

The Dying Lake

Careless man is hastening the death of Lake Erie, choking it with chemicals, sewage and trash, and turning its sparkling waters into a murky cesspool—By Barbara Tufty

See Front Cover

► THE VAST SHEET of inland water lies still and flat, reflecting the sky with a dull silver sheen like molten lead. Waves lap listlessly along the shore, sucking in and out among slimy green rocks, deserted filthy beaches and oily pilings of lonely piers.

No gull wheels and cries overhead, seeking rest and food from the lake—nor any duck, crane or other water bird. Farther back from the lakeshore, once lively cottages and motels stand empty, with "For Sale" signs stuck on pikes in the front yards.

Beneath the surface of the lake, there seems no visible life. There are few shining fish, eels or turtles. The waters are a murky green, choked with algae and tiny organisms that thrive on the rich nutrients dumped into the water.

As these crowded living things grow, then die and decay, they absorb the life-giving oxygen from the water, thus destroying desirable creatures like whitefish, lake trout and pickering, and encouraging coarser fish, the leeches and other unpleasant forms of life.

Large patches of oil, chemicals, trash and sewage float desolately on the water's surface, an affront to sight and smell. Foaming, evil-smelling yellowish windrows blow and roll upon the shore.

This is Lake Erie—a wasteland, a lifeless body of water that has lost its sparkle and vitality, and is being hastened to its wretched fetid death by man's affluent wastes and increasing activities. Industrial pollution floating from Cleveland harbor into Lake Erie is shown on the front cover.

Every day, 10 million people help dump more than 18,000 tons of sewage, chemicals, fertilizers and sediment into the lake, clogging and stinking the waters and speeding its death.

No other comparable body of water is undergoing such treatment and deteriorating so rapidly. Commercial fishing has almost disappeared, beaches are closed by health officials, residents who can, are moving away from the area, and no tourists are signing up for summer boating, fishing or swimming.

Men are beginning to realize with horror their roles in murdering the lake, and are setting up research projects and studies to "do something" about the problem. Yet even with Federal, state, private and individual awareness, the situation is getting worse. As yet there is no truly effec-

tive operation in sight and it will be some time before things can get moving efficiently.

To clean up Lake Erie alone, researchers estimate a cost of billions of dollars. Even if all the rivers flowing into the Lake were freed of contaminating material, it still would take about 20 years to flush Lake Erie clean. The Great Lakes will get worse before they get better.

Lake Is Living Body

Every freshwater lake is like a living individual. It is born, it grows, it breathes in a sense, and slowly dies a natural death. Through the ages, a lake slowly fills with dust and sediment, and reeds and water plants begin to accumulate in shallow waters. An outlet stream may cut through the side of a lake and drain out the water, turning the lake into a swamp. Gradually swamp plants give way to sturdier plants of drier soil, and eventually the lake is dry land.

Thus all lakes die a natural death. The United States has lost perhaps half the lakes it had 12,000 years ago.

During its lifetime, a lake is a vital entity, not a passive object. It is a moving body of water, sensitive and responsive to the winds, the rains, the gravitational pull of the sun and moon, the blowing of seeds and dust, the flight of birds. The lakes shifts, swells with the tides, responds to its nourishing rivers, streams and springs.

In its vitality a lake endures shocks and insults, and is able to encompass the wastes and filth thrown into it. The waters assimilate the mess, help it decompose into harmless chemicals, disperse it, and then are able to return fresh sparkling waves to the land from which the pollutants come.

Yet there is a limit to a lake's capacity. As greater concentrations of people and industry pour more wastes into the water, the lake eventually becomes saturated, and is unable to purify itself. As the natural process of death is hastened, evil smells and sights begin to appear and suddenly man realizes the lake needs help to survive.

Of the five Great Lakes, Lake Erie is the first to be murdered. Lake Michigan is next in line. Lake Superior, the farthest north and least industrialized, is in the best condition. Lake Huron has no large cities and industries discharging wastes, and Lake Ontario has no immediate problem.

Lake Erie is the oldest, southernmost and warmest of the five Great Lakes. Only 241 miles long, it also has the smallest volume of water, with almost a 10,000-square-mile surface area. It is very shallow, with an average water depth of only about 58 feet, and at its deepest point is only 210 feet. This Lake has always been treacherous, much like jittery water in a shallow pan, and winds and tides can quickly build up waves and choppy seas, overturning boats and confounding swimmers and fishermen.

Last year, the water level sank to the lowest point since record-keeping began in 1860. This declining water has alarmed water specialists and forced cargo vessels to lighten their loads to avoid getting stuck in the mud.

But the lake's biggest immediate problem is pollution.

Contaminants From Cities

Most contaminants come from the large industrial cities strung along the southern American Lake side. Detroit adds waste from its automotive industries, from its steel chemical, pulp and paper plants, and from petroleum refining. Toledo dumps in leftovers from its automotive, glass, petroleum and steel industries. Cleveland contributes acids, oils, cyanides and pherol from steel, automotive and chemical plants. Erie has pulp and paper wastes. Buffalo contributes its pollution from its steel, chemical, portland cement plants and flour mills.

