one given by the author in a previous paper (*Projective differential geometry of a pair of plane curves*, to appear in Duke Math. J.). Here two projective invariants determined by the fourth order terms in the Taylor expansions of the functions representing the two curves, at the point of intersection, are obtained and characterized geometrically. Further, on the basis of the vanishing or nonvanishing of these two invariants, the author arrives at four different types of canonical representation for the two curves at the point of intersection; the absolute invariants in the expansions of each type are interpreted geometrically in terms of certain double ratios. (Received June 11, 1943.)

234. Edward Kasner: *Motion in a resisting medium.*

Consider the motion of a particle moving in the plane under a generalized field of force and influenced by a resisting medium, the resistance R acting in the direction of the motion and varying as some function of the position (x, y), the direction y', and the speed v of the particle. Through a given lineal element E, there pass ∞^1 trajectories. If the osculating parabolas are constructed to these trajectories at E, the locus of the foci varies in shape with the nature of the resistance R. If the focal locus is a circle through the point of E, it is found that R must be of the form $A(x, y, y')v^2 + B(x, y, y')$. In the final part of the paper, this result is extended to space. Construct the osculating spheres at E to the ∞^1 trajectories passing through the lineal element E. If the locus of the centers of these spheres is a straight line, the resistance R is of the form $A(x, y, z, y', z')v^2+B(x, y, z, y', z')$. Finally it is shown that if a single trajectory is known in the field of gravity with a resisting medium $R(v)$, then the law of resistance $R(v)$ can be completely determined. (Received July 27, 1943.)

235. Edward Kasner and John DeCicco: *A generalized theory of contact transformations.*

The authors present a generalized theory of contact transformations in the plane. Any union-preserving transformation of differential elements of order n into lineal elements is obtained by considering the osculating (up to and including contact of order n) of a given parameterized family of ∞^{n+1} curves to an arbitrary curve. If a union-preserving transformation T is such that any two unions which possess $n \geqq 2$ as the order of contact are converted by T into two unions which have at least second order contact, then T must be a contact transformation between lineal elements. As a consequence of this work, the authors find a general theory of evolutes and involutes which contains the osculating circle theory of Huygens and Bernoulli as a special case. (Received July 27, 1943.)

Logic and Foundations

236. Theodore Hailperin: *A set of axioms for logic.*

Two well known logical systems claiming adequacy for mathematics are currently studied. These are appellatively described as "Principia Mathematica" and "set-theory." A third and stronger system, called "New Foundations," has been proposed by W. V. Quine. (This system is not to be confused with his *Mathematical logic*, 1940.) Quine's system uses the usual logical primitives for the propositional calculus and the theory of quantifiers, and class membership, but makes no restrictions on the