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INTERIM

magazine



INTERIM Magazine
A Quarterly Journal of Linguistic Recreations

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A NOTE TO READERS

As many of you are already aware, this will be the last issue of *Interim* to be published by me, and thus may well be the magazine's own final issue. *Interim* was never intended to be anything other than a temporary forum for logological writings displaced by the termination of *Word Ways*, and was always expected to be of short duration (hence its name). Now, after a year in which five issues have been published, I unfortunately have no more time to give to the project, enjoyable though the ride has been.

What happens next, whether or not *Interim* will now be produced under the direction of another editor/publisher, or whether some alternative wordplay magazine will soon come into existence, no one can say at this time. For several weeks past, two of *Interim's* editors have been looking into both of those possibilities, but as yet they have nothing definite to report. Also remaining to be settled is how *Interim's* five issues can best be preserved, preferably in an open archive to which the public has free online access. Perhaps someone reading this can suggest solutions to one or both of these problems.

My thanks to everyone who took the time to contribute content or encouragement to *Interim* over the past year.

Jim Puder

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All back issues of *Interim* are available free upon request from the editor at <wordways2@outlook.com>.

All issues of, and articles published in, *Word Ways, the Journal of Recreational Linguistics*, may be read and downloaded free of charge at the website Digital Commons @ Butler University: digitalcommons.butler.edu/wordways/

COLLOQUY

LETTERS

Dmitri Borgmann Jeff Grant writes, "Another excellent *Interim*. I particularly enjoyed the conclusion of your Borgmann article. Well done. I think you have probably solved it as near as possible. He was certainly a complex character. I feel privileged to have met Ross Eckler (a few times), Ajax and Darryl Francis (still corresponding). Dmitri Borgmann was evidently a reclusive and prickly individual. Don't think even Ross met him despite making arrangements to do so. We had a brief prolific correspondence and then he died." That sounds very likely. In the last year or so of his life, Borgmann evidently was concerned to get as much of his logological research written down and published as possible in the limited time that he thought he had left, and he wrote ferociously, churning out scores of high-quality *Word Ways* articles in just a few months. Nor did he neglect his correspondence during this time**;** as Jeff notes, that was also prolific. If I recall correctly, in fact, Jeff once told me that he has a letter from Borgmann dated or postmarked December 7, 1985 — the same day that Borgmann succumbed to a fatal heart attack. It seems never to have occurred to the man that perhaps he ought to slow down a little.

Twin tetragrams Jeff's article "Matching Initial and Final Tetragrams" drew more reader comment than any other article in the November *Interim*. Darryl Francis writes, "At the end of [the article] you mentioned the possibility of **RING**MASTE**RING**. Indeed, the *Oxford English Dictionary* shows RINGMASTERING as a noun," illustrating it with a 1998 citation from the *New York Times*. Darryl adds that the *OED* also lists the noun **SHIP**MAN**SHIP,** defined as the art of navigation, citing the use of the word in an 1838 issue of *Tait's Edinburgh Magazine*. Two other *OED* discoveries by Darryl were **OVER**REC**OVER** and **CONS**IDERA**CONS**. (CONSIDERACON is an old spelling of CONSIDERATION). He also found in the *OED* the verb UNDERFUND, which suggests **UNDERFUNDER** as a plausible inflection, although the OED doesn't record it.

Stuart Klimek suggests these additions to Jeff's list:

EINST**EINS** – units of radiant energy; listed in M-W's online *Medical Dictionary.*
MUCKA**MUCK** – North American slang for a person of apparent great importance, evidently derived from the hyphenated British term "muckety-muck"; but note that **MUCK**Y**MUCK**, said to be Canadian slang, has already been reported.
OKEYD**OKEY** – an adverb expressing agreement; a variant of "okey-doke," found in M-W's online *Thesaurus.*
TARAN**TARA** and **TARA**TAN**TARA** – trumpet sounds listed in M-W's online *Dictionary.*
AMINOPROPYLCOBAL**AMIN** – a chemical name found in two Super-Scrabble word lists, WJG and WJU, as well as in PubChem, an online chemical molecule database.

Two readers proposed HOTSHOTS, one of them pointing out that while HOTSHOTS may be a spelling tautonym, it is neither a syllabic nor an aural tautonym. A good point, but I think Jeff would still prefer that there be at least one uninvolved letter between its two repeating tetragrams in order for a word to be deemed eligible for the list.



Of the orthographic scavenger hunt that his article touched off, Jeff observes, "I'm sure there's lots more [of such words] to be found. Just today, I came across this, it's one of my favorites: **BUTT**ER**BUTT**." Listed in Wiktionary, "BUTTERBUTT" is a bird-watchers' nickname for the yellow-rumped warbler, a North American songbird. **BUTT**ER**BUTT** has to be one of *my* favorite fore-and-aft-tetragrammatic words too, although I don't think its's quite as interesting a word as **UNDER**GRO**UNDER** or *quite* as poetic a one as **GALE**N**GALE.** (No offense, little melodist.)

Pangrammatic grid packings In an article in the August *Interim* I posed the question of what were the fewest words needed to pangrammatically pack a rectangular grid having no side shorter than three cells in length. Stuart Klimek responded in the November *Interim* with a solution that packed five seven-letter words into a 7x5 grid in four of the 30 letters were repeats (below, left). Now Darryl Francis has submitted a four-word solution, packing four eight-letter words into an 8x4 grid having six duplicated letters (at right below):

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

Without getting into the question of whether a rectangle containing five seven-letter words with four duplicated letters or one containing four eight-letter words with six duplicated letters is the more aesthetically pleasing minimal pangrammatic grid packing, it would seem at this point that four is the fewest number of words needed to pangrammatically pack a rectangular grid of the specified shape. Apparently, a pangrammatic packing consisting of three nine-letter words is infeasible.

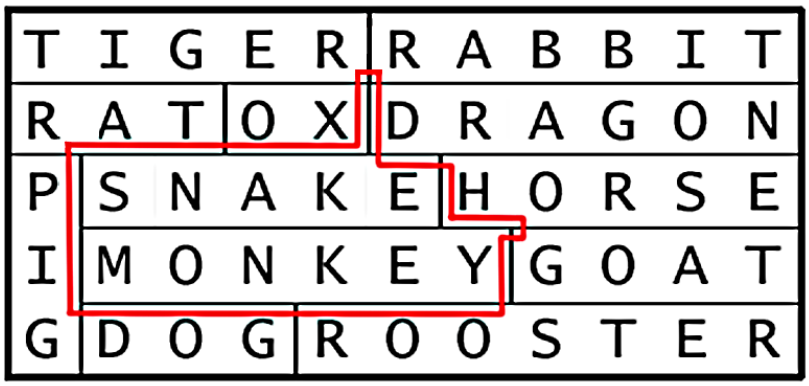
Sets of seven 14-letter words that use all of the non-blank tiles in a Scrabble set There are 98 non-blank tiles in a Scrabble set. Does there exist a set of seven 14-letter words that uses up all of the 98 letters on those tiles? If so, does more than one such set exist? Forty years ago, it would have been impossible to answer either of those questions; now, thanks to the advent of the computer, definitive answers to both of them are available. We now know that there exist a total of three such seven-word sets, to wit:

ACKNOWLEDGEDLY	CINEMATOGRAPHY	BOWDLERIZATION
DEHUMANIZATION	DIAGONALIZABLE	COXSACKIEVIRUS
IMPROVISATIONS	FOREKNOWLEDGES	DIAMONDIFEROUS
JUSTIFIABILITY	NONOBJECTIVITY	FREQUENTATIVES
OVEREXAGGERATE	QUADRUMVIRATES	NONJUDGMENTAL
UNCONQUERABLES	UNISEXUALITIES	PALEOGEOGRAPHY
WEATHERPROOFED	WEATHERPROOFED	WEATHERABILITY

In his Kickshaws column in the November *Interim* Darryl Francis displayed the first two of these word sets, which had been discovered by Dan Stock and Daniel Desjardins, respectively, and asked if any reader could identify any more such sets. In response, Mike Keith supplied the third set above, which was discovered only last August by John Chew. Mike further reports that a

computer program he crafted has proven that these three word sets are the only ones possible using the current NASPA word list, something which had not previously been confirmed..

Ordered packings of cyclical word lists The Chinese calendar is divided into 60-year cycles which are further divided into five 12-year subcycles. Each year of a subcycle has its own animal designation, the animals rotating in this order: RAT, OX, TIGER (that's the current year), RABBIT, DRAGON, SNAKE, HORSE, GOAT, MONKEY, ROOSTER, DOG and PIG. (That, at any rate, is one translation of the animals' Chinese names; other translations sometimes substitute HARE for RABBIT, SHEEP for GOAT and BOAR for PIG.) In the November Kickshaws Darryl Francis displayed a packing of these animals' names in a 55-cell rectangular grid and asked if any reader could manage the same packing in an ordered fashion. Mike Keith has responded with a packing that is not only ordered but *reentrant* — that is, the first and last names in its ordered list, RAT and PIG, are situated adjacent to one another in the grid. In my rendition below of Mike's packing, note that the continuous red line superimposed on it can trace the Chinese calendar's annual clockwise progression from one year's animal name to the next in an endless cycle only because of the packing's reentrant property:

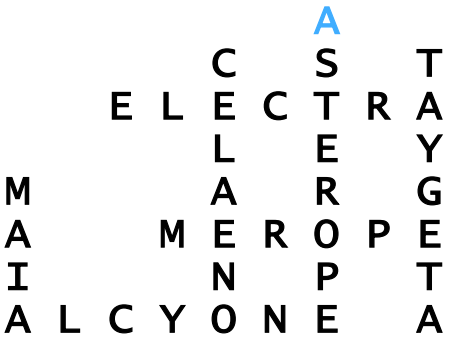


Mike's packing brings up a point which hasn't previously been made in *Interim* discussions of ordered packings, which is that there are two kinds of ordered word lists, cyclical and noncyclical, and that the criteria for complete ordered packings of the two varieties are not quite the same. In an ordered packing of a *non*cyclical ordered word list, reentrance, while it may perhaps be aesthetically desirable, is not essential. For a *cyclical* ordered word list, on the other hand, reentrance *must* occur in any ordered packing, otherwise the ordering is incomplete, having failed to accomplish its last key step. So far as I'm aware, this packing is the first complete ordered packing of any cyclical word list ever published (not that I can think of very many of those.)

Pleiades packings In my article "Classical Packings" in the November *Interim* I exhibited two crossword-type packings of the names of the "Seven Sisters," the seven brightest stars in the Pleiades open star cluster, one of them ordered (based on the stars' relative brightness) and one of the unordered. In each case I asked if anyone could fashion more compact packings than mine. Two readers, Mike Keith and Stuart Klimek, improved upon my unordered packing, a 9x9 square, with packings which, although very dissimilar, both fit into 9x8 rectangles, as shown at the top of the next page:



Keith's 9x8



Klimek's 9x8 or 9x7

How dissimilar are these two packings? For starters, note that except for MAIA, every name that is vertical in one is horizontal in the other. And then there's the fact that Klimek's packing, as he coolly points out, is a convertible; put its top down by removing ASTEROPE's "A" (leaving the star's alternative name of "STEROPE"), and it becomes a sporty little 9x7 roadster of a packing. Beep, beep!

A six-letter word composed of six consecutive letters of the alphabet? Twenty-nine years ago, in the February 1993 *Word Ways* (26:1), p. 34, Susan Thorpe identified three five-letter words composed of five consecutive letters of the alphabet: STRUV (past tense of "strive"), FEIGH (to cleanse, polish) and BACED (past tense of "bace," to beat or flog), and asked if anyone could find a six-letter word of that nature. Now such a word has been found, in the opinion of Stuart Klimek. The word is "FEIGHD," the past tense of the verb FEIGH, which in one of its senses means "in regard to timber in shipbuilding, to fit close," according to the English Dialect Dictionary. Its one known usage dates from 1775, in an era when it was the vogue to omit the "e" in the past-tense "-ed" suffixes of regular verbs, sometimes with an apostrophe and sometimes not. Stuart uncovered this usage in *Naval Documents of the American Revolution, Vol. 2*, a book published in 1966, which cites a letter written by a Col. Gordon Saltonstall regarding the placement of a cannon in the defense works of New London, Connecticut. From that letter:

*…give your Opinion It is made of 2 inch Oake Plank & **feighd** close down to the forend of the cannon…*

Is this one 1775 citation, however, solid proof though it may be that this word was once in use, sufficient to overcome the fact that FEIGHD, unlike STRUV, FEIGH or BACED, has no dictionary attestation, which is the usual sine qua non of a word's acceptability in wordplay contexts? Whether it is or not, a legitimate usage of FEIGHD is certainly a significant discovery.

Just the factorials, please In his article "More Elementary Equations" in the November *Interim,* Darryl Francis employed an ingenious strategem, the extraction and use of integrals, to fashion "elementary equations" for four otherwise refractory element names, TIN, XENON, LEAD and RADON. Although conceding the effectiveness of this tactic, Stuart Klimek adds that there are other functions available, such as the multifactorial and the subfactorial, which can achieve the same results. Here are Stuart's elementary equations for TIN, XENON, LEAD and RADON using these functions. [Some definitions: a *multifactorial* is a string of two or more factorial

signs after a number; a *subfactorial* is a factorial sign before a number; *nonuple* means 9x and *decuple* means 10x; OEIS is the On-Line Encyclopedia of Integer Sequences (https://oeis.org).]

TIN = (20 × (√9)!) - (14!!!!!!!!!) = 50. The factorial of the square-root of 9 is 6; 20 multiplied by 6 is 120; and the nonuple-factorial of 14 is70. (This latter value can be verified by checking the 14th term of the OEIS sequence A14806: Nonuple-factorial). Subsequently, 120 minus 70 is **50**.

XENON = (24 + !5 - 14) × (15 - 14) = 54-. The subfactorial of 5 is 44 [Cf. OEIS A000166]. (24+44-14)×(15-14) = **54**.

LEAD = -(12!!!!!!!!!) + 5! - √(1+√(!4)) = 82. The negative value of the nonuple-factorial of 12 is -36. The factorial of 5 is 120. The subfactorial of 4 is 9. The square-root of 9 is 3. The square-root of (1+3), i.e., 4 is 2. Subsequently, (-36 + 120 - 2) = **82**.

RADON = 18 + 1 + (√(!4))! + (15!!!!!!!!!!) - 14 = 86. The factorial of the square-root of the sub-factorial of 4 is 6. The decuple-factorial [OEIS A288327] of15 is 75. (18 +1 + 6 + 75 - 14) = **86**.

(A short-hand notation for multifactorials is a single factorial symbol superscripted, often parenthetically, by the plied-multifactorial, i.e., a quintuple-factorial of n may be written $n!^{(5)}$.

Readers intrigued, as I am, by the cleverness of equations such as these will be pleased to learn that Darryl Francis has extended the concept to the names of the cardinal numbers in his article "The Numbers Racket," located two articles further on in this issue.

ALSO IN THIS ISSUE

Due to a late surge of submissions after it became known that this could be Interim's final issue, we've received an unusually large number of articles for this issue; where we usually receive only twelve or fourteen articles for an issue, this one will have twenty-six, making it virtually a double issue. There are too many of them for the usual introduction of each one in Colloquy to be feasible, so I'll just mention the two articles written by Gregg Siegel, who is a new contributor and therefore entitled to an intro or two. "Aural Palindromes" explores a topic I don't remember being addressed in either *Interim* or *Word Ways* before. His knowledgeable article is based on his hands-on experience of listening to recordings of human speech played backwards. His other article is "The Wonderful World of Pun Competitions," which describes a previously unknown (at least to me) world of organized paronomasia, one that is apparently thriving; I read his report with rabbit interest.

It should also be explained that, prior to learning that *Interim* may cease publication after this issue, Darryl Francis had written a three-part series of articles on the topic of alphagrammatic isograms, intended to be published in three consecutive issues of the journal. Now they are all being published together in this issue instead, which may turn out to be be a convenience for researchers.₪

CONFESSIONS OF A VERBIVORE

RICHARD LEDERER
San Diego, CA

Carnivores eat meat. Pescatores eat fish. Herbivores consume plants. Verbivores devour words. I am such a creature. My whole life I have feasted on words—ogled their appetizing shapes, colors, and textures; swished them around in my mouth; lingered over their many tastes; felt their juices run down my chin. During my adventures as a fly-by-the-roof-of-the-mouth user-friendly wizard of idiom, I have met thousands of other wordaholics, logolepts, and verbivores—folks who also eat their words.

What is there about words that makes a language person love them so? The answers are probably as varied as the number of verbivores themselves. There are as many reasons to love words as there are people who love them. How do we love thee, language? Let us count the ways.

Some word people of etymological persuasion are intrigued by the birth and life of words and phrases. They become enthusiastic, ebullient, and enchanted when they discover that *enthusiastic* literally means "possessed by a god," *ebullient* "boiling over, spouting out," and *enchanted* "singing a magic song." They love the fact that when a candidate for office went to the Forum in ancient Roman times, he wore a bleached white toga to symbolize his humility, purity of motive, and candor. The original Latin root, *candidatus*, meant "one who wears white," from the belief that white was the color of purity and probity. The Latin verb *candere*, "to shine, to glow," parents the English words *candid, candor, candle,* and *incandescent*.

In the seasonal song "The Twelve Days of Christmas," etymology devotees wonder why the true love sends not only a partridge but an entire pear tree. That's because in the early French version of the song, the suitor proffered only a partridge, which in French is rendered as *une perdriz.* A 1718 English version combined the two—"a partridge, *une perdriz*"—which, slightly rejiggered, came out sounding like "a partridge in a pear tree." Through folk etymology, the partridge has remained proudly perched in a pear tree ever since.

Still another denomination of verbivores, logologists, see words as collections of letters to be juggled, shuffled, and flipped. I am such a person anagrammatically—RIDDLER REACHER—and palindromically: HERE, DICK LEDERER—UPWARD DRAW PURE RED ELK CIDER, EH? Inspired by the word *bookkeeper,* with its three consecutive pairs of double letters, pattern-seekers like me fantasize about a biologist who maintains raccoon habitats: *a raccoon nook keeper*—six consecutive sets of double letters. They also dream of another biologist who studies the liquid inside chickadee eggs. They call this scientist a *chickadee egg goo-ologist*—and into the world are born three consecutive clusters of triple letters!

Then there are the grammarians, who enjoy trying to transmute the briar patch of pronoun cases, subject-verb agreement, sequence of tenses, and the indicative and subjunctive moods into a manageable garden of delight. Such devotees of correct usage often explore the nuances of

confusing word pairs—*lay* vs. *lie* (first comes the laying; then comes the lying), *podium* vs. *lectern* (you stand on a podium; you stand behind a lectern), and *comprise* vs. *compose* (they're antonyms, not synonyms—the large comprises the small; the large is composed of the small).

Other wordaholics experience the joy of lex by prowling the lunatic fringes of language. These recreational word players ponder why we drive in a parkway and park in a driveway, why our nose can run and our feet can smell, and why the third hand on a clock is called the second hand. Why is it, they muse, that a king rules a kingdom, but a queen doesn't rule a queendom; a man mans a station, but a woman doesn't woman a station; a man puts on a pair of pants, but a woman puts on only one bra; and a man can call a woman a vision, but not a sight—unless she is a sight for sore eyes?

Finally, there are the legions of pundits, punheads, and pun pals who tell of the Buddhist who said to the hot dog vendor, "Make me one with everything." That same Buddhist never took Novocain when he had his teeth drilled because he wished to transcend dental medication. These pun-up girls and pun gents become even bigger hot dogs when they tell about Charlemagne, who mustered his Franks and set out with great relish to assault and pepper the Saracens, but he couldn't catch up. (Frankly, I never sausage a pun. It's the wurst!)

I am heels over head in love with language. When I say *heels over head*, rather than *head over heels,* I am not two letters short of a complete alphabet or a syllable short of a coherent statement. *Head over heels* is the normal position, sort of like doing things ass backwards, which is the way we do everything. I don't know about you, but when I flip over something, my heels are over my head.

When I say *language,* I mean by and large that glorious, uproarious, notorious, victorious, outrageous, courageous, contagious, stupendous, tremendous, end-over-endous adventure we call the English language. That's because in matters verbal, I am unabashedly lexist. Just as many would say the Italians do food well and the French do style and fashion well, I believe we English speakers and writers do language well. One might say we do it lexicellently.

Editor's note: Regarding the palindrome, a cursory Internet search discloses that there does, in fact, exist a Red Elk Brewing Company.

THE NUMBERS RACKET

DARRYL FRANCIS
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The November 2015 issue of *Word Ways* (volume 48, number 4) carried an article by the late Susan Thorpe, Elementary Equations. In her article, Susan showed how to derive the atomic numbers of elements using the alphabetical values of their letters and the mathematical functions of addition, subtraction, division, multiplication and square root (**+ – ÷ x √**). The first element on her list was HYDROGEN, and this is how she derived its atomic number of 1:

(8 + 25 – 4 – 18) ÷ (–15 + 7 + 5 + 14) = 1

Susan offered examples for most of the first 92 elements, missing only ZINC, TIN, XENON, GOLD, LEAD, and RADON, all of which had obviously proved very difficult. A solution for ZINC was offered in the succeeding issue (February 2016; volume 49, number 1). In the November 2021 issue of *Interim*, I extended the equations to the transuranic elements, those with atomic numbers 93 to 118.

I decided to extend the concept to the cardinal numbers, and to see if I could create mathematical expressions using the alphabetical values of the cardinal numbers' letters. I decided to use a slightly larger group of symbols than Susan had used. I used these:

+ – x ÷ ! √ . [ ] ( )

The first four of these are familiar enough, representing addition, subtraction, multiplication and division (using either **÷** or the **/** symbol). The next three **! √ .** are factorial, square root and decimal point. The symbols in red **[ ]** indicate the concept of 'the integral part of'. My preference was to avoid these square brackets as far as possible, as I felt that taking the integral part of a number was a bit of a cop-out. The final symbols **( )** are used to make clear that any calculation within the brackets is to be carried out before venturing on to the calculations outside the brackets. I have possibly made excessive use of **( )**, but I have done this to avoid any confusion with some of the calculations.

I couldn't find results for ZERO, ONE, TWO, SIX and NINE that didn't require use of the square brackets **[ ]**. I have marked these expressions in red so it is clear what needs improving. If you can find expressions for these five numbers which don't use the square brackets, please let the editors know.

ZERO	**([√26] – 5) x (18 + 15)**
ONE	**[15 – 14 + .5]**
TWO	**[(20 + 23) / 15]**
THREE	**(20 – 8 + 18) / (5 + 5)**
FOUR	**√ ((6! / 15) / (21 – 18))**
FIVE	**√ (– (6 / √9) + 22 + 5)**

SIX	**[(18 x 9) / 24]**
SEVEN	**–19 – 5 + 22 – 5 + 14**
EIGHT	**√ ((5 x 9) + 7 – 8 + 20)**
NINE	**14 + 9 – 14 + [.5]**
TEN	**(20 + 5!) / 14**
ELEVEN	**5 – 12 + 5 + 22 + 5 – 14**
TWELVE	**(20 + 23) x .5 + 12 – 22 + .5**
THIRTEEN	**–20 + 8 + √9 + 18 – 20 + 5 + 5 + 14**
FOURTEEN	**6 – 15 + 21 + 18 – 20 – 5 – 5 + 14**
FIFTEEN	**6 + 9 – 6 + 20 – (5 / 5) x 14**
SIXTEEN	**(19 + 9 + √ (24 – 20)) x (5 / 5) – 14**
SEVENTEEN	**19 – 5 – 22 + 5 + 14 + 20 + 5 – 5 – 14**
EIGHTEEN	**√ (5 + 9 + 7+ 8 – 20) + (5 / 5) + 14**
NINETEEN	**((14 x √9) / 14) x 5 – 20 + 5 + 5 + 14**
TWENTY	**(20 + 23 – 5 – 14 – 20) x √25**

For the numbers TWENTY ONE to TWENTY NINE, expressions can be generated by adding together the individual expressions for TWENTY and the appropriate second part. So, for example, TWENTY SEVEN can be expressed like this:

TWENTY SEVEN	**((20 + 23 – 5 – 14 – 20) x √25) + (–19 – 5 + 22 – 5 + 14)**

The same approach can be used for TWENTY THREE, TWENTY FOUR, TWENTY FIVE and TWENTY EIGHT. However, this approach should be avoided for TWENTY ONE, TWENTY TWO, TWENTY SIX and TWENTY NINE as it would perpetuate the use of square brackets. For these four numbers, I generated expressions avoiding square brackets. Thus:

TWENTY ONE	**20 + 23 + 5 + 14 – 20 – 25 – 15 + 14 + 5**
TWENTY TWO	**√ ((20! / (23 – 5) !) – 14 – 20 + (√25)! – 20 + 23 + 15)**
TWENTY SIX	**√ (–20 + 23 x (–5 + 14 + 20) + 25 + 19 + 9 – 24)**
TWENTY NINE	**– 20 + 23 – 5 + 14 – 20 + √25 + 14 + 9 + 14 – 5**

The same approach can be taken for the remaining numbers up to NINETY NINE. Specifically, I started by finding expressions for THIRTY, FORTY, FIFTY, SIXTY, SEVENTY, EIGHTY and NINETY. Thus:

THIRTY	**20 + 8 + 9 + 18 – 20 – √25**
FORTY	**6! / (15 + 18 – 20 + √25)**
FIFTY	**(– √ (6 x 9 x 6) + 20) x 25**
SIXTY	**(((19 – 9) x 24) / 20) x √25**
SEVENTY	**19 + 5 + 22 + 5 + 14 – 20 + 25**
EIGHTY	**5 + (9! / 7!) + 8 + 20 – 25**
NINETY	**((14 x 9) / 14) x 5 + 20 + 25**

For the numbers ending in THREE, FOUR, FIVE, SEVEN and EIGHT, I simply added together the expressions for each of the 10-divisible numbers and THREE, FOUR, FIVE, SEVEN and EIGHT. For example, THIRTY EIGHT can be expressed like this:

THIRTY EIGHT	**(20 + 8 + 9 + 18 – 20 – √25) + (√ ((5 x 9) + 7 – 8 + 20))**

As with TWENTY ONE, TWENTY TWO, TWENTY SIX and TWENTY NINE, I didn't want to use the expressions for ONE, TWO, SIX and NINE because of the square brackets. So for these numbers, I generated expressions avoiding square brackets. Thus:

THIRTY ONE	**–20 + (8 x 9) + 18 – 20 – 25 + 15 – 14 + 5**
THIRTY TWO	**20 + 8 + 9 + 18 – 20 + 25 – 20 – 23 + 15**
THIRTY SIX	**–20 + (8 x 9) – 18 – 20 + 25 – 18 – 9 + 24**
THIRTY NINE	**–20 + (8 x 9) + 18 – 20 – 25 + 14 – 9 + 14 – 5**
FORTY ONE	**(6 x 15) – 18 – 20 - √25 – 15 + 14 – 5**
FORTY TWO	**6 – 15 + 18 – 20 + 25 + 20 + 23 – 15**
FORTY SIX	**6 + 15 + 18 – 20 – 25 + 19 + 9 + 24**
FORTY NINE	**(6 x 15) + 18 – 20 – 25 – 14 – 9 + 14 – 5**
FIFTY ONE	**6 – 9 – 6 – 20 + 25 – 15 + (14 x 5)**
FIFTY TWO	**6 + 9 – 6 + 20 - √25 + 20 + 23 – 15**
FIFTY SIX	**6 + 9 – 6 + 20 – 25 + 19 + 9 + 24**
FIFTY NINE	**(6 x 9) + 6 + 20 – 25 – 14 + 9 + 14 – 5**
SIXTY ONE	**19 + 9 + 24 – 20 + 25 – 15 + 14 + 5**
SIXTY TWO	**– √ (19 + 9 – 24) + ((20 x 25) + (20 x 23)) / 15**
SIXTY SIX	**19 x √9 + 24 + 20 + √25 – 19 + √9 – 24**
SIXTY NINE	**(19 – 9) x (24 – 20) + 25 + 14 + 9 – 14 – 5**
SEVENTY ONE	**(19 x 5) – 22 – 5 + 14 + 20 – 25 – 15 + 14 – 5**
SEVENTY TWO	**19 + 5 + 22 – 5 + 14 + 20 + 25 – 20 – 23 + 15**
SEVENTY SIX	**19 + 5 + 22 + 5 + 14 + 20 + 25 – 19 + 9 – 24**
SEVENTY NINE	**–19 – 5 + 22 – 5 + 14 – 20 + √25 + 14 + √9 + (14 x 5)**
EIGHTY ONE	**(–5 + 9) x (-7 + 8) x 20 + 25 – 15 – 14 + 5**
EIGHTY TWO	**5 + 9 + 7 + 8 + 20 – 25 + 20 + 23 + 15**
EIGHTY SIX	**5 + 9 + 7 + 8 – 20 + 25 + 19 + 9 + 24**
EIGHTY NINE	**5 + 9 + 7 + 8 + 20 + 25 + 14 + ((–9 + 14) / 5)**
NINETY ONE	**14 + 9 + 14 + 5 + 20 + 25 – 15 + 14 + 5**
NINETY TWO	**14 + √9 + 14 + 5 + 20 + 24 + 20 – 23 + 15**
NINETY SIX	**(14 x 9) – 14 – 5 – 20 – 25 + 19 – 9 + 24**
NINETY NINE	**14 + 9 + 14 + 5 + 20 + √25 + 14 + 9 + 14 – 5**

So far, then, expressions have been generated for all the numbers from ONE to NINETY NINE. Onwards and upwards!