To all this is added everyday refuse from the populated cities—disease-carrying human sewage; meat and vegetable wastes from houses, restaurants and packing plants; house detergents, and small but lethal amounts of insecticides and sprays.

Shipping and boats add their share of pollution, since very few vessels have facilities for treating their own sewage and trash, or even storing it until they reach port.

Some of the most troublesome wastes are phosphates from detergents and nitrates from industry and farmlands. Once in the lake, these nutritious chemicals promote the growth of algae and living organisms that use up the oxygen and suffocate the lake. This condition is called eutrophication or overfertilization. Sometimes, when concentrated and thick enough, these sludgy elements can be dredged from the lake bottom, dried and turned back into the land as valuable fertilizers.

Even though pollution problems of

the other lakes are less serious than those of Lake Erie, specialists are becoming more concerned about Lake Michigan, especially at the south end which is essentially a cul-de-sac, with little circulation and outlet for the polluted waters to flow.

Huge masses of fish and water-birds have been killed, destroyed by the growing pollution.

A few years ago, Chicago officials and engineers worked a scheme whereby the Chicago River was made to flow backward in a southerly direction, and a sanitary canal was built. Now all the Chicago sewage effluent is carried down to the Illinois and Mississippi Rivers instead of being dumped on its own lake shores.

Greater efforts are being made to clean the lakes and study the sources of pollution and their control. Water pollution is a many-headed tiger, involving such basic but different facets of life as water, health, agriculture, industry and recreation—agencies often at odds with each other. Federal, state and municipal authorities are being forced to face the problem, as more and more voters are beginning to realize what is happening. As their recreation grounds, fishing spots, boating areas and beaches are curtailed, these people are bringing pressure on industries and cities to help clean up the mess.

The cleaning bill is not small. Industries are having a hard time trying to justify spending money on pollution research, and on expensive equipment such as filters, chemicals and processing plants, where once they merely dumped all their waste into the nearest water.

Millions Spent Yearly

The Federal Government spends several million dollars each year on the Great Lakes pollution problem. Canadians are putting money into research, equipment and enforcement, starting by cleaning up the interior of the land, so that when they work down to the Lake, clear water will be flowing behind them. The Internal Joint Commission and the U.S. Department of Health, Education and Welfare have pollution studies underway. The University of Michigan devotes about a million dollars a year to Great Lakes research, and the University of Toronto's Great Lakes Institute spends about half a million.

Conferences and congresses are drawing more top-notch specialists into particular problems. The Ninth Great Lake Conference at Chicago recently drew 500 scientists to discuss their research and ideas.

Recommendations are underway on such projects as making cities treat sewage to reduce the pollutants, prohibiting combined storm and sanitary sewers in all newly developed urban areas, prohibiting disposal of garbage and trash in the Lake, and removal of existing dumps along river banks and shores. By 1968, according to the

Federal Water Pollution Control Administration, industries must improve their treatment of such wastes as acids, oil, nitrogenous and phosphorus compounds, and foam-producing discharges.

It has even been suggested that the flow of water toward James Bay in Canada be reversed to divert fresh water into the lakes.

The Great Lakes have celebrated over one million birthdays, having probably been born during the Ice Ages. Their birth pangs were long and laborious, for the immense glaciers descending over the broad lowlands of the North American continent were not gentle as they gouged and grooved the earth with their crushing weight of ice and rock.

As the snow, ice and freezing cold of the glaciers finally retreated, the gouged-out depressions were filled with melting ice water. Plants, animals and then man began to creep over the once frozen land and inhabit it. For centuries, prehistoric men and great tribes of the North American Indians roamed the shores of the inland lakes—the Eries, Iroquois, Hurons. Then came the paleface, pushing the Indians back and taking over the land with their forceful weapons and tools.

Lake Erie was the last of the Great Lakes to be discovered by the Europeans. Louis Jolliet found it in 1669 while making his way around hostile Iroquois territory. Soon the Lakes were used as trade routes for trappers, voyagers and settlers. Construction of the Erie Canal in 1819 brought streams of European immigrants, some of whom sailed across the Lake to areas that were to become Michigan, Wisconsin and Minnesota, while others stopped to strip the dense forests, till the land and set up industries.

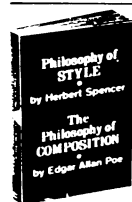
Rich coal fields of the Ohio Valley were unearthed, and the iron ranges of the upper Lakes were mined. Steel industries began to crop up along the Lake, spewing soot into the air and wastes into the streams.

The Lake became a busy thriving highway for traffic between New England and the growing west, and gradually the concentrations of people and industry grew to its present state. Experts estimate that the 10 million people of the Lake area will be doubled in 50 years.

Perhaps by that time American ingenuity and drive will be handling the massive problems in massive manners, and strict regulations and controls will be doctoring the failing Lake back to a semblance of its former health and beauty.

(Cover photograph by Federal Water Pollution Control Administration.)

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