

and ornamental boulevards, and decorating with plants, shrubs and trees, and the most stringent measures should be provided for preventing anything that may mar the beauty of boulevard, avenue or street, destroy vistas or ruin good facades.

The idea current that art is incompatible with economy and the necessity of trade, is false. If advertising is necessary let its form be neat and in keeping with surroundings. Where signs must be used, let them be considered as a decorative element of the business structure. If the sign fails to harmonize with the architecture of the structure it injures the building upon which it is placed. It becomes an ugliness of the public way, with no gain in advantage from the view point of publicity, and no municipal government will be interfering with private rights by taking power to prevent the desecration of good streets or buildings by ugly signs. Such by-laws or measures are necessary to attract substantial attention to this matter, but the main object is to appeal to the patriotic regard for the aspect of our country.

#### Road Drainage.

Water is the great destroyer of country roads. It not only washes away the service material, but it destroys the foundation and makes all the mud. It may come from springs, and in such cases ditches should be provided and, where necessary, under drains, either of stone or tile to convey the water where it will do no harm to the road. But often the trouble is caused by water standing in pools by the roadside. Deep side ditches, having no outlet and holding water, should be provided with an outlet or filled with earth to exclude the water. Depressions or holes, as often made by the road machine, or shallow places from any cause, where water may stand, whether upon or beside the road, should be filled. Where water stands in pools by the roadside, especially during the fall months, the whole structure of the road is thoroughly filled with water by capillary attraction, as it fills a sponge, making deep mud in fall, and the thawing process in the spring destroys the road. So we cannot have good roads of whatever material made, however well built, unless sufficient drainage be provided.

#### Laying Tile Culverts.

To meet with success in the use of tile culverts they must be put in place properly. They should be laid with a good fall on a regular grade to a free

outlet, in such a way that water will not stand in them.

The tile should be laid with the spigot end down grade, and the joints made tight with cement mortar. If the joints are open, water will work its way along the outside of the culvert, and finally make a considerable channel, which will allow the culvert to get out of line, and finally result in a "cave-in." To prevent the water finding its way along the outside of the pipe, it is advisable to protect the ends with concrete, stone or brick head-walls.

Care should be taken to excavate a concave bed for the pipe, with depressions for the bell of the pipe to rest in, thus securing an even bearing, without which a heavy load passing over before the culvert has properly settled into place, may burst the tile. Tile cannot be used in very shallow culverts, but must have a sufficient depth of earth over them to protect them from the direct pressure of heavy loads. The depth of covering necessary increases with the size of the pipe. At least a foot of earth over the top is advisable in every case, but for culverts of two feet in diameter or over this should be increased to at least eighteen inches.

The earth should be well packed and rammed around the tile to secure a firm bearing, and light soils should not be used immediately over or around the culvert. A heavy clay, a firm gravel, or a compact sand or gravel will answer, but vegetable mould, water sand and light loams are subject to wash-outs.

At the outlet, the culvert should be set nearly flush with the surface of the ground. If set higher than the surface, the fall of water will wash out a depression, and in time will undermine the end of the culvert. A too rapid grade will have the same effect, and it is well to cobble-pave an outlet where this undermining action is likely to occur.

#### Sewage Disposal.

The septic tank system of sewage disposal is now accepted as one of the most useful methods yet discovered of treating certain classes of waste. For ordinary kitchen and household refuse, it is thoroughly effective, but where certain manufacturing wastes are intermixed with domestic sewage, the septic action may be partially or wholly destroyed. The septic tank is merely a closely covered vat, of a size suited to the quantity of sewage, through which the sewage slowly flows. During its passage through the tank the solids are broken up by the action of microbes, and the resulting effluent is then in a suitable

condition to be completely disposed of, by distributing it over sand or gravel filter beds.

While best known in its application to the disposal of large quantities of city or town sewage, the principle is readily and cheaply applicable to the destruction of sewage from individual farm or country residences, and can be employed in connection with a water supply furnished by a pump or a wind mill, or from a natural elevation. Farmers and suburban residents find it a means of sewage disposal that affords them conveniences formerly supposed to belong solely to the city. An arrangement of water-tight barrels for septic tank, filter and flush tank, with an underground system of tile to dispose of the effluent, will provide for an ordinary family. The method is most successful where the soil, through which the tile are laid, is of a sandy or porous nature, and will operate without odor or nuisance, but is not suited to a locality where the soil is a stiff clay or such as has not good natural drainage.

#### Road Maintenance.

Roads being subject to continual use, and also to the destroying effects of the elements and the changing conditions of our climate, should have constant care. Ordinarily the country roads do not wear out, but by neglect they go to waste, run down and become bad. In that condition they are attacked usually about once a year by a gang of men with a road machine, operated by a great team force; they proceed to break up the hard settled ground and scrape upon the surface of the road, sods and other rubbish utterly unfit for road material, and call it road repairing. Roads should not be out of repair; they get in that condition only by neglect. A road, poor in character, should be kept so that it will get no worse, and by constant attention and small expense it should slowly grow better. A good road should be kept always good. All slight defects should be discovered and remedied at once. In this way the much praised macadam roads in France and other countries are kept and maintained at normal expense, and are always in good condition. The railroad corporations would become bankrupt should they practice the methods ordinarily used on our highways. All business corporations and successful farmers understand the necessity of watchful care that their plant, be it factory or farm, is continually at its best and never out of repair.