CARD DECK WORDPLAY

A. ROSS ECKLER
Morristown, New Jersey

There are thirteen playing card names consisting of 52 letters: TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN JACK QUEEN KING ACE. What sort of wordplay is possible with these? To begin with, there is the crossword challenge—to arrange the words in a standard crossword array, in a rectangle of minimum size. Here is a 9x10 example that can possibly be improved:

```
    E
N I N E   J A C K
  G       C   I
  H   F I V E   N
  T W O         G
      U   S I X
  T H R E E
  E       V
  N   Q U E E N
              N
```

This array can be compressed using a word search format, one in which words are read forward or backwards, up or down, and diagonally. In the first 7x7 array, all words are connected (share a letter in common with at least one neighbor); in the second 7x6 array, JACK-KING and SIX are separated from the others.

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G       F N Q
N E T W O I U
I       U N E
K   T H R E E
C   S E V E N
A C E I G H T
J   F   X
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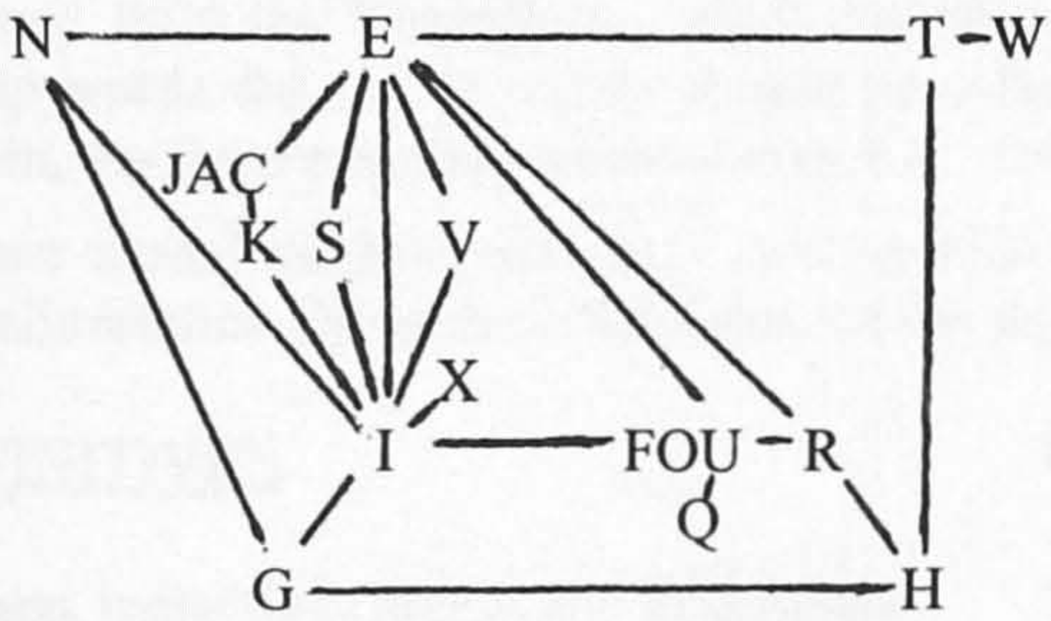
G S T E N Q
N I W C I U
I X O A N E
K T H R E E
C S E V E N
A E I G H T
J F O U R
```

Take the nineteen different letters and place them on squares on an extended checkerboard in such a way that one can trace out the thirteen words using chess moves. It turns out to be impossible to do it using king's move, but is just barely possible using queen's move.

