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NIBBLING ON EINSTEIN'S BRAIN

THE GOOD, THE BAD & THE BOGUS IN SCIENCE

BY DIANE SWANSON
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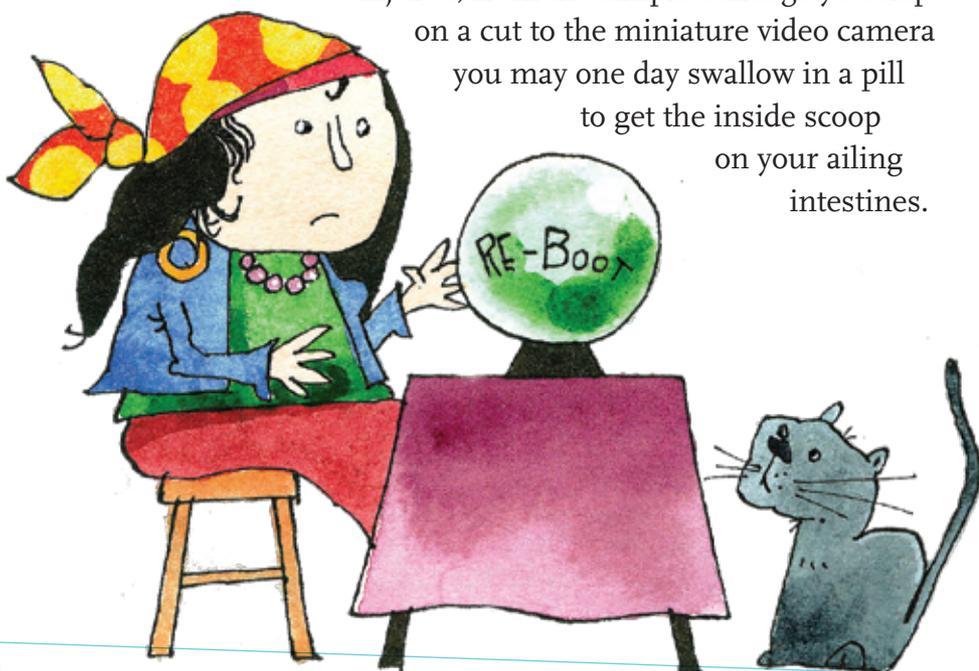
BEWARE OF BAD SCIENCE



ONE DAY SOON, if it hasn't happened already, you'll realize you've been terribly misled. Like everyone else, you've likely made some important decisions that were based on bad science — or the bad reporting of good science. Suppose, for instance, that you bought a bottle of Dr. Smart's Cough Syrup for Grandpa without realizing that Dr. Smart did her research only on poodles, not people. What if you decided to abandon your dream of becoming a teacher because an analysis of your handwriting claimed you didn't have what it takes? Imagine you'd sworn off your favorite soft drink, Silly Soda, because a news reporter announced it can make you sick — only the reporter failed to mention you'd have to drink 40 glasses a day to feel any ill effects. ARGHHH! You've been led down the garden path — three times!

How? Well, you can't assume that whatever might clear your pet poodle's throat is going to help Grandpa. After all, there are important differences between dogs and people. And a handwriting analysis is much like a fortune cookie. It's fun to see what it has to say, but you wouldn't want to plan your life — or your career — around it. As for Silly Soda, think about it. Every day, you eat food that could be harmful if you overdid it. Take salt, for instance. Small quantities help you contract your muscles, but too much might raise your blood pressure, bring on kidney stones, or trigger some heavy-duty headaches. Just because downing large amounts of something is unsafe doesn't mean that eating small amounts is necessarily bad for you.

What do you stand to lose if you don't sift out the bad science — and the bad reporting of good science — that's hidden among all the good stuff? The sky's the limit because science affects every part of your life. It influences what you eat and drink. It determines what kind of house you live in, what type of bike you ride, and how fast you can reach your friends on the Internet. It affects how you're treated when you're sick or injured, from the simple bandage you slap on a cut to the miniature video camera you may one day swallow in a pill to get the inside scoop on your ailing intestines.



Imagine what happens when inadequate, faulty, or phony science creeps into your life. It's used incorrectly to declare products "safe" or "unsafe." It persuades you to buy goods that are trash. It promotes poor medical treatments that don't help and discourages you from getting care that does. In court, it's used to back up unreliable — even false — claims. For instance, doctors have given "expert" testimony supporting people who claimed their cancer was caused by a blow from a can of orange juice or the handle of an umbrella. One doctor supported a fortune teller's testimony that a hospital CAT scan — which provides pictures of the brain — destroyed her ability to predict the future. A jury awarded her a million dollars for her loss, but a judge later threw out the decision.

"Scientific frauds ... are attempted almost daily in our courts, and many succeed."

— Peter W. Huber, lawyer

Some lobby groups present bad science to sway public opinion. One famous example concerned Alar, a product that used to be sprayed on apples to keep them fresh. By the 1980s, scientists had some concern that very high doses of Alar might cause cancer in test animals. In 1989, a lobby group that was pushing to have Alar banned in the United States released the results of a single, poorly done study to the hosts of a tv news show called *60 Minutes*. Although the animals used in the study had been exposed to amounts of Alar 266,000 times greater than people would ever be, the researchers concluded Alar threatened human lives — especially the lives of small children.

When *60 Minutes* featured this study, people panicked. Families and businesses pitched out their apples and apple juice, and pressed the American government to ban Alar. Even though government environmental and food agencies announced that

DRINK OF DEATH

“Cures” that are not tested scientifically can be useless in treating illness. What’s worse, they might even bring on a more serious sickness. During the 1920s, a patent medicine that claimed to cure more than 150 disorders turned out to be deadly. “Radiothor, the New Weapon of Medical Science,” was laced with radium, a radioactive metal used in making luminous paints and, under controlled conditions, in treating cancer. Unlike today’s drugs — which are subjected to hundreds of millions of dollars of scientific research for about 15 years before they’re approved — Radiothor was never properly studied. No one knew what effects it would have on people who swallowed it daily. The man who marketed the medicine, William Bailey, had no medical or scientific qualifications. He simply insisted Radiothor was safe because he drank it himself.



One man chose to take two or three small bottles of Radiothor every day for two years to boost his energy. At first, it seemed to work, but then he lost a lot of weight. Many of his teeth fell out, and bones throughout his body started to crumble. Soon after, he died of radium poisoning. And what happened to William Bailey? When researchers dug up his remains 20 years after his death, they discovered the “medicine” had destroyed him, too. His body was still radioactive!

the small amounts of Alar on apples were harmless, the public insisted Alar should go. It was withdrawn from use later that year. Whether or not it should have been will probably never be known. The point is that it was withdrawn for the wrong reason — limited, faulty research.