The overall lack of unanimity on the origin or application of Newton's work is not sufficient reason to stop referring to anything in heat transfer as "Newtonian." I chose instead to analyze the origin, limitations, use, and context of Newtonian heat exchange (through an admittedly expository device called a Newtonian animal) (*2*). This allows Newton's observations to be combined with the first law of thermodynamics and a well-defined set of conditions that, together, will produce a linear heat flow equation, Eq. 1. Thus, we can place Newton's work in historical and scientific context and are probably pretty close to the way the equation actually evolved. In the context of Bakken and Gates's comments it is not possible to explain how Newton's observations on temperature might have found their way into heat transfer theory.

I concur with Bakken and Gates's paragraph on Fourier's law, and before Tracy's comment (*3*) I had specifically described the limitations and use of not only Fourier's law but also Fourier's equation and a number of other equations common in heat transfer and urged a usage in biological systems consistent with that in heat transfer theory (*2*).

I do not see the advantage of terming Eq. 1 "the linear approximation to overall heat transfer." The coefficient h will be a complicated function of many variables, and the applicability of the equation will be limited to the range of validity of the linearization. I think the alternative, the "electrical analog of heat flow," obscures the historical and thermodynamic relationships that place the equation in a framework that includes the constraints.

The constraints that exist in various situations must be defined before consistency will replace confusion. My suggestions were derived from system constraints and their connection to history. I think it is the more coherent alternative.

There is a correction to Bakken and Gates's reference 12. Kreith lists "Newton's law of cooling" in his index (p. 616) and assigns its occurrence to p. 14, where a very familiar equation appears.

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References and Notes

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It is encouraging to find that the discussions in *Science* started in 1972 (*1*) have clarified several ideas concerning heat transfer in organisms. Among these are: (i) Newton's law of cooling is a law of temperature loss, not of heat flow. Heat flow is a concept of post-Newtonian caloric theory (which survived the riddance of the erroneous posit that heat is a material substance). (ii) Newton's law of cooling is limited to bodies without internal heating; therefore it cannot apply to living organisms, one of whose essential characteristics is metabolism, which involves internal heat production. (iii) The claim that Fourier supported the application of Newton's law of cooling to heat flow loses significance since the publication of the long-lost 1807 version of Fourier's *Analytical Theory of Heat* in 1972 (*2*). This book contains information which indicates that Fourier was somewhat confused about Newton's work on heat (*2*, p. 273, footnote). (iv) Fourier's law of heat conduction excludes convection. Bakken and Gates cite Fourier's own judgment on that question. This, unlike his notion of Newton's work on heat flow, is compelling.

When I extended Fourier's law from conduction alone to total heat flow I changed "conductivity" to "transferability" and "conductance" to its reciprocal "resistance to heat flow" in order to avoid confusion. Keeping Fourier's name for this extension was a semantic error because two Fourier laws of heat transfer could be a source of confusion. The criticism of Bakken and Gates is therefore justified. I will follow their recommendation and change my terminology from the "extended Fourier law" to the "linear approximation of total heat flow."

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Sex Pheromone of the Codling Moth

(2*Z*,6*E*)-7-Methyl-3-propyl-2,6-decadien-1-ol, proposed by McDonough *et al.* (*1*) to be a sex pheromone of the codling moth, *Laspeyresia pomonella* (L.), was found to be unattractive. (*E*,*E*)-8,10-Dodecadien-1-ol, discovered by Roelofs *et al.* (*2*) to be a sex attractant as determined by the electroantennogram method, was found in our laboratory, by physical data and ozonolysis, to be the authentic natural sex pheromone.

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