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Feature

Wollensky says
How would you like to be ohmless?
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"I very nearly attained the speed of light myself"

A well produced American book, The New Engineering by Eugene Adiutori, has made me scratch wonderingly inside my hard hat. The author, a sometime nuclear engineer, tells us that Ohm's Law is twaddle and that we should give up the metric based on it. He believes this partly because non-ohmic resistors exist but, more generally, because certain ratios are in his view bad for engineering calculation: he says they 'combine' important variables (voltage and current in the case of electrical resistance) but non-linear problems become much easier if those variables are 'separated'. Two other of his disapproved ratios are heat flow/temperature difference and stress/strain. As he points out, non-linear heat transfer features in power generation worldwide, and non-linear deformation is of growing importance in engineering.

Well, I can remember being taught at school that poor old Georg Simon Ohm (1787-1854) was scorned by his contemporaries when, as a lecturer in the German city of Cologne, he published his seminal work, The Galvanic Chain Mathematically Worked Out. Disheartened, he resigned his academic post and spent half a dozen years in the proverbial wilderness, doing odd jobs. But eventually his discovery of what became famous as Ohm's Law was recognised, initially in England, where he was honoured with a medal for it, and, when he was 62 years old, he became a professor in Munich, Germany.

The great British physicist, Clerk Maxwell, is quoted by Adiutori as declaring that the introduction of the term, resistance, would have been of no scientific value had Ohm not shown by experiment on very many conductors that the emf/current ratio for each of them had a definite value depending on the nature of the conductor. 'In other words', interprets Adiutori, 'electric resistance was a valuable concept in 1873' because many conductors had been tested and they had all obeyed Ohm's Law. Adiutori also cites a Maxwell statement that, if some of the conductors had shown the emf/current ratio to vary with

current, then Ohm's Law would have been proved untrue and electrical resistance scientifically valueless.

So far, so plausible. I was almost persuaded by these contentions to bin every ohmmeter in sight. But Adiutori is too deep for me when he presents such an argument as: 'Mathematical operations can not be performed on dimensions because dimensions are things. For example, feet can not be divided by seconds. If feet could be divided by seconds, it would be possible to answer the question "How many times does a second go into a foot?"'.

Clerk Maxwell's eyebrow, too, might have been raised by doubt cast on the notion of velocity. His mathematics remarkably gave the speed of light (electromagnetic waves), which I very nearly attained as an escape velocity myself when I reached this challenge in Adiutori's thesis.

You, however, may be open-minded and patient enough to persevere longer than I have done, and to follow the author's reasoning through to his new method of electrical calculation.* If you do, and are converted to ohmlessness, please tell me what to do with all those meters. And tell me also whether there is to be a global burning that will make the Library Fire of Alexandria seem unenterprising.

* The New Engineering by Eugene F Adiutori is purchasable direct from Ventuno Press, 12887 Valewood Drive, Naples, FL 34119, USA