KICKSHAWS

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Readers are encouraged to send their own favorite linguistic kickshaws to the Associate Editor. All answers appear in the Answers and Solutions at the end of this issue.

A Game of Scrabble

Josefa Byrne of Mill Valley, California sent this one in. In a two-man game of Scrabble, the players agreed to use as authorities any Merriam-Webster's plus Partridge's Dictionary of Slang and Unconventional English and the New Century Dictionary and Encyclopedia. I think we could call "open sources" on Josefa's problem and still come up with a unique solution.

The first player got rid of all seven tiles with the word DENOTED; the second player gave that for tit by placing IMITATE right above it, forming seven acceptable two-letter words vertically. Now the first player, who was lucky to have two E's, laid another seven-letter word right below DENOTED, forming seven vertical three-letter words. He was then heard to chuckle some such pleasantry as "That'll learn ya!" "How kind you are!" replied the second player, who, with the aid of a blank tile, was now able to place a seven-letter word atop IMITATE, forming seven vertical four-letter words.

At this point, what did the 4-by-7 word rectangle look like? If baffled, look it up in Answers and Solutions.

Query

Is the old maxim true about there being an exception to every rule? Well, no doubt we can all think of rules that appear to have no exceptions, but since appearances can be deceiving, maybe the old maxim is true. On the other hand, the maxim is itself a rule, so if we assume that it's true, it has an exception, which would be tantamount to saying that there is some rule that has no exception. So if the maxim is true, it's false. That makes it false. Thus we know at least one rule that definitely has an exception, viz. "There's an exception to every rule." We know that the answer is

For Alpha!

Although the earliest known alphabetic cipher was the Caesar cipher, which involved shifting the alphabet by a fixed number of places, alphabetic ciphers can involve any number of alphabetic substitutions. The simplest alphabetic substitution is the Caesar cipher, in which each letter of the alphabet is replaced by a letter N positions to the right. For example, in a Caesar cipher with a shift of 3, the letter A is replaced by D, the letter B is replaced by E, and so on. The problem of finding an alphabetic substitution that makes a given string of letters encryptible with a Caesar cipher is known as the Caesar cipher problem.

1. Find an alphabet substitution that makes the following string encryptible with a Caesar cipher:
   MORE = M
   TEN = T
   FOR = F
   ALPHA = A
   BETA = B
   GAMMA = G
   DELTA = D
   EPSILON = E
   ZETA = Z
   THETA = H
   IOTA = I
   KAPPA = K
   LAMBDA = L
   MU = M
   Nu = N
   OMEGA = O
   PHI = P
   PSI = S
   SIGMA = G
   TAU = T
   Upsilon = U
   2. There are three unknown digits that make the following alphabetic substitution correct:
   MORE = M
   TEN = T
   FOR = F
   ALPHA = A
   BETA = B
   GAMMA = G
   DELTA = D
   EPSILON = E
   ZETA = Z
   THETA = H
   IOTA = I
   KAPPA = K
   LAMBDA = L
   MU = M
   Nu = N
   OMEGA = O
   PHI = P
   PSI = S
   SIGMA = G
   TAU = T
   Upsilon = U

2. There is a three-letter word in the dictionary that can be turned into a verb. If we turn this word into a verb, we can see that the verb is a palindrome. For example, the word "level" can be turned into the verb "level" which is a palindrome.

2. There is a picture in the dictionary that can be turned into a verb. If we turn this picture into a verb, we can see that the verb is a palindrome. For example, the word "level" can be turned into the verb "level" which is a palindrome.

3. There is a three-letter word in the dictionary that can be turned into a verb. If we turn this word into a verb, we can see that the verb is a palindrome. For example, the word "level" can be turned into the verb "level" which is a palindrome.

The problem with alphabetic substitution ciphers is that they are vulnerable to cryptanalysis. One way to improve the security of an alphabetic substitution cipher is to use a larger alphabet, such as the 26-letter English alphabet. Another way to improve the security of an alphabetic substitution cipher is to use a key, which is a list of alphabetic substitutions that is known only to the sender and the receiver. The receiver uses the key to encrypt the message, and the sender uses the key to decrypt the message.

