Copyright © 2019 Jeremiah Farrell
<table>
<thead>
<tr>
<th>Topic</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopangrams</td>
<td>D. Francis</td>
</tr>
<tr>
<td>Rearrangements</td>
<td>D. Francis</td>
</tr>
<tr>
<td>A Short Story in Alphametics</td>
<td>U. Wermuth</td>
</tr>
<tr>
<td>Add A Vowel</td>
<td>S. Kahan</td>
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<td>Anil</td>
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<td>Cursive Russian-English Homographs</td>
<td>T. Miller</td>
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<td>S. Thorpe</td>
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<td>Jabbowocky or: Lipolating Nonsense</td>
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<td>Mary Had Four Little Lambs</td>
<td>Anil</td>
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<td>Mean Sidewalks</td>
<td>Anil</td>
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<td>Miami Sequences</td>
<td>S. Thorpe</td>
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<td>Opposites in Sentences</td>
<td>S. Thorpe</td>
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<td>Ping Pong</td>
<td>D. Shaw</td>
</tr>
<tr>
<td>Punk Whiz 23</td>
<td>Anil</td>
</tr>
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<td>Removing Separated Alphabetically</td>
<td>S. Thorpe</td>
</tr>
<tr>
<td>Adjacent Letters</td>
<td></td>
</tr>
<tr>
<td>Reversed Vowel Countries</td>
<td>S. Thorpe</td>
</tr>
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<td>The Disko Magic Square</td>
<td>J. Farrell</td>
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<td>The Inside and Outside of Four Letter Words</td>
<td>S. Thorpe</td>
</tr>
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<td>The Martin Game</td>
<td>J. Farrell</td>
</tr>
<tr>
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<td>E. Tentarelli</td>
</tr>
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<td>NYM Competition Tribute–It’s ‘Know’ Contest</td>
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</tr>
</tbody>
</table>
I’m sure that all Word Ways readers will know what a pangram is: a sentence containing all the letters of the alphabet. The most well-known one, once used for typewriter keyboard training, is this:

The quick brown dog jumps over the lazy fox (35 letters)

Shorter examples exist. For example, Wikipedia offers the following six examples:

- Jived fox nymph grabs quick waltz (28 letters)
- Glib jocks quiz nymph to vex dwarf (28 letters)
- Sphinx of black quartz, judge my vow (29 letters)
- How vexingly quick daft zebras jump (30 letters)
- The five boxing wizards jump quickly (31 letters)
- Pack my box with five dozen liquor jugs (32 letters)

A ‘perfect pangram’ is a set of words using all 26 letters of the alphabet, once and only once. The word isopangram is also used to describe a perfect pangram. Here is part of the OED entry for the word pangrammatist:

A writer who uses every letter of the alphabet in a single sentence, line of verse, etc; a composer of pangrams.

2002 Spectator (Nexis) 7 Sept. 32 The Holy Grail of the pangrammatists is the isopangram, which uses each letter once and once only.

In Dmitri Borgmann’s Language on Vacation, he offers these 6-word and 7-word isopangrams:

<table>
<thead>
<tr>
<th>cwm</th>
<th>fjord</th>
<th>bank</th>
<th>glyphs</th>
<th>vext</th>
<th>quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>fjord</td>
<td>buck</td>
<td>zags</td>
<td>whelm</td>
<td>qvint</td>
<td>pyx</td>
</tr>
<tr>
<td>junky</td>
<td>qoph</td>
<td>flags</td>
<td>vext</td>
<td>crwd</td>
<td>zimb</td>
</tr>
<tr>
<td>milk</td>
<td>vat</td>
<td>fez</td>
<td>bugs</td>
<td>qoph</td>
<td>crwd</td>
</tr>
<tr>
<td>zing</td>
<td>vext</td>
<td>cwm</td>
<td>fly</td>
<td>jabs</td>
<td>Kurd</td>
</tr>
</tbody>
</table>
Borgmann attempts to explain each of these as a meaningful sentence, albeit with a rather stretched, bizarre explanation. However, I think it’s best to simply treat the solutions as collections of unrelated words.

Once the quest for meaningful sentences is discarded, it’s not difficult to find other 6-word and 7-word solutions. Searching the internet throws up several additional examples. Here are just a few (reading left to right):

<table>
<thead>
<tr>
<th>cwm</th>
<th>fjord</th>
<th>veg</th>
<th>balks</th>
<th>nth</th>
<th>pyx</th>
<th>quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>jink</td>
<td>cwm</td>
<td>zag</td>
<td>veldt</td>
<td>fob</td>
<td>qursh</td>
<td>pyx</td>
</tr>
<tr>
<td>kat</td>
<td>veld</td>
<td>zubr</td>
<td>gif</td>
<td>cwm</td>
<td>jynx</td>
<td>qophs</td>
</tr>
<tr>
<td>cwm</td>
<td>fjord</td>
<td>bank</td>
<td>glyphs</td>
<td>vext</td>
<td>quiz</td>
<td></td>
</tr>
<tr>
<td>jock</td>
<td>nymphs</td>
<td>waqf</td>
<td>drug</td>
<td>vex</td>
<td>blitz</td>
<td></td>
</tr>
<tr>
<td>squdgy</td>
<td>fez</td>
<td>blank</td>
<td>jimp</td>
<td>crwth</td>
<td>vox</td>
<td></td>
</tr>
<tr>
<td>veldt</td>
<td>jynx</td>
<td>grimps</td>
<td>waqf</td>
<td>zho</td>
<td>buck</td>
<td></td>
</tr>
<tr>
<td>waqf</td>
<td>glyphs</td>
<td>vex</td>
<td>muck</td>
<td>djin</td>
<td>bortz</td>
<td></td>
</tr>
<tr>
<td>zing</td>
<td>dwarf</td>
<td>jocks</td>
<td>vex</td>
<td>lymph</td>
<td>Qutb</td>
<td></td>
</tr>
</tbody>
</table>

All of the words in the above solutions use words from mainstream dictionaries, even though several of the words are uncommon.

The challenge now is to find isopangrams using fewer than 6 words.

I am aware that the February 1977 edition of *Word Ways* contained a 4-word panisogram devised by Dmitri Borgmann: FJORDHUNGKVISL (a short river in Iceland, listed in *The Times World Index-Gazetteer*), PECQ (a town in western Belgium, also in *The Times World Index-Gazetteer*), WAMB (an obsolete spelling of *womb*, in *Webster’s Second*) and ZYXT (an obsolete Kentish second person singular indicative present form of the verb *see*, from *The Oxford English Dictionary*). As impressive as this solution is, it depends on two obscure geographical names and two obsolete spellings.

Could I devise something better? Could I avoid placenames and other proper names? Could I get down to just one obsolete spelling, or even avoid them completely? I decided to try …

But first, I wanted to lay down some ground rules – no initials, no abbreviations, no Roman numerals, no chemical symbols, no internet domains, no placenames or other proper names. I will allow obsolete, archaic, dialect
and variant spellings. And all solution words should be found in widely recognised reference sources, printed or online.

Delving back into the February 1977 Word Ways, there is this excellent 5-word solution, courtesy of Dmitri Borgmann:

```
jackbox  phlegms  qvint  fyrd  wuz
```

All these words are in *Webster’s Second Edition*, and none is marked obsolete.

Utilising the wealth of obsolete spellings from *The Oxford English Dictionary*, especially those beginning with QH-, QV- and QW-, I have managed to devise numerous 5-word solutions. Here are just 10 of them, most using only one obsolete spelling:

```
frogland  bumphs  qwyck  vext  jiz
muzjik    plongd  barfs  qwynch  vext
advect    qhwylk  bumpf  grosz  jinx
blocked   qwyght  vamps  jinx  zurf
schmutzig fjeld  prawn  qxvyk  box
trebling  jumps  qwyck  vozhd  fax
muzjiks   plongd  byrch  vext  waqf
jagdwurst flinch  bomp  qxvyk  zex
jackbox   frump  glitz  wends  qxhy
jackbox   qwyght  fremd  vuln  zips
```

The final challenge is to find 4-word isopangrams, even just one! My good friend Allan Simmons helped out here. Between us, we found several solutions which came very close, usually with four words and a single unused letter. Eventually, Allan came up with this imperfect solution:

```
backjumping  scqwyrt  vozhd  flex
```

Allan commented that “*The Oxford English Dictionary* has scqwyrt as an obsolete variant spelling of squirt, but the C is duplicated, also appearing in backjumping”. However, with a bit of sleuthing, I managed to find a couple of online dictionaries which have the C-less spelling SQWYRT. Thus:

```
backjumping  sqwyr  vozhd  flex
```
Let’s take a look at each of these four words.

- **backjumping:**
  - en.wiktionary.org/wiki/backjumping and www.yourdictionary.com/backjumping both have exactly the same definition: “(Computing theory) A form of backtracking that may move more than one level at a time, used to improve the efficiency of certain algorithms.”
  - en.wikipedia.org/wiki/Backjumping (the word’s Wikipedia article) has this more detailed statement: “In backtracking algorithms, **backjumping** is a technique that reduces search space, therefore increasing efficiency. While backtracking always goes up one level in the search tree when all values for a variable have been tested, **backjumping** may go up more levels. In this article, a fixed order of evaluation of variables is used, but the same considerations apply to a dynamic order of evaluation.”

- **sqwyrt**
  - www.dictionary.com/browse/squirt and www.wordreference.com/definition/squirt both have this: “(noun) late Middle English **sqwyrt** diarrhea, derivative of the verb.”

- **vozh:**
  - According to the **OED**: “A leader, one who is in supreme authority: applied especially to the Russian statesman Joseph Stalin (1879–1953).”

- **flex**
  - A common word, both verb and noun, findable in even modest dictionaries.

---

**Dictionary sources for some obscure words**

- **bumpf**: variant of **bumf**, **OED**
- **bumphs**: Webster’s Third
- **byrch**: obsolete form of **birch**, **OED**
- **fjeld**: Webster’s Third
- **frogland**: land on which frogs live, **OED**
- **grosz**: Webster’s Third
- **muzjik(s)**: Webster’s Third
- **plongd**: Spenserian spelling of **plunged**, **Chambers Dictionary, 12th edition**
- **qhwylik**: variant form of **quhilk**, A Dictionary of the Older Scottish Tongue (at dsl.ac.uk)
- **qvyk**: obsolete form of **quick**, **OED**
- **qwych**: obsolete form of **which**, 28 quotes including **qwych**, **OED**
<table>
<thead>
<tr>
<th><strong>Word</strong></th>
<th><strong>Definition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>qwyck</td>
<td>obsolete form of <em>quick</em>, <em>OED</em></td>
</tr>
<tr>
<td>qwyght</td>
<td>obsolete form of <em>quit</em>, <em>OED</em></td>
</tr>
<tr>
<td>schmutzig</td>
<td>filthy/dirty, <em>OED</em></td>
</tr>
<tr>
<td>waqf</td>
<td><em>Webster’s Third</em></td>
</tr>
<tr>
<td>zurf</td>
<td>cup-shaped holder for a hot coffee-cup, used in the Levant, usually of metal and of ornamental design, <em>OED</em></td>
</tr>
</tbody>
</table>
REARRANGEMENTS

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

We love rearranging the letters in a logical set of words to make a different group of words, preferably with fewer words in the rearranged group than in the original set – the fewer the better. We can rearrange WORD WAYS into AW DROWSY (2 words into 2 words) and THE NEW YORK TIMES into MONKEYISH WETTER (4 words into 2 words). We decided to identify some different logical sets of words, then to reorganise each set’s letters into as few words as possible. We present some of our best findings so far below, but it is possible that the number of words in some groups could be rearranged into fewer words. It just requires a bit of letter juggling and word searching.

Starting with a US theme, here are some fairly easy rearrangements, with the rightmost column showing the numbers of words in the original set and the rearranged group:

<table>
<thead>
<tr>
<th>Original Set</th>
<th>Rearranged Set</th>
<th>Words Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>STARS AND STRIPES</td>
<td>SPARTAN DISTRESS</td>
<td>3 to 2</td>
</tr>
<tr>
<td>RED WHITE AND BLUE</td>
<td>BEWILDERED HAUNT</td>
<td>4 to 2</td>
</tr>
<tr>
<td>US HOUSE OF REPRESENTATIVES</td>
<td>FORTUITOUSNESS HEAVER SEEP</td>
<td>4 to 3</td>
</tr>
</tbody>
</table>

Switching to seasons, we played with those of the US and Britain, thus:

<table>
<thead>
<tr>
<th>Original Set</th>
<th>Rearranged Set</th>
<th>Words Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPRING SUMMER FALL WINTER</td>
<td>WILLINGNESS FARMER TRUMP</td>
<td>4 to 3</td>
</tr>
<tr>
<td>SPRING SUMMER AUTUMN WINTER</td>
<td>INTERMENSTRUUM UPSWARMING</td>
<td>4 to 2</td>
</tr>
</tbody>
</table>

It seems slightly surprising that the US seasons with fewer letters can only be reduced to 3 words, while the British set with more letters can be reduced to 2 words. This is because FALL has only a single vowel, while the three vowels of AUTUMN provide more flexibility. The closest we could get to 2 words for the US seasons was this, with a single letter unused:

<table>
<thead>
<tr>
<th>Original Set</th>
<th>Rearranged Set</th>
<th>Words Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPRING SUMMER FALL WINTER</td>
<td>PRELAWFULNESS TRIMMING R</td>
<td></td>
</tr>
</tbody>
</table>

In several instances that we shall see later, a solution with a single letter unused usually implies that an improved rearrangement of all the letters is possible, doing away with the single letter.

Let’s look at some geographical sets of words and see how they can be rearranged. Starting simply with the points of the compass, we see that:

<table>
<thead>
<tr>
<th>Original Set</th>
<th>Rearranged Set</th>
<th>Words Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH SOUTH EAST WEST</td>
<td>TOOTHWASHES NUTTERS</td>
<td>4 to 2</td>
</tr>
</tbody>
</table>

And how about the USA?

<table>
<thead>
<tr>
<th>Original Set</th>
<th>Rearranged Set</th>
<th>Words Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNITED STATES OF AMERICA</td>
<td>DEFECATION TRAUMATISES</td>
<td>4 to 2</td>
</tr>
</tbody>
</table>
Staying with the USA, here’s a rearrangement of the names of the Great Lakes:

<table>
<thead>
<tr>
<th>Original Order</th>
<th>Rearranged Order</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERIE HURON MICHIGAN ONTARIO SUPERIOR</td>
<td>HISTORIOGRAPHER IMINOUREA NEURONIC</td>
<td>5 to 3</td>
</tr>
</tbody>
</table>

And how about these transformations of the boroughs of New York City?

<table>
<thead>
<tr>
<th>Original Order</th>
<th>Rearranged Order</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>BROOKLYN MANHATTAN QUEENS STATENISLAND THEBRONX</td>
<td>ANTHRAHYDROQUINONE BASKETBALLS ANNEXMENTS NOTT</td>
<td>5 to 4</td>
</tr>
<tr>
<td>BROOKLYN MANHATTAN QUEENS STATENISLAND THEBRONX</td>
<td>NONANNEXATIONS TALKATHONS REMBRANDTESQUE BLYTH</td>
<td>5 to 4</td>
</tr>
</tbody>
</table>

Notice how we have removed the spaces from STATEN ISLAND and THE BRONX in order to emphasise that we’re treating each of these as one name rather than two words. This space removal will feature elsewhere as this article continues.

