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a second new particle that was obviously related to the J/ψ , made the notion of quarks as mechanical objects irresistible to all but an obdurate few. The holdouts were either converted or consigned to a just irrelevance by the discovery of charm eighteen months later.

MEETING THE QUARK

My first contact with quarks came during the summer of 1966, as I was about to begin graduate school in Berkeley. Before I had set foot in a classroom, the Thirteenth International Conference on High Energy Physics took place on campus, a gathering of about four hundred scientists from around the world. Though attendance was by invitation, with strict national quotas, I could present myself at the front door of Wheeler Auditorium in the morning and obtain a day pass that allowed me to sit inconspicuously in the back of the room and watch the proceedings. Except for what I had learned that summer working through two little books by Richard Feynman, I knew nothing of the interactions between particles, or even

what the particles were like. So there I was, *tabula rasa* among the experts.

I could understand a little of the opening address by Murray Gell-Mann and a talk on symmetries by Richard Dalitz of Oxford. Both of them talked—rather cautiously, it seemed—about hypothetical objects called quarks as fundamental constituents of the proton and neutron and all the other strongly interacting particles. Although the idea that three quarks made up a proton while a quark and antiquark made up a meson brought order to a lot of information, it was clear that nobody had any idea how this could happen and whether there could be a self-consistent theory. And besides, no one had seen a quark.

Just as the Greek atomists had their opponent in Anaxagoras, who advocated an infinite progression of



Richard Dalitz in 1961.

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