

It is still the elect to whom it is given to escape from the bondage of their own consciousness so completely that they can think of time as nothing more than the most convenient means of ordering events. Sir Oliver Lodge was voicing the feeling of the man in the street when, at Birmingham, he said: "Surely, we must admit that space and time are unchangeable: they are not at the disposal even of mathematicians."

It is not so long since a similar divergence of view existed in respect of the other fundamental dynamical magnitude *mass*. But here the controversy has subsided; the mass of a body is still something more than a shadow, though no teacher of dynamics would to-day think of defining it as "the quantity of matter" in it. Rather the conception has gained in concreteness through its separation from the crude intuitive notion of heaviness, through the realisation that no precise definition is possible apart from the uniformity which is expressed in the laws of motion.

A reader of "The Grammar of Science" might well have exclaimed: "From this day forth mass is a mere shadow." But no one now would assert that mass as a measurable quantity is an *a priori* and obvious concept, independent of the phenomena of motion.

Now, apart altogether from the particular assumption of the principle of relativity that electrical phenomena cannot reveal an absolute motion, it was implied by its founder that as measurable quantities space and time are on exactly the same footing as mass, in that they are inseparable from the uniformities which they are used to describe. They are no more at the disposal of the metaphysician than of the mathematician. The psychologist is within his province in endeavouring to elucidate the nature of the consciousness of duration, but in the region of exact physical measurement this aspect of time is eliminated, so that only experiment can say whether there is, for instance, a unique sense in which two events at different places are simultaneous. It is exactly this which experiment has failed to do. Whether it will ever do so cannot be foreseen; the principle of relativity seeks to examine some of the consequences of assuming that it will not. But it is for the present generation to decide whether it is a sound scientific principle that time, like other physical concepts, is dependent for its significance on the observation of uniformity in physical processes, and that the reality of it to our minds is only due to the unbroken regularity of these processes. In this sense we may surely say with Sir Oliver Lodge that space and time are unchangeable, but at the same time we must leave it to nature to tell us what they are, and not foist upon the measures of them a metaphysical significance borrowed from a conceptual scheme which has been outgrown by experiment as the dynamical universe conceived by Laplace has been. The small volume before us embodies the classical papers, in which the gradual transition from the Newtonian thought about space and time to this point of view is developed.

THE HAVRE MEETING OF THE FRENCH ASSOCIATION.

THE arrangements are now complete for the visit of members of the British Association who have been unable to take part in the meeting in Australia, to the congress of L'Association Française pour l'Avancement des Sciences at Havre, beginning on Monday, July 27, and ending Sunday, August 2. Nearly one hundred members have intimated their intention of availing themselves of the courteous and kindly invitation with which they have been honoured by the French society. Among them are about fifty delegates of the associated and affiliated societies which are in correspondence with the British Association. The council of that association has approved of the holding of a meeting of the conference of delegates at Havre during the present year, to be followed later on, if necessary, by a meeting in London for any formal business that may still require to be done.

The session of the conference of delegates will be held at Havre on Tuesday, July 28, at 2.45 p.m., and as it forms part of the accepted programme of the French Association, it is hoped that it may be attended by many members of that association. It will be presided over by Sir George Fordham, who will deliver an address, in which he will direct attention to the work of the conference, since its establishment in 1885, and that will be followed by a discussion, in which the functions of local societies will, it is hoped, be considered from an eminently practical point of view. There is, it is understood, a strong feeling among scientific men in France in favour of the organisation of local societies in that country upon similar principles, and it would be very satisfactory if one result of this joint meeting should be to facilitate the movement in that direction.

At the opening meeting of the congress, to be held in the Grand Theatre, Place Gambetta, on Monday, July 27, at 2.30, Sir William Ramsay will speak as the principal representative of the British Association. In the sectional meetings on the four following days, several papers will be contributed by the English visitors. On Friday, July 31, at 2.30, a general Anglo-French meeting will be held, at which it is proposed that the subject of the Channel Tunnel should be discussed, and on the evening of the same day a discourse will be delivered by a member of the British Association in the Grand Theatre. Thursday, July 30, will be devoted to an excursion to Rouen, and the congress will conclude with a cruise and visit to Cherbourg on the Transatlantic steamer *La Touraine*.

The committee to which the council of the British Association has entrusted the making of these arrangements owes much gratitude to Dr. A. Loir, who two years ago conveyed the invitation of the French Association to the meeting at Dundee, and has been most assiduous in his care for the comfort of the English visitors. The invitation is felt to be a very graceful act on the part of the French Association.