Our first attempt at a transformation of the names of the six New England states gave us this imperfect solution, because of the single unused letter:

<table>
<thead>
<tr>
<th>Original Order</th>
<th>Rearranged Order</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAINE NEWHAMPSHIRE VERMONT MASSACHUSETTS RHODEISLAND CONNECTICUT</td>
<td>COUNTERREVOLUTIONARIES IMPEACHMENTS WITHSTAND CHESSMAN CHASMED N</td>
<td>6 to 5</td>
</tr>
</tbody>
</table>

But we soon managed to improve it thus:

<table>
<thead>
<tr>
<th>Original Order</th>
<th>Rearranged Order</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAINE NEWHAMPSHIRE VERMONT MASSACHUSETTS RHODEISLAND CONNECTICUT</td>
<td>CHEMOTHERAPEUTICS MENUS CONTRADISTINCTIONS HELMSMAN HEAVENWARDS</td>
<td>6 to 5</td>
</tr>
</tbody>
</table>

And we managed further still to improve it to give this superior solution:

<table>
<thead>
<tr>
<th>Original Order</th>
<th>Rearranged Order</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAINE NEWHAMPSHIRE VERMONT MASSACHUSETTS RHODEISLAND CONNECTICUT</td>
<td>COUNTERPRODUCTIVENESSES NEMATHELMINTHIC WHATSHISNAME CARDAMONS</td>
<td>6 to 4</td>
</tr>
</tbody>
</table>

However, there is a problem with this last solution. The only dictionary source we can find for COUNTERPRODUCTIVENESS is Wiktionary, and Wiktionary specifically says “uncountable”, implying that the plural form isn’t valid. However, Webster’s Third has an entry for the suffix -NESS, and specifically shows a plural form -NESSES, clearly implying that any noun ending in -NESS can be pluralized. On this basis, we’re claiming that the 6-to-4 arrangement above is acceptable. However, if readers can find another 6-to-4 solution without any caveating, we’d be grateful.

Our next challenge was to tackle the 13 original states of the USA. How far could we take the reduction down from 13? Here’s an early solution we came up with, but we suspect further reductions are possible:
As yet, we haven’t tackled Canada’s provinces and territories, so please feel free to see what you can do with this collection of 13 names:

<table>
<thead>
<tr>
<th>ALBERTA</th>
<th>BRITISHCOLUMBIA</th>
<th>MANITOBA</th>
<th>NEWBRUNSWICK</th>
<th>NEWFOUNDLANDANDLABRADOR</th>
<th>NORTHWESTTERRITORIES</th>
<th>NOVASCOTIA</th>
<th>NUNAVUT</th>
<th>ONTARIO</th>
<th>PRINCEEDWARDISLAND</th>
<th>QUEBEC</th>
<th>SASKATCHEWAN</th>
<th>YUKON</th>
</tr>
</thead>
</table>

We also tackled the names of the four countries of the United Kingdom:

<table>
<thead>
<tr>
<th>ENGLAND</th>
<th>SCOTLAND</th>
<th>WALES</th>
<th>NORTHERNIRELAND</th>
</tr>
</thead>
</table>

And here’s what we managed with the four main islands of Japan, no reduction at all! The presence of 5 K’s and 4 U’s probably means that a 4-to-3 solution isn’t possible, but readers are encouraged to prove that wrong.

<table>
<thead>
<tr>
<th>HOKKAIDO</th>
<th>HONSHU</th>
<th>SHIKOKU</th>
<th>KYUSHU</th>
</tr>
</thead>
</table>

We also had a stab at transforming the names of the seven continents. Our early attempts ended up with this:

<table>
<thead>
<tr>
<th>NORTHAMERICA</th>
<th>SOUTHAMERICA</th>
<th>ANTARCTICA</th>
<th>AUSTRALASIA</th>
<th>AFRICA</th>
<th>ASIA</th>
<th>EUROPE</th>
</tr>
</thead>
</table>

But we managed to improve on this, and our best solution so far is the one below. We think further improvement is unlikely because of the excessive number of vowels, but a 7-to-4 solution may just be possible:

<table>
<thead>
<tr>
<th>NORTHAMERICA</th>
<th>SOUTHAMERICA</th>
<th>ANTARCTICA</th>
<th>AUSTRALASIA</th>
<th>AFRICA</th>
<th>ASIA</th>
<th>EUROPE</th>
</tr>
</thead>
</table>
Beyond the Earth, we went on to tackle the names of planets in the Solar System. Once upon a time (1930–2006), Pluto was considered a planet; but the International Astronomical Union downgraded it to a dwarf planet in 2006. From our point of view, we can simply treat this as two different groups, one with 8 members (excluding Pluto), and the other with 9 members (including Pluto). We think the 8-to-4 solution is the best reduction which can be achieved, but suspect that the 9-to-5 reduction may be improvable to 9-to-4. Anyone care to tackle that?

<table>
<thead>
<tr>
<th>MERCURY VENUS EARTH MARS</th>
<th>JUPITER SATURN URANUS NEPTUNE</th>
<th>ANTEJURAMENTUM</th>
<th>SUPERSTRUCTURE UNIVERSARY NENUPHARS</th>
<th>8 to 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MERCURY VENUS EARTH MARS</td>
<td>JUPITER SATURN URANUS NEPTUNE</td>
<td>ANTEJURAMENTUM</td>
<td>REPRESENTATIVES UTURUNCU SULPHURY SPORRAN</td>
<td>9 to 5</td>
</tr>
</tbody>
</table>

Okay, enough of geography and the Solar System. How about we tackle some maths/science sets of words? The first one we tackled was the four classical elements. Here’s an early 4-to-3 solution:

| EARTH WATER AIR FIRE | RATIFIER WEATHER AR | 4 to 3 |

Since this solution uses a two-letter word, we felt that a 4-to-2 solution would also be possible with some further letter juggling. It was:

| EARTH WATER AIR FIRE | FAIRWEATHER ARTIER | 4 to 2 |

The four mathematical operators (addition, subtraction, division, multiplication) form a logical set, and this is where we probably spent the most effort in seeking an optimal rearrangement solution. Here are three of our early 4-to-4 solutions – that is, with no reduction in each initial set and its rearranged group.

| ADDITION SUBTRACTION DIVISION MULTIPLICATION | CONTRADISTINCTIONS TIBIAD ILLUVIATION PODIUM | 4 to 4 |
| ADDITION SUBTRACTION DIVISION MULTIPLICATION | ANTICONSTITUTIONAL DIM INDIVIDUAL PROBIOTICS | 4 to 4 |
| ADDITION SUBTRACTION DIVISION MULTIPLICATION | ANTICONSTITUTIONAL OP INDIVIDUALIST BROMIDIC | 4 to 4 |

The fact that the last of these rearrangements involved a two-letter word suggested to us that a 4-to-3 solution could be a possibility. We found many imperfect solutions where there was just a single unused letter – here are just three of them, although we unearthed many others:

| ADDITION SUBTRACTION DIVISION MULTIPLICATION | NONINDIVIDUALISTIC PROSTITUTION CALAMITOID B | |
| ADDITION SUBTRACTION DIVISION MULTIPLICATION | PROCONSTITUTIONALISM INDIVIDUATION ALBITIC D | |
Eventually we found a genuine 4-to-3 solution. This was also discovered independently by our good Scrabble friend Allan Simmons (from Coldingham, Scotland). The fact that we both ended up with this solution after many hours of letter-juggling suggests this is probably the only solution using words from dictionaries such as Webster’s Third, Webster’s Second, the Oxford English Dictionary, and the Random House Unabridged:

However, we suspected there might be other 4-to-3 solutions if we used words from outside our regular dictionaries. We managed to find just one more solution, this one using a word from Wikipedia (PROTOBALISTIUM = an extinct genus of prehistoric bony fish). If anyone can create additional 4-to-3 solutions, please let us know.

The periodic table of the chemical elements seemed like an interesting area to tackle, not all 118 of the elements we should hasten to add. That would be too much of an undertaking (but we will return to this later). Our first area of investigation was the so-called halogens, the six elements which sit towards the right-hand side of the periodic table (in group 17)

We then went on to investigate the inert gases, the seven elements which sit on the far right-hand side of the periodic table (in group 18). The presence of 9 N’s dismayed us at first, but we did manage this impressive rearrangement:

Turning now to something a bit more mundane – the seven colours of the rainbow. We found several 7-to-4 rearrangements which used two-letter words. Here are three of them:

The number of 7-to-4 arrangements involving a two-letter word led us to suspect that a
7-to-3 rearrangement should be possible. However, so far, our best 7-to-3 effort uses a word outside of our regular dictionaries, in this case using **NEURODEGENERATIVELY** from Wiktionary:

| RED ORANGE YELLOW GREEN BLUE INDIGO VIOLET | > | NEURODEGENERATIVELY WILLIER BOONDOGGLE | 7 to 3 |

Staying in the scientific world, what could we achieve with the eight taxonomic ranks which are used to classify all living organisms? We think this 8-to-4 rearrangement would be hard to beat:

| DOMAIN KINGDOM PHYLUM CLASS ORDER FAMILY GENUS SPECIES | > | PARAPSYCHOLOGICALLY KINDS GEMMIFEROUSNESS UNDIMMED | 8 to 4 |

Sort of scientific in as far as they are mathematical, what’s the best that could be achieved with the names of the numbers 1 through 10? One of our first solutions was this 10-to-6 effort:

| ONE TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN | > | INTERVENTIONISTS OVERWEIGHT XENON FEE HUE FE | 10 to 6 |

But our Scrabble and maths puzzling friend Chris Hawkins (from Cambridgeshire, England) offered us three 10-to-5 solutions, thus:

| ONE TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN | > | HETEROGENEITIES WHIFF NUN OVEREXTENSION VET | 10 to 5 |
| ONE TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN | > | INVENTIVENESS EXEGETE NONFORFEITURE HOH WIT | 10 to 5 |
| ONE TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN | > | NONINTERVENTION GHEE VEXT HOUSEWIFERIES FET | 10 to 5 |

Another Scrabble-playing friend Nathan Benedict (from Phoenix, Arizona) then piled in to the problem and managed the first of several 10-to-4 rearrangements:

| ONE TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN | > | NONEXISTENT OVEREFFUSIVE HEIGHTENER TOWNIE | 10 to 4 |

Not wishing to be outdone, we returned to the search and came up with a further 10-to-4 rearrangement:

| ONE TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN | > | NONEXTENSIVE HOUSEWIFE INVERTING FORETEETH | 10 to 4 |

Days of the week and months of the year proved an interesting area for exploration. We thought that days of the week might be a struggle as all seven days contained the letters DAY. Respectively, Allan Simmons and we managed these very different 7-to-6 rearrangements:
Months of the year proved more amenable to a significant reduction in the rearrangement size, 12-to-7. We think a 12-to-6 rearrangement may be possible, but meanwhile, here’s one of our several 12-to-7 ones:

| JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER | > | CHLAMYDOBACTERIACEOUS ANTEJURAMENTUM BEJABBERS EVERGREENERY FRUMP JUMBLY UPROAR |
| > | MEDROXYPROGESTERONE BOOKBINDINGS GASTRORRHAGIA REGATTA TOOK |

Sticking with calendars, we also tackled the signs of the zodiac and the creatures associated with the months in the Chinese calendar. Here are our best solutions so far, but both may be improvable:

| ARIES TAURUS GEMINI CANCER LEO VIRGO LIBRA SCORPIO SAGITTARIUS CAPRICORN AQUARIUS PISCES | > | PERSPICACIOUSNESS AURICULAR TERRITORIALISING PARAGRAM ACQUISITIVENESS CURIBOCA GOOR |
| > | JARGOGLING HEREUPON O |
| > | JARGOGLING EUROPHEN O |
| > | JARGOGLING HONOUREE P |
| > | GIGAJOULE PRONGHORN E |

So far, we’ve not tackled any familiar sets of people. The very first group we tackled was the first names of the Beatles – John, Paul, George and Ringo. At the outset this looked like a straightforward set of names to be rearranged, but it threw up some interesting points. Our first 4-to-3 solution is shown here:

| JOHN PAUL GEORGE RINGO | > | AEROPHONE JUGGLING OR |

Several imperfect solutions were found which ended up with two words and a single unused letter. Here are four of these imperfect solutions, three of them discovered by Allan Simmons:

| JOHN PAUL GEORGE RINGO | > | JARGOGLING HEREUPON O |
| JOHN PAUL GEORGE RINGO | > | JARGOGLING EUROPHEN O |
| JOHN PAUL GEORGE RINGO | > | JARGOGLING HONOUREE P |
| JOHN PAUL GEORGE RINGO | > | GIGAJOULE PRONGHORN E |

We note that GIGAJOULE is a Wiktionary word, defined as “one thousand million \(10^9\) joules” – strange that it’s not in our usual dictionaries. We felt that there really had to be a
4-to-2 rearrangement, but the best we could come up with resorted to using another word from Wiktionary (EUROPHONE = able to speak a European language):

<table>
<thead>
<tr>
<th>JOHN PAUL GEORGE RINGO</th>
<th>&gt;</th>
<th>JARGOGLING EUROPHONE</th>
</tr>
</thead>
</table>

Allan continued the search for a 4-to-2 rearrangement, and his best find was this one:

<table>
<thead>
<tr>
<th>JOHN PAUL GEORGE RINGO</th>
<th>&gt;</th>
<th>JOGOLOURE PREHANGING</th>
</tr>
</thead>
</table>

Both Allan’s words need further consideration. The printed copy of the Oxford English Dictionary contains the following entry between JOG-JOG and JOG-TROT:

\[
\text{JOG(O)LER(E), -OUR(E) obsolete forms of JUGGLER}
\]

Checking the entry for JUGGLER in both the printed and online versions of the Oxford English Dictionary reveals a multiplicity of carefully spelled-out obsolete spellings of JUGGLER, but none of which is JOGOLOURE. What about Allan’s PREHANGING? None of our regular dictionaries nor the online dictionaries we consulted list the word PREHANGING; however, it can be found on numerous websites, usually related to doors. For example, one of the doors-related websites explains “Prehanging is the process of assembling all the components for a doorway – door, hinges, jamb, and any hardware – so the doorway, as one unit, can be fitted on site into a preframed builders opening.”

We moved on to the Beatles’ surnames. Would this prove as problematic, or simply straightforward? Our best solution is this 4-to-3 rearrangement, but a 4-to2 one might be achievable:

<table>
<thead>
<tr>
<th>LENNON MCCARTNEY HARRISON STARR</th>
<th>&gt;</th>
<th>CONTRAREMONSTRANCE HARRY LINNS</th>
</tr>
</thead>
</table>

Another group of four names which looked like it might be straightforward was the names of the four gospels of the New Testament – Matthew, Mark, Luke and John.

<table>
<thead>
<tr>
<th>MATTHEW MARK LUKE JOHN</th>
<th>&gt;</th>
<th>WEALTHMAKER JUNK MOTH</th>
</tr>
</thead>
</table>

The first names of the Marx Brothers looked interesting to tackle – lots of O’s, a Z, and some clunky other letters. How far could we take this set?

<table>
<thead>
<tr>
<th>GROUCHO CHICO GUMMO HARPO ZEPPO</th>
<th>&gt;</th>
<th>ZOOGEOGRAPHIC CROUCH POMPOM UH</th>
</tr>
</thead>
</table>

The two-letter word and the relative shortness of CROUCH and POMPOM do tend to suggest a 5-to-3 solution might be possible, but the clunkiness of the letters suggests otherwise.

