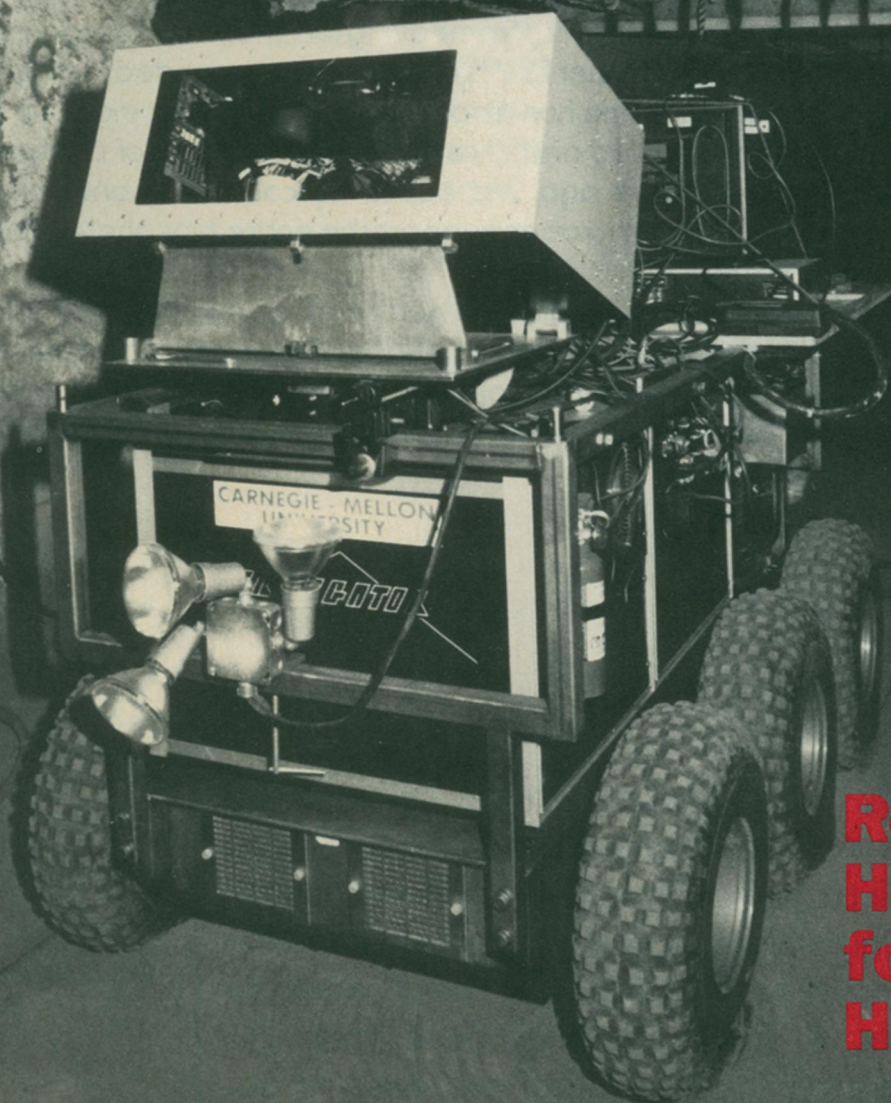


The Weekly Newsmagazine of Science

# SCIENCE NEWS

July 12, 1986  
Vol. 130, No. 2  
Pages 17-32

FIRST  
AID STATION



**Robots:  
Heading  
for  
Hazard**

# MICROCOSMOS

**Four Billion Years of Evolution from our Microbial Ancestors**

**By  
Lynn Margulis  
and  
Dorion Sagan**

Beginning four billion years ago, the authors show how microbes invented all of life's essential chemical systems; all of its rules for living and change. Microbes put oxygen into the atmosphere, they built huge structures of rock that changed the face of the earth, and through symbiosis — the process by which two unlike and even hostile organisms merge to form new life forms — they created us. Far from having left these microorganisms behind on an evolutionary ladder, we — and all other forms of life — are surrounded by them and composed of them. Nine out of ten of the some hundred quadrillion cells that make up the human body are bacteria; they and our so-called animal cells are descendants of the bacteria that swam in primeval seas billions of years ago. Moreover, by constantly and rapidly adapting to environmental conditions, these microbes support the entire biosphere, ultimately affecting every living plant and animal.

