KING'S-MOVE WORD PACKING

A. ROSS ECKLER
Morristown, New Jersey

In chess, a king can move to any of the eight adjacent squares on the board - up, down, left, right, and the four diagonals. One can construct logological challenges by inserting letters on individual squares of a chessboard (extended, if necessary, beyond its 8x8 limits), and spelling out words by moving from letter to letter via king's moves. (Words with paired letters, such as MOOSE or IFFY, are handled by permitting the king to tarry on a square.) One such challenge is to place 25 different letters in a 5x5 array to form as many different words as possible. A related challenge is to rearrange the letters to form the fewest possible words. Can one find an arrangement in which no Webster's Pocket Dictionary boldface words can be traced out?

In the November 1981 **Word Ways**, I introduced the concept of chesswords. A chessword is a word which can be traced out by king's moves on its letters, inscribed on a chessboard with no repeated letters. Such an array has been christened a template by Lee Sallows.

One can construct templates that will accommodate groups of words (see "Incompatible Strings" in this issue), but for large groups this is impossible. The criterion of excellence to be used in judging word-packing is the total number of letters required to do the job, the fewer the better. To show what can be done, I exhibit below a diagram incorporating all of the surnames of the US presidents using just 93 letters. Can you find the 37 different surnames? Better, can you pack them in fewer than 93 letters?

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                                  V A
        I N           B C M N
  W H S D G T C U H A U B
  J A R T N A L S O R E H
  I E C I O R E V I N T
  P M L K S G F J X O
    O W I L N H O
    S N K D I E W
  R T L E R A S R
  F A Y D O F M O
  H I G L I C I L
    E       N
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