"Balancing" Science and Pseudo-Science at the New York Times

By ACSH Staff — May 23, 2005

Ever wonder why the American public is so ill-informed about issues involving science such as evolution, genetic modification of food crops, stem cell research, and homeopathy or "alternative medicine"? Some scientific issues seem settled in the public's mind. There is no serious question as to whether the earth revolves around the sun, even though not too many centuries ago one could be burned at the stake for promoting proscribed ideas on this issue.

Tragically, the scientific issues about which the public is most severely misinformed are generally those with public policy implications. Indeed, there are activists groups whose ideological agenda is furthered by public misinformation. But there are other, less deliberate reasons for public confusion. Scientific ignorance is often perpetuated if the findings of science conflict with a deeply held worldview. The result is often that science and the scientific method are questioned or simply thought to be unnecessary.

One would think that the prestigious Book Review section of the New York Times, a newspaper that prides itself on being the paper of record, would have no trouble getting leading scientists to review books involving scientific and medical issues in which they have a demonstrated expertise. When the New York Times Book Review fails to do so, it is clearly a matter of choice, particularly when the reviewer that they obtain is an arts editor at the New Yorker. As a long-time subscriber to the New Yorker, I am in complete awe and admiration of its mastery of the English language, but when a book is to be reviewed, one expects a reviewer to have expert knowledge of the subject in addition to the ability to express it.

To review a book on homeopathy titled Copeland's Cure by Natalie Robins, the Times chose Liesl Schillinger, a New Yorker arts editor and a regular contributor to the Book Review. The book is described as being a "social history of the 150-year battle between conventional and alternative medicine in this country." The editors of the review must have rightly assumed that an expert on medical science might have a "bias" against homeopathy and consider it to be some form of quackery, so they got a reviewer who was not going to be inhibited by having any knowledge of the subject.

A Naif Among the Homeopaths
Schillinger understands that the "guiding principles of homeopathy are that 'like cures like' and that small doses are better than big ones." In fact, homeopathy logically entails the claim, implicit in its practice of "extreme dilution," that non-existent doses are best of all because we are told that "molecules have memory," which carries healing power after the original substances have been diluted away.

How does our intrepid arts editor respond to the belief that small doses are better? "These ideas are not bogus: after all, the vaccine for smallpox is made from a smidgen of the milder menace, cowpox." Let us not be picky, but vaccines don't cure -- they prevent. Vaccines stimulate the immune system so that it can later quickly recognize the onset of the infectious agent and begin to counter it. There is normally an interval between when the vaccine is administered and when it becomes effective, and in most cases it does nothing for you if the infectious agent has already invaded. To my knowledge, there are no vaccines based on "extreme dilution."

Homeopathy has been around for 200 years, so by now there ought to be some explanatory theory about why like cures like and small doses are better than large. Schillinger seems to consider the quote "We remain a long way from understanding how these extreme dilutions can directly create clinical effects" a profundity rather than a non-explanation. Schillinger adds that "all that matters...is that the patient get better." True, but where is the evidence that homeopathy works?

Schillinger is presumably "balancing" the review by having a paragraph of invectives that have been leveled against homeopathy rather than the underlying analysis that gave rise to them. For example, we are told that "Nobel laureate Murray Gell Mann derided the notion that an undetectable molecule could have a therapeutic result as 'garbage physics',' a assessment with which few physicists would differ. The fact that "Robins's curious book does not attempt to debunk or to defend either medical school of thought," seems to be a praiseworthy aspect of the book. One wonders whether such supposed agnosticism would have been found worthy by the reviewer in a book that looked at the nearly 150-year struggle between Darwinism and various forms of creationism and intelligent design?

**Tiny Doses of Error**

Let us look at some other errors in the review as reminders of what a knowledgeable scientist might have handled differently:

Schillinger: "In the 19th century and well into the 20th, homeopathy and allopathy had a great deal in common. There were no microscopes, bacteria had yet to be discovered...Luck and home remedies were what got most people through serious illnesses."

