Of especial interest to the geometer will be the frequent recourse to fundamental domains defined by the invariant metric.

Throughout this memoir, numerous examples are calculated for special domains. Extensive bibliography and detailed indications of original papers are given.

H. BEHNKE

La théorie de la relativité restrainte. By O. Costa de Beauregard. Paris, Masson, 1949. 6+174 pp. 800 fr.

In this little volume, the author presents a textbook of the special theory of relativity, with special emphasis on those aspects of the theory to which he himself has contributed. As a result, he has shown that it is possible to this day to write a textbook on the subject that is not repetitive.

The preface contributed by Professor de Broglie is most illuminating. It appears that the author's principal contribution has been the thorough investigation of three-dimensional integrals in Minkowski space, particularly as regards their transformation properties. While the results are probably well known to differential geometers, their consistent application to physically interesting questions affords the physicist an introduction to relativistically invariant three-dimensional (space-like) integrals.

Space-like integrals are frequent in physical theories. The integral over the electric charge density must be extended over a three-dimensional space-like domain to yield the total charge; the integral over the entropy density in three dimensions gives the total entropy, and so on. The corresponding four-dimensional integrals lack physical significance. In the standard physical literature Schwinger was among the first to discover that one cannot examine the properties of such integrals conveniently if one restricts oneself to plane surfaces. The reason is that in going over from one surface to a neighboring one (connected with each other by means of an infinitesimal transformation) one finds that the variation of the integral consists of terms having the form of a (three-dimensional) volume integral and additional terms that appear in a (two-dimensional) surface integral. Now if the only domains to be considered are space-like coordinate hypersurfaces in Minkowski space, the surface integrals are to be taken at infinity, and the convergence considerations that must be carried out, though feasible, are artificial. It is much more convenient to consider at first neighboring domains that coincide everywhere except in a bounded domain. And that point of view requires the consideration of curved hypersurfaces. All this has, of course, been