

Imperfect Drainage.

It is the almost universal experience that the drains and channels originally built in small towns to conduct away the surface waters gradually prove inadequate in size as the towns develop into cities of larger proportions, and as a result both trade and travel may be considerably inconvenienced. In not a few instances also, the flooding of cellars and private premises may constitute dangers to the public health, frequently furnishing causes of actions against the municipality for damages. These primitive drains, also, often become the media for the conveyance and diffusion of germs of infectious diseases, on account of the almost universal practice in small towns of permitting the adjacent property holders to discharge their sewage into them. The principal dangers from this source are in the percolation of fecal matter into the soil, the exhalation of dangerous odors, and the spread of disease by winged insects or birds which feed on carrion or fecal matter, or inhabit filthy or damp places.

Flies are particularly active in this regard, as they are very hardy and are known to be able to pass the bacilli of many infectuous fevers, even of cholera, through their digestive organs in a living condition. Some recent experiments were made in Berlin by Dr. George F. Nuttall, on the effects produced on flies feeding them on bullion solution of fresh plague organs from mice dead thirty-six hours after inoculation. They died when fed in this way, but experiments showed that they may live many days after they have taken infected food; they also showed that living infected flies may, after living twenty-four or forty-eight hours, or even longer, in a clean apparatus, with no infected food, be full of virulent plague bacilli, and hence the danger if they fall into food supplies, or void their excreta into them.

The late war has also shown the important part that flies play in the spread of infectious diseases. A commission composed of members of the Army Medical Corps, reported unanimously to the War Department that the fly was responsible for the typhoid fever infection in the United States army camps during the late war. The latent dangers in cellar or premises overflowed with fecal dilutions, or in stagnant pools in the bottom of poorly constructed open drains or gutters are therefore apparent.

Brampton is endeavoring to award an electric light contract. A satisfactory agreement was nearly completed, when it was discovered that the old company had a perpetual franchise to place poles and wiring on the streets, a condition which the new contractor would not accept. A franchise is easily given, but a difficult thing, very often, to annul. Municipalities of Ontario are every day giving away to electric companies, valuable privileges, which, in a few years, will bring repentance in dust and ashes.

Farm Drainage.

The depth to which water should be lowered by drainage, below the surface of the ground, need seldom exceed 3 feet for ordinary farm crops, while under some conditions the lowering of the water table may be less. There are instances on springy hill-sides and on flat areas between rises of ground, where the water is maintained within 4 feet of the ground for only a short period in the spring. In instances like these where the water falls normally to 5 or seven feet below the surface as the season advances, it is only necessary to insure a sufficient drying of the surface for a depth of 18 inches in which the plants may begin to grow. When this is done the gradual fall of the water table as the crop grows, allows the sub-soil to become sufficiently dry and open, through the natural process of drainage and evaporation from the surface. Where such land is deeply drained, there is liable to be a needless waste of much water.

In sandy soils, too, and others which are naturally leechy and open, it is not so important to draw the ground water down as low as when the soil is more close and impervious in texture. But in all cases where the water table usually remains as near the surface as 4 feet during the whole summer, the drainage system should be planned to draw the water down at once to 3 or 4 feet below the surface, and hold it there.

There are times when the ground has become very dry, and especially when the soil is stiff clay and has checked to a large extent as a result of drying, when heavy rains come they percolate so rapidly into the system of tiles that a large share of the water is lost before it has time to be absorbed by the soil. In such cases, although no provision is made for it, were tile drains provided with a few valves at different places in the system, which might be closed at such times, and thus retain the bulk of water for a day or more, until sufficient time has elapsed for the water to be taken up by the capillary pores of the soil, no inconsiderable advantages would be derived from it. When a heavy rain is preceded by a dry period, on tile drained ground a very large part of the water is lost through the drains, when the soil is much in need of it.

The vast difference between United States rule and Spanish mis-rule is already being illustrated in the island of Porto Rico. The U. S. military engineering staff in the island is now investigating harbors and possible railway routes and centres, and is building wagon roads. About 150 miles of railway has been in operation and this will be extended so as to form a marginal route around the island. The Island of the West Indies would still belong to Spain if that country had kept up the Good Roads Movement.

Lesson for Aldermen.

In the second year of this office, in the eleventh month, in the twelfth day, it came to pass that there was a meeting of authorities. These were the real authorities, or aldermen of the city, and high judges in the matter of what was good for the people. Exceedingly wise they were, and in their own estimation, their intellects were of great size, twenty cubits in diameter at the least.

And it came to pass on this day that the wise men assembled together and exchanged thoughts of such weight and brilliancy that they amazed even themselves.

And the people heard the reports thereof and were grieved.

"Indeed," said they, "it is time after all that the thoughts of our rulers are on a dead bias."

So they went home and wept copiously, because of the density of their rulers' foresight.

But little did the rulers or aldermen care for the people, and it happened that when the news of the dissatisfaction reached their ears, they snapped their fingers and said: "Pooh, little do they know what is good for them, we rulers are the people, and withal the real thing."

So they rejoiced in their thoughts, and continued to conduct business at the old stand in the city hall.

And after much discussion and deep thinking, in which their intellects were stretched to the utmost, the rulers, or aldermen, hit upon a scheme which has not been surpassed for its wisdom or brilliancy since the world began.

And they said: "We will fix the people. We will give unto all the poor corporations the playgrounds of the people."

But they made a provision allowing the people to breath the fresh air from the tops of their houses.

And it came to pass that all the poor and down-trodden corporations expressed glee at the wisdom of the authorities.

And the people at this were aghast, and hesitated to act.

But soon they said: "We will act," and they straightway bought pencils with which to mark their ballots at the next election of the rulers.

And the people organized for a great round up of the rulers, and the slaughter was great.

The Chinese are supposed to have been the first to construct arch masonry bridges, probably as early as 2900 B. C. In Egypt, Ethiopia and Greece, very ancient stone arches have been discovered. The Romans were the first to use arches of considerable magnitude. The first of these in Rome, of which there is authentic knowledge, was the Cloaca Maxima sewer, built about 615 B. C. The greatest distance ever spanned by a single masonry arch is supposed to be 251 feet. An iron arch in Portugal spans 561 feet.