What is science?

The question of “Umbrellaology”

Imagine that you receive the following letter.¹ Do you agree with its author? Is umbrellaology a science? If so, why? If not, how does it fall short of being a science? How does it compare to astronomy/zoology/geology/etc.?

“Dear Sir:

I am taking the liberty of calling upon you to be the judge in a dispute between me and an acquaintance who is no longer a friend. The question at issue is this: Is my creation, umbrellaology, a science? Allow me to explain this situation. For the past eighteen years, assisted by a few faithful disciples, I have been collecting materials on a subject hitherto almost wholly neglected by scientists, the umbrella. The results of my investigations to date are embodied in the nine volumes which I am sending to you under separate cover. Pending their receipt, let me describe to you briefly the nature of their contents and the method I pursued in compiling them. I began on the Island of Manhattan. Proceeding block by block, house by house, family by family and individual by individual I ascertained 1) the number of umbrellas possessed, 2) their size, 3) their weight, 4) their color. Having covered Manhattan after many years, I eventually extended the survey to the other boroughs of the City of New York, and at length completed the entire city. Thus I was ready to carry forward the work to the rest of the state and indeed the rest of the United States and the whole known world.

“It was at this point that I approached my erstwhile friend. I am a modest man, but I felt I had the right to be recognized as the creator of a new science. He, on the other hand, claimed that umbrellaology was not a science at all. First, he said, it was silly to investigate umbrellas. Now this argument is false because science scorns not to deal with any object, however humble and lowly, even to the ‘hind leg of a flea’. Then why not umbrellas? Next he said that umbrellaology could not be recognized as a science because it was of no use or benefit to mankind. But is not the truth the most precious thing in life? And are not my nine volumes filled with the truth about my subject? Every word is true. Every sentence contains a hard, cold fact. When he asked me what was the object of umbrellaology I was proud to say, ‘To seek and discover the truth is object enough for me’. I am a pure scientist; I have no ulterior motives. Hence it follows that I am satisfied with truth alone. Next, he said my truths were dated and that any one of my findings might cease to be true to-

¹Excerpted from: Sommerville, J. (1941). Umbrellaology, or, Methodology in Social Science. Philosophy of Science, 8, 557-566.
morrow. But this I pointed out, is not an argument against umbrellaology, but rather an argument for keeping it up to date, which is exactly what I propose. Let us have surveys monthly, weekly or even daily to keep our knowledge abreast of the changing facts. His next contention was that umbrellaology had entertained no hypotheses and had developed no theories or laws. This is a great error. In the course of my investigations, I employed innumerable hypotheses. Before entering each new block and each new section of the city, I entertained an hypothesis as regards the number and characteristics of the umbrellas that would be found there, which hypotheses were either verified or nullified by my subsequent observations, in accordance with proper scientific procedure, as explained in authoritative texts. (In fact, it is interesting to note that I can substantiate and document every one of my replies to these objections by numerous quotations from standard works, leading journals, public speeches of eminent scientists and the like.) As for theories and laws, my work presents an abundance of them. I will here mention only a few, by way of illustration. There is the Law of Color Variation Relative to Ownership by Sex. (Umbrellas owned by women tend to great variety of color, whereas those owned by men are almost all black.) To this law I have given exact statistical formulation. (See vol. 6, Appendix I, Table 3, p. 582.) There are the curiously interrelated Laws of Individual Ownership of Plurality of Umbrellas, and Plurality of Owners of Individual Umbrellas. The interrelationship assumes the form, in the first law, of almost direct ratio to annual income, and in the end, of almost inverse ratio to annual income. (For an exact statement of the modifying circumstances, see vol. 8, p. 350.) There is also the Law of the Tendency towards Acquisition of Umbrellas in Rainy Weather. To this law I have given experimental verification in chapter 3 of volume 3. In the same way I have performed numerous other experiments in connection with my generalizations.

“Thus I feel that my creation is in all respects a genuine science, and I appeal to you for substantiation of my opinion.”