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You don't have to be small-minded to learn from these literary offerings

Nature Watch

Two new books explore the world of the extremely tiny

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I have just finished reading two books about the world we can only see well through a high-powered microscope. I found the experience fascinating.

The first book is written for children by Jordan Brown, the son of my University at Buffalo colleague Steve Brown. Its paragraph-length title is "Micro Mania: A Really Close-Up Look at Bacteria, Bedbugs & the Zillions of Other Gross Little Creatures That Live In, On & All Around You" (Imagine Publishing).

I think that middle-school youngsters will enjoy reading this book, as its language is perfect for them. Some will giggle over a few words that would be edited out of this column, and the following paragraph will suggest the general style:

"Some parts of your body are much more appealing to bacteria than others. In general, if a body

part is dark, wet, warm, and stinky, then bacteria will thrive there. Given the choice between a dry elbow and a sweaty armpit, bacteria will go for the sweaty armpit every time. Your mouth is another place where bacteria can find the right conditions to grow like crazy. Bacteria also love to hang out and grow in your underwear, especially if you've just exercised. And it's hard to imagine a darker, wetter, warmer place than the insides of your intestines. that's why your colon is Bacteria City for your body."

What is important, however, is that the book takes youngsters well beyond such informal talk. It is a veritable mine of information about tiny living things, many of which live on or in our bodies. Almost any parents who reads this book with their children will also learn from it; I certainly did.

On just one page, for example, I learned that Anton van Leewenhoek was not the inventor of the microscope but rather improved upon earlier devices, having read about them in a publication by Robert Hooke; that Leewenhoek's microscopes looked more like mousetraps than the tube instruments we use today; and that I had even been pronouncing the Dutch microscopist's name wrong. Brown tells us it is LAY-ven-hook.

Readers of this book will come away with much information about bacteria, viruses, microbes, protozoa and the larger fleas, spiders and silverfish. They will have been encouraged to try projects: making mold, zapping a dirty sponge, preparing a plankton net. And they will be warned about the danger of salmonella infection from handling turtles.

The second book, by Felice Frankel and George Whitesides, is "No Small Matter: Science on the Nanoscale" (Harvard Belknap). It is written for adults, and it is about things so small even the best contemporary microscopes often cannot produce images.

Thus the authors find themselves using metaphors and computer-generated images to carry much of their message.

For example, they tell us, "Little children have an unerring sense for how to find their parents at a party. They sort through the forest of knees until they find the pair with the right shape and then wedge themselves between them. . . . Molecules in the cell do the same. They find one another and stick together—one wraps around, the other wedges in. If they do it correctly, the cell lives; if they make mistakes, the cell dies."

The authors clearly devoted much thought to this book but I found parts beyond me. For instance, I could not see how the connection between the Beatles song "Eleanor Rigby" and emotion has anything to do with microscopic materials.

The most important thing I learned from this book—and hope I will retain—is an understanding of some of the names for small measures. Let me place them in context for you: 1 meter is a bit more than a yard; 1 millimeter is one-thousandth of a meter, about 1/25 inch; 1 micron or micrometer is one-thousandth of a millimeter; and 1 nanometer is one-thousandth of a micron.

The smallest things we can see are about 100 microns in diameter. This is 100,000 times as wide as a nanometer-sized object. Small indeed.

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