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We propose a method to determine the smoothness for the free boundary of sufficiently flat solutions of one phase Hele-Shaw problems. The novelty is the observation that under a flatness assumption the free boundary—represented by the hodograph transform of the solution—solves a nonlinear integro-differential equation. This nonlinear equation can be linearized to a (nonlocal) parabolic equation with bounded measurable coefficients, for which regularity estimates are available. (Received February 06, 2018)