

the work on a piece of measured ground, to see if the spokes are of the right length. With iron points to the arms, measurements may be rapidly made on hard crusted snow.

For shorter distances, as gardens, village lots, &c., very accurate measuring may be effected by a light eleven-foot pole, three lengths of which make

33 feet or two rods.

A blacksmith will

make a good handle

of round iron, as

Fig. 59.

shown in fig. 59, a screw being cut on the lower end for insertion into the rod. Thin bladed knives, or slits of tin, may be thrust into the ground against the ends, by which one person will do the measuring alone—the handle being placed near one end for this purpose.

## TOWN AND COUNTRY ROADS.

BY ROBERT MORRIS COPELAND.

**A** LOVE OF THE BEAUTIFUL, or at least a recognition of its actuality and value, is widely spread among our countrymen, and in every hamlet in the United States there is at least one person who thinks he loves and understands beauty of landscape, and would like in some way to add to the natural advantages of the surrounding country. With most the enthusiasm spends itself in words, and a great deal of talk ends in little advance, for it is very easy to talk, and tiresome, expensive and difficult to create.

In very rude and undeveloped scenery, where the ragged mountain side is blended by wild tracts of forest with the partially subdued country, the introduction of neat houses, trim gardens, and well kept grounds might be actually inharmonious, giving just enough of variety to create a discord. Such cases are, of course, too rare to be considered by us, for in the United States population follows so closely on the steps of the pioneer that the number of clearings and hamlets soon creates distinct features which ought to be improved until they cease to be an injury to the general effect.

How populated places, taken as a whole, may be made agreeable or beautiful, rather than ugly or indifferent, should be a very interesting question, and one to which it would be worth while to devote a good deal of thought and careful planning. There are but few estates in this country extensive enough to give good opportunities to those who would improve the landscape; but a few farms or country places taken together, or the whole area of a village or town, might be laid out so as to be beautiful in its general effect. Both new and old towns alike are laid out to suit the whims or economies of a few land-holders, or to meet the present daily

wants of a handful of people who never think of what may be the future of their homes or towns, but are careful to see that the wants of to-day are satisfied.

In the western country where the land is level or gently rolling it seems as if convenience and economy alike dictate that all roads should be made straight and at right angles, and that if the streets of a new town are wide enough to give good circulation to the air, no further thought need be given to reserving space for health or pleasure. While all would admit the advantage of varying the roads from straight lines in a hilly country,

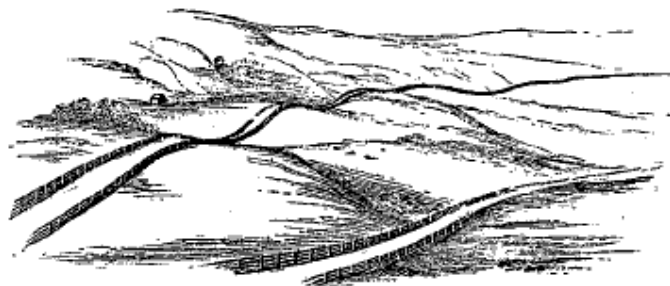


Fig. 60.—*Straight Road over Hills on the Left—Curving through Level Valley on the Right.*

and the dullest person can be persuaded that it is no farther around than over a hill, but few will understand the expediency of curving roads where the surface is as open to travel in one place as another. This is a serious mistake and stamps all the new towns of the west with such a stereotyped resemblance that a traveler might be excused if, landed on a dark night at the wrong depot, he should go up the main street, turn to right or left, and try his door-key in the same number which marks his own house in his native town.

To create variety in laying out and grouping the streets and houses of a town in a level country, requires more skill and thought than where rolling hills or water courses seem to compel the roads to diverge in well defined directions and the houses to be erected beside the natural highways.

Granting all that can be claimed for the economy and convenience of straight lines and right angles for traffic and travel in cities, we may still ask that the beautiful effects which may be produced by well grouped buildings shall have some recognition. It does not follow that because a straight line is the shortest between two points, therefore it is the best. When we compare the crooked streets of the old part of Boston with the straight ones in New-York and Philadelphia, the argument seems wholly in favor of the latter; but the crookedness is less objectionable than the narrowness of the Boston streets. The most crooked one there, its main avenue, Washington-street, or any of those which are near the harbor, as Devonshire, Broad, Commercial, Sea or Front, are no more inconvenient or crowded than the avenues in New-York which run along the Hudson or East rivers; the latter, though straight, are often impassable for hours.

It is the want of room which crowds, not the corners. But without claiming that the crooked are better than the straight, it is true that the buildings erected on either side of a crescent or oval, or at selected turnings in a street, make a much finer architectural effect than when we have a long, straight facade which gives no points of view where the buildings can be seen grouped together. The bends and corners of irregular streets afford points for the erection of particularly fine structures which can only be appreciated when seen from several directions or from a distance. The straight street taxes the invention of the architect and the purse of the builder less, because the buildings erected need have but one front.

