Letters

Paranormal Parley

Dear Editor:

I would like to publicly thank you for encouraging me to respond to your editorial, "Debunking the Paranormal . . ." (*ABT*, January 1992). Your willingness to welcome constructive criticism of your viewpoint indicates that you are a dedicated seeker of truth and I respect you for that quality.

I take issue with your statements about homeopathy, which you had placed under the subheading entitled "Other Kinds of Medical Quackery." In that section you state that homeopathy is a "sham," presumably because of the conventional belief that the extreme dilution of these medicines renders them biologically inactive. Homeopaths greatly dilute their medicines, often to the extent that not even a single molecule of the original substance is in the diluent. As if this were not sufficient reason to seriously question the scientific basis of much homeopathic prescribing, the homeopathic pharmacopeia is prepared by forcibly shaking the preparation at each dilution, a process termed succession. It is believed that the remedies will only function properly if this process is carried out.

The *British Medical Journal* (2-9-1991) published a review by Kleijnen, et al. of controlled trials of homeopathy, most which were published in languages other than English. Positive clinical results were noted in many of these studies but the authors declined to draw definitive conclusions on the efficacy of homeopathy because of various methodological flaws. However, they did state that a legitimate case for further evaluations of homeopathy does exist, provided that carefully controlled studies are conducted. Thus, it would appear to be prudent to suspend judgment on this subject until all the evidence is in.

One of the major arguments that is used to contest some of the apparent favorable results of homeopathy involves invoking the placebo effect. For that reason, it would be useful to mention the results of *in vitro* studies and those involving animals. A group of 20 sows were alternately placed in control and treatment groups, the latter receiving the homeopathic preparation, caulophyllium (30C) in food, twice weekly until farrowing. The percentage of stillbirths in the treated group was approximately half that in the control group. Homeopathic dilutions of arsenic significantly promote the excretion of arsenic in rats. In a widely publicized paper in *Nature*, it was claimed that highly diluted antiserum against IgE was capable of initiating human basophil degranulation. An unusual investigation of this experiment and the response to this investigation provide lively reading.

I would recommend that biologists exercise caution in any all-inclusive attempts to debunk the paranormal, lest we throw out the baby with the bathwater. I also suggest that we seriously attempt to answer the question, "What's the evidence?," posed in the editorial, by first conducting a literature review of the subjects we propose to debunk, rather than condemning them on an *a priori* basis.

In his closing address to the 5th Colloquium on Conventional Medicine and Complementary Therapies, Dr. Michael Blum, professor of surgery at King's College School of Medicine and Dentistry, London, stated that ". . . what is non-science today may indeed become the science of tomorrow . . ." Perhaps we biologists should seriously consider this statement, rather than assuming that we are completely cognizant of everything within the domain of science. Until recently, acupuncture was considered to be a hoax, yet it is now gaining wide acceptance. I can assure my colleagues in Biology that there is documented information on topics now considered to be "paranormal," which are likely to gain acceptance in the near future. Accordingly, we run the risk of losing our credibility if we condemn them prematurely.

Yours truly,
Barry S. Kendler, Ph.D.
Associate Professor
Biology Department
Manhattan College
Riverdale, NY 10471

Editor's Response to Kendler's Letter:

I stand by what I wrote.

Homeopathy is a pseudoscience based on the so-called "Law of Similars" and "Law of Infinitesimals," which state that a drug that would otherwise cause a symptom will, when given in small amounts, cure the same symptom. Homeopaths greatly dilute their "drugs." The limit to dilutions that can be made without losing the drug is Avogadro's number (6.023×10^{23}); dilutions exceeding this have none—not even one molecule—of the drug in them. Nevertheless, homeopaths claim that such solutions can cure a symptom because the solution has "a memory of the energy" of the substance that it contained. This phantom spirit somehow revives the body's "vital force" and "energy fields." Homeopaths claim that the smaller the amount of drug—including its absence—the more potent the potion.