Moving from one comedic team to another – what could we do with the names of the seven dwarfs? We’ve used the names of the Walt Disney dwarfs, but there are multiple different names used for the seven dwarfs in different versions of the Snow White story. Readers
might like to investigate the rearrangement possibilities of the other dwarf names, listed extensively in Wikipedia.

| BASHFUL GRUMPY SLEEPY SNEEZY DOPEY HAPPY DOC | PSYCHOANALYZE SYMPHYLOUS BEPEPERED FUDGY | 7 to 4 |

As with the seven dwarfs, so too with Santa’s reindeer – there are different spellings of some of the names. We’ve used Dasher, Prancer, Dancer, Vixen, Comet, Cupid, Donner and Blitzen. But Donner can also be rendered as Donder and Dunder, while Blitzen is occasionally rendered as Blixem and Blixen. Rudolph is excluded because he’s a 20th century addition to the original eight reindeer. We are offering two very different 8-to-4 rearrangements:

| DASHER PRANCER DANCER VIXEN COMET CUPID DONNER BLITZEN | OVERAPPREHENDED BRANDS NONEXTERNALIZED CIRCUMCINCT | 8 to 4 |
| DASHER PRANCER DANCER VIXEN COMET CUPID DONNER BLITZEN | COMPREHENSIVIZED BARNARD NONEXPECTANT UNDERCIRCLED | 8 to 4 |

From animals, back to humans. Body parts, sins and virtues are all fertile hunting grounds for material. Here’s a couple of simple rearrangements involving teeth types:

| INCISORS CANINES PREMOLARS MOLARS | COMPROMISSORIAL CARNALNESS REINS | 4 to 3 |
| INCISORS CANINES PREMOLARS MOLARS | MICROPROCESSORS MAINSAILS LANNER | 4 to 3 |

The human body has five vital organs essential for survival. Can their names be optimally rearranged? Here’s a 5-to-3 rearrangement, and an imperfect arrangement with a single unused letter. Can the imperfect arrangement be improved to 5-to-2?

| BRAIN HEART LIVER KIDNEYS LUNGS | VULNERABILITY GREENSHANKS RID | 5 to 3 |
| BRAIN HEART LIVER KIDNEYS LUNGS | DISVULNERABILITY GREENSHANK R | 5 to 3 |

Of course, there are plenty of other body parts and body systems that could be put into sets and for which rearrangements could be sought. Here’s just one easily definable set, the major bones of the arms and legs:

| HUMERUS RADIUS ULNA TIBIA FIBULA | UNBEAUTIFUL SUISIMILAR BAHADUR | 5 to 3 |

Here’s a related set of words, simply the classical plurals of the arm and leg bones listed above. Not an additional S anywhere, but plenty of additional vowels – in total, 12 consonants and 17 vowels. We have lots of 5-to-4 solutions, but hadn’t nailed a 5-to-3 one. Even though the five plurals are relatively short words, the excess of vowels made it unlikely a 5-to-3 solution exists. Or so we thought. Here are some of our 5-to-4 solutions:
HUMERI RADIULNAE TIBIAE FIBULAE > ALBUMINATURIA AIRIFIED BELIE HUE 5 to 4
HUMERI RADIULNAE TIBIAE FIBULAE > BILIRUBINURIA AETHALIUM AIDE FEE 5 to 4
HUMERI RADIULNAE TIBIAE FIBULAE > IDENTIFIABLE MULIEBRIA AURAE HUI 5 to 4
HUMERI RADIULNAE TIBIAE FIBULAE > ALBUMINURIA ELEUTHERIA ABIDI FIE 5 to 4

However, Allan Simmons managed to come up with not just one 5-to-3 solution but two such solutions below.

HUMERI RADIULNAE TIBIAE FIBULAE > HUTUFEIDERIA BILIRUBINAEMIA ALE 5 to 3
HUMERI RADIULNAE TIBIAE FIBULAE > HUREAULITE BILIRUBINAEMIA FEDIA 5 to 3

He discovered HUTUFEIDERIA, a genus of mites, in various online sources. The other words are all in Webster's Second or Third Editions.

And here’s our take on the seven deadly sins and the seven contrary virtues. The 7-to-3 rearrangement for the deadly sins looks optimal, but there may be the possibility of a better than 7-to-5 rearrangement for the contrary virtues.

GLUTTONY GREED PRIDE SLOTH WRATH ENVY LUST > OVERDELIGHTEDLY SPANGLLET UNTRUSTWORTHY 7 to 3
TEMPERANCE DILIGENCE CHASTITY HUMILITY KINDNESS PATIENCE CHARITY > UNSYMPATHETICALLY HYPERCRITICISING KITCHENETTES ACEDIAMINE DEN 7 to 5

How about some games – cards and chess? The four card suits, clubs, hearts, diamonds and spades makes for a nice set of four items. We can offer a 4-to-3 solution and an imperfect one with a single letter remaining:

CLUBS DIAMONDS HEARTS SPADES > AMBASSADORSHIPS CUDDLES NET 4 to 3
CLUBS DIAMONDS HEARTS SPADES > AMBASSADORSHIP DULCETNESS D

The four top cards in a suit (jack, queen, king, ace) can be rearranged thus:

JACK QUEEN KING ACE > QUACKING AJEE NECK 4 to 3

Or how about the six chess pieces?

PAWN BISHOP KNIGHT ROOK KING QUEEN > WORKSHOPPING BETHINKING QUOaken 6 to 3
Although **CASTLE** is an informal, incorrect or old-fashioned name for the **ROOK**, it does provide us with an alternative set of names. Here is our optimal 6-to-4 solution:

<table>
<thead>
<tr>
<th>PAWN BISHOP KNIGHT CASTLE KING</th>
<th>&gt;</th>
<th>QUENCHING BLOWPIPES SKANKING THETA</th>
</tr>
</thead>
</table>

But here are several near-misses, each fairly different, and each with a single unused letter. The variations here are sufficient to suggest that a genuine 6-to-3 solution should be achievable - can you find a proper 6-to-3 solution?

<table>
<thead>
<tr>
<th>PAWN BISHOP KNIGHT CASTLE KING</th>
<th>&gt;</th>
<th>BEQUEATHING ANTIKNOCKS SHEPPING W</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAWN BISHOP KNIGHT CASTLE KING</td>
<td>&gt;</td>
<td>PENTHIOPHENE SQUAWKINGS TACKLING B</td>
</tr>
<tr>
<td>PAWN BISHOP KNIGHT CASTLE KING</td>
<td>&gt;</td>
<td>PANTELEPHONE SQUAWKINGS BITCHING K</td>
</tr>
<tr>
<td>PAWN BISHOP KNIGHT CASTLE KING</td>
<td>&gt;</td>
<td>PINAKOTHEKS BANQUETING WELCHINGS P</td>
</tr>
</tbody>
</table>

After penning the previous paragraphs, our friend Allan Simmons managed the 6-to-3 solution shown below. Admittedly one of the words is from Wiktionary (**BEKNOWNST** = known, or in someone’s awareness), but it’s a great find.

<table>
<thead>
<tr>
<th>PAWN BISHOP KNIGHT CASTLE KING</th>
<th>&gt;</th>
<th>PIPSQUEAKING BEKNOWNST HATCHELING</th>
</tr>
</thead>
</table>

Now for two dozen book titles – a few are probably improvable:

<table>
<thead>
<tr>
<th>ON THE ROAD</th>
<th>&gt;</th>
<th>ANOTHER DO</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAR AND PEACE</td>
<td>&gt;</td>
<td>DREW PANACEA</td>
</tr>
<tr>
<td>OF MICE AND MEN</td>
<td>&gt;</td>
<td>FINANCED MEMO</td>
</tr>
<tr>
<td>BRAVE NEW WORLD</td>
<td>&gt;</td>
<td>OVERDREW BLAWN</td>
</tr>
<tr>
<td>LORD OF THE FLIES</td>
<td>&gt;</td>
<td>FOOTHILLS FREED</td>
</tr>
<tr>
<td>THE SECRET GARDEN</td>
<td>&gt;</td>
<td>REGATHERED CENTS</td>
</tr>
<tr>
<td>GONE WITH THE WIND</td>
<td>&gt;</td>
<td>DOWNWEIGHT THINE</td>
</tr>
<tr>
<td>THE SCARLET LETTER</td>
<td>&gt;</td>
<td>TRESTLETREE LATCH</td>
</tr>
<tr>
<td>A TALE OF TWO CITIES</td>
<td>&gt;</td>
<td>LATTICEWISE AFOOT</td>
</tr>
<tr>
<td>THE GRAPES OF WRATH</td>
<td>&gt;</td>
<td>AFTERWISEHEAPS</td>
</tr>
<tr>
<td>THE HANDMAIDS TALE</td>
<td>&gt;</td>
<td>MISDATE HEATHLAND</td>
</tr>
<tr>
<td>THE LORD OF THE RINGS</td>
<td>&gt;</td>
<td>HOTTER FINGERHOLDS</td>
</tr>
<tr>
<td>PRIDE AND PREJUDICE</td>
<td>&gt;</td>
<td>JAUNDICED REDIPPER</td>
</tr>
<tr>
<td>ALICE IN WONDERLAND</td>
<td>&gt;</td>
<td>LAWNED ACRINDOLINE</td>
</tr>
<tr>
<td>THE CATCHER IN THE RYE</td>
<td>&gt;</td>
<td>THEE ARCHITECT HENRY</td>
</tr>
<tr>
<td>CRIME AND PUNISHMENT</td>
<td>&gt;</td>
<td>INTERMUNDANE CHIMPS</td>
</tr>
<tr>
<td>TO KILL A MOCKINGBIRD</td>
<td>&gt;</td>
<td>ROADBLOCK MILKING IT</td>
</tr>
<tr>
<td>THE COUNT OF MONTE CRISTO</td>
<td>&gt;</td>
<td>CONFECTIONERS MOTTO HUT</td>
</tr>
<tr>
<td>THE CHRONICLES OF NARNIA</td>
<td>&gt;</td>
<td>NONHIERARCHICAL SOFTEN</td>
</tr>
<tr>
<td>TINKER TAILOR SOLDIER SPY</td>
<td>&gt;</td>
<td>REDISTILLATIONS PORKERY</td>
</tr>
<tr>
<td>ONE HUNDRED YEARS OF SOLITUDE</td>
<td>&gt;</td>
<td>UNFORESHORTENED YOU LADDIES</td>
</tr>
<tr>
<td>CHARLIE AND THE CHOCOLATE FACTORY</td>
<td>&gt;</td>
<td>TETRACHLOROETHANE CACODYLIC FAH</td>
</tr>
<tr>
<td>THE HITCHHIKERS GUIDE TO THE GALAXY</td>
<td>&gt;</td>
<td>HIGHLIGHTERS THICKHEAD OUTEYE TAX</td>
</tr>
<tr>
<td>HARRY POTTER AND THE SORCERERS STONE</td>
<td>&gt;</td>
<td>PERHYDROANTHRACENE TOTS RESTORERS</td>
</tr>
</tbody>
</table>

There are many more sets of words and names which we could have attempted to rearrange. But the two largest sets are the names of the 50 states of the USA (totalling 408 letters) and the names of the chemical elements (up to atomic number 118). While there are no variations on the USA statenames, there are variations in the spellings of the element names – for example, ALUMINIUM/ALUMINUM, CAESIUM/CESIUM, SULFUR/SULPHUR. It is suggested that anyone wishing to tackle rearrangement of the element names uses the nomenclature adopted by the International Union of Pure and Applied Chemistry (IUPAC). These are two very large groups, much larger than we have tackled so far, and may well be worthy of an article to themselves.

Footnote: except where noted, the words in the rearranged groups can be found in at least one of Webster’s Third Edition, Webster’s Second Edition, the Oxford English Dictionary, The Random House Dictionary, Collins English Dictionary (2018 edition), and Collins Scrabble Words (2019). Or are plurals of listed nouns, inflections of listed verbs, or -IS- variants of -IZ- words.
A short story in alphametics
by Udo Wermuth
Dietzenbach, Germany

The following independent alphametics form a short story about \TeX{} and other programs and books by Donald E. Knuth. The program for \TeX{} is available as Volume B of *Computers & Typesetting* (or *C&T* for short); see [www-cs-faculty.stanford.edu/~knuth/abcde.html](http://www-cs-faculty.stanford.edu/~knuth/abcde.html). Volume A is the user manual named *The \TeX{}book* and three more volumes describe the program Metafont and the Computer Modern fonts. The programs have a big user base and the users join together, for example, in the international \TeX{} Users Group (TUG); see [www.tug.org](http://www.tug.org).

\[
\begin{align*}
\text{ONCE} + \text{D} + \text{KNUTH} &= \text{CODED} + \text{TEX} \\
\text{DEK} + \text{WROTE} &= \text{THE} + \text{TEX} + \text{BOOK} + \text{TOO} \quad \text{and} \quad 0 \leq O < K \\
\text{AND} + \text{DEK} + \text{MADE} + \text{MORE} &= \text{OK} + \text{READ} + \text{CANDT} \\
\text{TUG} + \text{MEMBER} &= \text{TEX} + \text{USER} + \text{MEETS} + \text{MORE} + \text{TEX} + \text{USERS}
\end{align*}
\]

The second alphametic has two solutions, all others are pure, i.e., they have a unique solution. The additional condition for the second alphametic makes it pure too and the condition is stated in a way that helps if the alphametic is solved by hand. To solve the third alphametic by hand use the following additional information \( E + R + R = T \) if you get stuck.
The solution

First, the four solutions to the alphametics:

\[
\begin{align*}
0 &= 2, \ N &= 9, \ C &= 8, \ E &= 6, \ D &= 1, \ K &= 7, \ U &= 5, \ T &= 3, \ H &= 4, \ X &= 0. \\
D &= 6, \ E &= 2, \ K &= 4, \ W &= 1, \ R &= 0, \ O &= 3, \ T &= 5, \ H &= 8, \ X &= 7, \ B &= 9. \\
A &= 3, \ N &= 6, \ D &= 5, \ E &= 4, \ K &= 0, \ M &= 7, \ O &= 9, \ R &= 2, \ C &= 1, \ T &= 8. \\
T &= 5, \ U &= 9, \ G &= 8, \ M &= 1, \ E &= 2, \ B &= 0, \ R &= 4, \ X &= 6, \ S &= 7, \ O &= 3.
\end{align*}
\]

And here are the summations and the carries:

\[
\begin{align*}
\begin{array}{c}
\text{ONCE} \\
\text{D} \\
\text{KNUTH} \\
\text{CODED} \\
\text{TEX}
\end{array}
+ &
\begin{array}{c}
2986 \\
1 \\
79534 \\
82161 \\
360
\end{array}
+ &
\begin{array}{c}
2986 \\
1 \\
79534 \\
82161 \\
360
\end{array}
= &
\begin{array}{c}
82161 \\
1111 \\
1
\end{array}
\end{align*}
\]

\[
\begin{align*}
\begin{array}{c}
\text{DEK} \\
\text{WROTE} \\
\text{THE} \\
\text{BOOK} \\
\text{TOO}
\end{array}
+ &
\begin{array}{c}
624 \\
10352 \\
582 \\
9334 \\
533
\end{array}
+ &
\begin{array}{c}
624 \\
10352 \\
533
\end{array}
= &
\begin{array}{c}
582 \\
9334 \\
10976
\end{array}
\end{align*}
\]

\[
\begin{align*}
\begin{array}{c}
\text{AND} \\
\text{DEK} \\
\text{MADE} \\
\text{MORE} \\
\text{OK}
\end{array}
+ &
\begin{array}{c}
365 \\
540 \\
7354 \\
7924 \\
90
\end{array}
+ &
\begin{array}{c}
365 \\
540 \\
7354 \\
7924 \\
90
\end{array}
= &
\begin{array}{c}
16183 \\
16183
\end{array}
\end{align*}
\]

\[
\begin{align*}
\begin{array}{c}
\text{TUG} \\
\text{MEMBER} \\
\text{TEX} \\
\text{USER} \\
\text{MEETS}
\end{array}
+ &
\begin{array}{c}
598 \\
121024 \\
526 \\
9724 \\
598
\end{array}
+ &
\begin{array}{c}
526 \\
12257 \\
1342 \\
97247 \\
365
\end{array}
= &
\begin{array}{c}
121622 \\
121622
\end{array}
\end{align*}
\]
Manual calculations

In the first alphametic one of \( N, E, U, H, X \) is 0 as words cannot start with a zero. Let’s rewrite the equation as

\[
\begin{align*}
E + D + H &\equiv D + X \pmod{10} \quad (1) \\
C + T + a_1 &\equiv 2E + b_1 \pmod{10} \quad (2) \\
N + U + a_2 &\equiv D + T + b_2 \pmod{10} \quad (3) \\
0 + N + a_3 &\equiv 0 + b_3 \pmod{10} \quad (4) \\
K + a_4 &\equiv C + b_4 \pmod{10} \quad (5)
\end{align*}
\]

where \( a_i \) and \( b_i \), \( 1 \leq i \leq 4 \), are the carries from column \( i \), i.e., the column to the right. As the sum of two different digits is at most 17 all carries except \( a_1 \) are either 0 or 1; \( a_1 \) might be 2.