The next step was to find an expression for the word HUNDRED. Here's one way of expressing it:

HUNDRED	**8 x (21 – 14) – (4 x 18) + 5! – 4**

Once this was generated, the numbers THREE HUNDRED, FOUR HUNDRED, FIVE HUNDRED and so on could be expressed by multiplying the expressions for the single-digit numbers by the expression for HUNDRED. For example, here is SEVEN HUNDRED:

SEVEN HUNDRED	**(–19 – 5 + 22 – 5 + 14) x (8 x (21 – 14) – (4 x 18) + 5! – 4)**

As expected, I didn't want to use this approach for ONE HUNDRED, TWO HUNDRED, SIX HUNDRED and NINE HUNDRED because I wanted to avoid square brackets. For these numbers, I created the following expressions:

ONE HUNDRED	**15 + 14 + 5 + 8 + 21 + 14 + 4 + 18 + 5 – 4**
TWO HUNDRED	**20 x (23 – 15 – 8 + 14 + 4 – 18 + (5 x √4))**
SIX HUNDRED	**((–19 x 9) + (24 x 8) – 21 + 14 – √4 + 18) x 5 x 4**
NINE HUNDRED	**(14 – 9 – 14 + 5 – 8 + 21 + 14 + 4 + 18) x 5 x 4**

I've now reached the stage where expressions exist for ONE to NINETY NINE, and for the 'century' numbers ONE HUNDRED to NINE HUNDRED. I can now combine these appropriately to generate expressions for every number from ONE HUNDRED ONE to NINE HUNDRED NINETY NINE. For example, here is FIVE HUNDRED SIXTY SEVEN:

FIVE HUNDRED SIXTY SEVEN	**((√ (– (6 / √9) + 22 + 5) x (8 x (21 – 14) – (4 x 18) + 5! – 4)) + ((((19 – 9) x 24) / 20) x √25) + (–19 – 5 + 22 – 5 + 14)**

If I now take a similar approach with the word THOUSAND, as I did with the word HUNDRED, I can generate expressions all the way up to NINE HUNDRED NINETY NINE THOUSAND NINE HUNDRED NINETY NINE. Here's one way of expressing THOUSAND:

THOUSAND	**(–20 + (8 x 15)) x (21 – 19 – 1) x (14 – 4)**

Apart from the numbers ONE THOUSAND, TWO THOUSAND, SIX THOUSAND and NINE THOUSAND, I simply multiplied the expressions for THREE, FOUR, FIVE and so on up to NINE HUNDRED NINETY NINE by the newly created expression for THOUSAND. So, for example, here is EIGHT THOUSAND:

EIGHT THOUSAND	**(√ ((5 x 9) + 7 – 8 + 20)) x ((– 20 + (8 x 15)) x (21 – 19 – 1) x (14 – 4))**

As expected, I didn't want to use this approach for ONE THOUSAND, TWO THOUSAND, SIX THOUSAND and NINE THOUSAND because of the desire to avoid square brackets. For these numbers, I created the following expressions:

ONE THOUSAND	**(15 x 14 x 5) – (20 – 8 + 15 + 21 + 19 + 1 – 14 – 4)**
TWO THOUSAND	**20 x (23 + 15 – 20 + 8 + 15 + 21 + 19 + 1 + 14 + 4)**
SIX THOUSAND	**(19 – 9) x (–24 + 20 + 8 + 15 + 21 + 19 + 1) x (14 – 4)**
NINE THOUSAND	**((14 + 9 – 14 – 5 + 20) / 8) x 15 x (19 + 1) x (14 – 4)**

I've now reached the stage where all numbers from ONE to NINE HUNDRED NINETY NINE THOUSAND, NINE HUNDRED NINETY NINE can be expressed. Not surprisingly, some of the expressions have become rather complicated. For example, using the methods described

above, here is how TEN THOUSAND would be expressed – basically the expression for TEN multiplied by the expression for THOUSAND:

TEN THOUSAND	**((20 + 5!) / 14) x ((–20 + (8 x 15)) x (21 – 19 – 1) x (14 – 4))**

But TEN THOUSAND could be expressed in a completely different way which uses fewer mathematical operators and ends up being slightly more compact, thus:

TEN THOUSAND	**(20 x 5) x (14 + 20 – 8 + 15 + 21 + 19 + 1 + 14 + 4)**

It's probably the case that many of the numbers up to NINE HUNDRED NINETY NINE THOUSAND, NINE HUNDRED NINETY NINE could be expressed more compactly in ways which differ from the methods described above, but who's got time to create individual expressions for close on a million numbers?

Where now? What about expressions for the numbers ONE MILLION and upwards? First off, as with HUNDRED and THOUSAND, an expression needs to be created for the word MILLION. It's now time to introduce the **^** symbol, meaning 'raised to the power of'. Use of this symbol could be avoided by just writing everything that follows it in superscript form. For example, 10^6 has the same value as 10^6. I just using the **^** symbol makes things more readable. Here's one attempt, but there are likely others:

MILLION	**(13 – √9) ^ ((12 / 12) x (–9 + (15! / 14!)))**

Apart from the numbers ONE MILLION, TWO MILLION, SIX MILLION and NINE MILLION, simply multiply the expressions for THREE, FOUR, FIVE and so on up to NINE HUNDRED NINETY NINE by the newly created expression for MILLION. So, for example, here is EIGHT MILLION:

EIGHT MILLION	**(√ ((5 x 9) + 7 – 8 + 20)) x ((13 – √9) ^ ((12 / 12) x (–9 + (15! / 14!))))**

As expected, I didn't want to use this approach for ONE MILLION, TWO MILLION, SIX MILLION and NINE MILLION because of the desire to avoid square brackets. For these numbers, I created the following expressions:

ONE MILLION	**((15! / 14!) – 5) ^ (13 + 9 – 12 – 12 + 9 – 15 + 14)**
TWO MILLION	**.20 x (((23 – 15) + √ (13 – 9)) ^ (– (12 / 12) + 9 – 15 + 14))**
SIX MILLION	**√ ((19 + (√9)! + 24 – 13) x (9 + (12 / 12)) ^ (– √9 + (15! / 14!))**
NINE MILLION	**(14 – 9 – 14 + 5 + 13) x (9 + 12 / 12)) ^ (–9 + (15! / 14!))**

I've now reached the stage where all numbers from ONE to NINE HUNDRED NINETY NINE MILLION, NINE HUNDRED NINETY NINE THOUSAND, NINE HUNDRED NINETY NINE can be expressed – that's a billion minus one.

Going beyond the millions, it's now necessary to create a expression for BILLION (just as I did for HUNDRED, THOUSAND and MILLION). Here's how I expressed BILLION:

BILLION	**(– √ (– (2 ^ √9) + 12) + 12) ^ (9 x (15 – 14))**

So here is how SEVENTY FIVE BILLION can be expressed, with SEVENTY, FIVE and BILLION shown on separate lines, and then all together:

SEVENTY	**((19 + 5 + 22 + 5 + 14 – 20 + 25) +**
FIVE	**(√ (– (6 / √9) + 22 + 5))) x**
BILLION	**(– √ (– (2 ^ √9) + 12) + 12) ^ (9 x (15 – 14))**
SEVENTY FIVE BILLION	**((19 + 5 + 22 + 5 + 14 – 20 + 25) + (√ (– (6 / √9) + 22 + 5))) x (– √ (– (2 ^ √9) + 12) + 12) ^ (9 x (15 – 14))**

As previously, there is a need to generate non-square-bracket solutions for ONE BILLION, TWO BILLION, SIX BILLION and NINE BILLION. Here are my offerings, but there will be other expressions available:

ONE BILLION	**(((15 – 14) x 5 + 2 + √9) x (12 / 12)) ^ (9 x (15 – 14))**
TWO BILLION	**√ ((20 – ((23 – 15) x 2)) x (9 + (12 / 12)) ^ (√9 + (15! / 14!)))**
SIX BILLION	**√ ((19 – 9 + 24 + 2) x (9 + (12 / 12)) ^ (√9 + (15! / 14!)))**
NINE BILLION	**((14 + 9 – 14) x .5 x 2) x ((9 + (12 / 12)) ^ (9 x (15 – 14)))**

This means that we can now create expressions for all the numbers up to NINE HUNDRED NINETY NINE BILLION, NINE HUNDRED NINETY MILLION, NINE HUNDRED NINETY NINE THOUSAND, NINE HUNDRED NINETY NINE, or, put another way, one trillion minus one.

Going further still beyond the billions, it's now necessary to create an expression for TRILLION (just as I did for HUNDRED, THOUSAND, MILLION and BILLION). Here's how I expressed TRILLION:

TRILLION	**(20 / (18 / 9)) ^ (– (12 / 12) x √9 + (15! / 14!))**

Again, as before, there is a need to generate non-square-bracket solutions for ONE TRILLION, TWO TRILLION, SIX TRILLION and NINE TRILLION. Here are my offerings, but there will be other expressions available:

ONE TRILLION	**√ (((15! / 14!) – 5) ^ (((20 x 18) + 9 + 12 – 12 – 9) / (15! / 14!)))**
TWO TRILLION	**√ (((–20 + 23) / 15) x 20) x (18 – 9 + (12 / 12)) ^ (9 + (15! / 14!))**
SIX TRILLION	**(19 + 9 – 24 + 20 – 18) x (9 + (12 / 12)) ^ (– √9 + (15! / 14!))**
NINE TRILLION	**(14 + 9 – 14) x (5 x (20 – 18)) ^ ((9 + √ (12 x 12) – 9) x (15 – 14))**

This means that we can now create expressions for all the numbers up to NINE HUNDRED NINETY NINE TRILLION NINE HUNDRED NINETY NINE BILLION NINE HUNDRED NINETY MILLION NINE HUNDRED NINETY NINE THOUSAND NINE HUNDRED NINETY NINE, or, put another way, one quadrillion minus one.

This process can be carried on indefinitely for quadrillions, quintillions, sextillions, septillions, octillions, nonillions, decillions and so on!

Even some of the very largest numbers can be expressed by mathematical operations involving the alphabetic positions of their letters. So, a googol is 10 raised to the power of 100, or 10^{100}, or using the terminology used elsewhere in this article 10 ^ 100. And a googolplex is 10 raised to the power of a googol.

ONE GOOGOL	**((15! / 14!) – 5) ^ ((7 x 15) – 15 + 7 + 15 – 12)**
ONE GOOGOLPLEX	**((15! / 14!) – 5) ^ ((√ ((7 x 15) – 15 + 7 + 15 – 12)) ^ (16 + (12 x 5) + 24))**
INFINITY	**(9 + 14 + 6 + 9) / (14 – 9 + 20 – 25)**

All the positive integers have been addressed, but what about all the negative ones? There are two approaches to creating expressions for these. The first is simply to create a subtraction of two integers, subtracting the larger from the smaller. For example:

MINUS THREE	**SEVEN – TEN**	**(–19 – 5 + 22 – 5 + 14) – ((20 + 5!) / 14)**

The other approach is to develop an expression for MINUS ONE and then multiply this by the appropriate positive integer to get the desired negative integer. Here's one way to express MINUS ONE:

MINUS ONE	**13 + 9 + 14 – 21 – 19 + (15! / (14! x 5))**

So here's an alternate way to express MINUS THREE:

MINUS THREE	**MINUS ONE x THREE**	**(13 + 9 + 14 – 21 – 19 + (15! / (14! x 5))) x ((20 – 8 + 18) / (5 + 5))**

It's not just the atomic numbers of chemical elements or cardinal numbers that can be expressed by arithmeticizing the alphabetic positions of their constituent letters. The same approach can be taken with the sequential numbers of US presidents or the sequential numbers of states admitted to the USA. Some examples are offered below, but I leave a complete listing of the presidents and states to readers:

LINCOLN (16th president)	**16 = 12 + 9 + 14 – (3 x 15) + 12 + 14**
BIDEN (46th president)	**46 = 2 ^ √ ((9 – 4) x 5)) + 14**
IOWA (29th state)	**29 = (–9 + 15 + 23) x 1**
HAWAII (50th state)	**50 = (8 x 1) + 23 + 1 + 9 + 9**

A COMPLETE ALLITERATIVE PANGRAM ALPHABET

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A pangram, in this article, is considered to be a single grammatically complete and correct sentence in which every letter of the alphabet occurs at least once. Traditionally, shorter pangrams are regarded as being superior to longer ones. Various additional constraints, such as palindromicity, have been applied to the composition of pangrams as elaborations of the concept. In an article (1) in the November 2020 issue of *Word Ways*, Tristan Miller introduced a novel elaboration, the alliterative pangram. In an alliterative pangram, every word in a pangrammatic sentence must begin with the same letter, meaning that a complete alliterative pangrammatic alphabet will comprise 26 alliterative pangrams.

In his article, Miller presented alliterative pangrams for a dozen different letters, namely A, B, C, D, E, F, G, I, J, Q, X and Z. Note that this list includes what are probably the four most "difficult" letters in the alphabet, J. Q, X and Z. (A "difficult" letter is one which occurs at the beginning of relatively few words in the language, limiting the vocabulary available to alliterative pangrammatists of that letter.) Of the remaining 14 letters, only Y is similarly disadvantaged. In a follow-up article (2) on this topic in the February 2021 *Interim* which built upon Miller's beginning, I made mostly small changes to all of Miller's examples, mainly for the purpose of reducing their length, and added alliterative pangrams for the letters W and P. That left a dozen letters of the alphabet still not alliteratively pangrammized. The present article, in addition to making small changes in the existing alliterative pangrams for C, D, E, I, J and P, exhibits alliterative pangrams for those twelve remaining letters.

There is no established code governing what vocabulary is permissible in a pangram and what is not; a category of words prohibited by one pangrammatist may be deemed acceptable by another. With the exception of certain proper nouns and well-known recent neologisms, I require that all of the words in my pangrams be dictionary-attested; excluded from consideration are hyphenated words and words in any of categories:

- acronyms and abbreviations (but note that it is often necessary to consult a dictionary to know what is an abbreviation and what is not; according to Webster's Third, for instance, "DJ" is always an abbreviation, but "OK" and "TV" may or may not be abbreviations, depending upon usage).
- contractions (a common contraction such as "don't" is admittedly unobjectionable, but an exotic one such as "John'd" subverts the ethos of the pangram, and as there is no good place to draw a line between fair and unfair contractions, the entire category is excluded. Note that an apostrophe and a possessive "s" added to the end of a word is not a contraction).
- any proper noun not attested to by some published reference work such as a dictionary, encyclopedia, atlas or gazetteer (but not a telephone directory); two

exceptions to this exclusion are reasonably familiar given names (e.g., "Ralph") and common nouns used as proper nouns (e.g., the Constitution).

Beyond these exclusions, acceptable pangrammatic sentences are expected to be completely grammatical, to avoid contorted syntax and to be at least theoretically comprehensible.

Here is our alliterative pangram alphabet's final group of 12 pangrams, along with some ex-exegesis:

H (44): Howling hexes havocked Hump's hefty Hejaz harquebus.

"Hump" could be a diminutive of "Humphrey."

K (48): Kvetchy kabeljou kiosque kazi Knox *knew* keg kef, Kurd Kemp!

Kabeljou is an African food fish, "kiosque" is an alternative spelling of "kiosk," a kazi is a Moslem judge and kef is a state of dreamy relaxation. "Kvetchy" is in the American Heritage Dictionary.

L (46): Loth, lax, lazy lumberjacks loved lapping lawful liquor.

(It was less toxic than the bootleg homemade hooch.)

M (44): "Mow, mopy Mafeking Maquisard Max, Mischljenovatz' mob!"

An order given to a South African-born Yugoslavian guerilla in WWII, perhaps. The pangram features the isogrammatic 14-letter name of the Serbian town of Mischljenovatz, which Dan Tilque reported in his November 1996 *Word Ways* article "Placename Isogramy" (3). He found it in a 1905 German-language gazetteer, *Ritters Geographisch-Statistisches Lexicon*, from which he also extracted the 16-letter isogrammatic name of the Saxon hamlet of Malitzschenkendorf, which I considered using instead. Why? Because the more letters of the alphabet that can be crowded into a single word in a pangram, the fewer words the pangram may need, and in an alliterative pangram fewer words means fewer requisite repititions of a particular initial letter, possibly permitting a shorter pangram.

N (47): "Nimptschdorf nizy, *nix* newly nonquota Naja!" nags Nabokov.

A nizy is a fool, Naja is a genus of cobras, and Nimptschdorf, a village in Moravia, is another isogram unearthed by Tilque . Here, Vladimir Nabokov protests the town's plan to permit the unrestricted importation of the deadly snakes to combat a plague of hedgehogs.

O (38): Ought Ockham's opaqued Ojibwa oxen overfly Oz?

Why not? Flying monkeys do it.

R (50): Rowdy robot requiems, repackaged, rejuvenize rhea reflexes.

They're a rheal riot.

S (59): Sesquipedalian semantemes subjectify sexology, Szekesfehervar saw.

All of these words may be found in Merriam-Webster dictionaries; Szekesfehervar is a city in Hungary, and "semanteme" is a sesquipedalian word for "word."

T (46): Tzar, thumbscrewing Tuva Tadjik tax my topful tequilas!

Tuva is a Russian province north of Mongolia; "topful" means the same thing as "brimful."

U (47): Unwed Uj Uzbek uncopyrightably unfix unique Uma uvulas.

Uj is a town in Saudi Arabia and Uma is the genus of lizards comprising the fingerfoots. Descriptions of the illegal procedures for detaching their uvulas for use in aphrodisiacs are unpublishable (thus uncopyrightable) by international convention.

V (58): "Vax" views vehement, Vallejo vaqueros vilify "vapid" Vicksburg "vizards."

Contemporary slang for "vaccination," "vax" is a well-known recent neologism; e.g., note its occurrence in the dialogue in the cartoon at the end of this article (reprinted here under the "fair usage" doctrine), meaning that it's a pangrammatically acceptable word. Vallejo is a city in California, and a vizard is a mask. The pangram imagines a bit of inter-state name-calling over contrasting public vaccination and masking policies.

Y (62): Yavapai yank yajes, Yaxchilani yard yaguazas, yet Yanquis yowl "Ynambu yuft!"

Like X and a few other letters, Y is difficult to pangram alliteratively on account of the relative paucity of words in the language that begin with it. As a consequence of this fact, my alliterative pangram for this letter, like Tristan Miller's alliterative pangram for X, consists largely of unfamiliar words. Particlarly troublesome was the need to find a suitable word (one that wasn't hyphenated) that begins with a Y and contains an X. An internet search yielded the name of the ancient Mayan city of *Yaxchilan*, located in the Mexican state of Chiapas, which is believed to have been one of the most powerful Maya states of the Late Classic Period and is now a major archeological site. Other unfamiliar words in the pangram are *Yavapai,* the name of a people native to central Arizona, *yaja*, a Brazilian plant of the family Apocynaceae, *yaguaza*, the name of a West Indian duck, *Yanqui*, a Latin American spelling of "Yankee," *ynambu,* a "very large tinamou" of southern Brazil and Argentina, and *yuft*, the name of a type of leather often called "Russian leather." A fairly free paraphrase of this sentence might be "The Yavapai harvest the yaje plant, Yaxchilani raise yaguaza ducks, but Yanquis only care to acquire ynambu hide."

In addition to composing pangrams for these new letters, I replaced the existing pangram for the letter E with this one:

E (46): "Ephor," exflagellate equivocal Ezekiel's enjambed "ewery!"

In other words, "'Ephor," (a jocular term for poetry critics) caustically criticize a tentative Ezekiel for enjambing the word 'ewery' (a room for housing decorative ewers) in a poem!"

(Enjambment is the continuation of a sentence or idea from one line or couplet of a poem to the next; to "exflagellate" something is to flagellate it.)

With the completion of this last batch of alliterative pangrams, it becomes possible for the first time to assemble a complete alphabetic sequence of such pangrams, and here it is:

A (36): Ajax, advected Abkhaz aquas amplify awrong!
B (44): Blowzy bivouacking Bamford bipeds bequeath bijoux.
C (38): Cawing, caziques carjacked complex Chevy cabs.
D (46): Dvorak, *deoxygenize* Depew's deformable Dijon discotheque!
E (46): "Ephor," exflagellate equivocal Ezekiel's enjambed "ewery!"
F (46): Fitzpatrick fed Freyja Fanshaw foxglove fique *flambé*?
G (48): Gawky, grotesque Gijón gazebo grump Givenchy genuflexed.
H (44): Howling hexes havocked Hump's hefty Hejaz harquebus.
I (42): Injecting infrequently, Io impawned Izhevsk ilbex.
J (48): Jacques' jynx "Jazzbow's" joking jive jolted jewfish Jumper.
K (48): Kvetchy kabeljou kiosque kazi Knox *knew* keg kef, Kurd Kemp!
L (46): Loth, lax, lazy lumberjacks *loved* lapping lawful liquor.
M (44): "Mow, mopy Mafeking Maquisard Max, Mischljenovatz' mob!"
N (47): "Nimptschdorf nizy, *nix* newly nonquota Naja!" nags Nabokov.
O (38): Ought Ockham's opaqued Ojibwa oxen overfly Oz?
P (45): Poxy prefab Peking pewit pajamas piqued Przhevalski.
Q (54): Quiz, Qom Qajar Qadhafi, quiveringly quixotic Quapaw Quebeckers.
R (50): Rowdy robot requiems, repackaged, rejuvenize rhea reflexes.
S (59): Sesquipedalian semantemes subjectify sexology, Szekesfehervar saw.
T (46): Tzar, thumbscrewing Tuva Tadjik tax my topful tequilas!
U (47): Unwed Uj Uzbek uncopyrightably unfix unique Uma uvulas.
V (58): "Vax" views vehement, Vallejo vaqueros vilify "vapid" Vicksburg "vizards."
W (43): What Web wag, waqf wazir, wound wavy wax wejack wimples?
X (66): Xerodermatic Xrowet, xylograph Xinjiang xarif Xavier Xanakis' Xuchow xebeque.
Y (62): Yavapai yank yajes, Yaxchilani yard yaguazas, yet Yanquis yowl "Ynambu yuft!"
Z (58): Zolaesque Zhadanov, zap Zhangjiakou zanthoxylum zebec "Zif" Zionward!

In my article "Alliterative Pangrams Perceptibly Progress" in the February 2021 *Interim*, with a dozen alliterative pangrams for this alphabet remaining to be composed, I idly guessed (p.15) that the letter total of the completed alliterative pangram alphabet would be "something around 1250"; now, with the task completed, the actual total turns out to be **. . .**

1250. The two composers of these tongue-twisters could probably have reduced this number further, had they wished to make certain sacrifices, but both of them consider that there are other desirable qualities in a pangram besides its relative brevity.

Seven of the twenty-six pangrams in this alliterative alphabet require only six words to have their say, but none has managed to say it in five. Can any reader compose one or more alliterative pangrams of five words or fewer?

Articles Cited

1. Tristan Miller, "Alliterative Pangrams," *Word Ways*, 53(4): November 2020.
2. Jim Puder, "Alliterative Pangrams Perceptibly Progress," *Interim*, 1(1): 15-18, February 2021.
3. Dan Tilque, "Placename Isogramy," *Word Ways*, 29(4): 211-214, November 1996.



HAPPY GROUNDHOG DAY! (NOTE THE "VAXXED.")

PACKING FOR A TOUR OF THE STATE CAPITALS, VIA ST. PAUL

Mike Keith

In [1], Darryl Francis remarks that the names of the U.S. state capitals have a total of 409 letters, a prime number, and therefore they cannot be packed into a rectangle of any size. He then goes on to propose a scenario which overcomes this problem. In this article we offer a different solution to this dilemma: write the name of the capital of Minnesota as "St. Paul", and then use just the letters (no spaces or punctuation) to render the capital city names. This changes the number of letters from 409 to 406, which allows for two nice packing rectangles: 29 x 14 and 58 x 7. This is not an unconventional thing to do, as "St. Paul" is seen at least as much, maybe more often, in print than "Saint Paul" when referring to the capital of Minnesota. For instance, a Google search (as of today, 5 Nov 2021) gives 8.36 million hits for "St. Paul Minnesota" and 5.45 million for "Saint Paul Minnesota".

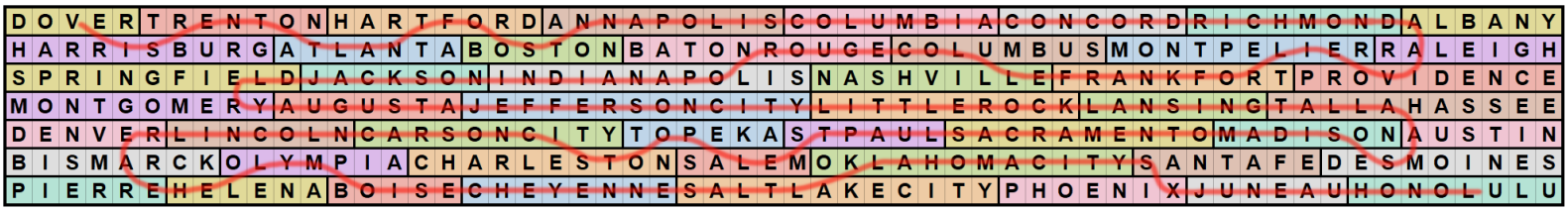
There's a good amount of room for creativity when packing the state capitals into a 29 x 14 rectangle, so we can impose an additional constraint if we wish. In [2] the concept of a *minimal-region* packing is described: color all words of each length with a specific color, and attempt to minimize the number of distinct single-color rectangles that appear in the packing. The state names have 9 different colors, one for each word length from 5 to 13. We were not able to achieve the minimal number of 9 regions, but here is a packing using 10 regions, just one more than the theoretical minimum:

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

All but one collection of the same-length names (the one 13, three 12's, two 11's, nine 10's, four 9's, seven 8's, twelve 7's, nine 6's) are able to be placed as a single block, and two of the 5's (DOVER and SALEM) also form a region. Only a single 5 (BOISE) breaks away from the pack.

Ordered packing of the capitals. There is one reasonable way to impose an ordering on the capital cities, so that the more challenging *ordered* packing of a rectangle can be attempted. And that is to attach each capital to its home state, with the states being ordered in their usual fashion according to the year of attaining statehood. So from the ordering of the states in the Union (Delaware, Pennsylvania, New Jersey, Georgia, ...) we get a natural ordering of the capitals (Dover, Harrisburg, Trenton, Atlanta, ...). This order is not related historically to when each city actually *became* the capital of its state, and ignores the fact that most states have had several different capitals during their history, but it still seems like a sensible way of ordering the list of current capital cities.

Due to the severe number of long capital names (nine 10's, two 11's, three 12's, and a 13) we strongly suspect that the 29 x 14 cannot be packed in an ordered fashion, so the next interesting rectangle to try is 58 x 7. Using the methods described in [2] we find that it naturally splits into strips of 3, 1, and 3 rows, from which the following ordered packing can be constructed:



Crossword packing, via Saint Paul. For crossword packing, as opposed to rectangle packing, there is no need to use the "St. Paul" spelling, so for this challenge we'll use the full "Saint Paul" name.

It is interesting to try and estimate what area and/or rectangle dimensions a complete crossword packing of the capital names might require. Using the statistics of some existing high-density crosswords that have been constructed already, such as those discussed in [3], we can make a guess.

The *density* of a crossword grid, bounded by a rectangle of some size and containing a specific list of words, is defined as the number of letters in the word list divided by the area of the rectangle. The densest known crossword grid containing all the distinct U.S. presidential surnames, for example, has a density of 63.9%. However, the capital city names have a significantly higher average word length (409/50 = 8.18) than the president names (304/46 = 6.6), as well as a significantly higher *maximum* length – there are 6 capital names with 11, 12, or 13 letters, and zero president names that long (just two 10's). Longer names are harder to place than shorter names, so it is likely that a high-density capitals crossword will have a lower density than a high-density presidents crossword. This suggests that around 60% might be a reasonable goal. Packing the 409 letters of the capital names at a density of 60% implies a rectangle with an area of around $409/0.6 \approx 682$.

As explained in [3], thin rectangles (as long as they are not *too* thin) are easier to pack crossword-style than squarish rectangles, because a thin rectangle of a given area has more border squares than a square of the same area, and these border squares are extra valuable. But how thin should we go? The obvious answer is a height, *h*, of 13, because then every capital city name can be placed either horizontally or vertically in the grid. But we have found, perhaps surprisingly, that it often works to go even thinner than this limit, as long as the number of words forced to be placed horizontally is not too high. Since there are many 10-letter words in this list it is clear that *h* should be at least 10, so we tentatively decided to try *h* = 10 first. Six of the capital names (Jefferson City, Indianapolis, Salt Lake City, Oklahoma City, Springfield, and Tallahassee) will have to be oriented horizontally, but only those. Our rough area goal is 682, so this suggests a 69 x 10 or 68 x 10 rectangle.

Here's a state-capital crossword that fits in 68 x 10, with an area of 680 and a density of 60.14%.

```
  1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4 5 5 5 5 5 5 5 5 5 6 6 6 6 6 6 6 6
  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8
1 JEFFERSONCITY   CONCORD MADISON           SALTLAKECITY   COLUMBIA   C
2       A       A    H  E O   A  OLYMPIA N     I                A     A
3 BISMARCK  B C N   JACKSON A I H A  H   A R   TOPEKA RICHMOND T     R
4 O     R S O H N    R  M T LINCOLN  O T S A   T          A    COLUMBUS
5 I TALLAHASSEE A H  L  O P B T N S  E R H L   L HARRISBURG J  N     O
6 S  U  M N T Y PIERRE  I E A PROVIDENCE V E   E       A  T  U  R   D N
7 E  S  E T O E O L  S  N L N A L N  I N I I SPRINGFIELD FRANKFORT O C
8   ATLANTA N N L E  T  E I Y U U G  X T L G   O       E  O  E  U   V I
9    I  T F  INDIANAPOLIS E   L L      OKLAHOMACITY   M  R  A  G   E T
10 MONTGOMERY E S A  N    R    AUGUSTA N E     K         D  U DENVER Y
```

We tried an N x 13 shape (the obvious choice alluded to above) and were not able to meet or beat an area of 680, so for now this is the smallest-known capital city crossword. But it is quite possible that smaller ones exist. Can you find one?

References

[1] Francis, Darryl (2021), "Packing The State Capitals", *Interim,* 1(4), p. 198.

[2] Keith, Mike (2021), "Ordered Word List Packing: Some New Specimens and Construction Techniques", *Interim*, 1(4), p. 202

[3] Keith, Mike (2021), "Some New Presidential Crossword Grids", *Interim*, 1(2), p. 60

OVERLAPPING PLACE-NAMES

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Extending Anil's concept of overlapping synonyms like choo**SE**lect and arre**ST**op, there are many countries with overlapping names. For example, there are

Portug**AL**bania, Ni**GER**many, Moroc**CO**lombia, Pol**AND**orra, Swe**DEN**mark, Bhu**TAN**-zania, Belo**RUS**sia, Burkina Fa**SO**malia, Viet**NAM**ibia, Myan**MAR**shall Islands, Cu**BA**h-rain, United Stat**ES**tonia and, in a schizophrenic pairing of a kingdom and a republic, the United King**DOM**inican Republic.

Longer strings are possible. Here are examples of three-, four-, five-, six- and seven-country chains:

three countries: Nicara**GUA**te**MALA**wi; Saint Kitts and Nev**IS**ra**EL** Salvador

four countries: Qat**AR**genti**NAURU**guay; Moldo**VA**nua**TU**va**LU**xembourg

five countries: Ja**PAN**a**MA**l**TA**jikist**AN**dorra / **AN**gola / **AN**tigua and Barbuda

six countries: Ja**PAN**a**MA**l**TA**jikist**AN**go**LA**tvia / **LA**os

seven countries: Ja**PAN**a**MA**ldiv**ES**wati**NI**cara**GUA**tema**LA**os / **LA**tvia (Eswatini is the former Swaziland.)

If Palestine were officially recognised as a country, there could be this endlessly repeating two-country chain:

Palesti**NEPAL**esti**NEPAL**esti**NEPAL**esti**NE**….

Or, if we spelled "Latvia" the way the Latvians spell it, "Latvija," there could be this endlessly repeating six-country chailn:

Latvi**JAPAN**a**MA**l**TA**jikist**AN**go**LA**tvi**JAPAN**a**MA**l**TA**jikist**AN**go**LAt**vi**JAPAN…**

What follows is an attempt to find overlapping place-names where the first name is a location within the country following. There must be at least a 2-letter overlap, e.g. Tripo**LI**bya, and the names can't be related or the same, e.g., Tunis, Tunisia or River Jordan, Jordan. The countries of the world are based on the list at worldometers.info. All localities within the countries are populated places (cities, towns, villages, etc), unless stated otherwise. They all appear on the geonames.org database. If you can fill any of the gaps or make improvements, please let us know.

