No Time to Lose

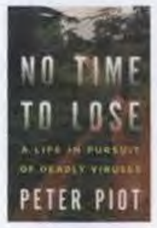
Peter Piot

When smallpox was eradicated in the 1970s, many people thought it was "game over" for infectious diseases as global threats. How wrong they were.

Peter Piot, then a young physician-researcher, was in the right place at the right time, if you can call it that. Piot was working in Belgium in 1976 when his laboratory received two vials of blood from a victim of a disease outbreak in Africa. They arrived in a thermos, and no one knew they contained a deadly virus.

So the researchers just opened the thermos. "Nowadays it makes me wince just to think of it," Piot writes. "Sure, we were wearing latex gloves [but] no suits or masks of any kind." Piot and the others traced the mystery pathogen back to Yambuku, Zaire, the outbreak's epicenter, and from there tracked its spread. The team named the virus for a nearby river, the Ebola.

Africa would define Piot's career. He shifted his attention to sexually transmitted diseases, and by 1983, when a condition called AIDS was showing up in U.S. gay men, he was back in Zaire. Doctors there had been seeing AIDS-like cases for years, so he gathered blood samples and sent them to the French lab of Luc Montagnier, who had discovered what would be named the HIV virus. When the samples matched, HIV and Africa were forever linked.



Life in the field is more interesting than behind a desk, and the book lags when Piot returns to Europe in the 1990s to become the first director of UNAIDS, the United Nations AIDS agency. But Piot has lived a life less ordinary, and it's presented well. — *Nathan Seppa*

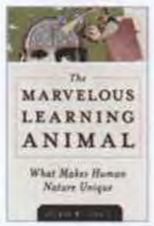
W.W. Norton & Co., 2012, 304 p., $28.95

The Marvelous Learning Animal

Arthur Staats

As the inventor of the time-out procedure for disciplining misbehaving kids, Staats transformed modern parenting. Now he wants to give a time-out to popular biology-based explanations of human behavior. Genes and brains orchestrate bodies, he argues, but don't determine behavior or inner states such as intelligence and cruelty.

Brain activity that characterizes poor readers, for example, often reflects how those individuals have learned to deal with written material, Staats says, not an inherently wayward brain. Misguided reinforcement of children's behavior by parents and teachers results in learning disabilities, emotional disorders and even autism symptoms, in his view.



Staats is a behaviorist who, unlike B.F. Skinner, regards emotions as key targets for shaping behaviors. Millions of years of evolution have yielded people who learn via positive and negative reactions to experiences, Staats argues. Repertoires of conditioned responses, such as learning the meanings of words, provide the foundation for more complex achievements such as writing stories and planning cities. No other animal snowballs knowledge this way.

Many of these ideas are not as radical as Staats seems to think. Biological determinism has ardent critics. Plenty of psychologists study how children and adults learn various tasks, for instance, focusing on the fit between individual characteristics and learning situations. And some anthropologists look back further, arguing that the rise of language a million or more years ago led to complex human cultures.

Sets of conditioned behaviors alone are unlikely to explain creativity and innovation. But Staats' point that scientists need to learn more about learning is a good one. — *Bruce Bower*

Prometheus Books, 2012, 402 p., $27

101 American Geo-Sites You've Gotta See

Albert B. Dickas

This handy guide has plenty of labeled photos and diagrams to help you find geological sites of interest in all 50 states.

Mountain Press, 2012, 250 p., $24

Is American Science in Decline?

Yu Xie and Alexandra A. Killewald

Two sociologists look at fears of falling behind the global competition and find that U.S. research is changing but is still in good health.

Harvard Univ., 2012, 230 p., $45

Gravity

Brian Clegg

A history of attempts to understand the universe's most mysterious force also explores gravity's importance in people's everyday lives.

St. Martin's, 2012, 336 p., $25.99

Gifts of the Crow

John Marzluff and Tony Angell

Tales of crows' amazing feats are complemented by original artwork in this look at the birds' intelligence.

Free Press, 2012, 289 p., $25

Rainy Brain, Sunny Brain

Elaine Fox

An overview of recent research suggests ways to take advantage of the brain's malleability to change patterns of thinking.

Basic Books, 2012, 256 p., $26.99

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Higgs affects inertia, not gravity

In the articles on the Higgs field in the July 28 issue, the Higgs boson was described as giving rise to the mass and therefore the inertia of particles, and the articles said the Higgs causes particles to "resist motion." Newton's first law states that inertia or mass is the property of matter that resists *changes* in motion, whereas drag is the resistance to motion. Can you explain the apparent conflict between your description and Newton's first law?

Sherman S. Steadman, via e-mail

I am confused about this statement in "Behind the Higgs" (*SN: 7/28/12, p. 26*): "With the Higgs field, physicists completed the standard model, which accurately describes the behaviors of all known particles and forces (except gravity)." Elsewhere the articles explain how the Higgs field infuses certain particles with mass. Isn't mass the basis of gravity — massive entities attracting each other?

Sam Henrie, via e-mail

"Resistance to motion" as a description of inertia is imprecise shorthand for "resistance to change in state of motion," as mentioned in "Behind the Higgs": "Such resistance to motion (or more precisely, change in motion) is the very definition of inertia, which in turn is the very definition of mass." Inertial mass is conferred upon particles by the Higgs; according to Einstein's general relativity, inertial mass is indistinguishable from gravitational mass. Einstein also showed, however, that gravitation acts not just on mass but on energy. So even though a photon has no mass, its energy distorts spacetime and its path follows distortions in spacetime. So while the Higgs explains why some subatomic particles described by physics' standard model possess mass, it does not reconcile general relativity with the quantum mechanics that underlies the standard model. —Tom Siegfried

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