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**RESOURCES & ENVIRONMENT**


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movement through a young forester named Aldo Leopold (1913–1948), founder of the American profession of wildlife management. In *A Sand County Almanac* (1949), Leopold expounded the notion that man's sense of right and wrong has evolved historically to include larger and larger communities: from self to family, to tribe, nation, race, and all mankind; then on to mammals, all animals and plants, all life. Environmental ethics, which recognizes the rights of nonhuman life and of the nonliving environment, represents the highest level of ethics.

Nash speculates that primitive man may have possessed such an extended ethic but lost it under the pressures of technological development. Today, he adds, thanks to the decline of some natural resources and a growing understanding of ecological reality, we may be groping our way back.

### *The Future of Oil Shale*

"Oil Shale: Prospects on the Upswing . . . Again" by Thomas H. Maugh II, in *Science* (Dec. 9, 1977), 1515 Massachusetts Ave., N.W., Washington, D.C. 20005.

The United States in the 1970s has become reliant on high-priced foreign sources of petroleum. According to Maugh, a *Science* staff writer, this combination of inelastic demand and rising prices has made the development of domestic oil shale economically feasible.

Oil shale—oil locked tightly in solid shale formations—has been touted before as a solution to America's energy crisis, but Maugh believes large-scale domestic production may soon begin in earnest. Techniques for underground conversion of oil shale into crude oil have been improved; federal tax incentives have increased; and as the price of imported oil rises, the relative cost of oil shale conversion becomes less prohibitive.

Deterrants and uncertainties remain, Maugh notes. Shale oil contains high concentrations of nitrogen, sulfur and paraffin; refining is expensive. A slowdown in federal subsidies, a rise in inflation, or a drop in the price of imported oil could doom the prospects for oil shale. But the oil industry is clearly interested. Within a 200-kilometer radius of the juncture of Utah, Colorado, and Wyoming, is the equivalent of 2 trillion barrels of shale oil—50 times the total U.S. petroleum reserves.

### *Water, Water, Everywhere*

"Drinkable, But . . ." by Frances S. Sterrett, in *Environment* (Dec. 1977), P.O. Box 3066, St. Louis, Mo. 63130.

Despite general progress on environmental quality in the United States, researchers have yet to determine the long-term physical effects of the 300-odd organic and inorganic chemicals found in America's local water supplies.

According to Sterrett, a Hofstra University chemist, scientists face two major obstacles: the sheer scope of the necessary research and the