```
C A J   Q
. . . R . U
.   . . .
. S . E . . . . . T
.   . . V   .     . .
. N . I X       .   .   .
.   .   F O . . . . . . W
. .   G . . . . . H
K
```

Note that queen's move can accommodate a maximum of eight letters leading into a given letter, and all eight are needed for both I (GKNSEVXF) and E (INSCRUTV); furthermore, three lead-in letters are common to both E and I (NSV), one fewer than the maximum possible.

The construction of a planar network using these nineteen letters appears to be impossible, but the one given below accommodates all the words but TWO, which requires the crossing of a line to connect T with O.



How near are these various words to each other in logological space? This can be gauged by noting the number of letters any pair of words have in common. By this criterion, JACK is by far the most isolated word, only sharing a K with KING and an AC with ACE. TWO is somewhat less so, sharing T with EIGHT, THREE, TEN and O with FOUR. SIX goes along with FIVE, KING, EIGHT, NINE and SEVEN. In contrast, EIGHT is the chummiest, sharing letters with ten others, ignoring only FOUR and ACE. Extending the notion of chumminess to the four suit names, CLUB is the most isolated, sharing letters only with FOUR, QUEEN and ACE, whereas DIAMOND is the chummiest, failing to share letters only with THREE.

A word worm creates a three-dimensional measure of the distance from one word to another in logological space. As described in *Making the Alphabet Dance* and "Letters of the Presidents" in the November Word Ways, each letter is assigned a unique direction and distance in space, and words are characterized by the sum of their letters. Each word arrives at a different point in space, and the closest pairs are SEVEN-TEN, FIVE-NINE and KING-FIVE, all one unit away from each other. In contrast, the most isolated word appears to be JACK (as it was above); it is $\sqrt{5}$ units away from its nearest neighbor, ACE. Furthermore, the two words farthest apart are JACK and EIGHT, at $\sqrt{51}$ units, followed by FOUR-NINE at $\sqrt{34}$. JACK is also the farthest from the origin, having traveled a distance of $\sqrt{21}$ units.

One can construct a directed network of these words by allowing passage from one word to the next only if the last letter of the first word is the same as the first letter of the second. The core of this network consists of a two-loop, EIGHT-THREE-, and an adjoining three-loop, EIGHT-TEN-NINE-. QUEEN, SEVEN, ACE and FIVE are beginner words, feeding into the core, and TWO is an ender, leading away. SIX and FOUR are isolates, with no words preceding or following them, and JACK-KING is an isolated pair.

What is the shortest sequence of letters from which one can read off the thirteen words with letters in order? There are 19 different letters represented, and N and E appear twice in a word, so that at least 21 letters are needed. However, HT is in EIGHT and TH in THREE, so a second T is needed, making 22 letters. Furthermore, one cannot get by with only two Es and two Ns because either SEVEN or NINE is not permitted, so one must add another E, making 23 letters. Finally NG follows I (in KING), and H follows G (in EIGHT), but H must be followed by two Es (in

THREE) and N must be preceded by two Es (in SEVEN). This problem can be solved by adding a third N or a third E, making 24 letters. The final sequence (one of many possible) is

Q F J A C K S T W O U E N I N V G H R E N E X T

The thirteen words with 52 letters can be efficiently packed in a 13x4 rectangle in many different ways. In the array below, a further condition was imposed: each word has a letter in common with the word above and beneath it, with one exception (SIX). Can a perfect rectangle be found?

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T W O T E N S I X F O U R
T H R E E N I N E F I V E
S E V E N E I G H T A C E
Q U E E N K I N G J A C K
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Spoonerisms for Kids

Although Shel Silverstein died in 1999, his *Runny Babbitt: A Billy Sook* (HarperCollins, hardcover, $17.99, was published post-humorously this past March. The book consists of 42 spooneristic nonsense verses for children, accompanied by the author's characteristic line drawings. The eponymous creature "bakes a tath," attempts a "jig bump," wears a "howboy cat," and so on. Although the jackets of many children's books specify an age range, this one does not. The intended audience, presumably, is the early reader. Confronted with all the cute animal pictures, an eight-year-old would likely dismiss this title as "a book for babies." Children love wordplay and nonsense, and when absurdities provoke laughter, that indicates that they grasp the meanings of words and their relationship to reality. One assumes that kids will simultaneously be entertained and improve their literacy as they tease out the meanings of "hassgropper," "belted mutter," and "nick your pose."

Some, however, may be confused by Silverstein's insistence on preserving spellings, as when "carrot pie" becomes "parrot cie." What are young readers—and their parents—supposed to make of that? One of the Major Laws of Spoonerisms is that spelling is subordinate to pronunciation. Thus, the phonetic *parrot kye* is preferable. This approach would also teach a valuable lesson about the inconsistencies of English spelling. In addition, I wish Silverstein had structured the book around spoonerisms that made sense, or differentiated between the meaningful and nonsense varieties. A skeptic might wonder if some youngsters will learn garbled English. Finally, the author or the editors might have appended a chapter briefly describing the long and glorious history of spoonerisms—or at least mentioning the word, which is entirely absent.

For a somewhat different way to combine spoonerisms with cartoons, on a more adult level, turn to "Spoonertoons 2: We're Punning for Resident!" elsewhere in this issue.

--reviewed by Don Hauptman