1000-35-164 **Ivan A Blank*** (`blanki@wpi.edu`), Dept. of Math. Sci., W.P.I., 100 Institute Road, Worcester, MA 01609, **Marianne K Korten** (`marianne@math.ksu.edu`), Manhattan, KS, and **Charles N Moore** (`cnmoore@math.ksu.edu`), Manhattan, KS. *The Hele-Shaw problem as a Mesa type limit of Stefan problems in exterior domains.*

We study a Hele-Shaw problem with a mushy region obtained as a Mesa type limit of one phase Stefan problems in exterior domains. We study the convergence and determine some of the qualitative properties and regularity of the unique limiting solution. (Received August 23, 2004)