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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

By chance, fourteen of the sixteen articles accepted for publication in this issue of *Interim* happen to fall within one of three fairly well delineated topical areas. In the largest group, six articles by five authors are concerned with finding words that contain particular letters or letter sequences. In the second-largest group, five articles by three authors deal with the packing of ordered word lists into square or rectangular grids, and in a third group, three articles by three authors constitute a humor bloc. *Interim* doesn't normally group its articles by topic to any great extent, but in this issue that arrangement seems to make sense, and to further distinguish these three main groups they have been color-coded in the table of contents.

In the first group, **David Shaw** exhibits occurrences of the bigram *hl* in various words (excepting proper nouns), **Stuart Klimek** finds instances of "zero" and its synonyms embedded in a number of often-obscure words, **Darryl Francis** identifies a certain minimal number of words which together contain all of the chemical element symbols, **Mike Keith** identifies new minimal sets of element names containing all the letters of the alphabet, including those with minimal letter repetition, Darryl Francis reports Stuart Klimek's improvement to his minimal set of words containing the postal codes of all of the Canadian provinces, and **Jeff Grant** reports some newly-identified Chinese place-names containing all four of the uncommon letters J, Q, X and Z.

The five articles in the word list-packing group might well serve as a mini-symposium on the current state of the art of this recently-invigorated field. In a pair of articles, Darryl Francis focuses on the packing of two particular word lists, while in the other three Mike Keith and I adopt more broad-ranging approaches to the subject. (To read a brief synopsis of each of these five articles, turn to page 158 of this issue.)

The humor contingent offer engaging contributions from **Richard Lederer**, **Don Hauptman** and **Louis Phillips**, while in this issue's lone puzzle article Mike Keith and **Christopher Kocher** test readers' wordplay knowledge and acumen. In the remaining article, Keith and a collaborator indulge in what might be called anagram poetry, in which the letter stock of some fairly lengthy piece of writing is rearranged to form verse. As a practical matter, this is only feasible with computer assistance, and its product is most interesting when, as in this instance, the letter frequencies of the original letter stock are for some reason sufficiently skewed as to impose a meaningful constraint upon the vocabulary available to the anagrammatist.

Unfortunately, unanticipated demands on my time have prevented me from completing Part II of "The Great Brain Robbery" in time for its inclusion in this issue of *Interim*. I hope to be able to finish it in time for the November issue.

~ ~ ~ ~ ~ ~ ~ ~

Darryl Francis will again host a "Kickshaws" department in the November *Interim*. Please send any Kickshaws contributions to him no later than October 15. All other submissions intended for the November *Interim* should reach me by October 22.

DAHLIAS AND PHLOXES

DAVID SHAW
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Susan Thorpe will be remembered for contributing regularly, especially on unusual letter combinations, such as bigrams. But one particular bigram was not among them, although it would have been appropriate. She happened to live in the same English village where Roald Dahl lived and is buried. So what better letter combination to explore than -hl-? The following examples are listed in groups based on the letter immediately preceding -hl-. Words are not listed if they are too technical or specialized or otherwise obscure, and also if, although intelligible, they are not really in common usage — words such as *poshly*, *anguishly* and *throughly*. Hyphens are also excluded, hence words such as *sylph-like* and *inch-long* do not appear (although dictionaries may differ in the spellings of some of these). In addition, proper nouns and adjectives are excluded, meaning that Dahl himself cannot be listed, although the first entry makes up for that, in a way.

ahl

dahlia

chl

chlamidia, chlorine, chloroform, etc., cochlea and cochlear, pinochle, speechless, matchless, searchlight, torchlight and torchlit, touchline, watchlist, archly, richly, staunchly, churchly, branchlet (*Schlepp* and others are listed under their anglicized spelling with sh-.)

ghl

highland, highlight, highly, roughly, thoroughly

ohl

kohl

phl

phlebitis, etc., phlegm, etc., phloem, phlogiston, phlox, pamphlet

shl

schlepp, shlock, schlemiel and shlimazel from the Yiddish, shashlik, cashless, marshland, brushland, bushland, flashlight, rashly, freshly, fleshly, harshly, lushly, plushly. There are too many words ending –ishly to list, among them foolishly and ghoulishly, hawkishly and mawkishly, girlishly and churlishly, peevishly and thievishly, slavishly and knavishly.

thl

athlete, biathlon, triathlon etc., heathland, breathless, deathless, worthless, faithless, mirthless, toothless, pathless, ruthless, deathly, smoothly, uncouthly, earthly and unearthly.

uhl

uhlan, buhl

Apologies to all those to whom words omitted here, like *chlorasma* and *typhlitis*, are part of everyday vocabulary.

WORDS CONTAINING “ZERO” AND ITS SYNONYMS

STUART KLIMEK

For the recreational linguistic magazine *Word Ways*, Volume 53, Issue 3 [August 2020], Darryl Francis had authored the article "Numbers in Words." I wondered whether it would be possible to find a few additional number-in-word words myself, and managed to find several. One such word was the Scottish adjective and verb **sevennil**, one of the several variant spellings of **sevendle [**"strong, firm; trustworthy; to become firm or secure"]. It struck me that the word sevennil was a unintentional construction of two strings of number words — **seven** and **nil**, with nil being a non-standard form for zero. Considering nil, I realized that Darryl had omitted the number zero from his article, a realization which provided part of the impetus for this article.

The string "zero", beyond the word zero itself and its derivatives and verb conjugates, is present in words found in the corpus of English words. Below I provide a list of such words, excluding words that are proper names or capitalized derivatives of proper names. Included in the list are the words furzeroot(s) and sizeroll(s) which are generally found as open or hyphenated compounds, yet the plural or singular form of each have been found as closed compounds in some authoritative sources. The source beneath the defintion is not always the source of the definition, but evidence of the spelling of the word and its existence in the English language.

brazero(s) [n./(pl.)] (chiefly Spanish) a brazier, a charcoal or wood-burning heater or stove
◊ Cf. "Buenos-Ayres"; "The Encyclopædia Britannica or Dictionary of Arts, Sciences, and General Literature. Eighth Edition", 1854; (vol. 5, p. 727, col. 1);

dzeron(s) [n./(pl.)] a gazelle of south-central and south-east Asia (*Procapra gutturosa*);
◊ Cf. "dzeren"; *Merriam-Webster.com*, 2021;

furzeroot(s) [n./(pl.)] the root of the evergreen shrub called furze (*Ulex europaeus*);
◊ Cf. "Maddock-hoe"; The Univesity of Innsbruck's *EDD Online 3.0*; (vol. 4: M-Q, p. 4, col. 1);

genizero(s) [n./(pl.)] tropical leguminous tree (*Samanea saman*), also called monkeypod and rain tree;
◊ Cf. "genisaro"; *Merriam-Webster.com*, 2021;

gizzeron(s) [n./(pl.)] (dialect) the gizzard (especially of a bird, the throat and stomach where food is ground)
◊ Cf. "Shot"; The Univesity of Innsbruck's *EDD Online 3.0*; (vol. 5: R-S, p. 407, col. 2);

gezerot(h [n.pl. (sing. gezerah)] rabbinical decrees issued as temporary preventative measures
◊ Cf. "gezerah"; *Merriam-Webster.com*, 2021;

sizero**ll(s)** [n./(pl.)] a fragment of parchment that would be added to a roll or cavity;
◊ Cf. "Sizeroll"; Thomas Edward's "An English-Welsh Pronouncing Dictionary: with an Analysis of the Orthography", 1864; (p. 473, col. 2); [translation of the Welsh definition of the English word into English was provided by Google Translate];

vizero**ye, vi**zero**ies** [n., pl.] early modern English forms of viceroy (pl., viceroys): a colonial governor acting for a sovereign.
◊ Cf. "Viceroy, Woiceroy"; Dictionaries of the Scots Language (DSL), 2021

wyzero**n(s)** [n./(pl.)] (dialect) the gullet, throat, windpipe;
◊ Cf. "Wyzen, Wyzeron"; The Univesity of Innsbruck's *EDD Online 3.0*; (vol. 6: T-Z, p. 560, col. 1);

As has been implied, the string 'zero' can also be found within the category of proper nouns. Some of these are:

A**zero**th, Ga**zero**n, Ha**zero**th, Ja**zero**, Je**zero**, Me**zero**n, Oz**zero**, and **Zero**r.

The non-standard forms of zero.
Zero, as noted, has several non-standard forms. Names and slang terms for the number zero in English include **cipher** and **naught**, and their variants — **cypher, nought, ought, aught**, and, in dialectal English, **owght**. Other words used for zero in English include the borrowed-from-Spanish word **nada**, it being a clipping and alteration of Latin *nūlla rēs nāta* "no thing born"; the word **nil,** a contraction of nihil [< Latin *nihilum* "nothing"] and, the slang terms **zilch** and **zip**. Additionally, by resemblance to the digit 0 — the letter **O**, **oh**, and the Greek letter **theta** [Θ, θ], **goose-egg**, and subsequently, **love**, a term for zero used in tennis and derived from French *l'œuf* "the egg".

The Middle English Dictionary (MED), published by the University of Michigan, and the Dictionaries of the Scots Language (DSL), published by the organization of the same name, also provides various forms of the words. Only those forms where the figure or number is given as one of the definitions for the word form are considered here. For cipher and cypher, the entry in the MED is **cifre**, and that entry provides the other forms: **ciffre**, **siphre,** and **sipher**. (Wiktionary expands this list of Middle English forms with **cyffre**, **siphe**, **sypher**, and **syphyr**). Another entry in the MED for the cipher (zero) is **nient**. from Old French, meaning "nothing." The MED also includes the word theta (thēta) and forms **teta** and **tetha**, and includes the definition that it is an arithmetical symbol for zero. The DSL provides the word **nocht**, a Scots variant of nought, and defined as zero in arithmetic.

Far from a complete list, what follows is a small portion of the number-in-words words, including some proper nouns, each containing a letter-string that represents one of the non-standard words for 'zero'. For what should be obvious, single letters (O, o) are excluded. It also may be observed that the list includes derivatives of homographs to some of the base-words, whereas the root-word can have a different etymological base than the word with a definition of 'zero' or 'nothing'.

aught: caught, claught, daughter, draughts, haughty, laughter, slaughter;
cifre: scifren*;
love: allover, beloved, boilover, cloverleaf, foxgloves, lovebirds, plover, sloven;
nada: aficionadas, gonadal, thanadar, nadair*;

nient: lenient, conveniently, interveniently;
nocht: Tenochtitlan*
nil: anile, anils, banilad, bonnilasse, brainily, minilab, nilgau, nonillion, unilateral, unilluminated, vanilla;
oh: alcohol, aloha, cohabit, fohn, john, megohm, mohawk, nohow, pharaohs, quohog, tetartohedrisms;
ought: bought; brought, broughta, doughty, droughty, foughten, sought; thoughtful, wrought;
siphe: Erysipheae*, Erysiphei*;
siphre: Siphre*, Siphrei*;
teta: tetanus, tetartohedral, whitetails;
tetha: stethal*;
theta: parasyntheta;
zilch: benzilchloride*;
zip: marzipan, unzips, zipline, zippers;

*benzilchloride = variant spelling of benzylchloride: (chemistry) α-chloro-toluene;
*Erysipheae & Erysiphei = New Latin plurals of erysipheus, a family of fungi that includes the genus Erysiphe;
*nadair = Middle English variant form of nādir (nadir) [< Arabic nazīr "azimuth"];
*scifren = Middle English form of shiver(e: ["(n.) a slice, splinter, or fragment; (v.) to break into bits"];
*Siphre & Siphrei = respective plurals of Siphra & Sepher [< Hebrew sēpher "a book; a liturgical scroll"];
*stethal = an old name for octadecyl alcohol;
*Tenochtitlan = once capital of the Aztec empire, it was destroyed by the Spanish and is now the site of Mexico City

Following are the primary references that were used for this article:

Merriam-Webster.com, an actively-updated online version of *Merriam-Webster's Collegiate® Dictionary, Eleventh Edition*; (https://www.merriam-webster.com);

Collins Online English Dictionary, 2021, (https://www.collinsdictionary.com);

The Century Dictionary Online, an online digitized version of The Century Dictionary, 1889-1891; (http://www.global-language.com/century/).

The University of Insbruck's EDD Online 3.0, an online digitized version of Joseph Wright's *English Dialect Dictionary* (EDD), 1898-1905; (https://eddonline-proj.uibk.ac.at);

The University of Michigan's online dictionary of the Middle English Compendium (2021). (https://quod.lib.umich.edu);

Dictionaries of the Scots Language Online [DSL Online], 2021, an online dictionary published by the organization Dictionaries of the Scots Language (https://www.dsl.ac.uk)

WORDS CONTAINING CHEMICAL ELEMENT SYMBOLS

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In one of my final *Word Ways* articles ("Words Containing US State Abbreviations," August 2020) , I showed how all 50 abbreviations of the US state-names could be contained in just 16 words – **berkovtsi calumny flaky gamdeboo gemsboks invariance lowveld mazo-pathia misconjecture misdemean neurohormone postxyphoid roundaboutness unman-hood warmth willowy**. Squeezing 50 abbreviations into 16 words gives an average of 3.125 abbreviations per word. In the same article, I showed how the abbreviations for the 50 states and 9 US territories could be squeezed into 21 words, or 2.81 abbreviations per word.

I felt sufficiently pleased with those results that I decided to take on a larger group of abbreviations. The most obvious group to tackle was the symbols for the 118 chemical elements, all the way from hydrogen (atomic number 1) to oganesson (atomic number 118); this is exactly twice the number of 59 US states and territories. Could I improve on the 3.125 ratio for the state-name abbreviations? The larger number of element symbols suggested I might struggle to improve on that ratio, but the number of one-letter symbols (B C F H I K N O P S U V W Y) might counterbalance the larger number of symbols. So, let's see.

First off, here are the 118 element symbols in alphabetic order:

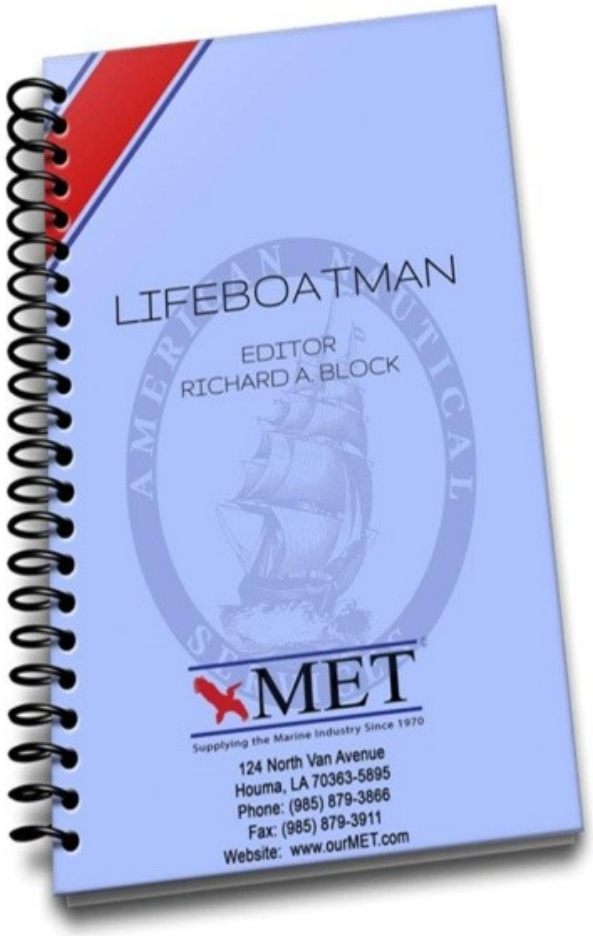
Ac	**Be**	**Cl**	**Er**	**Ge**	**Kr**	**Mn**	**No**	**Po**	**Rn**	**Sr**	**U**
Ag	**Bh**	**Cm**	**Es**	**H**	**K**	**Mo**	**Np**	**Pr**	**Ru**	**Ta**	**V**
Al	**Bi**	**Cn**	**Eu**	**He**	**La**	**Mt**	**O**	**Pt**	**S**	**Tb**	**W**
Am	**Bk**	**Co**	**F**	**Hf**	**Li**	**N**	**Og**	**Pu**	**Sb**	**Tc**	**Xe**
Ar	**Br**	**Cr**	**Fe**	**Hg**	**Lr**	**Na**	**Os**	**Ra**	**Sc**	**Te**	**Y**
As	**C**	**Cs**	**Fl**	**Ho**	**Lu**	**Nb**	**P**	**Rb**	**Se**	**Th**	**Yb**
At	**Ca**	**Cu**	**Fm**	**Hs**	**Lv**	**Nd**	**Pa**	**Re**	**Sg**	**Ti**	**Zn**
Au	**Cd**	**Db**	**Fr**	**I**	**Mc**	**Ne**	**Pb**	**Rf**	**Si**	**Tl**	**Zr**
B	**Ce**	**Ds**	**Ga**	**In**	**Md**	**Nh**	**Pd**	**Rg**	**Sm**	**Tm**	
Ba	**Cf**	**Dy**	**Gd**	**Ir**	**Mg**	**Ni**	**Pm**	**Rh**	**Sn**	**Ts**	

