



The Gecko's Foot: Bio-inspiration: Engineering New Materials from Nature

By Peter Forbes

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A riveting account of the unexpected relationship between nature and scientific design.

"Study nature, love nature, stay close to nature. It will never fail you." When Frank Lloyd Wright said this, he probably wasn't envisioning self-cleaning surfaces, the photonic crystal, or Velcro. But nature has indeed yielded such inventions for those scientists and engineers who heeded the architect's words.

The cutting-edge science of bio-inspiration gives way to architectural and product designs that mimic intricate mechanisms found in nature. In Peter Forbes's engaging book we discover that the spiny fruits of the cocklebur inspired the hook-and-loop fastener known as Velcro; unfolding leaves, insect wings, and space solar panels share similar origami folding patterns; the self-cleaning leaves of the sacred lotus plant have spawned a new industry of self-cleaning surfaces; and cantilever bridges have much in common with bison spines.

As we continue to study nature, bio-inspiration will transform our lives and force us to look at the world in a new way.

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Editorial Review

From Publishers Weekly

Most of us see a gecko and think of ads for auto insurance, but this little lizard possesses a remarkable ability to climb walls and scamper across ceilings. Until recently, scientists couldn't figure out these Spider-Man-like powers as they dreamed of potential commercial uses. Now, according to British science writer Forbes, researchers have used the electron scanning microscope to crack the mysteries of many plants and animals—including the gecko—by studying them at the nano level. For example, studying the dirt-repellent surface of the lotus—an age-old symbol of purity in Asia, rising spotless out of muddy water—led to the invention of self-cleaning glass. Attempts to spin spider-quality silk for a wide range of purposes, including snagging jets as they land on aircraft carriers, have been less successful (one group used genetic engineering to try to create the basic elements of spider silk in goats' milk). The folds of origami mirror the natural folding process of leaves, which in turn has led a Japanese designer to create a better map: it always folds up correctly. Readers interested in how invention imitates nature, and vice versa, will find much to savor. 69 illus. (May 29)

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From [Booklist](#)

At its inception, nanotechnology consisted of the brute miniaturization of machines; however, in the past decade, it has been branching out, imitating elegant solutions to the challenge of survival that eons of biological evolution have devised. Forbes presents technologists' pure research into nano-anatomy, followed by their applied and, many entrepreneurs hope, commercial mimicry of nature's ingenuity. Some applications are already on the market: self-cleaning paint and glass inspired by the way water balls off a lotus plant. Fabrics are ripe for a nanorevolution, as Forbes guides readers to the possibilities for threads presented by the iridescence of butterflies and the superstrong webs of spiders. As he takes up discrete fields (including self-assembly, flight, and architecture), Forbes acknowledges the ambivalence some feel about atom-size technologies. Reassuring the worried with the potential environmental friendliness of bio-inspired design, Forbes turns in an informative, positive account of the state of the art. *Gilbert Taylor*

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About the Author

Peter Forbes is a translator, science writer, and editor of *Scanning the Century: The Penguin Book of the Twentieth Century in Poetry*. He lives in London.

Users Review

From reader reviews:

Hilda Baker:

The feeling that you get from *The Gecko's Foot: Bio-inspiration: Engineering New Materials from Nature* could be the more deep you searching the information that hide in the words the more you get thinking about reading it. It does not mean that this book is hard to know but *The Gecko's Foot: Bio-inspiration: Engineering New Materials from Nature* giving you thrill feeling of reading. The copy writer conveys their point in specific way that can be understood simply by anyone who read that because the author of this reserve is well-known enough. This kind of book also makes your own vocabulary increase well. Therefore

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