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Although cryptic divisions seem to go back even further, the earliest known cryptic addition is the hoary old chestnut SEND + MORE = MONEY. The letters represent one-for-one substitutions of the digits, and when the correct (and in this case, unique) substitution is made, the addition is correct. Cryptarithmetic or alphametics can involve any arithmetic operation; the addition crypt cited above is of unknown origin; it is probably at least half a century old. Here are three new ones, possibly of more than usual appeal to logophiles. The first is relatively simple, although far from trivial. The second is intermediate in difficulty, and since the logic involved in its solution is less direct than that of the first one, only the naked solution is given in Answers and Solutions. The third is extremely difficult, and in fact nobody could possibly solve it completely. A computer solution is described below.

1. Find an encipherment of the ten digits (0 through 9) that makes the addition given at the right correct: + WORDS

2. There are many solutions to the first alphametic given at the right. If you turn this alphametic 90 degrees clockwise, you get another simple alphametic, given at the far right. Find an encipherment of the digits from one to nine into some permutation of the letters in A GORY LIST such that when the digits are substituted back for the letters in the two alphametics, two correct additions result.

3. There is some confusion as to how many words a picture is worth according to the old Chinese proverb. Is it one thousand or ten thousand? Neither, if we treat the problem as the alphametic given to the right. Although this alphametic reduces to either a three-letter or four-letter word, it cannot be 1000 (or any number ending in zero) since that would require that D and E be equal, and in an alphametic that's forbidden. So the question is: what are the possible integer values that a fraction of the above form can reduce to?

The problem bears much too high a "work factor" for ordinary mortals, so I passed it on to Charles W. Gardner of Topanga, California who programmed it in Fortran for the GE-265 high speed digital computer. Programming time was about an hour and a half, com-
piling took .0028 hours (ten seconds), and machine running time took .008 hours (twenty-nine seconds). The printout probably took as long as the rest of the program. There are 655 integral solutions. Every time a numerical solution was found, the computer was programmed to convert the digits back to letters and include this result in the printout.

By way of example, one of the more interesting solutions was 

$$\frac{3654807}{1209} = 3023 = \text{PROP}.$$ 

Hmm ... PICTURE equals PROP times WORD. Running through the printout, I find that PICTURE divided by WORD can be PEPE, PERE, DUCE, TCUP, WERE, CUI, WERE, IWW (the printer seemed a little wobbly here), TWIT, COW, EPT, DEI, UTE, WEE, DOD, DOE, EWE, TUT, REDE, TRI, POT, DIE, DEE, TOP, IDE, ERE, OTT, DOW, PEE, WOE, EDO, CUE, PEI and PET. Did you notice the two synonyms? Also, there was PPP, UPUP, URPP, OWRD (an anagram of WORD), OOO and UUUU. Enough of that, right?

Latin Word Squares

Walter Penney of Greenbelt, Maryland constructed the unusual word-set given at the right. It is not a word square in the classic sense, because the down-entries are not words. But it is "Latin" in a very unusual sense. Taking each of the five row words separately, assign to each letter its alphabetic "rank" within the word, ranking from one to five according to alphabetic order. If we do this, we get a number matrix that looks like the one at the right. This is a "Latin Square" of order five, in that every row and column contains each of the numbers 1, 2, 3, 4, and 5. What is even more remarkable is that instead of ordering row-by-row, we order column-by-column instead, we get exactly the same Latin Square! This is known as "going the whole hog" and such a word arrangement as we started with is therefore a "Pig-Latin Square". Walt challenges you to find one of dimensions 6-by-6.

Mea Culpa

I apologize to the readers for having given them a bum steer in the last issue regarding "The Nation's Best Puzzles" by Frank Lewis.
Lewis. The address I gave was several months out of date, and those who sent checks for the three collections of British crosswords, as created by an American, got them back with no forwarding address. Ross Eckler believes he has traced Lewis's new address to Plymouth, Montserrat, British West Indies. I suspect the entire stock of crossword collections has been sold, but I wouldn't be surprised if Mr. Lewis considered reissuing them if he received enough inquiries. Possibly the most assured way of reaching him is through Nation Magazine.

