curves in which the developables of the congruence intersect the surface is obtained. This net is called the *intersector net* on S. It is shown that the exhibition of a congruence relative to S for which the intersector net coincides with the lines of curvature net on S requires a solution of a partial differential equation of Laplace. It is also demonstrated that the specification of a congruence for which the intersector net coincides with the asymptotic net on S requires a solution of two partial differential equations of parabolic type. (Received October 11, 1945.)

37. T. Y. Thomas: *Absolute scalar invariants and the isometric correspondence of Riemann spaces.*

Necessary and sufficient conditions for the isometric correspondence of Riemann spaces R_n and $\overline{R}_n$ are given in terms of the equality of absolute scalar invariants of the spaces. In the general case for which the spaces admit a complete set of n functionally independent scalars it is proved that these and a certain derived set of scalars suffice for the solution of the problem. The solution of the correspondence problem is given for spaces of two dimensions which do not admit two functionally independent scalars. (Received October 10, 1945.)

38. T. Y. Thomas: *Topological theory of dynamical systems.*

The projective or topological theory of dynamical systems is concerned with the study of the trajectories independently of their time parameterization. This paper deals with the possible changes in the invariants determining the system which leave the trajectories unaltered. The case of the conservative system is of especial interest and is treated in detail. Under the assumption that the dynamical systems admit essentially a single quadratic or energy integral it is proved that the most general transformation on the coefficients $g_{\alpha\beta}$ of the expression for the kinetic energy and the potential function V is given by $g_{\alpha\beta}=(cw+d)h_{\alpha\beta}$ and $V=(aw+b)/(cw+d)$ where the a, b, c, d are constants. It is shown, moreover, that the property of a conservative system of possessing essentially only one energy integral is invariant under this transformation. The methods can be applied to systems which are not conservative. (Received October 10, 1945.)

Logic and Foundations

39. A. R. Schweitzer: *On the genesis of number systems.* I.

This paper aims to effect a gradual transition from the foundations of geometry to postulates for number systems in terms of undefined relations (operations) analogous to concepts previously developed by the author, Amer. J. Math. vol. 31. The first of these sets uses the undefined operation "replacement" (transformation) analogous to that employed in Chapter II of the preceding article, p. 373. A set S of elements (α) is combined into dyads $(\alpha\beta)$ of a set T assumed subject to two types of replacement of dyads by elements, symbolized by $R(\alpha\beta)=\gamma$ and $P(\kappa\lambda)=\mu$. These relations are also expressed, $\gamma R(\alpha\beta)$ and $\mu P(\kappa\lambda)$ or $\gamma=\alpha+\beta$ and $\mu=\kappa\times\lambda$. A closer analogy is attained by assuming, instead of $R(\alpha\beta)=\gamma$, that if $\alpha\xi$, $\beta\xi(\xi\alpha, \xi\beta)$ are in T, then γ exists in S such that $\gamma\xi(\xi\gamma)$ in T replaces $\alpha\xi$, $\beta\xi(\xi\alpha, \xi\beta)$; in symbols, $R(\alpha\xi, \beta\xi)=\gamma\xi$ or $\gamma\xi R(\alpha\xi, \beta\xi)$ or $\gamma\xi=\alpha\xi+\beta\xi$; and so on. The relation $\gamma=\alpha+\beta$ then holds if and only if $\gamma\xi=\alpha\xi+\beta\xi(\xi\gamma=\xi\alpha+\xi\beta)$ for any ξ in S. Postulates in terms of $\gamma R(\alpha\beta)$ and $\mu P(\kappa\lambda)$ are also interpreted as analogous to the author's system ${}^2R_2$ (ibid. p. 382). (Received October 19, 1945.)