In Preserving The Environment

Waste Water Treatmen

By CHRIS SMITH

Water has long been man's most popular medium for disposing of waste materials. For centuries human and commercial wastes could be pumped into fresh flowing water to be carried away.

As population of urban centers has grown, the capability of existing streams to carry away raw wastes has been exceeded, and systems for converting waste water into more acceptable forms have become necessary.

From the time the city of Moscow first installed a sewer system there has been need for some waste treatment because of the limited capacity of the receiving stream. In 1904 the first treatment plant consisting of a large single chamber septic tank with the effluent discharging directly into Paradise Creek was built.

In 1918 the city constructed the first plant at the present site. It consisted of two large open septic tanks, and two filter beds.

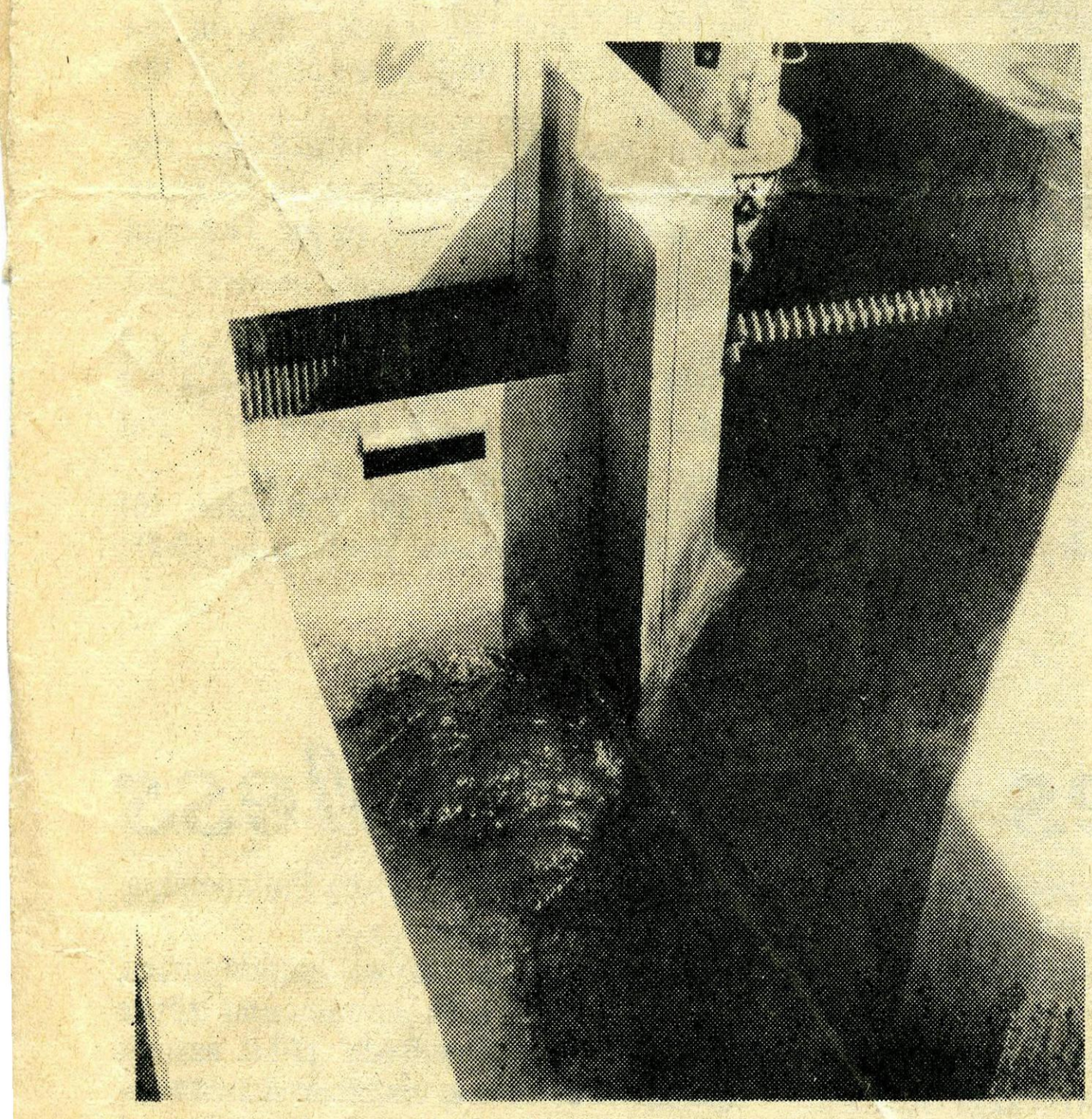
By 1938 that system had been outgrown, and had to be redesigned to give more thorough treatment to the increasing flow of waste water. With federal government participation the facility was redesigned on the present lines for a capacity of 12,000 population.

