

## Sewers.

The designing of a system of sewerage is often contemplated and requires special treatment in each case. The objection to using streams and rivers for disposal, is in many cases fatal and methods of purifying sewerage are required. Chemical, broad or intermittent filtration are used, the first being generally too expensive for small cities while the second is less costly and can be made nearly as effective. The question of combined or separate systems for small cities is now quite positively decided in favor of the latter. It is not necessary to repeat the well-known arguments used by the advocates of each system. The system now designed for nearly all cities of moderate size, and often of large ones, is based on the plan of providing for house drainage almost exclusively, subsoil drains are sometimes connected and where found necessary or expedient, storm water is admitted. The best results are obtained by cities when they can secure a well designed system covering the entire present and prospective area, if possible, with outfall so placed that no nuisance or injury to water supply can result. If storm water sewers do not empty into large streams it is a good plan to have an intercepting sewer, intercept their dry weather flow and carry or connect it with the outfall main of the sanitary sewers. The necessity of securing good work at a minimum cost is especially applicable to small cities, where the burden of public improvements is most severely felt. In order to secure this object, the plans and specifications must provide for the necessary work at the least cost. As an illustration of the contrary the following is given: In a city of some five thousand population, a main sewer of brick was constructed, one and one-half miles in length, with a uniform grade and section throughout. The unnecessary expense of such construction was considerable as the upper end of the sewer received but a slight portion of the drainage as compared with the lower end. Subsequently a complete system for the city was designed, but it was too late to remedy the error made by the failure to have a system designed before commencing to build. Even large city sewers are constructed without a complete system to work from, the work being designed in piecemeal, and consequently defective—some sewers too small, others too large. Plans in reference to construction of brick sewers are often unnecessarily expensive.

The question of single or double ring brick for various sizes of sewers is not decided, at least not in practice. Considering strength alone, it is perfectly safe in firm soil to construct good brick sewers of three or three and one-half feet in diameter with a single ring, and as experience shows, sewers of four and four and one-half feet have been constructed and stood for years. With these facts it seems extravagant to use two ring brick on sewers

of two feet or even two and one-half feet in diameter in good soil as is done in places—the difference in cost is from fifteen to twenty-five per cent. of the entire cost of the sewer and unless some great advantage can be shown by using two rings, the extra expense is unwarranted. In soliciting bids for sewer work, prices per lineal foot for various sizes are requested, regardless of the character of excavation which the bidder is required to determine for himself. In some instances, however, bids are received for rock excavation, if any, in case the engineer has made an estimate of the amount of rock, a just comparison of bids can be made, but much contention between the engineer and the contractor can be avoided by adopting the first and more general method. Where bids for rock excavation are requested, and no amount specified, as was the case in a large sewer contract, lately awarded, injustice was done to both city and the actual lowest bidder. The party securing the contract bid lowest on sewers but high on rock excavation, namely, \$5 per cubic yard; the other bid somewhat higher on the sewers, but only \$1.15 for the rock. From actual knowledge of the amount of rock in the work the city will pay at least \$10,000 more than if it had awarded the contract properly. Where unsafe foundation is anticipated, it seems proper to provide in the specifications that all extra material, as brick, plank or concrete, ordered to be used, in addition to what the plans call for, should be paid the contractor at a figure determined by the engineer in charge. This is generally done, but its omission occasions uncertainty in the minds of bidders, and can be made an unfair burden on the contractor.

Frequently it is found preferable in case of a very wide street, to place a lateral sewer along each side of the street for convenience of house connections, being more economical than one central sewer. The plan, however, of placing a lateral alongside of a main sewer or above in the same trench, I consider both unwise and a useless expense. No harm is done to main sewer by proper house connections, if Y's are placed where needed; and if the main sewer is considered too deep, or in a rock cut, I would advise carrying up house connections from side of main sewer in the same trench, nearly vertically, until a proper height is reached. The question of the maximum size of tile pipe for sewers is not settled. Practice limits it to twenty-four inches. Many cities specify brick for sewers over fifteen inches in diameter. The cost of a twenty-four inch brick sewer is less ordinarily than that of a twenty-four inch tile, but when ease of construction, increased flow, less sediment, and more imperviousness are considered we find the majority in favor of tile.

Great care, however, is required in securing the best material and in laying them.

## Municipal Farms.

During the recent industrial paralysis, the number of persons in Detroit requiring relief from the city authorities become so great that Mayor Pingree endeavored to find some way in which employment could be furnished to as many as were willing to work, and the strain on the city treasury might to that extent be lightened. It occurred to him that a great deal of the vacant land in the suburbs of the city, "held for a rise," might, if permission were obtained from the owners, be temporarily turned into potato farms. When his proposal was broached, many parcels of land were cheerfully placed at his disposal. The experiment was an entire success. It was proven that the great majority of the unemployed poor were willing to work, and merely needed guidance and opportunity. One very noticeable result of the scheme, it is said, is that it has drawn the attention of many poor people in the city to the desirableness of country life. They have had an introduction to its attractions, and they have tested its capability of affording remunerative employment for their mental and physical energies. The Pingree idea has rapidly extended to other cities. In the vicinity of Buffalo five hundred acres were turned to account last summer in the same manner as at Detroit. Every city, of course, has its own method of regulating the details. The Buffalo plan is to give each man charge of one-third of an acre, and let him work it during the summer. The men receive aid from the poor department just as if they were not working. At the end of the season, if they have kept at their work, they are paid for it in potatoes; if they have deserted it, they get nothing. In Rochester, where a beginning is to be made this spring, every man who applies for assistance will be given two days' work at the farm, and for this they will be paid in provisions from the poor store. At the end of the season the potatoes will be gathered and stored for use by the department. By this plan only men willing to work will be helped. Those who refuse to take a hand at the potato-raising will be dropped from the overseers' books, and will receive no relief from the department. In this province, fortunately, very few of the extremely poor need be idle during the summer months. If much more ought to be done than can be done at the House of Industry, many farmers in the neighborhood of the cities doubtless would be glad to get even inexperienced help.

AT THE HAIRDRESSER'S.—A barber, after applying some sticking plaster to a gash made with the razor, prepared, nothing daunted, to continue the operation. Customer—I only fight up to first blood. The duel is at an end; let us shake hands.—*Il Motto per Ridere.*