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Introduction.

SINCE 1905, when Prof. A. Einstein published his Principle of Relativity in its special form, much attention has been devoted to the subject in scientific circles, and during the last two or three years keen interest has been shown in it by many general readers of intellectual type. Nearly a thousand books, pamphlets, and papers have appeared in which the principle as a whole is described, or some of its aspects are discussed, and among these are a few which aim at making its character and consequences clear without the mathematical expressions which give it precise significance. A praiseworthy essay of this kind is that by Mr. L. Bolton, a senior examiner in the Patent Office, published in the *Westminster Gazette* on Monday by arrangement with the *Scientific American*, which awarded it a prize of five thousand dollars as the clearest explanation of Einstein's principle for general readers.

It is not difficult to understand why such wide interest is taken in this principle. No special knowledge is required to realise that measurements of space and time are essentially relative, and as all thinking people have pondered over the metaphysics of infinity and eternity, they are attracted by a conception in which these ideas are involved. The physicist is concerned with the principle because it developed out of experimental results of a negative kind, and is intimately associated with electromagnetic theory; the astronomer because it gives a new interpretation of effects not explained by the Newtonian law; and the mathematician because it provides him with a new space-time geometry. The principle has thus points of contact with many fields of scientific activity, and it is on this account that the present issue of NATURE is devoted to it.

We are gratified that so many leading authorities have been able to favour readers of this journal with surveys of the foundations of the principle or with their views as to the stability of the framework based upon them. Our own function has been limited to suggesting the scope of each article in the series, and, so far as possible, securing that the range of the whole covers the chief points around which discussion has centred. The writers have not seen one another's contributions, so that each article is an independent statement complete in itself so far as it goes. The order of the articles in the series is, therefore, important, and we believe that adopted will be considered appropriate to these columns.

Prof. Einstein describes the natural sequence of ideas which led to the conception of his principle, and Mr. Cunningham follows with a historical sketch of the conditions which demanded a revision of æther theories in relation to problems of absolute motion. The astronomical consequences—the displacement of light by the gravitational field of the sun, the movement of the perihelion of Mercury's orbit, and the displacement of solar spectrum lines (not yet established)—are dealt with by Sir Frank Dyson, Dr. Crommelin, and Dr. St. John respectively. The relation of Riemann's geometry of n-dimensions to the principle is outlined by Prof. Mathews; and the four articles which follow, by Mr. Jeans, Prof. Lorentz, Sir Oliver Lodge, and Prof. Weyl, are concerned mainly with physical aspects. How differently philosophers and astronomers regard the meaning and measurement of time is described by Prof. Eddington, and this article, with those by Dr. Norman Campbell and by Miss Wrinch and Dr. Jeffreys, leads naturally to the metaphysical conceptions presented by Prof. Wildon Carr.

Whatever may be the ultimate place taken by the principle of relativity in the history of science, no idea has ever proceeded by more logical steps from the rank of hypothesis to theory. In two cases predicted phenomena for which no satisfactory alternative explanation is forthcoming have been confirmed by observation, and the third is still a subject of inquiry. In this journal we are concerned mainly with the bearing of the principle upon physical science, and only incidentally with its metaphysical aspects. We may remark, however, that the absolute in Nature is not abolished by the principle. Measurements of time and space cease to be absolute and depend upon the motion of the observer, but things like energy and the velocity of light are independent of such motion and remain as absolute as ever they were.