At first, I thought I could be clever and use **pneumonoultramicroscopicsilicovolcanoconiosis** (let me call that P-45) to take care of 22 of the symbols (P N Ne U Mo O No Ra Am I C Cr Os S Sc Si Li Co V Ca Cs Ni), but that wasn't really necessary. Let me illustrate. To include the Zr symbol, I had to use **arzrunite**. Once that word was in place, it also covered the further sym-bols Ru, U, N, Ni and Te, four of which are in P-45, which means I didn't need to use P-45 for Ru, U, N and Ni. As I had to choose particular words to address other awkward symbols (for example, **macfarlane** for Cf), then further symbols from P-45 became addressed. The same principle

applied to various other words, eventually totally removing the need for P-45. Here is my list of words against each of the element symbols:

Ac	**macfarlane**
Ag	**carpetbaggism**
Al	**already**
Am	**amphisbaena**
Ar	**macfarlane**
As	**ecdysiasts**
At	**lifeboatman**
Au	**autovalve**
B	**kibbutznik**
Ba	**amphisbaena**
Be	**rhombenporphyr**
Bh	**coxcombhoods**
Bi	**exorbitantly**
Bk	**subkingdom**
Br	**pawnbroker**
C	**coxcombhoods**
Ca	**carpetbaggism**
Cd	**ecdysiasts**
Ce	**abscessroot**
Cf	**macfarlane**
Cl	**circumclude**
Cm	**ecmnesia**
Cn	**anthracnose**
Co	**coxcombhoods**
Cr	**crybaby**
Cs	**optics**
Cu	**circumclude**
Db	**windburn**
Ds	**coxcombhoods**
Dy	**ecdysiasts**
Er	**stepbrother**
Es	**abscessroot**
Eu	**kreuzer**
F	**macfarlane**
Fe	**lifeboatman**
Fl	**flushgate**
Fm	**snuffman**
Fr	**fremd**
Ga	**purgative**
Gd	**subkingdom**
Ge	**pimgenet**
Mg	**pimgenet**
Mn	**unhymned**
Mo	**topmost**
Mt	**blossomtime**
N	**arzrunite**
Na	**amphisbaena**
Nb	**pawnbroker**
Nd	**windburn**
Ne	**pimgenet**
Nh	**unhymned**
Ni	**kibbutznik**
No	**anthracnose**
Np	**rhombenporphyr**
O	**topmost**
Og	**xenogamy**
Os	**blossomtime**
P	**topmost**
Pa	**pawnbroker**
Pb	**stepbrother**
Pd	**klipdachs**
Pm	**topmost**
Po	**rhombenporphyr**
Pr	**predisgust**
Pt	**optics**
Pu	**purgative**
Ra	**anthracnose**
Rb	**exorbitantly**
Re	**already**
Rf	**farfetched**
Rg	**purgative**
Rh	**rhombenporphyr**
Rn	**windburn**
Ru	**arzrunite**
S	**snuffman**
Sb	**amphisbaena**
Sc	**abscessroot**
Se	**anthracnose**
Sg	**predisgust**
Si	**ecmnesia**
Sm	**carpetbaggism**
Sn	**snuffman**

H	mirthful
He	farfetched
Hf	mirthful
Hg	flushgate
Ho	coxcombhoods
Hs	klipdachs
I	arzrunite
In	subkingdom
Ir	mirthful
K	kibbutznik
Kr	kreuzer
La	macfarlane
Li	klipdachs
Lr	already
Lu	circumclude
Lv	autovalve
Mc	circumclude
Md	fremd
Sr	abscessroot
Ta	exorbitantly
Tb	carpetbaggism
Tc	farfetched
Te	arzrunite
Th	stepbrother
Ti	purgative
Tl	exorbitantly
Tm	lifeboatman
Ts	ecdysiasts
U	arzrunite
V	purgative
W	windburn
Xe	xenogamy
Y	ecdysiasts
Yb	crybaby
Zn	kibbutznik
Zr	arzrunite





There is a total of 36 different words, which gives an average of 3.278 symbols per word, which is slightly better than the 3.125 ratio for the state-name abbreviations. Here are the 36 different words listed alphabetically:

abscessroot	**ecmnesia**	**pawnbroker**
already	**exorbitantly**	**pimgenet**
amphisbaena*	**farfetched**	**predisgust**
anthracnose	**flushgate**	**purgative**
arzrunite	**fremd**	**rhombenporphyr**
autovalve	**kibbutznik**	**snuffman**
blossomtime	**klipdachs**	**stepbrother**
carpetbaggism	**kreuzer**	**subkingdom**
circumclude	**lifeboatman**	**topmost**
coxcombhoods	**macfarlane**	**unhymned**
crybaby	**mirthful**	**windburn**
ecdysiasts	**optics**	**xenogamy**

I should point out that none of the words is capitalised and all of the words can be found in at least one of these dictionaries: *Webster's Third*, *Webster's Second*, and the *Oxford English Dictionary*. Is a reduction possible on my total of 36 words?

Editor's note: the **amphisbaena, a fabulous winged beast having a head at each end of its body, has in modern times become to some extent associated with palindromes. Its name derives from the Greek words* amphis, *meaning "both ways," and* bainein, *meaning "to go."*



An amphisbaena in an illustration from the *Aberdeen Bestiary* (c.1200)

Sets of Element Names Containing the Most Distinct Letters

Mike Keith

In the May, 2021 issue of *Interim* (page 106), Darryl Francis considers sets of words drawn from the 118 IUPAC chemical element names that together contain every letter of the alphabet at least once (except for J and Q, which can never appear), with the goal of finding such sets having the fewest elements, and a subgoal of minimizing the total number of letters in the set. He presents two sets of elements that contain all 24 possible letters using just seven words and 47 total letters:

OXYGEN ZINC KRYPTON LEAD BISMUTH LAWRENCIUM FLEROVIUM
OXYGEN ZINC KRYPTON SILVER HAFNIUM DUBNIUM LAWRENCIUM

and asks if all 24 letters can be captured (a) with fewer than seven words, and (b) in less than 47 letters, regardless of the number of words. In this article we report that the answer to (a) is "no" and (b) is "yes", and find the optimal solutions for different word counts. (Note: our element lists are always ordered by increasing atomic number.)

We used an exhaustive-search computer program to find all seven-element groups containing 24 distinct letters, noting also the total number of letters in each solution. For seven words and 47 letters there is (exactly) one more solution:

OXYGEN ZINC KRYPTON GOLD BISMUTH LAWRENCIUM FLEROVIUM

which is simply Francis' first solution with GOLD substituted for LEAD. But wait! GOLD now captures the letter G, as well as the D from LEAD, so OXYGEN is now only needed for its X, which means that it can be replaced with XENON for a savings of one letter. Checking the entire search space of seven-element groups shows that the resulting set of elements,

ZINC KRYPTON XENON GOLD BISMUTH LAWRENCIUM FLEROVIUM

is the unique shortest (46-letter) seven-word solution to this puzzle.

Are there any solutions with fewer than seven words? It was easy for our program to check this, and the answer is no. But this raises an interesting question: for groups of one to six words (none of which can include all 24 letters), what's the most number of distinct letters you *can* capture?

Optimal solutions for these are shown in the first six rows of the table on the next page. For one through six words, the most distinct letters we can get are 11, 15, 18, 21, 22, and 23. Note that the length of the best solution for three words (18 different letters, 22 total) and four words (21 different letters, 40 total) is quite different, but this is just due to the vagaries of the word set at our disposal. There's a solution for four words that captures 21 different letters with only 28 letters,

KRYPTON GOLD BISMUTH LAWRENCIUM

but the only way to get that 22nd letter is to change the very tidy `GOLD BISMUTH`, which captures the letters BDGHS, to the verbose `RUTHERFORDIUM SEABORGIUM`, which in addition to having BDGHS also includes F. Because of this solution's extreme length, the best five-word solution is actually shorter than the best solution with four words. Note, however, that going

from N=4 to N=5 is the only instance where the value of L decreases.

We guessed, before seeing the solution, that if six words were only able to capture 23 letters, the unused letter in the minimal-length solutions would be W, and indeed this turns out to be true. The reason this seemed likely is that capturing W requires the long word LAWRENCIUM (most of whose letters, except for the W, will turn out to be redundant), so an expected strategy for minimal length would be to omit the W and capture the other 23 letters with relatively shorter words.

(***N = number of words, D = number of distinct letters captured, L = total number of letters used***)

N	*D*	*L*	*Elements*	*Unused Letters**
1	11	12	PRASEODYMIUM	BCFGHKLNTVWXZ
2	15	16	HYDROGEN PLATINUM	BCFKSVWXZ
3	18	22	OXYGEN COBALT DYSPROSIUM	FHKVWZ
4	21	40	KRYPTON LAWRENCIUM RUTHERFORDIUM SEABORGIUM	VXZ
5	22	35	OXYGEN ZINC PALLADIUM BISMUTH FLEROVIUM	KW
6	23	37	OXYGEN ZINC KRYPTON SILVER HAFNIUM DUBNIUM OXYGEN ZINC KRYPTON LEAD BISMUTH FLEROVIUM	W W
7	24	46	ZINC KRYPTON XENON GOLD BISMUTH LAWRENCIUM FLEROVIUM	
8	24	48	BORON ZINC KRYPTON SILVER XENON HAFNIUM GOLD LAWRENCIUM	
9	24	51	*Same as N=8* + TIN	

* J and Q are always unused, of course, and so are implicitly included in these lists

So now we know that at least seven words are needed, and we know how to do it with just 46 letters (see row 7 of the table), but can this 46 be reduced by using more words? To answer this we did exhaustive searches for N=8 and N=9, also shown in the table. For N=8, note that we can instantly make a solution by taking the N=7 solution and adding the element TIN, for a total of 49 letters. The actual best solution has 48 letters, an improvement over the trivial solution. But for N=9 the best solution *is* just the previous solution (N=8) with TIN added. At this point the shortest solution is up to 51 letters (compared to 46 letters for N=7), so it seems quite clear that it will never be possible to improve on 46 total letters, and after N=9 the value of L will just continue to grow. In fact, we conjecture that the best solution for *all* N > 8 is to just take the N=8 solution and add the N-8 shortest unused element names. If this conjecture is true then it, plus the results in the table, proves that 46 letters is minimal for any set of elements that captures all 24 letters.

Notice that N=6 is the only value of N in the table having more than one solution for the given (smallest possible) value of L. For every other value of N, the miminal-L solution is unique. Even the N=9 solution is unique, because there is only one three-letter element available (TIN) to add to the N=8 solution. From N=10 and beyond this is no longer true, as there are multiple elements of length ≥ 4 available to tack onto a smaller solution.

Especially elegant groups, though they do not maximize the value of D, are those where the whole set is a heterogram (no letter of the alphabet used more than once). The two longest single-element heterograms are LAWRENCIUM and SEABORGIUM (10 letters), which by chance both appear in the optimal N=4 solution. The unique longest two-element heterogram is KRYPTON CAESIUM (14 letters), which also has AEIOUY. There are no heterogram sets with three or more elements.

CANADIAN POSTAL ABBREVIATIONS – REVISITED

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In the final edition of *Word Ways* (Volume 53, issue 4, November 2020), I showed how the postal abbreviations for Canada's 13 provinces and territories could be fitted into just six words. Here are the postal abbreviations for the 13 provinces and territories:

AB	Alberta	NU	Nunavut
BC	British Columbia	ON	Ontario
MB	Manitoba	PE	Prince Edward Island
NB	New Brunswick	QC	Quebec
NL	Newfoundland and Labrador	SK	Saskatchewan
NT	Northwest Territories	YT	Yukon
NS	Nova Scotia		

And here are the six words which accommodate all the abbreviations:

cantons dabchick moskonfyt openly qcepo unbenumb

At the end of that 2020 article, I wrote "If anyone can get the minimum set of words down to just 5, I would love to hear of the improved solution."

One reader, Stuart Klimek, has recently emailed me to provide an improved solution of just five words containing the 13 abbreviations. Stuart offers the following:

lambskins	MB, SK, NS
petabyte	PE, AB, YT
qcepo	QC
subcontinuous	BC, ON, NT, NU
unbenignly	NB, NL

Apart from **qcepo**, which is in earlier editions of *Dorland's Medical Dictionary*, the other four words are all in the OED.

Stuart also wrote

> I did some research to find if there were any words with the letter pair QC that was used in publications in the English language, other than the one noted from *Dorland's Medical Dictionary*: qcepo. I did discover a title of a government official, when not associated as a formal (proper) title, is written with the first letter in lower-case, as is its plural. From the book *The Jews of Khazaria*, 2nd edition by Kevin Alan Brook, Rowman & Littlefield Publishers, Inc, 2006, chapter 3, page 54 is found:
> "The baliqchis were seen as the guardians of the waterfront."

"Some Khazar localities possessed elected government leaders in addition to appointed leaders like the tunduns and baliqchis."

Brook's book is not a standard English dictionary though it does contain a brief dictionary of several words used to aid in explaining its subject. On page 251, in the glossary section of the book, is the definition for baliqchi:
baliqchi -- Khazarian for 'fisherman'; from baliq (fish) + chi (profession). Appointed provincial governors were given this title. Alternative spellings: boluschchi, balgitzi, balquitzi.

Stuart's find of **baliqchi** is interesting. The word doesn't appear anywhere in the OED, either as a main entry or in any of its definitions or quotations. However, **baliqchi** does appear on Wikipedia, where it has its own entry. The Wikipedia entry cites four references, one of which is the Kevin Brook book referenced by Stuart.

A Google search also reveals that **Baliqchi** is both a city and district in Uzbekistan.

NAMES CONTAINING THE LETTERS J, Q, X AND Z

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Editor's note: The author originally intended these comments for "Colloquy," but due to the appearance of several other essays in this Interim *on the general subject of the occurrence of particular letters or letter strings in longer words and names, it was deemed preferable to publish his report as a short article in a group with those similar articles.*

In his excellent article "Three Awkward Letters from JQXZ" [in the May 2021 issue of *Interim*], Darryl Francis notes the scarcity of place-names containing all four of these difficult letters. His discovery of the Albanian village ZIQ-XHAFEJ was quite a milestone at the time, and I don't recall seeing anything better containing JQXZ.

Recently I've been manually scanning lists of Chinese place-names recorded by the US Board on Geographical Names online database (geonames.usgs.gov), specifically searching for names containing the letters J, Q, X and Z. There are quite a few 2-word place-names in China with these four letters, including QUIAZUO XIANG, QIXINGJIE ZHEN, QIZHUTUJIAZU XIANG, XIZHONGJING QIANCUN, QINJIA XIANGZI, QINJIAZHUANG XIANG, QINJIA XIAOZHUANGCUN, XINJIZHUANG SHEQU and XINQIAO YOUZHENGZHUU.

Finally, after several days searching I found a single solid-form place-name containing all the letters JQXZ: QINGJIAXINZHUANG, a town in Anhui province, eastern China.

A CONSTRAINED POEM

Mike Keith
Jim Puder

The body of the poem below is an anagram of all 923 letters in a specific, well-known, and well-defined topical word list. Can you work out the identity of that list? One clue: the poem's title is an anagram of the answer. Another is that the difficulty of the transposal was increased by the abnormal letter frequencies in the words of its source list.

Life: The Obsolete Predicament

"Luxuriant nasturtium buds uncurl in utopian union
To nurture summer elements in homespun ruby hue,
Or pose as merry muumuus in noble azure blue..."

I'm humming, in a musical murmur, the rime of the ancient marinade.
Immured in humdrum momentum in a ridiculous suburb,
In mammoth midsummer boredom I muse…

Impious, I imbue it all, I impute it all; ornithic, I fly unbound!
As I climb, I hum, in a rigid continuum, of nuclear fusion in a vacuum
Until, uncommonly tired, I plummet to earth, commonly human.

I realize I'm in it – I'm living here,
I'm not immune to mammon or its inimical infirmities;
But may no one licitly dream?

Uniting glum minimum, murky medium or dumb maximum
– A curious conundrum compendium am I! –
I run harder, mourning in silence.

In the meantime, vague minutiae beguile me:
Ecumenical ambiguity, impudent monism, rude humor,
Vicious irony, mutinous friends, our mutual hurt…

O for a clump of humanity,
Or cucumber mango punch,
Or artichoke dumplings in moose milk!

As a million pronouns clamor in tumult,
Umber murals in a dim museum rue
Pure delirium's implicit public triumph.

So I, a grammar nerd, bide on;
I live through this plague
via Word Immunity.

A BETTER PRESIDENTIAL 17-SQUARE PACKING

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In the May 2021 Interim, Jim Puder wondered whether it would be possible to pack the presidents' surnames from Washington to Bush (the second one) into a 17-square in an ordered fashion in which all adjacent names in the presidential succession sequence touch each other in the grid along the length of at least one square. Both Jim (and previously Ross Eckler) attempted to do this, without success. Jim's chain ended at TRUMAN. He wondered if there was any way to accommodate the 10-letter name EISENHOWER in the space remaining in his square.

I can report an improvement now by packing a 17-square with the names from Washington to Reagan, an addition of seven presidential surnames, missing only the three presidents Bush, Clinton and Bush. My improved square is shown below.

I think the main reason why Jim got stuck at TRUMAN is because he was progressively wrapping the presidents' names around the outside of his square, leaving an ever-decreasing space in the centre, and then struggled to fit in EISENHOWER. My square fills the rows as much as possible, working down from the top, leaving space at the bottom for the likes of EISENHOWER and successors. Is there scope for any further improvement?

