

depend in the long run on using modern science to fashion a style of agriculture suitable for each country's needs. Equally important are the terms of trade on which agricultural commodities are exchanged. Many developed countries have set up tariff barriers to protect the income of their own farmers. As a result the share of developing countries in world agricultural trade has declined steadily since 1955. But advanced countries also suffer. The United States could export considerably more food to Europe if

in the forthcoming round of GATT talks the Common Market countries can be persuaded to lower their tariffs against American agriculture. Failure to win such a reduction could leave American farmers with vast unsalable surpluses on their hands.

The high prices and alarming shortages of the last 2 years probably do not reflect any fundamental change in the world food economy. What has changed is people's attitudes. Developing countries have begun to realize the desirability of a healthy indigenous

agriculture. Congress has legislated a more rational agricultural policy in the form of an act that guarantees minimum prices for crops instead of paying farmers not to grow them. Serious attention is being given in many countries (although not by the USDA) to the proposal by the Food and Agriculture Organization for a world system of grain reserves. The new sense of urgency may at least lead to arrangements that buy some extra time to keep world food production ahead of population growth.—NICHOLAS WADE

Environment: A Lesson for the People of Plenty

Environmentalists are now asking what gains and losses for the cause of environmental quality may result from the energy crisis. That there will be losses, at least in the near term, is clear enough. More encouraging, if less obvious, is the possibility that persistent energy shortages will make for desirable changes in the nation's social and economic development, including some wholesome changes in life-styles. Here, the essential point is that a crisis is perhaps necessary to teach the body politic that the conservation of energy and the attainment of environmental quality are complementary goals, both demanding that resources be used with care and restraint.

Already, the energy shortage has led to steps toward some relaxation of hard-won standards and procedures for environmental protection. The Senate and House have passed bills that would allow the Environmental Protection Agency (EPA) to suspend clean air standards temporarily in situations where a power plant must switch from low-sulphur oil to high-sulphur coal. Even before the Arab oil boycott, Congress had moved to exempt the Trans-Alaska Pipeline project from any further court challenge under the National Environmental Policy Act (NEPA).

Proposals to authorize still other exemptions from NEPA are being discussed, and there is every chance that some will find favor with Congress. Certainly Congress will be under strong pressure not to sit still for suits brought under NEPA which would delay development of shale oil or offshore oil and

gas reserves. One important test of the effect of the energy crisis on environmental protection efforts will come early next year when the House Interior Committee resumes work on legislation for the regulation of strip mining (in October the Senate passed a strip-mine bill containing some provisions that were strongly opposed by the coal industry).

Yet, in terms of the public good, any temporary setback in the passage or implementation of environmental protection laws caused by the energy crisis could be easily offset if this crisis brings most Americans to see the necessity of changing their profligate ways. That profligacy has its roots deep in the national history.

In the United States during its first two centuries, the people have had both a dedication to individual freedom and the opportunity to develop the immense resources of a virgin land of continental size. Furthermore, from the Industrial Revolution, which was just beginning in Europe at the time the United States was founded, came the technology allowing the development of those resources on a scale and with an intensity never before dreamed of.

The "frontier" in the American experience was not only the advancing edge of western settlement but also the advancing edge of an industrial technology which, especially in this century, has produced consumer goods at relatively low cost and in great profusion and variety. Americans became the "people of plenty," as they have been described in a provocative, if little-known, book first published nearly 20

years ago by an historian who went beyond the thesis of Frederick Jackson Turner that the frontier experience was the critical influence in shaping the American character.* Indeed, such was the abundance of this new age that the development of modern advertising was necessary to make people want what they often did not need and to make consumption virtually an end in itself.

The United States' extraordinarily high consumption of energy, nearly 400 million BTU's per capita in 1968, clearly indicates how dependent Americans have become, even when compared to the peoples of other rich and technologically advanced countries, on cheap, plentiful energy. Only in Canada has the per capita consumption of energy even approached the level found in the United States. In none of the European countries do people consume even half as much energy as Americans.

Appliances such as home air conditioners, dishwashers, clothes dryers, and freezers, which were luxuries in the 1950's, are now used in about a third to nearly half of the homes in the United States. Some new appliances, such as frost-free refrigerators, use more than twice as much electricity as older ones. For an example of extravagant commercial use of power, one need look no farther than some of the new indoor sports arenas. The Houston Astrodome during 1971 used enough electricity for more than 8000 homes.

But it is particularly in the use of

* D. M. Potter, *People of Plenty: Economic Abundance and the American Character* (Univ. of Chicago Press, Chicago, 1954).

the private automobile that the people of plenty have been truly reveling in extravagance. The symbol of economic sufficiency has changed in less than two generations from a chicken in every pot to two automobiles under every carport. In 1970 there were more than 82 million passenger cars on the road, and, in that one year alone, almost \$88.5 billion was spent on the purchase, operation, and maintenance of automobiles. Today, the automobile industry accounts for 13 percent of the gross national product, and one out of every six jobs depends on it. Better than half of the 4 million barrels of petroleum consumed by the automobile daily during 1971 was used in urban regions, which could have been served by efficient systems of public mass transportation if the automobile had not been king.