Having reduced man to his proper place in nature as an evolutionary afterthought, Margulis and Sagan go on to challenge accepted notions of our past and future. When life is seen as an expanding microcosm, they say, the picture of competition among species and survival of the fittest dissolves before a new view of continual interaction, cohabitation and mutual dependence among life forms.

— from the book

"Microcosmos is nothing less than the saga of the life of the planet. Lynn Margulis and Dorion Sagan have put it all together, literally, in this extraordinary book, which is unlike any treatment of evolution for a general readership that I have encountered before. A fascinating account that we humans should be studying now for clues to our own survival." — from the foreword by Lewis Thomas

Simon and Schuster, 1986, 301 pages,  
8<sup>3</sup>/<sub>4</sub>" x 5<sup>1</sup>/<sub>2</sub>", hardcover, \$17.95

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Please send \_\_\_\_\_ copy(ies) of **Microcosmos**. I include a check payable to Science News Book Order Service for \$17.95 plus \$1.00 handling (total \$18.95) for each copy. Domestic orders only.

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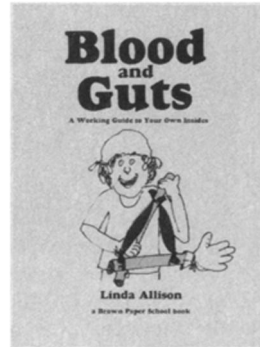
... where you can learn (among other things) how to solve a problem twice your size, how to be naturally geographic, that you may be smarter than you think, why earwigs make good mothers, all about food in thirty-two bites, and why you should accept no substitutes for fun.



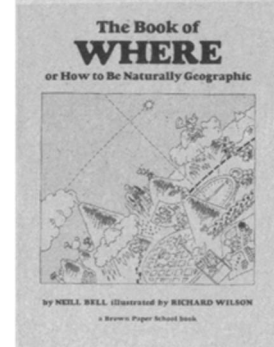
*The Night Sky Book: An Everyday Guide to Every Night* will keep you up at night. The words, pictures and activities in this book will help you understand a lot about those distant specks of light you see when you look up at night. It talks about astrology and different kinds of astronomy. It describes planets and stars, pulsars and quasars. It teaches you how to recognize constellations and makes you consider what time and distance in space are all about. By Jamie Jobb, illustrated by Linda Bennett. [A]



*Gee, Wiz! How to Mix Art and Science or The Art of Thinking Scientifically* mixes up art, science and three of the wackiest characters ever. There are science experiments and art projects guaranteed to stretch your imagination. By Linda Allison and David Katz, illustrated by Linda Allison. [C]



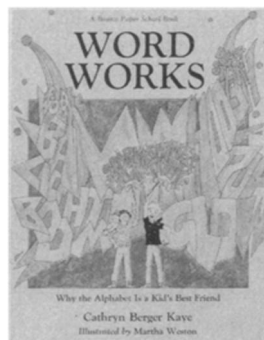
*Blood and Guts: A Working Guide to Your Own Insides* will help you explore that incredible territory inside yourself. You are miles of blood vessels, billions of cells, a system of levers, pumps and bellows. You are electrical charges and chemical reactions. You are a furnace, filters and a fancy computer with a huge memory bank. You are a finely tuned organism with more parts than there are people in New York City. When you read this book, you'll amaze yourself. Written and illustrated by Linda Allison. [E]



*The Book of Where: Or How to Be Naturally Geographic* is for you if you think that the Philippines is a rock group. If you aren't sure where the Andes are (or even *what* they are), then you need this book. And if you don't know that most of us live on great big hunks of earth that are continually shifting, then this book has surprises for you. It is a trip around the world in 120 pages. By Neill Bell, illustrated by Richard Wilson. [G]