W[1]	A	S	H	I	N	G	T	O	N	A[2]	D	A	M	S		P[11]
M[4]	A	D	I	S	O	N	J[3]	E	F	F	E	R	S	O	N	O
M[5]	O	N	R	O	E	A[6]	D	A	M	S	T[10]	Y	L	E	R	L
J[7]	A	C	K	S	O	N	H[9]	A	R	R	I	S	O	N		K
V[8]	A	N	B	U	R	E	N	F[13]	I	L	L	M	O	R	E	T[12]
G[18]			L[16]	I	N	C	O	L	N	P[14]	I	E	R	C	E	A
R	J[17]	O	H	N	S	O	N	B[15]	U	C	H	A	N	A	N	Y
A	H[19]	A	Y	E	S	G[20]	A	R	F	I	E	L	D			L
N	A[21]	R	T	H	U	R	C[22]	L	E	V	E	L	A	N	D	O
T	R[40]	E	A	G	A	N		H[23]	A	R	R	I	S	O	N	R
C[39]	A	R	T	E	R			C[24]	L	E	V	E	L	A	N	D
F[38]	O	R	D	N[37]	I	X	O	N	M[25]	C	K	I	N	L	E	Y
	J[36]	O	H	N	S	O	N	R[26]	O	O	S	E	V	E	L	T
K[35]	E	N	N	E	D	Y	T[27]	A	F	T	W[28]	I	L	S	O	N
E[34]	I	S	E	N	H	O	W	E	R	H[29]	A	R	D	I	N	G
			T[33]	R	U	M	A	N	C[30]	O	O	L	I	D	G	E
		R[32]	O	O	S	E	V	E	L	T	H[31]	O	O	V	E	R

Editor's note: *The answer to Darryl's question is yes. By making some rearrangements in the bottom half of his packing, I was able to consolidate enough unused space to add the name of the first Bush to his sequence:*



One lesson to be learned from Darryl's packing is that, in general, the best tactic to employ in such packings is probably that of keeping the entries parallel in a single direction as much as possible. As he points out, a mostly parallel packing can help to preserve valuable long open spaces for end-of-sequence use.

PACKING WORD LISTS INTO RECTANGLES & SQUARES: SOME NEW RESULTS AND NEW PUZZLES

Mike Keith

This logological challenge has been explored a number of times before, most recently by Jim Puder in the May, 2021 *Interim* [1]. As a quick review, a list of words having a natural ordering, such as the names of the U.S. presidents or the chemical elements, is chosen. Let $s(n)$ be the sum of the number of letters in words 1 through n. When $s(n)$ is a square or rectangular number this means that words 1 through n can *possibly* be packed, Tetris-style, into a rectangular or square grid with $s(n)$ cells. The challenge is to create such a packing. Most articles have considered the square case only (a notable exception is Ross Eckler's 1999 article [2]), but in this investigation we also allow rectangles, as long as their aspect ratio is 3:1 or less. Henceforth, whenever we write "rectangle" this aspect ratio limit is implicitly enforced.

States of the U.S. In [1] two word lists were considered – the U.S. presidents and the U.S. state names (sorted by date of statehood) – so we'll start with some new results for the U.S. states list. As mentioned in that article, two of the most interesting possibilities are $s(18) = 169$ (first 18 states in a 13x13 square) and $s(30) = 256$ (first 30 states in a 16x16 square). In [1], Jim Puder deemed the 13x13 unpackable and displayed an almost-complete packing of the 16x16, wondering if its complete packing were possible.

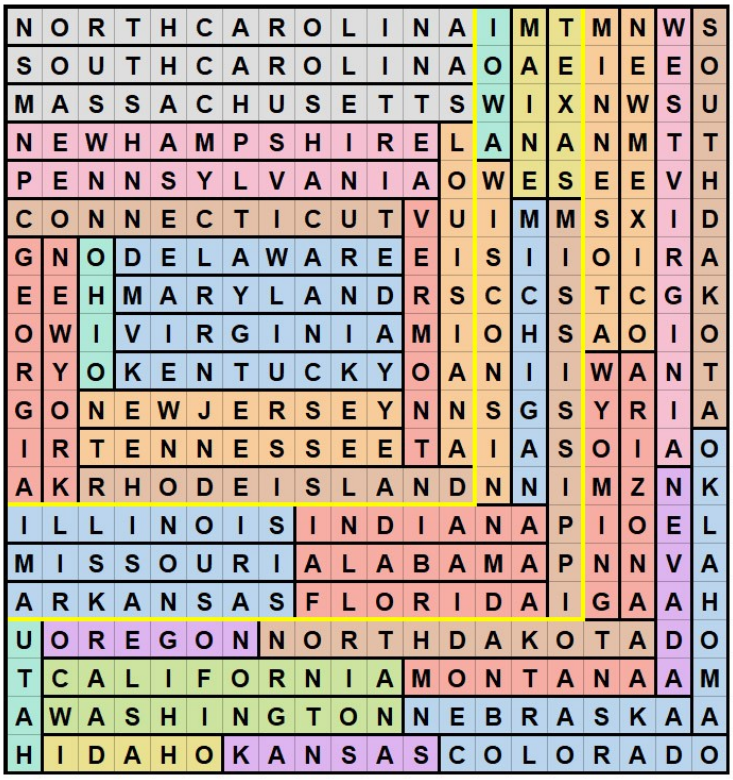
We discovered two surprising things: (1) the 13x13 is actually packable! and (2) there is another case that has been overlooked all these years: $s(48) = 400 = 20\text{x}20 = 25\text{x}16$. (See page 139 of this issue for some background on this.) At right is a packing of the 13x13.

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

As an indication of how good a puzzle this is, we have been able to determine that *there is essentially only one way to do it*. The embedded 9x6 rectangle at the bottom center has three chunks (a 9x4 group at the top plus NEWJERSEY and TENNESSEE at the bottom). These three chunks can be shuffled vertically at will, plus the entire 9x6 can be rotated 180 degrees, or flipped horizontally or vertically. In addition, the whole 13x13 can be rotated or flipped. But all of these are just minor variations on this single, essentially unique, solution. This surely must be one of the most elegant word packing puzzles of this type.

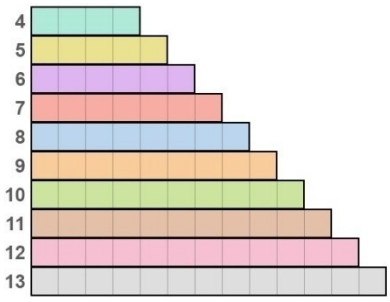
In regards to the "new" 20x20 puzzle, we first note that $s(48) = 20\text{x}20$ is particularly nice since it means that the grid will contain precisely the "lower 48" states (those apart from Alaska and Hawaii). This geographical fact will come into play in a new puzzle later on, but for now – how about a packing of this newly-uncovered grid? Well, this turns out to

be fairly easy due to the size of the grid, so we decided to attempt something more ambitious, which turned out to be possible:



As indicated by the yellow lines, this 20x20 packing of the lower 48 states has, embedded within it, a 16x16 packing of the first 30 states, which in turn has the unique 13x13 packing of 18 states embedded in its upper left corner.

In all of our diagrams the background color of each word indicates its length (number of letters) – see color key at the right. These colors make it easy to spot words of the same length in a solution, which might be useful if we want to shuffle around equal-length words for aesthetic reasons. These colors also play an integral role in a new puzzle to be introduced later in this article (the fewest-regions challenge).



Oulipacking. The 20x20 embedded solution above is an example of "packing with extra constraints", which for obvious reasons we like to call "Oulipacking". Unrestricted packing into a square or rectangle is easier with larger-sized grids, but we can add extra requirements to make it more challenging. For example, can it be done entirely with horizontal words (called *linear packing* in [2])? If not, how few vertical words can you use?

Ordered packing. Another type of Oulipacking is *ordered packing*, introduced in [2]. In an ordered packing each pair of adjacent names in the ordered word list must touch along the length of at least one cell. Equivalently, it must be possible to place a rook on some square of the first word of the ordered list and then make a sequence of rook moves that passes through all the words in order. It is often impossible to make a perfect ordered packing that includes all the words, in which case one attempts to place as many words as possible while obeying the ordered constraint. For example, a significant improvement on the best partial ordered packing of the first 43 U.S. presidents into a 17x17 square appears elsewhere in this issue (see page 129).

Unrestricted packing is clearly easier in large-area grids, but the situation with ordered packing is less clear. In fact, the largest-known perfect ordered packing is fairly small: the 10x9 rectangle shown at the right (from [2]), containing the cardinal numbers ONE through SEVENTEEN. Can you find a larger perfect ordered packing than this one, using the first *n* words from a natural (non-contrived) word list?

T	W	E	L	V	E	T	E	N	S
T	F	E	L	E	V	E	N	N	E
H	O	T	H	R	E	E	T	I	V
I	U	F	F	O	U	R	W	N	E
R	R	I	S	O	N	E	O	E	N
T	T	V	I	E	I	G	H	T	T
E	E	E	X	S	E	V	E	N	E
E	E	S	I	X	T	E	E	N	E
N	N	F	I	F	T	E	E	N	N

The fewest-regions challenge. Here's another Oulipacking challenge. Use a length-based color scheme such as ours to create a colored packing. Define a *region* as a rectangular area of the same color, which might include more than one word – like the THIRTEEN-FOURTEEN and FIFTEEN-SIXTEEN blocks in the packing above, each of which counts as one region. For a given word list and rectangle/square size, how small can you make the number of regions?

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

At the right is an attempt at a fewest-region packing for the 30-state 16x16, with just 10 regions. This one uses a neat trick: the two five-letter words are joined end to end rather than the usual way. We do not know if 10 regions can be bettered for this grid.

But note that there are eight different word lengths here (4,5,7,8,9,11,12,13), so the theoretical minimum number of regions for this grid is eight. That we've done it with 10 is pretty good, but are there *perfect* region packings that achieve the theoretical minimum? The answer is yes, but the largest we've found is quite small: the cardinals ONE through ELEVEN in a 9x5 rectangle, pictured at right.

T	S	E	E	L	E	V	E	N
H	E	I	F	F	N	O	N	E
R	V	G	O	I	I	T	W	O
E	E	H	U	V	N	S	I	X
E	N	T	R	E	E	T	E	N

A complete grid list. As an aid to future ordered packing fans, here is a listing of all the possibly-packable squares and rectangles (with aspect ratio 3:1 or less) for both the U.S.

states and U.S. presidents. Squares are shown in **bold**, while grids which I, or others, have successfully packed are underlined, and entries colored red are known to be impossible. All the rest are puzzles in search of a packing, and we think it's likely that all the undecided entries in the table can be packed. There are two (and only two) grids that appear in both tables: 17x11 can be used for either the first 20 states or the first 27 presidents, and 23x13 can be used for 35 states or 45 presidents.

Notice that the current full list of presidents can fit in a 19x16 rectangle (see page 137 in this issue). The states are not so lucky, as the total number of letters, 412, has a large prime factor (103), so no interesting rectangles are available for the 50 states.

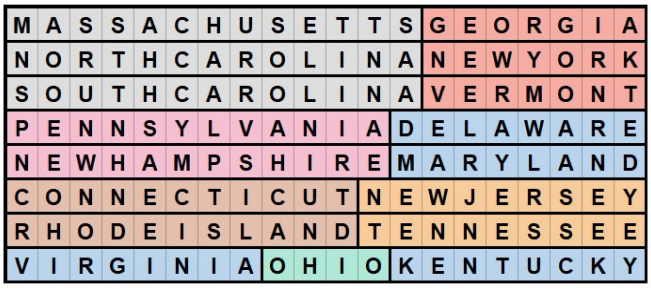
U.S. States

n	*s*(*n*)	Grid Sizes
17	160	20 x 8 16 x 10
18	169	**13 x 13**
19	176	22 x 8 16 x 11
20	187	17 x 11
21	195	15 x 13
23	207	23 x 9
26	231	21 x 11
27	238	17 x 14
28	243	27 x 9
29	247	19 x 13
30	256	**16 x 16**
31	266	19 x 14
32	275	25 x 11
35	299	23 x 13
41	350	25 x 14
42	360	30 x 12 24 x 15 20 x 18
44	372	31 x 12
46	384	32 x 12 24 x 16
48	400	**20 x 20** 25 x 16
49	406	29 x 14

U.S. Presidents

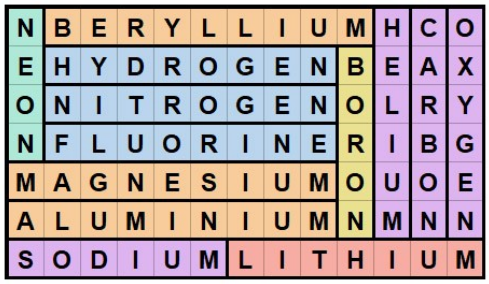
n	*s*(*n*)	Grid Sizes
13	88	11 x 8
15	102	17 x 6
18	121	**11 x 11**
19	126	18 x 7 14 x 9
21	140	20 x 7 14 x 10
27	187	17 x 11
29	200	20 x 10
30	208	16 x 13
36	253	23 x 11
42	285	19 x 15
43	289	**17 x 17**
44	294	21 x 14
45	299	23 x 13
46	304	19 x 16

Smallest packable grids. Grids at the small end of both lists that are either obviously too small, or less than 3:1 aspect ratio, or impossible to pack, are not shown, which means that the first rectangle or square in each column is the smallest packable grid for that word list. Below are packings of these smallest rectangles: 17 states in 20x8 = 160 and 13 presidents in 11x8 = 88. Amazingly, the 20x8 packing is linear.



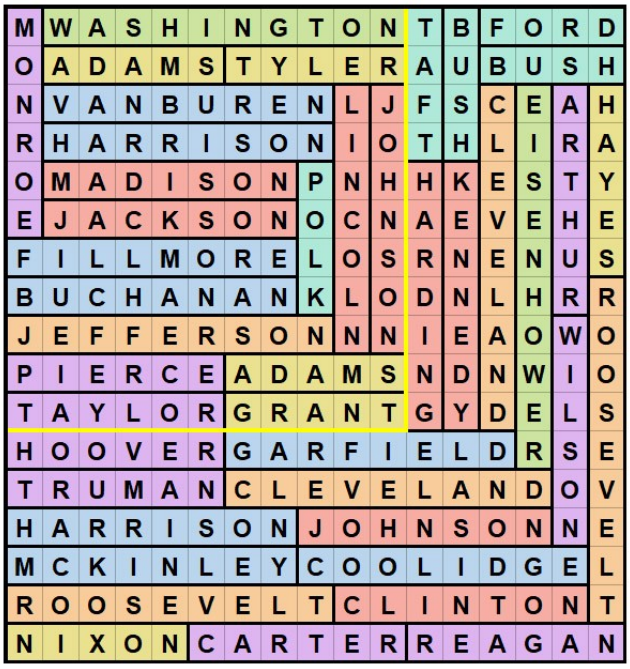


We wondered about the smallest packable rectangle of the atomic number-ordered list of chemical elements, and determined that it is the one shown below (the first 13 elements, 13x7 = 91).



Of course the ultimate small rectangle must be the one supplied by the cardinal numbers, with its perfectly-ordered, linear, single-region 3x2 rectangle containing ONE and TWO!

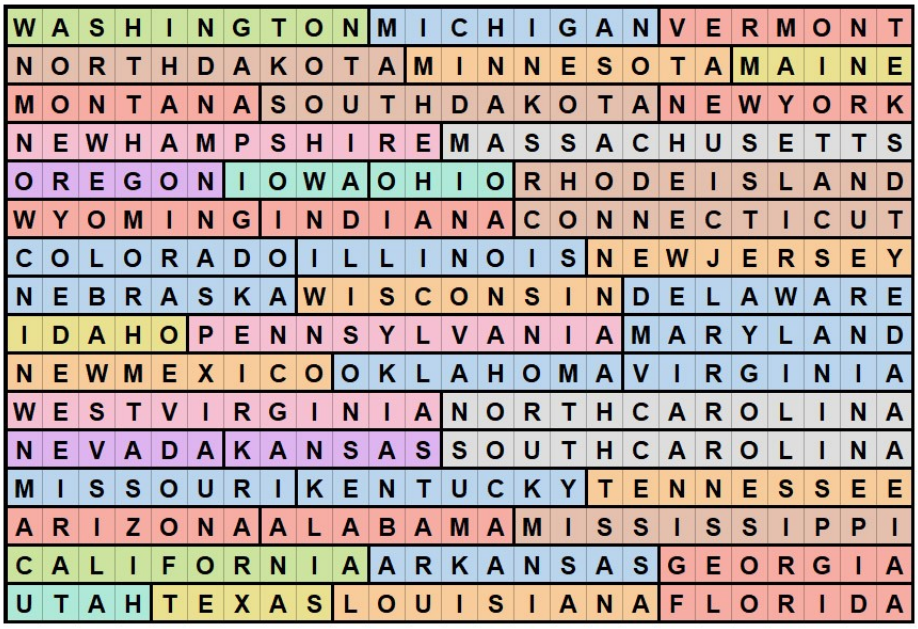
Two more Oulipackings. In closing, here is an embedded square, similar to the triple embedded square of the states shown earlier, containing both presidential square sizes (11x11 and 17x17):



We also tried to minimize the number of vertical words in the 11x11. Can the 11x11 be packed using fewer than four vertical presidents?

