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The Quotable Feynman

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Youth



I didn't get to do as much as I wanted to, because my mother kept putting me out all the time, to play.

— *Surely You're Joking, Mr. Feynman!*, p. 17

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When I was a kid, I had this notion that you could take the importance of the problem and multiply it by your chance of solving it. You know how a technically minded kid is, he likes the idea of optimizing everything anyway, if you can get the right combination of those factors, you don't spend your life getting nowhere with a profound problem, or solving lots of small problems that others could do just as well.

– *Omni* interview, February 1979

Don't despair of standard dull textbooks. Just close the book once in a while and think what they just said in your own terms as a revelation of the spirit and wonder of nature. The books give you facts but your imagination can supply life. My father taught me how to do that when I was a little boy on his knee, and he read the *Encyclopaedia Britannica* to me!

– Letter to Rodney C. Lewis, August 1981 (*Perfectly Reasonable Deviations from the Beaten Track*, pp. 332–333)

I went to take the calculus book out, and the teacher — sorry, the librarian — said, “Child, you can't take this book out. Why are you taking this book out?” I said, “It's for my father.” And so I took it home, and I tried to learn a little bit. My father looked at the first few paragraphs and couldn't understand it, and this was rather a shock to me — a little bit of a shock, I remember. It was the first time I realized that I could understand what he couldn't understand.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

I learned very early the difference between knowing the name of something and knowing something.

– *What Do You Care What Other People Think?*, p. 14

When I was a child and found out Santa Claus wasn't real, I wasn't upset. Rather, I was relieved that there was a much simpler phenomenon to explain how so many children all over the world got presents on the same night.

– *Los Angeles Times*, November 27, 1994

When I was young, what I call the laboratory was just a place to fiddle around, make radios and gadgets and photocells and whatnot. I was very shocked when I discovered what they call a laboratory in a university. That's a place where you are supposed to measure something very seriously. I never measured a damn thing in my laboratory.

– Future for Science interview

[On his first talk:] I remember getting up to talk, and there were these great men in the audience and it was frightening. And I can still see my own hands as I pulled out the papers from the envelope that I had them in. They were shaking. As soon as I got the paper out and started to talk, something happened to me which has always happened since and which is a wonderful thing. If I'm talking physics, I love the thing. I think only about physics, I don't worry where I am; I don't worry about anything, and everything went very easily.

– Future for Science interview

The moment I realized that I was now working on something new was when I read something about quantum electrodynamics at the time, and I read a book, and I learned about it. For example, I read Dirac's book, and they had these problems that nobody knew how to solve. I couldn't understand the book very well because I wasn't up to it, but at the last paragraph at the very end of the book, it said, "Some new ideas are here needed!" And so there I was! Some new ideas were there needed, so I started to think of new ideas.

— Interview with Yorkshire Television program, "Take the World from Another Point of View," 1972

[To one of his former high school teachers:] Another thing that I remember as being very important to me was the time when you called me down after class and said, "You make too much noise in class." Then you went on to say that you understood the reason, that it was that the class was entirely too boring. Then you pulled out a book from behind you and said, "Here, you read this, take it up to the back of the room, sit all alone and study this; when you know everything that is in it, you can talk again." And so, in my physics class I paid no attention to what was going on but only studied Woods' *Advanced Calculus* up in the back of the room. It was there that I learned about gamma functions, elliptic functions, and differentiating under an integral sign. A trick at which I became an expert.

— Letter to Abram Bader, November 1965 (*Perfectly Reasonable Deviations from the Beaten Track*, pp. 176–177)

[CBS] asked me what I thought of the New York School System, and I said that I am only good in physics and I do not know the

New York School System except for the particular school that I went to thirty years ago. I thought that my high school was very good. There was a great variety of science courses offered for those times — advanced math, physics, chemistry, and biology. Several teachers gave me direct encouragement, good advice, and taught me special things outside the regular courses. I had a good time in high school.

– Letter to Miriam Cohen, November 1965

[To his aunt:] It is good to hear from someone who has known me for so long. You have gone through all the stages with mother, from ruined linen towels to mom’s worrying about whether I would blow up the house with my laboratory.

– Letter to Jesse M. Davidson, December 1965 (*Perfectly Reasonable Deviations from the Beaten Track*, p. 181)

[On his father:] He was rational; he liked the rational mind and things that could be understood by thinking.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

When I got to kindergarten, which was much later — I was six years old — they had a thing in those days which was “weaving.” They had a kind of colored paper — square paper with quarter-inch slots made parallel. And you have quarter-inch strips of paper. One was the weft and the other was the warp. You’re supposed to weave it and make designs that were regular and interesting. And

apparently that's extremely difficult for a child. I was especially commented on; the teacher was very excited and surprised. I made elaborate patterns — correctly, without any difficulty, whereas it was so difficult for most of the children that they don't do that in kindergarten anymore.

- Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

My father would often take me to the Museum of Natural History — that was a great place. We would look at the dinosaur bones and stuff like that — it was great!

- Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

[On his father describing glaciers:] He understood! The thing that was very important about my father is not the facts but the process — the meaning of everything. How we find out; what is the consequence of finding such a rock? With a vivid description of the ice, which is probably not exactly right! Perhaps the speed was not ten inches a year but ten feet a year — I never knew; he never knew. But he would describe anyway, in a vivid way, and always with some kind of lesson about it. Like, “How do you think we find these things out?”

- Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

[On his sister, also a physicist:] She would hear us talking, and she would ask me, and I would explain it to her. It wasn't so direct in her case.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

I was always very upset if something went bad or if I was bad — I always tried to be a good boy.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

Arithmetic was very easy; it was too easy. For instance, when I was ten or eleven, one day I was called from a class to a previous class that I had been in by a previous teacher to explain to the class how to do subtraction. I had “invented,” (they claim) a better way of doing subtraction than they were using that she liked. She had forgotten it, in the meantime, so I was called from class to explain it to her.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

[On his friend Bernard Walker:] I had a friend who was as interested in science as I was, so we did much together — I was about twelve. We studied together, we'd argue together, we did chemistry experiments.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

I was not good at athletics. This always bothered me — I felt like a sissy because I couldn't play baseball. It was to me, at a childish age, a very serious business. I had trouble learning how to ride a bicycle Every once in awhile, I would get kicked out of the group. We had a hut, and each time I was kicked out of the group, I would invent something, like a periscope for the hut or a design for a second story or something.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

We put sodium ferrocyanide — sodium ferrocyanide? — or something, in the towels, and another substance, an iron salt, probably alum, in the soap. When they come together, they make blue ink. So we were supposed to fool my mother, you see. She would wash her hands, and then when she dried them, her hands would turn blue. But we didn't think the towel would turn blue. This was all in the Cedarhurst era. Anyway, she was horrified. The screams of “My good linen towels!” But she was always cooperative. She never was afraid of those experiments.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

[On boiling water:] I remember using the developing trays, which were waxed, so that they were insulated, putting water in them, and boiling it — and watching the most beautiful phenomenon at the end, when all the water boils away, and the last bit of water, it's dry, is making sparks, because it's breaking the circuit. And the sparks move around, because it breaks here, but the water

flows, you see, and it flows here and connects, and then it makes another spark here, and finally, these lines of salt, and beautiful yellow and blue sparks! It's a very beautiful thing. In fact, now that you remind me, I think I'll have to set one up and see what it looks like, after all these years. I used to boil water all the time with this thing.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

I had lots of trouble, because I remember, my friend and I — the man drew on the blackboard (I still remember, you know, he's going to explain how a projection system works, you know, the projector that makes pictures on the wall) — so he drew a light bulb, and he draws a lens and so on to explain. Then he draws lines coming out of the light bulb parallel, the rays of light going parallel to each other. So, I don't remember whether it was I or my friend, but one of us said, "But that can't be right. The rays come out from the filament radially, in all directions." I don't know if I used the word "radially," but anyway, we explained. He turned around and said, "I say they go parallel, so they go parallel!" Well, this didn't sit well with us, because I knew, certainly, that no matter what he said, the rays didn't go parallel.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

[On the Great Depression:] There was also the attitude that you should do something, work — you know, the idea that to hang

around and do nothing was somehow There was a feeling of some sort of responsibility to earn money. I can't explain it.

– Interview with Charles Weiner, March 4, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

I always kept up this ability to work very quickly with the mathematics, so as to get rid of the homework.

– Interview with Charles Weiner, March 5, 1966 (Niels Bohr Library and Archives with the Center for the History of Physics)

I don't know much about the “general theory of intelligence,” but I do remember when I was young I was very one-sided. It was science and math and no humanities (except for falling in love with a wonderful intelligent lover of piano, poetry writing, etc.).

– Letter to Dr. William L. McConnell, March 1975 (*Perfectly Reasonable Deviations from the Beaten Track*, p. 281)

I was inspired by the remarks in these books [Heitler and Dirac]; not by the parts in which everything was proved and demonstrated carefully and calculated, because I couldn't understand those very well. At the young age what I could understand were the remarks about the fact that this doesn't make any sense, and the last sentence of the book of Dirac I can still remember, “It seems that some essentially new physical ideas are here needed.” So, I had this as a challenge and an inspiration. I also had a personal feeling, that since they didn't get a satisfactory answer to the

problem I wanted to solve, I don't have to pay a lot of attention to what they did do.

– From *Nobel Lectures, Physics 1963–1970*, Elsevier Publishing Company, Amsterdam, 1972

At the age of thirteen I was converted to non-Jewish religious views.

– Letter to Tina Levitan, January 1967 (*Perfectly Reasonable Deviations from the Beaten Track*, p. 234)

You see, what happened to me, what happened to the rest of us is we started for a good reason, but then we're working very hard to do something, and to accomplish it, it's a pleasure, it's excitement.

– UCSB talk, "Los Alamos from Below," February 1975

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