Awq**AF**ghanistan
Shpatm**AL**bania
Tirou**AL**geria
Tossal Gr**AN**dorra (locality)
Sanj**ANGO**la
Mount Pleas**ANT**igua and Barbuda
Simbol**AR**gentina
Karmirs**AR**menia (peak)
Prenzl**AU**stralia
Funfh**AUS**tria
Teyv**AZ**erbaijan
Ba**BA**hamas (point)
Sal**BAH**rain (ruins)
Ban**BANGLA**desh
Bathshe**BA**rbados
Pod**BELA**rus
Au**BEL**gium
Xai**BE**lize
Agom**BE**nin
Cam**BER**muda (strait)
Bhutan?
Tre**BOL**ivia
Du**BO**snia and Herzegovina
Mato**BO**tswana
Salo**BRA**zil
Brunei?
Kri**BUL**garia
Ta**BU**rkina Faso
Bu**BU**rundi
Cacho**CA**bo Verde
Kompon **CAM**bodia (admin division)
Fo**CAM**eroon
Irri**CANA**da
Servi**CE**ntral African Republic
Kar**CHA**d
Pi**CHI**le
Nan**CHI**na
Proto**COLO**mbia
Cocori**CO**moros (peak)
Coton**CO**ngo
Hue**COS**ta Rica
Babis**CO**te d'Ivoire
Babis**CO**te d'Ivoire
Tro**CRO**atia (peak)
Caba**CU**ba
Cyprus?
Siedlisz**CZE**chia (= Czech Republic)
Lun**DEN**mark
Ha**DJI**bouti
Dominica?
Villarpan**DO**minican Republic
Pachacut**EC**uador
Gebel Yell**EG**ypt (peak)
San Rafa**EL** Salvador
Wick**EN**gland
Equatorial Guinea?
Sh**ERIT**rea
R**ESTO**nia
Nun**ES**watini (formerly Swaziland)
Nazar**ETH**iopia
Fiji?
Finland?
Mont**FRANC**e
Mo**GABO**n
Sarin**GA**mbia
Leshamu**GE**orgia
Munsterla**GER**many
Ku**GHAN**a
Greece?
Grenada?
Sara**GUATE**mala
Ba**GUINE**a
Lan**GUINE**a-Bissau (stream)
Guyana?
Chac**HA**iti
Joac**HON**duras
Hungary?
Iceland?
Rawalp**INDI**a
Kl**INDON**esia
Malk**IRA**n
Ch**IRA**q
Lism**IRE**land
K**ISRA**el
Margar**ITA**ly
Tro**JA**maica
So**JA**pan
Jordan?
Yenbekshi**KAZAKH**stan
Nase**KENY**a (hill)
Buari**KI**ribati
Bu**KOS**ovo

Ka**KYR**gyzstan
Ban Danna**LA**os
Raksa**LA**tvia
El-Mtei**LEB**anon
Matsai**LE**sotho
Yo**LI**beria
Tripo**LI**bya
Riet**LI**echtenstein
Zhi**LI**thuania
Luxembourg?
Anjo**MA**dagascar
Zozo**MALA**wi
Kampung Ka**MALA**ysia
Ulegu**MA**ldives
Di**MALI**
Bingem**MA**lta
Ke**MAR**shall Islands (island)
Gadia**MA**uritania
Pal**MA**uritius
Yaca**MEX**ico
Kuchu Ku**MI**cronesia (admin division)
Moldova?
Monaco?
Jal**MON**golia
Solo**MON**tenegro (peak)
Bou Zem**MOR**occo
Chefe To**MOZA**mbique
Tha**MYA**nmar (or Ai**BUR**ma)
Tha**MYA**nmar (or Ai**BUR**ma)
Okata**NA**mibia
An**NA**uru
Chu**NEPA**l
Trophor**NE**therlands
Tilloug**NE**w Caledonia
Whakata**NE**w Zealand
Salo**NICA**ragua
Kokoma**NI**ger
Viniv**NI**ue
Con**NOR**thern Ireland
Kobong**NO**rth Korea
Si**NOR**th Macedonia
Mag**NOR**way
Arzo**OM**an
To**PAKI**stan
Palau?
Cam**PANA**ma
Po**PAPU**a New Guinea (island)
Estancia Luci**PAR**aguay
Chu**PER**u
Petro**PHIL**ippines (admin facility)
To**POLA**nd
Cam**PO**rtugal
Al Maraq**Qat**ar
Lod**ROMAN**ia
A**RUSSI**a
Ki**RWA**nda
Saint Kitts and Nevis?
Bella Ro**SA**int Lucia
Saint Vincent and Grenadines?
Fasafa**SA**moa
San Marino?
Milagro**SA**o Tome and Principe
Kha**SA**udi Arabia
Mar**SCO**tland (peak)
Djilas**SENE**gal
Pac**SER**bia
Curieu**SE**ychelles (island)
Mokaines**SIE**rra Leone
Jombo**SIN**gapore
Nove Me**SLO**vakia (admin division)
Slovenia?
Alo**SOLO**mon Islands
Lusolu**SO**malia
Mosho**SO**uth Africa
Yong**SO**uth Korea
Kimpo**SO**uth Sudan
A**SPA**in
Sri Lanka?
A**SUDA**n
Ven**SUR**iname (estate)
Sweden?
Switzerland?
Syria?
Gulpis**TA**jikistan
M**TANZA**nia
Ban Lu**THA**iland
Biti**TI**mor-Leste
Ngobo**TO**go
Havelulo**TO**nga
Trinidad and Tobago?
Beni Kral**TUN**isia
Gok**TURK**ey

Sayva**TUR**kmenistan
Mutulo**TU**valu (island)
Kamb**UGA**nda
Zelench**UK**raine
Sif**UNI**ted Arab Emirates (wadi)
Bra**UN**ited States (Oregon)
Pa**URU**guay (locality)
Sart**UZ**bekistan
Larata**VA**nuatu

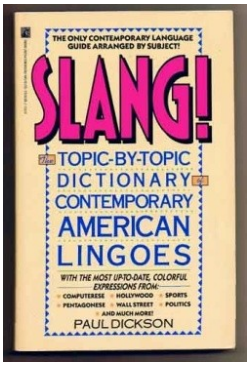
Gramo**VEN**ezuela
Abri Pa**VIE**tnam
Wales?
Dar al Ba**YEM**en
Dar al Ba**YEM**en
Chama**ZAMBI**a
Chid**ZIMBA**bwe

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The Interim Quarterly View of Books



(Photo courtesy Darryl Francis)



Also highly recommended!

THE FEWEST COUNTRY NAMES CONTAINING 26 DIFFERENT LETTERS

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In an earlier *Interim* article, The Fewest Elements Containing 24 Letters (May 2021), I showed how the names of just seven chemical elements could contain all the 24 different letters that exist in the names of the elements. (There's no J or Q in any element names.)

This article repeats a similar exercise with the names of the countries of the world. Different reference sources, both printed and on the internet, occasionally have different forms of the names for some countries. For example, the United Nations (UN) website lists BRUNEI as BRUNEI DARUSSALAM, and SYRIA as SYRIAN ARAB REPUBLIC. Some countries are not members of the UN – for example, ENGLAND, SCOTLAND and WALES are not individual members of the UN, existing only as parts of UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND. If necessary, I'm happy to exploit these differences where it helps.

Okay, let's try to build the list with the fewest country names and all 26 letters. In building my first list, I started by selecting countries which contained J, Q, X and Z – thus:

SWITZERLAND IRAQ FIJI MEXICO PARAGUAY BHUTAN SLOVAKIA

That's seven names and a total of 47 letters.

In building that list, I had started with SWITZERLAND as it contained the awkward letters Z and W. I wondered if starting with a country with different awkward letters would produce a shorter list. For my second list, I kicked off with MOZAMBIQUE. Here's the result;

MOZAMBIQUE FIJI MEXICO SLOVAKIA HUNGARY KUWAIT POLAND

Still seven countries and still 47 letters. No improvement then!

I wondered about using a really long country name in the hope that it would mop up quite of lot of letters. For my third list, I began with BOSNIA AND HERZEGOVINA, with its clunky B, Z and V. Here's where I ended up:

BOSNIA AND HERZEGOVINA FIJI MEXICO IRAQ PARAGUAY KUWAIT LAOS

Still seven countries but now a total of 52 letters. Maybe selecting a really long name doesn't help unless it uses even more clunky letters.

Is there a group of just six countries which use all 26 letters, regardless of the total number of letters used? Go figure!

The flipside of this problem is to find a set of countries that uses the fewest number of letters in total, regardless of how many different countries are selected. Perhaps selecting more short country names might get us down to less than the 47 letters we've seen above.
This time I started with ZIMBABWE, and ended up with this list:

ZIMBABWE FIJI MEXICO IRAQ SLOVAKIA EGYPT CHAD NAURU

While this is eight countries, it only has 44 letters.

Okay, let's start with a different country …

BELIZE FIJI MEXICO IRAQ EGYPT CHAD KUWAIT SLOVENIA

Eight countries, but now down to 43 letters!

In this last set, BELIZE is only usefully contributing the B and Z, so could just as easily be replaced by BRAZIL or ZAMBIA, thus:

BRAZIL FIJI MEXICO IRAQ EGYPT CHAD KUWAIT SLOVENIA

ZAMBIA FIJI MEXICO IRAQ EGYPT CHAD KUWAIT SLOVENIA

In the last of these two sets, MEXICO is only usefully contributing the X – and, unfortunately, MEXICO is the only country with an X, so we can't replace it with another X-country.

Can the 43-letter solution be improved on?

A PILISH CROSSWORD PUZZLE

MIKE KEITH

The crossword puzzle on the next two pages is an ordinary 15 x 15 American style crossword which can be solved in the usual manner. If the clues seem a bit oddly worded, that's a hint that this is a constrained composition, with something going on beneath the surface. The constraint is that the number of letters in successive words in the Across then Down clues spell out the first 255 digits of the number π. In other words, the clues are written in *Pilish*, that peculiar dialect of English in which word lengths are dictated by the digits of pi. That something quite different from normal prose – crossword clues – can be successfully written in Pilish is, it seems to me, a testament to the remarkable versatility of language.

If one is to extract the digits of π from the clues text, it is necessary to specify precisely the rules for doing this. Here they are:

(1) Start by removing any apostrophes in words and closing up the resulting space. For example, ORE'S in 48 Down becomes ORES and so is counted as a "4". The reason for this rule is that without it, ORE'S would get split into a 3 and a 1 by the next rule, which is clearly not desirable.

(2) Define a word as a contiguous chunk of letters, where the only symbols that count as letters are *a* to *z* and *A* to *Z*. In other words, any non-letter symbol is a word delimiter. A corollary of this is that non-letter symbols can be used at will to make the clues more meaningful, since they are ignored in the digit-extraction process. Examples include the literal number 2020 in 51A, the π's in 45A, the "&" in 9D, blanks like "____", etc.

(3) Scan through the clues in order and write down the number of letters in each word, with one exception: if a word has 10 letters, write "0". If a word has more than 10 letters, just write the number of letters as usual and interpret it as two consecutive digits of π. For example, a 12-letter word becomes "12" (a "1" followed by a "2"). The result will be the first 255 digits of π.

In the spirit of self-referentiality, the theme of the crossword, as indicated by the three long across answers, is...Pilish! For these three clues the answer as well as the clue are in Pilish, with the answers using the first five digits of π *rounded* to 3.1416, which by luck adds to 15 so that the answers can span the full width of the puzzle. Remarkably, the word "Pilish" was available to use in all three of the theme clues, as the digit 6 just happened to be nearby.

For reference here are the first 255 digits of π, those which are encoded in the clue words. The red zero indicates the beginning of the Down clues (the 10-letter "Arrowhead's").

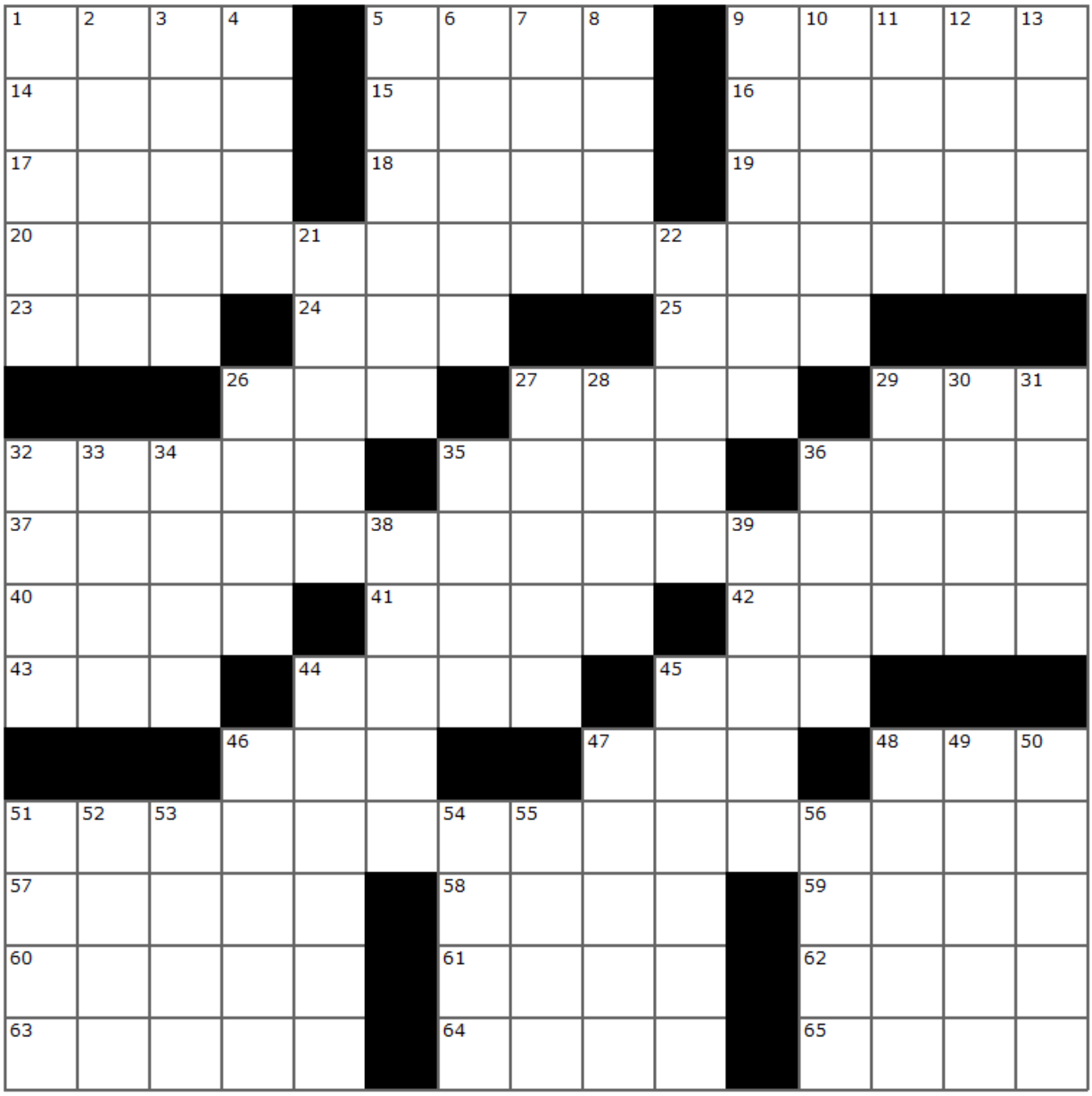
3141592653 5897932384 6264338327 9502884197 1693993751
0582097494 4592307816 4062862089 9862803482 5342117067
9821480865 1328230664 7093844609 5505822317 2535940812
8481117450 2841027019 3852110555 9644622948 9549303819
6442881097 5665933446 1284756482 3378678316 5271201909
14564

→ → →

1. It's a film, a slimy oversmear of putrid algae
5. ATM extra-annoying subsidies
9. Mention purposely now ("___ to")
14. Bad aversion
15. Auto wheels do attach here
16. Cue for compound gas (as, "nitrous ___")
17. Posterior canal terminator
18. In peaceful attitude
19. Just a slightest shading
20. A Pilish statement (3,1,4,1,6)
23. The gymnastic nonpareil
24. ___bro ("Twister" maker)
25. I masticated
26. Buddy
27. Ovencook an appetizing casserole
29. Typical beer dispenser word
32. Name: Queen guitarist
35. An ear possession
36. Essence (mystical)
37. A Pilish math confession (3,1,4,1,6)
40. Mighty in altitude
41. Bowled _____ (in wonderment)
42. Humorous celebrity gathering
43. Poetical "before"
44. An onomast's Christmasy cry
45. П П П П П П П ...
46. Code required at banks
47. Its body is constricted
48. Firepit denouement
51. 2020 Pilish whimper (3,1,4,1,6)?
57. Desdemona prepared to _____
58. A Bush opponent
59. Incredibly promptly
60. Handle, pivot
61. A bit of stinkage
62. My 26 →
63. All workaholic people
64. Momma's boys
65. Adioses

↓ ↓ ↓

1. Arrowhead's companion
2. Boy-scouting boat
3. Auto course correction
4. Landscape "table"
5. Faces-associated
6. Class features
7. It is now a Journal of style
8. The large transport with deliveries
9. Simulate wheelbarrows & windmill arms
10. Announce deportation
11. A lowdown scab
12. Knife-_____ (precarious)
13. My clarinet need
21. I appreciate
22. To disturb sleepiness
26. A container for sandplay
27. Tract of digestibles
28. Ubiquitous jokes venue
29. Large, lumbering "oompah" horn
30. Mars
31. Actors go to personify this
32. Computer structure using bits
33. Posterior
34. The peninsula's all isolated
35. A universal notion: "true _____"
36. Book of biblical prophecy
38. O, everybody's opposite's arrived
39. Heep's prefix
44. Sports team's numerical tag
45. One daft film: Austin _____
46. O, he embodies "Pied"!
47. Tycoon's label
48. Verify ore's elements in the lab
49. Grayish flatfish
50. Boosts, praises, promotes
51. Had a suitor, _____ hands
52. Is buttery
53. Perambulated spiderlike?
54. I encounter swellheads
55. Nonextant (a bird)
56. Poems employ this



(The solution is in “Answers and Solutions” near the end of the magazine.)

MORE MULTIPLE ELEMENT NAMES IN SINGLE WORDS

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In his article “Multiple Elements in Single Words” in the February 2019 *Word Ways* (52,1), Darryl Francis reported that he had looked for, but failed to find, an eight-letter word that contained within it the letters of four spelled-out chemical element names. He wondered if any reader could supply one.

One answer might be RINGTONE, the sound made by a mobile phone to signal an incoming call. RINGTONE’s letters can spell out IRON, NEON, NITROGEN and TIN. (RINGTONE, incidentally, is a transposal of NITROGEN.)

Francis further wondered if any word of fewer than ten letters existed which contained the letters to spell out five element names. Surprisingly, Darryl overlooked the fact that he had already mentioned such a word, the nine-letter RELOADING, identifying it in his article as a word containing the letters of four element names. Actually, it contains five**:** ARGON, GOLD, IRON, LEAD and RADON. There are two transposals of RELOADING which also, of course, contain the letters of these five element names**:** GIRANDOLE (a branched support for candles or other lights) and NEGROIDAL.

Another 11-letter, seven-element-name word to accompany Darryl’s BIMUCRONATE (containing BARIUM, CARBON, CERIUM, ERBIUM, IRON, TERBIUM and TIN) is DINOTHERIUM (a synonym of Deinotherium, a genus of Miocene and Pliocene elephant-like mammals), which contains the letters to spell IRON, INDIUM, IODINE, RHENIUM, RHODIUM, THORIUM and TIN.

I failed to find a word of 12 letters or less which would match Darryl’s TURBINECTOMY in containing letters that spell the names of eight elements, but I did find a word improving upon his two suggestions for the word containing the greatest number of element names, which were BRANCHIOPULMONATES (23 element names) and the non-dictionary NANOBIOPHARMACEUTICALS (also 23 element names). My own nominee for such recognition is PSEUDOLAMELLIBRANCHIATE, an adjectival subentry for the noun “Pseudolamellibranchiata,” a zoological classification which is listed in Webster’s Third as a bold-face entry. Its 23 letters can spell out 34 element names**:** ACTINIUM, ARSENIC, BARIUM, BISMUTH, BOHRIUM, BROMINE, CARBON, CERIUM, CESIUM, CHLORINE, COBALT, ERBIUM, HELIUM, INDIUM, IODINE, IRON, LEAD, LITHIUM, NIOBIUM, NOBELIUM, PALLADIUM, PLATINUM, RADIUM, RADON, RHENIUM, RHODIUM, SCANDIUM, SELENIUM, SILICON, SODIUM, TERBIUM, THALLIUM, THORIUM and TIN. **SK**

*Editor’s note**:** The noun “PSEUDOLAMELLIBRANCHIATES,” if it exists — and it probably does, in specialized scientific literature — would add POTASSIUM and HASSIUM to this list.*

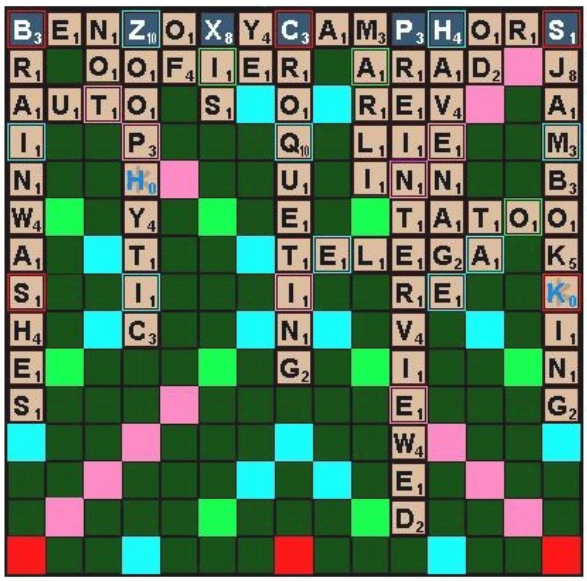
SUPERSCORE SCRABBLE

DARRYL FRANCIS
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In my Kickshaws column in last November's *Interim*, I showed how Stuart Klimek had managed to devise a single Scrabble move scoring 1922 points, using only words from *Webster's Second Edition* (W2). Stuart played BENZOXYCAMPHORS on the top row of the Scrabble board, adding seven letters (BZXCPHS) to the beginnings of seven words already placed vertically on the board. He converted the vertical words as follows: OARFISHES to BOARFISHES, OOPHYTIC to ZOOPHYTIC, IS to XIS, ROQUETING to CROQUETING, REVIEWED to PREVIEWED, OVERING to HOVERING, and JAMBOKING to SJAMBOKING. The detailed board layouts were in November's *Interim*.

After the appearance of his solution, Stuart continued to search for even higher scoring moves. Not only did he devise moves with BENZOXYCAMPHORS on the top row of the board, he came up with moves playing BENZOXYCAMPHORS on the bottom row. By playing that long word on the bottom row, he also managed to add letters to the ends of seven words already placed vertically on the board.

Here's the 1930 point solution that Stuart devised with BENZOXYCAMPHORS on the top row. This solution uses SJAMBOKkING, with a double K, the second K being a blank tile. *Webster's Second* shows SJAMBOK as a verb, but doesn't make it clear whether the -ING form uses a single K or a double K. Stuart's solution neatly takes account of this – if you want to spell the word with only a single K, just remove the blank and shift each of the three ING tiles up one square. (It's interesting to note that the *Oxford English Dictionary* (OED) clearly lists both the single K and double K spellings.) The diagram below shows the scores for each of the words played, and shows the unused tiles (ADDEFILLUU).



A1	BENZOXYCAMPHORS	1593
	bingo bonus	50
1A	BRAINWASHES	57
1D	ZOOPhYTIC	34
1F	XIS	10
1H	CROQUETING	66
1K	PREINTERVIEWED	23
1L	HAVENAGE	19
1O	SJAMBOKkING	78
	total	1930

A1 D2 D2 E1 F4
I1 L1 L1 U1 U1

Stuart also devised several high-scoring plays by placing BENZOXYCAMPHORS on the bottom row of the Scrabble board. Here are some of the vertical words considered en route to his best bottom-row solution:

> JIB-B, POTHER-B, PROVER-B, FE-Z, HAY-Z, OYE-Z, WHEE-Z, BIJOU-X, FABLIAU-X, FLAMBEAU-X, OCTUPLE-X, VOUDOU-X, DIFFICULT-Y, INVESTIGATOR-Y, SQUANDERMANIA-C, SWEE-M, WHEE-M, GENE-P, POLY-P, VEE-P, WIS-P, YAW-P, GADDIS-H, VERANDA-H, WOUNDWORT-H,KAY-O, JAWBREAKER-S, JINRICKSHA-S, JINRIKISHA-S, PADDYWHACK-S

Stuart's highest-scoring 1938 solution is below. Although the word VEEP doesn't appear in the main body of *Webster's Second*, it does appear in the addenda of some of the later printings. My own copy of the W2 is dated 1958 and lists VEEP. The diagram below shows the scores for each of the words played, and shows the unused tiles (IILOT).



15A	BENZOXYCAMPHORS	1593
	bingo bonus	50
A12	JIBB	45
D11	FREEZ	27
G3	INVESTIGATORY	20
H2	SQUANDERMANIAC	84
K12	VEEP	9
L6	WOUNDWORTH	20
05	PADDYWHACKS	90
	total	1938

I I L O T

Both Stuart and Jeff Grant devised even higher scoring solutions with BENZOXYCAMPHORS on the bottom row, but these were dependent on the word AMP being on the bottom row prior to placement of BENZOXYCAMPHORS. Yet, strangely, AMP is not listed in W2 or in any of its addenda sections. The earliest use of AMP in the OED is dated 1882, so it was rather surprising to find that W2, in print from 1934 until the appearance of W3 in 1961, failed to list AMP.

HOWARD ADAMS' SPELLING TRICK: METHOD AND VARIATIONS

MIKE KEITH

In the February 2009 *Word Ways* article "An Amazing Spelling Trick", Martin Gardner describes a card trick published by magician Howard Adams in 1984. Gardner describes how to perform this self-working trick with a packet of 10 cards, but leaves the question of why the trick actually works as a puzzle for the reader. In this article we describe the mathematics behind the workings of this trick and then show how it can be performed with any number of card pairs (not just five). This requires a detour into wordplay: crafting sentences that predict the outcome of the trick using words having certain letter counts. We also suggest some minor modifications to the presentation of the trick to increase its impact when performed.

The performance. We will describe the trick using n=6 pairs of cards, which are secretly taken from a deck of cards and prearranged by the magician**.** Each pair consists of a card and its mate, which is the card of the same number and color as the first card in the pair. So a pair might be the 2 of clubs and the 2 of spades, or the Q of hearts and the Q of diamonds. Let us call the six different card values 1, 2, 3, 4, 5 and 6 (even though they actually might be A, 2, 5, 7, 10, Q, or whatever). Make the cards into a packet in the order 123456123456. At the beginning of the trick the spectator (who we might call the *helper*, due to their role) may cut this packet any number of times without affecting the working of the trick. The spectator is asked to deal the top 6 cards into a pile and place the remaining 6-card packet next to it. Now, unknown to the spectator, one pile has top-to-bottom cards of 123456 while the other is 654321.

Now the magician brings out a slip of paper with a prediction on it that says AFTER DEAL, ALL PAIRS MATCH. From here on, the magician never touches the cards, instead instructing the helper to do the following:

1) Pick up *either* pile and "deal" one card from the top of that pile to the bottom, then put the pile back on the table. This deal corresponds to the first letter, "A", in the prediction. The helper is instructed to do this again, each time randomly selecting which pile to use, for the letters "F", "T", "E", and "R".

2) Now we're at the end of a word, so the helper is told to remove the top card of each pile and put these two cards close together somewhere on the table.

3) Repeat steps (1) and (2) for the other four words in the prediction (DEAL, ALL, PAIRS, MATCH). Again, after each word is finished then remove the top card of each pile and place them near each other in another place on the table.

Now there are five pairs set aside and one last pair formed by the two remaining cards (one in each pile). Place this final pair near the other five. Now for the miracle. Remind the spectator what the prediction says and ask them to turn over all six pairs of cards. Despite the random choice of pile in every one of the 22 top-to-bottom deals performed by the spectator, all the pairs match! In other words, the six pairs are 11, 22, 33, 44, 55, and 66.

Instead of on a slip of paper, we like to display the prediction using letter tiles such as those found in Scrabble or Bananagrams. At the beginning of the trick these tiles are placed *face down* on the table but correctly arranged into the words of the prediction. As the helper does each top-to-bottom deal of a single card, the magician turns over one more letter in the prediction. This also makes it easy to see when we arrive at the end of each word and it is time to set aside another pair. Most importantly, what the prediction actually says is unclear to the spectator until the very end, after the word MATCH is revealed, which leads quickly and naturally to the moment when it is revealed that, indeed, all the pairs match.

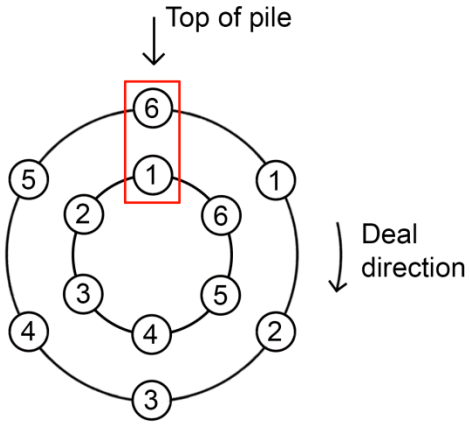
Below is a picture taken while the trick is in progress. Two pairs have already been set aside on the left, and the word ALL is just starting to appear.



We've modified the presentation in another way, compared to the one given by Adams and Gardner. In their 10-card version the prediction sentence is LAST TWO CARDS MATCH, and the magician at first only shows that the final pair matches, then separately turns over the other pairs as a "kicker". We think that having the prediction say that all pairs will match, and then revealing them all at once, makes the trick stronger.

Why it works. A helpful diagram and a little analysis makes it easy to see what's going on. First, note that the act of dealing one card from the top to the bottom of the pile has the effect of "rotating" the cards by one step – for example, 123456 becomes 234561, assuming that the left

side of the string is the top of the pile. In the diagram below the circular nature of this dealing is captured by representing the two piles (in their initial state) as two concentric circular necklaces having $n = 6$ beads. The red rectangle indicates the location of the top of each pile, and doing a single top-to-bottom deal using one pile is equivalent to rotating its necklace in the diagram by one step in the direction shown by the arrow at right.



Now we ask: how many one-step rotations of each necklace are needed to make the two top cards match, which means that both beads inside the red rectangle have the same number, k? From the diagram we see that these are the answers, for each possible value of k:

k	Inner #steps	Outer #steps	Inner + Outer
1	0	5	5
2	1	4	5
3	2	3	5
4	3	2	5
5	4	1	5
6	5	0	5

Note that all the numbers in the last column are the same. So if we rotate the two necklaces a total of 5 (= n-1) times, with those rotations distributed between the inner and outer necklaces in any mixture, the top cards will be guaranteed to match. But this is precisely what the spectator does, since the result of the magician's instructions is that the spectator does a top-to-bottom deal 5 times (once for each letter in AFTER), with those deals distributed between the two piles in whatever fashion the spectator chooses. To summarize: if the two piles currently have n cards, a prediction word having n-1 letters, combined with the specific spelling procedure of this trick, will result in the top cards of the two piles matching.

Furthermore, after the top card of each pile is set aside, the two new piles have exactly the same structure as before (one pile is just the other one in reverse order), with the number of cards in each pile, n, reduced by 1. Thus the same rule ("use a word with n-1 letters") works for the next word and every remaining word in the prediction.

So the full trick will work if the prediction sentence has words with 5, 4, 3, 2 and 1 letters. But since we are dealing with circular structures these numbers can be taken as being modulo n (the current pile size), since an n-bead necklace is unchanged under rotation by any multiple of n

steps. So to 5, 4, 3, 2, 1 we can add any integer multiples of 6, 5, 4, 3, 2. If we make the set of multipliers (0, 0, 0, 1, 2) we get

(5, 4, 3, 2, 1) + (0, 0, 0, 1, 2) x (6, 5, 4, 3, 2) ("x" means term-by-term multiplication)
= (5, 4, 3, 2, 1) + (0, 0, 0, 3, 4)
= (5, 4, 3, 5, 5)

which, finally, explains why the sentence AFTER DEAL, ALL PAIRS MATCH works, since these words have 5, 4, 3, 5 and 5 letters. Can you craft a suitable prediction sentence for some of the other combinations that work, like (5, 4, 7, 5, 5) or (5, 4, 7, 2, 5) or (5, 4, 3, 5, 3)?

