t shows green (red) for the horizontal line through P_{ij} and red (green) for the vertical. Various questions are asked of S, notably those concerning the possibility of non-stop travel along all horizontal and vertical paths through the point network. Those systems S admitting "through" speeds are determined and for each such S all through speeds are found. Such problems are solved by the theory of simultaneous congruences. The results are applied to the determination of the synchronization for the "best" flow of traffic. Consideration of "almost" through speeds and more general problems in traffic control is deferred to a later paper. (Received October 19, 1943.)

43. František Wolf: *On a problem of L. M. K. Boelter. Viscous fluid forced through a heated vertical pipe.*

The temperature at the wall is prescribed to be $t° = \lambda \coth mz + \mu$, independent of θ. The density and viscosity are analytic functions of t. There are four differential equations of which three are of the second order. Solving Stokes' hydrodynamical equations for a cylinder, we obtain a set of integro-differential equations which can be used for successive approximations. The chief difficulty is in determining the boundary value of the pressure which, generally, is determined by an integral equation. After some preliminary changes of the differential system, the Laplace transformation can be applied. This leads to an algebraic equation for the transform of the boundary value of the pressure. A later paper will be devoted to the study of the convergence of the successive approximations and to the problem of the existence of the solution. (Received October 28, 1943.)

ERGODIC THEORY

44. P. R. Halmos: *In general a measure preserving transformation is mixing.*

The first proof is given of the old standing conjecture announced in the title. "In general" means of course that the exceptional set is of the first category in one of the usual natural topologies (the strong neighborhood topology) for measure preserving transformations. The principal new and quite surprising fact used in the proof is that for any almost nowhere periodic transformation T the set of all conjugates of T, that is, the set of all STS^{-1}, is everywhere dense. (Received October 26, 1943.)

GEOMETRY

45. V. G. Grove: *The transformation of Čech.*

The purpose of this paper is to give a simple geometric construction of the general transformation of Čech. This is accomplished by first constructing a two parameter family of quadrics having second order contact with a surface and associated in a simple manner with a conjugate net on the surface. The polar plane of a point on the tangent to a curve of the net with respect to a quadric of the family is related to that point by a general transformation of Čech. Geometrical characterizations are made for several particular transformations of Čech. (Received November 19, 1943.)

46. Janet MacDonald: *Conjugate nets in asymptotic parameters.*

This paper presents some contributions to the projective differential geometry of conjugate nets in asymptotic parameters on an analytic nonruled surface in ordinary space. The equation of the bundle of quadrics each of which has contact of at least