ON A BROWNIAN MOTION PROBLEM OF T. SALISBURY

FRANK B. KNIGHT

ABSTRACT. Let $B$ be a Brownian motion on $\mathbb{R}$, $B(0) = 0$, and let $f(t, x)$ be continuous. T. Salisbury conjectured that if the total variation of $f(t, B(t))$, $0 \leq t \leq 1$, is finite $P$-a.s., then $f$ does not depend on $x$. Here we prove that this is true if the expected total variation is finite.