

Most of the research on herbal medicines has been done by companies in Europe (particularly Germany). The reason, Rawls explains, is that it is far less costly to get a drug approved for use there than in the United States. "Because herbal medicines are usually not patentable, the profit margin on them is often much lower than for synthetic drugs," she notes.

In the United States, herbal remedies are generally sold in so-called natural food stores rather than drugstores. Extracts from the echinacea plant, used to prevent or treat colds and influenza by stimulating the immune system, are the best-selling herbal medicines here. Garlic is also widely used for medical purposes, such as the reduction of cholesterol levels and blood pressure. Many clinical studies indicate that garlic does cut cholesterol, Rawls notes, though just how it works is unclear.

Many other "alternative" therapies, from folk remedies to bioelectromagnetics, have

been getting increased attention in recent years. Cooper, director of the Health Policy Institute at the Medical College of Wisconsin in Milwaukee, and Stoflet, a research assistant, report that in 1990 Americans spent \$13.5 billion on alternative therapies—equivalent to about half the out-of-pocket sum spent on physician services. Interest in such therapies is growing rapidly. The authors project that the number of chiropractors, now about 50,000, will double by 2010. Also on the horizon: a tripling in the ranks of today's 1,800 naturopaths and 7,200 practitioners of acupuncture and "oriental" medicine.

There are still plenty of skeptics, but Cooper and Stoflet say that "many physicians" now use acupuncture, herbal medicine, and other alternative measures. It no longer makes sense, the authors conclude, to discuss the future of America's health care system without giving consideration to medicine beyond the mainstream.

Sperm Shortage?

"Toxic Shock," in *The Economist* (Aug. 3, 1996), 27 St. James's St., London SW1A 1HG.

In the Great Lakes, female gulls have been found nesting with other females, having apparently given up on the males. In a Florida lake contaminated by pesticides, alligators have abnormally small penises. These and other strange incidents—along with studies claiming to show dramatic declines in human sperm counts and increases in testicular cancer—have given rise, the *Economist* reports, to a new scare: the fear that artificial chemicals are wreaking havoc with the reproductive systems of man and other animals.

"Many studies do indeed show sperm counts to be falling," the British news-magazine says. A 1992 review in the *British Medical Journal* of 61 such studies, involving a total of 15,000 men from around the world, concluded that the average sperm count had dropped by 42 percent since 1940—from 113 million sperm per milliliter of semen to 66 million. Suspicion has been cast on a number of synthetic chemicals—including the insecticide DDT (which is now banned in many developed countries) and phthalates (widely used to make plastics softer)—that are believed to mimic estrogens, the female hormones.

"But the evidence looks messier on closer inspection," the *Economist* observes. One recent study showed slight *rises* in the sperm counts of men in various American cities since 1970. The fact that sperm counts, for reasons unknown, often vary hugely from region to region may explain the decline found in the *British Medical Journal* survey, since a large proportion of its early samples were taken from New York City, where men in the recent study had by far the highest sperm counts, while later samples were from outside the United States.

Even if "gender-bending" is going on, man-made chemicals may not be responsible. Many naturally occurring chemicals also can act as hormone mimics. In a study published this year, the skeptical scientists of the European Science and Environment Forum say the estrogenic effects in the human diet from naturally occurring chemicals far outweigh those of artificial chemicals, and no solid evidence exists that either sort poses any risk to human health. Other than chemicals, some possible "gender-bending" suspects are stress, global warming, and even, according to one recent study, tight underwear.

An Intelligible Universe

A particle physicist and ordained Anglican priest, John Polkinghorne, president of Queens' College, University of Cambridge, writes in *Commonweal* (Aug. 16, 1996) about a very curious coincidence.

When we use mathematics as a key to unlock the secrets of the universe, something very peculiar is happening. Mathematics is the free exploration of the human mind. Our mathematical friends sit in their studies, and out of their heads they dream up the beautiful patterns of mathematics. Inexplicably, some of the most beautiful patterns thought up by the mathematicians are found actually to occur in the structure of the physical world. In other words, there is some deep-seated relationship between the reason within (the rationality of our minds—in this case mathematics) and the reason without (the rational order and structure of the physical world around us). The two fit together like a pair of gloves. That is a rather significant fact about the world, or so thought Einstein. Einstein once said, "The only incomprehensible thing about the universe is that it is comprehensible." Why, we should ask, are our minds so perfectly shaped to understand the deep patterns of the world around us? . . .

Why do the reason within and the reason without fit together at a deep level? Religious belief provides an entirely rational and entirely satisfying explanation of that fact. It says that the reason within and the reason without have a common origin in that deeper rationality which is the reason of the Creator, whose will is the ground of both my mental and my physical experience. Theology has the power to answer a question, namely the intelligibility of the world, that arises from science but goes beyond science's ability to answer. Remember, science simply assumes the intelligibility of the world. Theology can take that striking fact and make it profoundly comprehensible.

Taking the Measure of Deep Ecology

"There's No Going Back to Nature" by Walter Truett Anderson, in *Mother Jones* (Sept.-Oct. 1996), 731 Market St., Ste. 600, San Francisco, Calif. 94103.

Deep ecology, bioregionalism, ecofeminism, neo-Luddism, and other forms of "back-to-nature" environmentalism are all the rage in some precincts of the Left today. Passionately opposed to "anthropocentric" (human-centered) thought and action, thinkers such as Kirkpatrick Sale hate technology, love the primitive, and dream of a world in which people stay put in their own bioregions, living and working alongside native plants and animals. A former editor of *Earth First! Journal* wrote that he would like "to see human beings live much more the way they did 15,000 years ago" (i.e. hunting and gathering).

Popular as such notions may be on college campuses, writes Anderson, author of *Evolution Isn't What It Used to Be* (1996), they are almost completely irrelevant to "most of the valuable environmental work that is being done now and will be done in

the future." The earth, he points out, "is becoming more densely populated, not less; more urbanized, not less; more technological, not less. Most important of all, human beings are exerting ever more—not less—power in nature, having a greater impact on ecosystems."

Even the most benign human interventions reshape nature, Anderson argues. "People are rebuilding rivers and streams and ponds and beaches, reconstructing forests and prairies and deserts, sometimes coaxing populations of near-extinct species back to a sustainable size." But restorations can never be perfect replicas of past ecosystems. Inevitably, the restored ecosystem lacks certain species that have become extinct and includes some bird, insect, or plant that has moved in and made itself at home.

Technology, the nemesis of radical envi-