

greatest artist-engineer of all time, and a poignant reminder of the heroic age that preceded the ethereal sway of cyberspace, an age when men labored, Prometheus-like, against the corporeal constraints of heaven and nature.

—Peter Quinn

**SOMETHING NEW UNDER
THE SUN:**

*An Environmental History
of the Twentieth-Century World.*

By J. R. McNeill. Norton. 421 pp.
\$29.95

In my youth in the 1950s, the Chesapeake Bay teemed with life. In summer we swam and fished in its clear, brackish waters. In winter we watched in awe as migrating ducks filled the evening sky and poured into the bay. Today, though, the ducks are nearly gone, and the brown waters are hostile to eelgrass, blue crabs, oysters, fish, and humans. Yet even in the 1950s, people reminisced about an earlier golden age when there had been far more ducks.

Do such anecdotes represent yearning for an idealized past or genuine and lasting environmental decline? McNeill, a professor of history at Georgetown University and the author of *The Mountains of the Mediterranean World: An Environmental History* (1992), would choose the latter. In this ambitious and exhaustively researched book (the bibliography lists close to a thousand sources), he argues that the 20th century spawned environmental changes that, though unintended, were extraordinary in scope and intensity.

Erosion, smog, extinctions, shrinking tropical forests, ozone holes, birds suffocating in midair over Mexico City—McNeill has plenty to work with. Individual culprits stalk his landscape, including the inventor of the harpoon cannon and the Shakespeare fanatic who released 160 starlings in New York City. But the real villains, as he discusses in the last quarter of the book, are more complex: urbanization, migration, population growth, globalization, and shifts in preferred fuels and technologies, among others.

His account is not unremittingly gloomy. He notes positive developments, such as smog abatement, forest regeneration, and the return of the sensitive salmon to formerly polluted waters. He acknowledges the upside of many environmental changes—eliminating coastal mangroves, for instance, benefits rice farming—and he generally refrains from character-

izing a change as bad unless it amounts to a disaster for all life forms. But his neutrality sometimes lapses, as when he relegates rival explanations to footnotes or uses *toxic* eight times in two pages. He may have found it impossible to do otherwise after concluding that the growth imperative responsible for so much environmental degradation is, like the European rabbit and the water hyacinth, all-consuming and all-destructive.

—Shepard Krech III

THE TRIPLE HELIX.

By Richard Lewontin. Harvard Univ. Press. 136 pp. \$22.95

At least since Descartes described the visible world as “merely a machine in which there was nothing at all to consider except the shapes and motions of its parts,” metaphor has played a central role in scientific understanding. We think of our brains as computers, or we refer to the human genome as the master blueprint for the species. Lewontin, a professor of evolution and zoology at Harvard University, contends that metaphors can mislead as well as enlighten. While conceding that scientific explanations “necessarily involve the use of metaphorical language,” he argues that many common terms have outlived their usefulness, especially in the realm of evolution.

To begin with, he finds fault with use of the word *development* to describe how an organism changes over time. In photography, “the image is already immanent in the exposed film, and the process of development simply makes this latent image apparent.” Some biologists believe that organisms change in a similarly preordained fashion: Genes determine the outcome, while environment, like photographic developer, provides nothing more than “a set of enabling conditions that allow the genes to express themselves.” Scientists who discount the role of environment in this fashion, he contends, are guilty of “bad biology.”

Darwin’s notion of *adaptation* does account for the influence of environment, but Lewontin believes that it too constitutes “an impediment to a real understanding of evolutionary processes.” The term implies that the organism adapts to a fixed world—that the organism is the variable and the environment is the constant—whereas the two actually affect each other. Humans, for example, produce a “microclimate”: a layer of higher-den-