And finally, here's a somewhat unusual constraint. The table of grid sizes shows that the 400 letters of the first 48 state names fit in a 25x16 rectangle. This reminded us of the rough shape of the United States, and a quick check reveals that a U.S. map using the standard Lambert conformal conic projection has an aspect ratio of 1.6, while 25x16 has an aspect ratio of 1.56 – a remarkable coincidence. Hence this challenge: pack the 48

names such that each state name is placed as close as possible to its correct geographical location. These placements will probably have to be pretty rough, but can we make one that's at least somewhat aesthetically pleasing? Our best effort is shown below.



We deliberately chose to use a linear packing (luckily, that's possible) since it provides three independent degrees of freedom to help get the states in the right general area:

1) Any row can be moved as a unit up or down in the grid.
2) All the words in each row can be rearranged horizontally.
3) Any two words of the same color, anywhere in the grid, can be interchanged.

Of course there are major hindrances as well, such as the requirement for exactly 25 letters on each row. Also observe that most of the long state names are located in the east (especially northeast), which causes that area of the U.S. to "grow" and take over a disproportionate amount of the grid.

Can you construct an even more pleasing U.S. geographical grid (either linear or not)?

References

1. Jim Puder 2021, "State and Presidential Square Sets II", *Interim* 1(2), p. 89
2. Ross Eckler 1999, "Packing the Cardinals", *Word Ways,* 32(3), p. 178

Editor's note: The author neglected to mention that the two complete packings of the 30-statename 16x16 square shown on pages 131 (as part of a 20x20 statename square) and 132 are the first such complete packings of this square ever published.

DIVERS & SUNDRY PACKINGS

JIM PUDER

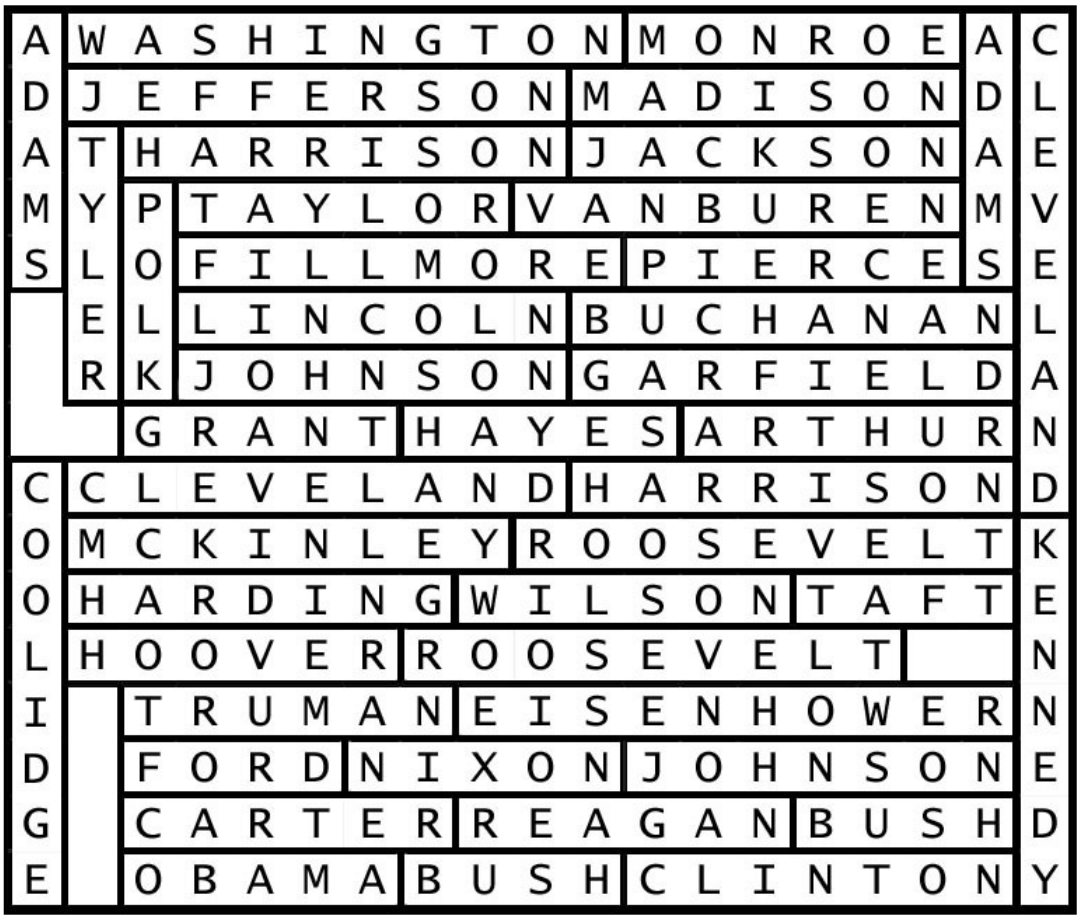
Before getting down to cases, let's discuss some generalities. What constitutes a logologically "interesting" packing of some set of words into a rectangular grid? Essentially, this question resolves into two others: what constitutes an interesting word set, and what constitutes an interesting grid shape and size. Mike Keith, in the article just concluded, suggests that the answer to the first question is that, for packing purposes, an appropriate word set consists of the first *n* words from a natural (i.e., non-contrived) ordered word list. I'd agree with that, but would add that the word list should be one that is generally familiar. Also, I'd suggest that the term "perfect packing" be reserved for packings in which a *complete* word list exactly fills a grid in ordered fashion. (For the cardinal numbers, which are an open-ended sequence and so cannot be "perfectly" packed under this definition, I'd substitute the term "ideal packing" for similar packings.)

As for dimensions, Keith suggests that grids should have an aspect ratio (the ratio between two adjacent sides) of no more than 3:1, but specifies no minimum grid size; by contrast, Ross Eckler, in his August 1999 *Word Ways* article "Packing the Cardinals," ruled out any grid that wasn't at least three cells in length on all sides, but specified no aspect ratios. In this article, my rule will be that grids should extend at least three cells on all sides and should have aspect ratios not exceeding 4:1. (Note that as a rectangle's aspect ratio increases, it becomes flatter.)

With those issues dealt with, here is an olio of new grid packings which utilize a wide variety of word lists including the names of U.S. presidents, the names of the letters of the Greek alphabet, the names of the U.S. states, the names of the (formerly) nine solar system planets, the names of the (still) four Galilean satellites of Jupiter, the words of the familiar ALFA-BRAVO-CHARLIE spelling alphabet, and some other word lists which are packed here for the first time.

1. All the Presidents' Names

No square grid will accommodate the packing of the entire current sequence of U.S. presidents; however, the recent accession of Joe Biden to the presidency has brought the total number of letters in the surnames of all of the presidents (counting Cleveland twice, as is usually done) to 304, which, while it is not a square number, *is*, I noticed, the exact number of cells in a reasonably squarish rectangular grid of 19x16 cells. It would probably not be very difficult merely to pack this grid with the currently complete roster of presidential surnames, but can it accommodate an *ordered* packing of all of those names? Given that some recent attempts at an ordered packing of a partial list of the presidents' names into the slightly smaller 17x17 square grid have approached complete success, this seems a reasonable question to ask. My one attempt to achieve an ordered packing of *all* of the presidents' names (shown on the next page) got as far as OBAMA, which left only two names of five letters each to go. The fact that I got so far on my first try suggests that there is probably still room for improvement by at least one of those short names. As names keep being added to the presidential succession, and their packable grids in consequence keep becoming larger relative to the average length of the names, the likelihood that a complete ordered packing of the current roster of the presidents in such a grid can be achieved becomes ever greater. Will this be rectangle that finally does the trick?

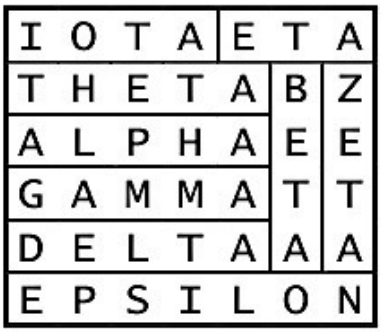


2. Alpha to Omega

If ever there were an ordered set of words that seem expressly designed for packing into square and rectangular grids, it would be the names of the letters of the Greek alphabet. These are names familiar to most of us, even if not too many of us can recite the entire Greek alphabet from memory. They are 24 in number, neither too many nor too few, and only four of them are over five letters long. But most all, by some obliging fate there are exactly one hundred letters in the names of all of the letters of the Greek alphabet, which means that a square 10x10 grid could exactly accommodate all 24 of those names, provided they could be fitted in. And if those 24 names could be fitted into this square grid in ordered fashion, then that packing would become, under my definition of the term, the first perfect packing on record. (It would also be the largest grid-filling ordered packing published to date, surpassing Ross Eckler's 10x9 ordered packing of the cardinal numbers from ONE to SEVENTEEN.)

Which is not to say that the 10-10 square is the only interesting packing afforded by the names of the letters of the Greek alphabet. There are at least two others, both of which, like the 10x10 square, will be discussed for the first time in this article. Before proceeding further, however, it may be helpful to review the order of the letters in the Greek alphabet, which is this:

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



In his accompanying article, Mike Keith exhibits the smallest packable grids for the names of the states (a 20x8 grid of 160 cells for the first 17), the surnames of the presidents (an 11x8 grid of 88 cells for the first 13) and, in an ordered packing, the names of the first 13 elements of the periodic table (a 13x7 grid of 91 cells). Easily surpassing all of these in smallness is this ordered packing of the first nine letternames of the Greek alphabet in a 7x6 grid of only 42 cells. (This is not the record for smallness, however; several smaller packable word lists, some of them orderable, occur among the cardinal number names and elsewhere — see below).

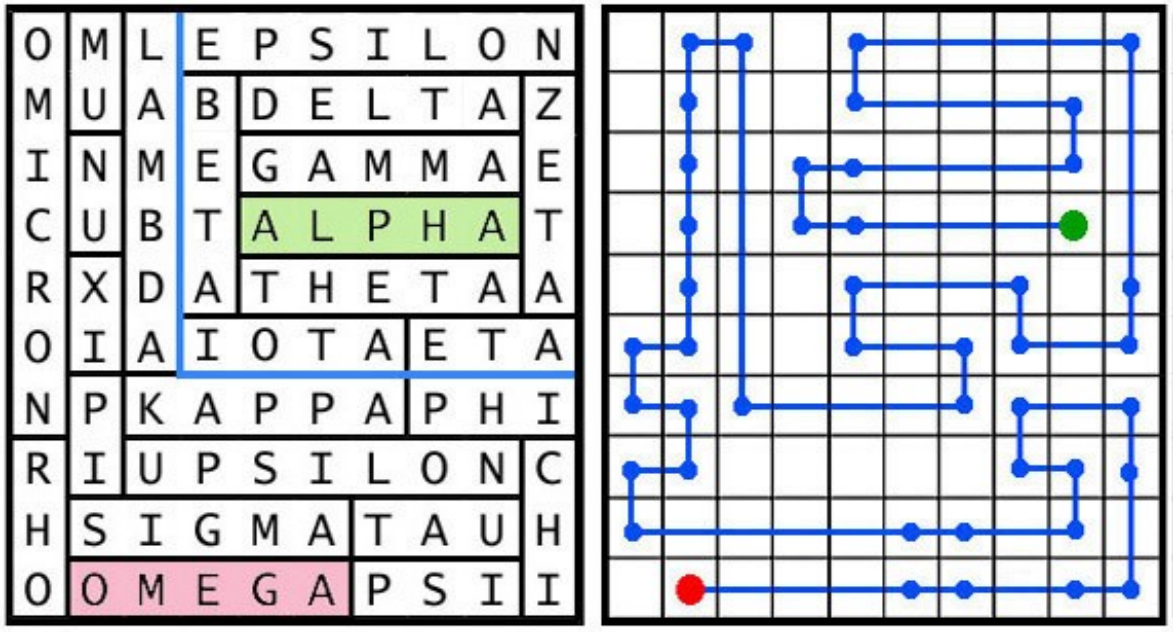
With the 100 total letters of the names of the letters of the Greek alphabet one can pack a square grid ten cells on a side. Subtract the last letter's name, OMEGA, from that group and 95 letters are left, a number which cannot pack a square grid but which can pack a rectangular one of 19x5 cells. I wondered whether it would be possible to pack that grid with an ordered sequence of the first 23 letter names of the Greek alphabet, and soon found was that not only was this absurdly easy to do, but that the resultant packing, currently the third-largest complete ordered packing known, is both a surprisingly elegant logological construct and a seriously uncanny one.



As may be seen, "95," as I call it, is an entirely linear packing, and much as I might like to claim credit for this, I had nothing to do with it. I simply began writing out the names of the Greek letters in horizontal lines (writing in back-and-forth boustrophedon fashion to maintain an ordered packing) starting with ALPHA in the upper left corner, and just kept writing in horizontal lines until I reached PSI in the lower right corner. Amazingly, all five of the line breaks at the ends of lines (there were five of these, not four, on account of the boustrophedon) just happened to fall between letter names, enabling an unprecedentedly easy linear ordered packing. Sheer chance is seldom so accommodating. And as if that weren't uncanny enough, note the improbable occurrence of a common five-letter word, "BEARS," in 95's sixth column. What can it all mean?

In contrast to 95's unparalleled ease of ordered packing, the ordered packing of the complete Greek alphabet's 10-square, just five cells larger, was a challenging puzzle; nevertheless, the following solution, contorted though it may be, was eventually worked out. It is, by a small

margin, the largest complete ordered packing yet devised, and it is also, by my definition of the term, the only "perfect" one yet published. (Note: No longer; see elsewhere in this article.)



(The blue line in the figure at left above encloses a smaller ordered packing of the first nine letter names. In the figure at right, the blue line is a map of the route of the entire 10x10 packing.)

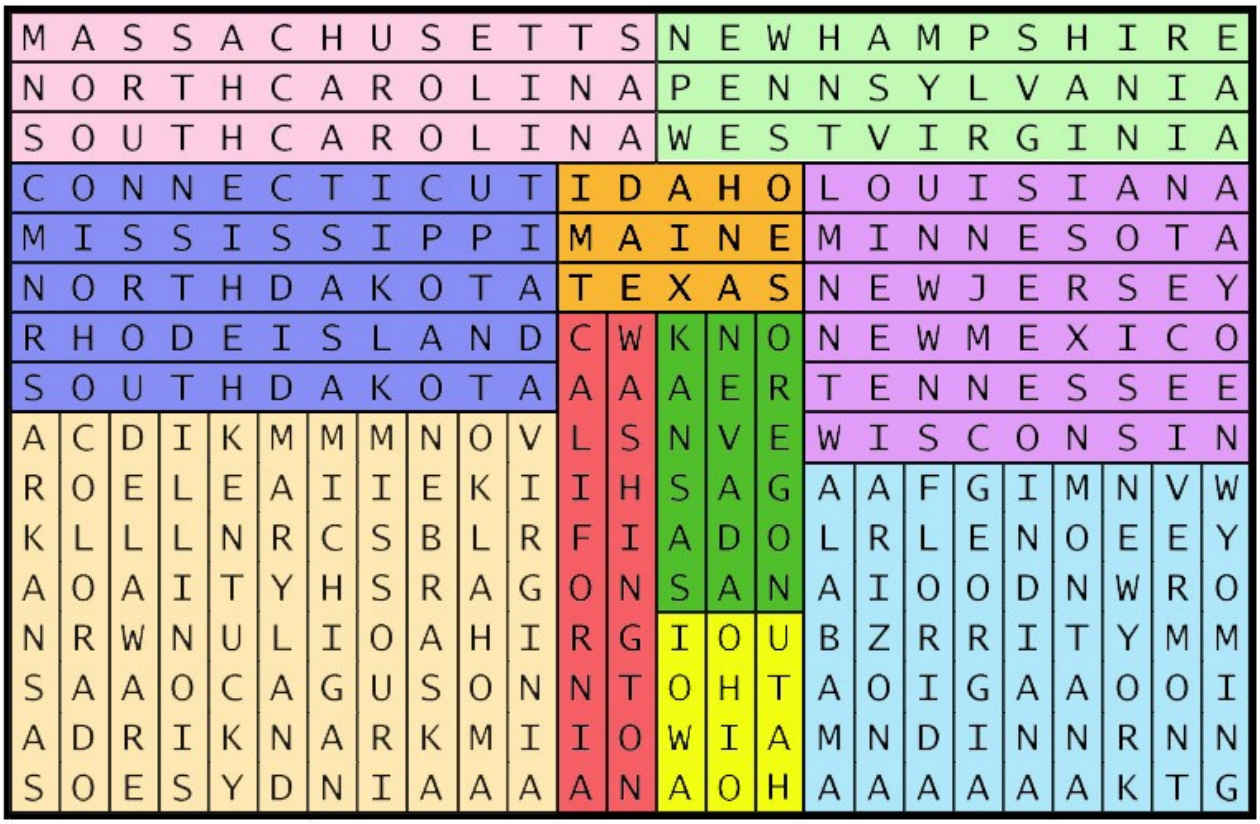
3. The Lower Forty-Eight

The next packing involves a statename packing option which, until recently, I was not even aware existed. Due to a 17-year-old counting error on my part, I had long thought that there were only 399 letters in the names of the first 48 states, but as Mike Keith has now informed me, there are actually 400 letters in those names. This means that there exist not just one but two eminently suitable grids for packing with the names of the "lower 48" states: a 20x20 square and an aesthetic 25x16 rectangle. In his article just preceding this one, Keith presents interesting packings for both of these large grids, including an imaginative "geographical" packing of the 25x16 (see page 135).