Any number of pairs. Generalizing to any number of starting pairs, *n*, is straightforward. The starting arrangement of the cards is 1234...*n*1234...*n*, from which *n* cards are dealt off to make the initial two piles. The prediction sentence has *n*-1 words, and the number of letters in those words, in order, must be *n*-1, *n*-2, *n*-3, ..., 1, but integer multiples of the corresponding moduli (which are *n*, *n*-1, *n*-2, ..., 2) can be added to one or more of those base numbers for the purpose of (a) camouflaging the fact that the sentence is a basically a reverse snowball, and (b) providing more word alternatives when crafting the prediction sentence. Here is a list of the valid word lengths up to *n* = 10, including some options where multiples of the modulus have been added:

Packet size (*n*) & modulus	10	9	8	7	6	5	4	3	2
Base word length (= *n*-1)	9	8	7	6	5	4	3	2	1
Alternative lengths (+ multiples of *n*)						9	7	5, 8, etc.	3, 5, 7, etc.

Here are the sentences we use for *n* = 4 to 10, but feel free to craft your own.

n	**Prediction**
4	ALL PAIRS MATCH
5	NOTE ALL PAIRS MATCH
6	AFTER DEAL, ALL PAIRS MATCH
7	HELPER DEALS THEN ALL PAIRS MATCH
8	MAGICAL HELPER DEALS THEN ALL PAIRS MATCH
9	TALENTED MAGICAL HELPER DEALS THEN ALL PAIRS MATCH
10	EXTREMELY TALENTED MAGICAL HELPER DEALS THEN ALL PAIRS MATCH

To further camouflage the word lengths it helps to format the sentence in several lines, rather than in a single horizontal or vertical row. See the photo two pages back for an example.

If you know who you'll be performing this trick for and their first name has, say, 5, 6, or 7 letters, you can add a personal touch by including their name in the prediction:

(5-letter name) MADE ALL PAIRS MATCH
(6-letter name) DEALS THEN ALL PAIRS MATCH
(7-letter name) NICELY DEALS THEN ALL PAIRS MATCH

It's even possible that the spectator's surname is one letter shorter than their first name (I know not one but two (6,5) people, for instance), in which case both their first and last names can be incorporated into the prediction.

FOUR AND FINISHED, THREE AND THROUGH

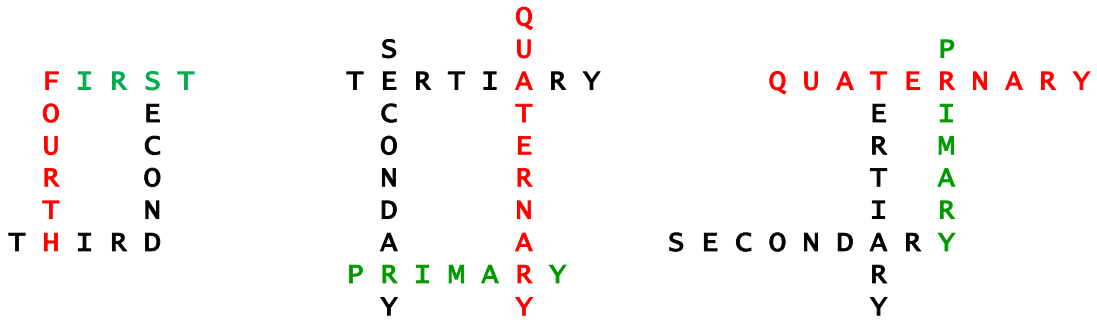
JIM PUDER

In an article in the November 2021 *Interim* (1), Mike Keith introduced the concept of the "reentrant" ordered packing of ordered word lists in grids. In a reentrant ordered grid packing, the last word in an ordered word list ends up occupying a grid cell adjacent to the first word in the list. As is discussed in "Colloquy" in this *Interim*, while reentrance is not essential to the ordered packing of most ordered word lists, it *is* requisite to the ordered packings of *cyclical* word lists such as the names of the signs of the zodiac; absent reentrance, it has now become evident, such packings must necessarily be considered incomplete.

Reentrance is now also recognized as being essential to the crossword-style ordered "packing" of certain word lists, principally infinite ones such as the names of the ordinal numbers. (In a crossword-style ordered word list "packing," reentrance occurs when some word in the list intersects with the first word in the list.) In an article of my own in the November 2021 *Interim* (2), I made the point that in the absence of reentrance, a crossword-type packing of an infinite ordered word list has no logical stopping point, unless it be one forced by either geometry or the lack of an unused letter in common with an adjacent word in the list. The article exhibited several reentrant packings initial members of the infinite set of the ordinal numbers.

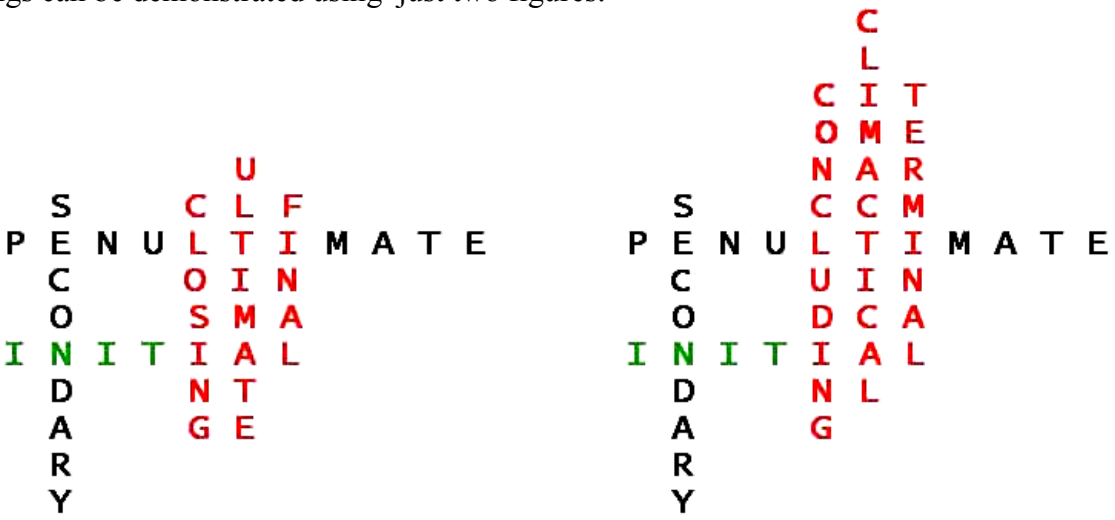
Rereading that article recently, I noticed that it contained a misstatement. In it, I wrote "…there can be no reentry number lower than TWENTIETH" in a crossword-type packing of the ordinal numbers, forgetting that this is true of only one of the two initial starting patterns available to packings of the ordinals; the other one is in fact reentrant at FOURTH, beyond which number it can't be extended. This pattern is shown on the left below.

Crossword-type packings which achieve reentry with their fourth word are interesting because four is the least number of words needed to do so in packings on a flat surface in which words are required to intersect at a right angle. In my November article, I showed that a different set of ordinal numbers, the one that begins *primary, secondary, tertiary, quaternary, quinary, senary,* etc., could not only also achieve fourth-word reentry in a crossword-type packing, but could do so in two different ways, as demonstrated at center and right below.



With these three four-word reentrant ordered crossword packings in hand, I set out to look for others. Ordering number — or rather, ordering *adjective* — sequences seemed to be fertile soil

in which to search for these. After assessing the established adjectival ordering sequences that begin with *once*, *single* and *simplex*, however, I had failed to find any new four-word reentrant crossword-type packings. and so decided to experiment with an original sequence of ordering adjectives. I chose *initial* to be the first word in the sequence, and *secondary* seemed to be the most logical adjective to follow it. Since this was to be just a four-word sequence, I was able to install the long adjective *penultimate* as its third word. Put together in an intersecting chain, these three words formed a convenient "C" shape, and it remained only to find some synonym for "last" which could close the square. Consulting a thesaurus, I found nine acceptable "last" synonyms: *climactical, closing, concluding, culminating, ending, final, finishing, terminal* and *ultimate.* I hoped that *one* of these would work in the packing as the reentry word**;** to my amazement, SIX of them did! (What are the odds?) Equally astonishing, all six fourth-word-reentry packings can be demonstrated using just two figures:



So it seems that we now know of at least eight ordered word lists capable of achieving a four-word reentry in a crossword-type packing, one of which can do so in two ways. Can anyone think of any others?

* * *

I've mentioned that, in a standard crossword packing in which words are required to intersect each other only at right angles, reentrance is impossible in fewer than four words. But that is only if the crossword is drawn on a plane surface. If it is drawn on some other surface, such as the surface of a sphere, reentry with only three words is possible without violating the right-angle rule. To convince yourself of this, picture a globe of the earth with meridians and the equator drawn on it. Now imagine a red line drawn south along the Greenwich meridian from the north pole to the equator, noting that the meridian meets the equator at a right angle. Next, continue the red line west along the equator until it meets the western 90th meridian, a meeting which once again forms a right angle. Finally, continue the red line north along the 90th meridian back to the north pole, where it will meet the end of its first segment at — you knew it all along — a right angle. Thus, the red line you've drawn describes a straight-sided equilateral triangle all of whose interior angles are right angles. Now it only remains to imagine that the three straight sides of this triangle are actually straight lines of letters which spell out intersecting words in a cross-word-type packing, and you'll see how, if such a packing is drawn on the surface of a sphere,

reentry can be achieved with just three words. At left below is an example using the cardinal number sequence TWO-THREE-FOUR, as projected onto a flat surface. Another three-word sequence of ordering words that can achieve legal reentry in only three words in an ordered crossword-type packing on the surface of a sphere is LEAST-MORE-MOST, is shown similarly projected at right below:



Don't laugh; knowing one of these little doodles, and having a tennis ball and a Magic Marker handy, might just win you a bar bet some day.

Articles Cited:

(1) Mike Keith, "Ordered Word List Packing," *Interim*, 1(4) November 2021
(2) Jim Puder, "Reentrant Ordered Crossword Packing of the Ordinal Numbers," *Interim*, 1(4) November 2021



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US VICE-PRESIDENTS: THEIR TRANSPOSALS

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Several issues of *Word Ways* included articles on transposals, transdeletions and transadditions of the names of US presidents. The issue of August 1988 (volume 31, number 3) carried Jim Puder's article *The Presidents, More or Less*. This was followed in the November 1988 Colloquy (volume 31, number 4) with responses from Susan Thorpe, Sir Jeremy Morse and me. The subject was revisited in February 2004 (volume 37, number 1) in my article *Transdeleted and Transadded Presidents,* which presented the longest transdeletions and the shortest transadditions of presidential first names and surnames. But as far as I can recall, no attention has been paid to the transposability of the US vice-presidents' names, except by default in those cases where a vice-president has subsequently become a president. In an occasional series of three articles, I'll be taking a look at transposals, transdeletions and transadditions of the vice-presidents' names.

This first article explores the best transposals of the vice-presidents' names. Thus far, 15 vice-presidents have gone on to become presidents, and some of their transposals presented here will have been covered in various editions of *Word Ways* or *Interim*.

A name can be defined in several ways. It can be any first name, middle name, surname, full name, familiar name, short form of a name, or nickname. But I exclude the suffixes Junior, Jr, Senior, Sr, and Roman numerals. I've also ignored names at birth which were different from names when the individuals were vice-presidents.

So, let's look at the transposals in chronological order of the vice-presidents.

John Adams (VP #1)
The first vice-presidential surname transposes to **damas**, a 17th century spelling of 'damask', a type of cloth originating from Damascus, according to *The Oxford English Dictionary*.

Thomas Jefferson (VP #2)
The first name of this second veep and third president transposes to **Tosham**, a town in India situated in the foothills of the **Tosham** Hill Range.

Aaron Burr (VP #3)
Burr is the next veep to provide a transposal. **Arona** is a model of Seat car marketed in Europe, and is also a municipality in Tenerife, one of the Canary Islands in the Mediterranean.

George Clinton (VP #4)
There aren't any straightforward transposals of either of this veep's names, but there is an obscure transposal of his full name. As odd as it may look, **logo-centering** is a thing. According to a Google serach, there appear to be numerous items of software available to manipulate logos of companies and other organisations – for example, WordPress, Mega Menu and JoomShaper. A particular item of functionality which these software packages handle is **logo-centering**.

Elbridge Thomas Gerry (VP #5)
Vice-president Gerry, who gave us the word 'gerrymander', is the next veep to provide us with a transposal. His first name transposes to **begirdle**, to surround as if with a girdle or belt.

Thomas Jefferson's first name transposal gets repeated here for Gerry's middle name: **Tosham**.

Daniel D. Tompkins (VP #6)
Three common words are transposals of this veep's first name – **alined**, **denial** and **nailed**.

It seems this vice-president was born with the name Daniel Tompkins, but added the middle initial D later in life, supposedly to distinguish himself from everyone else called Daniel Tompkins. How necessary was that, I wonder! It turns out that the D doesn't actually stand for any name in particular, a precedent of the S in Harry S Truman.

John Caldwell Calhoun (VP #7)
The middle name here transposes to the hyphenated **well-clad**, defined by the OED as elegantly, properly or warmly clothed.

Martin van Buren (VP #8)
Eighth vice-president and also eighth president, his first name transposes to **Antrim**, a town and county in Northern Ireland. Although van Buren is this vice-president's surname, let's assume that van and Buren can be treated separately for transposal purposes. Van can be transposed to **nav**, which according to the OED is both a potato (yes!) and a navigator. The word **nav** also appears in the term 'sat nav' (satellite navigation), although more recently this has become the solidly spelled word 'satnav'. Buren has several transposals, all listed in the OED: **berun** (to run about, to encompass), **beurn** (a warrior or hero), **brune** (a brown-haired girl or woman), and **burne** (body armour).

Richard Mentor Johnson (VP #9)
This veep's middle name has at least four dictionary-listed transposals: **monter** (to muster), **montre** (an organ stop), **termon** (land owned by an Irish church) and **tormen** (the singular of 'tormina', acute pains).

John Tyler (VP #10)
The surname of this vice-president transposes to **lyter**, an old spelling of 'lighter', a type of boat or barge. His surname also transposes to **tryle**, an old spelling of 'trill', and to **tyrle**, an old spelling of 'trill', to pluck at the strings of a harp.

George Mifflin Dallas (VP #11)
The transposal of this surname is also a reversal – **sallad** is an old spelling of 'salad', and also an old spelling of 'salade', a piece of armor for the head.

Millard Fillmore (VP #12)
The first name of this vice-president can be transposed to **Madrill**. According to the website www.names.org, this was the surname of 165 people in the US census of 2010. The surname also appears on the website www.ancestry.co.uk. This vice-president's surname can also be transposed to **Florimel**, a female character in John Dryden's *The Maiden Queen*. Apparently, she was a gay and witty maid of honor.

William Rufus DeVane King (VP #13)
The familiar form William King transposes to **King William**, a county in the US state of Virginia. **King William** is also another form of the name William the Conqueror, the English king from 1066 to 1087.

This veep's middle name DeVane transposes to **advene** (to arrive at a significant juncture without being essential to it), and also to **Evadne** (a genus of water fleas, a girl's name, and various individuals in Greek mythology).

Finally, the veep's surname transposes to **gink**, a guy, a fellow, especially an odd or eccentric one.

John Cabell Breckinridge (VP #14)
As noted in a previous edition of *Interim*, this veep's name contains the letters of Joe Biden. His middle name transposes to **becall**, to call names or to miscall.

This veep's 12-letter surname has as a transposal the name of **Ingrid Becker**, a West German athlete who won gold medals at the 1968 and 1972 Olympics.

Hannibal Hamlin (VP #15)
The surname here transposes to **Hilman**, a first name and surname of various individuals noted on Wikipedia.

Andrew Johnson (VP #16)
There are five easy transposals of this veep's first name: **dawner**, **redawn**, **wander**, **warden** and **warned**. There's also an obsolete selling of 'drawn' – **drawen**. Additionally, there's a market town called **Darwen** in Lancashire, England.

Schuyler Colfax (VP #17)
These are difficult names to transpose, but there are a couple. **Churleys** are hard-core church-goers, according to the online Urban Dictionary. And this veep's surname transposes to **Alf Cox**, an Australian rugby league footballer (1919-2008) who played in the 1940s.

Henry Wilson (VP #18)
One transposal of this veep's first name is also a reversal – it's **yrneh**, a unit of inverse electrical inductance. There's also **rhyne**, an obsolete spelling of 'rhine', a word with a variety of different meanings according to the OED. It can be a high-quality hemp from eastern Europe, and a large open ditch or drain. Although it's not really needed to complete the clutch of first name transposals here, one I like is **Rye NH**, a form of the name of the town of Rye in New Hampshire.

This veep's surname is also transposable. The OED lists **lowsin** as a questionable Middle English spelling of the verb 'loose'.

William Almon Wheeler (VP #19)
This veep's middle name provides an unfamiliar word as its transposal: **monal**, a pheasant of India and other parts of Asia.

The vice-president's surname transposes to **rewheel**, a technical term defined on the internet as 'to change out the internals of a compressor to alter its throughput capabilities'. Alternatively, spelled with an initial capital letter, **Rewheel** is the name of a Finnish research firm and management consultancy.

Chester Alan Arthur (VP #20)
The first name here has two straightforward transposals: **etchers** and **retches**. And the middle name can be transposed to **anal**, **lana** (a close grained wood of South America) and **nala** (a gully or ravine).

Thomas Andrews Hendricks (VP #21)
This veep shares his first name transposal with that of veeps Jefferson and Gerry: **Tosham**.

His middle name provides a clutch of transposals: **dawners**, **redawns**, **wanders** and **wardens**, all straightforward -s additions of some of Andrew Johnson's first name transposals.

Levi Parsons Morton (VP #22)
The first name here has four easy-to-spot transposals: **evil**, **live**, **veil** and **vile**. There are three less familiar transposals: **ivel** (an old spelling of 'evil'), **vlei** (a shallow pool of water in South Africa) and **vlie** (a variant spelling of **vlei**).

This veep's surname also has a transposal: **tomorn**, an English dialect word for tomorrow.

Adlai Ewing Stevenson (VP #23)
The first name here transposes to **Dalai**, which appears in the title **Dalai** Lama, the spiritual head of Tibetan Buddhism. An uncapitalised transposal, albeit obscure, is **alaid**, a Middle English spelling of 'allayed', according to the OED.

The middle name of this veep transposes to **gwine** (an English dialect and southern US variant of 'going') and **winge** (a variant of 'whinge', to whine or complain).

Garret Augustus Hobart (VP #24)
The first name here has a couple of familiar words as transposals: **garter** and **grater**. A more obscure transposal is **targer**, a person who targes or scolds.

This veep shares his surname with the city of Hobart in Tasmania, Australia. It transposes to **athrob**, simply meaning throbbing. (Parenthetically, note that **athrob** makes up the central letters of the word 'bathrobe'.)

Theodore Roosevelt (VP #25)
25th vice-president and 26th president, his first name transposes to **treehood**, the state of being a full-grown tree, according to the OED.

The surname here can be transposed to **resolve to**, which has various definitions in the OED, and also the infinitive form **to resolve**.

Charles Warren Fairbanks (VP #26)
There are a couple of familiar words which are transposals of the first name here: **clasher** and **larches**. A third transposal is the less familiar **raschel**, a type of knitting machine, according to the OED, and a type of knitting, according to Merriam-Webster. Presumably, **raschel** knitting is done on a **raschel** knitting machine.

The middle name has the familiar words **rewarn** and **warner** as its transposals.

James Schoolcraft Sherman (VP #27)
A transposal of this vice-president's surname is **Hermans**. This is a relatively common Dutch surname, also being the 14th commonest surname in Belgium. Alternatively, it can be considered simply as being several people named Herman.

Thomas Riley Marshall (VP #28)
Sharing his first name with earlier vice-presidents Jefferson, Gerry and Hendricks, the first name transposal is once again **Tosham**.

The middle name Riley transposes to **lyrie**, a variant spelling of 'lyre', not a musical instrument, but a bird from the Orkney and Shetland islands of Scotland.

Calvin Coolidge (VP #29)
The first name of this veep transposes to **Clavin**, the surname of the fictional character Cliff Clavin who appears in the television series *Cheers*. A **clavin** is also a type of fish, the spotted gunnel, according to *The English Dialect Dictionary*.

Charles Gates Dawes (VP #30)
Already seen for an earlier vice-president, the first name transposals are **clasher**, **larches** and **raschel**.

The obvious middle name transposal for this veep is **stage**, but there are two other transposals: **getas** (Japanese wooden clogs) and **Geats** (Scandinavian people of southern Sweden subjugated by the Swedes in the 6th century).

This veep's surname has the familiar words **sawed** and **wades** as its transposals. More obscurely, there is **deaws**, an old spelling of 'dews'.

Charles Curtis (VP #31)
Another Charles following on from his predecessor, hence the transposals **clasher**, **larches** and **raschel**.

This veep's surname has a triplet of transposals: **citrus**, **rictus** (a grimace) and **rustic**.

John Nance Garner (VP #32)
This veep's middle name transposes to **canne**, an old spelling of 'can', a container.

Cactus Jack, as this vice-president was nicknamed, has surname transposals of **ranger** and **rerang**, the past tense of the verb 'rering'.

Henry Agard Wallace (VP #33)
As with his predecessor Henry Wilson, the first name transposals are **yrneh**, **rhyne** and **Rye NH**.

The unfamiliar middle name transposes to **garda**, a policeman in the Republic of Ireland.

Harry S Truman (VP #34)
Apparently, this veep was named Harry, not Harold, in honor of his maternal uncle Harrison 'Harry' Young.

As with Daniel D. Tompkins, the middle initial doesn't stand for a particular name, although it is supposed to honor his grandfathers Anderson Shipp Truman and Solomon Young.

The only part of this veep's name which is transposable is his surname, the transposal being **antrum**, the cavity of a hollow organ in the body.

Alben William Barkley (VP #35)
First name transposals are **blane** (a variant of 'blain', an inflammatory swelling on the body) and **nable** (a dialect variant of 'navel').

The surname of this vice-president transposes to **bakerly**, a lovely word meaning in the manner of a baker.

Richard Milhous Nixon (VP #36)
Only one of the three names here has a transposal. Nixon's surname gives us **Ninox**. The full definition according to the Unabridged Merriam-Webster Dictionary online is as follows: a large genus of owls having bristly feet and long wings and ranging from Madagascar to Australian and Indo-Malayan regions.

Lyndon Baines Johnson (VP #37)
And only one of LBJ's three names is transposable. Baines can be rearranged to give **sabine**, a type of Arctic gull. Or, spelled with a capital S, a **Sabine** is a member of an ancient people inhabiting chiefly the Apennines in Italy. Also, the **Sabine** River forms a portion of the eastern border of LBJ's home state of Texas.

Hubert Horatio Humphrey (VP #38)
The first name transposes to **turbeh**, a Muslim tomb or mausoleum. There's also **Turbhe**, a suburb of Mumbai, India.

This veep's middle name transposes to **Aithoor**, a village in the southern state of Karnataka, India. Closer to the US is **Ohio Art**, a company specializing in metal lithography, based in Bryan, Ohio. The company's website address is **ohioart**.com

Spiro Theodore Agnew (VP #39)
This vice-president's first name has **sirop** as its transposal, syrup of concentrated fruit juice, sugar, and water.

The middle name transposes to **treehood**, first encountered with Theodore Roosevelt.

The surname transposes to three words, all obsolete spellings. There's **gnawe** (for 'gnaw'), **wagen** (for 'wagon') and **wange** (for 'wang', a dialect word for a cheek).

During his time as vice-president, Agnew was usually referred to simply as Spiro Agnew, and it turns out this 10-letter form has a transposal: **power gains**, the plural of the electrical term 'power gain', which in an electrical network is the ratio of an output power to an input power.

Gerald Rudolph Ford (VP #40)
Ford's first name has one familiar word as a transposal**, glared**. Three other transposals will be less familiar. There's **argled**, a dialect variant of 'argued', **glader**, an old spelling of 'gladdon', an iris, and **regald**, an obsolete spelling of 'rigald', a type of wood, and also an obsolete spelling of

‘riggold’, an animal which has been imperfectly castrated. (Who knew there was a need for such a word?)

Ford’s surname can be spelled in reverse to give **drof**, an obsolete adjective meaning physically or mentally disturbed.

Nelson Aldrich Rockefeller (VP #41)
Rockefeller’s first name transposes to **nolens**, which comes from the Latin term ‘**nolens** volens’, meaning willing or unwilling, willy-nilly.

The middle name of this billionaire VP transposes to **childar**, an old Scottish word for ‘children’.

Walter Frederick (Fritz) Mondale (VP #42)
This veep’s first name can be transposed to **lawter**, a clutch of eggs. The reversal **Retlaw** is a community in Alberta, Canada,

The surname can be transposed to **lodeman**, a leader, guide or pilot.

George Herbert Walker Bush (VP #43)
The first of the two middle names here, Herbert, can be transposed to **berther**, the person on a ship who assigns places where hammocks can be hung.

The second of the two middle names can be transposed to **Reklaw**, a city in Cherokee and Rusk counties, Texas. The land for the city was donated by one Margaret Walker, and since there was already a town of Walker, Texas, it was decided to reverse her surname in order to name the new town.

This veep’s surname has the straightforward transposal **hubs**.

James Danforth (Dan) Quayle (VP #44)
This veep’s middle name can be rearranged to **Thandorf**, a municipality in Germany. The shortened form Dan has **and** as a simple transposal, and **nad** (a testicle) as perhaps a less familiar term.

The surname Quayle can be transposed to **laquey**, an obsolete spelling of ‘lackey’, a footman, toady or otherwise obsequious follower. **Laquey**, with a capital L, is also the name of a community in Pulaski county, Missouri.

Albert (Al) Arnold Gore (VP #45)
Transposals of the formal first name Albert are **batler** (a device for beating clothes while being washed, in order to smooth them after they have dried), **bralet** (a combined bra and corset), **labret** (an ornament, as of wood, shell, or stone, worn in some cultures in a perforation of the lip), **tabler** (a person who tables a resolution), and **tarble** (a regional variant in England of ‘terrible’).

The shortened form Al was the name by which this vice-president was most frequently known. Obviously, there is just one transposal of Al, namely **la**, a musical note.

Gore's middle name Arnold has multiple transposals, only a few of which are dictionary-listed. The dictionary-listed ones are: **androl** (a liquid alcohol), **Dralon** (a proprietary name for an acrylic fibre used in textiles), and **ladron** (a thief or robber). Many of the other transposals are personal names - usually first names - which can be found on social media websites. The commonest personal name is probably **Ronald**.

Gore's surname has four transposals: **ergo**, **goer**, **ogre** and **rego**. The last of these has two distinctly different meanings. One is a verb, to go again; the other is a noun, a vehicle registration plate or registration number.

As noted above, this vice-president was usually referred to as Al Gore, which has several transposals: **galore**, **gaoler, goaler** (a player in ice hockey whose role is to prevent goals, while in netball it's a player whose role is to score goals), **orlage** (an obsolete spelling of 'horologe', a clock or other timepiece), and **regalo** (an obsolete word for a present or lavish meal or entertainment).

Even the form Albert Gore has a transposal - **Robert Gale**, several named individuals on Google and social media websites.

Richard (Dick) Bruce Cheney (VP #46)
Cheney's middle name has two transposals: **cebur** (an oily liquid prepared in the Philippines, used for treating skin wounds and diseases) and **cuber** (a machine for cutting food into cubes).

Joseph (Joe) Robinette Biden (VP #47)
As noted previously in *Interim* (February 2021), the middle name here can be transposed to **Otterbein**, the name of a university in Westerville, Ohio.

Again, as per February's *Interim*, the surname can be transposed to **bedin**, to fill with noise or to make a din.

Michael (Mike) Richard Pence (VP #48)
The full form of this veep's first name can be transposed to **lechaim**, a drinking toast meaning 'good health'. Not in printed dictionaries yet, but findable in Wikipedia, is **helicam**, a remote-controlled mini-helicopter with camera capabilities.

An alternative spelling of Michael is **Micheal**, found in Scotland and Ireland.

The shortened form of the veep's first name has **kime** as a transposal, defined by the OED as a fool or simpleton. A name taken from the realm of Marvel Comics is **Miek**, a fictional insect-like character.

Kamala Devi Harris (VP #49)
And so to the current vice-president. There don't appear to be any transposals of the VP's first name in regular dictionaries, but there are some interesting transposals findable elsewhere. The Urban Dictionary website has the reversal **alamak**, an exclamation effectively meaning 'oh, no; oh, my God'. **Almaak** is the third-brightest point of light in the northern constellation of Andromeda; it is a multiple star system approximately 350 light-years from Earth. **Kalama** is a city in Cowlitz County, Washington. **Amalka** is a girl's given name, a variant of Amalia.

The VP's middle name transposes to **dive**, **vide** (see, refer to, consult) and **vied**.

The VP's surname provides for several transposals: **arrish** (a field of stubble), **rarish** (somewhat rare), **shirra** (a 19th century spelling of 'sheriff') and **sirrah** (a term of address used to men or boys, expressing contempt, reprimand, or assumption of authority on the part of the speaker). Note that **sirrah** is a reversal of the VP's surname.

The name by which most people would know the VP, Kamala Harris, has a transposal, although it needs some explanation: **HMAS Larrakia**. Let's unpick this. HMAS stands for 'Her or His Majesty's Australian Ship', and is a name prefix used for ships of the Royal Australian Navy. The prefix now refers to the King or Queen of Australia, who is also the British monarch – currently Queen Elizabeth II. Larrakia is an ethnic group of Australia and the group's language.

Footnote: many of the transposals in this article can be supplemented with ever more obscure transposals, particularly placenames and personal names, taken from sources outside of regular dictionaries and websites.

US VICE-PRESIDENTS: THEIR TRANSDELETIONS

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My earlier article *US Vice-presidents: Their Transposals* explored the best transposals of the names of the US vice-presidents. This second article addresses the best transdeletions of the vice-presidents' names. Thus far, 15 vice-presidents have gone on to become presidents, and most of their transdeletions presented here will have been covered in various previous editions of *Word Ways* or *Interim*. Transdeletions involve the deletion of one or more letters from a name, and the fewer letters deleted, the better (or longer) the transdeletion will be. For the remainder of this article I will abbreviate 'longest transdeletion' to LT.

As explained in the earlier article, a name can be defined in several ways. It can be any first name, middle name, surname, full name, familiar name, short form of a name, or nickname. But I exclude the suffixes Junior, Jr, Senior, Sr, and Roman numerals. One final caveat: for many of the names, there may well be additional transdeletions available; I have offered a reasonable selection of the familiar words and some not-so-familiar words.

John Adams
The LTs of John and Adams are **hon** (a shortened form of honey) and **dams**. This veep's full name LT is **Dahomans** (natives of the West African country previously called Dahomey, now called Benin).

Thomas Jefferson
LTs of the first name are **atoms**/**moats**; and for the surname there are **offense**/**rejones** (the latter is the plural of 'rejon', a short lance used in bullfighting). For his full name, the LT is the hyphenated **foster-homes**. Or, if you prefer an unhyphenated LT, there are **freemasons, horsemeats** and **sarmentose** (a sugar).

Aaron Burr
The LTs of the first name, surname and full name are **roan**, **rub** and **aurora**.

