THE LONGEST N-CRASH WORD LISTS

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In the November 1978 Word Ways, I introduced the concept of symmetric crash groups—sets of 2k words of 2k-1 letters apiece, in which each pair of words has exactly one crash (same letter in the same position, as E in rovErf and cruEt), and all letters in the set participate in crashes. The best example then known was HATED HORNY FITLY FAUNS WIRES WOULD, improved by Steve Root in February 1999 to BIOLOGY DEATHLY SLOshed BASTARD SELVAGE FISSILE DALLIES FLAVORS among many others).

If one does not insist on the latter requirement, much longer n-crash lists can be constructed. The strategy to use is to assemble a word list in which each word has the same letter in a specified position. For example, place A in the second position and Y in the fourth, leading to lists such as BABY MANY WAXY LADY etc. Such lists have a maximum size of 26, for the unspecified letters must always be different from one word to the next. In practice, lists fall considerably short of this ideal, except for very short words and multiple dictionaries and gazetteers (see “Alphabetic Triliterals” in May 1972 for lists on BO-, HA-, PA- and –AT up to 17 in size).

The special case of no crashes was introduced by Dmitri Borgmann in Beyond Language (Scribner’s, 1967) in Problem 86: Irrelevance. For the Merriam-Webster Pocket Dictionary the longest three-word through six-word lists are given in the May and August 1972 Word Ways, containing 17, 17, 17 and 15 words. These lists grow in size if larger dictionaries are used; the five-word list can be extended to 20 for Webster’s Third (Steve Root, August 1986), and the four- and five-word lists can be extended to 23 and 20 (Jeff Grant, May 1982).

Little attention has been paid to word lists with one or more crashes. To start the ball rolling, I present some preliminary investigations for the Merriam-Webster Pocket Dictionary. The problem is to identify the best letter-choice and position to maximize such a list. Some clues can be garnered by examining positional dictionaries and noting those letter and position choices which maximize the total number of words.

For three-letter words with one crash, the ?E? list has 18 members: REV LEI VEX HER JEW FEZ DEB WEE TEA KEY EEL ZED BEG NET GEM PEP MEN YES. For three-letter words with two crashes, ??AY appears to be the best with 14: BAY CAY DAY FAY GAY HAY JAY LAY MAY NAY PAY RAY SAY WAY.

Moving up to four-letter words, the one-crash list corresponding to ?A?? is 19 in length: JAZZ BAHT SAFE WAXY PAPA GAEL CALM RACK FANG NAIF HARP OATS KAYO IAMB LAUD MAGI YAWN TABU DASH. The ?A?E pattern generates two crashes for all pairs in a 15-word list: EASE CAFÉ JAPE KALE VANE WAKE BABE DAZE SAGE FARE GATE LAVE MADE NAME PACE.

It does not seem possible to find a list of more than 15 five-letter words with a single crash. Both ???E and ???Y do the job: OCHRE UKASE ISSUE ADDLE EMCEE THROE MAYBE HELVE WITHE BOGIE LUNGE FLUTE SWINE CREPE GNOME and MCCOY ABBEY EMPTY INLAY JAZZY PYGMY USURY ODDLY DOWDY STAGY CHEWY HUFFY
TWINY NERVY WITHY. A sixteenth word must be of the form ?RO?? or ?LO??, but all possible candidates—CRONY, PROSY, PROXY, GLORY, BLOWY—have double crashes with one or more words on the list.

In view of the remarkable performance of A in the second position for four-letter words, one might expect ?A??? to be the pattern of choice, but this also yields a list of only 15: TANGO YACHT WALTZ JAZZY MAXIM SATYR RABBi NAïVE FAKED HAVOC LARCH PAMPA KAYAK CAJUN BASKS. Even more amazingly, one can also achieve a fifteen-word two-crash list using ?O???: BONNY COVEY DOWRY FORAY GOUTY HOBBY JOLLY LOAMY MOSSY, NODDY POPPY ROCKY SOGGY TOFFY WOOZY.

Readers are invited to (1) improve on these Pocket Webster examples, (2) extend these to six-letter and longer words, and (3) use larger dictionaries. No doubt a digital computer will be an indispensable tool.

Little Tom Tucker
Sings for his supper,
What shall he eat?
White bread and butter.
How shall he cut it
Without e'er a knife?
How can he marry
Without e'er a wife?

Find a cook.