Now (5) shows that \( a_4 \neq b_4 \) as \( K \neq C \); either \( 0 + N + a_3 \) or \( 0 + b_3 \) of (4) must produce a carry. If \( a_4 = 0 \) but \( b_4 = 1 \) then \( 0 = 9 \) and \( b_3 = 1 \) as well as \( N = 0 \) and \( a_3 = 0 \). This means \( 9 + 0 + 0 \equiv 9 + 1 \pmod{10} \), a contradiction. Thus \( a_4 = 1, b_4 = 0, \) and \( K + 1 = C \); moreover \( C > 1 \) as \( K \neq 0 \).

Subtracting \( 0 \) on both sides of (4) states \( N + a_3 \equiv b_3 \pmod{10} \). As \( a_3 \) and \( b_3 \) are either 0 or 1 one of three cases must be true: \( (N; a_3, b_3) \) is either \( (9; 1, 0) \) or \( (1; 0, 1) \) or \( N = 0 \) and \( a_3 = 3 \). The last case is impossible as (4) becomes \( 0 + 0 + a_3 \equiv 0 + b_3 \pmod{10} \) and that means \( a_4 = b_4 \), which is not allowed. Similar \( N = 1 \) gives \( 0 + 1 + 0 \equiv 0 + 1 \pmod{10} \) and this implies \( a_4 = b_4 \). Therefore, \( a_3 = 1, b_3 = 0, \) and \( N = 9 \).

Next, we look at (1): \( E + D + H \equiv D + X \pmod{10} \) or \( E + H \equiv X \pmod{10} \). This means that neither \( E \) nor \( H \) can be 0 elsewise the other must be equal to \( X \). So either \( U \) or \( X \) must be 0. If \( U = 0 \) then (3) becomes \( 9 + 0 + a_2 \equiv D + T + b_2 \pmod{10} \). The finding \( a_3 = 1 \) requires that \( a_2 = 1 \) and thus \( 0 \equiv D + T + b_2 \pmod{10} \). But as \( b_3 = 0 \) the sum \( D + T + b_2 \) must equal 0; a contradiction because \( D + T > 0 \). Thus \( X = 0 \).

Back to (1): As \( D + X = D + 0 < 10 \) we know that \( b_1 = 0 \). And \( a_1 = 1 \) as \( E + H \equiv 0 \pmod{10} \) or \( E + H = 10 \) so that \( 10 < E + D + H < 20 \). There are only three sets that qualify for \( \{E, H\} \): \( \{2, 8\} \), \( \{3, 7\} \), \( \{4, 6\} \).

Congruence (2) becomes \( C + T \equiv 2E - 1 \pmod{10} \). The six possible values for \( E \) help to find candidates for \( \{C, T\} \). The values 0, 9, and the associated \( H \) are excluded for \( C \) and \( T \) and we know \( C > 1 \) and neither \( E \) nor \( T \) can be \( C - 1 = K \). For \( \{E, 2E - 1; C, T\} \) we find \( \{2, 3, 6, 7\} \), \( \{4, 7, 2, 5\} \), \( \{6, 11; 3, 8\} \), \( \{6, 11; 8, 3\} \), \( \{7, 13; 5, 8\} \), \( \{8, 15; 4, 1\} \).

Only six assignments for \( \{N, C, E, K, T, H, X\} \) might lead to a valid solution: \( \{9, 2, 4, 1, 5, 6, 0\} \), \( \{9, 3, 6, 2, 8, 4, 0\} \), \( \{9, 4, 8, 3, 1, 2, 0\} \), \( \{9, 5, 7, 4, 8, 3, 0\} \), \( \{9, 6, 2, 5, 7, 8, 0\} \), \( \{9, 8, 6, 7, 3, 4, 0\} \). Now three letters are still missing: \( U, D, 0 \). Their values in the six partial assignments must form the respective set \( \{3, 7, 8\} \), \( \{1, 5, 7\} \), \( \{5, 6, 7\} \), \( \{1, 2, 6\} \), \( \{1, 3, 4\} \), or \( \{1, 2, 5\} \). As \( a_3 = 1 \) and \( b_3 = 0 \) we get from (3) an equation \( U + a_2 = D + T + b_2 + 1 \). Based on the sets of the missing letters the values of \( T, C, \) and \( E \) from the corresponding partial assignment are used to calculate the values \( a_2 \) and \( b_2 \) from (2): \( C + T > 8 \iff a_2 = 1, E > 4 \iff b_2 = 1 \). The sum of \( T + b_2 + 1 - a_2 \) and \( D \) must equal \( U \). There is only one solution: \( \{U, D, 0\} = \{5, 1, 2\} \) for \( \{N, C, E, K, T, H, X\} = \{9, 8, 6, 7, 3, 4, 0\} \).

The alphametic has a unique solution: \( \{0, N, C, E, D, K, U, T, H, X\} = \{2, 9, 8, 6, 1, 7, 5, 3, 4, 0\} \).
In the second alphametic one of $E$, $K$, $R$, $O$, $H$, $X$ must be 0. This time we have

\[
K + E \equiv E + X + K + O \pmod{10} \tag{6}
\]
\[
E + T + a_1 \equiv H + E + 2O + b_1 \pmod{10} \tag{7}
\]
\[
D + O + a_2 \equiv 3T + O + b_2 \pmod{10} \tag{8}
\]
\[
R + a_3 \equiv B + b_3 \pmod{10} \tag{9}
\]
\[
O + a_4 \equiv b_4 \pmod{10} \tag{10}
\]
\[
O < K \tag{11}
\]

where the $a_i$ and $b_i$, $1 \leq i \leq 4$, are the carries.

The only possibility for (10) is $b_4 = 1$ (and thus $b_3 > 0$), $a_4 = 0$, and $W = 1$.

In (6) $K$ and in (6) and (7) $E$ appear on both sides and after subtraction both disappear from the formulas, i.e., their values can be exchanged. (11) assures that the solution is unique, so $E < O < K$. And (6) without $E$ and $K$ shows that $0 \equiv x + o \lor \{x, o\} \in \{\{2, 8\}, \{3, 7\}, \{4, 6\}\}$. And now one of $E$, $R$, or $H$ must be 0.

Formula (9) and $b_4 = 1$ give $B \geq 7$ as $0 < b_3 \leq 3$. Note $R \neq 1 = W$ and $R < 9$ if $a_3 = 1$ as $a_4 = 0$. So $(B, b_3; R, a_3)$ is one of $(7, 3; 0, 0)$, $(8, 3; 0, 1)$, $(8, 2; 0, 0)$, $(9, 3; 2, 0)$, $(9, 2; 0, 1)$, or $(9, 1; 0, 0)$.

Can $R$ equal 2? Then $B = 9$, $b_3 = 3$, and $a_3 = 0$. Thus $D + O + a_2 < 10$. As now $D > 2$ we must have $0 < 7 - a_2$, i.e., $O \in \{2, 3, 4, 6\}$. The right hand side of (8) is therefore at most $(8 + 0) + 2 \cdot 6 + 2 = 22$ and thus $b_2 \leq 2$ and $T$ must be 8, $O = 6$, and $b_2 = 2$ to make $b_3 = 3$; then $X = 4$ and $K = 7$. As $a_3 = 0$ (8) gives $D = 3$ and $a_2 = 0$. This means by (7) $E = 0$ and $H$ gets the remaining digit, the 5. Therefore $b_1 = 1$ and $b_2 = 1$ as $H + E + 2O + b_1 = 18$; contradiction because $b_2$ was found to be 2. Thus, $R = 0$.

As $R = 0$ $E$ must be at least 2 and thus $O > 2$. Moreover $B = 9$ and $O = 8$ violates (11) as there is no value for $K$. And $B = 7$ and $O = 8$ implies $K = 9$ so that $T < 7$ and the right hand side of (8) is at most $3 \cdot 6 + 8 + 3 = 29$. Thus $b_3 < 3$; a contradiction as $(B; b_3)$ must be $(7; 3)$. Therefore $2 < O \neq 8$. Thus, $\{x, o\} \in \{\{3, 7\}, \{4, 6\}\}$.

Let’s summarize what we have found so far. The tuple $(W, R, O, X, B)$ is one of ten cases: $(1, 0, 4, 6, 7)$, $(1, 0, 6, 4, 7)$ with $(b_3, a_3) = (3, 0)$; or $(1, 0, 3, 7, 8)$, $(1, 0, 4, 6, 8)$, $(1, 0, 6, 4, 8)$, $(1, 0, 7, 3, 8)$ with two cases for $(b_3, a_3)$: either $(2, 0)$ or $(3, 1)$; or $(1, 0, 3, 7, 9)$, $(1, 0, 4, 6, 9)$, $(1, 0, 6, 4, 9)$, $(1, 0, 7, 3, 9)$ and $(b_3, a_3) \in \{(1, 0), (2, 1)\}$.

For the four possible values of $O$ (7) is used to find acceptable $(H, T)$ pairs. As $b_1 - a_1 = 1$ the formula can be shortened to $2O + 1 + H \equiv T \pmod{10}$. The digits of the set $\{0, 1, 0, X\}$ are ignored for $T$ and $H$. And the pairs must allow to assign a value less than $O$ to $E$ as well larger values to $B$ and $K$. A little computation gives seven pairs: $(0, 2O + 1; H, T)$ is one of $(3, 7; 8, 5)$, $(3, 7; 9, 6)$, $(4, 9; 8, 7)$, $(4, 9; 9, 8)$, $(6, 13; 2, 5)$, $(6, 13; 5, 8)$, or $(6, 13; 9, 2)$.

Now (8) is applied to the five values of $T$ together with all possible values for $b_2 \in \{1, 2\}$ and $a_2 \in \{0, 1\}$ to get $D$ and combine it with $O$ and $H$. Finally, we compute $a_3$ and $b_3$. In total 20 cases have to be looked at but only a few valid tuples are found. $(T, D, O; H; b_3, a_3)$ is one of $(5, 6, 3, 8; 1, 0)$, $(5, 6, 3, 8; 2, 1)$, $(5, 7, 6, 2; 2, 1)$, $(6, 8, 3, 9; 2, 1)$, $(7, 2, 4, 8; 2, 0)$, $(7, 3, 4, 8; 2, 0)$, $(8, 5, 4, 9; 2, 0)$, $(8, 5, 4, 9; 3, 1)$. 
In the third alphametic only four letters can be 0: N, E, K, or T. The equations create the following formulas:

\[ D + K + 2E \equiv K + D + T \pmod{10} \] (12)

\[ N + E + D + R + a_1 \equiv 0 + A + D + b_1 \pmod{10} \] (13)

\[ 2A + D + O + a_2 \equiv E + N + b_2 \pmod{10} \] (14)

\[ 2M + a_3 \equiv R + A + b_3 \pmod{10} \] (15)

\[ a_4 \equiv C + b_4 \pmod{10} \] (16)

\[ E + 2R = T \] (17)

where the \( a_i \) and \( b_i \), \( 1 \leq i \leq 4 \), are the carries. Equation (17) is the hint from the problem statement to simplify the computation.

As \( a_4 \leq 2 \) by (16) \( 1 \leq C \leq 2 \). \( C = 2 \) means \( a_4 = 2 \) and \( b_4 = 0 \), thus by (15) \( M = 9 \) and \( a_3 \geq 2 \) as well as \( R + A + b_3 < 10 \). As \( a_3 < 4 \) the left hand side of (15) is either 20 or 21 so \( R + A + b_3 \) must be 0 or 1 which is impossible as neither \( R \) nor \( A \) can be 0. Thus, \( C = 1 \).

Congruence (12) can be reduced to \( 2E \equiv T \pmod{10} \) which means that \( T \) must be even and \( E \neq 0 \). Of course (17) states that \( E \) must be even too. And it must be smaller than \( T \). Thus there are only two cases for \((E, T)\): \((2, 4)\) or \((4, 8)\). As \( R > 1 \) only the second case is valid: \( R = 2 \), \( E = 4 \), and \( T = 8 \). And as \( 2E = T \) we know \( a_1 = b_1 \).

If \( b_4 = 1 \) then \( a_4 = 2 \), \( M = 9 \), and \( a_3 \geq 2 \). Moreover \( b_3 \leq 1 \) and with (15) this means \( A = 7 \), \( b_3 = 1 \), \( a_3 = 2 \), \( N \neq 0 \) and thus \( K = 0 \) as it is the remaining letter of the above list. So \( \{N, D, O\} = \{3, 5, 6\} \). Formula (13) states now \( N \equiv 0 + 1 \pmod{10} \) so that \( N = 6 \), \( O = 5 \), and therefore \( D = 3 \). This leads to \( 763 + 340 + 9734 + 9524 = 20361 \) and \( 50 + 2473 + 17638 = 20161 \) which is not a solution of the alphametic. Thus \( b_4 = 0 \) and \( a_4 = 1 \).

If \( M \leq 5 \) then by (15) \( 10 \leq 2M + a_3 < 14 \) and \( 2 + A + b_3 < 4 \). A contradiction as \( A \geq 3 \). If \( M = 6 \) then \( a_3 \) must be 3 to reach 15. But then \( 2A + D + O + a_2 \leq 6 + 9 + 8 + 3 = 26 \) we have \( a_3 \leq 2 \); therefore \( M \in \{7, 9\} \). As \( A > 7 \) implies \( b_4 > 0 \) we find \( A \in \{3, 5, 6, 7\} \).

With all these values the left hand side of (14) is between \( 17 + a_2 \) and \( 26 + a_2 \), i.e., \( a_3 \in \{1, 2\} \), and the right hand side is smaller than 20, so that \( b_3 \in \{0, 1\} \). There are just three cases for (15) as \( M = 9 \Rightarrow a_3 < 2 \) and we find two solutions both with \( M = 7 \) and \( A = 3 \).

The four remaining letters \( N, D, K \), and \( O \) must be assigned to the set \( \{0, 5, 6, 9\} \). Substituting the known values in (13) gives \( N + 4 + D + 2 + a_1 \equiv 0 + 3 + D + b_1 \pmod{10} \) or \( N + 3 \equiv 0 \pmod{10} \). Thus \( N = 6 \) and \( O = 9 \).

Next, \( K = 0 \) and as there is only one digit left, \( D = 5 \).

The equations have a unique solution: \( (A, N, D, E, K, M, O, R, C, T) = (3, 6, 5, 4, 0, 7, 9, 2, 1, 8) \).
In the fourth alphametic all letters except \( T, U, \) and \( M \) can be 0. This time we have

\[
\begin{align*}
G + R &\equiv 2X + R + 2S + E \pmod{10} \\
U + E + a_1 &\equiv 3E + 2R + T + b_1 \pmod{10} \\
T + B + a_2 &\equiv 2T + 2E + S + 0 + b_2 \pmod{10} \\
M + a_3 &\equiv U + E + M + S + b_3 \pmod{10} \\
E + a_4 &\equiv M + U + b_4 \pmod{10} \\
M + a_5 &\equiv b_5 \pmod{10}
\end{align*}
\]

where the \( a_i \) and \( b_i \), \( 1 \leq i \leq 5 \), are the carries.