George Clinton
The LTs of the first name, surname and full name are **gorge**, **Linton** (the name of various towns in the USA and villages in England) and **congreeting** (greeting mutually)

Elbridge Thomas Gerry
This is the first vice-president to have a middle name, so we now have to consider LTs for the three individual names, the full name, and the more familiar name. The LT of Elbridge is **beglide**; we've already seen that the LTs for Thomas are **atoms**/**moats**; and the LT for the

surname is **grey**. The LT for his full name is **erythrodermia** (abnormal redness of the skin), while the LT for the familiar veep name Elbridge Gerry is **elderberry**.

Daniel D. Tompkins

This vice-president was born with the name Daniel Tompkins, but added the middle initial D later in life, supposedly to distinguish himself from everyone else called Daniel Tompkins. How necessary was that, I wonder! It turns out that the D doesn't actually stand for any name in particular, a precedent of the S in Harry S Truman. The LTs of his first name and surname are **ailed/alien/eland/ideal/laden/lined** and **inkpots/inkspot**. The LT of his full name with or without the middle initial is **simpletonian**. What might his political opponents have made of that LT!

John Caldwell Calhoun

We've seen the LT for John above, namely **hon**. The middle name Caldwell transdeletes to **called/walled**, and the surname Calhoun to **launch**. The veep's full name has as its LT **alchochoden** (an astrological term for a particular type of planet). And the LT for the familiar form John Calhoun is **oulachon** (a marine fish of the north Pacific).

Martin Van Buren

Martin has a simple LT, **train**, and that of his surname is **unbrave**. The LT of the veep's full name is **unnarrative** (not having the form or character of narration).

Richard Mentor Johnson

The LT of this veep's first name is **chidra** (a Central and South American plant resembling a palm). There are several LTs of his middle name: **metro**, **noter**, **tenor** and **toner** are familiar words, while **enorm** (an archaic word for enormous), **mento** (a Jamaican dance), **moner** (a microscopic organism), **monte** (a card game), **morne** (the blunt head of a lance) and **trone** (a weighing machine) are among less familiar words. The veep's surname has **noons** as its LT.

The veep's full name has as its LT **chromosantonin** (a yellow-colored chemical), while the familiar form (first name plus surname) has **chondrosin** (a type of acid).

John Tyler

Another John, another **hon**. And a simple LT of **rely/tyre** for the surname, and a very nice **helotry** for the veep's full name.

George Mifflin Dallas

Another George, so another **gorge**. The middle name here has the LT **infilm** (to cover with a film), and the surname gives us the easy-to-spot **salad**. This veep's full name LT is **deglamorising**, while the shorter form of his name, George Dallas, leads to **doggerels**.

Millard Fillmore

Millard transdeletes to **drill/laird**, and Fillmore to **morille** (an old spelling of morel, a type of fungus). The full name's LT is **lamelliform** (having the form of a thin plate).

William Rufus DeVane King

This the first vice-president to have two middle names, giving us even more transdeletions to search for. The LT for William is **limail** (a term for metal filings). Rufus and DeVane provide us with the easy finds of **surf** and **evade**. The LT of this veep's full name is **undervaluinglike**, spelled solidly in *Webster's Second Edition* (W2), but hyphenated in the *Oxford English Dictionary* (OED). And finally, the LT of William King is the single-letter transdeletion **willmaking**, which comes courtesy of W2.

John Cabell Breckinridge

Yet again, another John, so another **hon**. The middle name here has the straightforward LTs **cable**/**label**, and the surname gives us **derricking** (the action of operating as the jib of a derrick-crane). The full name transdeletes to **checkerboarding**, while John Breckenridge provides both **bedrenching** and **bechignoned**. It has been previously noted in *Interim* that John Breckenridge contains the letters of Joe Biden.

Hannibal Hamlin

The first name's LT is **Albainn** (an old name for Scotland). And the surname's LT is **linha** (an old Portuguese measure equal to just under one-tenth of an inch). The LT for this vice-president is **Hannibalian** (relating to the Carthaginian general Hannibal), but it could be argued this LT is somewhat trivial as it contains the veep's first name in full. Shorter transdeletions are these three: **Albanian**, **Bahamian and Namibian**, each pertaining to a different country or its inhabitants. As noted previously in *Interim*, Hamlin was the first vice-president of Abraham Lincoln, and his name sits there in the middle of the president's name.

Andrew Johnson

Some straightforward LTs here – **drawn**/**wader**/**waned** and **noons**, the latter already mentioned above. There are a couple of nice LTs for the full name: **honorands** (persons awarded honors) and **wanderoos** (east Asian monkeys).

Schuyler Colfax

Lurches, **focal** and the unfamilar **sclerocauly** (excessive development of parts of the stems of various desert plants) are the three LTs here.

Henry Wilson

Some obscure LTs for the first name here: **hern** (a dialect word for a nook or corner), **hery** (an obsolete verb meaning to praise), **hyen** (an old spelling of hyena) and **hyne** (a dialect word for hence) – take your pick. The surname's LT is the straightforward **lions**/**loins**, and that of the full name is **snowline**.

William Almon Wheeler

William has an LT of **limail** (see above). Almon has LTs of **loam**/**loan**/**moan**/**mona**. Wheeler has an LT of **reheel**. The LT of this veep's full name is **millinormal** (pertaining to a solution which is

one-thousandth normal). And the more familiar name, William Wheeler, gives us **whillilew** (a hullabaloo, hubbub or confusion).

Chester Alan Arthur

For the vice-president who went on to become president after the assassination of James Garfield, there are plenty of LTs for his first name: **cheers**/**erects**/**etcher**/**etches**/**ethers**/**secret**/**threes**. His middle name provides LTs of **ala**/**ana**, while his surname provides **hurra**. The full name provides us with **transurethral** (extending through the urethra), and the shorter, more familiar name of Chester Arthur gives us **chatterers**.

Thomas Andrews Hendricks

This is the third Thomas, hence the third **atoms**/**moats**. The middle name gives us a variety of everyday words: **dawner**/**redawn**/**wander**/**warden**. The LT of the full name is **crashworthiness**, while that of just Thomas Hendricks is **mackintoshes**.

Levi Parsons Morton

Lei/lie/vie, **aprons**/**arsons**/**parson** and **motor** are LTs of the three individual names. When it comes to seeking LTs for his full name or a shorter name, it's worth noting that this veep is frequently styled Levi P. Morton, so I'm going to offer three LTs: Levi Parsons Morton transdeletes to **impersonators**, Levi P Morton goes to **promotive**, and Levi Morton goes to **monrolite** (a mineral named after the town of Monroe, New York).

Adlai Ewing Stevenson

Simple words for the LTs of the three individual names here: **dial**/**laid**, **wine**/**wing** and **oneness**/**sonnets**. The LT for the full name is **evangelisations**, while that for the simpler Adlai Stevenson is **vasodentinal** (relating to the vascular system and teeth).

Garret Augustus Hobart

Garret has some familiar words as LTs – **grate**/**great**. Less familiar words are **rager**, **rater**, **targe** (a shield) and **terra**. The middle name is more problematical: the LT is **augusts**, but if that is felt to be too similar to the actual middle name, then how about **gauss** or **gusts**? The surname has **abhor**/**abort**/**broth**/**throb** as its LTs. The full name LT is **Arthrogastra** (a division of Arachnida which includes scorpions). And the shorter familiar name LT is **garrotter**.

Theodore Roosevelt

This veep's first name has the LT **othered** (conceptualized as intrinsically different from oneself, a rather specialized meaning from philosophy). The LT for this surname is **overlets** (overhanging parts). And the LT for the full name is **overlettered** (having an excess of letters).

Charles Warren Fairbanks

The individual names here give LTs of **arches**/**chares**/**chaser**/**clear**s/**search**, **rawer**/**reran** and **Biafrans**. The LT of the veep's full name is **enfranchisable**, and the LT of Charles Fairbanks is **franchisers**.

James Schoolcraft Sherman

This veep's first name has the easy to spot LTs of **jams**/**same**/**seam**. The middle name here is pretty strange – how come he was named Schoolcraft? It looks an awkward name to find a good transdeletion for, but there is a single-letter transdeletion of **ochlocrats** (advocates of ochlocracy, which is a fancy name for mob rule). The surname has as LTs **harems**/**masher**/**shamer**. The LT of the full three names is **schoolteachers**, while related LTs of just the first name and surname are **sharesman**/**sharesmen** (one or more members of a fishing crew who share the risk and the profits). Absolutely nothing to do with transdeletions, but interesting is that this veep was the first one to fly in a plane - in 1911!

Thomas Riley Marshall

We have already seen that LTs of Thomas are **atoms**/**moats**. Riley transdeletes to **rely**, and Marshall transdeletes to **marshal**. If the latter one is too similar to the surname, then opt for **alarms**/**llamas**. The veep's full name transdeletes to **assertorially** (in an assertive manner). And the shorter first name plus surname transdeletes to **mashallah** (a Muslim interjection, roughly meaning 'this is what God wills').

John Calvin Coolidge

We've seen the LT for John above, namely **hon**. Calvin transdeletes to **anvil**/**cavil**/**linac**/**vinca**, and Coolidge has **oceloid** (relating to the ocelot, a wild cat) as its LT. This veep's full name has **nonideological** as its LT, while the more familiar Calvin Coolidge has **ideological**.

Charles Gates Dawes

Arches/**chares**/**chaser**/**clear**s/**search** are the familiar words already seen as LTs of Charles. The LTs of the middle name are **sages/east/eats/etas/gate/gets/sage/seat/stag/tags/teas**. And the LTs of the surname are **awed**/**awes**/**dews**/**wade**/**wads**/**weds**. The veep's full name has **weatherglasses** as its LT, while the first name plus surname has **escaladers** (a fancy name for people to climb over walls).

Charles Curtis

Another Charles, so another **arches**/**chares**/**chaser**/**clear**s/**search** set of transdeletions. And the surname Curtis transdeletes easily to **crust**. This veep's full name reduces to **charcutiers** (pork butchers).

John Nance Garner

Yet another John, so yet another **hon**. The middle name and surname provide easy transdeletions – **cane** and **anger**/**rager**/**range**. Usually known by his full three names, this vice-president's LT is **carragheen** (a kind of seaweed).

Henry Agard Wallace

As with vice-president Henry Wilson, Wallace's first name transdeletes to: **hern**/**hery**/**hyen**/**hyne** – definitions are provided above for Henry Wilson. This veep's middle name transdeletes to **agar**/**drag**/**grad**/**raga**, and the best LT of his surname is **calla** (a familiar

houseplant). The LT of this veep's full name is **challenger**; the LT of the form of his name Henry Wallace is **cellarway** (a way leading to a cellar).

Harry S. Truman

This veep's first name has **yarr** (a small European weed) as its LT. The surname has **unarm** as its LT. The best LT for Harry Truman is **unmartyr** (to deprive of martyrdom), while the best LT for his full name is through the straightforward of his middle name S to give us **unmartyrs**.

Alben William Barkley

Bane/**bean**/**lane**/**lean**/**nabe** (the last of these being a neighbourgood cinema or theater) are the best LTs of this veep's first name. The middle name's LT is **limail**, defined above for vice-president William Wheeler. **Bakery** is a nice LT for this veep's surname. Alben Barkley has **breakable** as its LT, while Alben William Barkley has **illiberally** as its LT.

Richard Milhous Nixon

Nixon was the second vice-president to have the name Richard – its LT is **chidra**, the definition is above at Richard Johnson. Nixon's middle name has **mulish** (stubborn, like a mule) as its LT. And his surname provides us with **noni** (a tropical shrub). The LT of this veep's three-part name is **harmonichords** (19th century keyboard instruments), while the LT of the more familiar form Richard Nixon is **Indochina**. (Was that ever commented on during Nixon's stewardship of the war in Vietnam?)

Lyndon Baines Johnson

The best LTs for Lyndon and Baines are **nylon** and **basin**/**beans**/**bines**. For Johnson, the best LT is **noons**, as for his predecessors Richard Johnson and Andrew Johnson. Lyndon Johnson transdeletes to **donjons** (fortified towers in ancient castles), while his full name transdeletes to **Johnsonianly** and the one-letter-shorter **nonadhesion**.

Hubert Horatio Humphrey

Hubert, Horatio and Humphrey give us the LTs **berth**/**brute**/**rebut**/**tuber**, **thoria** (the mineral thorium oxide) and **rheumy** (rheumatic). The first and last names give us **eurytherm** (an organism tolerating a wide range of temperatures), while the full three names give us **erythrophobia** (fear of blushing or the color red).

Spiro Theodore Agnew

LTs of the first name are **pois** (Hawaiian foods), **pros** (professionals), **rips** and **risp** (to scratch). The middle name LT is **othered**, the same as for Theodore Roosevelt. And the surname has a multiplicity of common-word LTs: **anew**/**gnaw**/**wane**/**wean**. The first and last names give us an LT of **wainropes** (ropes for securing loads on wagons), and the full three names provide an LT of **stenographer**.

Gerald Rudolph Ford

Easy-to-spot LTs for the first name here are **alder**/**glade**/**grade**/**lager**/**large**/**raged**/**regal**. An LT for the middle name is **uphold**. And LTs for the surname are **dor** (an insect), **for**, **fro**, **ord** (the point of a spear), **orf** (a disease of sheep) and **rod**. The familiar form Gerald Ford gives us **foraged**, and the full name Gerald Rudolph Ford gives us **flapdoodle**.

Nelson Aldrich Rockefeller

A triplet of LTs for the first name here: **lenos** (types of fabric), **noels** (Christmas carols), **nones** (the ninth day before the ides, in the Roman calendar). And a triplet of LTs for the the veep's middle name, all uncommon words: **archil** (a violet dye), **chiral** (a term from chemistry, having a structure that is not superimposable on its mirror image) and **diarch** (a botanical term describing a root which has two points of origin). The veep's surname has **forekeel** (the front part of a ship's keel) as its LT.

Walter Frederick (Fritz) Mondale

Five familiar words are available as the LTs for Walter: **alert**/**alter**/**later**/**trawl**/**water**. The veep's middle name provides us with **dickerer** (someone who engages in negotiation or bargaining). The veep's surname gives us a clutch of LTs: **almond**, **daemon**, **dolman** (a long robe), **dolmen** (a prehistoric monument), **loamed**, **loaned**, and **moaned**. An additional LT is **Delano**, the middle name of President Franklin Roosevelt.

The familiar form Walter Mondale gives us **alderwoman** and its plural **alderwomen**. The veep's full name gives us the even longer **aircraftwomen**.

This veep's nickname was Fritz, giving us the LTs **frit**/**rift**/**ritz**. There are several LTs for the Fritz Mondale form of the veep's name: **formalized**, **intermodal**, **manifolder**, **matronized**, **mortalized**, **normalized** and **tremolandi** (tremolo effects by the string instruments of an orchestra).

George Herbert Walker Bush

Another George, another **gorge**. Herbert has **berret** (an alternative form of 'beret') as its LT. Walker has the LTs **waker**/**wreak**. And the veep's surname gives us **bus**/**hub**/**sub**. The veep's full four-part name has the nice LT **leatherworkers**.

This veep (and later POTUS) was often referred to as George H. W Bush, in order to distinguish him from his POTUS son George Walker Bush. I thought it fitting to offer an LT for George H. W. Bush – **brewhouse**.

James Danforth Quayle

Another James, so the earlier LTs (for James Sherman) are repeated here: **jams**/**same**/**seam**. This veep has a unique middle name for any of the vice-presidents, with an LT of **frontad** (towards the front). And the uncommon surname gives us **equal**.

As far as I can determine, this veep was hardly ever referred to as James Quayle or even Danforth Quayle – it was always Dan Quayle. Even so, here are LTs for all three forms of the two-part name:

James Quayle: **amylase** (an enzyme), **queleas** (African birds), **sequela** (a secondary result, especially or disease or an injury), **squamae** (a scale)
Danforth Quayle: **fatherland**, **thunderfly** (an insect), **unfatherly**
Dan Quayle: **landau** (a carriage), **nudely**

The full form of this veep's name gives us the LT **tremendously.**

Albert Arnold Gore

The first name has several familiar words as LTs: **abler/alert/alter/baler/blare/blear/bleat/later/table**. The middle name also has several familiar LTs: **adorn/nodal/radon**. And the surname has the familiar LTs: **ego/erg**. Other less familiar words are also available for all three names.

Albert Gore has the LT of **barrelet** (a small barrel), while the commonly used form Al Gore has these familiar words as its LTs: **glare/lager/large/largo/ogler/regal**. Other less familiar words are also available.

The veep's full three-part name has as its LT **angelolater** (an angel worshipper).

Richard Bruce Cheney

Another Richard, so the same LTs as predecessor veeps Johnson and Nixon: **chidra**. Some easy-to-spot LTs for Cheney's middle name: **cube/curb/cure/ecru/rube**. As with several other vice-presidents' short names, more obscure LTs are available. The surname Cheney provides us with the straightforward **hence**.

Richard Cheney has perhaps a rather apposite LT: **chicanery**. The more familiar name Dick Cheney has **chickened** as its LT. And the full three-name form Richard Bruce Cheney provides us with a trio of nice LTs: **brachyceric** (pertaining to particular types of flies having short antennae), **buccaneered** and **underbearer** (one who assists in the carrying of a coffin at a funeral).

Joseph Robinette Biden

LTs for each of the three individual names are **hopes**, **tenebrio** (a night-prowler), **tenorite** (a mineral containing copper) and **bend/bide/bind/dine**.

The LT of Joseph Biden is the girl's name **Josephine**, but since this contains the veep's first name unchanged, it's worth listing the LTs not including his first name. Thus: **bishoped** (appointed as a bishop), **diphones** (speech consisting of two units of sound), **disponee** (a Scottish legal term**), ebonised** (stained black), **hipbones, hopbines** (twining stems), **siphoned**. The form Joe Biden has **joined** as its LT. And the veep's full formal name gives us **endoenteritis** (inflammation of part of the intestine).

Michael Richard Pence

Michael gives us a familiar word **malice**, and less familiar words **achime** (chiming), **haemic** (pertaining to blood), **heliac** (pertaining to the sun), **hiemal** (pertaining to winter), **maleic** (a type of acid). The middle name is yet another Richard, so the same LTs as predecessor veeps Johnson, Nixon and Cheney: **chidra**. A trio of LTs for the veep's surname: **cepe** (an edible fungus), **neep** (a turnip) and **peen** (part of a hammer). The shortened form of the veep's first name Mike gives us LTs **Ike** (President Eisenhower's nickname) and **Kim** (a girl's name).

Michael Pence provides us with the LT **encephalic** (pertaining to the brain), while Mike Pence gives us **pikemen** (soldiers armed with pikes, as well as keepers of turnpikes). And the full formal name gives us **archencephalic** (pertaining to the archencephalon, the primitive forebrain of the early embryo).

Kamala Devi Harris

The three LTs of this veep's first name are all unfamiliar words: **akala** (a Hawaiian shrub), **amala** (a law-court official in India) and **kaama** (an African antelope). The veep's middle name has several LTs, including: **die**, **div** (an evil spirit), **ide** (a fish), **vid** (a video) and **vie**. The surname Harris has LTs **arish** (a field of stubble), **arris** (the sharp edge or salient angle formed by the meeting of two surfaces), **hairs** and **shirr** (to bake eggs removed from their shells).

The veep's first name and surname give us the LT **Kailashahar** (a city in India). And the veep's full three-part name gives us **adversarial**, the latter relevant to her previous office of attorney-general for California and earlier attorney roles.

Footnote:

Acknowledgments are due to previously published articles and other items on transposals and transdeletions of US presidents' names. Many of these are particularly relevant for presidents who had previously served as vice-presidents. These articles specifically: Jim Puder's *The Presidents, More or Less* (*Word Ways*, August 1998), which was followed by Colloquy responses from Susan Thorpe, Sir Jeremy Morse & me. There was a further article *Transdeleted and Transadded Presidents* (*Word Ways*, February 2004).

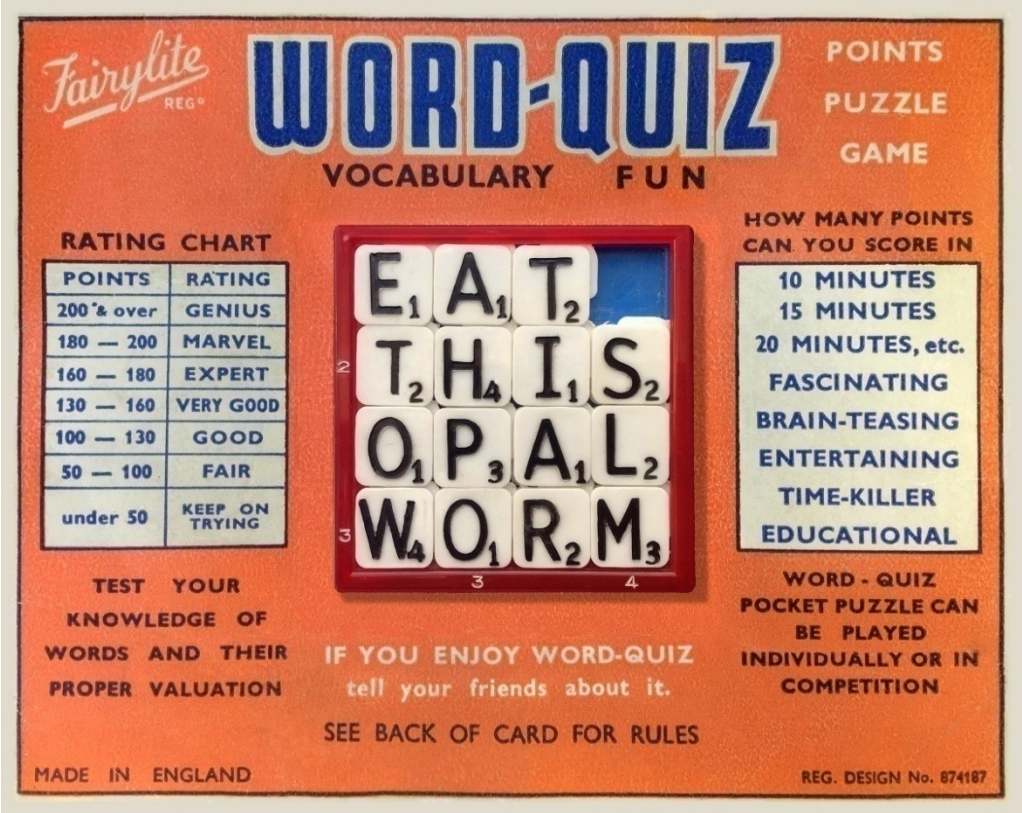
SLIDING-LETTER PUZZLES III

MIKE KEITH

Two articles in *Word Ways* ([1] and [2]) surveyed eleven different sliding-letter puzzles from the 1960's to 1990's. I recently came across two more such puzzles that were new to me. They share several similarities in their rules and goals, so they make a nice pair of objects for joint study.

Fairylite "Word Quiz"

Pictured below, this puzzle was made in England by Fairylite some time in the 1950's.



As usual, I do not know how the tiles were originally arranged in the puzzle when it was sold, so I just made up an interesting sentence to use for this photo. Note that neither WORD nor GAME can be made from the letters, so a typical self-referential advert (like Ro-Let's classic BUY THIS WORD GAME) cannot be formed from the letters. The task of attempting to reverse engineer its original message is offered as a challenge for the reader.

The fifteen letter tiles contain multiple pairs of repeated letters, so one doesn't have to worry about whether a specific letter arrangement can be created by sliding the tiles (i.e., whether it is an "even permutation" of the starting arrangement), since any pair of identical tiles can always be swapped to get to the other half of the permutations.

The rules for this puzzle, written on the back of the card, can be summarized as follows:

- Slide the tiles to spell as many valid words as possible in both the rows and columns. The goal is to achieve the highest score, as computed by these rules:
- Each horizontal word earns a score equal to the sum of its letter scores. Also, the score for the word in the second row is multiplied by 2, and the score for the fourth-row word is multiplied by 3. (Note the numbers printed on the edge of the puzzle next to the 2nd and 4th rows). Each vertical word is scored in the same way, with the 2nd and 4th column score multiplied by 3 and 4, respectively.
- If a row or column is not a valid word, it scores zero. If all four rows are words a bonus score of 25 is earned, and if all four columns are words another bonus of 50 is earned.
- The blank space is also treated as a letter, and is a "wildcard" that is to be assigned any letter of the alphabet you wish (including letters that don't appear on any tile).
- (Perhaps the most interesting rule) The wildcard square scores the number of points in the letter-score table below, *but only if the wildcard is located on the bottom row*. If the wildcard is not on the bottom row, it scores zero.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T	U	V	W	X	Y	Z
1	3	3	2	1	4	2	4	1	5	5	2	3	2	1	3	2	2	2	1	4	4	8	4	9

Note that many of the letter values are the same as in Scrabble, but J, L, N, R, T, and Z are not. Also notice that Q is not in the table! The printed rules for Word Quiz are a little ambiguous about what this means, but I think the intended rule is that the wildcard space is not allowed to stand for Q.

Since we're all diehard logophiles here, let's skip the preliminaries and go directly to the GENIUS level of the "ratings chart", and try for a score of 200 or more. This is not too hard to achieve, even with common words; here is one example:

	10	15	7	40	**72**
11	**W**	**I**	**S**	**H**	
12	**R**	**O**	**L**	**E**	
7	**A**	**T**	**O**	**M**	
24	**P**	**A**	**T**	**S**	
54					**201**

In this and all other solution diagrams in this article, the score for each row is shown to the left of each row and the score for each column at the top of each column. The bold number at upper right is the sum of the column scores, the number at lower left is the sum of the rows, and the number at the lower right is the final score (which is equals RowSum + ColumnSum + 75 bonus, since we'll always be earning both the row and column bonus). The shaded square shows the location of the wildcard letter.

Since the scoring rules are asymmetrical, with different multipliers for horizontal and vertical rows, the transpose of a solution usually has a different score from the original. For instance, this 201-point solution only scores 200 points when transposed. But, surprisingly, it is possible for a solution and its transpose to have the same score; we call such a solution *invariant*. Can you construct an invariant solution? What's the highest-scoring invariant solution you can find?

Before attempting some higher scores it is useful to know the theoretical best possible score (allowing any string of letters to count as a word). The diagram on the left below shows the effective multiplier for each square in the grid after the horizontal and vertical multipliers are combined. The best possible score is attained by assigning the highest-scoring letters, in descending order, to the squares with the highest multipliers, also in descending order. So, to start, a 9-point wildcard Z is placed in the lower right corner with multiplier 7, then the two 5-point letters (H and W) go in the two squares with multiplier 6, and so on. A resulting grid achieving the maximum possible score of 272 (one of many possible) is shown at the right.

2	4	2	5
3	5	3	6
2	4	2	5
4	6	4	7

	5	30	5	76	116
7	A	T	E	M	
16	A	R	I	W	
7	O	L	O	P	
51	T	H	S	Z	
81					272

Returning to the quest for higher-scoring solutions, here are two:

	9	30	7	36	82
9	H	A	L	T	
14	A	M	I	R	
7	T	O	P	O	
36	S	K	E	W	
66					223

	8	21	6	72	107
8	A	L	E	W	
18	R	O	T	H	
7	M	O	T	I	
45	S	P	A	Z	
78					260

The grid on the left, with score 223, has the best score of any solution composed entirely of North American Scrabble-legal words. To make the grid on the right, with an impressive score of 260, we allowed a few proper names (ETTA James, Philip ROTH, and MOTI – an island, and also volcano, in Indonesia) and one obscure word, ALEW, that's in the OED ("= HALLOO", it says) with a citation from Book 5, Canticle 6, stanza 13 of Edmund Spencer's *The Fairie Queene*: "Yet did she not lament with loud alew."

Having arrived at a score of 260, only 12 points shy of the theoretical maximum, we wondered if the maximum score of 272 could be achieved by allowing any word (including proper names and acronyms) having a well-defined meaning revealed by a Google search. Here is our best attempt at scoring 272 using somewhat-justifiable words and acronyms. Can you construct a better 272-point solution that's less logologically fanciful?

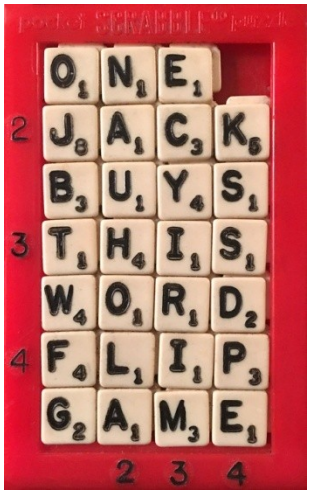
	5	30	5	76	116
7	A	R	I	M	
16	A	L	E	H	
7	O	T	O	P	
51	S	W	T	Z	
81					272

Meanings of the "words" are as follows:

ARIM	Village in Iran, or decorative stone company (Arim Inc.) in New Jersey
ALEH	Aleh Negev, rehabilitation village for the disabled in southern Israel
OTOP	"One Town, One Product", economic initiative in several Asian countries
SWTZ	Switzerland, for short
AAOS	American Academy of Orthopaedic Surgeons
RLTW	U. S. Army Rangers motto ("Rangers Lead The Way")
IEOT	Springer mathematics journal: "Integral Equations and Operator Theory"
MHPZ	Model name of a fretless bass currently sold by Cort Guitars (MH = mahogany wood, PZ = piezoelectric pickup)

Scrabble Pocket Puzzle

Made by the Plastrix Company in 1954, under license from the makers of Scrabble, the Scrabble Pocket Puzzle is pictured below left, again using a sentence I crafted (since I do not know how the letters were originally arranged). As shown in the photo at right, two puzzles were provided in the box to facilitate competitive play.



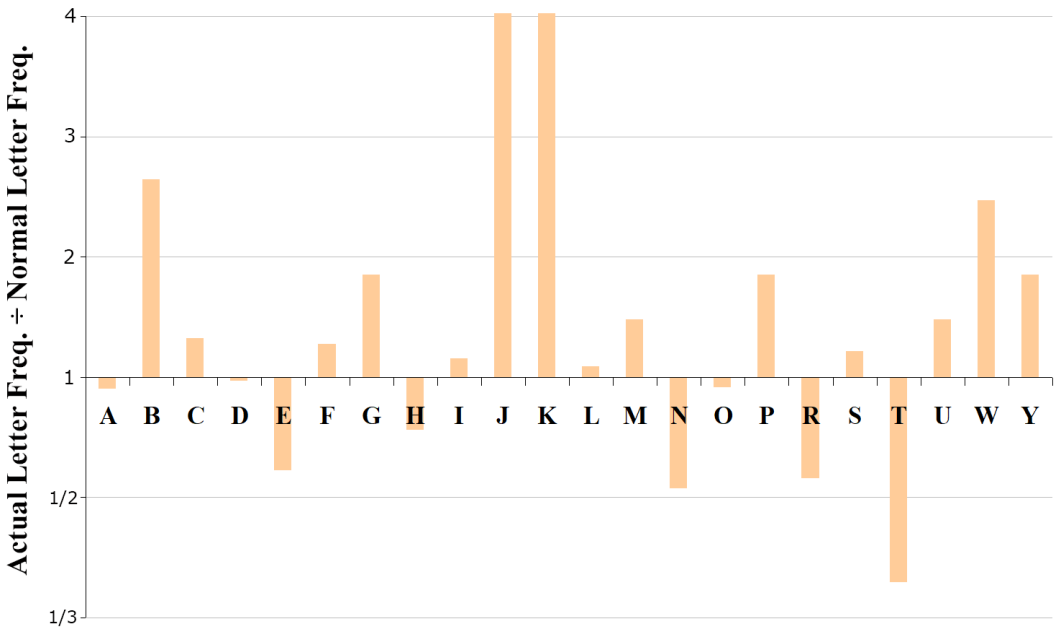


As before, the goal of this puzzle is to simultaneously form horizontal and vertical words to achieve the highest score. The scoring rules are basically the same as in Word Quiz, with the following differences:

- The score multipliers for horizontal and vertical words, printed on the edge of the puzzle, are as follows. The base score of the 2nd, 4th, and 6th horizontal words get multiplied by 2, 3, and 4 (respectively) while the 2nd, 3rd, and 4th vertical words have respective multipliers of 2, 3, and 4.
- There is a 50-point bonus for forming words in all eight rows, but no bonus for making words in all the columns. We'll see later why the lack of a column bonus makes sense.
- The blank wildcard square works the same way as in Word Quiz. It has to be assigned to a letter but it scores zero unless it is on the bottom row, in which case its letter score is taken from the table below. Notice that these letter values are exactly the same as in ordinary Scrabble.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	3	3	2	1	4	2	4	1	8	5	1	3	1	1	3	10	1	1	1	1	4	4	8	4	10

Before assailing this puzzle it is useful to look at the letter frequencies of the 27 tiles, specifically how the distribution of these tiles compares to the normal letter frequencies in English. The relative-frequency graph below plots actual letter frequency divided by normal frequency, so a value of 1 means "just right", 2 means "there are twice as many of this letter as in normal English", 1/3 means "there are 1/3 as many as normal", and so on.



