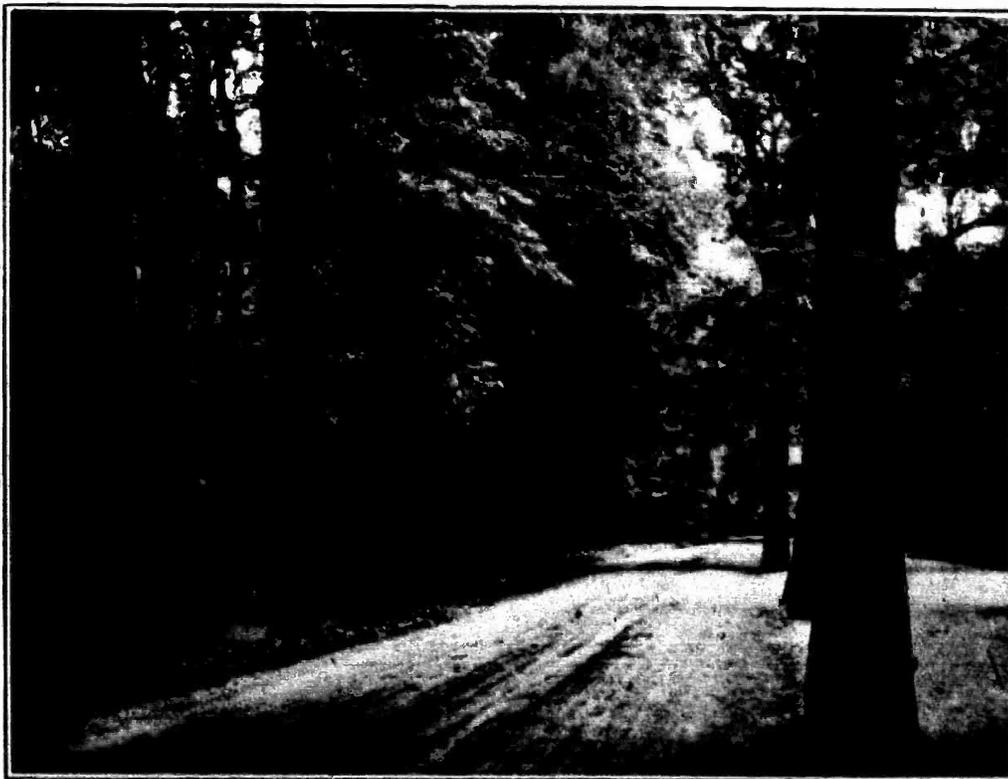


B. A VERMONT HIGHWAY.



A. BUSHY PARK, ENGLAND.

A beautiful road bordered by horsechestnut trees.



B. ROAD IN THE BOSCH, HOLLAND.

Let us plant a tree by the wayside,  
 Plant it with smiles and tears,  
 A shade for some weary wanderer,  
 A hope for the coming years.

—L. H. MOONEY.

There is no more certain sign, no better evidence of the intelligence and culture of a community, the good taste of a people, their public spirit and domestic virtue than is afforded by the trees they plant and maintain for the public on the public highway.—BURRELL.

#### THE JOYS OF THE ROAD.

(By courtesy of Small, Maynard & Co., Boston.)

Now the joys of the road are chiefly these:  
 A crimson touch on the hardwood trees;

A vagrant's morning wide and blue  
 In early fall, when the wind walks, too;

A shadowy highway cool and brown  
 Alluring up and enticing down.

From rippled water to dappled swamp,  
 From purple glory to scarlet pomp;

The outward eye, the quiet will,  
 And the striding heart from hill to hill;

The tempter apple over the fence;  
 The cobweb bloom on the yellow quince;

The pulchish asters along the wood,  
 A lyric touch of the solitude;

An open hand, an easy shoe,  
 And a hope to make the day go through.

These are the joys of the open road  
 For him who travels without a load.

—BLISS CARMEN.

Why are there trees I never walk under but large and  
 melodious thoughts descend upon me?

I think they hang there winter and summer on those  
 trees and always drop fruit as I pass.

—WALT WHITMAN.

#### EXTRACTS FROM THE SONG OF THE OPEN ROAD.

Walt Whitman.

(By courtesy of the executors of the Walt Whitman estate.)

A foot and light-hearted I take to the open road,  
 Healthy, free, the world before me.

The long brown path before me leading wherever I choose.

Henceforth I ask not good fortune, I myself am good fortune,  
 Henceforth I whimper no more, postpone no more, need nothing,  
 Done with indoor complaints, libraries, querulous criticisms,  
 Strong and content I travel the open road.

Now I see the secret of the making of the best persons,  
 It is to grow in the open air and eat and sleep with the earth.

O highway I travel, do you say to me, Do not leave me?  
 Do you say Venture not—if you leave me you are lost?  
 Do you say I am already prepared, I am well beaten and undenied, adhere  
 to me?

O public road, I say back I am not afraid to leave you, yet I love you,  
 You express me better than I can express myself,  
 You shall be more to me than my poem.

I think heroic deeds were all conceived in the open air, and all free poems also,  
 I think I could stop here and do miracles,  
 I think whatever I shall meet on the road I shall like, and whoever beholds  
 me shall like me,  
 I think whoever I see must be happy.