If \( a_3 = 1 \) then \( E = 9 \) and \( a_4 = 0 \), but then \( M + a_3 < 10 \) as \( a_3 \in \{0,1\} \), so \( a_4 = 0 \); contradiction. Thus \( a_5 = 0 \). As \( b_4 < 5 \) the sum \( M + U + b_4 \leq M + 9 + 4 = M + 13 \) has a carry \( b_5 \) of 1 or 2. But by (23) \( M \) equals also \( b_5 \) so both must be 1.

Of course, \( a_i \in \{0,1\} \) for \( 1 \leq i \leq 3 \) and \( a_4 = a_5 = 0 \). The ranges for the other carries except \( b_5 \) are limited by using the smallest or largest available digits in the congruences. The result is: \( 1 \leq b_4 \leq 3 \), \( 0 \leq b_5 \leq 5 \), \( 0 \leq b_4 \leq 3 \). To make \( b_4 = 3 \) we need \( U + E + 1 + S + b_3 \geq 30 \) or \( b_3 = 5 \) and \( U + E + S = 24 \), i.e., \( \{U,E,S\} = \{9,8,7\} \). But the maximum for \( b_3 \) is then 4 as by (20) \( 2 \cdot 6 + 2 \cdot 9 + 8 + 5 + b_2 = 43 + b_2 < 50 \); so \( 0 \leq b_4 \leq 2 \).

As \( b_5 = 1 \) the right hand side of (22) must create a carry; this limits the possibilities for \( (b_4; U, E) : (0, 9, 0), (1, 8, 0), (2, 7, 0), (2, 9, 2) \). The first case is invalid as the right hand side of (21) is larger than 10 if \( U = 9 \) so that \( b_4 > 0 \).

If \( E = 0 \) then by (22) \( U + b_4 = 9 \) with three possibilities for \( b_4 ; 0, 1, 2 \). If \( b_4 = 0 \) then \( U = 9 \) so that the right hand side of (21) gets larger than 10, i.e., \( b_4 > 0 \); a contradiction. Similar \( b_4 = 2 \) means \( U = 7 \) and the right hand side of (21) must be 21 or 22. Even with \( S = 9 \) \( b_3 \) must be 4 or 5 which is impossible as the right hand side of (20) is at most \( 31 + b_2 \). Therefore \( b_4 = 1 \) and \( U = 8 \). If \( a_3 = 0 \) then by (21) \( 0 \equiv 8 + S + b_3 \pmod{10} \) so that \( S = 2 \) and \( b_3 = 0 \); but the right hand side of (20) makes \( b_3 > 0 \). If \( a_3 = 1 \) then either \( S = 3 \) and \( b_3 = 0 \), which leads to a similar contradiction as before, or \( S = 2 \) and \( b_3 = 1 \). Now by (18) \( G \equiv 2X + 4 \pmod{10} \) so \( G \) is even: \( G \in \{4, 6\} \) as \( E = 0 \), \( S = 2 \), \( U = 8 \) in this case. In the first case \( X = 0 \) or \( X = 5 \), in the second \( X = 1 \) or \( X = 6 \). Only the pair \( (G, X) = (4, 5) \) is possible. So we have \( \{R, T, B, 0\} = \{3, 6, 7, 9\} \) and \( a_1 + 1 = b_1 \). Now (19) becomes \( 7 \equiv 2R + T \pmod{10} \) and there is only one solution, \( (R, T) = (7, 3) \). Thus (20) becomes \( E \equiv 0 + 6 \pmod{10} \) which cannot be fulfilled with the remaining digits 6 and 9. Therefore, \( b_4 = 2 \), \( E = 2 \) and \( U = 9 \).

Looking at (21) as an equation \( S + b_3 = 9 + a_3 \) we find five solutions for \( (S; a_3, b_3) \): it is one of \( (8; 0, 1), (8; 1, 2), (7; 0, 2), (7; 1, 3), (6; 0, 3) \).

With these values for \( S \) the range of \( b_1 \) can be reduced to \( 1 \leq b_1 \leq 3 \).

The next three steps require a little bit of straightforward computation. First, the three values of \( S \) create via (18) eleven possible solutions for \((X; G) : (0, 4), (3, 0), (5, 4), (7, 8), (8, 0) \)

if \( S = 6 \); \((0, 6), (5, 6), (6, 8) \) if \( S = 7 \); and \((3, 4), (4, 6), (6, 0) \) if \( S = 8 \).

Second, congruence (19) contains the letters \( R \) and \( T \) and is transformed into the form \( 5 - (b_1 - a_1) \equiv 2R + T \pmod{10} \). As \( a_1 \in \{0, 1\} \) and \( 1 \leq b_1 \leq 3 \) their difference is in \( \{0, 1, 2, 3\} \).

Now we write down the solutions to the four possible congruences \( 2, 3, 4, \) or \( 5 \equiv 2R + T \) as
(R, T) pairs without using the values of M, E, and U and with T > 0. For example, 5 = 2R + T generates three pairs for (R, T): (0, 5), (4, 7), and (6, 3). Next, two passes over each (S, X, G) triple are made to eliminate first all (R, T) pairs from the generic list that conflict with the triple. Second the real values of \(a_1\) and \(b_1\) are computed and checked against the assumed difference \(b_1 - a_1\). For example, \((S, X, G) = (6, 3, 0)\) has only one candidate for \(b_1 - a_1 = 0: (R, T) = (4, 7)\). As \(S = R = 4\) we find \(a_1 = 0\) and \(2X + R + 2S + E = 24\) gives \(b_1 = 2\) so that \(b_1 - a_1 = 2\) which does not equal the assumed difference. Thus the candidate cannot give a valid solution. In total 18 candidates are found that might be valid assignments to the eight letters \(T, U, G, M, E, R, X, \) and \(S\).

Third, we compute the \(\text{sum \ } T + 2E + S + b_2 - a_2\) for the 18 candidates and try to assign the remaining digits to \(B\) and \(0\) such that by (20) \(B \equiv 0 \pmod{\text{sum}}\), i.e., the difference between the larger and the smaller digit must equal either \(\text{sum}\) or \(10 - \text{sum}\).

Here are the 18 tuples with the associated set \(\{B, 0\}\), the \(\text{sum}\), and the pair \(\{B, 0\}\) if there is a match: \((T, U, G, M, E, R, X, S; \{B, 0\}; \text{sum}; \{B, 0\})\) is \((8, 9, 4, 1, 2, 3, 0, 6; \{5, 7\}; 9; -), (5, 9, 0, 1, 2, 4, 3, 6; \{7, 8\}; 6; -), (7, 9, 0, 1, 2, 3, 5, 6; \{4, 5\}; 9; (4, 5)), (3, 9, 4, 1, 2, 5, 6, \{7, 8\}; 3; -), (7, 9, 4, 1, 2, 3, 5, 6; \{0, 8\}; 8; (8, 0)), (7, 9, 4, 1, 2, 8, 5, \{0, 3\}; 9; -), (3, 9, 8, 1, 2, 0, 7, \{4, 5\}; 3; -), (3, 9, 8, 1, 2, 7, 6, \{0, 4\}; 4; (4, 0)), (5, 9, 8, 1, 2, 4, 7, \{0, 3\}; 6; -), (4, 9, 6, 1, 2, 5, 0, 7; \{3, 8\}; 6; -), (8, 9, 6, 1, 2, 3, 5, \{4, 5\}; 0; -), (3, 9, 6, 1, 2, 0, 5, \{7; 4, 8\}; 4; -), (8, 4), (3, 9, 8, 1, 2, 6, \{4, 5\}; 4; -), (3, 9, 8, 1, 2, 7, \{0, 4\}; 5; -), (5, 9, 8, 1, 2, 4, 6, \{0, 3\}; 7; (0, 3)), (3, 9, 6, 1, 2, 0, 4, 8; \{5, 7\}; 5; -), (3, 9, 6, 1, 2, 5, 4, 8; \{0, 7\}; 6; -), (7, 9, 6, 1, 2, 3, 4, 8; \{0, 5\}; 0; -).

Only five tuples remain for \((T, U, G, M, E, B, R, X, S, 0)\): (3, 9, 8, 1, 2, 4, 5, \{7, 6\}; 0) with \((a_3, b_3) = (0, 1); (a_3, b_3) = (1, 2)\) for \((7, 9, 4, 1, 2, 8, 3, 5, 6, 0)\) and \((3, 9, 6, 1, 2, 8, 0, 5, 7, 4)\); \((a_3, b_3) = (1, 3)\) is computed for \((7, 9, 0, 1, 2, 4, 8, 3, 6, 5)\); and \((5, 9, 8, 1, 2, 0, 4, 6, 7, 3)\) has \((a_3, b_3) = (0, 2)\). The comparison with the five solutions for \((S; a_3, b_3)\) above shows that only the last one has an acceptable combination \((S; a_3, b_3) = (7; 0, 2)\). Only this one can be a solution of the alphametic.

The alphametic has a unique solution: \((T, U, G, M, E, B, R, X, S, 0) = (5, 9, 8, 1, 2, 0, 4, 6, 7, 3)\).
Every one of the twenty collections contained in this volume is comprised of a score of five-letter alphabetically ordered letter sets. However, each is missing one of the five vowels - A, E, I, O, and U. Once the unique absentee is properly identified and added to the set, a six-letter word will emerge after a suitable permutation of its members is performed. For instance, if ‘D N O W W’ were to appear, the word ‘WINDOW’ would result after an ‘I’ were selected and rearrangement took place.

Since each offering presents twenty questions, a sense of symmetry dictates that each missing vowel should be used exactly four times per puzzle.
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<td>16. FIFTHS</td>
<td>16. GUFFAW</td>
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<td>17. GYPSUM</td>
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<td>18. GLITZY</td>
<td>18. JITNEY</td>
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<td>19. KIMONO</td>
<td>19. ZOYSIA</td>
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<td>20. LINENY</td>
<td>20. UPROOT</td>
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SEVEN
1. BATBOY
2. FIBULA
3. BAYOUS
4. COAXES
5. CHUKKA
6. GEISHA
7. DYBBUK
8. CHERUB
9. BICEPS
10. HYBRID
11. BATIKS
12. CAUCUS
13. CLIQUY
14. TOUCAN
15. DIRNDL
16. IODINE
17. FJORDS
18. HOWDAH
19. EFFIGY
20. MUSEUM

EIGHT
1. MAKEUP
2. JIGSAW
3. HOOPLA
4. GERBIL
5. KIBOSH
6. BUNION
7. FAUCET
8. LICHEN
9. WEIRDO
10. WIZARD
11. TORRID
12. OUVRE
13. EULOGY
14. GURNEY
15. AUGUST
16. ZEPHYR
17. JOYOUS
18. KNOTTY
19. KOWTOW
20. LARYNX
A given word is split into two parts which may, or may not, have the same number of letters. A common letter (A to Z) is positioned at the front of each of the two groups of letters to form two words which, ideally, make a 2-word phrase. e.g. ADEN + MM = MAD MEN

RELIGHT + AA = ARE ALIGHT
ADEN + BB = BAD BEN
OVERALL + CC = COVER CALL
IDEAL + DD = DID DEAL
RELY + EE = ERE ELY (in UK)
ROMAN + FF = FROM FAN
ORAN (a city in Algeria) + GG = GO GRAN!
ALTER + HH = HALT HER!
STEM + II = IS ITEM
AMAR (a first name) + JJ = JAM JAR
ERRANT + KK = KERR KANT (both names)
ANDOVER + LL = LAND LOVER
YEN + MM = MY MEN
OOSE + NN = NO NOSE
MARRAM (a grass) + OO = OMAR (a first name) ORAM (a surname)
also transposals
ALLAYS + PP = PAL PLAYS
AVENUES + RR = RAVEN (surname) RUES
EVENING + SS = SEVEN SING

RIPEN + TT = TRIP TEN

PTERUS + UU = UP UTERUS

ILEAN (a girl’s name) + VV = VILE VAN

ASHEN + WW = WAS WHEN?

ONES + YY = YON ? YES !

ANEAL (a metallurgical term) + ZZ = ZANE ZAL (names)
ANAGRAM COUPLETS

ANIL
Perth, Australia

These rhymes are polyanagrams of their titles, or else couplets within a single anagram of the title. Some are anagram couplets with no title. Several are longer than couplets. Most of the A-M titles are modified from my Definitive Anagrams articles (03-91, 279; 04-274; 05-211; 12-223). Nearly half of these are also Spoonerisms [s], an easy route to rhymes.

After Death
The fade art fed at heart:
‘The far date—the rad fate?’

A Mother
mo’ heart home art

A Pre-Stage
Great apes ate grapes.
The apple was not our undoing, but a fall from grapes. (Neatly illustrated by Jasmine Jordan in How to Double the Meaning of Life, p.180.)

[s]

Day Frazzled
Fray dazzled?

Irritableness
An ire bristles, ‘I blister’ nears, ire blast siren blistering ears.
Brit’leness air is stir enabler.
(Risibles aren’t ires in stabler.)

[s]

Bar Fad
Far bad barf ad!

Dishonesties
Set sin so hide
one’s shit side.

Disparage
Are ‘Sap!’ dig, as dare ‘Pig!’
ea. sad prig.
Doomed
Mod ode: OD mode!

Frolicking
I grin, flock,
I fling, rock!

Good riddance!
Did go. Cared? No!

Laissez Faire
A self-size air.
(Sleaze is fair.)

Languages
A sage lung a gale sung,
a Age slung!

Laughing Stock
Gang shout, lick,
slug tango hick,
haul gong stick,
gut long 'Ha! Sick!'
(No gag, shit luck.)
(Tango hick = me! I had to quit doing
the tango in public I was so ridiculed.)

Lotus Eaters
Tearless out steers a lout.

Macroscopic
Cosmic cap?
Or a comic’s crop
o’ cosmic crap?
Moderation
I’m o’ dare not
mode, air not.

Raided
Are did, dear id.
l dread I r dead!

Reformatory
‘Foamy terror
o’ my fat error!’

Religion
‘Re oil, gin!’
(Olé I grin.)

Love Shanty
[s] Nasty hovel, hasty novel.

Reunited
[s] rude nite nude rite
(a reunion union!)

Lusting
[s] gin slut sin glut
(male dreamtime)

Self-denial ends ea. fill.
(Fills a need? Feeds an ill?)

Self-sowed
[s] Slow, feeds, flow seeds.
COLLOQUY

JEFF GRANT writes:

In ‘Mirror Palindromes’ in the latest Word Ways, Darryl Francis expands Dmitri Borgmann’s concept of ‘mirror palindromes’ (Language on Vacation, 1965) with new long examples such as AMYOTAXIA (9), THYMOMATA (9), THAMMATTAMA (11) and THAUMATOMYIA (12). Darryl challenges readers to find a 13-letter example, or longer. Here are some extreme ‘mirror palindromes’, two of which are localities in New Zealand.

WAIWHATAWHATA (13) the name of several streams in the North Island, New Zealand (geonames.org)

MOUTH-TO-MOUTH (14 characters) designating a method of artificial respiration (Chambers Dictionary) Darryl found this one.

TAUMATAWHAUWHAU (15) a mountain in Northland, New Zealand (geonames.org)

ANIL announces a new book entitled Silly Animal Rhymes and Stories A to Z for which he received a Purple Dragonfly Award for Excellence in Children’s Literature in the humor category. The book is for ages 2-102 (not suitable for truly old people) and illustrated by Halpart.

