Figure 1. Location of two sites at which stimulation altered naming in left, dominant hemisphere of a 36-yr-old female subject. Circles are sites of bipolar stimulation through electrodes separated by 5 mm, using trains of biphasic square-wave pulses at 60 Hz, of 2.5 msec total duration, and 4 mA between pulse peaks. Solid circles, sites of repeated naming errors; open circles, no errors. Solid circle labeled A, naming errors, predominantly arrest of speech; other solid circle, anomia. Letters outside of the circles indicate evoked motor (Mm, Mt, A) and sensory (Sm, Sf) responses identifying Rolandic cortex. The shaded area in the inset indicates the location of intraoperative cortical exposure. Note site of repeated naming errors in superior temporal gyrus and lack of errors at immediately surrounding sites [from Ojemann, 1988; additional examples of localized essential areas for naming with sharp boundaries are presented in Ojemann (1983, 1991) and in G. Ojemann et al. (1989)].