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**RESOURCES & ENVIRONMENT**


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grams around the world to a standstill. So write Lovins, British representative of Friends of the Earth; his wife, a lawyer; and Ross, a former California energy official.

Electricity is the only practical form of energy that nuclear power will yield in the foreseeable future, the authors argue. But only 10 percent of the world's oil is so used. The rest goes to make petrochemicals, fuel vehicles, and heat homes and factories. Replacing the West's oil-fired electric plants with nuclear reactors in 1975 would have cut oil use only 12 percent, claim the authors. And the annual growth of electricity demand is slowing (down to 2.9 percent in the United States since 1974); overcapacity will probably hit 43 percent this year. In 1979, the United States reduced by 16 percent the amount of oil burned to make electricity, even as nuclear output fell 8 percent.

The authors contend that nuclear power is also pricing itself out of the energy market. From 1971 to 1978, capital costs per kilowatt rose more than twice as fast for nuclear as for coal plants. Nuclear-generated electricity is already 50 percent more expensive than coal-generated electricity. Managing waste, decommissioning plants, and cleaning up radioactive spills from uranium mining have added billions to nuclear energy's price tag.

As a result, the world is already "denuclearizing." Utility companies in the United States, West Germany, Italy, and Sweden have informally stopped ordering new reactors. And interest has slackened noticeably in once pronuclear Britain, Japan, and Canada, the authors report. Since 1973, worldwide projections of nuclear power output for the year 2000 have fallen five-fold. Third World countries such as Iran and Brazil have sharply cut back ambitious nuclear programs. Even the USSR, which has given plant construction high priority, achieved only one-third of its nuclear power generation goals for the 1970s.

### *Drought on the Prairie*

"Ancient Climes on the Great Plains" by Reid A. Bryson, in *Natural History* (June 1980), American Museum of Natural History, Central Park West at 79th St., New York, N.Y. 10024.

The pioneers who reached the Great Plains in the 19th century marvelled at the sea of "stirrup-high" grass that fed millions of buffalo. But what they saw was only a "snapshot" from North America's volatile climatic history, writes Bryson, a University of Wisconsin climatologist.

Eight hundred years ago, the prairies were dotted with woodlands. The Plains Indians lived in permanent villages, grew corn, and chased deer as well as bison. Then, a 200-year-long drought set in during the 13th century. Wind-blown dust covered the northern plains, and the farmers abandoned their settlements. They were gradually replaced by nomadic hunters of Athabaskan stock who moved down from Canada. Drought struck again on a smaller scale during the 1850s, reducing

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*Changing winds  
have brought  
periodic droughts  
to the Great  
Plains.*



*Adapted from Natural History.*

rainfall 20 to 30 percent through the end of the century. According to Bryson, the weather would have wiped out three-fourths of the bison had white settlers and sportsmen not slaughtered them first.

Changes in air-stream patterns probably caused both dry spells. Westerly winds from the Pacific Ocean lose their moisture as they travel through three passages of the Cordilleras (the range that includes all the mountains from the Rockies to the Pacific) on their way to the Great Plains. During the summer, they mix with moist tropical air from the south to produce showers and raise humidity. During the winter, dry arctic air prevents this tropical air from reaching the Plains. In the 13th century, writes Bryson, the arctic air mass expanded and dramatically reduced summer rainfall throughout the Great Plains and the Southwest.

These shifts occur periodically, producing droughts of varying duration. During the last 3,600 years, the northern edge of Canada's forests has crept north and south four times within a 200-mile zone as arctic air masses expanded and contracted. Bryson reports that recent rainfall patterns on the Plains closely resemble those of the bone-dry 13th century. His troubling analysis: The American grain belt is either coming out of a very short dry spell or entering a very long one.

### *Energy: The Population Factor*

"The Demographics of Energy" by Reid T. Reynolds, in *American Demographics* (June 1980), Circulation Dept., American Demographics, Inc., P.O. Box 68, Ithaca, N.Y. 14850.

The post-World War II Baby Boom, the shrinking family, the growth of the Sunbelt—all are likely to affect America's demand for energy through the end of the century, reports Reynolds, former senior editor