Dave Morice lends the following strong endorsement:
Anil’s new book is a gem? Fun and funny text and fun and funny artwork. Really creative. The structure of the book is so clever and Mary Jo and I laughed out loud. It’s a nonsense masterpiece, right up there in the bookshelf next to Edward Lear’s “Owl and the Pussy-cat” and Dr. Seuss’s “on Beyond Zebra.” I love it.
Several past *Word Ways* articles [1–5] have treated the topic of Russian–English *homoglyphs*—that is, those letters of the Russian alphabet that resemble letters of the English alphabet—as well as *homographs*, the sequences of such letters that form valid words in both languages. Until now, however, these studies have dealt only with *print letterforms*—that is, the block letters of handwritten documents and the standard upright type of typeset or typewritten documents. But both Russian and English are also commonly handwritten in their respective *cursive scripts*, which are joined-up writing styles with their own distinct letterforms. The table below shows the 33 letters of the Russian alphabet, including the upper- and lowercase forms for both upright type and cursive script.\(^1\)

Here we can immediately recognize not only the familiar upright Russian–English homoglyphs known from past work (namely, the uppercase ‘А’, ‘В’, ‘Е’, ‘К’, ‘М’, ‘Н’, ‘О’, ‘Р’, ‘С’, ‘Т’, ‘У’, and ‘Х’, as well as the lowercase ‘а’, ‘е’, ‘о’, ‘р’, ‘с’, ‘у’, and ‘х’), but also several cursive homoglyphs: А, а, В, в, and so on. With a little further study, we can also make a number of more insightful observations:

- Not every letter that has a homoglyph in the upright form has a homoglyph in the cursive form. For example, the Russian ‘Т’ in its upright uppercase form resembles the English ‘Т’, but its cursive uppercase form, Т, does not resemble any English letter.

- Conversely, not every letter that has a homoglyph in the cursive form has a homoglyph in the upright form. For example, the Russian lowercase п in its upright form does not resemble any English letter, but in its cursive form, п, it resembles a cursive English ‘n’.

- Certain letters are homoglyphs in uppercase but not in lowercase, or vice versa. For example, the Russian ‘З’ in its cursive lowercase form, з, resembles a cursive English ‘z’, but the

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\(^1\)Note that there are no cursive uppercase versions of ъ, ы, and ь, as these letters never appear in word-initial position. The upright uppercase versions are used only for setting text in all-caps.
cursive uppercase form, \( \mathcal{Z} \), does not resemble a cursive English ‘Z’ (at least, not the way it is written by most people).

- A given Russian letter may resemble one English letter when written in upright uppercase, but an entirely different English letter when written in cursive lowercase. In particular, the Russian ‘Т’ in its upright uppercase form resembles an English ‘T’, but in its cursive lowercase form, \( \mathfrak{t} \), it does not resemble an English cursive ‘t’ but rather an English cursive ‘m’.

- A given Russian letter may resemble one English letter when written in cursive uppercase, but an entirely different English letter when written in cursive lowercase. In particular, the Russian ‘Д’ in its cursive uppercase form, \( \mathcal{D} \), resembles an English cursive uppercase ‘D’, but the same Russian letter in its cursive lowercase form, \( \mathfrak{d} \), resembles an English cursive ‘g’.

All these exceptions and anomalies point to the topic of cursive Russian–English homographs and homographs as being something quite distinct from upright Russian–English homographs and homographs, and therefore ripe for fresh logological study.

The first order of business is to list all the cursive homographs and their upright English equivalents. Allowing for some variation in handwriting styles, we might settle on the following:

\[
\begin{align*}
A & \quad a & \quad B & \quad b & \quad D & \quad g & \quad E & \quad e & \quad z & \quad U & \quad u & \quad K & \quad H & \quad O & \quad o & \quad n & \quad C & \quad c & \quad m & \quad y & \quad X & \quad x \\
A & \quad a & \quad B & \quad b & \quad D & \quad g & \quad E & \quad e & \quad z & \quad U & \quad u & \quad K & \quad H & \quad O & \quad o & \quad n & \quad C & \quad c & \quad m & \quad y & \quad X & \quad x
\end{align*}
\]

One might reasonably quibble with some of the choices here. For instance, most English speakers write a cursive uppercase ‘A’ more like an enlarged version of the cursive lowercase ‘a’ and not as \( \mathcal{A} \). However, the latter form is not an uncommon variant, hence its inclusion here. Perhaps the Russian \( \mathcal{Y} \) could have been included as a homoglyph of the English ‘Y’ for the same reason, though the Russian letter is written entirely above the baseline whereas almost all English speakers write the loop of a cursive ‘Y’ below the baseline. The Russian \( \mathfrak{U} \) and \( \mathfrak{u} \) might similarly have been included as homoglyphs of ‘W’ and ‘w’, though in Russian these letters are always linked to the following letter at the bottom, whereas the corresponding English letters are almost universally linked at the top.

Given such a homoglyph table, an English dictionary, and a Russian dictionary, it is possible to search for Russian–English homographs. Below are the results of a semi-automated search for homographs of length 2 or greater, conducted in the Oxford English Dictionary, 2nd edition and filtered against the Russian edition of Wiktionary, the free online dictionary. Though acronyms and obsolete or archaic words have been excluded, many of the resulting homographs (in their English interpretations, anyway) may be recognizable only to subject-matter experts and Scrabble or crossword enthusiasts. The homographs are listed in order of length, and then in Russian alphabetical order. A gloss of each Russian word is provided; note that these glosses are necessarily brief and so make no attempt to precisely translate the case of the nouns, the tense and aspect of the verbs, etc.

\[
\begin{align*}
\text{ag} & \quad \text{hell} & \quad \text{De} & \quad \text{says} & \quad \text{Hy} & \quad \text{letter Q} & \quad \text{ox} & \quad \text{Oh!} & \quad \text{mo} & \quad \text{that} \\
\text{am} & \quad \text{att} & \quad \text{Du} & \quad \text{letter D} & \quad \text{Ha} & \quad \text{onto} & \quad \text{na} & \quad \text{pas} & \quad \text{my} & \quad \text{that} \\
\text{ay} & \quad \text{hello?} & \quad \text{go} & \quad \text{before} & \quad \text{He} & \quad \text{not} & \quad \text{nu} & \quad \text{pi} & \quad \text{xu} & \quad \text{laughter}
\end{align*}
\]
<table>
<thead>
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<th>aga</th>
<th>hell</th>
<th>Don</th>
<th>sidetrack</th>
<th>nub</th>
<th>drunk</th>
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<tr>
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<td>zag</td>
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<td>waddings</td>
<td>Heg</td>
<td>sneaker</td>
<td>can</td>
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<td>beg</td>
<td>Vedas</td>
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<td>stacks</td>
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<td>nat</td>
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<td>no</td>
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<td>Hub</td>
<td>cornfields</td>
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<td>gab</td>
<td>given</td>
<td>Hum</td>
<td>nit (phys.)</td>
<td>com</td>
<td>cells</td>
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<tr>
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<td>given</td>
<td>Hob</td>
<td>new</td>
<td>coco</td>
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<td>Hoc</td>
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<td>mam</td>
<td>father</td>
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<td>mux</td>
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<tr>
<td>Dub</td>
<td>demon</td>
<td>neb</td>
<td>sung</td>
<td>mon</td>
<td>top (naut.)</td>
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<tr>
<td>Dou</td>
<td>milk</td>
<td>neg</td>
<td>pedagogical institute</td>
<td>mom</td>
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<table>
<thead>
<tr>
<th>baba</th>
<th>pain</th>
<th>Huna</th>
<th>stack</th>
<th>cane</th>
<th>sap (mil.)</th>
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</thead>
<tbody>
<tr>
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<td>water</td>
<td>Hona</td>
<td>sixty pieces</td>
<td>cany</td>
<td>sap (mil.)</td>
</tr>
<tr>
<td>game</td>
<td>date</td>
<td>Hame</td>
<td>here you go!</td>
<td>Cuba</td>
<td>grey</td>
</tr>
<tr>
<td>Dame</td>
<td>date</td>
<td>Huma</td>
<td>nit (phys.)</td>
<td>Cuna</td>
<td>vulture</td>
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<tr>
<td>gamy</td>
<td>date</td>
<td>Hob</td>
<td>new</td>
<td>coma</td>
<td>cell</td>
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<tr>
<td>Deem</td>
<td>does</td>
<td>Home</td>
<td>note</td>
<td>come</td>
<td>cell</td>
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<tr>
<td>Dose</td>
<td>dose</td>
<td>Homy</td>
<td>note</td>
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<tr>
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<td>dose</td>
<td>nage</td>
<td>groove</td>
<td>coxy</td>
<td>plough</td>
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<td>milk</td>
<td>nana</td>
<td>father</td>
<td>mage</td>
<td>basin</td>
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<td>Dozy</td>
<td>fur coat</td>
<td>nace</td>
<td>pass</td>
<td>mazy</td>
<td>basin</td>
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<td>burn incense</td>
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<td>mana</td>
<td>pan</td>
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<td>buttocks</td>
<td>mama</td>
<td>father</td>
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<td>meze</td>
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<td>Kama</td>
<td>cat (naut.)</td>
<td>cage</td>
<td>garden</td>
<td>mona</td>
<td>top</td>
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</table>
Some assorted comments and observations on the results:

- The longest cursive homographs that were discovered, \textit{begem} and \textit{cubeb}, are only five letters long. In Russian, the word \textit{бегем} (\textit{ведет}) means ‘vedette’, a military term for a horseback sentinel, whereas in English (‘begem’) the word means ‘to decorate with jewels’. The Russian \textit{сивев} (\textit{сивев}) is an adverbial participle that might be translated as something like ‘while having greyed’; in English ‘cubeb’ refers to a particular species of pepper shrub, \textit{Piper cubeba}, or its berries.

  By contrast, the longest known upright homograph \footnote{4} is the seven-letter \textit{TOKAMAK}, meaning ‘an apparatus for effecting controlled nuclear fusion’ in both English and Russian.

- Only two cursive homographs have the same meaning in both English and Russian: \textit{ace} (‘ace’) and \textit{Dao} (‘Dao’).

- Two homographs actually have \textit{opposite} meanings in English and Russian: \textit{mam} and \textit{mama} (\textit{тар} and \textit{тата}, respectively) mean ‘father’ in Russian but the corresponding terms in English (‘mam’ and ‘mama’) mean ‘mother’.

\textbf{References}

EATING BY NUMBERS

SUSAN THORPE
Great Missenden, Buckinghamshire, England
thorpeds@hotmail.com

The number classification 1 to 9 below is derived by:
Finding the numerical total of a word (assigning a = 1 to z = 26) eg. SPROUTS = 128
Add together the three digits 1, 2 and 8 = 11. Then add together the two digits 1 and 1 of the 11 to produce the single digit 2. In other words, it is a case of adding the digits together until a single digit results.
Where two adjacent words are underlined, their two numerical totals are added together and treated as one.

his substantial lunch consisted of a main course of LAMB (28 - 10 - 1) and CHIPS (55 - 10 - 1) with GRAVY (73 - 10 - 1), followed by a PLUM CRUMBLE (136 - 10 - 1) dessert. 1

TOMATO SOUP (155 - 11 - 2), to start with, was followed by STEAK(56 - 11 - 2) with a BAKED POTATO (110 - 2) and a SIDE SALAD (74 - 11 - 2), the meal being rounded off with a choice of FRUIT (74 - 11 - 2) for dessert. 2

a BOILED EGG (66 - 12 - 3) for breakfast, and then a lunch of LIVER and CABBAGE (66 - 12 - 3) followed by FRUIT SALAD (111 - 3) and ICE CREAM (57 - 12 - 3) for dessert. 3

a lunch of VEAL (40 - 4) with ASPARAGUS (103 - 4) and CARROTS (94 - 13 - 4) followed by TREACLE PUDDING (139 - 13 - 4) and CREAM (40 - 4) was rounded off with a cup of COFFEE (40 - 4) 4

the vegetarian’s lunch consisted of CELERY (68 - 14 - 5), ONIONS (86 - 140 - 5) and PEAS (41 - 5) followed by PEARs (59 - 14 - 5) and CUSTARD (86 - 14 - 5) 5

accompanied by a glass of LEMONADE (69 -15 - 6), a FISH (42 - 6) course preceded PORK (60 - 6) with a squeeze of ORANGE (60 - 6) and POTATO (87 - 15 - 6), and a dessert of XMAS PUDDING (132 - 6) and mashed BANANA (33 - 6) 6

lunch consisted of VEGETABLE BROTH (142 - 7), RUMP STEAK (124 - 7) and TRIFLE (70 -7) 7

SOUP (71 - 8) was followed by CHICKEN (53 - 8) wrapped in BACON (35 - 8), with CAULIFLOWER (125 - 8), and a dessert of APPLE PIE (80 - 8), all with a nice cup of TEA (26 - 8) 8

the main lunch course was either BEEF (18 - 9), or FISHCAKES (81 - 9), with TOMATOES (108 - 9) followed by RHUBARB CRUMBLE (144 - 9) for dessert and then a scrumptious looking CHEESE (45 - 9) plate, all washed down with a glass of GINGER BEER (90 - 9) 9
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<td>S 79 + 19 = 98 = 17 = 8</td>
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BROTH  63  9  VEG BROTH  79 + 63 = 142 = 7

STEAK  56  11  2  BRAISED STEAK  BRAISED  58  13  4  114  6

TYPES OF SOUP………….MUSHROOM  122  5  PEA SOUP  93  12  3

MUSHROOMS  141  6  MUSHROOM SOUP  122  71  193  13  4

CHICKEN SOUP  53  8  71  124  7

SOUP =  71 = 8

PEA SOUP  22 + 71 = 93  12  3

LETTUCE  86  14  5

SPROUTS  128  11  2

PARSLEY  96  15  6

3  CABBAGE  PIE  MUTTON  BOILED EGG  47  19  XMAS  SHERRY  BREAD

BUTTER  86  14  5

VEGES  FRUIT  MEAT  FISH  DRINKS  OTHER

FRUIT
the upside down  APPLES  88  16  7  69  15  6  APPLE  50  5

PEAR  40  4  PEAR  59  14  5  PEAR  and CUSTARD  5s

CHERRY  77  14  5  CHERRIES  95  14  5  CHERRIES  and CUSTARD  5s

BRAMBLE  53  8  BRAMBLES  72  9

BANANA  33  6  BANANAS  52  7

ORANGE  60  6  ORANGES  79  16  7

Rhubarb  70  7

CRUMBLE  74  11  2

PIE  30  3

VEGES
CARROT  75  12  3  CARROTS  94  13  4

CABBAGE  21  3  CABBAGES  40  4  MUTTON (PIE) with CABBAGE  3
POTATO 87 15 6  POTATOES  110 2
CAULIFLOWER 125 8  CAULIFLOWERS 144 9
ONION 67 13 4  ONIONS 86 14 5
SPROUTS 128 11 2
ASPARAGUS 103 4
PEAS 41
TURNIP 98 17 8  TURNIPS 117 9
SWede 56 11 2

PARSNIPS 112 4
BEETROOT 100 1
CELERY 68 14 5
TOMATOES 108 9
BAKED POTATO 23 + 87 = 110 2

MEAT

PORK 60 6
LAMB 28 10 1  LAMB, BEETROOT and GRAVY - PLUM CRUMBLE - all 1s
MUTTON 93 12 3
BEEF 18 9
BACON 35 8
EGGS 38 11 2 BOILED
TURKEY 100 1
VEAL 40 4  VEAL with ASPARAGUS and CARROTS all 4s
VENISON 98 17 8  CAULIFLOWER 5
KANGAROO 82 10 1

STEAK 56 11 2  CHIPS 55 10 1  CHIPS WITH EVERYTHING
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<tr>
<td>OTHER</td>
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<td>TOMATO SOUP</td>
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<td>RHUBARB CRUMBLE</td>
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<td>RHUBARB CRUMBLE with CHEESE</td>
<td>9s</td>
<td>BEEF</td>
<td>and a nice cup of MILK</td>
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<td>TREACLE PUDDING</td>
<td>139</td>
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<td>4</td>
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<td>SPOTTED DICK</td>
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<td>18</td>
<td>9</td>
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<tr>
<td>BEEF SPOTTED , DICK</td>
<td>9s</td>
<td>etc.</td>
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<td>PLUM PUDDING</td>
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<tr>
<td>PLUM CRUMBLE</td>
<td>62</td>
<td>74</td>
<td>136</td>
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<tr>
<td>SALAD</td>
<td>37</td>
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<td>1</td>
</tr>
<tr>
<td>SIDE SALAD</td>
<td>37 + 37  = 74</td>
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DRINKS

MILK 45 9
MILK SHAKE 45 + 44 = 89 17 8
LEMONADE 69 15 6
GINGER BEER 60 + 30 = 90 9
COLA 31 4 COCA 22 4
TEA 26 8
COFFEE 40 4
SHERRY etc. 93 12 3

CHEESE 45 9

CHRISTMAS 110 2
XMAS 57 12 3 PUDDING 75 12 3 XP TOGETHER = 132 6

EGGS 38 11 2
BOILED EGG 47 + 19 = 66 12 3
BREAD 30 3
TRIFLE 70 7
FRUIT SALAD 74 37 = 111 3
CHOCOLATE PUDDING 82 75 = 157 13 4
ICE CREAM 17 40 12 3

P = 16
A story wall entitled "A Mark was Made" has been recently installed in the Black Hawk Mini Park area of the Downtown Pedestrian Mall. The wall illuminates the impact that 17 Iowa Citians have had on the City from the 1830s until today.

