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We define and compute the energy of 1-dimensional foliations on Riemannian manifolds. We then derive the Euler-Lagrange equations associated with the energy for Riemannian flows. We also prove that Riemannian flows on manifolds of constant curvature are critical if and only if they are isometric. Finally we prove that isometric flows on 3-manifolds are critical if and only if they are either transverse to a foliation or they provide K-contact structures. (Received September 18, 2006)