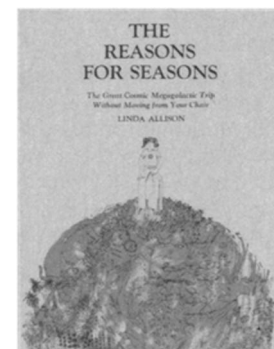
*Beastly Neighbors: All About Wild Things in the City or Why Earwigs Make Good Mothers* tells you that nature is under your feet, just outside your door or in your refrigerator; you don't have to go to a park to find it. You can feed the birds, build a pond and grow wildflowers even if you live three flights up. Read this book and meet some of your beastly neighbors. Some of them may be old chums. By Mollie Rights, illustrated by Kim Solga. [B]



*Word Works: Why the Alphabet Is a Kid's Best Friend*. This book is about words — why we have them, why we need them, how we use them. Words are tools. You can build castles in the air with some highfalutin words or craft a tiny poem for your friend's valentine. Words are like friends. When you are alone you can play games with them or use them to write a letter to a pal. When you're with friends you can use them to write and stage a play or start your own newspaper. By Cathryn Berger Kaye, illustrated by Martha Weston. [D]



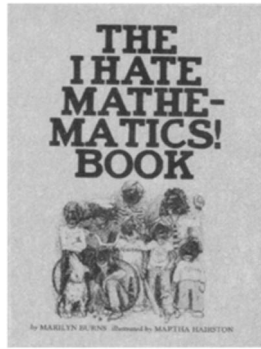
*Math for Smarty Pants. Are you a mathematical whiz?* If your answer is no, this book has a surprise for you. You may be smarter than you think. If you say yes, this book may still surprise you because there are many ways to be smart when it comes to mathematics, and this book will tell you about all of them. By Marilyn Burns, illustrated by Martha Weston. [F]



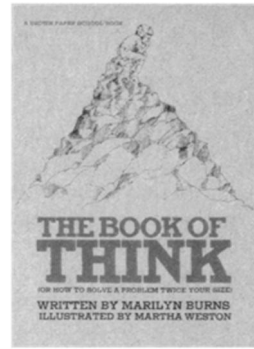
*The Reasons for Seasons: The Great Cosmic Megagalactic Trip Without Moving from Your Chair* is about the trip the earth makes around the sun each year. Inside you'll find a sun dance, oology, epic spuds, a worm farm, yeast breath, spore lore, a moon watch, a window salad and all you'll ever need to know about Groundhog Day. In fact, there is so much in this book, you may need a vacation when you get back. Written and illustrated by Linda Allison. [H]



*Good for Me! All About Food in 32 Bites* is the book you should read if you have ever wondered why we eat things and what happens when we do. In it you'll find out why you should drink that glass of milk, and why that triple-dipped, cream-filled Winko might just gum up your works. This book will make you the food expert in your house . . . in just 32 bites. By Marilyn Burns, illustrated by Sandy Clifford. [I]



*The I Hate Mathematics! Book* proclaims that mathematics is a way of looking at the world and is not be confused with simple arithmetic. Here you'll find everyday mathematical events, gags, magic tricks and experiments that just may make you love math! By Marilyn Burns, illustrated by Martha Weston. [J]



*The Book of Think: Or How to Solve a Problem Twice Your Size* is about what to do when you're puzzled, perplexed, stumped, or can't get there from here. It's about being smart when you feel stupid and how to think when you are fresh out of ideas. If you've ever faced a problem you thought was twice your size (and who hasn't?), this book was written for you. By Marilyn Burns, illustrated by Martha Weston. [K]



*This Book Is About Time*. What does time have to do with flowers, birds and the fiddler crab? This book will tell you the whole story — and then some. When you learn about time, you'll learn about history, biology, biorhythms and a whole lot more. You'll read about the Mayas, the ancient Egyptians, jet lag and the Roman calendar. And you'll have the time of your life. By Marilyn Burns, illustrated by Martha Weston. [L]

***The Brown Paper School is recommended reading for anyone over age nine who will accept no substitutes for fun.***

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