The piece is located in the southwest corner of the Black Hawk Mini Park of the downtown Pedestrian Mall. It is adjacent to the Paul Hellen Building, which houses the Iowa Artisans Gallery, and the 110 S. Dubuque Street building, home to Buzz Salon.

The wall was created to become an evolving acknowledgement celebrating the leadership, activism, and creativity of those who have influenced the Iowa City community and beyond.

Constructed of limestone faced blocks, The Story Wall features plaques with the names and accomplishments of local leaders of the past and present. The wall is also adorned with metallic silhouettes of birds.

The honorees were selected by soliciting the general public for their suggestions.
Over 80 individuals were nominated through an online poll conducted in October and November of 2017. A committee of local historians, University of Iowa representatives, and downtown business owners then reviewed the list and selected a balance of honorees that represent Iowa City over the years in areas related to discovery, education, commerce, culture, and community.

The complete list of those honored:

- **1830s: Cyrus Sanders - Discovery**
  - Early Johnson County surveyor described pioneer life in Iowa City. His farmhouse remains at 2040 Waterfront Drive.

- **1850s: Martha Reno - Education**
  - African American woman who fought racial inequality and school taxation when her daughter was not allowed to attend.

- **1850: Ed Rate & Family - Commerce**
  - Ed Rate and his family owned the Rate and Sons Glove Factory and were leaders in the Iowa City area for generations.

- **1860: John Hands - Commerce**
  - Trained as a watchmaker in England, he founded Hands Jewelers still at its original location on Washington Street.

- **1870s: Emil Boerner & Family - Commerce**
  - First Dean of UI College of Pharmacy established an apothecary, producing pharmaceuticals in the Davis Building.

- **1910s: Dora Chapman/Etta Englert - Culture**
  - The driving forces behind the Englert Theatre, a community cultural attraction that survives and continues to thrive.

- **1920s: George Gallup - Education**
  - A UI graduate and editor at The Daily Iowan, was a pioneer of survey sampling techniques and invented the Gallup Poll.

- **1920s: Howard Moffitt - Community**
  - Constructed over 175 whimsical cottages in Iowa City from 1924 to 1943, often using recycled and found materials.

- **1940s: Dottie Ray - Community**
  - First female editor of the DI and KXIC radio legend for 55 years, she interviewed over 30,000 guests on her program.

- **1940s: John Alberhasky - Commerce**
  - A WWII vet, he launched Johns Grocery alongside his wife and family who continue to operate the store now for over 70 years.

- **1950s: James Van Allen - Discovery**
  - UI astrophysicist whose discoveries in magnetospheric research led to use of scientific instruments on space satellites.

- **1960s: Minnette Doderer - Community**
  - Brought issues of women and children to Iowa Legislature and was a founding member of Iowa Women’s Political Caucus.

- **1960s: Nancy Sieberling - Community**
• Co-founder of Project Green raised nearly 2 million dollars to beautify Iowa City with trees, shrubs, and flowers.
• **1970s: Bill Sackter - Community**
  Sackter helped change attitudes towards persons with disabilities and was featured in two movies and a documentary.
• **1970s: Dave Morice - Culture**
  As Dr. Alphabet, he became an Iowa City icon for his prolific output of poetry, drawings, and street performances.
• **1990s: Karen Kubby - Community**
  Artist, activist, volunteer and business owner who served on City Council and as Director of the Emma Goldman Clinic.
• **1990s: Connie Mutel - Discovery**
  IIHR Senior Science Writer, Mutel wrote definitive books about Iowa's prairie, landscape, flooding, and climate change.

For more information, contact Marcia Bollinger, Public Art Coordinator, at 319-356-5237, or at marcia-bollinger@iowa-city.org.

**Date of publication**

Tuesday, July 23, 2019

**Project**

*Downtown and Pedestrian Mall Streetscape Plan*

**Contact**

Marcia Bollinger
Neighborhood Outreach Coordinator
319-356-5237
marcia-bollinger@iowa-city.org

**Department**

Com
Jabbowocky or: Lipolating Nonsense
Tikki Saram   Dublin, Ireland
'Twas stimmig, and the stivy toves
Did gyne and gimbey in the wabe;
So mimsy stood the bomogoves,
And the mome caths outscabe.

For some time now I have been engaging in writing lipolations of the greater poetic works of the English language — that is to say, rewriting them to eliminate all instances of the letters 'l' and 'r.' The process of lipolating a poem is fundamentally the same for the vast majority of works, and I soon became comfortable with the routine. Then I decided to tackle Lewis Carroll's "Jabberwocky", and suddenly I was thrown; back to being but a babe in the Woods of Poesy. It was time to put my thesaurus away and come up with a completely new approach.

Typically, writing a lipolation involves finding suitable synonyms for offending words and then shaping the entirety in accordance to the poetic form employed, which includes ensuring correct rhythm and rhyme. But what does one do when the words are simply the author's fancy, when they cannot be found in any thesaurus or dictionary? If the meaning of these words is derived exclusively from their form — the way they sound and their resemblances to other words — the only manner of proceeding is to base the lipolation on those same elements.

I decided to leave the opening/closing stanza for last due to its apparent difficulty — it contained next to no lexical meaning; it was, for the most part, complete nonsense. I began to work my way through the other stanzas in an unsystematic manner, reading through them repeatedly, jotting down ideas and piecing the lipolation together. I decided that 'badumphing' sounds like the same kind of jumpy movement as "galumphing"; I liked the repetition of 'oo' in "whooming in the toogey wood" and figured that replacing 'frabjous' with 'fabjous' is acceptable and strengthens the 'fabulous' element. The titular

1 Or more correctly the sounds /l/ and /r/, so a silent 'l' like that in 'palm' is acceptable. This is due to the difficulty that Japanese speakers have with those sounds, since in Japanese they are a single phoneme. For more information about lipolations, see: Saram, Tikki. "Goodbye Lenore." Tikki's Thoughts, 16 August 2019, https://tikkisaram.tumblr.com/post/187038449593/goodbye-lenore
Jabberwock sounded similar to 'Jabbowock', especially when using a British pronunciation, so I went with that.

My lipolatory work required some sacrifices, however. I couldn't save the wonderful 'vorpal'; since I struggled to work around 'sword' and 'blade' I decided to replace it with an axe, which lent itself to a heavy adjective like 'womping'. This also meant I had to change 'snicker-snack'; I settled on 'smock and smack', which has the sadly sensical 'smack' but otherwise works well. I considered replacing 'burbled' with 'gadunking', but since that would be too similar to 'badumphing' I went for a screechy 'sheeded' instead, which isn't quite as good as the original onomatopoeia. I changed the 'Tumtum tree' to a 'Bombom bush' — not a problem in itself but it loses the internal rhyme. I struggled with "eyes of flame" (A common problem in lipolations is the unavailability of words relating to fire; the only reasonable one seems to be 'ignite') and decided to introduce a new nonsense word, 'abame', which I thought sounded appropriate.

After finishing up the body of the poem (I spent a long time on the final word, 'chortled'; I decided on 'chuffed' due to its resemblance to 'chuffed') I went back to the opening stanza. Before writing anything, I decided to turn to Humpty Dumpty for help — this poem first appeared in Through the Looking-Glass, and What Alice Found There, where Alice asks Humpty Dumpty to explain the first stanza to her. It turned out that "'brillig' means four o'clock in the afternoon — the time when you begin broiling things for dinner." Replacing broiling with steaming, I got 'stimmig'. 'Slithy' means "lithe and slimy", so replacing 'lithe' with 'active' we get something along the lines of 'stivy'; I liked the sound of 'stivy toves' and so I decided to keep it. Humpty Dumpty says "To 'gyre' is to go round and round like a gyroscope. To 'gimble' is to make holes like a gimlet." I tried to limit my changes to the sounds of those words, justifying the 'gyne' in a rather oblique way — since the 'gyro-' comes from the Greek 'gyros' for circle or ring, we can take the 'n' from the Latin 'anus' (ring) and replace the 'r' with it. Since a 'borogove' is a "thin shabby-looking bird" I decided on 'bomogoves', which reminded me slightly of flamingoes. 'Rath' is obviously reminiscent of 'rat'; I was going to use 'baths' but due to its existing meaning I settled on 'caths'. 'Outgribing' is "something between bellowing and whistling, with a kind of sneeze in the middle"; since I saw no connection there, I felt safe rendering it as

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2 Informal British: “Very pleased” — OED
3 According to the Online Etymology Dictionary, etymonline.com
'outscabe', especially since the letters 'sc' fit well with the Old English feel of the stanza — and with that, this lipolation adventure of mine drew to a close.

So, after all that, here is my attempt at a lipolation of "Jabberwocky"; it is in no way definitive, but I hope that — at the very least! — it will pave the way for more skilled lipolators:

'Twas stimmig, and the stivy toves
Did gyne and gimbey in the wabe;
So mimsy stood the bomogoves,
And the mome caths outscabe.

'And heed the Jabbowock, my son!
The jaws that bite, the fangs that catch!
Avoid the Jubjub beast, and shun
The tumious Bandingsnatch!

He took his womping axe in hand:
Ages the manxome foe he sought —
And then he stopped by the Bombom bush
And stood sometime in thought.

And as in uffish thought he stood,
The Jabbowock, its eyes abame,
Came whooming in the toogey wood,
And sheeded as it came!

One, two! One, two! And bam and bam
The womping axe went smock and smack!
And with it dead, he took its head
And went badumphing back.

'Didst thou defeat the Jabbowock?
Give me a hug, my beamish boy!
O fabjous day! Awoo! Ahay!
He chufted in his joy.

'Twas stimmig, and the stivy toves
Did gyne and gimbey in the wabe;
So mimsy stood the bomogoves,
    And the mome caths outscabe.
MARY HAD FOUR LITTLE LAMBS

ANIL
Perth, Australia

Lipograms and other constrained-writing parodies of ‘Mary Had a Little Lamb’ have appeared in Word Ways often in the past, by Ross Eckler, Dave Morice, myself and others. But none very recently. Here are four new ones.

The first is a ‘universe’ or single rhyme form like Silly Animal Rhymes, of four quatrains. It only loosely parallels the original Mary story, with substitutes for each of the particulars.
(Rub-a-dub is a chastening taunt for naughtiness.)

1. Mary Had a Little Brother
Mark’s pet CUB, a BEAR called Bub,
followed him around the hub
and one day into the pub,
creating a real hubbub.

Patrons there said ‘Rub-a-dub,
boy, you’ve made an awful flub.
He’s no member of the club.
We don’t want BeelzeBub!’

Thus went on the heckler’s drub,
‘We must all give him a snub.
Send him back into the scrub!
Meanwhile thru a washing tub!’

Mark’s tears flowed at this cruel rub.
‘Even though Bub eats my grub,
there for me is just no sub.
Up yours, Human Racist club!’

The second admits no words of less than nine letters. It’s much truer to the original story than #1. Inevitably it’s cumbersome and not an easy read. (An earthspin periodicity is a day.)

2. Mary Had a Little Dictionary
 Merrymary possessed individual miniature Adolescent Potential Bellwether. Adolescent’s epidermal outgrowths resembled subfreezing precipitation.
 Furthermore, everywhere Merrymary travelled, Adolescent necessarily accompanied. Particular earthspin periodicity pursuantiy, Adolescent accompanied Merrymary schoolward, violating regulations.
 Witnessing Adolescent’s institutionalisation generated assembled generational education candidates’ merriment, boogeying.
The third is a homophonic nonsense rereading of the story verbatim.

3. **Mary Had a Hearing Problem**
   
   Mayor, he head a lid (*dull ham!*),
   hits, flees what’s wide ass, no?
   Endeavour, re-wear dot; Mayor, re-wend;
   Dull Ham, watch your tug, oh?
   Id fall loader deuce cool wand, hey,
   witches ugh hints day rue’ll.
   Id may Dutch hill drain lay if endplay
   deuce heal ambit’s cool.

The fourth is an effort to tell the story with only the left-hand half of the keyboard, with debatable success.

4. **Mary Had Half a Keyboard**
   
   Sara targeted grazer care.
   Grazer wears ‘freezer dress’ gear.
   Grazer ‘weds’ Sara, targets Sara’s wades/waxes.
   Grazer gets at Sara’s Grade Ed. set—bad fare!
   Grade Ed. crew rave as see grazer at Ed. set.
MEAN SIDEWALKS

ANIL
Perth, Australia

• REBUSSES:
  1. **EDPF**  2. **WOE**  3. **362436**

• RIDDLE:
What emotional weakness did Alexander the Great and Jesus have in common?

• 'UP-SCENE' EUPHEMISMS
As penance for occasionally using obscenities in Word Ways, I propose these cryptic homophonic euphemisms for a number of common curses, something like Cockney rhyming slang, inspired by classics like Mike Hunt, Master Bates, Mother Duck, cunning linguist, & Got down some old ditch.

**EUPHEMISM**
'a virgin fish'
billy's revelation'
'DIY glue'
'Dolly Parton classics'
'Edam on frozen dog'
'fish feces'
'pot belly punch'
'stuffy-air ticket line'
'travel lure ad'
'100% on target'

**CRYPTIC OBSCENE HOMOPHONE**
a pure wrasse
goat tell
stick kit
biggest hits
Cheese is cur-iced.
bass turd
bulge hit
fug queue
mass tour bait
Each hit!

QUIZ: Translate these five euphemisms:
1. 'Fish, Dashiell!'
2. 'heart of 18th letter'
3. 'arrive booze'
4. 'pre-bath farmer'
5. 'rooster aid'

REBUS ANSWERS:
1. Yep, folks, it's EDIE PIAF.
2. We have nothing inside!
3. normal curve (Don't we wish! 364840 would be a more average belly-shaped curve these days.)

RIDDLE ANSWER:
They were crybabies. Alex wept from nothing left to do, Jesus wept from too much left to do.

QUIZ ANSWERS:
1. Cod, Hammett! / 2. R soul / 3. come liquor / 4. dirty hoer / 5. cock succor
MIAMI SEQUENCES

SUSAN THORPE
Great Missenden, Buckinghamshire, England
thorpeds@hotmail.com

In Removing Embedded Letter Patterns (WW98128), I removed tautonymic sequences and palindromic sequences from inside a word, to make another word by joining the letters remaining at the beginning and end of the original word. Thus, when the tautonymic sequence atat is removed from CATATONIC, the c + onic = CONIC; and when the palindromic sequence illi is removed from MILLIONTH, the m + onth = MONTH.
Part 1 of the current article repeats this exercise, removing embedded Miami sequences (12312).