Polygrams

Jack Levine's remarkable new dictionary, A List of Pattern Words of Lengths Two Through Nine, is reviewed elsewhere in this issue. Using it, many of the diversions that have been discussed in Kickshaws would have been much easier to solve. But as always, advances in knowledge pose as many new problems as they solve. Many intriguing questions suggest themselves, some of which I hope to see resolved in a promised sequel which will cover word-lengths up to sixteen.

If words such as DERMATOGLYPHICS are called isograms, let's call words such as NONILLION polygrams -- words in which each letter is repeated at least twice. In addition to NONILLION, Levine lists no fewer than 15 nine-letter polygrams, all of which divide into three sets of two repeated letters and one set of three repeated letters. One question that I would like to see resolved: what is the longest polygram? To avoid what The Pedant would label "unsatisfying" we'll exempt tautonyms such as PAPA and DUMDUM.

Sparse Words

If we define the density of a word as the ratio of the number of distinct letters to the total number of letters, then isograms such as CHORDATE have a maximal density of one. Levine's dictionary permits us to zero in on low-density, or sparse, words. AA, OO and EE have densities of 0.5. We can do better as word length increases, but not with three-letter words. The sparsest we can find in Webster's are 0.667 (EEL, EGG, POP, etc.). Among four-letter words the best we can do is 0.5 again with words such as LULL and NOON. Among five-letter words there are several with density 0.4 (ESSES, ALALA, MAMMA, etc.). The sparsest words we can obtain using Levine have length six and density 0.333 (MUUMUU, ESSEES, DEEDED, etc.). Among 7, 8, and 9-letter words, the lowest densities are respectively 0.429, 0.375, and 0.444 (TESTEES; TEETERER; REORDERED). Kickshaws has a hunch that when the sequel appears, it will be found that no words from Webster can best (or even equal) those six-letter words for sparseness.
Pan-Crashing Word Lists

In the May 1971 Kickshaws, Ross Eckler, with reasonable conviction, offered the list STAIR HERON GREED CLOSE DITTY QUITR POUCH BANAL which he believed had the property that every five-letter word in the Merriam-Webster Pocket Dictionary has a crash (occurrence of the same letter in the same position) with at least one word of the list. W.H. Rawlings, West Vancouver, British Columbia verified the claim. If the 2,497 five-letter words of the MWPD were arranged separately, the thought of all the work involved would not be so shudder-making.

However, in the same issue Kickshaws surmised that the Eckler list would pan-crash with any dictionary. Several readers earned kudos by proving our conjecture wrong. Rawlings found several counterexamples and asked that I gift-wrap his kudos and enclose it in Grade A lemon bumff! Ralph Beaman, Murray Pearce, Mary Youngquist and The Word Buff also fired barrages of counterexamples. Mary found eight in the A-section alone of Web III and thought that should be enough (one of the more familiar words was ANCUS). Murray discovered ANGUS, ASCUS, INCUS and UNCUS in little old Webster's Collegiate, plus 31 more in the Big Web from ACLYS to USSUK. The Word Buff found 40 in Web III and Ralph Beaman, believe it or not, found one the Buff missed. Murray suspects that it is possible to find a seven-word list that pan-crashes the MWPD, but nobody has come forth with one.

The Buff found two ten-word lists that pan-crash the Big Web. One is obtained by adding the words ANSUS and THING to the Eckler list. The other list is AHOLT CRUOR DIETS HURRY LANAI ONMUN PLAID REDYE STIPA TOWEL. Most of these are familiar words, but what the heck is a TOWEL? Murray finds that the list EERIE ADIEU OCEAN IGLOO DAUNT TIARA BOOTY PUNCH uniquely determines STYLI in the MWPD if we don’t insist on main entries. Similarly, the Buff claims (an encomium if you find a counterexample) that if you add ANGUS and THING instead of ANSUS and THING to the Eckler list, the only word in Web III that null-crashes the entire list is UPSKⅠ. Even more astounding (and inviting of inspection) is the Buff’s claim that the nine words ABOUT CRUOR DIETS HURRY LANAI PLAID REDYE STIPA TOWEL uniquely determine OFF-GO in Web III.

