

Actually, Einstein's original paper announcing the Special Theory of Relativity (1905) gave little grounds for the current misconception concerning the origins of his discovery. It opens with a long paragraph referring to the anomalies in the electrodynamics of moving media, mentioning in particular the lack of symmetry in its treatment, on the one hand, of a wire with current flowing through it moving relative to a magnet at rest, and on the other of a magnet moving relative to the same electric current at rest. It then goes on to say that 'similar examples, as well as the unsuccessful attempts to observe the relative motion of the earth in respect to the medium of light lead to the conjecture that, as in mechanics, so also in electrodynamics, absolute rest is not observable. . . .'<sup>1</sup> The usual textbook account of relativity as a theoretical response to the Michelson-Morley experiment is an invention. It is the product of a philosophical prejudice. When Einstein discovered rationality in nature, unaided by any observation that had not been available for at least fifty years before, our positivistic textbooks promptly covered up the scandal by an appropriately embellished account of his discovery.

There is an aspect of this story that is even more curious. For the programme which Einstein carried out was largely prefigured by the very positivist conception of science which his own achievement so flagrantly refuted. It was formulated explicitly by Ernst Mach, who, as we have seen, had first advanced the conception of science as a timetable or telephone directory. He had extensively criticized Newton's definition of space and absolute rest on the grounds that it said nothing that could be tested by experience. He condemned this as dogmatic, since it went beyond experience, and as *meaningless*, since it pointed to nothing that could conceivably be tested by experience.<sup>2</sup> Mach urged that Newtonian dynamics should be reformulated so as to avoid referring to any movement of bodies except as the relative motion of bodies with respect to each other, and Einstein acknowledged the 'profound influence' which Mach's book exercised on him as a boy and subsequently on his discovery of relativity.<sup>3</sup>

portance. (1) The problem he is referring to in his autobiographical sketch about the impressions of an observer moving with the velocity of light and viewing a lightwave; (2) the lack of symmetry of action between phi current elements and phi magnets. (In the pre-relativistic electrodynamics of moving media it made a lot of difference whether you move a wire with a current relative to a magnet, or the magnet relative to the wire.) (1) suggested to him that the velocity of light must play a privileged role; (2) seemed strange since, among other reasons, he felt that the situation is to be determined by the relative velocities which are the same. I hope I do not misrepresent him.

The Michelson-Morley experiment had no role in the foundation of the theory. He got acquainted with it while reading Lorentz's paper about the theory of this experiment (he of course does not remember exactly when, though prior to his papers), but it had no further influence on Einstein's considerations and the theory of relativity was not founded to explain its outcome at all.

<sup>1</sup> Albert Einstein, 'Zur Elektrodynamik bewegter Körper'; *Annalen der Physik* (4), 17 (1905), p. 891.

<sup>2</sup> E. Mach, *Die Mechanik in ihrer Entwicklung*, 2nd edn., Leipzig (1889), pp. 213-14.

<sup>3</sup> Albert Einstein: *Philosopher-Scientist*, p. 21.