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CAVES FORM BELLEVUE'S  
SEWAGE SYSTEM*By* LEFEVER M. LEE, Chem.E. 2

## EDITOR'S NOTE

Mr. Lee is a resident of Bellevue and so has a first-hand knowledge of its sewerage system.

What is probably the most unique and cheapest sewage disposal system in the country is found at Bellevue, Ohio, located about one hundred miles north of Columbus on the county line between Huron and Sandusky counties. This area is underlaid by limestone which dissolves by the action of water, forming caves, fissures, and sink-holes. In this locality the fissures are found close to the surface and have water flowing through them the year around.

The city of Bellevue takes advantage of these conditions to dispose of its sewage by drilling holes through the limestone in much the same manner as people living on a farm drill a well. If an opening in the rock is not found within a depth of about two hundred feet, the drilling machine is moved to another place within ten or twenty feet of the first attempt and another hole is bored. It is a rare occasion when a third try must be made, because the fissures are very numerous and close to the surface. The majority of the homes of the town have their own sewers, but it is not unusual for two houses to share the same one, thus lessening the cost for each family. Nearly all of the streets drain into pipes that lead to natural sink-holes located in various sections of the city.

This sink-hole area varies from three to eight miles wide and extends to the west of Carey, which is approximately forty miles to the southwest. West of Carey is a cave that leads to an underground stream which is as close to the origin as anyone has been able to trace. From here the stream flows through the cracks in the limestone to Bellevue and then probably finds an outlet somewhere in Sandusky Bay. There are many places along this subterranean river where it comes to the surface in the form of springs and wells. On one or two occasions the river has become too full and turned a number of the sink-holes into springs, but these always subsided when the river receded. After the flood of 1913 water stood on many of the farms north of Bellevue in ponds of as much as 10 or 12 acres, because the fissures were filled with water from the neighboring country.

It is a matter of conjecture as to where the final outlet for this river is located. Experiments by the state health authorities with chemicals to determine this outlet settled nothing farther than a northward trend of the current which was already known. Other experiments, by Professor E. L. Mosely of Bowling Green and E. F. Warner of Bellevue, with ground cork and small corks proved nothing. In the floor of Sandusky Bay there are springs, but it has never been proved that they are a part of the rest of the system. None of the wells or springs in this neighborhood show any impurities from the use to which the river is put when it passes under Bellevue. Thus it is that this little city has one of the cheapest and most sanitary sewage disposal systems known.