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The Liouville function $\lambda(n)$ is the completely multiplicative arithmetic function defined by $\lambda(p) = -1$ for each prime p . Pólya investigated its summatory function $L(x) = \sum_{n \leq x} \lambda(n)$, and showed for instance that the Riemann hypothesis would follow if $L(x)$ never changed sign for large x . While it has been known since the work of Haselgrove in 1958 that $L(x)$ changes sign infinitely often, oscillations in $L(x)$ and related functions remain of interest in analytic number theory. We describe some recent experimental work that establishes new bounds on the magnitude of the oscillations of $L(x)$ and its relatives. (Received December 19, 2015)