

the domain of physics proper we know that motion results in heat and why not in the domain of life—which is motion. According to Trall *good health*, or a normal play of all the functions, is the secret and explanation of the production and maintenance of a proper animal temperature. He had no patience with the chemico-physiologist who sought to turn the human system into a chemical laboratory and explain vital processes by chemical data. As bearing upon a proper estimation of Trall as an authority in physiology as against Liebig, it is only fair to state that Trall has apparently successfully refuted one or two of Liebig's other chemico-physiological positions.

Now, Prof. Cook, if I rightly understand him, holds the view taught by Trall as to the production of animal heat in the system; while Mr. Cushman holds the theory taught by Liebig. The Prof. claims "the leading physiologists of to-day" on his side, and here, I venture to submit, he is mistaken. Prof. Huxley is unquestionably the greatest biologist and physiologist and he is on the other side. Prof. Carpenter who died a few months ago, and second only to Huxley as an eminent physiologist, was also, I think, on the other side. I have not Carpenter by me at present but I think Prof. Cook will find that he was distinctly on the other side of the house. I know of no really eminent physiologist who can be quoted on Prof. Cook's side except Trall. Trall's school of medicine, the *Hygienic Therapeutic*, doubtless nearly all agree with their great teacher; while the regular Allopathic profession—that is their authorities—are almost all on the other side with Liebig, Carpenter and Huxley. The Homeopathic and Eclectic Schools of Medicine are divided on the question with a majority, perhaps, on Liebig's side. Thus it is that this problem of the production of animal heat in the living system is still if not an unsolved at least an unsettled one; and hence we must gently oppose Prof. Cook's attitude in the premises as savoring just a little of dogmatism.

When the Prof. wrote in the JOURNAL (page 722) about "a little learning being a dangerous thing," and proceeded *ex cathedra* to set aside Liebig's hypothesis and belabor Mr. Cushman I myself felt just a little in the Professor's road remembering that in my leaflet on "Honey—Some reasons why it should be eaten," I had written the following sentence, viz: "If the animal heat of the system is produced and maintained by the combustion in the blood of the oxygen of the air taken in by the lungs and certain elements of the food, as the most eminent authorities maintain, then it is absolutely certain that for six or eight months of the year in this climate there is no more wholesome or necessary food than pure honey."

Now, the use of the word "if" in the sentence above quoted really leaves the question as to the production of animal heat an open one, as it undoubtedly is, with the preponderance of authority, as there intimated, on the chemical side. I must confess, however, that twenty-five years ago when I looked into Trall's position on this question I thought him right so far as my poor judgment was capable of deciding between great authorities, and ever since, the principle has had its weight more or less in daily life in the regulation of diet, etc. Whether Trall is right or wrong on this point one thing is certain—he teaches more wholesome physiological and hygienic truth in his writings than any other with whom I am acquainted living or dead. One other thing is certain, if Liebig's theory is false it has done a great deal of harm in a quarter of a century in the influence it has had in regulating human diet, and will continue to do a great deal more until it is thoroughly refuted and abandoned. My confidence in what I would call the physiological explanation of animal heat as against the chemical remained firm until Prof. Huxley appeared in the arena. I could easily understand how the allopathic medical profession, even including the great Dr. Carpenter, would readily and naturally accept Liebig's chemical theory of animal heat for it is in close keeping with the fundamental doctrines of their school, which, however, I believe to be erroneous. And it was equally natural that Trall and his school should go to the other extreme in utterly casting out all chemistry from the *living system*, being so dead set against all "drug medication." But when Prof. Huxley comes forward, having no axes to grind either for the chemists or physiologists—without any hobby-horses to ride, but as a scientist and disinterested investigator—and endorses Liebig's theory I begin to think it may possibly be true. Time will no doubt tell. This vexed question, with many others, seeking the light, will be cleared up in due time. Meanwhile, let no one be dogmatic—not even professors—especially when they get out of their special lines. A few months ago when the "hibernation" theory was fairly on the "rampage" in the bee journals and Prof. Cook uttered his laconic dictum, "Bees do not hibernate," which had the effect of making the author of that theory quite petulant and impatient, I thought the Prof. was quite right both in manner and matter. That was in his line as an entomologist and he had a right to speak authoritatively, especially as the point was a settled one. Prof. Cook, of course, means that bees do not hibernate in the scientific sense. He admits with others of us that they frequently get into a very quiescent or semi-