

applied to one man. In this sense Professor Rohlich is a rarity. He holds the Harrison Prescott Eddy Medal from the Water Pollution Control Federation for outstanding research and also the Benjamin Smith Reynolds Award from the University of Wisconsin for excellence in teaching engineers.

A civil engineer by training, Professor Rohlich received B.S., M.S. and Ph.D. degrees from the University of Wisconsin. Prior to his present position he served as associate dean of Wisconsin's graduate school, associate professor at Penn State, and instructor of civil engineering at Carnegie Tech. He has also held positions as: Engineering Assistant for the Bureau of Sewers, New York City; Chief Project Engineer for ESNA Corporation; and Senior Sanitary Engineer, Office Chief of Engineers, War Department.

Dr. Rohlich, is Lake Erie dead?

I'm not sure what the word "dead" means in this context. The fate of any lake is extinction. Our whole environment is constantly being altered by natural forces. In the case of a lake there is a gradual but constant encroachment by land . . . a filling in of inlets and outlets with sediment . . . an erosion of the surrounding soil. The terms "dying" and "dead" when applied to a natural water body are therefore relative and can be very misleading.

A "dying" lake, then, is not necessarily a cesspool . . .

No. But there may be some public confusion on this point. For example, some may refer to a lake as dying because it has a decreasing capability to be used for specific purposes. If a lakeshore became choked up with undesirable weeds they would interfere with swimming or boating, and the lake's *usefulness* for these purposes might be considered to be "dying." In the case of Lake Erie for example, authorities report that its productivity in terms of total fish catch has not changed significantly but that the *variety* of fish caught has changed. From this standpoint, the capability of Lake Erie to support certain species of fish is on the decline. On the other hand, there are other bodies of water which have deteriorated to the point where they are essentially cesspools.

What causes the deterioration in natural water bodies?

Some deteriorate through the process of eutrophication. In the broad context this is a process of enrichment often accompanied by a change in the natural "balance" of aquatic organism which the water is capable of supporting. It is caused by fertilization of the water as nutrients enter it from many sources. Just as fertilizer makes your lawn grow, the addition of nutrients such as phosphorous and nitrogen to water increases the growth of algae and aquatic weeds. The difference is that large concentrations of algae in water are undesirable.

Why?

Like terrestrial plants, algae produce oxygen from carbon dioxide, using sunlight as energy. In the absence of sunlight, however, plants reverse the process . . . consuming oxygen and giving off carbon dioxide. In a well-kept aquarium a balance is established so that the plants don't use more oxygen than they give off. The problem in a natural water body, however, is that large accumulations of algae are concentrated by wind action and at night begin to draw oxygen from the water . . . in extreme cases, completely depleting the water's supply. The deterioration in water quality then becomes self-sustaining . . . rotting vegetation releases more nutrients which promote algal growth which continues to use oxygen and so on. The algae also often create turbidity in the water and are a cause of tastes and odors.

Are water pollution and eutrophication one and the same?

No. While it is true that some types of pollution accelerate eutrophication, contamination of water with pollutants such as arsenic, DDT, or copper compounds do not contribute nutrients for plant growth. They, of course, may cause other detrimental effects. The words pollution and eutrophication should not therefore be used synonymously.

Is eutrophication a natural process?

You might consider it both a natural *and* cultural process. Normal precipitation and drainage from forest or plain areas contribute nutrients to water. This is a natural condition so that even if man were not around the lakes would go through an aging process. But the natural processes of enrichment and sedimentation are often accelerated by man's activities. In altering the landscape by agricultural development, urbanization, and by the discharge of sewage and other pollutants, man has increased the *rate* of eutrophication.

Has eutrophication reached crisis proportions in the country?