the point of view of F. Kaufmann, and then gives an account of the intuitionism of Brouwer and of the results in connection with it of Brouwer, Heyting (the author of the present work), Kolmogoroff, Glivenko, Gödel, Gentzen, de Loor, Belinfante. The second section discusses the classical axiomatic method and the concepts of consistency and categoricity, then proceeds to an account of Hilbert's formal system and the Hilbert concept of a metamathematical proof of consistency. The consistency proofs of Ackermann and von Neumann are outlined; and brief mention is made of the consistency proof of Herbrand; also of the famous theorem of Gödel and its significance in this connection. And the section ends with a discussion of the relationship between formalism and intuitionism. The third section gives a description of several other points of view on the foundations of mathematics, notably those of Mannoury and Pasch. The fourth section discusses the relation of mathematics to the natural sciences, comparing the formalistic and the intuitionistic accounts of this relation. At the end of the pamphlet is a five-page bibliography of publications in this field.

ALONZO CHURCH

The Differential Invariants of Generalized Spaces. By T. Y. Thomas. Cambridge, University Press, 1934. 241 pp.

This book has a special place in the growing literature on linear displacements in a general manifold of an arbitrary number of dimensions. It deals, as the title indicates, with the differential invariants of such manifolds, thus excluding to a considerable extent special geometrical points of view, and concentrating on the analytical side of the theory. There it throws full light on a field in which the author has distinguished himself for many years through fundamental contributions. This comprehensive account of the present state of things is the more welcome as it is the first of its kind to be written.

The book begins with a general discussion of n-dimensional spaces as a basis for a theory of differential invariants, starting from a selected set of fundamental postulates. An affine connection is introduced leading immediately into the midst of things: the affine and the projective geometry of paths, Riemannian spaces, spaces with distant parallelism, conformal and Weyl spaces. The immediately following chapters give the foundations of the invariant theories of these spaces, built upon the motion of affine, projective, and conformal relative tensors. Then follow normal coordinates on which the general theory of extension of tensors is based, a theory which leads us from one relative tensor to other tensors by means of differentiation. A next chapter is devoted to an exposition of spatial identities based on the concept of the complete set of identities of the components of an invariant, that is a set of identities furnishing all the algebraic conditions these components satisfy. The simplest example is the complete set of identities of the components $g_{\alpha\beta}$ of the fundamental tensor of a metric space, which consists of the identity $g_{\alpha\beta}=g_{\beta\alpha}$. This leads to complete sets of identities for the curvature tensor of metric space, the projective curvature tensor, and to so-called divergence identities. Then follows a chapter on absolute scalar differential invariants and parameters, which can be considered as defined by means of complete systems of