Another new idea put forward by Keith in his article is that of his "fewest regions challenge." In a given packing, group together, insofar as possible, all words of equal length in their own "regions." The point is to finish up with as few regions in the packing as possible; ideally, you end up with no more regions than there are different word lengths in the packing. If you can configure such an outcome, you've achieved what Keith calls a "perfect region packing." Apparently, perfect region packings are scarce, and all of the previously known ones are rather small, the largest of them consisting of the cardinal numbers from ONE to ELEVEN packed into a 9x5 grid. The implicit question is, can any larger perfect region packing be devised?

The answer to that question is yes — at least one can. Shown below is a perfect region packing of the names of the first 48 states in a 25x16 rectangular grid. Note the interesting near-parity of

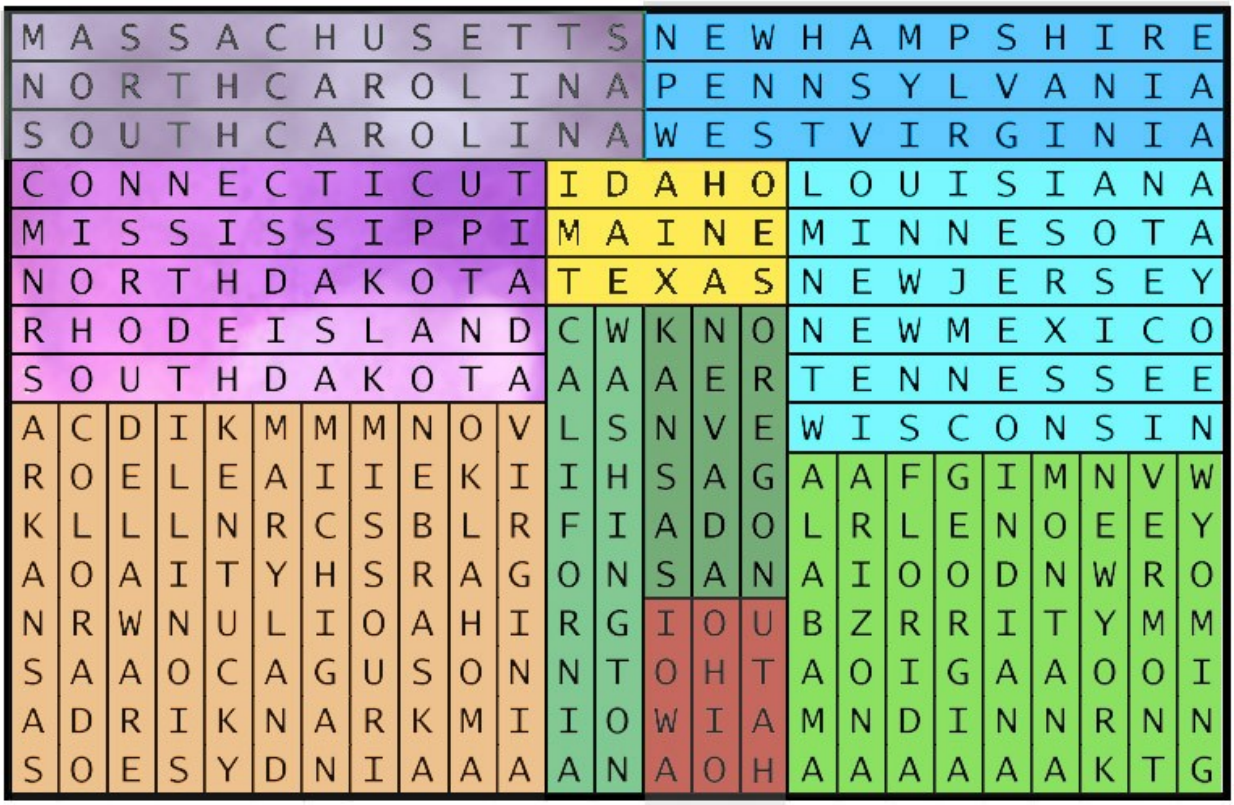
the horizontally-oriented and vertically-oriented regions, which are here consolidated into two "superregions" of practically the same size. Numerically, there are five "vertical" regions consisting of 201 letters in 28 statenames, and five "horizontal" regions consisting of 199 letters in 20 statenames. Thus, only a single letter makes one superregion larger than the other. Given that any region could be either vertically- or horizontally-oriented, is this virtual parity of the two superregions merely an accident, or is it somehow dictated by the grid's shape?



As was mentioned above, the first 48 states' 25x16 grid is one of pleasing dimensions, and in fact its dimensions are very nearly those of a golden rectangle. Recall that in a golden rectangle the smaller side is to the larger side as the larger side is to the sum of the two sides. Doing the arithmetic, we see that $16 \div 25 = 0.64$ and that $25 \div 41 = 0.61$; that is a close enough correspondence, I think, to call this rectangle golden.

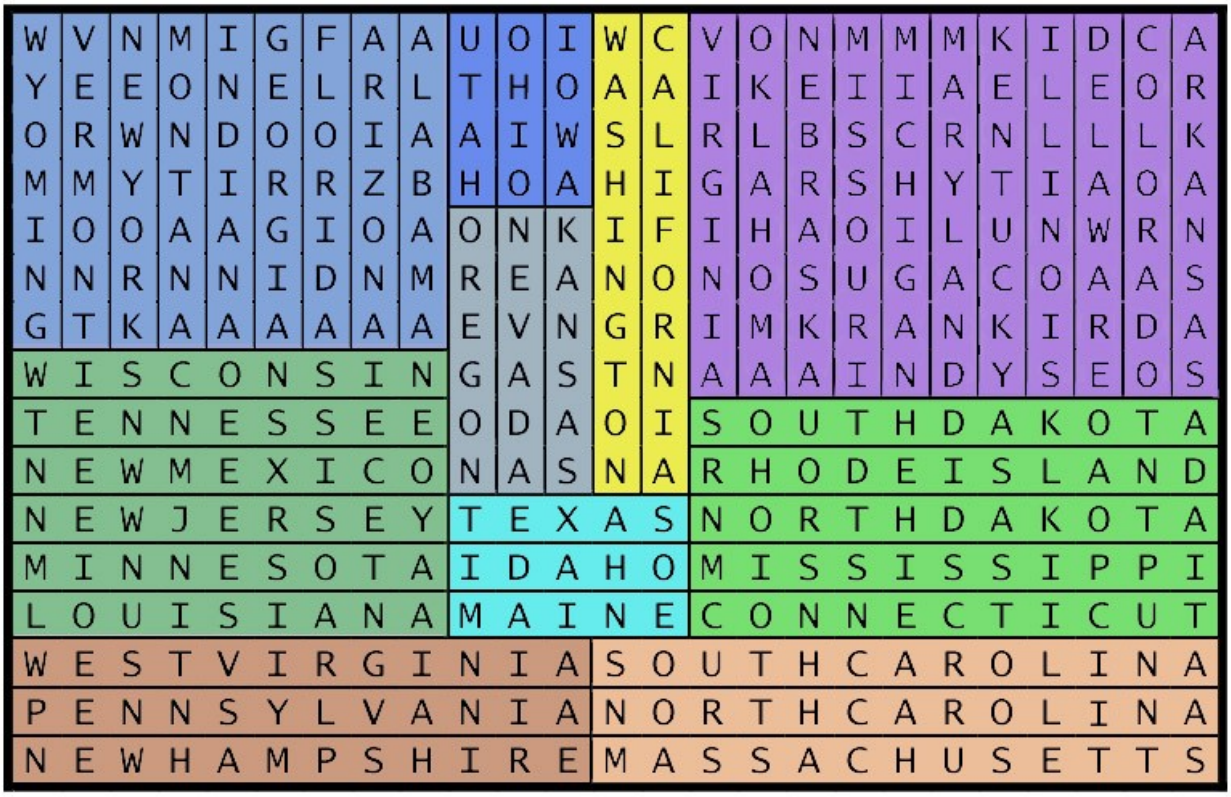
Presented with such a canvas as this, it seems as if one ought to be able to think of something artistic to do with it. In its horizontal orientation, the rectangle is in what photographers call a "landscape" format, so why not try to depict an *actual* landscape in one, using the large blocks of color of a regional packing as abstract picture elements, as in the examples below? Call it the Compressionist school of art.

On the next two pages, Compressionist art as it might be used to didactically illustrate elementary school readers; in a brilliant stroke, students would subliminally absorb the names and spellings of the states from the intriguing illustrations as they read along:



A SUMMER STORY

The sun rose over the trees of the wood into a cloudless midsummer morning sky. In the gold and green fields below, there was standing room only as the ripening wheat and the new barley basked in the bright orb's light. As the morning wore on, however, the heat became oppressive and the air sultry and still. But presently, roiling storm clouds began to gather in the northwest…



In less than an hour, dark clouds had covered the sky, banishing the day, and rain was falling in torrents. In the fields, the crops bowed down as if in obeisance to the rain, and on freshly-plowed earth tiny rivulets flowed in serried ranks in the furrows. Suddenly, a tremendous bolt of lightning struck the surface of the pond! Fortunately, Tim the turtle and Eda the eel were on the other side of the pond at that moment, and so they felt only mild electrical shocks which did them no harm. (Tim, however, who'd been sound asleep in the mud before being rudely galvanized out of his nap, remained indignantly agitated for some time afterward.) Still grumbling, the storm moved on…

4. Better Late than Never

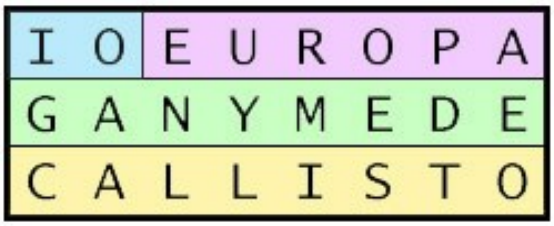
Just as we've done with the presidents and the states, we can do with the planets of the solar system, and look back in time to when there was a different number of them and pack a planetary grid for that time. Let us now look back to the 76-year era (1930 – 2006) when there were nine recognized solar planets, before Pluto was summarily demoted, first to a "dwarf planet" and then to a "plutoid" (how embarassing); fortunately, there is a rectangle within our 4:1 aspect ratio limit that just fits the 52 letters of the names of the planets of the erstwhile nine-planet solar system, namely, this 13x4 grid that vaguely resembles a Mars bar**:**



Note that this is *almost* an ordered packing (the order being the planets' distance from the sun); only the fact that MARS and JUPITER don't touch prevents it from being both an ordered and a perfect packing. But at least this *is* a complete packing of the planetary family as it once was; without PLUTO, not even that much is possible, as there are no packable eight-planet rectangles of any interest. (For that matter, without Pluto's participation there are no interesting and packable rectangles at *any* stage of the planetary sequence, as it's usually ordered. Just saying.)

5. The Galilean Satellites of Jupiter

There are only four of them, but by one of those felicitous coincidences that sometimes occur in grid-packing, they perfectly pack an 8x3 rectangle. They are Jupiter's four largest moons, called "Galilean" because they were discovered by Galileo. In order of increasing distance from Jupiter, they are IO, EUROPA, GANYMEDE and CALLISTO.



Note that this packing is both ordered and complete (i.e., it packs the complete list of the Galilean satellites of Jupiter); ergo, it's another "perfect" packing, by my definition of the term. Packed into an 8x3 grid barely large enough to meet the minimum size requirement, you might call this a "pocket" perfect packing (see also the packing of the seasons' names, below).

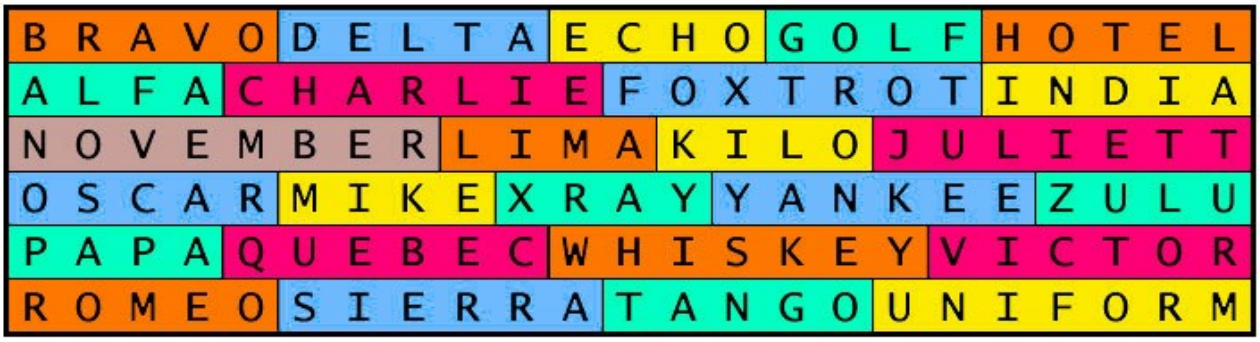
6. ‘Alf a ‘Bravo,’ Charlie!

The old “Able-Baker-Charlie” spelling code was invented by the first generation of radio communicators and was in common use for several decades. In the 1950’s, however, NATO decided that it needed revision for better comprehension among speakers of different languages, and so the International Radiotelephony Spelling Alphabet (IRSA), commonly known as the NATO Phonetic Alphabet, came into being, and was subsequently adopted by the International Civil Aviation Organization and the International Telecommunications Union. It runs thusly:

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

Note that ALFA and JULIETT (but not ROMEOO) are the correct IRSA spellings of those words, and also note that in grid packings X-RAY loses its hyphen.

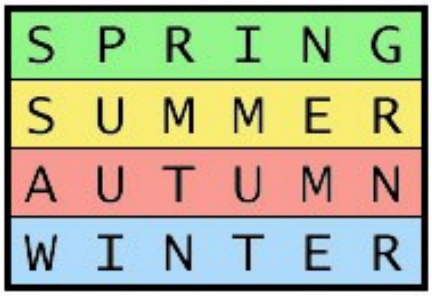
Like the names of the letters of the Greek alphabet, the IRSA is a word sequence which lends itself well to grid packing, and in fact about half of its running letter totals can form packable rectangular grids. The most interesting of these, of course, is the 138-cell 23x6 grid which might, with luck, be exactly packable in ordered sequence with all 26 words of the IRSA. Is it? Well, as may be seen in the grid below (if its pavonine color scheme isn’t too blinding), our recent run of packing luck seems to be holding:



With 138 cells, this ordered packing is now the largest perfect grid packing known, supplanting (quick transit gloria) the 100-cell perfect packing of the names of the letters of the Greek alphabet displayed earlier in this article. That its packing is entirely linear is probably more the consequence of the pronounced flatness of its grid than anything else. (Like two other packings presented in this article, the “95” Greek alphabet packing with its 19x5 grid and the planet-names packing with its 13x4 grid, this packing’s 23x6 grid approaches our 4:1 aspect ratio limit, but there is no less-flat grid available for this word list.) Note the coincidence that the same word, ALPHA or ALFA, appropriately initiates the ordered sequences in each of the three largest complete packings published to date (the Greek alphabet’s “95” being the third largest).

7. A Grid for All Seasons

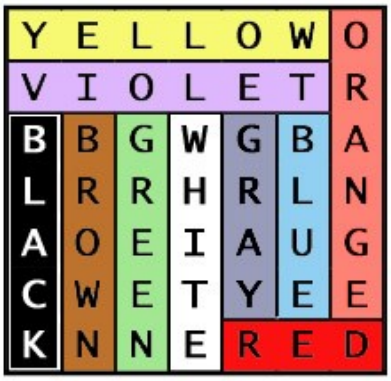
The names of the months of the year, like those of the days of the week, seem not to be especially packable, but the names of the seasons, as may be seen here, are more accommodating:



There is no question that this is a complete list in a complete packing; the only question might be whether or not it's an *ordered* packing, i.e., does it correctly place SPRING at the top or should WINTER be considered the first season of the year? Internet opinion seems to be divided on this question. But does it really matter which season's name leads off, so long as they're all packed in the correct sequential order? I'd think that with cyclic sequences such as the seasons it would be the ordering, not the starting point, that would determine whether a packing is ordered or not. Note that this 6x4 perfect packing and the 8x3 perfect packing of the names of the Galilean moons of Jupiter shown earlier both consist of just 24 letters distributed among four words.

8. Answers Unknown

I close with a pair of questions whose answers are unknown to me. In general use in the electronics industry is a color code in which ten basic colors are numbered from 0 to 9, their sequence being BLACK (0), BROWN (1), RED (2), ORANGE (3), YELLOW (4), GREEN (5), BLUE (6), VIOLET (7), GRAY (8), WHITE (9). There are 49 letters in these ten color names, which suggests that they might be able to exactly pack a grid 7x7 units square — as indeed they can, as shown at left. But can they also pack it in an *ordered* fashion?