Note in particular the fairly extreme deficit of E, N, R, and T, and the overabundance of B, G, P, W. The J and K values are actually off the chart – K is 7.8 and J is 27.5! – because even the presence of one J or K is way more than normal. Now, there are two effects at play here. First, the task of making a 7 x 4 grid with both horizontal and vertical words is made harder by *any* restriction on the set of letters available – even restricting them to a specific set of 27 letters with a very good letter distribution plus one wildcard. Second, the ability to make such a crossword grid becomes even harder if the letter distribution is bad, as it is here.

For these reasons we found that it is impossible to make words in all the rows and columns, even using a very large word list – namely the *allwords.txt* word list from the NPL website [3]. We now understand why the rules provide no bonus for having words in all columns, since it's essentially impossible to do this while also forming words in the rows. Words in all rows is easy, so the best strategy for a high score is to have a word in every row, in order to capture the 50-point bonus, and also form words in either two or three columns on the right side, in order to use the highest column multipliers.

	9	24	45	136	214
5	A	A	E	D	
16	E	S	G	F	
6	I	I	L	B	
36	N	C	H	Y	
6	O	O	R	M	
80	P	W	K	J	
13	S	T	U	Z	
162					426

As before, it's interesting to know the maximum possible score. It is 426, as illustrated by the grid at the right. (Again, this grid counterfactually allows any sequence of letters to count as a word.) But what's the best score we can actually achieve with real words? And which of these two options will produce the highest score: an arrangement with two vertical words, or one with three?

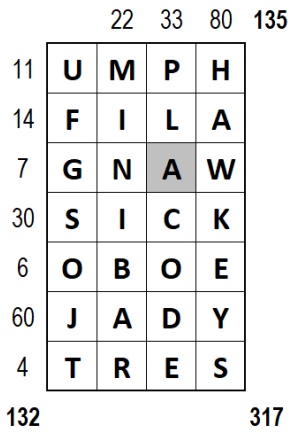
Trying two vertical words first, here are our two best solutions:

			39	108	147
7	T	E	W	S	
18	G	R	O	K	
9	B	U	O	Y	
45	H	A	D	J	
6	L	I	M	A	
32	S	P	E	C	
11	F	I	N	K	
128					325

			39	108	147
7	T	E	W	S	
20	B	O	O	K	
10	F	U	R	Y	
45	H	A	D	J	
6	L	I	M	A	
32	S	P	E	C	
9	G	I	N	K	
129					326

These are both variations on the same grid, with different word-source restrictions. The grid on the left, scoring 325, uses only Scrabble-legal words (including the two vertical words). We were able to gain one point, to 326, by allowing words from Webster's Third. Just one word, WORDMEN, is not a Scrabble word, but is a boldface entry in Webster's Third, being the plural of WORDMAN, "one that is skilled in the use of words" (how appropriate!). The reason we weren't able to improve much on the 325 solution is the presence of the spectacularly good word SKYJACK, which has high-scoring letters (K, J, C) in all the even positions, to benefit from the row multipliers, a high-scoring wildcard, K, at the end, which earns the wildcard score as a result of being on the bottom row, and a favorable position in the right-most column in order to exploit the highest column multiplier.

Our best score with three vertical words is 317, shown in the grid on the next page. All but three words (UMPH, JADY, PLACODE) are in the Scrabble word list, and all three of those are in Webster's Third.



The lower score of this grid, versus 326 with two vertical words, indicates that the additional restrictions imposed by the requirement to make three vertical words are so severe that they drastically reduce the ability to choose words that give a high score. Note also the unusual letter assignment and location of the wildcard. This is probably related to the need for more vowels when forming three vertical words.

References

[1] Keith, Mike (2011), "Vintage Plastic Sliding-Letter Puzzles", *Word Ways,* 44(4), p. 310.
[2] Keith, Mike (2012), "More Sliding-Letter Puzzles", *Word Ways*, 45(1), p. 4.
[3] National Puzzler's League, "Our Collected Wordlists" page, "Consolidated list" section, http://wiki.puzzlers.org/dokuwiki/doku.php?id=solving:wordlists:about:start

AURAL PALINDROMES

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(Note: It's suggested that having ready access to a backwards talking or reversing phone app, music reversing software or sound reversing device would aid greatly in the enjoyment of this article. (See sidebar below) The apps are free and downloadable in seconds from the Google Play Store or Apple App Store. Do it now. You'll thank me later.)

A palindrome, as anyone reading this publication likely knows like the back—or the front—of their hand, is a word, phrase or other sequence that reads the same backwards and forwards: Otto. Redivider. 12/22/21. A man, a plan, a canal, Panama! Madam, in Eden I'm Adam.

Pretty neat.

However, regardless of the fact that they read the same backwards and forwards, the sounds that they make, backwards and forwards, are very different. As a matter of fact, with most any palindrome, when spoken backwards, these *exact* same group of letters, sound *exactly* like gibberish. Try it with any of the palindromes above, or any of your own devising.

Pretty disappointing.

Okay, I guess nobody *promised* us that a palindrome would in fact sound the same *as well as be* spelled the same, nor, perhaps, would such observation be completely counterintuitive to any-one with the slightest experience in the intricacies and variances of phonemes and pronunciations.

Still, I don't know, it would be kind of cool if it did. I mean, you can see how some people who enjoy a life unburdened by knowledge of the intricacies and variances of phonemes and pronunciations would say that they should, right? In fact, in a better world, perhaps, it would be the norm.

Well, before we investigate the potential existence of palindromes that read the same backwards and forwards AND ALSO sound the same backwards and forwards (spoiler alert: more disappointment awaits), let's look at a related area much more fruitful, and much less disappointing. In fact, pretty cool actually.

Let's hear it

The observation regarding palindromes above—spelled the same backwards but sound different backwards—suggests a flipside, a class of deviant words or phrases that, while they read wholly different backwards to forwards, by some accident of phonetics, sound the same, or at least similar enough to be readily understandable by a disinterested passerby without a great deal of

Talking gear

While traditional palindrome creators/discoverers reportedly develop a delightful yet presumably disconcerting expertise in seeing words backwards "everywhere" that, ultimately, greatly enhances their palindrome construction efforts, the author does not know if audio palindrome aficionados develop any analogous facility in hearing phrases backwards. In his case, external tools were utilized, with words and phrases originally tested using a Yak Bakwards, a novelty "pen" that could record a brief snippet and play it backwards on command. Currently, the author mostly utilizes "Reverse Talk," a free app available for Android phones. Others use similar iPhone apps, Audacity or similar sound manipulation software, and/or forwards/backwards playing cassette decks or similar mechanical tools. #

coercion. These are aural palindromes, also called phonetic palindromes.

If palindromes *read* the same backwards as forwards and don't necessarily (almost always don't) *sound* the same backwards as forwards, aural palindromes *sound* the same backwards as forwards and don't necessarily (almost always don't) *read* the same backwards as forwards.

Start talking

So try speaking this: EARACHES ARE SCARY. As a traditional palindrome attempt, YRACS ERA SEHCARAE obviously is gibberish, but spoken and reversed, the results are frighteningly impressive. Played backwards EARACHES ARE SCARY sounds uncannily like EARACHES ARE SCARY.

Another good one, albeit shorter is YEAH RIGHT. Reversing visually to THGIR HAEY, it would obviously fall somewhat short as a traditional palindrome. But say it and play it backwards and the situation, uh, reverses.

Now say SAY YES, and the backwards version comes out in a delightful Southern accent that is not there in the forward version as spoken, at least in my case, but both versions are readily understandable as SAY YES. Similarly, HUBBA HUBBA strangely takes on a greater urgency when played backwards but both HUBBAs are there for the hearing.

In addition, an impressive phonetic palindromic poem by Karsten Johansson includes a longish self-contained aural palindromic phrase. Like many longish traditional palindromes, while clearly painstakingly and laboriously constructed, it takes on a strangely beautiful, almost haiku-like cadence and effervesces a similar inherent wisdom: WHAT'S NEVER BEEN'S NEVER BEEN SO. Try it.

Compounding the effect

Another flavor of aural palindromes emerge from words that are not aural palindromic in that they don't sound like *themselves* backwards but rather distinctly sound like *other* words. For example, ENOUGH, pronounced as e-nough with the long e sound, sounds like FUNNY backwards. (When spoken with the short e sound, Eh-nough, interestingly enough, sounds just like FUN.) Similarly, OMINOUS, backwards, sounds quite clearly like CINEMA. So from there, creating an audio palindrome phrase is simply a matter of combining the pairs. OMINOUS CINEMA and FUNNY ENOUGH, are both, indeed, aural palindromes.

For perspective, it is worth noting here that, most words and phrases sound like gibberish backwards. Say any random word, and play it in reverse. COMPUTER. THEATRE. PANCAKE. TIMESUCK. None of them sound like anything recognizable. So I would think that these aural palindromes are relatively rare, just like real palindromes. And, I believe, they are as enjoyable and valuable to be worth seeking out.

Some subjectivity allowed

Although I'll say it, it goes without saying that determining whether or not a word or phrase is an aural palindrome is more subjective than determining whether one is a traditional palindrome.

After all, determining the order of the letters is pretty much inarguable, while agreeing on what is being heard can be, well, arguable.

Similarly, unlike a traditional palindrome, one can impact an aural palindrome's output inadvertently by such factors as individual accent, or purposely by deliberate pronunciation or enunciation. As noted, the output of ENOUGH can be impacted by pronouncing the long or short "e" sound; similarly, stressing the final "T" strongly in YEAH RIGHT causes the backwards version to start with a "tsk" sound. While this wouldn't likely serve to make too many non-aural palindromes into clear audio palindromes, it is worth noting. And, indeed, theoretically, some examples on the aural fence could perhaps be nudged into one camp or another through a particular pronunciation, purposeful or otherwise.

So, are aural palindromes more an art than a science? You be the judge. (Answer: Yes, they're more an art than a science.)

Checking both boxes

As noted earlier, the heartbreaking observation that palindromes, while spelled the same forwards and backwards, don't sound the same forwards and backwards, was a reality that we each likely needed to grasp early on, akin to learning that there was no Santa Claus. But is that *always* the case? (The palindrome thing, not the Santa Claus thing.) *Are there* any words and phrases that read the same backwards and forwards *and* sound the same backwards and forwards—existing as both palindromes *and* aural palindromes, as, in a perfect world, perhaps, they all would be? Let's head to the test kitchens.

Common sense, certainly, would tell you to start with the shortest, simplest groups of sounds, and indeed, three letter palindromes including WOW, PIP, MOM and DAD, bookended by repeating hard consonants, present as strong aural palindromes as well. But things fall apart pretty quickly after that, with OTTO, CIVIC and RADAR sounding far different when heard backwards. LEVEL shifts the syllable stress too much to be considered in my opinion, although NOON makes a decent case.

.

A quick say/yas riffle through a list of some common short one- and two-word palindromes leaves me to believe that STOP POTS is among the longest constructions that is both a visual and an aural palindrome. Can one of the readers of this fine publication reverse this belief and pay it forward? Only time will tell.

# # #

Editor's comment: How about "WOW, DAD, DID MOM STOP SPOTS? MOM DID, DAD? WOW!" *(This supposes that "STOP SPOTS" would work as well as an aural palindrome as "STOP POTS" does.)*

FEWEST WORDS FROM DIFFERENT ALPHABETS

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As noted in a previous *Interim* article, the letters of the Greek alphabet, when spelled out as English words, total exactly 100 letters. Here is that alphabet:

ALPHA BETA GAMMA DELTA EPSILON ZETA ETA THETA IOTA LAMBDA MU NU XI OMICRON PI RHO SIGMA TAU UPSILON PHI CHI PSI OMEGA

I wondered how few words these 100 letters could be rearranged into, to form other English words. My first attempt resulted in ten new words, then subsequently nine new words, and eventually eight new words. I managed to find many eight-word solutions, but I suspect a seven-word solution is a possibility. Here is one of my eight-word solutions. Can it be improved on?

ANTIDISESTABLISHMENTARIANISM PALAEOANTHROPOLOGICAL MUM APOPHTHEGMATIZE AMPLEXICAUDATE AUTOPHAGIA AKIMBO PUP

By concentrating on starting with very long words, I ran the risk of using up the 'easy' consonants (such as D, L, N, R, S and T), ending up with a whole bunch of clunky consonants (such as B, F, K, P, V and W) and then struggling to find words which use more than just one of these. The trick seems to be to find long words which make inroads into the clunky consonants, too. Even my eight-word solution above suffers partly from this – look at those three shortish words AKIMBO, MUM and PUP. I suspect there is a seven-word solution.

I decided to tackle the NATO phonetic alphabet in the same way. It's also called the International Radiotelephony Spelling Alphabet, the NATO spelling alphabet, the ICAO phonetic alphabet and the ICAO spelling alphabet. The NATO phonetic alphabet is the most widely used radiotelephone 'spelling alphabet'. A spelling alphabet is a set of words used to stand for the letters of the alphabet in oral communication, especially when over a two-way radio or telephone. The words are chosen because they sound sufficiently different from each other to avoid any confusion that could easily otherwise result from the names of letters that sound similar except for some small difference easily missed or easily degraded by the imperfect sound quality of the apparatus. Here is the current NATO phonetic alphabet:

ALFA BRAVO CHARLIE DELTA ECHO FOXTROT GOLF HOTEL INDIA JULIETT KILO LIMA MIKE NOVEMBER OSCAR PAPA QUEBEC ROMEO SIERRA TANGO UNIFORM VICTOR WHISKEY XRAY YANKEE ZULU

That's 138 letters. It's important to note that the word representing the letter A is **ALFA**, not ALPHA; that the word representing the letter J is **JULIETT**, not JULIET; and that the word representing W is **WHISKEY**, not WHISKY.

My first solutions involved 13 and 12 words, but, after lighting on the 29-letter specimen included below, I discovered this 11-word solution. But is there a ten-word solution?

FLOCCINAUCINIHILIPILIFICATION ELECTROTELETHERMOMETER
OBDIPLOSTEMONOUS QUADRIVALVULAR KATZENJAMMERS
VOORTREKKER HAULAGEWAY AXBREAKER HAYBOX GOOFY OAF

Editor's note: Another alphabet of spelled-out letter or word names that could be used for this purposeis the one that is the subject of the next article.

OUR SPELLED-LETTER ALPHABET

JIM PUDER

The following is a revision of an item that I wrote for Kickshaws in the February 2008 Word Ways; *this is its first publication in article form. I was reminded of it by the use of other spelled-out alphabets in the preceding article.*

Users of phonetically-spelled languages that do not employ some version ofthe Latin alphabet in their orthographies commonly use the spelled-out names of the letters of their alphabets when they refer to those letters in writing. Greek, for instance, has its familiar *alpha*, *beta*, *gamma*…, Hebrew its *aleph*, *beth*, *veth*…, Arabic its *alif*, *be, te*…, etc. In contrast, in English and in many other languages that use the Latin alphabet it is the common practice to simply let a letter stand for itself when referring to it in writing. Thus, for example, when we wish to refer to the letter Q in writing, we seldom spell it *cue*, almost always preferring to just write Q. Note, however, that when we use letters to stand for themselves in this manner we are not really spelling their names, but using the equivalent of pictographs of the letters in place of spellings, just as if we habitually used a drawing of a hand in our writing instead of spelling out the word "hand."

That we occasionally lapse into this cruder, non-phonetically-based form of writing has apparently not escaped the possibly disapproving notice of lexicographers, who may see it as a violation of the fundamental principal of our system of orthography, which is that written symbols should stand for sounds, not ideas. If the names of the numbers of our number system have their familiar phonetic spellings, why should not the names of the letters of our alphabet have them as well, as the logical Greeks have in their language?

Perhaps some such philosophic principle as this accounts for the fact that most of the major English dictionaries offer their readers whole or partial alphabets of spelled letter names. Merriam-Webster, for instance, gives us this complete spelled-letter alphabet; it consists of single-letter spellings for the five vowels and multi-letter spellings for the 21 consonants:

A, BEE, CEE, DEE, E, EF, GEE, AITCH, I, JAY, KAY, EL, EM, EN, O, PEE, CUE, AR, ESS, TEE, U, VEE, DOUBLE-U (in lower-case letters, double-U), EX, WYE. ZEE

Alas for the helpful intentions of the lexicographers, however, most of these perfectly good spelled letter names receive little or no employment in normal usage. *Aitch* is occasionally seen, and typographers distinguish between *em* dashes and *en* dashes (long and short dashes). *Tee* and *vee* are sometimes used to indicate shapes (as in *tee* shirts with *vee* necks), and *cee, dee, gee, jay, tee* and *vee* are often seen in spelled-out initialisms *(deejay, Humvee, Jaycee* and so on). But these are the exceptions; seldom seen are such other spelled-lettername as *ef, ar* and *wye.*

For all the public's near-total indifference to our spelled-letter alphabet, however, Merriam-Webster has maintained a tradition of including one in all of its general dictionaries larger than pocket size. I was surprised, therefore, when a number of years ago *Webster's Ninth New Collegiate*

Dictionary came out with no *ar* in it. Was this yet another example of slipping stan-dards, I wondered. I needn't have worried, however; when *Webster's Tenth New Collegiate Dictionary* came out, *ar* was back in its accustomed place — it's omission from the Ninth Edition had only been an oversight, not a harbinger of cultural collapse.

The incident illustrates, however, the slender thread by which our spelled-letter alphabet seemingly hangs. If it is to survive in the long run, I think, people are simply going to have to begin using it a bit more often. One way to foster such use might be the sponsoring in schools of essay competitions using what might be called "Alphabetish," a didactic form of written English in which spelled letter names (with the exceptions of *aitch* and *double-U*, which are excessively awkward) are substituted for their respective letters. The result, which resembles nothing so much as pidgenized Middle English, is nonetheless remarkably understandable, much more so than, say, a similar usage of the names of the Greek alphabet would be to a Greek. Here's an illustrative example of the form:

Emaarwye hadee a eliteeteeele elaembee,
Iteeess efeleeceee waess whiteee aess essenow;
Aendee eveeearwyewheare teehatee Emaarwye weentee,
Teehe elaembee waess essuare teeo geeo.

Itee efoelelowedee hear teeo essceehooel oene deeawye,
Whiceeh waess ageeaienesstee teehe aruele;
Itee emadeee teehe ceehieldeeareen elaugeeh aendee peeelawye,
Teeo essee a elaembee atee essceehooel.

Aess wyeou ceean essee, Aelpeehabeeeteeiessh iess areaelelwye cueuiteee ceeoempeeare-heenessibeeele. Aendee whatee beeeteeteeear teeooel ceeoueldee teeheare beee teeo heelpee aceecueuaientee ouar wyeouengee peeeopeeele witeeh ouar eliteeteeele-kayenowwn aendee eendeeaengeeearedee esspeeeleledee-eleteeteeear aelpeehabeeetee?

WORD-RICH SEQUENCES OF LETTER TUPLES

MIKE KEITH

In the November, 2021 *Interim*, on page 222, Darryl Francis proposed the following interesting problem. Consider this sequence of letter pairs:

MP AO TS ES

If we choose one letter from each pair and put them together, in order, the result is a four-letter string of letters. There are 2^4 ways to choose and therefore 16 different possible strings. For this special set of letter pairs, every one of those 16 strings is a word:

MASE MASS MATE MATS MOSE MOSS MOTE MOTS PASE PASS PATE PATS POSE POSS POTE POTS

In this article we present some more configurations like this, including ones with longer strings (more than four tuples) and larger tuples (such as letter triples or quadruples instead of pairs).

Introduction and Definitions. Let b be the number of letters in each letter tuple ($b = 2$ in the above example), and n be the number of tuples, which is the same as the number of letters in the words produced ($n = 4$ in the example). The number of "words" (which may or not be actual words) produced by choosing one letter from each tuple is b^n, which is simply the number of n-digit base-b numbers (4-digit binary numbers, in the example). If all b^n generated words are actually words, then we'll call such a solution *complete*. If a complete solution is not possible, then the puzzle is to make as many words as possible.

Francis asks specifically about two cases: $n = 5$, $b = 2$ and $n = 4$, $b = 3$. We will show some results for both of those cases as well as a few others.

Note that the letters in each tuple must be distinct, but it is not necessary for all the letters in all the tuples together to be distinct. As long as all tuples have distinct letters then the generated words will be all different.

More $n = 4$, $b = 2$ sets. We wrote a computer program to find all solutions using the NWL2018 North American Scrabble word list. Here are five more (the only five that exist in this word list, except for a few that we will incorporate into a larger solution presently):

```
MT AO RT SE  MARS MARE MATS MATE MORS MORE MOTS MOTE TARS TARE TATS TATE TORS TORE TOTS TOTE
PS AO LN ES  PALE PALS PANE PANS POLE POLS PONE PONS SALE SALS SANE SANS SOLE SOLS SONE SONS
DL IU CN KE  DICK DICE DINK DINE DUCK DUCE DUNK DUNE LICK LICE LINK LINE LUCK LUCE LUNK LUNE
BM AO ST HS  BASH BASS BATH BATS BOSH BOSS BOTH BOTS MASH MASS MATH MATS MOSH MOSS MOTH MOTS
BM AU ST ST  BASS BAST BATS BATT BUSS BUST BUTS BUTT MASS MAST MATS MATT MUSS MUST MUTS MUTT
```

Note that Francis' solution was not found, since it has three words (MOSE, POSS, and POTE) that are not in the NWL2018 word list. However, MOSE is in the OED, while POSS and POTE are in both the OED and Webster's 3rd Unabridged.

The last of these five solutions demonstrates that it is okay to have letters shared between tuples, since the third and fourth pairs are identical (ST). Even so, the 16 generated words are all different, as they must be as long as no tuple has within it any repeated letters.

Mixed-radix solutions. A further generalization is to allow unequal tuple sizes, so we can, for example, mix letter pairs and letter triples. Instead of the resulting words having the structure of all *n*-digit base-*b* numbers, they now mimic a set of *mixed-radix* numbers. If we denote the sizes of the tuples by b_1, b_2, ... , b_n, then the number of words produced by choosing one letter from each tuple will be b_1 x b_2 x ... x b_n. The generation procedure remains the same – it's still "pick one letter from each pile", but now the piles can have unequal sizes.

We found two complete solutions for 4-letter words with *b* values of (2, 2, 3, 2), which generate 2 x 2 x 3 x 2 = 24 words, all present in the NWL2018 word list:

```
CM AO DRT ES  CADE CADS CARE CARS CATE CATS CODE CODS CORE CORS COTE COTS
              MADE MADS MARE MARS MATE MATS MODE MODS MORE MORS MOTE MOTS

CT AO PRT ES  CAPE CAPS CARE CARS CATE CATS COPE COPS CORE CORS COTE COTS
              TAPE TAPS TARE TARS TATE TATS TOPE TOPS TORE TORS TOTE TOTS
```

These two can be combined into a (2, 2, 4, 2) solution with 32 words by stealing the P from the second and adding it to the first:

```
CM AO DPRT ES  CADE CADS CAPE CAPS CARE CARS CATE CATS
               CODE CODS COPE COPS CORE CORS COTE COTS
               MADE MADS mape MAPS MARE MARS MATE MATS
               MODE MODS MOPE MOPS MORE MORS MOTE MOTS
```

though, unfortunately, one of these words (MAPE, shown in lowercase) is not in NWL2018, nor is it in OED or Webster's Unabridged. It is, however, an acronym in the field of statistics, standing for Mean Absolute Percentage Error, and is the subject of an article with that name on Wikipedia.

Adding the T from the second (2, 2, 3, 2) solution to the first letter pair almost gives a complete solution, too, producing this set of 48 words with tuple sizes of (3, 2, 4, 2):

```
CMT AO DPRT ES  CADE CADS CAPE CAPS CARE CARS CATE CATS
                CODE CODS COPE COPS CORE CORS COTE COTS
                MADE MADS mape MAPS MARE MARS MATE MATS
                MODE MODS MOPE MOPS MORE MORS MOTE MOTS
                tade TADS TAPE TAPS TARE TARS TATE TATS
                TODE TODS TOPE TOPS TORE TORS TOTE TOTS
```

Only the two lowercase words (MAPE that we've already seen, plus TADE) are not in either NWL2018 or the OED or Webster's Unabridged. So at least 46 of these 48 are justifiable words.

The case $n = 4$, $b = 3$ (four letter triples). The best solution for this case using the NWL words has 60 valid words out of the 81 generated strings (valid words shown in uppercase, as usual):

```
DMP IAO NCR EKS

DINE DINK DINS DICE DICK dics DIRE DIRK dirs
dane DANK DANS DACE dack dacs DARE DARK dars
DONE donk DONS doce DOCK DOCS DORE DORK DORS
MINE MINK mins MICE MICK MICS MIRE MIRK MIRS
MANE mank MANS MACE MACK MACS MARE MARK MARS
mone MONK MONS moce MOCK MOCS MORE mork MORS
PINE PINK PINS PICE PICK PICS pire pirk pirs
PANE pank PANS PACE PACK PACS PARE PARK PARS
PONE ponk PONS poce POCK pocs PORE PORK pors
```

Some of the non-NWL words could surely be counted, such as DANE (with the obvious meaning) and PIRE (which is in the OED: a variation on "peer") – not to mention Robin Williams' MORK. How close could we get to 81 by examining the lowercase words closely?

It turns out that S can be added to the first group to scoop up another good batch of words. Here is the result with S added, a (4,3,3,3) solution having 78 valid NWL words out of 108:

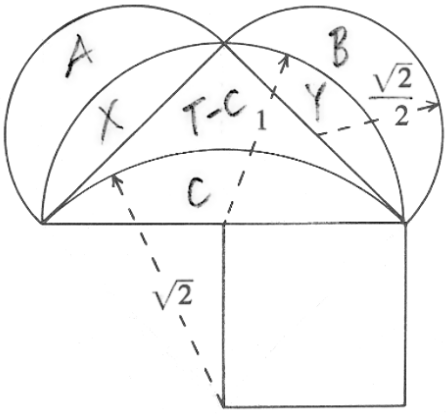
```
DMPS IAO NCR EKS

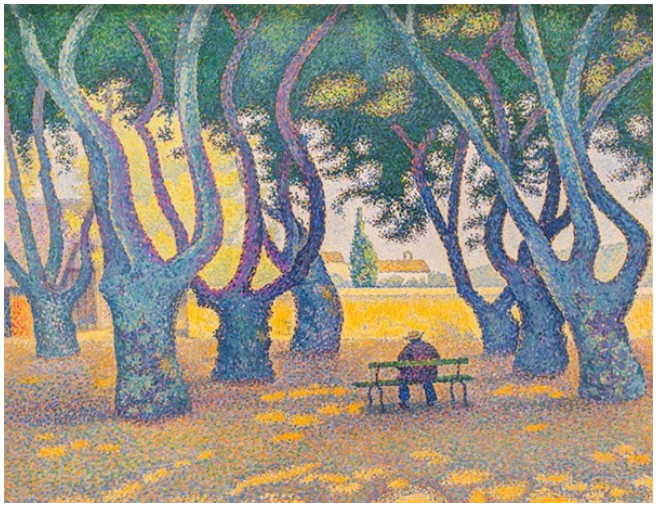
DINE DINK DINS DICE DICK dics DIRE DIRK dirs
dane DANK DANS DACE dack dacs DARE DARK dars
DONE donk DONS doce DOCK DOCS DORE DORK DORS
MINE MINK mins MICE MICK MICS MIRE MIRK MIRS
MANE mank MANS MACE MACK MACS MARE MARK MARS
mone MONK MONS moce MOCK MOCS MORE mork MORS
PINE PINK PINS PICE PICK PICS pire pirk pirs
PANE pank PANS PACE PACK PACS PARE PARK PARS
PONE ponk PONS poce POCK pocs PORE PORK pors
SINE SINK SINS SICE SICK SICS SIRE sirk SIRS
SANE SANK SANS sace SACK SACS sare SARK sars
SONE sonk SONS soce SOCK socs SORE sork sors
```

We finish with our favorite find: a letter set for $n = 5$ and $b = 2$ (five letter pairs) having a complete solution, with a full $2^5 = 32$ words. This started as a solution having 22 valid NWL words that we looked at closely and found reasonable interpretations for the other ten. This solution is presented on the following page as a puzzle with definitions. The ordering of the words is scrambled to make it more interesting – they are not in the natural order as we have displayed them so far in this article. Nonetheless, the puzzle is quite easy, since after getting a few answers you'll know what the five letter pairs are, from which you can generate all the remaining words and just match them up with the clues.

The answer to this puzzle may be found in the "Answers and Solutions" department near the end of this issue.

_ _ _ _ _ ___ out (is fortunate)
_ _ _ _ _ Like the Sahara, or a certain sci-fi epic
_ _ _ _ _ Golf spot
_ _ _ _ _ More like a drawing than a painting
_ _ _ _ _ Missing word (below DE) on wine label (see bottom right)
_ _ _ _ _ Puts donut in Java
_ _ _ _ _ Former Italian leaders
_ _ _ _ _ Author, *The Sisters of St. Croix*
_ _ _ _ _ Units of cocaine?
_ _ _ _ _ Ernie's bathtime friend
_ _ _ _ _ Detectives, slangly
_ _ _ _ _ *Place de* ___, *St. Tropez*, painting by Paul Signac (see bottom left)
_ _ _ _ _ Meatheads
_ _ _ _ _ Tennis drop shots
_ _ _ _ _ Cows with salt blocks are this
_ _ _ _ _ Prone to showing off on the court
_ _ _ _ _ Regions A and B in diagram to the right
_ _ _ _ _ Wikipedia articles are very ___
_ _ _ _ _ Eats grandly
_ _ _ _ _ *Waiting for Godot* monologist
_ _ _ _ _ Risky
_ _ _ _ _ Florence, Oregon claim to fame
_ _ _ _ _ Like the Incredible Hulk
_ _ _ _ _ Small and unimpressive
_ _ _ _ _ ____-bird (in 3rd line of a "Mikado" song)
_ _ _ _ _ Moonlike, or just nutty
_ _ _ _ _ Makes food cubes
_ _ _ _ _ Defeats soundly
_ _ _ _ _ Current governor of Arizona
_ _ _ _ _ Itchy-headed
_ _ _ _ _ Lights, in Las Palmas
_ _ _ _ _ Quackers







ALPHAGRAMMATIC ISOGRAMS, PART I: 7 LETTERS

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For this article, I'm going to look at 7-letter words with no repeated letters – that is, 7-letter isograms. This article will explore some ideas around the alphagrams of those 7-letter isograms. In two later articles, I will extend these ideas to different-length isograms – those of 2 to 15 letters.

