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Quarks, leptons and beyond

Are particle physicists the schoolmen of our time? Asking the question does not imply the answer yes, although it does, we fear, breach the unwritten rule against any interference in what is going on. There are two sound reasons for the rule. First, no one understands particle physics except particle physicists themselves, and since for the most part they know what they are doing, the question why they are doing it is not one which they find occasion to pose. Secondly, for the rest of us it must smack of philistinism to enter the arena at all, as though one who was tone-deaf should cast doubt on a performance of *The Ring* at Bayreuth. However, there is a difference. Even those who do not readily identify with Wagner recognise (a) that he had a certain aim in mind in composing the score, and (b) that that aim is accomplished whenever the work is performed. As to (a) it is not clear what aim the particle physicists now have for themselves, and as to (b) there is therefore no knowing how the accomplishment of the aim, if there is one, would be recognised and applauded if it came about.

For instance, some 200 sub-atomic particles have been discovered in the last two or three decades, and whereas in the early days each particle was the occasion for a press conference and an announcement that we were now approaching the very building blocks of matter, that practice has now been discontinued. Each building block has turned out to consist of other building blocks, and as they became smaller and more elusive the gigantic machines needed to detect them when they turn up (they don't always) have increased in size. In the vast circular tube built for CERN near Geneva, particles will be caused to collide at enormous speed and without touching life at any point. Quarks, leptons, mesons, and charmed particles will be thrown off in all directions, but will the cosmos be disturbed? Alas, or perhaps thankfully, no.

Last week a symposium was called at Cambridge to discuss six of the 200 particles which are, it appears, partly matter and partly not-matter. (that does not mean that they are anti-matter, which is a different thing entirely, as we should soon be aware if we came into contact with any. We should disappear in a puff of particles—or anti-particles as the case might be.) For want of a better term, the physicists have called them glue, because they apparently hold quarks together inside protons, but any similarity to the known world is purely coincidental. But the Cambridge colloquium does raise some terribly naive questions which someone has to be fool enough to ask. And the sort of questions which occur are: when are we going to get to the bottom of all this? What is the aim? Can a philosophy be built on these 200 interim quarks, leptons, glues, and hermaphrodite particles? If not, how many more sub-particles will it take? Will anybody understand, particle physicists apart, when it is all over? We ask because, pleasant though it is to have a highly intelligent, if expensive, science with no military application whatever, it would be comforting to know that there is a purpose of some kind that can, even dimly, be discerned. Pure mathematics is one thing: a brain at one end and a pencil at the other. But a science that exists, or so it seems, simply to go subdividing particles at ever-increasing technological cost, would be embarrassed to find that it was only proving a tautology and might lose its audience in trying to settle how many leptons dance at the sharp end of a quark.