Let $p$ be a prime, $n$ be an integer, $k|p^n - 1$, and $\gamma(k, p^n)$ be the minimal value of $s$ such that every number in $\mathbb{F}_{p^n}$ is a sum of $s$ $k^{th}$ powers (should such exist). Heilbronn conjectured that for $\mathbb{F}_p$ that $\gamma(k, p) \ll \sqrt{k}$ if there are more than 2 non-zero $k^{th}$ powers in $\mathbb{F}_p$. Here we provide an outline of a proof for a generalization to $\mathbb{F}_{p^n}$. (Received September 16, 2008)