

RICHARD FEYNMAN, SOURCERER

This is an addendum to my article on Richard Feynman in the Feynman commemorative issue (February, page 42). That article contains many Feynman quotations, taken almost entirely from his 1965 Nobel address, as recorded in the 1966 Nobel Foundation book *Les Prix Nobel en 1965*. Inasmuch as that volume also includes Sin-itiro Tomonaga's delayed lecture of 6 May 1966, it is very likely that the book was distributed in the second half of that year.

I had retained no particular memory of Feynman's Nobel lecture, and I do not think that I glanced at his printed account more than casually on its arrival from Stockholm in the latter part of 1966. Thus, when I finally read his words in detail last September, it was a severe jolt to come across the following section (in which Feynman is proposing a replacement for the use of wavefunctions in situations that lack time locality): "Instead of wavefunctions we could talk about this; that if a source of a certain kind emits a particle, and a detector is there to receive it, we can give the [probability] amplitude that the source will emit and the detector receive. We do this without specifying the exact instant that the source emits or . . . [the] detector receives, without trying to specify the state of anything at any particular time in between, but by just finding the amplitude for the complete experiment. And, then we could discuss how that amplitude would change if you had a scattering sample in between . . . and so on."

These are the initial stages of source theory! (It was during the Spring 1966 semester at Harvard that I began to appreciate that a new and more physical foundation would appear if the familiar concept of the source of a field were replaced by that of a particle.) And then I remembered a long-ago conversation with Feynman. In response to his query about the nature of source theory, I had given him a brief outline, to which he replied, "I had an idea like that once, but I never got around to doing anything with it."

Feynman had a long record of disdain for renormalization as a method of dealing with divergences: He called it "a way to sweep . . . divergences under the rug," "a dippy process" and "hocus-pocus." If he had gotten around to doing something with the particle source concept, would he not have recognized that source theory is the realization of his lifelong quest for a physically intuitive theory that is devoid of divergences—and free of renormalization?

I cannot rule out the possibility that I came away from Feynman's Nobel lecture with a subliminal implantation of the particle source idea. Accordingly, I am happy to acknowledge Richard Feynman as a virtual source of source theory.

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2/89

Surely Mr. Feynman Was Joking

The February issue of *PHYSICS TODAY* celebrated the life of Richard Feynman. It seems to me appropriate to make some mention of Feynman's opinion of *PHYSICS TODAY*. I believe that what follows can count as the formal publication of a historically important document.

On 26 October 1964, the American Institute of Physics sent Feynman a communication that began, "In our RENEWAL INSTRUCTIONS covering your Renewal Invoice for dues and/or subscriptions. . . ."

Feynman's reply of 9 November 1964 follows in full:

Gentlemen:

Look—I'm a physicist, not an accountant—please send me *Physical Review A* and *B*—do NOT send *Physics Today* under any circumstances—and tell me how much I owe you. I don't know what an invoice is—nor did you enclose the "business reply envelope for my convenience."

Sincerely,
Richard P. Feynman

This letter was discovered in the

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