

THE THIRTEEN WORDS

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Puzzle: Using 13 different letters of the alphabet, each repeated 4 times, construct 13 4-letter words with the property that each possible pair of letters appears in only one word, and each possible pair of words has only one letter in common.

This intriguing word puzzle was first formulated in the February 1963 issue of *Recreational Mathematics Magazine*; unfortunately, the solution that the author, Ronald C. Read, suggested was incorrect. The problem was picked up by Dmitri Borgmann, who presented it as Problem 122 (*Finite Projective Geometries*) in *Beyond Language* (Scribner's, 1967). His solution was:

airy auto dieu kino oyes pane pits prod puky runs skad trek tynd

Unfortunately, no single Webster dictionary contains all of these words; dieu, oyes, puky and tynd are missing from the Third Edition, and skad is not in the Second.

Recently, two improved solutions to this puzzle have been published; for details, the reader is referred to "Labelling the Thirteen-Point Geometry" in the January 1971 issue of the *Journal of Recreational Mathematics*. The first solution, devised by J. C. Ault, is:

hers hua hymn iron lean loth move ruly slim soya stun tram yeti

These words can all be found in the Third Edition; however, yeti is missing from the Second, and two others (loth and ruly) appear below the line there. Probably the best solution to date has been provided by Roger F. Wheeler:

aitu hies hurl moue myth oily opah pelt prim puyt slam sort year

All of these words appear both in the Third Edition and above the line in the Second Edition. However, these two solutions do not fare so well in smaller dictionaries. Aitu is missing from the Oxford Universal Dictionary, and ruly, soya, aitu and puyt cannot be found in the Random House Unabridged Dictionary.