My second question has to do with **pangrammatic packings**, a topic as yet unexplored. What is the minimum number of words needed to completely pack a regulation grid in pangrammatic fashion? The smallest regulation grid available for this purpose would be one of 27 cells whose dimensions are 9x3, and the fewest number of words that could pack it would be three nine-letter words which between them incorporate all 26 letters of the alphabet. If, as seems not unlikely, no such trio of nine-letter words exists, what then *is* the smallest number of words that can pangrammatically pack a regulation grid? A 7x4 rectangle might be a more realistic target grid; in order to pack it pangrammatically with the fewest possible words, one need "only" find four seven-letter words which together contain all of the letters of the alphabet. Has that been done?

POSTSCRIPT

Just for fun, here are some examples of what I'll call informal packings, packings which, although they may consist of names and other words that are reasonably familiar, are not based upon recognized, ordered word lists.

1. King Arthur and the Knights of the Square Table

The legend of Arthur derives from a multiplicity of sources which disagree in many details, including the number and names of the knights of the Round Table. The fifteen inscribed on this 10x10 shield seem to me to be the most prominent ones — remember, not every knight seated at the table was a young man. Obviously, this is not an ordered group (alphabetical order doesn't count), as the whole point of the Round Table was to defeat any ranking of the knights.

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



"Arturus rex," a 1493 illustration from the *Nuremberg Chronicle*

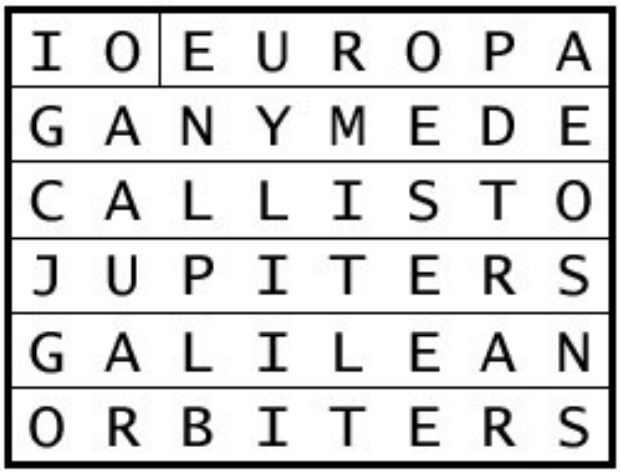
2. 'Tis the Night Before Christmas, and Santa Counts Noses

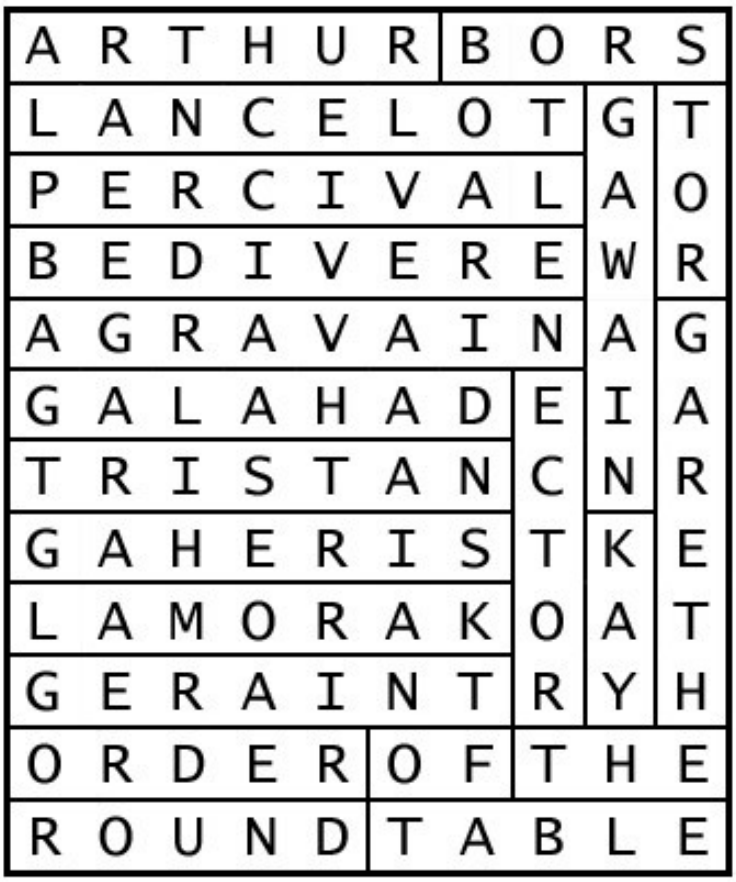
D	A	S	H	E	R	D	A	N	C	E	R
P	R	A	N	C	E	R	V	I	X	E	N
C	O	M	E	T	R	U	D	O	L	P	H
C	U	P	I	D	B	L	I	T	Z	E	N
D	O	N	N	E	R	S	T	N	I	C	K
C	H	R	I	S	T	M	A	S	E	V	E

Call this a gridgram; like a telegram, it eschews punctuation. Punctuated, this one reads:

"'Dasher, Dancer, Prancer, Vixen, Comet, Rudolph, Cupid, Blitzen…*Donner*?' – St. Nick, Christmas Eve"

It’s easy to create such informal constructions simply by extending existing packings, e.g.:





CHEMICAL ELEMENT SQUARE SETS

Darryl Francis
Carlisle, Cumbria, England
darryl.francis@yahoo.co.uk

Previous editions of Interim (and even *Word Ways*) have explored the packing of US presidents' surnames into a 17-by-17 square, starting with Washington and progressing in order to get as far as possible towards Bush (#43). See Jim Puder's article in the May 2021 edition of Interim, as well as updates elsewhere in this current edition.

This set me thinking … are there are other groups of names or words which similarly could be packed into squares in a logical succession sequence, touching each other in the grid along the length of at least one cell?

An obvious contender was the names of the 118 chemical elements. I pondered whether the logical succession sequence should be alphabetical (ie actinium to zirconium) or in atomic number order (ie hydrogen to oganesson). I decided that the latter was a more logical approach, as an alphabetical sequence could be upset by the naming of new elements with atomic numbers greater than 118.

The US presidents' surnames present no problems with spelling, but there are variations in the spelling of the names of three of the chemical elements - aluminium/aluminum, sulfur/sulphur, and caesium/cesium. I decided to use the spellings formally recognised by IUPAC, the International Union of Pure and Applied Chemistry. The spellings used on IUPAC's website are aluminium, sulfur and caesium.

Here are the names and atomic numbers of the 118 elements:

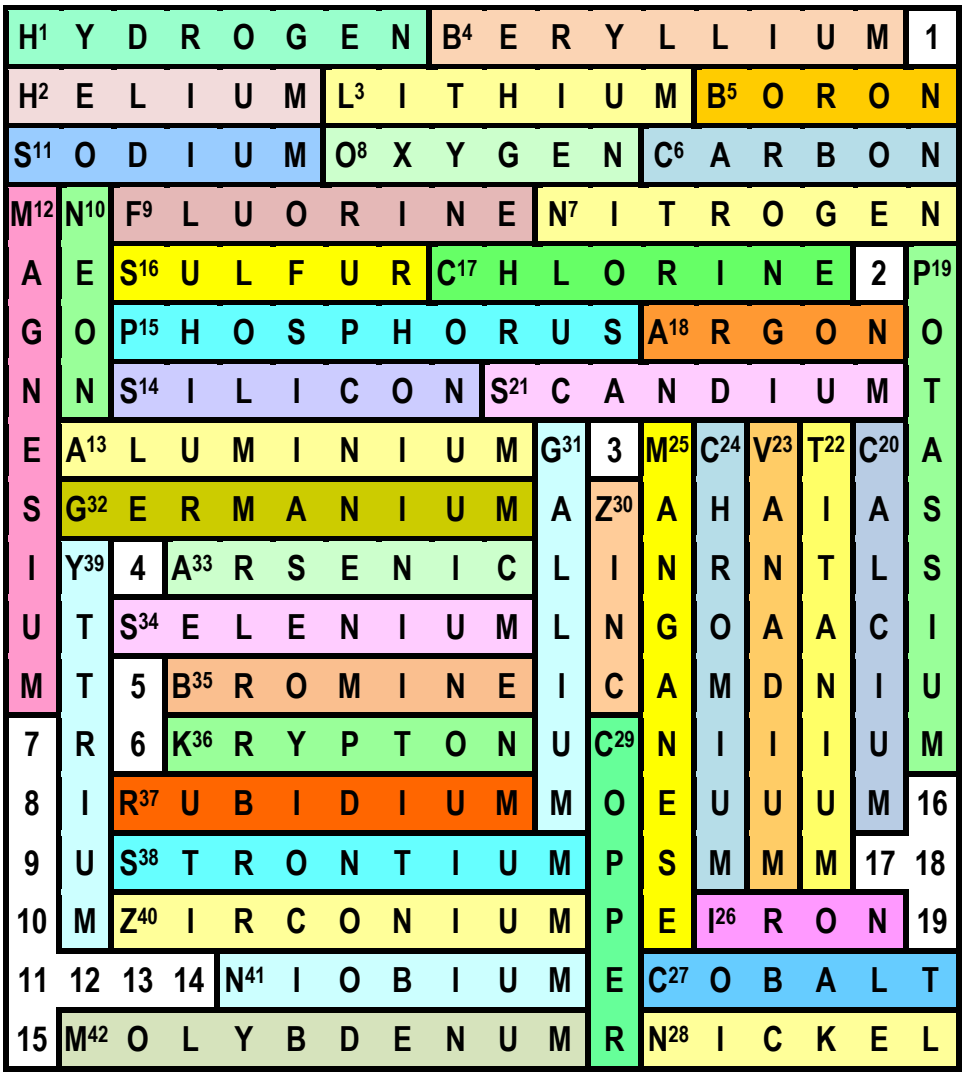
1 hydrogen	26 iron	51 antimony	76 osmium	101 mendelevium
2 helium	27 cobalt	52 tellurium	77 iridium	102 nobelium
3 lithium	28 nickel	53 iodine	78 platinum	103 lawrencium
4 beryllium	29 copper	54 xenon	79 gold	104 rutherfordium
5 boron	30 zinc	55 caesium	80 mercury	105 dubnium
6 carbon	31 gallium	56 barium	81 thallium	106 seaborgium
7 nitrogen	32 germanium	57 lanthanum	82 lead	107 bohrium
8 oxygen	33 arsenic	58 cerium	83 bismuth	108 hassium
9 fluorine	34 selenium	59 praseodymium	84 polonium	109 meitnerium
10 neon	35 bromine	60neodymium	85 astatine	110 darmstadtium
11 sodium	36 krypton	61 promethium	86 radon	111 roentgenium
12 magnesium	37 rubidium	62 samarium	87 francium	112 copernicium
13 aluminium	38 strontium	63 europium	88 radium	113 nohonium
14 silicon	39 yttrium	64 gadolinium	89 actinium	114 flerovium
15 phosphorus	40 zirconium	65 terbium	90 thorium	115 moscovium
16 sulfur	41 niobium	66 dysprosium	91 protactinium	116 livermorium
17 chlorine	42 molybdenum	67 holmium	92 uranium	117 tennessine
18 argon	43 technetium	68 erbium	93 neptunium	118 oganesson
19 potassium	44 ruthenium	69 thulium	94 plutonium	
20 calcium	45 rhodium	70 ytterbium	95 americium	
21 scandium	46 palladium	71 lutetium	96 curium	
22 titanium	47 silver	72 hafnium	97 berkelium	
23 vanadium	48 cadmium	73 tantalum	98 californium	
24 chromium	49 indium	74 tungsten	99 einsteinium	
25 manganese	50 tin	75 rhenium	100 fermium	

The next step was to identify the size of the square (or squares) into which it might be possible to enter element names. Once the names of the elements were listed in atomic number order, as in the table above, a running count of the cumulative total number of letters in the names on the list was set up, and this total noted after each name as it was added to the list. Once the list was finished, the cumulative totals were checked to see if there were any square numbers among them. It turned out that there are three of them: 49 after NITROGEN (atomic number 7), 324 after RUTHENIUM (atomic number 44), and 529 after LUTETIUM (atomic number 71). Forty-nine, 324 and 529 are the squares of 7, 18 and 23. There are no other integral square numbers.

So, could the element names from HYDROGEN to NITROGEN be packed into a 7-square? Could those from HYDROGEN to RUTHENIUM be packed into an 18-square? And could those from HYDROGEN to LUTETIUM be packed into a 23-square? Any packing would have to be without bending and without crossing one another. In the case of the 7-square, such a packing is obviously impossible, since three of the element names are more than seven letters long – HYDROGEN, BERYLLIUM and NITROGEN. But what about packing the other two squares, the 18-square and the 23-square?

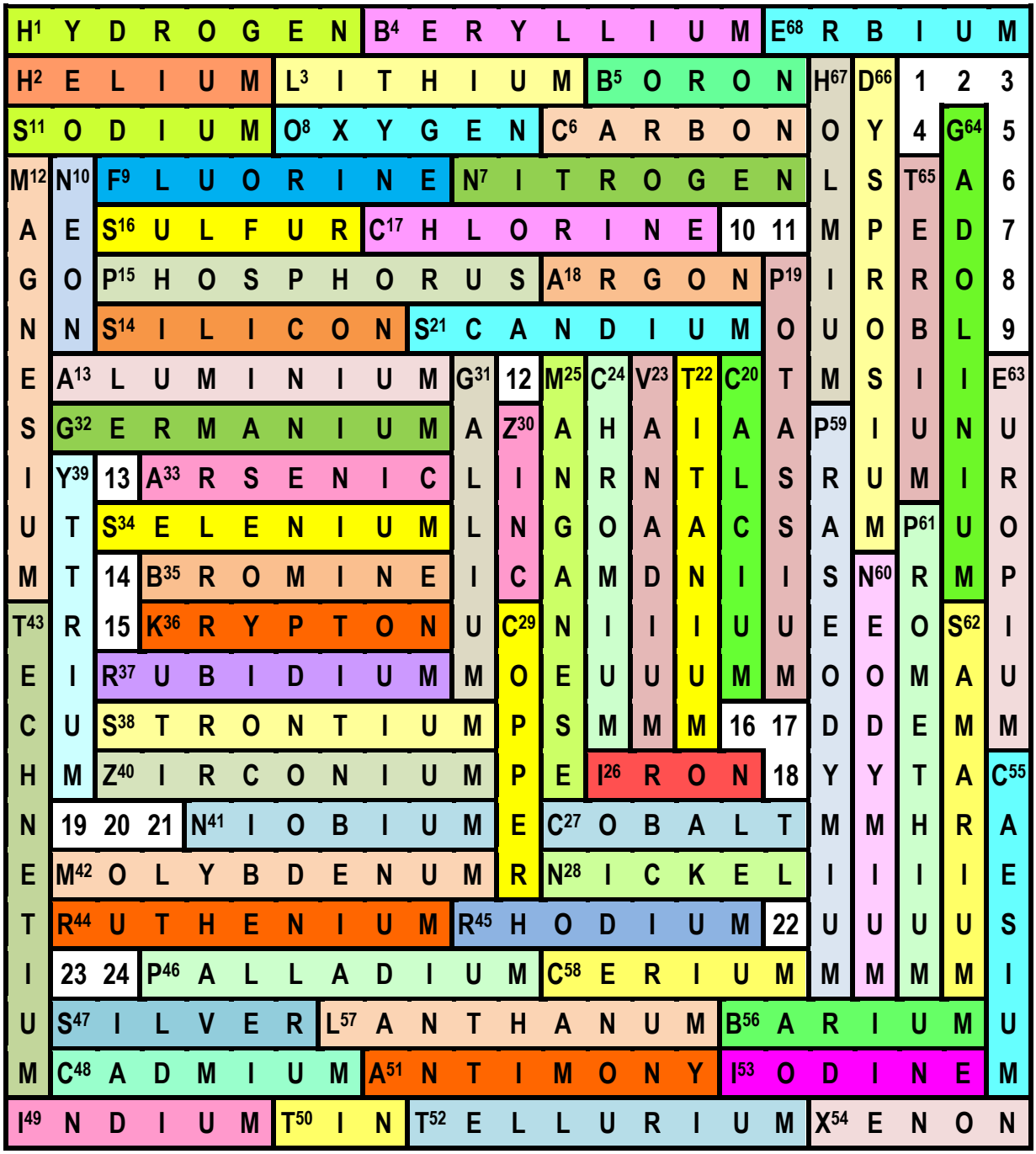
My first attempt was to devise an ordered packing of the 18-square. After several attempts, my best effort is in the table below. This includes the elements with atomic numbers 1 to 42, omitting just the last two elements, TECHNETIUM and RUTHENIUM (atomic numbers 43 and 44). In the table, the first letter of each element's name is accompanied by its atomic number, so that it is straightforward to follow the element names in atomic number order. There are 19 unfilled squares (numbered 1 to 19, and left uncolored). The grid's 305 squares filled out of a total of 324 squares is a ratio of 94.14%. Can an additional one or two elements be fitted into an 18-square? The two clumps of contiguous squares numbered 7-15 and 16-19 suggest it might be possible to rearrange the element names in order to squeeze in one more element, TECHNETIUM. Can it be done?

(Footnote: the colors used in the two squares have no significance, other than making the distinction between adjacent elements clear.)