We know that a great part of the peculiar charm of European cities lies in the character, grouping and contrasts afforded by the medieval buildings of which they are largely composed. In this country the rawness of our towns and the sameness of much of the landscape, demand that we should make greater efforts to give cities and towns decided architectural beauty, irrespective of the mere questions of cost and convenience.

The necessities of business life compel one who would plan for laying out a city, to consider many things not wholly consistent with what might be most beautiful or picturesque. Gas and water pipes and sewers must traverse the streets, land will become very high priced, and increasing population require more fresh air and ventilation; but these conditions are not inconsistent with a graceful or even picturesque treatment of the surface, if planned for at the outset. It is true that cities which have grown to great size were not foreseen by their progenitors. Most, like Chicago, were the result of a kind of chance; the first settler was attracted by a good spring, the mouth of a stream which gave plenty of fish and access to some large body of water, a hummock covered with wood which promised fuel, and freedom from malaria, a mill-site or some such natural feature.

Whatever was an advantage to the first settler is equally important to others; population and business collect about the favored point, and before the inhabitants themselves realize the fact, they have passed through the stages of a village and town, and find themselves living in a compact city. It would have seemed preposterous to the first settlers to have thought of laying out a city with curved avenues, crescents, squares and parks, and to have provided for the possible elegancies desirable in the future. Many speculators might have been ready to make roads on paper and leave corner lots, and try to sell to new comers eligible sites, but even they would prosecute their plans with some hesitation.

It is hardly to be expected that the few practical men who guide the destinies of a new town should be willing to provide for a city's future greatness; they are too much occupied with private interests. New roads are made wherever accident or convenience chooses to lay them, without any regard to final effect. But while all this is true, and was reasonable

in the infancy of our country, we ought to know and do better now ; new towns may grow to be a Chicago or St. Louis, and each one should have its maturity foreseen and provided for in its infancy. The old towns and cities which have grown, will increase in the future and ought to look to it that their increasing suburbs are not only convenient, but as beautiful as thoughtful foresight can make them.

Thus far I have reasoned as if cities alone were interested, and as if only masses of people should provide for their future. But if my argument is good for the future or present city, it applies more strongly to towns and villages. Nothing is more refreshing to a traveler, than to come by stage or rail into a quiet country town, where the newness of the houses has been toned by the hand of time ; where vines have learned to climb the walls and swing from the rafters ; where stately trees spread loving shelter



Fig. 61.—*Street Planted with Trees, with Shrubs in the Door-yards.*

over the streets and houses ; the village gardens seeming a part of the country about ; the main street, by a pleasant turn, taking us out of the hum of population to the banks of a river or lake, or between farms rich with grain fields and orchards, with farm houses that nestle among trees and shrubs ; where a few flowers about the doors show that the inhabitants know the value of beauty as well as money.



Fig. 62.—*Streets without Trees.*

Instead of these pleasing combinations, this blending of town and country, we enter every town between stiff houses, without a vine to decorate or a tree to shade, through the suburbs given up to squalid inhabitants, redolent with bad smells, the pathway disputed by rampant pigs or predacious cows.

The positive difference to the stranger and to the inhabitant, between two such hamlets is apparent, and it ought to be the duty of every village and town corporation to arrange their roads and precincts so as to provide not only for the necessities, but also for the beauties.

There must be some part of every town devoted to the squalor of poverty and careless indifference, as there must be sewers under the streets—why not lay out the town at first recognizing this fact, and instead of thrusting misery and disorder in the face of every one who enters or leaves the place, provide such approaches and exits, subject to civic restrictions in the matter of kind and quality of buildings, as will insure an agreeable feeling on the mind of the coming or departing traveler?

This is no fancy idea; a village, town or city is as readily laid out and improved as a private country place; there is no more need—if the people will act together as a body corporate—of having the agreeable character of a town injured by the way it is presented to the eye, than of entering a fine house through the kitchen, or having the avenue of approach traverse the kitchen garden and barnyard instead of the lawn. It is a more difficult problem to solve satisfactorily than the treatment of a private estate or a public park, but it is also more important and vitally affects a greater number of interests.

This question has been treated rather in relation to the level lands of the new and great West, than to the long settled eastern and middle States. Few would deny the truth of my theory and argument if applied only to the rolling and hilly countries of the East, and many would add facts to mine to show how absurdly many long settled towns are sacrificed to their highways, for the roads are carried up and over the steepest hills, as if some imperative necessity compelled every one to weary out their muscles in daily hard climbing at any rate, and therefore the exercise might as well be got in the village street as in mountain rambles. There are many arguments which I need not repeat in favor of a hill or elevated place as a site for a dwelling-house, which if good for one person, is for all who can find room to build thereon. If one man is benefitted by having his house where it may get the widest views and the purest air; all who can, should imitate his example.

