

# DIFFERENCE WORDS RIDE AGAIN

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What is a difference word? The concept can best be introduced by an example. The letters of the word FORM occupy positions 6, 15, 18 and 13 in the alphabet. The difference between 6 and 15 is 9; between 15 and 18, 3; and between 18 and 13, 5. The letters of the word ICE occupy the positions 9, 3 and 5 in the alphabet; therefore, ICE is the difference word of FORM.

Difference words, originally devised by Howard Bergerson, were described by Dmitri Borgmann in his book Beyond Language (Scribner's, 1967), in Problem 45 (The New Chemistry). The concept was first brought to the attention of Word Ways readers as a Query in the November 1970 issue, proposing two unsolved problems: (1) find a five-letter word with a four-letter difference word which in turn has a three-letter difference word, (2) find a six-letter word with a five-letter difference word. In the August 1971 issue, Ross Eckler devoted a full article to the intricate processes of selecting and generating difference words. In this article he advanced the state of the art a bit further. In response to the second unsolved problem, Ross managed to produce ELDEST - GHANA, RETAIN - MOSHE and FRITOS - LIKED (there's something Freudian in that last). However, in response to the first unsolved problem, the best he could offer was GRIM - KID - BE, BIRD - GIN - BE and SLUG - GIN - BE.

I felt compelled to resurrect the concept, in an attempt to more fully respond to the unsolved problems, if possible extending them beyond the limits originally envisioned. This article is the result.

As a matter of self-discipline, I felt it desirable to set some ground-rules for myself. I am not one who likes to employ inferred inflectional forms or "common sense" plural forms, merely to arrive at a hard-sought solution. (However, I do not quarrel with those who do this customarily, and I'm certain that I, too, would "bend" if the only solution depended on it.) My decision was to stick solely to the Second and Third Editions of Webster's Unabridged, and to main bold-face entries therein -- no scurrying to esoteric atlases and gazetteers.

Let's take the second problem first; it yields more easily. To the three examples given above, we add the following ten:

CEDRON - BANCA  
GIRNIE - BIDED

EXPUGN - SHENG  
HAFTER - GENOM\*

BONBON - MALMA\*  
 MULITA - HICKS  
 REFRET - MALMO\*

AONACH - NAMBE\*  
 GULPIN - NIDGE  
 REJOLT - MEECH\*

Unasterisked words can be found in the Second Edition (although REFRET is below the line), and asterisked ones in the Third. I speculate that it may be possible to find a seven-letter word with a six-letter difference word in these sources.

The first problem is a bit more challenging, but far from unsolvable. The following all meet the required conditions:

MONIE\* - BAED\* - ADA  
 EGYPT - BRID\* - PIE

SAJOU - RIEF\* - IDA  
 SCRUF - POCO - ALL

These take us to the limits of the Query. But, is there really any reason why we should stop there? Why not one step further?

SOFIA - DICH - EFE\* - AA

LOFTY - CINE\* - FEI - AD

Does anyone care to extend the path from a five-letter word through all steps down to a one-letter? My blessings on your efforts!

## QUERY

Philip Cohen has for many years been compiling a trigram dictionary: for each of the 17,576 possible arrangements of three letters, he attempts to locate one or more words in unabridged dictionaries, gazetteers, etc., which contain these letters in consecutive order. There exists a list of tetragrams which are supposedly contained in words from Webster's Second Edition; Philip has found examples for most of the trigrams corresponding to these tetragrams, but wonders whether Word Ways readers can supply words containing any of the following letter-sequences:

ablne	asiju	emnt.	irlco	ogyco	tghkno
adiqu	cghkna	etrsy	irssu	oxpho	ughkn
antki	cgnkno	exoki	mihdr	refgo	yctta
attbo	elddr	hivzo	nuvol	tghkna	