I then moved on to the challenge of the ordered element-name packing of the 23-square, starting with HYDROGEN and progressing as far as possible towards LUTETIUM (atomic number 71). After several attempts, all based on the 18-square above, I arrived at the arrangement in the 23-square below. This omits three elements - THULIUM (#69), YTTERBIUM (#70) and LUTETIUM (#71). This arrangement leaves 24 squares unfilled, numbered 1 to 24, and left uncolored. Its 505 squares filled out of a total of 529 squares is a ratio of 95.46%, slightly better than my best 18-square effort, suggesting that ordered packings (whether of US presidents' surnames or of chemical element names) is less difficult in larger squares, as suggested previously by Jim Puder. The clump of squares numbered 1-9 suggests it may be possible

to rearrange the names somehow in order to squeeze THULIUM in somewhere. Is this achievable?



It did occur to me that a better fill ratio for the 23-square might be achieved by beginning the square-filling exercise from LUTETIUM (#71) and working

down towards HYDROGEN (#1). Even if the last three elements LITHIUM (#3), HELIUM (#2) and HYDROGEN (#1) couldn't be accommodated, that would leave 21 squares unfilled, a better fill ratio of 96.03%. Anyone care to tackle the 23-square challenge in this way?

Editor's comment: With 68 names, this impressive near-complete ordered packing of the elemental 23-square becomes the lengthiest ordered packing on record, considerably exceeding the 44-name presidential (Washington to Obama) packing elsewhere in this issue. (If Francis had made no effort to pack the element names through LUTETIUM into this square in an ordered fashion, he could doubtless have packed it completely, making it the largest completely-packed square known, surpassing the statename 20-square.)

What if we were to consider packing the element names into rectangles other than squares? There is a total of 923 letters in the official names of all the elements in the periodic table. Working backwards from 118 oganesson, we find that at 116 livermorium the cumulative letter count is 893, which generates a not-too-unwieldy 47x19 rectangle. One atomic number less is 115 muscovium, whose cumulative letter count of 884 generates a rectangle of somewhat more pleasing dimensions, 34x26. If someone were to take the trouble to completely pack one of these with its complete element-name list — which, while doubtless a tedious chore, would probably not be difficult — it would be by far the largest complete packing on record. Moreover, as both of these rectangles are nearly twice as large as the 23-square that Darryl almost succeeded in packing in an ordered fashion, an ordered packing of at least one of them would seem to have a reasonable chance of complete success. Should a competition develop between these two similar-sized rectangles, livermorium's and muscovium's, it will be interesting to see whether the flatter one or the fatter one proves to be more amenable to ordered packing; experience suggests that the flatter grid, livermorium's, may hold the shape advantage.

A GUIDE TO THE GRIDS

Jim Puder
Interim, August 2021

In view of the current surge of interest in this journal in logological grid packing, it was thought that it might be helpful to readers to have convenient access to certain information often essential to that undertaking, in particular the exact order of the words comprising various ordered word lists. Hence this guide, which consists of three parts:

A) Several well-known ordered word lists
B) A history of grid-packing articles in *Word Ways* and *Interim*, up to and including this issue
C) A 23x25 worksheet grid

PART A: SOME PACKABLE WORD LISTS

1. Numbers

There are perhaps three ordered numerical word sequences familiar enough to be utilized in logological grid packing, but so far only one of them, the cardinal numbers, has been so employed. The cardinals' cousins, the ordinal numbers, have never been used in any published packing that I know of, and neither has any cardinal-number expression of the digits of a third familiar number sequence, the irrational ratio *pi*. Let's consider this last sequence for a moment. Here is *pi* as it looks (as expressed in numerals) when expanded to thirty decimal places:

3.14159265358979323846264**3**

Now let's suppose that there are two schools of thought among logological grid-packers regarding decimal points. On the one hand are the *minimalists*, who say that decimal points, like hyphens, should be ignored in word-packing and who begin their packings of *pi* "THREE-ONE-FOUR-ONE-FIVE…" Of a different mind are the *pointillists*, who insist that its decimal point is an integral (if not an integeral) part of *pi* and that it cannot be ignored, and who begin *their* packings of *pi* "THREE-*POINT*-ONE-FOUR-ONE-FIVE…" How would this hypothetical dichotomy of views play out in practice? Well, the pointless minimalist school would find that the first square number to occur in the cumulative letter totals of its cardinal-number expression of *pi* would come at *pi's* thirtieth decimal place, which is at the **red three** in the number above; at this point, the minimalists' cumulative letter count for *pi* would stand at exactly 100, the number of cells in a 10x10 square grid. The dotty pointillists, meanwhile, would find that the first square number occurring in *their* cumulative letter count, also exactly 100, came at *pi's* twenty-ninth decimal place, which is at the **blue four** in the number above. The upshot would be that there would be two different word lists available for use by anyone hoping to pack *pi's* 100-square in an ordered fashion. Could either or both of the lists succeed in doing so? Possibly; the recent success of an ordered packing of the names of the letters of the Greek alphabet in a grid of the same dimensions suggests that this might well be feasible.

2. U.S. Presidents (304 total letters through #46)

Did Taylor come before Tyler, or was it the other way around? Ponder no longer; here is the handy and authoritative *Interim* U.S. Presidential Succession List to settle all such questions:

01 George WASHINGTON
02 John ADAMS
03 Thomas JEFFERSON
04 James MADISON
05 James MONROE
06 John Q. ADAMS
07 Andrew JACKSON
08 Martin VAN BUREN
09 William H. HARRISON
10 John TYLER
11 James K. POLK
12 Zachary TAYLOR
13 Millard FILLMORE
14 Franklin PIERCE
15 James BUCHANAN
16 Abraham LINCOLN
17 Andrew JOHNSON
18 Ulysses S. GRANT
19 Rutherford B. HAYES
20 James A. GARFIELD
21 Chester A. ARTHUR
22 Grover CLEVELAND
23 Benjamin HARRISON
24 Grover CLEVELAND
25 William McKINLEY
26 Theodore ROOSEVELT
27 William H. TAFT
28 Woodrow WILSON
29 Warren G. HARDING
30 Calvin COOLIDGE
31 Herbert HOOVER
32 Franklin D. ROOSEVELT
33 Harry S TRUMAN
34 Dwight D. EISENHOWER
35 John F. KENNEDY
36 Lyndon B. JOHNSON
37 Richard M. NIXON
38 Gerald R. FORD
39 James E. CARTER
40 Ronald W. REAGAN
41 George H. W. BUSH
42 William J. CLINTON
43 George W. BUSH
44 Barack H. OBAMA
45 Donald J. TRUMP
46 Joseph R. BIDEN

3. The Fifty States (412 total letters)

By custom, the names of the 50 U.S. states, when used in grid packing, have been listed in the order of their state's admission into the Union. But there is no particular reason why this should be so. Indeed, whenever one sees the 50 states listed in a group, they are almost always listed in alphabetical order, so why not pack them as well? Here are the names of the states listed in both ways, the first one in chronological order of statehood and the second one in alphabetical order of spelling:

a) Order of Admission

01 DELAWARE
02 PENNSYLVANIA
03 NEW JERSEY
04 GEORGIA
05 CONNECTICUT
06 MASSACHUSETTS
07 MARYLAND
08 SOUTH CAROLINA
09 NEW HAMPSHIRE
10 VIRGINIA
11 NEW YORK
12 NORTH CAROLINA
13 RHODE ISLAND
14 VERMONT
15 KENTUCKY
16 TENNESSEE
17 OHIO
18 LOUISIANA
19 INDIANA
20 MISSISSIPPI
21 ILLINOIS
22 ALABAMA
23 MAINE
24 MISSOURI
25 ARKANSAS
26 MICHIGAN
27 FLORIDA
28 TEXAS
29 IOWA
30 WISCONSIN
31 CALIFORNIA
32 MINNESOTA
33 OREGON
34 KANSAS
35 WEST VIRGINIA
36 NEVADA
37 NEBRASKA
38 COLORADO
39 NORTH DAKOTA
40 SOUTH DAKOTA
41 MONTANA
42 WASHINGTON
43 IDAHO
44 WYOMING
45 UTAH
46 OKLAHOMA
47 NEW MEXICO
48 ARIZONA
49 ALASKA
50 HAWAII

b) Alphabetical Order

ALABAMA, ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, CONNECTICUT, DELAWARE, FLORIDA, GEORGIA, HAWAII, IDAHO, ILLINOIS, INDIANA, IOWA, KANSAS, KENTUCKY, LOUISIANA, MAINE, MARYLAND, MASSACHUSETTS, MICHIGAN, MINNESOTA, MISSISSIPPI, MISSOURI, MONTANA, NEBRASKA, NEVADA, NEW HAMPSHIRE, NEW JERSEY, NEW MEXICO, NEW YORK, NORTH CAROLINA, NORTH DAKOTA, OHIO, OKLAHOMA, OREGON, PENNSYLVANIA, RHODE ISLAND, SOUTH CAROLINA, SOUTH DAKOTA, TENNESSEE, TEXAS, UTAH, VERMONT, VIRGINIA, WASHINGTON, WEST VIRGINIA, WISCONSIN, WYOMING

4. The Elements of the Periodic Table (923 total letters)

Listed in order of atomic number. Note that "ALUMINIUM," "CAESIUM" and "SULFUR" are official spellings. Major thanks to Darryl Francis for sharing this list with me:

1 hydrogen	**26 iron**	**51 antimony**	**76 osmium**	**101 mendelevium**
2 helium	**27 cobalt**	**52 tellurium**	**77 iridium**	**102 nobelium**
3 lithium	**28 nickel**	**53 iodine**	**78 platinum**	**103 lawrencium**
4 beryllium	**29 copper**	**54 xenon**	**79 gold**	**104 rutherfordium**
5 boron	**30 zinc**	**55 caesium**	**80 mercury**	**105 dubnium**
6 carbon	**31 gallium**	**56 barium**	**81 thallium**	**106 seaborgium**
7 nitrogen	**32 germanium**	**57 lanthanum**	**82 lead**	**107 bohrium**
8 oxygen	**33 arsenic**	**58 cerium**	**83 bismuth**	**108 hassium**
9 fluorine	**34 selenium**	**59 praseodymium**	**84 polonium**	**109 meitnerium**
10 neon	**35 bromine**	**60neodymium**	**85 astatine**	**110 darmstadtium**
11 sodium	**36 krypton**	**61 promethium**	**86 radon**	**111 roentgenium**
12 magnesium	**37 rubidium**	**62 samarium**	**87 francium**	**112 copernicium**
13 aluminium	**38 strontium**	**63 europium**	**88 radium**	**113 nohonium**
14 silicon	**39 yttrium**	**64 gadolinium**	**89 actinium**	**114 flerovium**
15 phosphorus	**40 zirconium**	**65 terbium**	**90 thorium**	**115 moscovium**
16 sulfur	**41 niobium**	**66 dysprosium**	**91 protactinium**	**116 livermorium**
17 chlorine	**42 molybdenum**	**67 holmium**	**92 uranium**	**117 tennessine**
18 argon	**43 technetium**	**68 erbium**	**93 neptunium**	**118 oganesson**
19 potassium	**44 ruthenium**	**69 thulium**	**94 plutonium**	
20 calcium	**45 rhodium**	**70 ytterbium**	**95 americium**	
21 scandium	**46 palladium**	**71 lutetium**	**96 curium**	
22 titanium	**47 silver**	**72 hafnium**	**97 berkelium**	
23 vanadium	**48 cadmium**	**73 tantalum**	**98 californium**	
24 chromium	**49 indium**	**74 tungsten**	**99 einsteinium**	
25 manganese	**50 tin**	**75 rhenium**	**100 fermium**	

5. The Spelled-Out Letters of the Greek Alphabet (100 total letters)

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

6. The International Radiotelephony Spelling Alphabet (138 total letters)

Commonly known as the NATO Phonetic Alphabet; note that "ALFA" and "JULIETT," while funny-looking, are nonrtheless the official spellings.

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

PART B: GRID-PACKING ARTICLES, ETC., IN *WORD WAYS* AND *INTERIM*

1. Michael Keith, "Some Properties of One Two Three," *Word Ways*, August 1999 (32,3)
2. A. Ross Eckler, " Packing the Cardinals," *Word Ways*, August 1999 (32,3)
3. Frank Rubin, in "Colloquy," *Word Ways*, February 2000 (33,1), page 24
4. Jim Puder, "State and Presidential Square Sets," *Word Ways*, May 2004 (37,2)
5. Jim Puder, "State and Presidential Square Sets II," *Interim*, May 2021 (1,2)
6. Darryl Francis, "A Better Presidential 17-Square Packing," *Interim*, August 2021 (1,3)
7. Mike Keith, "Packing Word Lists into Rectangles & Squares: …" *Interim* August 2021 (1,3)
8. Jim Puder, "Divers and Sundry Packings," *Interim*, August 2021 (1,3)
9. Darryl Francis, "Chemical Element Square Sets," *Interim*, August 2021 (1,3)
10. Jim Puder, "A Guide to the Grids," *Interim*, August 2021 (1,3)

Over the years there were a number of articles in *Word Ways* dealing with the "packing" of lists of words into confined spaces, but the majority of these involved packings in which words were allowed to overlap, sharing letters that they happened to have in common. Prior to this issue of *Interim*, there have been only four articles in *Word Ways* and *Interim* combined that have dealt with word-packing of the kind currently in vogue, in which ordered sequences of words are attempted to be fitted *without overlapping* into rectangular grids of various shapes and sizes.

Word-packing of this sort was first described by Michael Keith in a seminal article (1) in the August 1999 *Word Ways*, in which he elucidated actual and potential square, rectangular and even hypercubic packings of some of the cardinal number names. In a companion article (2) in the same issue, A. Ross Eckler exhibited ten square and rectangular grids packed with sequences of the cardinal numbers, some ordered and some not, starting from one to as far as twenty-one. In that article, Eckler defined and demonstrated *linear* and *ordered* packings for the first time. Two *Word Ways* issues later, in "Colloquy" (3), Frank Rubin demonstrated an improvement to one of Eckler's packings.

Subsequently, in a 2004 *Word Ways* article (4), I pointed out that both the chronological order of the succession of the U.S. presidents and the chronological order of the admission of the U.S. states to the Union generated historically-ordered word lists in which, from time to time, the cumulative letter totals of the names in the lists would be square numbers, and that this could possibly permit the names in the lists at that point in time to be packed into square grids of that cell capacity. I named a number of historical occasions on which such square cumulative letter totals had occurred in both lists, but exhibited no examples of such packings.

So far as I'm aware, there was no further discussion of grid-packing in *Word Ways*. In an article in the May 2021 *Interim* (5), I basically recapitulated my 2004 *Word Ways* article (4), this time illustrating it with four packings: complete (but not ordered) packings of the presidential 11- and 17-squares, a failed attempt to pack the statename 16-square, and an incomplete attempt to pack the presidential 17-square in an ordered fashion.

This brings us to the present issue of *Interim*, in which may be found a total of five articles on the subject of grid packing. In the first one (6), which was written by Darryl Francis and amended by me, the author presents a whopping seven-name improvement in my incomplete ordered packing of the presidential 17-square mentioned above, and explains how he was able to do it. In an addendum, I slightly revise his packing in order to add one further name to its presidential sequence, thereby leaving it just two names short of completion.

Mike Keith, who some two decades ago pioneered this pastime, next contributes a landmark article (7) in which a number of remarkable packings are presented, the most amazing of which may be his complete packing of the statehood sequence 13-square, a packing which I'd recently written off as being impossible. Keith deems this very difficult packing an "elegant puzzle," remarking that there is but one possible solution to it. Also exhibited in his article is the first complete packing of the statehood 16-square as well as the first complete packings of the first 48 states' names in two different 400-cell grids, to wit, a 20x20 square and a 25x16 rectangle. In addition to these startling results, Keith exhibits the smallest-possible complete rectangular packings for the state and presidential word lists, and introduces some novel packing ideas including "regional" and quasi-geographical packings.

The third packing article (8) offers a miscellany of packings, including an ordered packing of presidential surnames up to and including OBAMA and the only four examples (two of them four-word miniatures) I've yet seen of "perfect" packings. (A "perfect" packing, as I define one, is one in which an entire ordered word list is packed in ordered fashion into a grid which just contains it.) Several novel word lists are explored.