Business necessities, moving heavy merchandise, utilizing water-powers and vicinity to railroads, will always select the level or lower part of towns as the best places for shops and factories. In such places, to accommodate traffic, the roads should be broad, and often will be most convenient when straight, but the high or rolling part of the town should be given up to dwellings. In the old feudal days of Europe this was recognized, and the lord of the town always selected the hill for his tower or castle. It is true that he gained advantages for offence and defence by his elevation, but I do not doubt that, safety apart, the hill would have always been taken as the best site for the palace.

Few towns are destitute of both kinds of surface, but generally the

practical habits of our people, their desire to be near their business, church, school and turnpike, induce men to build in the lower and level parts of the town before the uplands are considered serviceable.



Fig. 63.—Town with Stores and Warehouses on the Level—Dwellings on the Hill.

The fatigue of climbing a hill at the end of a day's work, and the greater cost of making and keeping roads on hills, are arguments for lowland houses; but every consideration of beauty, picturesqueness and effect is in favor of living on the hills and transacting our business in the valleys. In the old days, when population was too scanty to make good country roads, turnpike corporations were established which, believing only in the shortest road, selected the straightest line between two points, and made their roads over hill and through valley, indifferent to effect or fatigue. Turnpike roads, which are steep and intensely hot in summer days, leading the tired traveler toilsomely up miles of hills, have created in the minds of many persons a disrelish for houses on hills. These old turnpikes have done great injury to the public taste and appreciation by their violation of both convenience and economy, and too often their straight road bisects the most beautiful hill in a country village.

They substitute for smooth, grassy slopes or groves of trees, a long, hard line of road, with fences on both sides, the gravel glaring in the hot sun, the fences like a line of grade stakes, compelling the eye to measure the height of the hill and the steepness of the ascent. We see villages spring up in the most uninteresting situations and gradually expand, while the most inviting and romantic spots will be neglected. It should, therefore, be the duty of the town authorities who want their town to thrive and be selected by strangers for homes, to have their lands carefully examined, their valleys and hills surveyed, their environs studied, and then lay out the future roads which shall define how and where the town is to grow, so as to make the most, in every sense, of the surface. It may be years before such roads are made, but if they are adopted and defined, future improvements of private owners will be in relation to them. This plan requires no interference with vested rights or private interests; no one will be obliged to divide his land into ineligible lots, or to sell against his will, but on the contrary, it will give private property increased value and advantages. The farm of to-day which is to be the suburb

of another generation will confine its fences, hedgerows, orchards, ornamental plantations and buildings to the proposed roads, avenue or park, and when the public road is needed there will be people ready to live upon it.

Summon before the imagination some hilly town, the suburb of a city, or so far inland that city fluctuations and interests are unfelt or unknown; see its hills, some parts farm land, some wooded, some precipitous and almost inaccessible; such roads as there are, climbing up the steepest slopes, and to be avoided by every one but boys with their sleds in winter. Imagine now the same town in its primitive condition, and then carry a road up the valleys, gently winding round the hills to their very summits, of so easy a grade that neither man or horse would experience unusual fatigue in their ascent. Houses would be built by the side whose windows would look over valleys and meadows, or towards the distant lakes and mountains. In time the land opened by these highways would be sought for the home of those who recognize the advantage of surrounding their houses with all that is beautiful, would gladly build on however small an area, if by the fact of their position they can own the landscape beyond, their lawns will end, not in fence or hedge-row, but gradually blend in the outlines of the valley or distant mountains. This is no dream or impossible theory, but may be realized in every hilly town that now exists, or shall be hereafter built. Wherever the surface is varied, men can improve the opportunities if they will be awake in time to their best interests, and level towns may, by wise planning and judicious planting, create a local beauty for the future which will make them individual in their characteristics and varied in their home attractions.

The authorities representing the people should watch their present as well as future interests, and should lay claim in a general way to such outside lands as must in time become thickly settled, and provide by plans for such drainage, roads and public grounds, such as the wants and increasing tastes of the future population will demand.

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### FARM BUILDINGS.

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SINCE THE INVENTION of horse machinery for elevating hay, and carrying it horizontally through barns to any required distance, the plans of these buildings are likely to be materially modified. There will be less necessity for the three-story barns—into which the crops from the fields were drawn to a high elevation and pitched downwards with great ease—although the filling of granaries from above is quite a convenience. The horse-fork will lift its load to any ordinary required height, from the floor next above the basement. And by the use of Hinman's or Hick's horizontal carriers the load may be run off to any desired distance