. The paper that you cite ("Human basophil degranulation triggered by very dilute antiserum against IgE", *Nature* 333, p. 816; 30 June 1988) was publicized widely, including in *Time* (8 August 1988) and *Newsweek* (25 July 1988). The publication was popular on news programs because of its outrageous claims—claims that violated the fundamental laws of physics. The paper describes a study headed by Jacques Benveniste, who claimed that an antibody was active when diluted to 1 part in 10^{20} parts of water (for comparison, the number of stars in the universe is about 10^{20}). Thus, the antibody was absent in the treatments reported in the *Nature* paper. Nevertheless, Benveniste and his colleagues claimed that the antibody had changed the basophils because the water "remembered" the antibody's chemical properties. According to the authors, the antiserum caused the water to rearrange its hydrogen atoms in some inexplicable way—perhaps with mysterious vibrations, resonance or force fields—to mimic the action of the antibody, even though the antibody was absent.

What you euphemistically refer to as "lively reading" is actually a blistering denunciation of the work of Benveniste and his colleagues. Indeed, the 28 July 1988 issue of *Nature* reported that the research of Benveniste et al. was "not reproducible," that there is "no substantial basis for the claim," and that "the hypothesis that water can be imprinted with the memory of past solutes is as unnecessary as it is fanciful." You also did not mention that two of the authors of the *Nature* paper were salaried employees of a firm that manufactures homeopathic "drugs." Their unrepeatable

work and unsubstantiated conclusions regarding homeopathy are no more credible than are those of science hacks who are paid by the tobacco industry to claim that smoking four packs of cigarettes per day for 40 years is unrelated to lung cancer.

The claim of homeopaths that water can "remember" violates the fundamental laws of physics. There is overwhelming evidence that water cannot "remember" anything. Moreover, there is no evidence that decreasing the concentration of a substance increases its effectiveness any more than diluting a dye produces a deeper hue or adding less sugar makes food sweeter.

You suggest conducting a literature review to answer questions about paranormal. The literature is full of all sorts of crack-pot claims. For example:

- In 1903, René Prosper Blondlot claimed to have discovered a new kind of radiation, N-rays (named after the University of Nancy, where he worked). Scores of papers confirmed his findings. Luckily, a skeptical scientist decided to base his conclusions on experimentation rather than the blind faith of accepting anything that happens to be published. When Wood removed the prism from the apparatus that was essential to seeing the N-ray spectrum, the N-rays appeared anyway. N-rays disappeared from the literature when Wood reported his findings in *Nature* (Vol. 70, p. 530, 1904). If everyone had relied only on the literature rather than skepticism and experimental evidence, we'd still be talking about N-rays.
- In the 1960s, scientists claimed that water acquires strange properties when it collects in hairlike capillary tubes. This so-called "polywater" was hailed as the "most important physical-chemical discovery this century." Millions of dollars of grants were dispersed to study polywater. *Scientific American* published an article about it (November 1970), and *Nature* warned that research on polywater proceed with caution because polywater could polymerize Earth's oceans, destroy life and create a Venus-like planet. Was it a great discovery? Not really; the properties resulted from dirty test tubes. Luckily, not everyone relied only on a review of the literature.

Rather than blindly accept the claims of any published report, regardless of its quality or context, scientists must evaluate the experimental design, evidence, context and quality of the work that is reported. This is far different from counting the number of papers that support or refute a particular hypothesis. Truth is not the same thing as a popularity contest.

Homeopathy remains popular among people who disregard careful experimental design, and believe that anecdotal testimonials have great meaning and that the medical establishment is conspiring to suppress new treatments. Homeopaths sell concoctions such as "Human Power Recharger" and "Pain Control" that include fancy-sounding ingredients such as *lachryma filla* (i.e. tears), *asterias rubens* (i.e. powdered starfish), *mephitis* (i.e. skunk secretions) and *acidum uricum* (i.e. uric acid from human urine). Although homeopathic "physicians" charge from $150 to $500 per hour to administer these "cures," these cures have no therapeutic effects. Thus, people having serious illnesses either prolong their suffering or prevent their cure when relying on homeopathy. This causes people to suffer—even die—unnecessarily while waiting to be cured by homeopathic "drugs" such as urine and tears.

You predict that topics now considered to be paranormal are likely to gain acceptance in the near future. I don't doubt that. Astrology, psychic surgery, crystal power, ESP, faith-healing and homeopathy—to name just a few—are already accepted widely, especially among people who reject critical thinking and experimental evidence.