Pearciana

Murray Pearce of Bismarck, North Dakota is a kickshaw-mine. He invites you to add to his MEDLEY of mixture-synonyms: MELANGE, PASTICCIO, MISHMASH, OLLA-PODRIDA, OMNITUM-
To enrich our vocabularies, he offers the following useful words: EMMPEOMANIA (Webs II & III) -- a mania for being employed, especially in public office; NONNANT (an obsolete variant in Web II but a fully qualified word in Web III) -- at Eton College, England, one who cannot swim; NOYADE (Web III) -- execution by drowning (cf. DEFENESTRATION).

He cites QASABA, KEG, BECAM and WAGES as "prime" words for a very good reason: If the letters from A to Z are numbered alphabetically, all these words consist of the letters from the sequence ABCEGKMQSW, corresponding to the sequence of primes 1 2 3 5 7 11 13 17 19 23. Murray asks for the longest prime word (it need not be an isogram). Kickshaws diffidently ventures the conjecture that there is no "square" word longer than PAID, the square sequence being ADIFY. Readers are asked to consider the Fibonacci sequence of letters ABCEHMU and seek the longest Fibonacci word.

As a by-product of his Crash research, Murray offers the following quiz, based only on five-letter main entry words appearing in the Merriam-Webster Pocket Dictionary:

1. What is the only word with J in 4th position?
2. What is the only word with Q in 4th position?
3. What are the only two words with J in second position?
4. What are the only two words with X in fourth position?
5. There are only three words with _ in third position. What is the letter, and what are the words?

The Leap Year Track Meet

In the January 16, 1972 issue of West Magazine, Burt Prelutsky noted hundreds of restive candidates (brim-full of emplereomania) will be competing in the election-year track meet. The events on the schedule include jumping to conclusions, bull tossing, foot-in-mouth sprints, long-winded marathons, mudslinging, hurdling issues, and straddling fences.

Abstemious Words

Words lacking any of the five vowels will henceforth be called abstemious (get it?). From the MWPD, Ross Eckler has culled CRYPT, GYPSY, LYMHP, LYNCH, MYRRH, NYMPH, PYGMY, SLYLY, SYLPH, TRYST and the six-letter RHYTHM. Another Crash by-
product, no doubt. We wonder what is the longest abstemious word in Webster's Seventh New Collegiate Dictionary.

Old Rebus Chestnuts

R. Robinson Rowe of Sacramento, California recently helped me pin down a long-lost rebus that reputedly originated with Voltaire and Frederick the Great. Frederick's dinner invitation, addressed to Voltaire, reads "C sur a cent sous C" (Six o'clock at Sans Souci), and Voltaire's polylingual reply can be read either as "Ja" (German) or "J grand, a petit" (I have a large appetite) (French). Can any reader say whether this exchange was historical or apocryphal?

Mr. Rowe appends a less-well-known rebus which consists of a tall narrow A with " following. Can Kickshavians decipher the name of a book and the name of its author? The following antiquated rebus may be new to younger readers:

STAND TOOK TO TAKING
I YOU THROW MY MND.

Answers to both are in Answers and Solutions.

Overtrumped

In the November 1971 issue, Les Card's list of fourteen four-letter words containing all 26 letters twice was published. Kickshaws expressed doubt that the trick could be done with only thirteen words. Mary Youngquist promptly came back with CWMS DICK GROW GYS HADJ JAZZ KLUX LYNX MIFF QOPH QUTB VENT VERB. To obtain each letter three times with the minimal 20 words, Mary adds BAWD CLEF GURK JOHN QUIZ STYX VAMP.

