

global warming may be occurring, "catastrophic predictions are unsupported by the scientific evidence." It will take years, perhaps a decade or more, before a definite climatic trend can be established with satellite data.

In the view of many scientists and most agricultural specialists, greenhouse warming may well be beneficial if it occurs, since crops need both warmth and carbon dioxide to flourish. Global warming would be especially welcome if, as some scientists expect, the current interglacial period, which began about 11,000 years ago, comes to an end relatively soon and the Earth enters a new ice age.

But what if the environmentalist doomsayers, despite the current lack of evidence, are right?

"Delaying action," Singer maintains, "is not an invitation to disaster, as [is] often claimed." Calculations by University of Illinois atmospheric scientist Michael Schlesinger, Singer says, "clearly demonstrate that postponing controls on carbon dioxide for even a decade would have no noticeable impact on the next century's temperature trends." By contrast, drastic steps to curtail carbon dioxide emissions, as an SEPP statement signed by more than 50 atmospheric scientists warned, could have "catastrophic" economic effects, "with the most severe consequences falling upon developing countries and the poor." That such steps were not taken in Rio, it appears, may not have been so terrible a failure after all.

## *The Pill's Precursors*

"Oral Contraceptives in Ancient and Medieval Times" by John M. Riddle and J. Worth Estes, in *American Scientist* (May-June 1992), Sigma Xi, The Scientific Research Soc., P.O. Box 13975, Research Triangle Park, N.C. 27709.

Historians puzzling over sudden population declines in ancient and medieval times usually conclude that infanticide or other nonmedicinal methods of family planning were involved. But Riddle and Estes, historians of pharmacology at North Carolina State University and Boston University School of Medicine, respectively, contend that "the archeological and written record is sprinkled with evidence that drugs were a trusted way to prevent conception or induce early-term abortions."

Ancient medical authorities regularly prescribed antifertility preparations made from plant secretions. The sap from silphion, a plant grown exclusively in the hills near Cyrene, an ancient Greek city-state in North Africa, may have been the ancient world's most effective antifertility drug—it was finally harvested to extinction. As professional medicine developed during the Middle Ages, antifertility lore came to be almost exclusively the property of midwives; in time, much of it was lost.

Western scientists have long regarded the ancient antifertility prescriptions as belonging to "the realm of magic and superstition." But in 1960, chemists D. B. Bounds and G. S. Pope,

following up on a report that Thai women took an extract of the root of *Pueraria mirifica* to induce abortion, isolated an estrogenic compound from the plant. (It is by keeping estrogen concentrations in the blood at a high level that modern oral contraceptives work.) Subsequent reports in Indian and Chinese journals provided further evidence that crude traditional antifertility drugs made from indigenous plants were effective.

"It is possible . . . that women of ancient and medieval times were fooled by physicians, witch doctors, herbalists, witches, midwives, village wise persons and charlatan medicine-show salesmen into taking birth-control potions that did not work," Riddle and Estes write. If so, women were fooled for a very long time. "We've so many sure-fire drugs for inducing sterility!," said the Roman satirist Juvenal—and six centuries later, priests were asking women in confession if they had drunk any *maleficium* (herbs or other agents) to prevent conception. Modern scholars, in Riddle and Estes's view, have too quickly dismissed the possibility that the ancients' antifertility preparations actually worked.

## *The R&D Deficit*

"Redesigning Research" by Elizabeth Corcoran, in *Scientific American* (June 1992), 415 Madison Ave., New York, N.Y. 10017.

U.S. companies long ago proved their excellence in basic scientific and technological re-

search. Back in the 1950s, they often advertised their scientific prowess. The Radio Corporation

of America (RCA), for example, declared in a 1952 ad that its "years of research and engineering" were opening the way for television service throughout the land. Bell Telephone Laboratories, in another ad, hailed the impending introduction of its "tiny amplifying device" (the transistor) to the world of telephone communications. But such proud corporate refrains are not being sung so loudly these days, reports *Scientific American* staff writer Elizabeth Corcoran.

"Even prominent laboratories have been sold or shuttered," she writes. "RCA's research center, where liquid-crystal displays were invented, was simply given away." Overall, the growth of investment in U.S. industrial research and development (R&D) has slowed in recent years. Investment grew by only 1.5 percent annually in 1985-90, compared with almost seven percent in 1975-85.

Companies now confront a changed economic environment. "Tax policies, demands for quick financial returns and takeover threats have discouraged long-term strategies based on investing in research," Corcoran explains.

But if corporate R&D has fallen on hard times, it is partly because of its own past (economic) performance. Fewer than half the companies that gave birth to an important invention in the last few decades made much money

from it, according to Charles H. Ferguson, an industry analyst at the Massachusetts Institute of Technology. "From the window of the corporate finance office," Elizabeth Corcoran notes, "the research center has looked more like a resort for misplaced academics than a business division. Scientists often seem motivated by obscure, intensely personal goals rather than by company goals."

But the scientists are not the only culprits. Although the first color printer was built at Xerox's Webster Research Center, near Rochester, N.Y., Xerox's competitors were more successful at exploiting the new technology. At Xerox, IBM, and a few other U.S. firms, corporate leaders have come to perceive the research "problem" as a matter of managing innovation, Corcoran reports. "If an invention is too far outside the company's agenda to exploit, both research and management must ask themselves why research wandered so far afield. When relevant inventions are not translated into commercial innovations, management must bear some of the blame."

The redesign of corporate R&D, however, can be carried only so far. There must be room for researchers to engage in "longer-term thinking," a Xerox manager told Corcoran, or the "research" becomes so narrowly focused as to be of almost no consequence.

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## ARTS & LETTERS

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### *Unforgivable?*

"Nat King Cole" by Terry Teachout, in *The American Scholar* (Summer 1992), 1811 Q St. N.W., Washington, D.C. 20009.

Singer Nat King Cole's 1951 hit, "Unforgettable," transmuted by modern recording technology 40 years later into a duet with his daughter Natalie, soared to the top of the pop charts last year. Few of his new fans knew that Cole (1919-65), one of America's most successful popular singers in the 1950s and '60s, had before then been an outstanding jazz pianist. Nat King Cole, said *New Yorker* jazz critic Whitney Balliett, "belonged with Earl Hines and Art Tatum and Teddy Wilson, from all of whom he learned, and if he had concentrated on playing rather than on singing he might well have outclassed them all." That he did not concentrate on his piano playing in the postwar decades was, in the eyes of many jazz critics and historians, unforgivable, a result of his having "sold out." Cole signed with Capitol Records in 1943, and Capitol's greedy executives, according to

the indictment, soon had him singing saccharine ballads and working with studio orchestras. Cole "capitulated to the evils of the capitalist system," as one recent critic put it, and so his great potential as an artist went unrealized. That is the legend of Nat King Cole, but it fails to stand up to close scrutiny, asserts Teachout, a writer who is working on a biography of H. L. Mencken.

"To begin with," Teachout says, "Nat Cole was a singer of real stature, Frank Sinatra's only rival as the most distinguished popular vocalist of the '50s." In addition, Cole began singing in public not in 1943 but in 1937, shortly after his King Cole Trio was formed. Finally, Teachout says, there is the evidence of the 349 tracks from 1943-61 in the recently issued *Complete Capitol Recordings of the Nat King Cole Trio*. "Some are jazz oriented, others