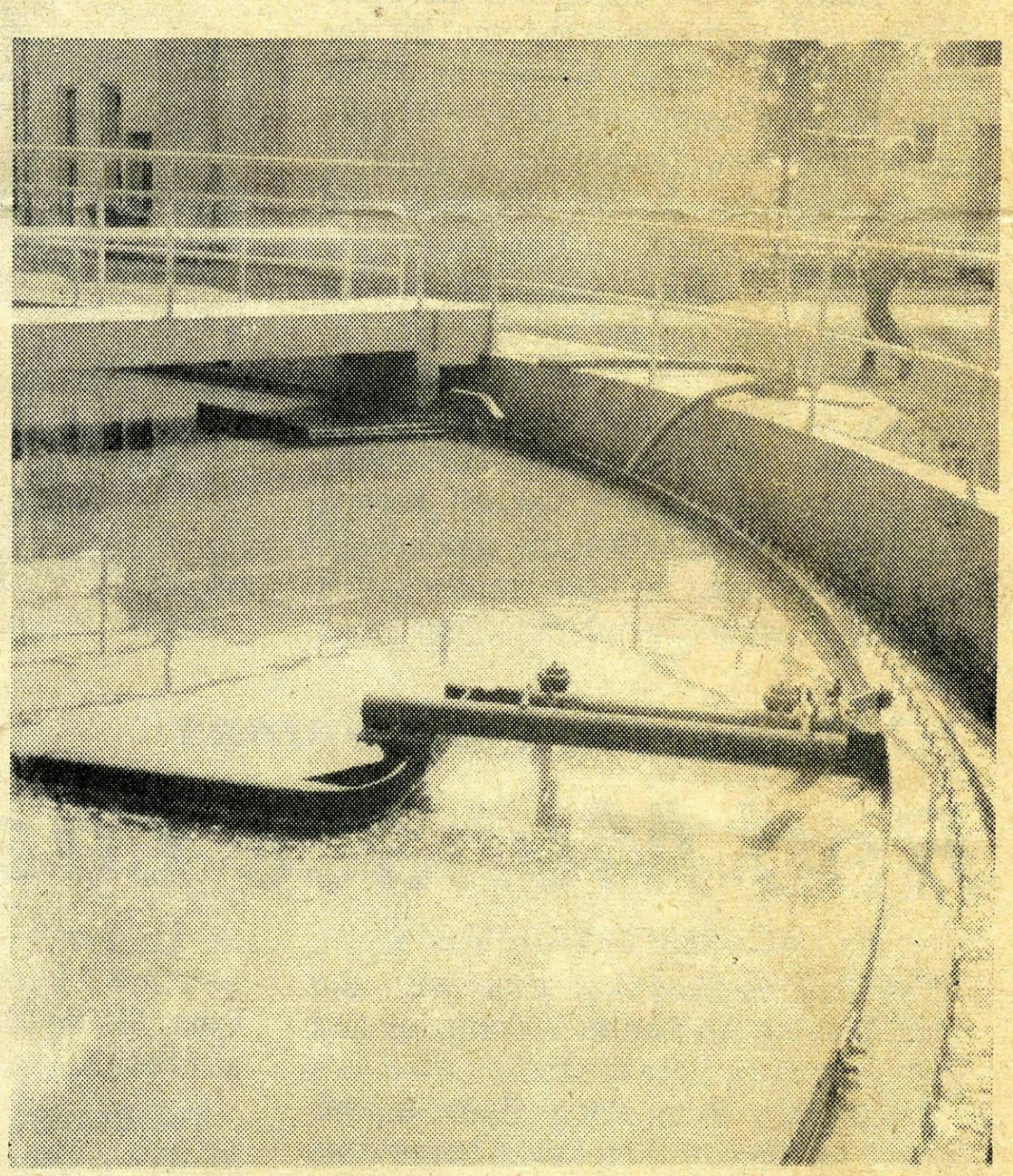
In 1957 the system had to be redesigned and enlarged to cope with the increased water flow from the growing town and university. With the 1957 improvement and additional improvement made in 1961, the plant now has the capability of converting the raw sewerage from a town of 20,000 population into relatively clean water and usable sludge. To serve that population, the facility is designed to handle 3.5 million gallons of water daily.

Through primary and secondary treatment the plant is able to reduce the bacteria count in 100 mililiters of water to less than 100, and produces a sludge that is acceptable for use as commercial fertilizer.

The plant operates on the concept of allowing the organic matter in the water to be acted upon by bacteria colonies so that it is usable as food by bacteria in the stream. After conversion by the bacteria the highly objectionable raw sludge, is converted to simple stable organic compounds that may be used for fertilizer. A high methane content gas is produced by bacteria action and is recycled and used to heat the mixture to continue the bacteria action.

Water remaining after the bacteria action is completed is filtered through large beds of crushed basalt gravel where it is further acted on by bacteria and the remaining organic matter is stabilized. Before flowing out into Paradise Creek the water is filtered again and clorinated.





SEWAGE CHOPPED, SETTLED, AND SKIMMED — Raw sewage entering the plant is chopped, and all rags, golf balls, wood, paper, and other items reduced to small particles that will not clog the system. Shown left is the chopping operation with raw sewage entering the plant. After chopping the sewage is pumped into a primary settling tank, right, where solids settle to the bottom and are withdrawn. A rotating arm continually skims the top removing all floating solids. The skimming arm is shown removing floating solids as clear water cascades through filter teeth at the side of the tank.