Murray Pearce also did the job with two different lists, both (like Mary's list) based on Web II and III:

1. BYTH CWMS DOLL FIZZ GUMP HOST JABD JYNX KICK PREX QUNG VERV WAQF
2. BRIT BUZZ CINQ CWMS DOFF HELD JERK JYNX QOPH VAMP VUGG WALK XYST

Since no restriction against repeated words was made, Murray fills out a 20-word list containing each letter thrice by adding BIND CWMS FLIT JERK QOPH VAUX ZYGA.

Kickshaws is impressed. The only way one could better the thir-
teen word bi-panalphabetic or the twenty word tri-panalphabetic lists would be to dispense with the keystone word CWMS. Even if repeated words are permitted, the odds look to be very much against it. You may consider this a challenge, Word Buff.

Les Card has produced two lists of six five-letter words that are panalphabetic: FLOWN JUNGL MARKT PSYCH QUIZD VIBEX and CHIMB FLAVE JAPYX QUIZD TALKS WRONG. Not even Word Buff could make it in five!

An O, D. E. to the O, E. D.

Another barb from Josefa Byrne, the Richard Armour of Mill Valley, California:

I think that I shall never see
A tome quite like the O, E. D.
The words found in those august pages
Range from plain to plain outrageous
A verbal palette of the curious
It spurns not words deemed to be spurious
The only problem that I find
Is how to keep from going blind.

To which The Poetaster has added:

If eyestrain makes you holler for a tonic
Keep cool; the next edition will appear
Engraved upon a pinhead, so I hear
And furnish'd with a microscope 'electronic.'

Charitable and Hospitable Words

In the August 1971 issue, the concepts of hospitable words and charitable words were introduced. Darryl Francis submitted the hospitable word CARES, which produces a new word by the addition of an appropriate letter in any position: SCARES CHARES CADRES
CARIES CARETS CARESS.

Charitable words, on the other hand, can give up any letter and, without transposition, remain a word. One of the examples given was SEAT: SEA SET SAT EAT.

Murray Pearce shares the length record for charitable words with Mary Youngquist. He notes that CHAINS: CHAIN CHAIS CHANS CHINS CAINS HAINS all appear in Web II, at least as inferred inflected forms. Mary submits PLEATS: PLEAT PLEAS PLETS
PLATS PEATS LEATS from Web III. She also offers SHOOTS, which technically qualifies, since isograms were not explicitly required. However, a charitable word, by its nature, would not have an excess of any letters.

So far, then, the record length for hospitable words is five and for charitable words, six. The record for words that are both charitable and hospitable is three letters. Murray has three:

AID: AI AD ID PAID AMID AIRD AIDE
AIT: AI AT IT GAID AINT AITU
EAT: EA ET AT BEAT EVAT EAST EATS

and Mary has three more:

AMY: AM AY MY GAMY ARMY AMOY AMYL
IDO: ID IO DO DIDO INDO IDEO IDOL
SEA: SE SA EA ASEA SHEA SERA SEAT

Undertaking the task of finding a four-letter word that is both charitable and hospitable is a boggling thought. Kickshaw, however, does not rule out the possibility, especially if The Bloodhound of Hounslow takes the scent.

Mary suggests two more word categories: stingy (can't afford to give up any letter) and hostile (won't allow room for even one insertion). It is no problem to find such words as long as one wishes, up to the evanescent "longest word"; for example, IMPETUOUS is stingy and hostile. The trick is to find short words. If we accept the technical truth that every single letter is a word, then the shortest possible stingy word has three letters. Is there a one-letter hostile word? Comments invited from readers.

A Seven-Letter Onalosi

A similar word phenomenon, the onalosi (a word which admits a garble in every position), was discussed in the May 1970 and August 1971 issues. In the latter, Les Card matched Kickshaw's SHORES with SHARES. Mary Youngquist has broken the length record with PASTERS: TASTERS POSTERS PATTERS PASSERS PASTORS PASTELS PASTERN.

Isomorphs

Levine's dictionary lists six words with pattern 1232141 and seventy-four with pattern 1234151. DIVIDED, with the first pattern, is strongly connotative of SCHISMS, with the second. Can you find a pair of antonyms, one of each pattern?