Before I go any further, I just need to define what an alphagram is. An alphagram is the ordering of the letters of a word alphabetically – for example, AEGINRT is the alphagram of GRANITE, TANGIER, TEARING etc.

So, the remainder of this article is about the alphagrams of **7**-letter isograms. To avoid keep referring to 7-letter alphagrams and 7-letter isograms, for the rest of this article I shall just refer to alphagrams and isograms, with the 7-letter part understood.

How many alphagrams, with no repeated letters, are there, regardless of whether there are real words corresponding to them? To choose 7 different letters, first off calculate the number of different ways of selecting 7 letters – this is 26 x 25 x 24 x 23 x 22 x 21 x 20 (3,315,312,000 to be exact … a tad over 3 billion). Then divide by 7 factorial (=5040). Thus, 3,315,312,000 divided by 5040 = 657,800. This tells us that there are 657,800 different alphagrams. When all the alphagrams are themselves sorted into alphabetical order, the very first alphagram is obviously ABCDEFG; this is followed by ABCDEFH, then ABCDEFI, and so on. The very last alphagram is TUVWXYZ. Given that there's an even number of alphagrams, the midpoint of all these 657,800 alphagrams lies halfway between the 328,900th and 328,901st alphagrams.

(Mathematical note: The general formula for the number of different alphagrams for n different letters is (26! x (26 – n)! / n!), where the exclamation mark signifies a factorial. In the extreme case of 26 different letters – the whole alphabet – there is only one alphagram. Putting n=26 into the above formula demonstrates that 0! (zero factorial) equals 1. While this may seem surprising, this is mathematically correct.)

How many of these 657,800 theoretically possible alphagrams actually correspond to real words? The easy answer is … I don't know! However, I have a booklet entitled *A List of Words Containing No Repeated Letters*, by Jack Levine – produced probably in the 1950s or 1960s. This is based on *Webster's Second* (W2), and contains approximately 10,800 words of 7 letters. Allowing for additional isograms which have come in via *Webster's Third* (W3) and the *Oxford English Dictionary* (OED), it wouldn't be unrealistic to suggest that there may be 20,000 isograms. But many of these will be transposals of others, thus sharing alphagrams. I would suggest that 20,000 could be the upper limit on the number of alphagrams which correspond to real words, with a more likely figure somewhere between 10,000-15,000.

Which is the first alphagram which corresponds to a real word in our regular dictionaries? And which is the last? And which two real-word alphagrams are nearest to the theoretical midpoint, either side of that alphagram midpoint? The answers to these questions will likely vary depending on which dictionaries are consulted.

Using W3 the first alphagram corresponding to a real word is ABCDEHT (**BATCHED**), but using W2, the first real-word alphagram is ABCDEHO (**COBHEAD**). The OED offers a possible improvement – it lists BANCHE as a verb, so presumably **BANCHED** would correspond to the ABCDEHN alphagram. Are there improvements on these, corresponding to an alphagram somewhere between ABCDEFG and ABCDEHM?

We've already seen that the midpoint of the 657,800 alphagrams lies halfway between the 328,900th and 328,901st alphagrams. Following some very detailed calculations, these alphagrams have been identified as:

328,900th CDHNRUY 328,901st CDHNRUZ

A couple of familiar real-word alphagrams getting near to CDHNRUY are CDHIORS (**ORCHIDS**) and CDHIPTY (**DIPTYCH**). W3 and the OED offer a word nearer still to CDHNRUY. Both of them provide us with CDHLTUY (**DUTCHLY**). The surname **MURDOCH** (CDHMORU) comes even nearer to the alphagram midpoint, appearing in *Collins English Dictionary*.
Initially, I thought that the nearest real-word alphagram coming after CDHNRUZ would be CDIKNOR (**DORNICK**, a type of fabric, in W3 and OED). Then I lighted on CDHORSU (**SCHROUD**, an obsolete spelling of SHROUD in the OED). Are any improvements possible, using W3, W2 or the OED, over **MURDOCH** and **SCHROUD**?

What about the last alphagram? The last theoretically possible alphagram is TUVWXYZ, but obviously there is no real word corresponding to this alphagram. So, what is the last real-word alphagram? My first thought was NOPSTUW (**UPTOWNS**), courtesy of both W3 and OED. But further on is NORSTUY (**SUNTORY**, a type of Japanese whisky, courtesy of the OED). I had hoped to find the word **SPROUTY** in one of our regular dictionaries (like a sprout, perhaps), but it's in none of them. But strangely, it turns out that **SPROUTY** is a type of protein (first found in sprouts, maybe?). Wikipedia provides this highly technical description: "The protein Sprouty is a developmental protein involved in cell signalling. It works by inhibiting the MAPK/ERK pathway."

Just a reminder … this article has concerned itself solely with alphagrams of **7**-letter isograms. I have extensive results for alphagrams of isograms of length 2 to 15 letters. I am planning to publish two further articles – one for alphagrams of 2, 3, 4, 5 and 6-letter isograms, and a second one for isograms of 8-15 letters.

My thanks to Nina Warwick (of Peterborough, England) who did sterling work helping to identify the alphagrams around the midpoint of the 657,800 alphagrams.

ALPHAGRAMMATIC ISOGRAMS, PART II: 2-6 LETTERS

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Introduction

This is the second in a series of three articles about alphagrams of isograms. Definitions of the terms alphagram and isogram, and relevant background material, were in a previous *Interim* article *Alphagrammatic Isograms: 7 Letters*. This current article explores aspects of alphagrams of isograms of length 2 to 6 letters. The third article will consider those of length 8 to 15 letters.

2-letter Isograms

There are 650 ways of selecting two different letters (that's 26 x 25). But selecting two letters (for example, QE and EQ) will only result in a single alphagram EQ. So, the number of alphagrams is only 325 (that's 650 divided by 2). The very first alphagram is AB and the very last is YZ. The midpoint of the 325 alphagrams is the 163rd one, which is HQ.

There are two real words which correspond to the alphagram AB – namely, **AB** and **BA**, both in W3, W2 and OED.

The midpoint alphagram is HQ, and while this is a familiar set of initials, our regular dictionaries show it as an abbreviation. Which are the two real words lying nearest either side of the HQ alphagram? Coming before HQ is the alphagram HO, with corresponding real words **HO** and **HO**, both in W2, W3 and OED. And coming after HQ is the alphagram HS, with corresponding real words **SH** and **HS**. Regular readers will be aware that W3 shows an S plural form for all 26 letters.

The last real-word alphagram varies, depending on the dictionary consulted. Some collegiate size dictionaries list the word YU (a type of jade), corresponding to the alphagram UY. Further towards the final alphagram, the word WY (the letter Y) corresponds to the alphagram WY, and appears in W3, W2 and OED. But there is a genuine word, albeit obsolete, corresponding to the final alphagram YZ – it is **ZY**, which the OED lists as an early Middle English form of the definite article 'the'.

3-letter Isograms

Things become a bit more interesting when investigating alphagrams of three-letter isograms. There are 15,600 ways of selecting three different letters (=26 x 25 x 24), and these are represented by 2600 different alphagrams (=15,600 divided by 3 x 2). The first alphagram is ABC, and the last is XYZ. The midpoint of these 2600 alphagrams lies between positions 1300 (FHS) and 1301 (FHT).

The first alphagram ABC corresponds to the real words **CAB** and **BAC**. The former is a familiar word needing no definition, but the latter only appears in the OED (a shortened form of the casino game 'baccarat', as well as a type of French boat) and also in *Chambers Dictionary* (as a

shortened form of ‘baccalaureate’, a type of degree).

Which real words have alphagrams lying nearest to the two alphagrams adjacent to the midpoint? Coming a short way before the alphagram FHS is FHO, from the real word **FOH** (an exclamation in both W3 and OED). And coming some way after the alphagram FHT is FIK, corresponding to the word **KIF** (a term of approval, according to the OED; and a state of dreamy tranquillity, according to W3).

One of the last alphagrams corresponding to a real word is UWZ, from the word **WUZ** (a colloquial form of ‘was’, shown in the OED). But the very last alphagram XYZ corresponds to **ZYX** (a Middle English form of ‘six’, according to the OED).

4-letter Isograms

Things become more interesting still when investigating alphagrams of four-letter isograms. There are 358,800 ways of selecting four different letters (=26 x 25 x 24 x 23), and these are represented by 14,950 different alphagrams (=358,800 divided by 4 x 3 x 2). The first alphagram is ABCD, and the last is WXYZ. The midpoint of these 14,950 alphagrams lies between positions 7475 (DPQV) and 7476 (DPQW).

Checking W3, the first real-word alphagram is ABCH, corresponding to **BACH** (a shortened form of ‘bachelor’). But the OED improves on this with ABCE, corresponding to **BACE** (a blow or drubbing).

Which real words have alphagrams lying nearest to the alphagram midpoint? I think that the nearest real-word alphagram coming before DPQV is DOYZ, which corresponds to **DOZY**. And the nearest real-word alphagram coming after DPQW is DPSU, which corresponds to **DUPS** (opens), **PUDS** (puddings) and **SPUD** (a potato).

One of the last alphagrams corresponding to a real word is TUYZ, from the word **YUTZ** (a foolish person, according to the collegiate-sized *Collins English Dictionary*). But closer to the very end of the alphagrams is TXYZ, corresponding to **ZYXT** (a Middle English form of the verb ‘see’, according to the OED).

5-letter Isograms

Onwards and upwards to the alphagrams of 5-letter isograms. There are 7,893,600 ways of selecting five different letters (= 26 x 25 x 24 x 23 x 22), and these are represented by 65,780 different alphagrams (= 7,893,600 divided by 5 x 4 x 3 x 2). The very first alphagram is ABCDE and the last is VWXYZ. The midpoint of these 65,780 alphagrams lies between positions 32,890 (DEJUY) and 32,891 (DEJUZ).

The first alphagram corresponding to a real word is ABCEH (**BEACH**).

The two real-word alphagrams lying nearest before and after the midpoint are DEJUX (**JUDEX**, a judge, according to W3) and DEKNO (**KENDO**, a Japanese fencing sport using bamboo swords, according to W3 and OED). The former of these, DEJUX, is immediately adjacent to DEJUY, while the latter is quite some distance away from DEJUZ.
While the very last alphagram is VWXYZ, the nearest real-word alphagrams are a long way from this. A contender for being among the last real-word alphagrams is RSTUY (**RUSTY**). But the OED

trumps this with STXYZ (**ZYXST**, an obsolete spelling of 'sixth').

6-letter Isograms

Moving on to alphagrams of 5-letter isograms. There are 165,765,600 ways of selecting six different letters (= 26 x 25 x 24 x 23 x 22 x 21), and these are represented by 230,230 different alphagrams (= 165,765,000 divided by 6 x 5 x 4 x 3 x 2). The very first alphagram is ABCDEF and the last is UVWXYZ. The midpoint of these 230,230 alphagrams lies between positions 115,115 (CGIPQV) and 115,116 (CGIPQW).

The first real-word alphagram, lying only 3rd in the list of alphagrams, is ABCDEH (**BACHED**, lived as a bachelor, according to W3 and OED).

Two real-word alphagrams lying closely before and after the midpoint are CGIORS (**CORGIS**) and CHIKNS (**CHINKS**). But quite a bit closer to the midpoint than CHIKNS is CGIRSU (**UGRICS**, members of the Ural-Altaic peoples, from the OED).

Probably the last of the real-word alphagrams is PRSTUY (**UPRYST**, an old form of 'upriseth', itself an old form of the verb 'uprise', according to *Chambers Dictionary*).

Summary

Numbers, alphagrams and words mentioned in this article and the earlier article (about 7-letter alphagrams and words) are summarised in the table below – but only those words findable in regular dictionaries (W3, OED and Chambers).

Alphagrams of isograms						
Number of letters	**2**	**3**	**4**	**5**	**6**	**7**
Number of n-letter sets	650	15,600	358,800	7,893,600	165,765,600	3,315,312,000
Number of alphagrams	325	2,600	14,950	65,780	230,230	657,800
Theoretical midpoint - position(s) & alphagram(s)	163 HQ	1,300 FHS 1,301 FHT	7,475 DPQV 7,476 DPQW	32,890 DEJUY 32,891 DEJUZ	115,115 CGIPQV 115,116 CGIPQW	328,900 CDHNRUY 328,901 CDHNRUZ
First word's alphagram	AB	ABC	ABCE	ABCEH	ABCDEH	ABCDEHN
First word(s)	**AB, BA**	**BAC, CAB**	**BACE**	**BEACH**	**BACHED**	**BANCHED**
Alphagram for nearest word before midpoint	HO	FHO	DOYZ	DEJUX	CGIORS	CDHMORU
Nearest word before midpoint	**HO, OH**	**FOH**	**DOZY**	**JUDEX**	**CORGIS**	**MURDOCH**
Alphagram for nearest word after midpoint	HS	FIK	DPSU	DEKNO	CGIRSU	CDHORSU
Nearest word after midpoint	**HS, SH**	**KIF**	**DUPS, PUDS, SPUD**	**KENDO**	**UGRICS**	**SCHROUD**
Last word's alphagram	YZ	XYZ	TXYZ	STXYZ	PRSTUY	NORSTUY
Last word	**ZY**	**ZYX**	**ZYXT**	**ZYXST**	**UPRYST**	**SUNTORY**

ALPHAGRAMMATIC ISOGRAMS, PART III: 8-15 LETTERS

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In two previous *Interim* articles, I've explored the alphagrams of isograms having from 2 to 7 letters. Definitions of the terms alphagram and isogram, and relevant background material, were in the first of the two articles. This third article explores aspects of alphagrams of isograms of length 8 to 15 letters. At these kinds of lengths, there are many isograms which are hyphenated or spelled as two-word terms, but I am choosing to ignore these. However, readers could research these and they could form the basis of a later article. But for this article, all words will be spelled solidly and taken from regular printed dictionaries.

8-letter Isograms

There are 62,990,928,000 (almost 63 billion) ways of selecting eight different letters (= 26 x 25 x 24 x 23 x 22 x 21 x 20 x 19), and these are represented by 1,562,275 different alphagrams (= 62,990,928,000 divided by 8 x 7 x 6 x 5 x 4 x 3 x 2). The very first alphagram is ABCDEFGH and the last is STUVWXYZ. The midpoint of these 1,562,275 alphagrams lies at position 781,138 (BHIMQSTW).

The first real-word alphagram is ABCDEFLO (**BOLDFACE**).

The two real-word alphagrams lying nearest before and after the midpoint are BHIMORTU (**BOTHRIUM**, part of a tapeworm, according to W3) and BHINOPSU (**UNBISHOP**, to deprive of the office of bishop, according to W2 and the OED).

While the very last alphagram is STUVWXYZ, the nearest real-word alphagrams are a long way from this. A contender for being among the last real-word alphagram in our familiar dictionaries is MNORSTUY (**UNSTORMY**, listed in both W2 and the OED). However, NOPRSTUY can be found in the word **UNSPORTY**, which appears only in a quote dated 2010 in the OED. At the main entry PODGY is this: "A pale, unsporty lad with a tendency to podginess, Paul was no teenage Adonis."

9-letter Isograms

There are 1,133,836,704,000 (over 1 trillion) ways of selecting nine different letters (= 26 x 25 x 24 x 23 x 22 x 21 x 20 x 19 x 18), and these are represented by 3,124,550 different alphagrams (= 1,133,836,704,000 divided by 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2). The very first alphagram is ABCDEFGHI and the last is RSTUVWXYZ. The midpoint of these 3 million plus alphagrams is between positions 1,562,275 (BEGOPQSTW) and 1,562,276 (BEGOPQSTX).

The first real-word alphagram is ABCDEFIKL (**BACKFIELD**, the football players whose positions are behind the line of scrimmage, according to W3 and the OED).

The two real-word alphagrams lying nearest before and after the midpoint are BEGNORSTU (**BURGONETS**, 16th century helmets, according to W3 and the OED) and BEHIKLMTU (**THUMBLIKE**, listed in W2).

While the very last alphagram is RSTUVWXYZ, the nearest real-word alphagram is a long way from this. A contender for being among the last real-word alphagram is KLMOPRSUW (**SLUMPWORK**, work done roughly, listed in W2).

10-letter Isograms

There are 19,275,223,968,000 (over 19 trillion) ways of selecting ten different letters (= 26 x 25 x 24 x 23 x 22 x 21 x 20 x 19 x 18 x 17), and these are represented by 5,311,735 different alphagrams (= 19,275,223,968,000 divided by 10 x 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2). The very first alphagram is ABCDEFGHIJ and the last is QRSTUVWXYZ. The midpoint of these 5 million plus alphagrams is at position 2,655,868 (BDFGHLPRXZ).

The first real-word alphagram is ABCDEFIKLS (**BACKFIELDS**, courtesy of W3 and the OED).

The two real-word alphagrams lying nearest before and after the midpoint are BDELMNOTUW (**TUMBLEDOWN**, ramshackle, from W3) and BDGIKMNOSU (**SUBKINGDOM**, a taxonomic category below kingdom, from W3 and the OED).

The very last alphagram is QRSTUVWXYZ, but the nearest real word alphagram I can find is INOQRSTUWY (**QUINSYWORT**, a Eropean herb, also called ‘squinancy’, according to W2).

11-letter Isograms

The numbers go on getting ever larger. There are 308,403,583,488,000 (over 300 trillion) ways of selecting eleven different letters (= 26 x 25 x 24 x 23 x 22 x 21 x 20 x 19 x 18 x 17 x 16), and these are represented by 7,726,160 different alphagrams (= 19,275,223,968,000 divided by 11 x 10 x 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2). The very first alphagram is ABCDEFGHIJK and the last is PQRSTUVWXYZ. The midpoint of these 7 million plus alphagrams is between positions 3,863,080 (BCFHKLMOQUW) and 3,863,081 (BCFHKLMOQUX).

The first real-word alphagram is ABCDEFGHIKLT (**BACKLIGHTED**, courtesy of W3).

The two real-word alphagrams lying nearest before and after the midpoint are BCEINOPRSUV (**SUBPROVINCE**, part of a province, from W2 and the OED) and BDEFILNORSW (**BROWNFIELDS**, tracts of land that have been developed for industrial purposes, polluted, and then abandoned, according to the OED).

The very last alphagram is PQRSTUVWXYZ, but the nearest real word alphagram I can find is GHILNPRSTUY (**UNSPRIGHTLY**, listed in W2).

12-letter Isograms

There are 4,626,053,752,320,000 (over 4 quadrillion) ways of selecting twelve different letters (= 26 x 25 x 24 x 23 x 22 x 21 x 20 x 19 x 18 x 17 x 16 x 15), and these are represented by 9,657,700 different alphagrams (= 4,626,053,752,320,000 divided by 12 x 11 x 10 x 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2). The very first alphagram is ABCDEFGHIJKL and the last is OPQRSTUVWXYZ. The midpoint of these almost 10 million alphagrams is between positions 4,828,850 (BCDGIKNPRTVXY) and 4,828,851 (BCDGIKNPRTVXZ).

The first real-word alphagram is ABCDEGHLNORU (**BLEACHGROUND**, ground which has been bleached white, listed in W2).

The two real-word alphagrams lying nearest before and after the midpoint are BCDEIKMNRSTU (**DUMBSTRICKEN**, struck dumb, listed in *Collins English Dictionary*) and BCEFHLNORSUW (**BUNCHFLOWERS**, tall herbs found in the southern and eastern US, according to W3).

The very last alphagram is OPQRSTUVWXYZ, but the nearest real word alphagram I can find is EILNOPRSTUVY (**UNSPORTIVELY**, meaning the same as unsportingly, listed in the *Random House Unabridged Dictionary*).

13-letter Isograms

There are 64,764,752,532,480,000 (almost 65 quadrillion) ways of selecting thirteen different letters (= 26 x 25 x 24 x 23 x 22 x 21 x 20 x 19 x 18 x 17 x 16 x 15 x 14), and these are represented by 10,400,600 different alphagrams (= 64,764,752,532,480,000 divided by 13 x 12 x 11 x 10 x 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2). The very first alphagram is ABCDEFGHIJKLM and the last is NOPQRSTUVWXYZ. The midpoint of these 10 million plus alphagrams is between positions 5,200,300 (AOPQRSTUVWXYZ) and 5,200,301 (BCDEFGHIJKLMN).

By the time we get to 13 letters, there are very few isograms, probably only a few dozen. The first real-word alphagram is ABCDEGIKLNOPR (**PREBLOCKADING**, from the verb 'preblockade', which appears in the *Random House Unabridged Dictionary*).

The two real-word alphagrams lying nearest before and after the midpoint are AEILMNORSTUVY (**SEMIVOLUNTARY**, listed in W2) and CDEGHINOPRTUY (**UNCOPYRIGHTED**, listed in W2 and the OED). Notice just how far apart these two adjacent real-word alphagrams are, reflecting the paucity of 13-letter isograms.

The very last alphagram is NOPQRSTUVWXYZ, but the nearest real word alphagram I can find is CEILMNOPSTUVY (**CONSUMPTIVELY**, in a way which is distinctive of the disease consumption, listed in W3 and the OED). Notice how this alphagram is only just a shade past the midpoint.

14-letter Isograms

There are 841,941,782,922,240,000 (almost 842 quadrillion) ways of selecting fourteen different letters (= 26 x 25 x 24 x 23 x 22 x 21 x 20 x 19 x 18 x 17 x 16 x 15 x 14 x 13), and these are represented by 9,657,700 different alphagrams (= 841,941,782,922,240,000 divided by 14 x

13 x 12 x 11 x 10 x 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2). Notice how the number of different 14-letter alphagrams is less than the number of different 13-letter alphagrams, and is in fact the same as the number of different 12-letter alphagrams. The numbers of different length alphagrams are symmetrical around the length 13. Thus, 14 and 12 are the same, 15 and 11 will be the same, and so on all the way to 25 and 1 – in this last case, there will be 26 different alphagrams of length 25 letters, and 26 different alphagrams of length 1 letter.

The very first alphagram is ABCDEFGHIJKLMN and the last is MNOPQRSTUVWXYZ. The midpoint of these almost 10 million alphagrams is between positions 4,828,850 (AEFHJLPQRSTUXZ) and 4,828,851 (AEFHJLPQRSTUYZ). Notice, too, that the midpoint positions are the same as for those of the 12-letter alphagrams, but the alphagrams at those positions are different from the 12-letter ones.

The first real-word alphagram is ABCDEHIMNORXYZ (**BENZHYDROXAMIC**, a chemical term, listed in W2).

Things get interesting as we search for the real-word alphagrams nearest either side of the midpoint. The nearest real-word alphagram occurring before the midpoint is ACHIMNOPRSTUYZ (**SCHIZOTRYPANUM**, a genus of protozoans, listed in W3 and W2). As far as I can determine, there are no real-word alphagrams occurring after the midpoint, the first length for which this shortfall has occurred. So ACHIMNOPRSTUYZ (SCHIZOTRYPANUM) is also the last of the real-word alphagrams.

15-letter Isograms

There are 10,103,301,395,066,900,000 (just over 10 quintillion) ways of selecting fifteen different letters (= 26 x 25 x 24 x 23 x 22 x 21 x 20 x 19 x 18 x 17 x 16 x 15 x 14 x 13 x 12), and these are represented by 7,726,160 different alphagrams (=10,103,301,395,066,900,000 divided by 15 x 14 x 13 x 12 x 11 x 10 x 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2). This is the same as the number of different 11-letter alphagrams. The very first alphagram is ABCDEFGHIJKLMNO and the last is LMNOPQRSTUVWXYZ. The midpoint of these 7 million plus alphagrams is between positions 3,863,080 (ADEGIJPQRTUWXYZ) and 3,863,081 (ADEGIJPQRTVWXYZ).
Notice, too, that the midpoint positions are the same as for those of the 11-letter alphagrams, but the alphagrams at those positions are different from the 11-letter ones.

The first real-word alphagram is ABCEGHILNOPRTUY (**UNCOPYRIGHTABLE**, listed in W2 and OED).

The nearest real-word alphagram occurring before the midpoint is ACDEGHILMOPRSTY (**DERMATOGLYPHICS**, the study of skin markings such as fingerprints, in W3 and the OED).

As with 14-letter alphagrams, I don't think that there are any real words occurring after the alphagram midpoint. So, ACDEGHILMOPRSTY (**DERMATOGLYPHICS**) is also the last of the real-word alphagrams.

Summary

Numbers, alphagrams and words mentioned in this article are summarised in the table below – but only those words findable in regular dictionaries (W3, OED and Chambers).

Alphagrams of isograms

Number of letters, n	8	9	10	11	12
Number of n-letter sets	62,990,928,000	1,133,836,704,000	19,275,223,968,000	308,403,583,488,000	4,626,053,752,320,000
Number of alphagrams	1,562,275	3,124,550	5,311,735	7,726,160	9,657,700
Theoretical midpoint - position(s) & alphagram(s)	781,138 BHIMQSTW	1,562,275 BEGOPQSTW 1,562,276 BEGOPQSTX	2,655,868 BDFGHLPRXZ	3,863,080 BCFHKLMOQUW 3,863,081 BCFHKLMOQUX	4,828,850 BCDGIKNPRTVXY 4,828,851 BCDGIKNPRTVXZ
First word's alphagram	ABCDEFLO	ABCDEFIKL	ABCDEFIKLS	ABCDEFGHIKLT	ABCDEGHLNORU
First word(s)	**BOLDFACE**	**BACKFIELD**	**BACKFIELDS**	**BACKLIGHTED**	**BLEACHGROUND**
Alphagram for nearest word before midpoint	BHIMORTU	BEGNORSTU	BDELMNOTUW	BCEINOPRSUV	BCDEIKMNRSTU
Nearest word before midpoint	**BOTHRIUM**	**BURGONETS**	**TUMBLEDOWN**	**SUBPROVINCE**	**DUMBSTRICKEN**
Alphagram for nearest word after midpoint	BHINOPSU	BEHIKLMTU	BDGIKMNOSU	BDEFILNORSW	BCEFHLNORSUW
Nearest word after midpoint	**UNBISHOP**	**THUMBLIKE**	**SUBKINGDOM**	**BROWNFIELDS**	**BUNCHFLOWERS**
Last word's alphagram	NOPRSTUY	KLMOPRSUW	INOQRSTUWY	GHILNPRSTUY	EILNOPRSTUVY
Last word	**UNSPORTY**	**SLUMPWORK**	**QUINSYWORT**	**UNSPRIGHTLY**	**UNSPORTIVELY**

Alphagrams of isograms

Number of letters, n	13	14	15
Number of n-letter sets	64,764,752,532,480,000	841,941,782,922,240,000	10,103,301,395,066,900,000
Number of alphagrams	10,400,600	9,657,700	7,726,160
Theoretical midpoint - position(s) & alphagram(s)	5,200,300 AOPQRSTUVWXYZ 5,200,301 BCDEFGHIJKLMN	4,828,850 AEFHJLPQRSTUXZ 4,828,851 AEFHJLPQRSTUYZ	3,863,080 (ADEGIJPQRTUWXYZ) 3,863,081 ADEGIJPQRTVWXYZ
First word's alphagram	ABCDEGIKLNOPR	ABCDEHIMNORXYZ	ABCEGHILNOPRTUY
First word(s)	**PREBLOCKADING**	**BENZHYDROXAMIC**	**UNCOPYRIGHTABLE**
Alphagram for nearest word before midpoint	AEILMNORSTUVY	ACHIMNOPRSTUYZ	ACDEGHILMOPRSTY
Nearest word before midpoint	**SEMIVOLUNTARY**	**SCHIZOTRYPANUM**	**DERMATOGLYPHICS**
Alphagram for nearest word after midpoint	CDEGHINOPRTUY	none	none
Nearest word after midpoint	**UNCOPYRIGHTED**	**none**	**none**
Last word's alphagram	CEILMNOPSTUVY	ACHIMNOPRSTUYZ	ACDEGHILMOPRSTY
Last word	**CONSUMPTIVELY**	**SCHIZOTRYPANUM**	**DERMATOGLYPHICS**

As in the previous two articles, my thanks to Nina Warwick (of Peterborough, England) who did sterling work helping to identify the midpoint alphagrams for most of the different word lengths.

Footnote

Throughout the three articles, I've made the point that the words offered would all be spelled solidly (ie no hyphens, no apostrophes, no multi-word terms) and taken from regular printed dictionaries. However, various improvements to the words offered here can be found in other printed sources and on the internet. Here are a few:

DUCHNOW: The 7-letter CDHNOUW comes slightly nearer to the midpoint than that for MURDOCH. DUCHNOW is a village in Poland, listed in Wikipedia.

ZOPYRUS: The 7-letter alphagram OPRSUYZ comes later than that for SUNTORY. ZOPYRUS is the proper name of a Persian nobleman who lived in the 6th century BC, and can be found in Wikipedia.

OWENSBURG: The 9-letter alphagram BEGNORSUW lies slightly nearer to the midpoint than that for BURGONETS, offered previously. OWENSBURG is the name of a community in Indiana, and can be found in *The Times Index Gazetteer*, as well as in Wikipedia.

BODYFLIGHT: The 10-letter alphagram BDFGHILOTY lies slightly nearer to the midpoint than that for TUMBLEDOWN. BODYFLIGHT is a skydiving term, described extensively in Wikipedia.

FRESCOBALDI: The 11-letter alphagram ABCDEFILORS comes earlier than that for BACKLIGHTED. FRESCOBALDI is the name of a prominent noble family that has been involved in the history of Tuscany since the Middle Ages. The name appears in *Webster's Biographical Dictionary*, and can also be found in Wikipedia.

COLINSBURGH: The 11-letter alphagram BCGHILNORSU lies slightly nearer to the midpoint than that for BROWNFIELDS. COLINSBURGH is the name of a village in Scotland, and can be found in *The Times Index Gazetteer*, as well as in Wikipedia.

FALCONBRIDGE: The 12-letter alphagram ABCDEFGILNOR comes earlier than that for BLEACHGROUND. Wikipedia provides it with various different definitions, one of which is the name of a community in Ontario, Canada.

FAULCONBRIDGE: The 13-letter alphagram ABCDEFGILNORU comes earlier than that for PREBLOCKADING. FAULCONBRIDGE is the name of a village in Australia, and can be found in *The Times Index Gazetteer*, as well as in Wikipedia.

OUTSPREADINGLY: The 14-letter alphagram ADEGILNOPRSTUY comes cnearer to the midpoint than that for SCHIZOTRYPANUM. Because of the very few 14-letter isograms, it is also the last real-word alphagram of this length. OUTSPREADINGLY can be found in various online dictionaries, such as Wikipedia, Wordnik, WordSense and YourDictionary. They all provide a definition such as "in a way that outspreads". The word also appears in Herman Melville's *Moby Dick*. Chapter 134 contains this sentence: "The mast-heads, like the tops of tall palms, were outspreadingly tufted with arms and legs."

As ever, any corrections, improvements, and comments are welcomed. Please send them to the editors.

THE WONDERFUL WORLD OF PUN COMPETITIONS

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Even people who love puns are often not aware that there are a wide variety of pun competitions and shows to enjoy going on throughout the U.S. and around the world. Indeed, the O. Henry Pun-Off has been presented annually for more than four decades, and The PUNDERDOME® in New York recently celebrated its 10 year anniversary with more than 120 monthly shows—facts that drive most every lifelong pun lover who newly discovers them to exclaim, ruefully, something like "this is awesome—how could I not have known about this before?" as did, certainly, this author. All those years of potential pun bliss, wasted! Well, paying it forward, I'm here to tell you about pun competitions and help you get your pun life back on track, with the hope that pun competitions will enrich your life as much as they have mine.

