Everyone is enough of an empiricist to believe that we learn from experience and no one is so far removed from rationalism as to deny that ideas play a vital role in the theories we construct about the world. But it is only too easy, and perhaps too tempting, for philosophers with a pronounced empiricist or rationalist bias to caricature the position of their opponents and make them appear as holding ludicrously simplistic views about the nature of scientific knowledge. In fact, any philosophical position worth its salt has a built-in flexibility or a power to accommodate, sometimes with surprising comfort, theses that seem central to rival theories. The Leaning Tower experiment, however fictitious, is equally well explained by rationalists or empiricists. Facts, however hard or obdurate, have a way of lending themselves to varying interpretations. Properly marshalled, they can be enlisted to serve any good philosophical cause.

Of course, one does come across extreme statements but these are usually found in popular books or among the *obiter dicta* of professors who, despairing of getting their undergraduates to grasp the complexity of the problem, vow that they shall, at least, remember one illuminating falsehood. “It is better”, they say, “to have students believe that Galileo never performed experiments rather than have them profess with glib positivistic complacency that he dropped balls from the Tower of Pisa and that their thud made the opponents of scientific progress speechless to the present day.” Such drastic remedy may be intended to counteract the influence of Oliver Lodge’s *Pioneers of Science*, first published in 1893, and still going strong in a paperback edition. Lodge not only tells us what Galileo’s method was like, he also draws a moral, and issues a warning:

Galileo was not content to be pooh-poohed and snubbed. He knew he was right, and he was determined to make everyone see the facts as he saw them. So one morning before the assembled University, he ascended the famous leaning tower, taking with him a 100 lb shot and a 1 lb shot. He balanced them on the edge of the tower, and let them drop together. Together they fell and together they struck the ground.
The simultaneous clang of these weights sounded the death-knell of the old system, and heralded the birth of the new.

But was the change sudden? Were his opponents convinced? Not a jot. Though they had seen with their eyes, and heard with their ears, the full light of heaven shining upon them, they went back muttering and discontented to their musty old volumes ... We need scarcely blame these men; at least we need not blame them overmuch. To say that they acted as they did is to say that they were human, were narrow-minded, and were apostles of a lost cause ... Conduct which was excusable then would be unpardonable now, in the light of all this experience to guide us. Are there any now who practically repent their error and resist new truth? Who cling to any old anchorage of dogma, and refuse to rise with the tide of advancing knowledge? There may be some even now.¹

We cannot read these words without a smile and perhaps a touch of nostalgia for an age when men knew not only how science had originated but where it was taking us. We cannot divorce our intellectual interests from the assumptions of our age anymore than we can step out of its technological limitations. As long as men believed that the 17th century marked a break with the past, that it heralded the dawn of a new intellectual period, it was normal to seek to clarify the nature of the scientific method by contrasting it with the method that prevailed before. One of the most plausible explanatory models was devised by Ernst Mach who saw the Galilean breakthrough in the discovery of the law of inertia. In this, he had an illustrious forerunner in the person of Isaac Newton who took it for granted that Galileo had preceded him in formulating the First Law of Motion. Mach could not positively assert that Galileo discovered the law by making experiments but he was in no doubt “that he tested the law experimentally” for “Salviati, chief advocate of Galileo’s doctrines in the Discorsi, assures us of his repeatedly taking part in experiments, and describes these experiments very accurately.”² Mach’s Teutonic rigour made no allowances for Latin exuberance.

When the historical studies of Emil Wohlwill made it clear that Galileo’s concept of inertia had the troubling feature of circularity, Mach was not unduly perturbed. What Galileo did not say but could have said, had he been fully aware of the logical consequences of his own position, became what really counts. However deficient Galileo’s explicit utterances may have been he was, at least implicitly, in possession of the correct doctrine.

The best way of dispensing with a solution that is considered unsatisfactory is to attack the question that it was meant to answer.