odors to appear at certain seasons of the year which will contribute to make the water supply generally unpopular.

One of the principal advantages to be derived from a water supply, and one which is generally recognized, is the introduction of modern plumbing facilities in the home. This permits the abandonment of private wells, which may be dangerously contaminated, and the use of indoor sanitary equipment, which makes possible the removal of the insanitary privy.

From a financial aspect the introduction of a public water supply is to be considered a good investment. There results an actual saving to the individual, a general increase in property values, the provision of fire protection and an attraction to industries in search of a suitable location. The financial measurement of the advantages of a public water supply is determined largely by the quality, quantity, development and use of the supply. The consideration of the financial value of a water supply from the standpoint of its quality has been dealt with completely by Whipple in his treatise on the "Value of Pure Water." Assuming absolute purity as a standard of greatest value, he has shown, for instance, that unsatisfactory physical quality may result in a loss of from five to twenty dollars per million gallons of water pumped; unsatisfactory hygienic quality, fifty to one hundred dollars per million gallons; and objectionable chemical quality, ten to twenty dollars per million gallons. The mere provision of a water supply may, therefore, not result in a great financial advantage; it is also required that the quality be such as to bring the maximum benefit to the community.

Considering next the advantages of a sewerage system, a few brief words of explanation of what a sewerage system is may be of benefit. Sewerage systems are divided into three classes, according to their use. The sanitary sewer system is employed for the removal of house sewage and all objectionable liquid wastes. Storm sewers are used for the removal of surface drainage, while combined sewers are utilized for the removal of all classes of wastes and surface drainage. For the small village, especially where treatment of the sewage may be required, the sanitary sewer system is by far more preferable than the combined sewer system for the removal of sewage. Any sewer system, to furnish good results, must be of proper capacity, laid with proper grades and in general designed according to good engineering practice. Its construction must also be carefully supervised. After its installation it must be maintained in its most efficient condition. Of course, the sewer system will not furnish maximum benefit until it has become universally used. We may, therefore, state that the full advantage of a sewer system will be realized only when the following conditions have been met:

1st. It must be properly designed and constructed.
2nd. It must be properly maintained.
3rd. It must be universally used.

The first two factors are dependent upon preliminary study and the plans under which the system is built, but the use of the sewers is a matter which can be regulated by the authorities in charge.

The benefits resulting from the installation of a sewerage system may be measured according to the same standards as a public water supply improvement, namely, by the effect on the public health and from financial conditions.

It seems unnecessary to refer to the improvement in health conditions resulting from the installation of proper sewers. First of all, a public water supply cannot be fully enjoyed in the absence of a sewer system. The provision of a system of sewers may, therefore, contribute some of the benefits resulting from the public water supply development. With provision of sewers the abandonment of cesspools and privies is facilitated and general cleanliness of the community is encouraged. Drainage and drying of the soil also results, which has an important bearing upon the general health. It may be expected that, following the installation and use of a system of sewers, the death rate from typhoid fever will be reduced about 50 per cent. Records of results obtained in a certain town in England indicate a reduction in deaths from pulmonary tuberculosis of over 50 per cent., following the introduction of sewers.

From a financial aspect the installation of a sewerage system is highly beneficial. It results in an actual saving to the individual as it provides an ever-ready means of disposal of house sewage at a cost considerably less than would be demanded in the installation and maintenance of cesspools. Increased property values also result from improved sewerage, and it may be expected that individuals and manufacturers will be attracted to a well-sewered community and thus enhance its value. The degree to which the sewer system becomes a benefit is, however, dependent upon the extent of its use. Frequently it has been found that the citizens of a community have failed to appreciate the value of a sewer system and have neglected to properly utilize it. The result has been a continuance of the privy and cesspool nuisances and general insanitary conditions of the community. It is well to remember that following the installation of a sewer system its general use should be required by the municipal officers in authority.

Having reviewed the advantages to be derived from public water supplies and sewerage systems, a brief explanation of the method of obtaining these advantages may be of value. A popular desire for the improvements is, of course, necessary before the village authorities can hope to make the actual installations. However, before the expression of the electors is obtained it is important for the village authorities to become thoroughly informed as to the general method of development of the works and the cost of the same. When the council of a village has determined to take steps to install a public water supply or sewer system a competent engineer, experienced in this field of work, should be retained to make preliminary surveys, general plans and an estimate of cost for the improvements. In case of a water supply the preliminary survey should include a study of available sources and in this connection the considerations of quantity and quality enter. No source of supply should be determined upon until a complete test as to its quantity and quality has been made. In the case of a sewerage system the preliminary survey should include the general layout of a sewer system and location for outlet or treatment plant. After the preliminary survey has been completed general plans and an estimate of cost should be made and these submitted to the village council for adoption. Following their adoption by the council they should be submitted to the Board of Health for approval and after this approval is secured the village authorities should immediately take up the question of educating the people in the advantages to be derived from installing the improvements contemplated. In some cases this campaign of education may require the utmost effort on the part of the village authorities. After a favorable expression of the electors on a bond issue is secured the village should again call upon their engineer to prepare detail plans and specifications for the work. These should be submitted to the Board of