IS SPACE FINITE OR INFINITE?

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Sir Robert Ball, F.R.S., is of the opinion that we are in the presence of about equal difficulties, whether we attempt to think of space as infinite or as finite. If you try to conceive a boundary of space, the imagination will suggest that there is something on the other side of that boundary from which you can commence again; and yet it seems impossible to suppose that the journey could be carried on for ever. We are referred to Kant's view, that space is "a form in which the human mind is compelled to regard objects, and not a self-existing fact of external nature." We have, therefore, no power in our own consciousness to surmount the difficulties of conception to which reference is made, since they arise from conditions of our mental constitution. Reasoning about space will do no more to remove these mysteries than it will to give the man who is born blind a definite notion of the various colors. We know space, from the standpoint of common sense, only as room—that which holds all things; and yet this definition, in the light of philosophy, has very little value, as Kant and other distinguished thinkers, including Spencer, have abundantly shown.

An interesting part of Mr. Ball's article is that in which he refers to a recent discussion, occasioned by an extract from a work written by Prof. A. E. Dolbear, in which the positions of the higher geometry were criticized very freely and vigorously.

Mr. Ball says that Euclid's notion of parallel lines is so far from being an axiom of the same character as that "If equals be added to equals, the wholes are equal," that it is quite possible to doubt this notion without doing any violence to our consciousness. The principle assumed in this so-called axiom, he says, cannot be proved, and he declares that nearly all of our difficulties in connection with our conceptions of space have their origin in the ambiguities arising from the assumption which this axiom about parallel lines implies.

Some modern mathematicians, he mentions, have gone so far as to deny the existence of this axiom as a truth of nature, and he says that, when freed from the embarrassment which the assumption of Euclid involves, a geometry emerges which removes our difficulties. This inclined him to the view that space is finite rather than infinite, so far as we can assign definite meaning to the word finite. He says that all known facts concerning space can be reconciled with the supposition that, if we follow a straight line through space, using for the word straight the definition which science has truthfully given to it, that then, after a journey which is not infinite in its length, we shall find ourselves back at the point from which we started. In referring to the attribute of straightness, he says that "it is quite compatible with the fact that a particle moving