In the articles on “Magic Spells” (Word Ways, Feb and May 2010) it was proposed that tricks could be performed with a deck of $n$ letter cards. The deck would be prearranged, spelling some word $u$. There would be a “skip sequence” of integers $k_1, k_2, \ldots, k_n$; the more natural the sequence the better. The magician would spell a new word $w = w_1w_2w_3 \cdots w_n$ as follows: skip $k_1$ cards and set the next card aside making it $w_1$, skip $k_2$ cards and set the next card aside making it $w_2$, etc. Each skipped card is returned to the bottom of the deck. Note that the skip sequence defines a permutation $\pi$ of the the original deck order; $w = \pi(u)$. We say $w$ is a fixed-point if $w = \pi(w)$. For any given permutation there exists a skip sequence, though it might be hard for a magician to incorporate.

The logological question is to find pairs of words $u$ and $w$, and a well-motivated skip sequence relating them, that a magician could use with suitable patter. I am not a magician, however, so in this article I will just give pairs of common words. (Pairs using an uncommon word were found but are not reported.)

The story of Josephus Flavius is well-known in recreational mathematics. Forty men stood in a circle and every third man, still standing, was killed. (The puzzle is to find where Josephus should stand to survive to the end.) In our terminology we would say $k_i = 2$ for all $i$. However $k_1$ might be different depending on where you want to start. Let $J_t^u$ be the skip sequence where $k_1 = a$ and $k_i = b$ for $i > 1$. Choosing $a = 0$ or $a = b$ would be natural in a trick.

We first looked at six letter words. For $J_1^u$ there is teaset/estate, and veined/endive. For $J_2^u$ there is mimosa/Maosim. For $J_3^u$ there is neuter/tenure, settee/testee, and opuses/spouse. For $J_4^u$ there is ginned/ending, and parsec/escarp. For $J_5^u$ affair/raffia. Letting $a = 0$ we have begird/bridge, and preset/pester for $J_6^u$. Also we have Bosnia/bonsai, and stored/strode for $J_7^u$. There are also some fixed points for $J_8^u$ (addend, attest, eggnog, beetle, needle among many others) and for $J_9^u$ (coffee, yippee, halloo, etc.). The word tattoo is a fixed point for both $J_6^u$ and $J_7^u$.

There are fewer seven letter examples. For $J_4^u$ there is striate/artiest. For $J_5^u$ there is Devries/diverse and obtrude/outbred. For $J_6^u$ there is perusal/pleuras. We found none for eight letter words.

We could also define other skip sequences. An obvious idea is to choose longer and longer skips, which we call “rhopalic”. Let $R_6$ be the skip sequence with $k_1 = a$ and $k_i = k_{i-1} + 1$ for $i > 1$. A six letter example, for $R_6$ is starer/Sartre. For seven letter words $R_7$ has piastre/parties and $R_8$ has the fixed points eeriest and oospore. The skip sequence $R_9$ for eight letter words yields a large number of fixed points including addendum, announce, assassin and innuendo.

There remains many more skip sequences to explore.