Three corrections:

-- Microscopes go back to at least Robert Hooke (1635-1703) (Micrographia in 1665) and Anton van Leeuwenhoek (1623-1723). Leeuwenhoek actually produced a drawing of bacteria -- those wee little beasties -- in 1683. By the 1830s, scientists were getting better images by using the refractory microscope. William Henry Perkin's discovery of the aniline dye color, mauve, in 1856 (building on the work on benzene by Michael Faraday in the 1840s) initiated the process by which
slides could be stained -- Gram stains -- for better identification of the cell's components, including any bacterial invaders.

-- In 1862, Louis Pasteur advanced a germ theory of disease and recognized that the bacteria and other microbes in our bodies were the source of disease. In the 1870s, using slides stained with aniline dye, Robert Koch was able to identify tuberculosis, cholera bacilli and bovine anthrax bacillus and show how germs spread between animals and cause disease. In less than thirty years, scientists such as Pasteur and Robert Koch (1843-1910) isolated the microbes for "leprosy (1873), anthrax (1876), typhoid fever (1880), bacterial pneumonia (1881), tuberculosis (1882), diphtheria (1883), cholera (1884), and tetanus (1889)." Though we may not have had antibiotics until the 1930s with sulfa and the 1940s with penicillin, the 19th century advances in medical knowledge facilitated a variety of life saving medical and public health measures. This scientifically exciting period coincides with the rise in influence of the homeopathic promoter who is the central figure of the book under review.

-- There is certainly more than a modicum of truth in the statement that "luck and home remedies" were important in the late nineteenth and early twentieth century, but important advances in science and public health were taking place. Paul Ehrlich's (1854-1915) idea of a "magic bullet" -- and the use of coal tar derivatives to create pharmaceuticals -- led to synthesis of Salvarsan, the main treatment for syphilis (which is caused by a spirochete) before the discovery of penicillin. This was followed in the 1930s with the red dye sulfanilamide, or simply sulfa, which was effective in treating puerperal fever. Yes, we have come a long way in the last hundred years, but that progress was built on the nineteenth-century advances in biology, quantitative chemistry, and other areas of science and technology. Schillinger fails to note that homeopathy is in fundamental contradiction to science as understood throughout the last two centuries. In the middle of the nineteenth century, the physician John Snow identified the water from one well as the source for an outbreak of cholera, followed by Louis Pasteur's recognition of the microbial origin of many diseases, some of which were waterborne. Previously, water could be visually clean or ritually clean, but with this new knowledge and chemical intervention we could have hygienically clean water, thanks to the science and technology that Schillinger implies did not exist. Chlorination of water in the United States began in the early part of the twentieth century and very quickly "produced dramatic reductions in morbidity and mortality associated with waterborne disease, such as typhoid, cholera, amoebic dysentery, bacterial gastroenteritis, and giardiasis." A potential typhoid epidemic in Chicago in 1908 was stopped by chlorinating contaminated drinking water. "The introduction of drinking water disinfection in the United States...is credited with reducing the incidence of cholera by 90%, typhoid and leptospirosis by 80%, and amoebic dysentery by 50%" (Farland and Gibb 1993, 3). Prior to chlorination of water, diarrhea and enteritis were the third-leading cause of death in the United States.

**Mingling Faith and Fact**

Schillinger concludes that "the role of doctors, whether conventional or alternative, will never be entirely separate from the role of faith healer, at least not until somebody finds a cure for the flu that actually works." Apparently Schillinger thinks many cures of conventional medicine are of no importance and that various preventive measures for the flu, which reduce the incidence of it
and/or reduces its severity, are also not worthy of mention.

I would hope that scientists who read the review will write to the New York Times Book Review and request that it run corrections for the numerous errors they might find. They might also raise the question of editorial bias in the selection of reviewers or in news columns that gives a free pass to pseudo-sciences such as alternative medicine/homeopathy, organic agriculture, and anti-transgenics.

References:


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