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Rebutting the Preposterous

At one point in the 18-century Chinese novel, *Dream of the Red Chamber*, as translated by Chi-Chen Wang and published by Doubleday Anchor Books, the physician Chang Yu-shih examines Chin-shih, taking her pulse first with his forefinger and then with his second finger. After considering the problem over a cup of tea, Chang Yu-shih reports that the pulse under the second finger is "vague" and that "the vague second finger pulse bespeaks a wood element in the liver too strong for the earth element in the spleen." The doctor goes on to deduce that the symptoms of this disturbance must include "lack of appetite, general fatigue, and a soreness of limbs." A maidservant who has been attending the patient confirms this deduction, and the doctor writes his prescription.

To the best of our knowledge, no one in the United States is presently espousing this particular approach to medicine, but scientists in all fields are occasionally challenged by pseudo scientists who advance theories that are quite as preposterous. To reply to such challenges, however, can prove exasperatingly laborious; the more preposterous the theory, the more laborious the rebuttal.

As in the case of the doctor in the story, the difficulty is not that pseudo scientists hold views that are experimentally false, but that they make generous use of concepts that have no experimental meaning at all. We may know what it means to speak of wood, earth, the liver, and the spleen, but we are stymied when it comes to investigating the relation between a surfeit of wood element in the liver and the patient's pulse. If the proponent of such a causal relation cannot prove it true to our satisfaction, we cannot begin to prove it false—for example, the maidservant's confirmation of the doctor's deduction actually confirms nothing—until we have cleared away many misconceptions and replaced them with some solidly based information.

To rebut preposterous theories may be exasperating, but it is sometimes necessary. Usually the pseudo scientist remains well insulated from scientific opinion, but occasionally he gains a considerable public following, with his views appearing in the columns of prominent popular magazines or in hard covers under the imprint of major publishing houses. When a pseudo scientist succeeds in fooling others besides himself, scientists should discuss publicly the merits of his work, both to maintain the prestige of science and to prevent unsound views from gaining further adherents. But the hope of public debate is not to cure a madman of his delusions but to persuade the audience that his views are without foundation.

Ultimately, however, the reply a scientist must accord a pseudo scientist is not so different from the reply he must give his own colleagues when he finds himself in complete disagreement with them. And, indeed, although pseudo science is as different from science as night from day, the two activities shade into each other through the grey of dawn and dusk. The final answer to one's critics is to stop arguing and go back to the laboratory. A scientist may conclude in all justice that it is more profitable for him to spend his time seeking answers from nature than from his opponent's pen.—J.T.