Since (very belatedly) discovering the concept in mid-2019, the author has jumped in with all six feet, so to speak, and, although still a relative novice compared to many, has enjoyed participating in upwards of 25 pun contests and shows including numerous episodes of the aforementioned O. Henry Pun-Off and The PUNDERDOME, as well as Pun DMV at the Washington DC Improv; Capitol PUNishment out of Sacramento, California; the U.K. Pun Off and its offshoot OutPUNched; Punnit, a British podcast; and the PunIntended PunSlam out of Seattle.

Previous to the COVID pandemic, pun competitions had long been most frequently associated with live shows in comedy clubs and similar locations. More recently, the resulting venue closures have led to shows transferring to, and/or new shows emerging in a Zoom-based or podcast format, and thereby, as a positive side effect, removing geographic and travel limitations and serving to "cross pollinate" pun show participation around the world. Indeed, it is unlikely that pun enthusiasts like the author would have otherwise been able to have the pleasure of meeting and punning with like-minded people from all over the U.S. and the world and participating in as many different events during normal circumstances.

Types of pun competitions

Although each show contains some unique elements, pun competitions roughly come in two broad categories, which I will informally label "Soliloquy" and "Slingers."

The Soliloquy style is most often a painstakingly pre-written, well-rehearsed, very polished one-person monologue. The presenter usually picks their own pun category topic such as Vegetables, or Elements, or Dogs, and makes puns on upwards of 40-50 words or more in that category over the course of, depending on the venue, 2-4 minutes or so, with the puns hung on some kind of a basic story framework.

The Slingers style rounds are more improvisational and entail some kind of multiple player back and forth around an assigned topic. They can differ a great deal venue to venue, with variables including number of people involved, performance time, preparation time allowed and more.

They range from completely off the cuff— "your topic is 'Cheese,' go!"—to getting a couple of minutes think time, to getting several days writing time. It could be two people going back and forth one pun at a time, or several around the circle, or each person in turn presenting everything they came up with in the allotted think period. It could be timed with a 2 or 5 or 10 minute limit or it could go on and on until someone can't think of a pun and gets counted out—and at the high end of competition that can sometimes go on for 30 minutes or more. Sometimes you're out right away and sometimes you get some number of strikes. In short, while there are many variations, the common denominators in a Slingers style pun competition are mostly the ideas of a common topic and having a group dynamic of some kind, vs. the Soliloquy one person, chosen topic monologue presentation.

The Soliloquy

While the work of this author, as a relative novice, might not yet reach the highest standards that the art form can attain, presented now for your amusement is an example of an original two minute presentation in the Soliloquy style, which the author first performed at a virtual PUNDERDOME in mid-2021, with the topic "Clothing."

These pun soliloquies, of course, are meant to be actively performed live, and lose something when being read remotely and passively on the page. Will "underwear" be smoothly morphed into "on-the-way-here" as successfully in the reader's head as when it is given a painstakingly rehearsed pronunciation punch by the punner?[1] Not likely. But note that if one makes an appropriately strained facial expression commensurate to the gargantuan challenge of the language twisting effort, extra laughs can be achieved.

Hi everybody. So, my lawyer says that before I start I need to give all of UNIFORMal notice—kind of a listeners adVISORy kinda thing.

He says, "Look, you got people enjoying a NIGHT GOWN really well and suddenly this CLOTHES-minded son of a BRITCH'S going to get all up in their FEZ with an unSUITable barrage of puns. That could cause some real disDRESS."

Well, KIMONO, I'm SARI, but hey, cut me some SLACKS. See, OVERALLs this is a category that is CHAPEAUs to be good for punning, and one could get a lot out HABIT I guess. Unfortunately, though, my puns, well they kinda SOCK. And that LEAFs me RACKed with KILT. Because I like pun people, I think they're a very CULOTTE, so I hope that this doesn't turn out to be like an epic VEIL.

But hey, don't worry, I got SHOES covered, I'll DRY CLEANING a decent pun or two out for your amusement. But there is no guaranTEE here, I'm SHAWL you understand that even the smallest bit of entertainment value is far from a SHIRT thing.

OK, now that I've set the bar really LOAFER expectations, I promise I got some good puns coming soon, any minute — in fact, I swear they are UNDERWEAR right now!

[1] Hint: Something like "On-duh-way-er" perhaps.

But making up puns is hard. He knows that. CHINOs that. Everybody knows that. It's not like shooting fish in APPAREL.

So maybe please say a SOMBRERO something for me, about how, though I wish I'd written a really strong CLOTHING LINE to end with, but of CORSET eluded me.

So I'll end with what I think is a FITTING ROOMination. I often wonder, when you're on a Zoom call with work, what do you think your boss is wearing? DEPENDS.

The Slingers Style

While each Soliloquy competitor will have a different, self-selected topic, the Slingers style, regardless of the amount of relative preparation or other variables involved, usually showcases the competitors each digging into a common topic assigned by the MC. Often, the resulting dialog can develop into a vaguely conversational back and forth, with competitors playing off each other and building on or commenting on prior puns or other aspects of the current proceedings. Depending on the vibe of the show, complimenting an opponent might be good form (Countries: "You know who's a good punner? USA good punner!"), or engaging in mild (or not so mild) dissing (Instruments: "Sorry, UKE are CYMBALly not very good at this!")

As an illustration, here are some puns that might be slung if the category were Cities, with a back and forth based on a number of Slingers-type events I've been in and pun puzzles I've written (more on those later). The color coding denotes the relative offerings of the two hypothetical punners involved.

I will start with a tribute to my home state as well as my favorite fruit by noting that ANNAPOLIS a tasty snack.

Indeed it is, and speaking of which, you know I'm from the Big Apple, but do you know where the MINNEAPOLIS?

No, but would I find out if I STUTTGART at your house?

I have so many answers to that I can only use one but I wish I could HOUSTON.

Wow, that was pretty bad—you set the BARCELONAow.

I think maybe your ego is a little oVERSAILLESized.

Well I do have a TAIPEI personality.

Well that explains why you were messing with me when we were playing poker earlier. Did you really expect me to believe that a PARIS better than a full house?

Sorry, I was being distracted by my favorite John Cougar Mellencamp song — a little ditty about Jack and CHEYENNE. [Sings]

Classic rock is fun, but I prefer Rush. Yes, Kansas; you know, PRAGUE rock.

I didn't hear what you said — that other TUNIS really stuck in my head.

Yeah, that can be really HANOIing.

I can't wait to go to concerts again, though. VENICE that going to happen, do you think?

Soon hopefully; but remember, when you go, wearing DAMASCUS preferred.

I will. You know, I also miss baseball. Do you like the old Yankees players—Mickey Mantle, Lou Gehrig, BEIRUT?

Yeah, let's catch a game! TELLURIDE to meet me out front.

This can go on for upwards of fifteen or more delightful—or, as some people might describe it, excruciating—minutes.

Puns in a quiz format

Switching it around, pun competitions sometimes take a quiz format, engaging the larger audience in a different manner, such as in instances of the Rogue Riddle game that the O. Henry group has been doing for many years. Likewise, a topic like cities can be a juicy, multi-syllabic pun work-out in this format as well, with clues taking a fill-in-the-blank or crossword puzzle-type approach[2]. So, looking at some ones I've written in the past, a nice pun puzzle might include clues such as the ones below, each one intended to elicit a punned city:

1. More than 100 degrees C.
2. Scooby-Doo is my favorite. Flintstones is a good one too.
3. What Captain Kirk's phaser might give you.
4. Spouses might not want you to go out with other people: They say no BLANK!
5. What fans might have asked if they'd wondered whether the Yankee's HOF catcher of legend and pitcher of malapropisms could take the pressure: "_____ stand the gaff?"
6. What the *Six Million Dollar Man* actor might say to his mother if she forgot his first name.
7. I want to see my holiday gifts early. Do I get BLANK little?
8. What you can do if the car isn't rising fast enough.
9. If Tattoo from *Fantasy Island* saw a jet overhead, he might say BLANK!

[2] Unlike crossword puzzles however, looking at a list of cues—in this case, cities—for inspiration is not frowned upon. After all, it is not knowledge but the ability to manipulate the word that is the *raison d'etre* of the exercise.

10. Why your pants might fall down.
11. How you got to the top of the mountain.
12. Why did it take me like 45 minutes to run a mile? BLANK!
13. What you'd be doing if you were going to multiply a number by two.

Look for pun shows near you

You can readily find clips from most of the pun shows mentioned on Facebook or You Tube or by Googling the name of the show. However, as live venues hopefully continue to re-open, be sure to look for live pun shows at your local comedy club or similar venue. If you don't see one, maybe call and suggest the concept. Besides frequently drawing sell-out crowds, the performers all pretty much work for free—so the shows can quickly become a club owner's dream and a pun fan's dream as well.

# # #

For the Pun Puzzle answers, see "Answers and Solutions" near the end of this issue.

LIVING THE LIFE OF WRYLY

Another Potpourri of Miscellaneous Linguistic Humor

DON HAUPTMAN
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Several years ago, I attended a talk by an authority who repeatedly mispronounced *biopic*. He uttered the word as if it rhymed with *myopic*. After an audience member expressed puzzlement, several people (I was one) shouted a correction. What was the speaker's field of expertise? Screenwriting! He was giving a presentation on filmmaking. So the gaffe was especially embarrassing and ironic. Perhaps the error suggests that he was also a bit . . . myopic?

Speak of the revel! This is another gallimaufry of items that don't qualify for articles devoted to my major rubrics: puns, spoonerisms, mixed metaphors, redundancies, and bloopers. I hope you relish something in this varied selection of "brain pleasers."

Last spring, I was at a ritzy café here in Manhattan. Orders were delivered to outdoor tables by waiters who found the right tables via consecutive numbers printed on the receipts. In this case, it was "86." It would have been both confusing and amusing had the server called out the number, because, of course, "86" is diner lingo for "Cancel the order." (The origin of the expression is unknown, though there are several speculations.)

"Pause fillers" can be irritating. These are the words some people automatically, and often unconsciously, insert in their speech when they are hesitating or stalling for time. Among the most common are "I mean" and "You know." I imagine a conversation where one person says: "I mean" and "you know" and his interlocutor replies: "I know! You mean. . . ."

One of my own pet peeves is the misuse of compound adjectives (also called phrasal adjectives), such as *for-profit firm* and *well-known actor*. In most cases, such phrases require hyphens, but they're often omitted. This complaint isn't mere pedantry; the hyphen clarifies the meaning and its omission can result in ambiguity, misinterpretation, or unintended humor. In an ad, I spotted "early bird pricing." Sans hyphen, could that refer to a pet shop? Another example: In the phrase "small-business owners," the hyphen confirms that the proprietors are not of short stature!

As a language enthusiast, I occasionally deploy unfamiliar words. Early in my writing career, I followed the familiar commandment: "Use simple words." That makes sense where clear communication is paramount. But I subsequently discovered that little-known words, such as *eleemosynary* and *panjandrum*, can be fun, as well as educational. So in appropriate situations, I casually insert sesquipedalian words. In a message to someone who was overwhelmed with work, I advised: "You need an amanuensis." Then, this coda: "A word that has, alas, faded into desuetude."In two consecutive issues of *Word Ways* (February and May 2016), I wrote briefly about "rhyming trios." These are often used to mock selected occupations, such as the dentistry procedures: "Drill, fill, bill." They're hard to find via online search, and I know of no one else who has collected them. But here are more examples I later encountered serendipitously:

"Pale, male, and Yale" describes the non-diverse culture of the State Department. "Eds, meds, and feds" is cited as a critique of dependence on government to come to the rescue. "The hook, the book, and the cook" is a formula for writers pitching ideas to publishers. (The "cook" is the author and his or her credentials.) "Crude, rude, and lewd" castigates humor, art, literature, and other media deemed objectionable. And "Name, blame, and shame" can apply to any kind of misbehavior.

Language issues constitute a continuing topic of contention, with disagreements often provoking hot disputes. The opposing camps are *prescriptivists*, who advocate rules of proper usage, and *descriptivists*, who simply report how language is used, with acceptability in effect determined by popularity. For more than four years, I wrote an online column on grammar and usage, so it's evident that I'm a prescriptivist. Well, most of the time.

Consider the word *mutual*. It's commonly used to refer to a third party ("our mutual friend"). Strictly speaking, however, it refers to something going on between *two* parties ("mutual affection"). "Whatever is *mutual* is reciprocal—it's directed by each toward the other," says language guru Bryan A. Garner.

What to do? Alternatives such as "shared friend" and "common friend" are clunky. My solution: "We plan to invite George, our mutual (not the correct word) acquaintance." Of course, this suggested tactic is in jest. After all, it would be particularly awkward in conversation.

I've noted a phenomenon that might be called "humor of the obvious." This term applies to an utterance—intentional, not a malapropism—where the amusement arises from the fact that it's jaw-droppingly self-evident.

For example, I sent a friend a note justifying my entitlement to a recent extravagant expenditure: "I'm retired. I've earned it. I've paid my dues. Full disclosure: The dues are metaphorical." In another exchange, when a name was mentioned, I morbidly quipped: "I once met him, but that was before he died." In still another situation, I cautioned that a certain action might damage the eyes, "which are useful organs."

Legendary comedian Mort Sahl predicted: "The future lies ahead." It was the title of his 1958 vinyl comedy album.

Googling "humor of the obvious," in quotes, generates only a dozen links, none with any analysis. Obviously (!), however, the concept could be expressed in other ways. Has anyone else made this observation?

A final thought: The above sorts of jokes bring to mind a popular expression: "It's a no-brainer." The meaning is clear. Still, it raises the puckish question: Shouldn't something obviously true or correct be called . . . a "brainer"?

ACKNOWLEDGMENT: I thought I had invented the article title, but online search turned up 20 matches for "Life of Wryly."

CARD DECK WORDS – TWO NEW RESULTS

MIKE KEITH

In an article in the August 2008 issue of *Word Ways* entitled "Card Deck Wordplay", Ross Eckler presents a variety of constructions using the thirteen names for the values in a deck of cards (ACE, TWO, THREE, FOUR, FIVE, SIX, SEVEN, EIGHT, NINE, TEN, JACK, QUEEN, KING). He exhibits an interlocking crossword grid that fits in a 9 x 10 rectangle (Figure 1a, below), and says that it "can possibly be improved". Indeed it can, as Figure 1b shows with a crossword that fits in a 9 x 9 square. This crossword's area of 81 is the smallest possible.

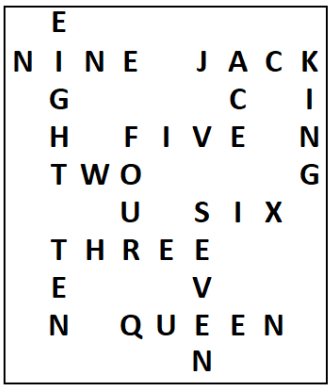


Fig. 1a

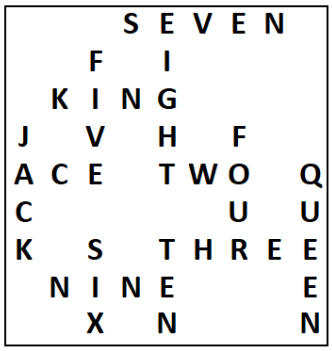


Fig. 1b

These words have a total of 52 letters – a remarkable coincidence since there are 52 cards in a standard deck. Eckler shows these words packed into a 13 x 4 rectangle but he does not give an *ordered* packing, in which each word touches, along a line at least one unit long, the previous word in the sequence. Below are three different ordered packings of these words in a 13 x 4. These grids also have the special property of being reentrant, which means that the last word (KING) touches the first (ACE), making the path through the words a closed loop. These three reentrant packings use different choices (NINE, TEN, and JACK) for the lone vertical word.

A	C	E	K	I	N	G	Q	U	E	E	N	N
T	W	O	T	H	R	E	E	J	A	C	K	I
F	O	U	R	S	E	V	E	N	T	E	N	N
F	I	V	E	S	I	X	E	I	G	H	T	E

A	C	E	K	I	N	G	Q	U	E	E	N	T
T	W	O	T	H	R	E	E	J	A	C	K	E
F	I	V	E	F	O	U	R	N	I	N	E	N
S	I	X	S	E	V	E	N	E	I	G	H	T

A	C	E	K	I	N	G	Q	U	E	E	N	J
T	W	O	T	H	R	E	E	F	O	U	R	A
S	E	V	E	N	S	I	X	F	I	V	E	C
E	I	G	H	T	N	I	N	E	T	E	N	K

UNIVOCALIC POEMS

WILL SHORTZ

Every year since 1982 I've helped run a program devoted to words and language, called the Wonderful World of Words, at Mohonk Mountain House, in New Paltz, N.Y. Part of the weekend is devoted to word games and puzzles, and one of the games is always a creative competition involving some sort of wordplay constraint.

Last November my challenge to the participants was to write a univocalic poem of up to eight lines, using only one vowel repeated as often as necessary. About 50 verses were submitted. I judged the entries on originality, naturalness of wording, poetic feeling, cleverness, and overall effect. Poetic devices such as rhyme, meter, and alliteration were welcome but not required.

Below are the entries that earned honorable mention, followed by the runner-up and winner — all worthy, I think, of being recorded for posterity.

In shining light with prism bright
Skis wild child, first in flight.
Twisting, tilting, twirling tight
Till winning is within his sight.
~*Todd Huttunen*

Chris did this big picnic.
His ziti stinks;
I'm liking his chili;
I miss his ribs.
~*Warren Chang*

Ad astra!
A star man calls.
Mars attacks!
Bastards.
Act fast and blast at last stand!
~*Kara Miranda*

Gypsy rhythm —
Myth? Hymn?
Synths sync,
Sly nymphs tryst,
Fly!
~*Jim Russell*

Picnic with siblings:
Childish fighting,
Chips in flight, spilt milk.
I sigh …
~*Judy Kelsen*

Mood: forlorn.
Hollow woods of low growth.
Bloodroot moon droops.
Soot bowls form tombs.
Throw off gloom!
Good morn'!
~*Pam Papish*

[A haiku about the United Nations' climate conference taking place in Glasgow]

World's too hot. Oh no!
C-O-2 doom loop now grows.
Scots host COP to slow.
=*Rich Lesser*

Old boss, old lord, now off.
Hobo now.
No spoon or bowl for food.
No cloth for comfort or comb for do.
So low, so hollow, so lost.
~*Sebastian Mostek*

[First runner-up]

Frigid night, chill wind,
It stings.
I sigh.
I shift, I flirt.
With hip tilt in miniskirt,
I highlight thrills in thigh-highs, fishing.
Bill, in his T-Bird: Hi! (Bill bit.)
I wink; I climb in; I sit.
~*Jenni M.G. Stephens*

[The winner, chosen because of its evocative image, humor, and rhymes]

'Tis night.
Skiff sits still.
I fish, I wish
I might find krill.
I mix stiff drink.
I sip, I sigh.
Fish isn't biting if I'm high.
~*Judy Raphael*

“INTERIM” TRANSDELETIONS AND TRANSADDITIONS

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Here are three definitions from Dave Morice’s book *The Dictionary of Wordplay*:

transdeletion	the deletion of a letter followed by the transposal of the remaining letters
transdeletion chain	a set of words formed by the successive transdeletion of a word to a single letter
transaddition	the addition of a letter to a word followed by the transposal of all the letters to make a new word

Strangely, Morice doesn’t define a transaddition chain, but by analogy with the definitions above, I suggest:

transaddition chain	a set of words formed by the successive transaddition of a word to make increasingly longer words, until no further words can be made

I decided to see what could be done regarding transdeletion and transaddition chains beginning with the word **interim**. With a transdeletion chain, if you can successively transdelete the starting word down to one letter, you will know you have been completely successful. But with a transaddition chain, you can never be sure whether some further transaddition exists or not.

Here are a couple of transdeletion chains beginning with **interim**, both easy to construct:

interim	**interim**
minter	**mitier**
inert	**merit**
tire	**mire**
tie	**rim**
it	**mi**
I	**I**

Transaddition chains offer more challenges. Should all words be spelled solidly or are hyphenated words allowed? Are terms of two or more words allowed? Are non-dictionary words and terms allowed? How widely can the net be cast when it comes to considering foreign place-names? As the criteria for allowability are eased, the lengths of transaddition chains can be increased.

Here is an **interim** transaddition chain using only solidly spelled words, with the longest word having 17 letters. All words can be found in at least one of the mainstream diction-aries OED, W2 and W3:

interim
triamine
demitrain
intermedia
intermediae
intermediate
indeterminate
interseminated
inadvertisement
inadvertisements
determinativeness

Increasing the length of an **interim** transaddition chain to 18 letters necessitates the use of two words from outside regular dictionaries. In the chain below**, tienopramine** is from Wiktionary, and **Septentrionalism** is from Wikipedia.

interim
triamine
antiprime
imperation
omniparient
tienopramine
impenetration
impenetrations
presentationism
Septentrionalism
presentationalism
presentationalisms

To increase the length of an **interim** transaddition chain to 19 letters, I've had to resort to a hyphenated word, a US place-name with its state-name, and a two-word biological name. Otherwise, the words can be found in at least one of the OED, W2 and W3.

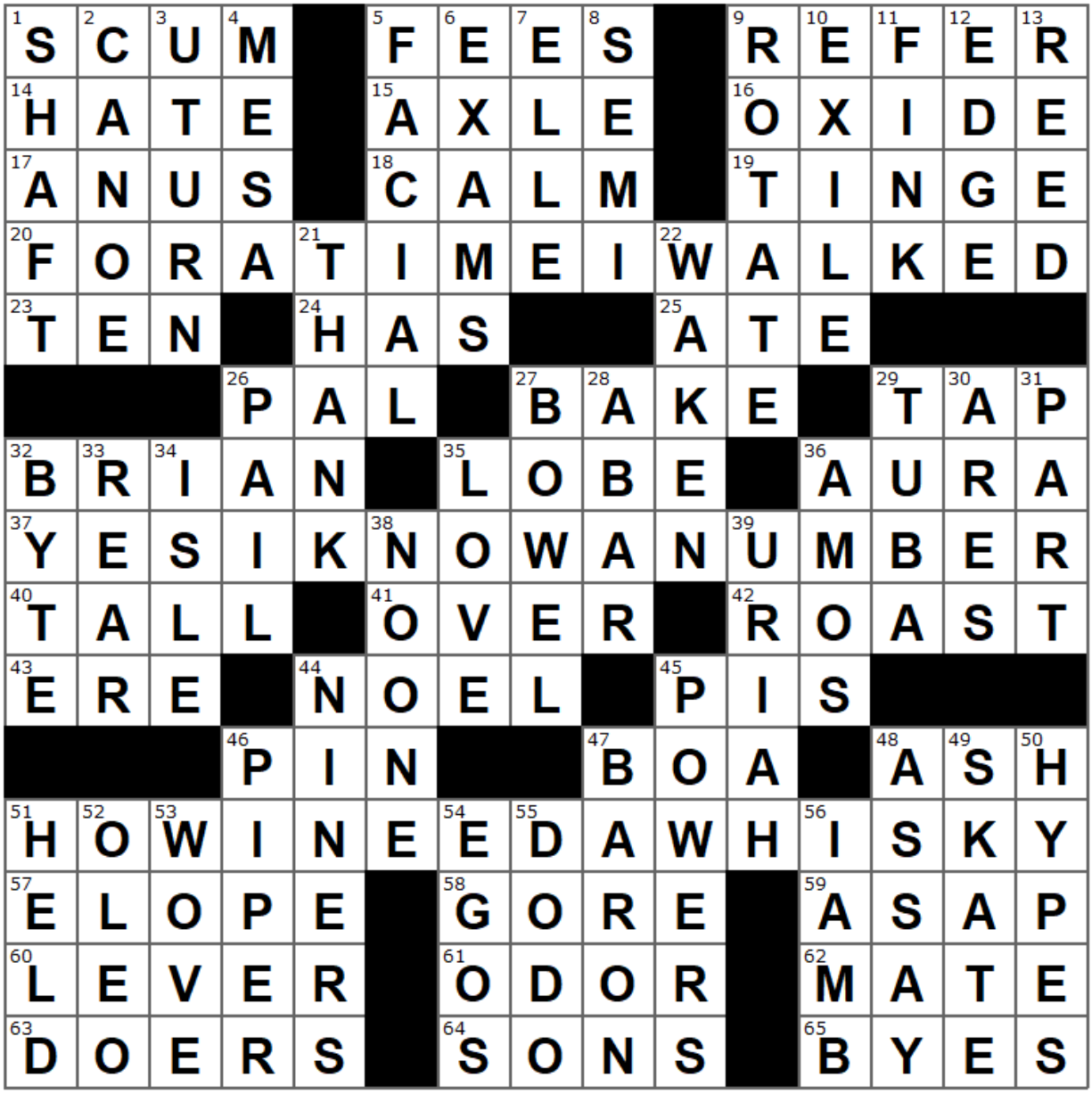
triamine
matriline
laminarite
antirealism
intraseminal
Trail, Minnesota
anti-Orientalism
nonmaterialistic
anticeremonialist
anticeremonialists
Ceromitia natalensis

Trail, Minnesota is described by Wikipedia as a city in Polk County, Minnesota, but with a population of only 46 in the 2010 census, I would be hard pushed to describe that as a city! **Ceromitia natalensis** is the genus and species name of a moth, and can be found on the website animaldiversity.org

Thus far, I've not been able to devise an **interim** transaddition chain where the final word (or term) is 20 or more letters long. Can it be done?

ANSWERS & SOLUTIONS

Mike Keith: A Pilish Puzzle



(continued on next page))

Mike Keith: Word-Rich Strings of Letters

The 32 answers in order**:**

LUCKS DUNEY LINKS LINEY LUCEY DUNKS DUCES DINEY
LINES DUCKY DICKS LICES LUNKS DINKS LICKY DUNKY
LUNES LINKY DINES LUCKY DICEY DUNES LUNKY DINKY
DICKY LUNEY DICES LICKS DUCEY LICEY LUCES DUCKS

Gregg Siegel:
The Pun Puzzle Answers:

1. BERLIN
2. KARTOUM
3. AUSTIN
4. DAYTON
5. CANBERRA
6. LIMA
7. TOPEKA
8. JAKARTA
9. DESPLAINES
10. TOULOUSE
11. UTRECT
12. OSLO
13. DUBLIN

BULLETIN BOARD

An Appeal to Continue Publication of a Journal of Recreational Linguistics

By Don Hauptman

As Jim Puder's announcement elsewhere in this issue indicates, this is the final issue of *Interim* under his auspices.

Interim was created to replace—temporarily, as the name indicated—*Word Ways*, which ended publication after 53 years in November of 2020.

Now *Interim* is in danger of termination as well. So I and other contributors are hoping that someone will volunteer to assume that position—preferably of a brand-new permanent successor journal and website. After *Word Ways* ceased publication, contributors were enthusiastic about the idea, and many suggested names and other ideas.

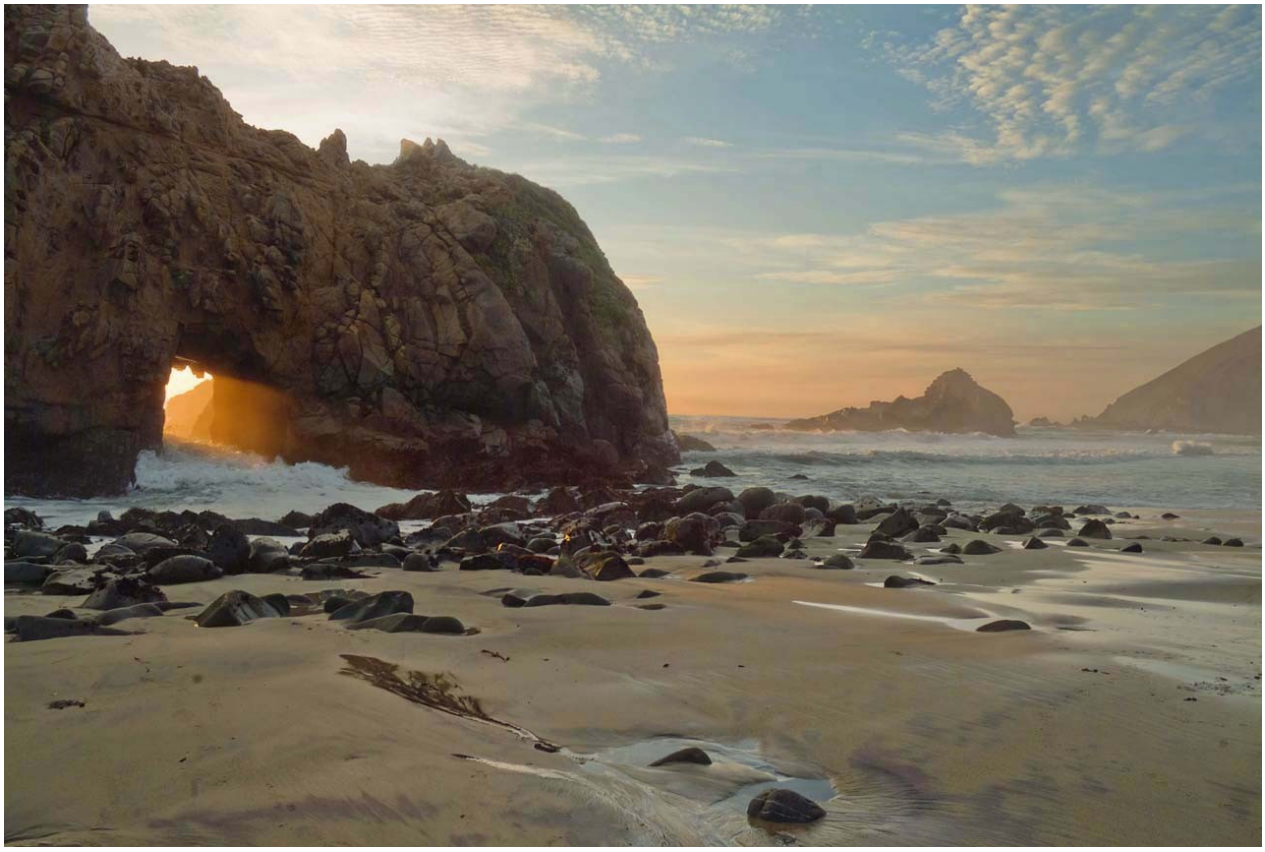
Jim is willing to offer his assistance to any responsible person who might care to take a turn at editing and publishing *Interim*, an offer that includes the use of the magazine's name, its logo, and fully-prepared front covers for any additional 2022 issues, as well as a means to communicate with everyone on *Interim's* distribu-tion list.

As noted above, the alternative and superior option is to launch a new publication or website. In either case, a quarterly journal of recreational linguistics would continue a 54-year run without interruption. It would be a shame for this impres-sive track record to end.

The new publisher would not be on his or her own. Contributors would very likely be willing to pitch in by reviewing submissions, editing the Kickshaws column, and volunteering for other essential tasks. If a lack of material is a concern, several prolific contributors have indicated that they are willing to supply multiple articles for each issue, as needed. I for one, and probably others, would be willing to support the journal monetarily, helping to cover expenses such as domain registration and website hosting.

Finally, I and other contributors want to express our thanks to Jim for creating *Interim* and shepherding it for the past year. I hope someone will pick up the ball and run with it, ensuring the survival of a forum for logophiles and verbivores.

###



"... And the end of all our exploring
Will be to arrive where we started
And know the place for the first time."

~ T. S. Eliot