Your paths worn in the irregular hollows by the roadside,  
 I believe you are latent with unseen existences, you are so dear to me.

(By courtesy of Houghton Mifflin Co., Boston.)

Who does his duty is a question  
 Too complex to be solved by me,  
 But he, I venture the suggestion,  
 Does part of his that plants a tree.

—J. R. LOWELL.

#### FOREIGN LANDS.

Robert Louis Stevenson.

(By courtesy of Charles Scribner's Sons, New York.)

Up in a cherry tree  
 Who should climb but little me?  
 I held the trunk with both my hands  
 And looked abroad on foreign lands.

I saw the next-door garden lie  
 Adorned with flowers before my eye,  
 And many pleasant places more  
 That I had never seen before.

I saw the dimpling river pass  
 And be the sky's blue looking glass;  
 And dusty roads go up and down  
 And people tramping into town.

If I could find a higher tree,  
 Farther and farther I could see  
 To where the grown-up river slips  
 Into the sea among the ships--

To where the roads on either hand  
 Lead onward into fairy land,  
 Where all the children dine at five  
 And all the playthings are alive.

---

THE WAYSIDE INN—AN APPLE TREE.

From the German.

[From Harper's School Speaker, vol. 1, by courtesy of the American Book Co., New York.]

I halted at a pleasant inn  
 As I my way was wending—  
 A golden apple was the sign,  
 From knotty bough depending.

My host—it was an apple tree—  
 He smilingly received me,  
 And spread his sweetest, choicest fruit  
 To strengthen and relieve me.

Full many a little feathered guest  
 Came through his branches springing;  
 They hopped and flew from spray to spray  
 Their notes of gladness singing.

Beneath his shade I laid me down  
 And slumber-sweet possessed me;  
 The soft wind blowing through the leaves  
 With whispers low caressed me.

And when I rose and would have paid  
 My host, so open-hearted—  
 He only shook his lofty head—  
 I blessed him and departed.

---

A good road picks up a farm 10 miles out and moves it 5 miles in.—B. F. YOAKUM.

Once in the city the young folks are not willing to travel over the bad roads back to the farm.—BETTER ROADS.

## GOOD ROADS ARBOR DAY.

## MOTION SONG: PLANTING THE TREE.

(Words by Ruth Barnes. Old English tune.)

This is the way we dig the hole,  
Deep 'tis made, with pick and spade.  
This is the way we dig the hole  
To plant our tree by the roadside.

This is the way we plant the seed,  
Put it down, all safe and sound.  
This is the way we plant the seed  
To grow to a tree on the roadside.

This is the way we scatter the dirt,  
Pack it tight with all your might.  
This is the way we scatter the dirt  
To cover our seed on the roadside.

This is the way we water the seed,  
Pour it down upon the ground.  
This is the way we water our seed  
To grow to a tree on the roadside.

## BIBLIOGRAPHY.

- Burrill, T. J. Street and highway planting. In Illinois State horticultural society. Transactions, 1903.
- Byrne, Austin T. A treatise on highway construction . . . 5th rev. and enl. ed. New York, John Wiley & Sons, 1907. xliii, 1024 p. Illus., tables, diagrs. 8°.
- Chapman, John. Johnny Appleseed. In National encyclopedia of American biography.
- Dickinson, M. F. Rights and duties concerning highways. In Massachusetts. State board of agriculture. 15th annual report.
- Fox, W. F. Tree planting on streets and highways. Albany, N. Y., J. B. Lyon co., printers, 1903. 50 p. 21 pl. 8°.
- Hale, William B. The old national road. Century magazine, December 1911.
- Hulbert, A. B. Historic highways of America. Cleveland, Ohio, A. H. Clark co., 1902-5. 16 v. Illus. 8°.
- Red-men's roads . . . Columbus, Ohio, F. J. Heer & co., 1900. 37 p. 8°.
- Nevada. University. Ornamental and shade trees. Agricultural experiment station. Bulletin No. 61.
- Valuable for irrigated sections.
- Patterson, Virginia Sharp. The lady of the green scarf . . . Chicago, A. Flanagan co. (c 1910) 7-31 p. 8°.
- Phillips, Alfred E. and Byrne, Austin T. Highway construction. Scranton, Pa., American school of correspondence, 1912. 144 p. illus. 12°.
- Revell, E. Isabel, comp. Arbor day exercises for the schoolroom. Boston, New York (etc.) Educational publishing co. (c 1909) 128 p. 12°.
- Schauffler, Robert Haven. Arbor day . . . New York, Moffat, Yard & co., 1909. xxix, 360 p. 8°.
- General Arbor day exercises described. Arbor and Bird day annuals are published by the several States.
- Stevenson, Robert Louis. Vaillima letters . . . The road of gratitude. Chicago, Stone & Kimball, 1895. 2 v. 12°.
- United States. Department of agriculture. Public roads office. Descriptive catalogue of the roads models of the Office of public roads . . . Washington, Government printing office, 1913. 20 p. illus. 8°. (Bulletin no. 47.)
- Sand-clay and burnt-clay roads, by W. L. Spoon. Washington, Government printing office, 1907. 22 p. illus. 8°. (Farmers' bulletin no. 311.)
- Use of the split-log drag on earth-roads, by D. Ward King. Washington, Government printing office, 1908. 14+11 p. illus. 8°. (Farmers' bulletin no. 321.)