Moreover, an entire urban culture has been built around the automobile, as can be seen in cities like Houston, where rings of suburbs surround the business district. A conspicuous and generally blighting feature of most cities, large and small, is the strip development that stretches for miles and miles along major roads, with one city's shopping centers, used-car lots, and hamburger drive-ins usually being indistinguishable from another's.

The harmful environmental effects often associated with the voracious consumption of fuel and other resources led to the environmental movement, which first became highly visible as a political force at the close of the 1960's. As the result of this movement, Congress enacted measures such as NEPA and the Clean Air Act and the Water Quality Act, these latter two measures having both been passed in 1970.

Some environmentalists, perhaps many, recognized from the outset that environmental quality could not be achieved unless people adopted more modest habits of personal consumption and unless they accepted greater governmental regulation in such matters as land use and transportation. For instance, as the Clean Air Act moved toward passage, some of its sponsors tried to underscore the fact that effective implementation of this measure could very well mean that the amount of automobile traffic in places such as downtown Los Angeles might have to be drastically reduced. Similarly, sponsors of water pollution legislation were becoming increasingly aware that many waters could not be cleaned up or pro-

tected without land use controls to prevent development and new sources of effluents from exceeding the capacity of waste-control facilities.

For the public as a whole, however, the environmental movement seemed to represent nothing more than a kind of generalized concern about "pollution." Everyone could agree that pollution was bad and had to be combatted, and, for this reason, some bold and far-reaching environmental measures breezed through the House and Senate with little opposition and sometimes with little discussion. But this did not mean that a majority of the American people, or a majority of their representatives in Congress, were in fact ready to accept the enforcement of measures that would demand substantial changes in their habits or lifestyles.

That there was indeed a major gap between what some of the new pollution control laws required and what the public was willing to support became apparent last summer when EPA announced its first urban transportation control plans. The plans, considered necessary if Los Angeles, Denver, Washington, and other major cities were to meet clean air standards, were generally resisted and denounced. They were taken to be quite radical and, viewed against the freewheeling habits of the American motorist, they were radical.

The plan for Los Angeles, for example, contemplated such measures as parking taxes, gasoline rationing, and even an eventual ban on all automobile traffic in parts of the city. As one EPA official recently observed, people just could not believe that such drastic steps were necessary.

"Wrenching Changes" to Occur

Now, however, the energy crisis has pointed up the fact that the time for reform is at hand. In a recent interview with *Science*, John R. Quarles, EPA's deputy administrator, put it this way: "Both the energy shortage and the environmental crisis are forcing in upon American society and making us recognize some constraints on unlimited material growth and unlimited economic activity, and this is going to force some wrenching changes. Already, there have been some changes. As environmentalists we would have been hard pressed to slow down the driving public to 50 or 55 miles per hour, but that has happened."

The combination of environmental

upsets and energy shortages work to create a different kind of mental outlook, Quarles says. "When it happened that Lake Erie went 'dead,' that the Cuyahoga River caught on fire, that Washington experienced a series of air pollution alerts, and that we are running out of gasoline and home heating fuel, these events implant themselves in the subconsciousness of the American mentality," he said. "They lay the foundation on which changes can be made in governmental decisions that affect the way people lead their daily lives. Changes regarded as wholly unacceptable until these things begin pushing in on us."

The new chairman of the Council on Environmental Quality, Russell W. Peterson, shares Quarles' view that the energy crisis will help make conservationists of the American people in the profoundest sense of that term. Peterson believes that the United States and other technologically advanced countries now must place increasing emphasis on "resource-lean" activities in their further economic and social development. Such activities, he says, would include teaching, counseling, writing, communications, care for the young and the aged, medical and mental health care, arts and handicrafts, many forms of research and development, and the involvement of citizens in politics and public affairs.

Before serving a term as Governor of Delaware, Peterson was director of development in du Pont's R & D division and he led the research that produced the Dacron polyester fiber. This conversion of a ranking industrial chemist to a philosophy stressing quiet, humanistic endeavors is itself worth noting as a sign of changing times and changing values.

Yet, while the energy shortage argues strongly for greater care, planning, and restraint in the use of resources, it does not of course necessarily follow that people will behave accordingly. Quarles says it well: "We can face up to the bitter tasks of reordering our national economy and imposing discipline over our patterns of personal consumption. Or we can maintain our pursuit of progress and, as in some wild form of pyramid game, continue with ever-more-frantic efforts to keep one jump ahead of the ultimate collapse." The energy crisis will prove a blessing if, from this crisis, Americans understand the choice facing them.

—LUTHER J. CARTER