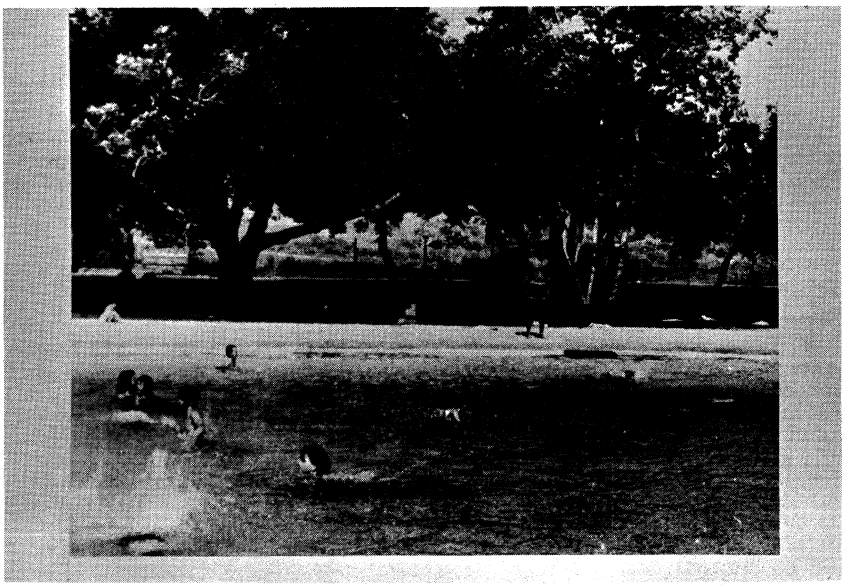

FIGURE 22.—Use of renovated waste water for swimming at Lake Santee, Santee, California.

Several advanced waste-treatment processes are being tested for treatment of irrigation return flow waters. Potentially, such waters could be recycled and reused thereby eliminating the pollution load on streams and simultaneously augmenting the irrigation water supply.

In the industrial area, the project at Fort Collins, Colo., involves studies to develop high efficiency treatment for sugar beet factory wastes. The objective is to concentrate the wastes by chemical precipitation and to re-use the purified effluent in a closed in-plant recirculation system. Can you imagine such an industrial plant without a waste outfall? Such is the ultimate objective of this research. Another research project at Richland, Wash., is aimed at developing selective ion-exchange materials which could remove ammonia from industrial or domestic wastewaters as well as from agricultural run-off. At Green Bay, Wisc., a research study is just getting under way to evaluate various advanced processes for treating combined municipal and industrial wastewaters.

In summary, research and development on advanced waste-treatment and wastewater renovation technology has been under way since late 1960. Its objective has been the development of an arsenal of treatment tools capable of achieving any goal in waste water purification. Approximately 30 advanced waste-treatment processes have been or are now being screened to assess their technical and economic feasibility. About one-third of these have been rejected from consideration, and several have been developed into the large pilot-scale stage. In the last few months a number of research and development grants have been awarded by the Department of the Interior to various communities to initiate design and construction of full-scale demonstrations, large-scale field evaluations, and pilot plant investigations of these processes. Other processes now undergoing feasibility evaluation or in the engineering development stage would allow purification of wastewaters from either municipalities or industries to such a degree that pollution from these sources could be completely eliminated.

In advanced waste-treatment lies the final answer to many of our water resource problems. With this technology we believe we can come close to fulfilling President Johnson's recent pledge to "doom water pollution in this century."