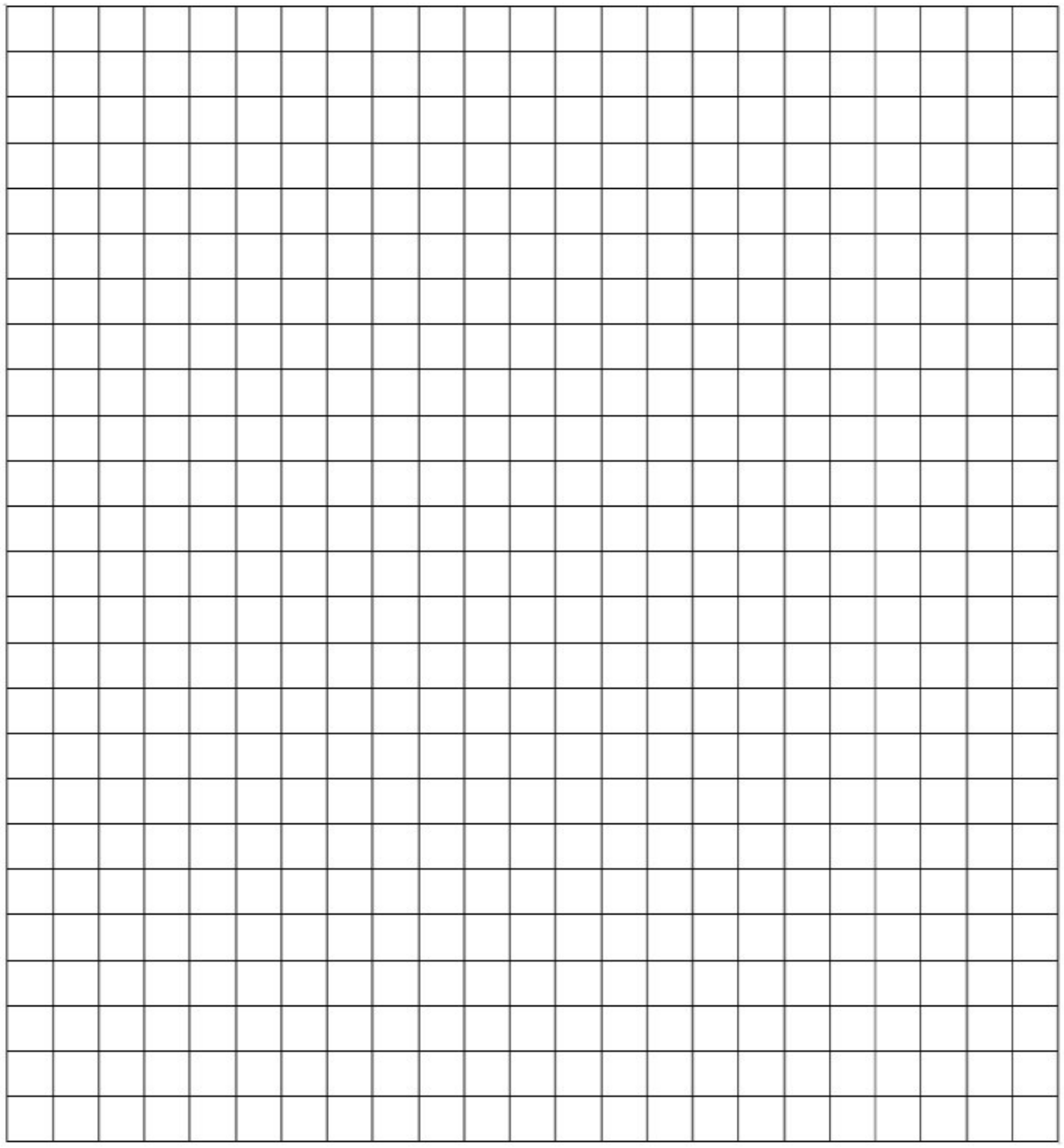
In the fourth packing article in this issue of *Interim* (9) Darryl Francis goes where no one else has gone, tackling the most daunting of the available word lists, the names of the chemical elements of the periodic table. Whereas there are 46 presidential surnames and 50 statenames, there are 118 element names, and a good many of them are rather lengthy, especially towards the end of their sequence. Ordering the elements by their atomic numbers, Francis found two places in their sequence at which the cumulative letter totals of their names formed square numbers, at element 44 (ruthenium), an 18-square, and at element 71 (lutetium), a 23-square, and attempted ordered packings of both squares. Neither attempt succeeded completely — that would border on the miraculous — but given the difficulty of this word list, his results are little less than astonishing, with completion ratios averaging about 95%. His packing of the 23-square, with its 68-word sequence, is the longest ordered packing on record.

Lastly, there is this article (10), in which the major excitement may be its reminders that a number of eligible word lists, such as the ordinal numbers, the digits of *pi,* and the alphabetically-ordered names of the states have yet to be employed in any published packing, as well as the fact

that no one has yet ventured to attempt an *ordered* packing of the names of the states, either chronologically or alphabetically, in a grid of any size.

PART C: A 23x25 GRID WORKSHEET

For any would-be grid packers who may be in need of orthogonally-ruled worksheets, the following 23x25 grid is offered as a template for a worksheet suitable for most grid-packing purposes. Simply make a screen copy of this page and print out as many copies of it as needed.



PUZZLE: X IS A Y OF Y

Mike Keith
Christopher Kocher

Each item below is the X in a statement of the form

X is (a, an, the) Y (of, for, about) Y

where Y is a language or wordplay term. Your task is to determine Y given X. For instance (this example is too easy), the answer to "Char Ade" would be "charade", since Char Ade is a charade of "charade". Some of these are almost as easy as that one, others are more difficult. Note: X is never equal to Y.

1. noosperism
2. nasal sport
3. A curious relic of spelling takes its course
4. svenska
5. thyme
6. synonym
7. "Raga, man!"
8. "Curtail, men!"
9. "Man, the green!" (with a Jamaican accent)
10. Las Rever
11. equivalent
12. 
13. igpay atinlay
14. portword
15. Übersetzung
16. importunate
17. acorn
18. fodszqujpo
19. A
20. Crazy Celtic cry: "Up, arcane allusion!"
21. abbr.
22. senior talent
23. aaabehiilnopttz
24. транслитерация
25. sketch of nature scene / with seasonal metaphor / Japanese art form
26. canned lime
27. English language

Answers on page 166

PERFECT MARRIAGES

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Born as a DC Comics demigoddess superheroine on December 1941, Wonder Woman recently celebrated her seventy-fifth birthday. I grew up reading about the valiant Amazonian warrior-princess equipped with her Lasso of Truth and indestructible bracelets, sword, and shield.

In addition to being an inspiration to girls—and boys—Wonder Woman is the heroine of a pyrotechnic pun: If Wonder Woman married Howard Hughes and then divorced him and married Henry Kissinger, she'd be (get ready to sing the punch line) "Wonder Hughes Kissinger now!"

Surprising results follow when the right people marry the right people. Here are some fanciful marriages, involving real and fictional personages, between some of our favorite luminaries:

- If Ella Fitzgerald married Darth Vader, she'd be Ella Vader.
- If Rosemary Decamp married William Kunstler, she'd be Rosemarie Decamp Kunstler.
- If Anna Magnani married Martin Mull, she'd be Anna Mull.
- If Imogene Coca married Tom Mix, she'd be Imogene Coca Mix.
- If Jo Ann Worley married Larry Bird, she'd be Jo Ann Worley Bird.
- If Isadora Duncan married Robert Donat, she'd be Isadora Duncan Donat.
- If Annette Bening married Lonzo Ball, she'd be Annette Ball.
- If Ilka Chase married David Seltzer, she'd be Ilka Seltzer.
- If Jodie Foster married Sherlock Holmes, she'd be Jodie Foster Holmes.
- If Bella Abzug married Timothy Bottoms, she'd be Bella Bottoms.
- If Rose Kennedy married George Bush, she'd be Rose Bush.
- If Ellen Burstyn married Red Buttons, she'd be Ellen Burstyn Buttons.
- If J.K. Rowling married Oliver Stone, their children would be Rowling Stones.
- If Meryl Streep married Michael Dukakis, she'd be Meryl Streep Dukakis.
- If Ali McGraw married Jim Kaat, she'd be Ali Kaat.
- If Bea Arthur married Sadaharu Oh, she'd be Bea Oh.
- If Tuesday Weld married Frederic March's grandson, she'd be Tuesday March the Second.
- If Wynn Everett married Claude Raines, she'd be Wynn Everett Raines.
- If Anita Ekberg married Neil Diamond and then divorced him and married Jack Nicklaus, she'd be Anita Diamond Nicklaus.
- If Olivia Newton-John married Wayne Newton and then divorced him and married Elton John, she'd be Olivia Newton-John Newton John.
- If Kaye Ballard married Wally Schirra and then divorced him and remarried him, she'd be Kaye Schirra Schirra.

- If Liv Ullman married Judge Lance Ito and then divorced him and married Jerry Mathers, she'd be Liv Ito Beaver.
- If Sondra Locke married Eliot Ness and then divorced him and married Herman Munster, she'd be Sondra Locke Ness Munster.
- If Ida Lupino married Dan Rather and then divorced him and married Don Knotts, she'd be Ida Rather Knotts.
- If Karen Black married Chris Rock and then divorced him and married Kenneth Starr, she'd be Karen Black Rock Starr.
- If Sue Grafton married Raymond Burr and then divorced him and married Thomas Mann, she'd be Sue Burr Mann.
- If Phyllis George married Denzel Washington and then divorced him and married Raymond Carver, she'd be Phyllis George Washington Carver.
- If Bo Derek married Richard Nixon and then divorced him and married Clarence Darrow, she'd be Bo N. Darrow.
- If June Allyson married Stevie Wonder and then divorced him and married Edwin Land, she'd be June Allyson Wonder Land.
- If Olivia Wilde married Oscar Wilde and then divorced him and married Kanye West, she'd be Olivia Wilde Wilde West.
- If Judith Light married Jimmy Waite, divorced him and married Joseph Cotton, and then divorced *him* and married Richard Gere, she'd be Judith Light Waite Cotton Gere.
- If Crystal Gayle married Charlie Chan and then divorced him and married Michael Dell and then divorced him and married Norman Lear, she'd be Crystal Chan Dell Lear.
- If Tippi Hedron married Albert Camus and then divorced him and married Steven Tyler, she'd be Tippi Camus and Tyler, too.
- If Vicki Carr married Martin Mull and then divorced him and married James Caan and then divorced him and married Joey Dee, she'd be Vicki Carr Mull Caan Dee.
- If Gracie Allen married Count Basie and then divorced him and married William Macy and then divorced him and married Spencer Tracy and then divorced him and married Steve Lacy and then divorced him and married Kevin Spacey and then divorced him and married Ben Casey, she'd be Gracie Basie Macy Tracy Lacy Spacey Casey.
- If Ivana Trump married Mister Bean, then divorced him and married King Oscar of Norway, then divorced him and married Mike Myers, and then divorced him and married Anthony Wiener, she'd be Ivana Bean Oscar Myers Wiener!

Nog (Quark's brother on *Star Trek: Deep Space Nine*) has no other name, so he uses it twice when he gets a marriage license and takes the last name of his wife. If he married one of Howard Hughes's wives, then divorced her and married Brynn Thayer, he'd be Nog Nog Hughes Thayer.



"FLASHBACKS ARE A THING OF THE PAST"
More Self-Referential Humor . . . and Assorted Observations Thereon

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"There are two kinds of people: Those who divide people into two kinds and those who don't."

This is a quintessentially reflexive joke: humor that refers to itself. The quip is attributed to Robert Benchley, a popular writer in the 1920s and '30s.

An article I wrote on self-referential humor was published in the November 2004 issue of *Word Ways*. It was an original, pioneering analysis—or at least I unilaterally so decreed, based on internet and terrestrial searches. In the ensuing 17 years, I haven't encountered much else on the subject. Thus, it's time to fill that shocking lacuna with a sequel.

Let's recap the strict criteria I devised. To qualify as self-referential humor, a candidate cannot merely be ironic, contradictory, paradoxical, or oxymoronic, but must truly be reflexive. And humorous, of course. I've seen numerous compilations of linguistic jokes and cerebral witticisms, but I rejected most because they fail to check all the boxes.

Consider, as one that does, the title of this article: "Flashbacks are a thing of the past." It's a malapropism supposedly uttered by Samuel Goldwyn, the legendary Hollywood producer whose heyday was in the 1930s and '40s. Goldwyn was notorious for amusing gaffes, some genuine and others invented. If the expression still has currency, it may be because it's a line of dialogue in *City of Angels*, a 1989 Broadway musical with a libretto by Larry Gelbart, regularly revived in college- and community-theater productions.

Here are additional specimens of the genre that were not in the original article, though some, like those cited above, go back a ways.

- "I can resist everything except temptation." Oscar Wilde's famous quip, a line in his 1892 comedy *Lady Windermere's Fan*.

- "A witty saying proves nothing." Voltaire, *Le dîner du comte de Boulainvilliers*, 1769.

- "Pragmatism doesn't work." An ancient joke among philosophers.

- "People say I'm condescending. That means I talk down to you." Spotted on a T-shirt. A search reveals that this snark and variations are also available on coffee mugs and water bottles, if you prefer.

- The *interrobang* (⁉) is a punctuation mark invented in 1962. Its purpose: to emphasize utterances that are simultaneously questions and exclamations. Alas, the interrobang is not often seen these days. Whatever happened to it⁉

- True story: A professor told me he was working on a book on nihilism. I riposted: "Nihilism? Is it worth it?"

- "Everybody is forever saying that the essay is dead. This is always said in essays." John Leonard, literary critic.

- *Hippopotomonstrosesquippedaliophobia*. What does it mean? Fear of long words, of course. The coinage is no doubt facetious; a more accepted term consists only of the final nine syllables.

In my earlier article, I cited examples of the risible self-contradictory grammatical dicta, widely circulated but homeless until linguist William Safire compiled them into a 1990 book called *Fumblerules*. A few more: "Don't use no double negatives." "Take the bull by the hand and delete mixed metaphors." "Avoid trendy locutions that sound flaky."

In school or elsewhere, you might have encountered the clever verse by English Romantic poet Samuel Taylor Coleridge, self-defining the major metrical forms. This is an excerpt:

Trochee trips from long to short;
From long to long in solemn sort
Slow Spondee stalks, strong foot!, yet ill able
Ever to come up with Dactyl's trisyllable.
Iambics march from short to long.
With a leap and a bound the swift Anapests throng.

In his book *Rhyme's Reason* (1981, 4th edition 2014), John Hollander carried this trick a step further by composing entire poems that self-illustrate their forms.

For 45 years, Metropolitan Diary, a weekly column in *The New York Times,* has published anecdotes submitted by readers. This one appeared in the March 13, 2011 issue. Jan Carr's son needed a short story for a school assignment. In a phone conversation with a clerk at a local bookstore, the following conversation ensued: "Can you check a title for me? 'Bartleby, the Scrivener.'" The immediate response: "I would prefer not to." If you recall the classic 1853 Herman Melville story, you get the joke. After that surprisingly literate exchange, the book was indeed located, so the tale had a happy ending.

Finally, another incident involving a student task, reported to me by Marc Kahn, a retired software consultant in Vancouver, Washington. Some years ago, his 16-year-old daughter was doing her homework and his wife asked her: "Do you know what a rhetorical question is?" Marc interrupted: "Does she have to answer that?"

INTERRIMSHOTS

LOUIS PHILLIPS
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Bon mots and rimshots:

“”Knock, knock.” “Who’s there?” “Force.” “Force who?” “Forceupper we brought hot dogs and buns.”

What’s the opposite of a laboratory? A laborawhig.

“Dad, are we pyromaniacs?” “Yes, we arson.”

“I’ll never forget the time I got mooned in Miami,” said Tom with hindsight.

Just so everyone’s clear, I’m going to put on my glasses.

From *Webster’s Unabashed Dictionary*:

torrent – what it costs to lease a small mountain (“tor rent”)

succumbed – what a succum sleeps on

vsetarh – *Random “Harvest”*

Incidentally, have you heard that the word “gullible” has been dropped from the OED?

I hate HCl!” Tom said. There was acid in his voice.

What do you call a pig with laryngitis? Disgruntled.

Writing my name in cursive is my signature move.

Why do bees stay in their hives in winter? Swarm.

Was Little Miss Muffet set in her wheys?

The Shakespeare deniers

Difficult though it may be for moderns to believe, there have been times in the past when the Bard’s oeuvre has not necessarily been regarded as being above all criticism. The following disparaging assessments of his work were culled from Jennifer Higgie’s books *The Little Book of Venom* and *Far Too Noisy, My Dear Mozart*, both of which are subtitled *A Collection of Historical Insults*:

"Crude, immoral, vulgar and senseless." ~ Leo Tolstoy

"With the single exception of Homer, there is no eminent writer, not even Sir Walter Scott, whom I detest so entirely as I despise Shakespeare when I measure my mind against his . . . it would positively be a relief to me to dig him up and throw stones at him. ~ George Bernard Shaw

"To the King's Theater, where we saw A Midsummer Night's Dream, which I had never seen before, nor shall ever again, for it is the most insipid, ridiculous play I ever saw in my life." ~ Samuel Pepys

"This enormous dunghill." ~ Voltaire

Illustrative spellings:

Shrinking NONCOMFORMIST SEP ARATION

cAMEL PA IR Swan TRIo SPIKE LOOK

DOLLAR$ HOle ZERO AlTeRnAtE

DRAWKCAB MULTI X PLICATION INVI IBLE

UPSIDEDOMN giraffes OM SSION

* * * * * * * * * *

Answers to "Puzzle: X is a Y of Y" 1. spoonerism 2. transposal 3. acrostic 4. Swedish 5. rhyme 6. antonym 7. anagram 8. curtailment 9. monde- green 10. reversal 11. synonym 12. rebus 13. Pig Latin 14. portmanteau word 15. translation 16. permutation 17. eggcorn 18. encryption (a letter shift by 1 gives "fodszqujpo") 19. acronym 20. cryptic clue 21. abbreviation 22. transdeletion 23. alphabetizaton 24. transliteration 25. haiku 26. slant rhyme 27. Anguish Languish

INFORMATION FOR CONTRIBUTORS

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