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both require staging bases to support the expeditions.

What made continuous Antarctic exploration feasible was the development of the airplane; 1942 was the last year in which no humans "wintered over" in Antarctica.

Needed, Mark contends, is a similar "enabling technology" for the moon: an Earth-orbiting space station to serve as a staging base and an "orbital transfer vehicle not burdened by the equipment needed to re-enter the Earth's atmosphere." Today's space shuttle program could produce both by 1990. And Mark believes that the first small U.S. lunar base could be in place by 2000.

His scenario follows closely the Antarctic timetable—30 years between the "dash to the pole" and the establishment of regular bases on the continent. And just as Antarctica yielded few of its mysteries before the 1957 International Geophysical Year, extensive lunar exploration may not begin for roughly another 15 years. Today, 70 years after Amundsen reached the South Pole, commercial exploitation of Antarctica's mineral resources (e.g., oil and natural gas) is about to begin; the first cargo from the moon should arrive after a similar interval.

Such a timetable is not only practical, Mark believes, but probably too conservative. The moon, after all, has fired more imaginations than has the South Pole. And, for the United States, the stakes, military and scientific, are far higher than they were in the frozen continent.

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A Requiem For Conservation

"The Market Needs Help: The Disappointing Record of Home Energy Conservation" by Bernard J. Frieden and Kermit Baker, in *Journal of Policy Analysis and Management* (Spring 1983), John Wiley & Sons, 605 Third Ave., New York, N.Y. 10158.

During the late 1970s, Washington made decontrol of oil and gas prices, rather than active government intervention, the chief U.S. strategy to spur home energy conservation. The results have been largely disappointing.

Between 1972 and 1980, energy consumption per household dropped by only 13 percent, despite spectacular price hikes for heating oil (421 percent), natural gas (205 percent), and electricity (118 percent). In fact, the nation's aggregate energy use rose due to an increase in the number of households, say Frieden and Baker, professor and student, respectively, of urban planning at M.I.T.

Even with tax credits of up to \$300, few consumers during the decade made energy-saving investments in insulation, storm windows, and the like. Most simply turned down their thermostats or used appliances

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more sparingly—and the poor made a disproportionate share of such sacrifices. A 1979 U.S. Energy Department study revealed that no energy-saving measures at all had been adopted by 10 percent of those surveyed. Sixty percent of the households queried had *invested* nothing in conservation. As for the rest, the average outlay per household was only \$266; those most likely to invest were young and relatively affluent.

The lesson: Higher energy prices spur less affluent families to reduce their living standards, while only those who can easily afford it make lasting improvements. Renters, one-third of U.S. families, have little reason to spend anything on conservation. And during 1978 and 1979, some 600,000 households simply converted from oil to gas heat, say the authors, a step that "saved money without saving energy."

Conservation at home will never yield the big energy savings its most fervent advocates envisioned during the 1970s, the authors assert. But without active promotion by Washington—heftier financial incentives, better technical advice, improvements in notoriously inaccurate home energy "audits"—it will produce next to nothing in terms of greater U.S. "energy independence."

Natural Gas

"A Nearly Perfect Fuel" by Barry Commoner, in *The New Yorker* (May 2, 1983), 25 West 43rd St., New York, N.Y. 10036.

A chaotic system of production and distribution is depriving the United States of the full benefits of "a nearly perfect fuel."

Methane, the principle constituent of natural gas, is clean, plentiful, easily transportable. But Commoner, a Queens College biologist and third-party presidential candidate in 1980, asserts that U.S. natural gas supplies have been consistently mismanaged. More than half the nation's reserves are in the hands of oil companies, which are more interested in selling oil. Congress complicated matters in 1978 by voting to deregulate gradually natural gas prices within seven years. For the interim, it created 28 different categories of gas, each with its own price. The result: In 1981, some gas could be had for 19.7 cents per thousand cubic feet and some for more than \$6.

Consumers, meanwhile, have reaped few benefits because pipeline companies are locked into contracts that prevent them from buying the cheapest gas.

Congress has erred before. Based on alarmingly low estimates of remaining U.S. natural gas reserves, it passed a law in 1978 requiring many large factories and utilities using gas to switch to coal. Today, gas is so plentiful that wells are being capped.

A rock-bottom estimate of current reserves is nine hundred trillion cubic feet—a 45-year supply. But when natural gas from such unconventional sources as deep wells (beyond 15,000 feet), "geopressed" methane trapped in brine far below ground, and gas locked in densely