1025-30-28 **Milne Anderson**, **Jochen Becker** and **Julian Gevirtz*** (`jgevirtz@gmail.com`), 2005 North Winthrop Road, Muncie, IN 47305-2536. *Characterization of quasidisks in terms of first-order univalence criteria.*

In an as yet unpublished paper the first two authors showed that a simply connected domain $D \subset \mathbb{C}$ has a univalence criterion of the form $\log f'(D) \subset R$ for some domain R if and only if D satisfies an interior chord-arc condition. We use this to show that D is a quasidisk if and only if for some $\epsilon > 0$, $\log f'(D) \subset \epsilon S$ is a univalence criterion for D, where $S = \{z : -1 < \Re\{z\} < 1\}$. This contains as a corollary the fact, due to Astala-Gehring, that there can exist a constant $C > 0$ such that $|f''(z)/f'(z)| \leq C/\mathrm{dist}(z, \partial D)$ implies univalence in D only if D is a quasidisk, which in turn strengthened an analogous statement about the Schwarzian established earlier by Gehring. We also show that for any $\alpha \notin \mathbb{R}$ there is a simply connected D which is not a quasidisk but for which there is some $\epsilon > 0$ such $\log f'(D) \subset \epsilon\alpha S$ (*) is a univalence criterion. This raises the problem of characterizing in purely geometric terms domains for which there is a univalence criterion of the form (*). (Received December 30, 2006)