

Channel hopping

What was your first experiment as a child?

While riding with my grandmother in her 1939 Ford, I became fascinated with trying to figure out a way to estimate the total distance of our journey solely from tracking the angle of the speedometer throughout the trip. I never did come up with an algorithm for this, but perhaps that's why I was so excited by my first encounter with calculus in high school.

Who has been the most important mentor in your career?

Gilbert Ling, a brilliant but ultimately tragic figure whose theory that membranes don't exist appealed to the contrarian in me, then a clueless graduate student. Also influential was his inability to discard a theory becoming increasingly untenable in the inexorable flow of fact. This made me highly sensitive to Faraday's dictum about holding theories lightly on the fingertips, and of Scatchard's extension of that dictum to facts themselves.

What book has been most influential in your scientific career?

Gilbert Ling's *A Physical Theory of the Living State* (1962). In my final year as an undergraduate physics student, this book fired up my fascination with a biological question: why are Na⁺ and K⁺ handled so differently by cells when they are chemically so similar? If I had not stumbled upon this book, I might still be a high-school maths teacher, a job that I enjoyed very much before I returned to school for graduate work.

What literary character would you employ as a postdoc?

At first impulse, I thought to offer the job to Henry Burlingame III, the omniscient and personally appealing teacher in John Barth's comic masterpiece *The Sot-Weed Factor*. But on pondering this, I realized that Henry's experiments would all work perfectly the first time — his gels would be consistently without blemish and the single-channel records noise-free — and that consequently I'd always suspect his results to be fraudulent. So instead I'd choose razor-sharp, clear-eyed Dorothea Brooke from George Eliot's *Middlemarch*, who makes mistakes but always learns from them and is driven deeply by an uncompromised curiosity.

Does this mean that there's an ion-channel equivalent of the 'Key to All Mythologies'?

Yes. The role of the top quark in ion selectivity and gating — and we are all, at bottom, Casaubons.

What's your favourite conference destination, and why?

That's easy — Baltimore. It's simply a perfect place to exchange scientific information: a well laid-out conference hall close to cheap hotels, a surfeit of crab cakes, and not much in the way of distraction.

What was the most memorable comment you ever received from a referee?

"This paper will be very interesting to three people in the world and totally boring to everyone else." The reviewer (I think I know who you are — and where you live) had it exactly right. I was one of the three people.

What music heads the playlist in your car or lab?

In my car, Mose Allison's sublime jazz/blues piano. In the lab, the rule is no music composed after the death of Mozart. That generally takes care of things.

Assuming the dead can be raised and/or time travel exists, who from the world outside science would you most like to have dinner with?

Sam Clemens. If a third were permitted to join us for brandy and cigars, I'd invite Henry Mencken.

What one thing would you rescue from your burning laboratory?

My daughter's first oil painting.

What's the best piece of advice you've received?

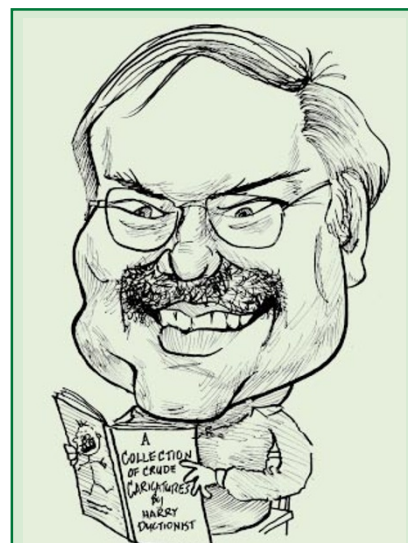
From my postdoctoral adviser Ef Racker, his exact words and urgent tone still vivid in my memory: "Don't think about the damned experiment — just do it!"

What do you most dislike about having research published?

The inevitable awkward waltz with the copyeditors, who, while slavishly following rules of syntax and diction learned as pre-adolescents (rules promulgated by their tin-eared employers), strive to disembowel my full-blooming paragraphs of every vestige of colour; my sinuous sentences of music; and my subtle words of connotative accompaniment. This problem is, paradoxically, far more prevalent in the popular vanity journals such as *Nature* than in workaday technical publications. But at least I'm not bitter.

Is there a 'tyranny of reductionism' in how scientists are trained today?

I don't accept the question's premise — that such a tyranny exists. The word 'reductionism' carries pejorative overtones that apply only to its crudest caricature, usually drawn by non-scientists, not to its actual implementation in the trenches. The caricature portrays us collecting free-floating facts about little meaningful things while missing the big picture on the



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pointillist canvas. But it seems to me that all great understandings of the big things emerge from meticulous attention to the detailed workings of the minutiae: solar systems from the investigation of real numbers, evolution from pigeon-breeding, and so on. Even the novel behaviours of complex systems arising from complexity itself are ultimately comprehensible only in terms of the underpinnings — as with Boltzmann's treatment of a huge collection of newtonian billiard balls vomiting up that humdinger of an emergent property, the second law of thermodynamics.

Do you have a burning ambition to do or learn something of no practical or immediate value? If so, what?

As I approach the age of 60, crossing the American continent on a bicycle has become the most appealing useless accomplishment I can muster in my imagination that is still marginally plausible.

The host at a dinner party has placed you next to God. What would you talk about?

I would be very curious to ask God: "On those rare occasions when You decided to directly reveal a particularly important communication for the benefit of mankind — the burning bush, the annunciation, the Bhagavad-Gita, the giving of the Koran or the Golden Tablets, for instance — why did You neglect to mention the value of π , the reason for the seasonal agricultural cycle, or the biological basis of inheritance?"

What would you have written on your gravestone?

His self-love was, on occasion, required. ■