PART 1
REMOVING EMBEDDED MIAMI SEQUENCES TO LEAVE A WORD

argar margarine – mine
ence licence – lie
tenent centenaries – caries
gang ingangan – inn
intin fainting – fag
kinki wiskinkie (a Tammany Hall Officer) – wise
murmur demurmurate – derate
onson consonant – can’t
quau Nequaquon (Canada) - neon
stast distaste – die
urmur murmuring – Ming
waywa awaywards – ards
yntyn Kyntynen (Finland) – ken

blabl garblable – gare
deade bedeaded – bed
frefr ifrefan (to comfort) - Ian
hagha shaghaired - sired
jonjo ajonjoli (webster 3) – Ali
lioli miliolite – mite
nioni unionised – used
phoph morphophonic – moronic
recre firecrest (webster 2) – fist
tisti artistic – arc
valva univalvalate(Webster 2) – unite
xenxe Nhamaxenxene–Nhamane (both Mozambique)

PART 2
REMOVING ENVELOPING MIAMI SEQUENCES TO LEAVE A WORD

Here, the Miami sequence envelops a word which is located in one of the positions marked*: 12312 12321 123*21 1232*1

ascas ascarides (threadworms) – ride
cence credence – red
edied editored – tor
gypsy gypsology – solo
ignig igniting – tin
kalka Kalkaska (Michigan) – ask
meime meantime – ant
oenoe oenochoe – och
qioqi Qioqi (Greenland) – I
shish smoothish – moot
undun underrun – err
wsaws whipsaws – hip
yelye yellow-eye – lowe (old ‘low’)

brabr Brabanter – ante
deode deodorise – oris
farfa farfalla (a candle-fly) – all
heche headache – Ada
jetje Jilette (Sweden) – ill
lenle lendable – dab
neine Nemateine (Papua New Guinea) – mate
prepr preparer – are
reare rearrange – rang
terte terminate – mina
vaeva Vasudeva (father of Krishna) – sud
xerxe Artaxerxes – Artas (Greece)
zaoza Zaragoza (Colombia) – rag
MULTIPLE SPLIT MIAMI SEQUENCES FROM SINGLE WORDS

Amersham  ameam / amram / amsam / amham
chaffinch  chach / chfch / chich / chnch
decide    deco / deide
estranges  estes / esres / esaes / esnes / esges
emblem    embem / emlem
eraser     eraer / erser
Icelandic  iceic / iclic / icaic / icnic / icdic
insulin    insin / inuin / inlin
Penelope   penpe / pelpe / peope
restore     resre / retre / reore
strongest  strst / stost / stnst / stgst / stest
thirtieth  thith / thrth / theth

MULTIPLE SPLIT MIAMI SEQUENCES FROM 2-WORD PHRASES

14 sequences
kissing cousin  sinsi / sigsi / sicsi / siosi / siusi  sngsn / sncsn / snosn / snusn
pleuro pneumonia peupe / perpe / peope  eureu / euoeu / eupeu / euneu
driendly society  ienie / iedie / ielie / ieyie / iiesie / ieoie / iecie
euro pneumonia  eopeo / eoneo  purpu / puopu / uopuo / uonuo / uoeuo
personal pronoun  prspr / propr / prnpr / prapr / pprpr  ponpo / poapo / polpo
pleasure gardens  easa / eauea / earea  esues / esres / esges / esaes / esdes
weather beaten  eatea / eahea / earea  ethet / etret / etbet
athat / ateat / atrat / atbat  terte / tebte / teate

15 sequences
chinese checkers  chich / chnch / chech / chschr / cesce / cehce
permanent magnet manman / maema / matma  anean / antan / anman
foreign legion  eigei / einei / eilei  gnlgn / gnegn / inlin / inein / ingin
olde worlde  oldol / oleol / olwol  ldeld / ldwld / ldold / ldrdld
subject object  bjebj / bjcbj / bjtbj / bjobj  jecje / jetje / jeoje / jebje
aircraft carrier  airai / aicai / aifai / aitai  arcar / arfar / artar

16 sequences
olde worlde  oldol / oleol / olwol  ldeld / ldwld / ldold / ldrdld
subject object  bjebj / bjcbj / bjtbj / bjobj  jecje / jetje / jeoje / jebje
aircraft carrier  airai / aicai / aifai / aitai  arcar / arfar / artar
newgate fringe  
newne / negne / neane / netne / nefne / nerne / neine
gefge / gerge / geige / genge / nga
nga / ngtng / ngeng / ngfng / ngrng / nging
railway carriage  
raira / ralra / rawra / rayra / racra
raia / iacua / iaria / riiri / riari / riiry / ricri
night flight  
ighig / iitig / igfig / ightgh / ghfgh / ghggh / ghtit / itlit
htfht / hrlht / htiht / hghtgh / ihiti / ihifh / ihilhi
breakfast cereal  
reare / rekre / refre / resre / retre / recre
eakea / eafea / easea / eata / eaea
raakra / rafrara / rastra / racra / raera
ancient monument  
etne / nemne / neone / enmen / enonen / enuen / enmen
ntmnt / ntont / ntunt / nten / etnet / etuet
nnonnm / nmnnmm
escape mechanism  
eses / esaes / espes / esmes / ecaec / ecpes / ecme
eapeca / caeca / camca
smesm / smcsms / shmsms / smnmsm / smism
strait waistcoat  
strst / stasit / stist / stwst / taita / tawta / tasta
itwit / itait / atwat / atiat / atsait / atcat / atoat
aitai / aiwaii / saisai / satsa / sawsa
reception centre  
crecre / crepre / retre / reinre / reore / renren
cpecce / cetce / ceice / ceoce / cence / cecet / etiet / etoet / etnet / etcet
encenc / ctcet / ctocct / ctntct
imperial measure  
impim / imeim / imrim / merme / meime / meame / melme
mrimr / mramr / mrlmr / ealea / eamea
erier / eraer / erler / ermer / ierie / reare / resre / reure
russian dressing  
rsirs / rsars / rsnrs / rsdrsr / siasi / sinsi / sidsi / sirsi / siessi
indin / inrin / inein / insin / riari / rinri / ridri / rdinn
sdsnn / snrsn / snesn
clitter clatter  
clicl / ctccl / clecl / clrcl / ctcct / ctcct / ltlct / ltlct / ltlct
lerle / lecle / lerler / lerle / lerlevels / terte / tecte / teltte / teate
ecer / erler / erer / erler
jeepers creepers  
eprep / epsep / epcepe / perpe / oespe / pecpe
prspsr / prcpr / prepr / pscpsps / psrpsps / psepses / erser / ercer / erper
rsrs / rsers / rsprs / esces / esres / espes
ploughs through  
oougou / ouhou / ousoou / outou / ourour
oghog / ogsog / ogtog / ogrog / ughug / ugsug / ugtug / ugrug / ugoug
obsoh / othoh / ohroh / uhuh / uhuh / uhtuh / uhruh / uhouth
ghshgh / ghtgh / ghrgh / ghogh / ghugh
country cousin  
coucou / conco / cotco / corco / coyco /ounou / ouou / ourour / ouyou / oucou
untun / unrun / unyun / uncun / unoun / onton / onron / onyon / oncon
contcn / crrccn / cynecn / cuncu / cutcu / curcu / cuycu
31 sequences
thought through thoth / thuth / thgth houho / hogho / hotho hughu / huthu
ougou / ouhou / outou / ourou ughug / ugtug / ugrug / ugoug
ghtgh / ghrgh / ghogh / ghugh uhtuh / uhruh / uhouh
touto / togto / tohto tugtu / tuhtu
oghog / ogtog / ogrog

32 sequences
ploughed through ougou / ouhou / oueou / oudou / outou / ourou
ughug / ugeug / ugdug / ugtug / ugrug / ugoug
ghegh / ghggh / ghtgh / ghrgh / ghogh / ghugh
oheoh / ohdoh / ohtoh / ohroh
uheuh / uhduh / uhtuh / uhruh / uhouh
oghog / ogeog / ogdog / ogtog / ogrog

35 sequences
blister plaster stest / strst / stpst / stlst / stast serse / sepse / selse / sease
srpsr / srlsr / srasr trptr / trltr / tratr / trstr
terte / tepte / telte / teate / teste erper / erler / eraer / erser / erter
lerle / leple ltelt / ltlrt / ltplt lstls / lsels / lsrls / lspls
MORE COUNTRY TRANSPOSITIONS

Jeff Grant
Hastings, New Zealand

In the last *Word Ways* (Vol 52, Issue 3, 2019) Darryl Francis and I attempted to find transposals for the names of countries of the world. ‘Country Transpositions’ exhibits our best efforts for every name from **Abkhazia** to **Zimbabwe**. Since this article went to press I have been searching for further transposals (in collaboration with Darryl) and managed to find quite a few. Many are improvements, while others are merely interesting, but worthy of a mention nevertheless. If readers can improve on any of our examples, or add countries (old or new) we have missed, please let the editor know as a follow-up for Colloquy.

<table>
<thead>
<tr>
<th>Country</th>
<th>Transposition</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>anti-Afghans</td>
<td>People against Afghans ‘That the Mughals were psychologically anti-Afghans is clear…’ [Himu, <em>the Hindu Hero of Medieval India</em>, S K Sarker, 1994, p16]</td>
</tr>
<tr>
<td>Shanti Fagan</td>
<td></td>
<td>The name of females in Longview, Texas, US [pinetreepost.blogspot.com] and Winchelsea, Victoria, Australia [colacherald.com.au]</td>
</tr>
<tr>
<td>Albania</td>
<td>Baalian</td>
<td>Of or relating to the god Baal. [Wiktionary]</td>
</tr>
<tr>
<td>Andorra</td>
<td>adornar</td>
<td>An adorner, one who adorns [Dictionary of the Older Scottish Tongue]</td>
</tr>
<tr>
<td>Austria</td>
<td>tauaris</td>
<td>plural of tauari, a tropical American tree [Funk &amp; Wagnall’s New Standard Dictionary]</td>
</tr>
<tr>
<td>Bahamas</td>
<td>ambasha</td>
<td>Another name for ‘dabo’, a lightly-sweetened celebration bread of Ethiopia. [Encyclopedia of Jewish Food, G Martes, 2010]</td>
</tr>
<tr>
<td>Bahrain</td>
<td>hrabina</td>
<td>a countess in Polish nobility, the wife of a hrabia (count) [Wikipedia, Hrabia]</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>handlebags</td>
<td>Different types of bags with handles [Net]; for example, bags to put on the handlebars of a bicycle. 'This bike can be equipped with a variety of saddlebags or handlebags.' [Security Management, 1983, p59]</td>
</tr>
</tbody>
</table>
Bhutan unbath A quick wash of a child’s hands and face 'The unbath has limited objectives - it’s mostly an effort to keep the sheets clean.' [Breakfast is Only the Beginning, M Yeager, 1997, p142]

Bolivia biovial In scientific research, a type of polypropylene vial, from generic use of the trademark Biovial 'For this reason, only dark adapted, siliconised glass vials, or polypropylene biovials should be used.' [Liquid Scintillation Counting, C-T Peng, 1980, p333]

Brazil Zarbil Populated place in the Gilan province, northwest Iran [geonames.org]

Cambodia bodamica Relating to the pond snail Limnaea bodamica. 'Even more surprisingly, in the case of the bodamica varieties, selection has done more than it needs to,...' [Behaviour and Evolution, J Piaget, 2013, p50]

Chad dhac Early variant of dhak, an Indian tree of the Butea genus. [Oxford English Dictionary, dhak, 1799 quot] The forest is the typically dry deciduous type with dhac being the most popular tree.' [karmantour.com]

Costa Rica Acrostica collections of acrostic word puzzles. [acrostica.com] Cheilanthes acrostica is a species of lip fern. [Wikipedia]

Cuba bacu Old English plural of ‘back’ [A Concise Anglo-Saxon Dictionary, J R Clark Hall, 1960]

Dominican Republic nonamidic Not of or derived from an amide. ‘However, this is achieved if nonamidic solvents are used instead.’ [Fused Pyrimidines, Part 2, The Purines, J H Lister, 2009, p36]

Greece gerece Variant of ge-rec; rule, government, direction, in Old English. [An Anglo-Saxon Dictionary, J Bosworth & T N Toller, 1898, see quotas]
<table>
<thead>
<tr>
<th>Country</th>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea-Bissau</td>
<td>subasi</td>
<td>Variant of <em>soubashi</em>, a gubernatorial title used to denote various positions in Ottoman hierarchy <em>[Wikipedia]</em> 'In 1460 Ali Bey became <em>subasi</em> of the Guvercinlik (Golubac, today in Serbia)' <em>[Wikipedia, Mihaloglu Ali Bey]</em></td>
</tr>
<tr>
<td>Indonesia</td>
<td>anisodine</td>
<td>A drug derived from several species of Solanaceae [nightshades] that is used as an antispasmodic and anticholinergic agent <em>[Dictionary of Plant Sciences, M Allay, 2019]</em></td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>Yvori</td>
<td>Early form of <em>ivory</em> <em>[Middle English Dictionary, ivori 1.b, ‘Yvori combes, 1394 quot]</em></td>
</tr>
<tr>
<td>Maldives</td>
<td>Devilmas</td>
<td>The antithesis of Christmas “It’s a Devilmas present”, the grey and black haired Lucifer jesterly insisted chuckling to himself.’ <em>[One World under One God, S Swayze, 2012]</em></td>
</tr>
<tr>
<td>Moldova</td>
<td>ovaldom</td>
<td>The realm of oval track auto racing *[At] The Mile …viewing of the cars on the track is a much more intimate experience than elsewhere in ovaldom.’ <em>[<a href="http://www.offcamber.net">www.offcamber.net</a>]</em></td>
</tr>
<tr>
<td>Monaco</td>
<td>oncoma</td>
<td>A swelling or tumor <em>[Dorland’s Medical Dictionary, 1980]</em></td>
</tr>
<tr>
<td>Montserrat</td>
<td>tormentars</td>
<td>Plural of <em>tormentar</em>, variant of ‘tormento(u)r’, early Scots for ‘tormentor’, a torturer <em>[Dictionary of the Older Scottish Tongue]</em></td>
</tr>
<tr>
<td>Myanmar</td>
<td>armyman</td>
<td>A soldier, member of the regiment <em>[Dictionary of the English/Creole of Trinidad and Tobago, L Winer, 2009]</em></td>
</tr>
<tr>
<td>Namibia</td>
<td>bimania</td>
<td>A mental illness in which the mind is consumed by two objects or ideas. ‘A patient with a paranoid (delusional) state suffers from a monomania, a <em>bimania</em>, or a polymania.’ <em>[Determining Mental Status, M Kantor, 1988, p85]</em></td>
</tr>
<tr>
<td>Country</td>
<td>Word</td>
<td>Description</td>
</tr>
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</tr>
<tr>
<td>Pakistan</td>
<td>Kapitans</td>
<td>Plural of Kapitan, a kind of early Chinese ambassador appointed by various colonial administrations in Southeast Asia; sometimes uncapitalised as in this extract from Asian Culture, Issue 32, 2008 (p33): ‘The colonial government ordered the Chinese kapitans to tell the Chinese to give their loyalty to the Chinese kapitans.’</td>
</tr>
<tr>
<td>Portugal</td>
<td>Rotaplug</td>
<td>A 13 amp electric 3-pin plug with screwless terminals formerly made in Great Britain by Rotacon Ltd, Cambridge [collection.sciencemuseum.org.uk]</td>
</tr>
<tr>
<td>Romania</td>
<td>Omarian</td>
<td>A student or admirer of the poetry of Omar Khayyam [Webster’s Third New International Dictionary, 1976]</td>
</tr>
<tr>
<td></td>
<td>amaroni</td>
<td>Plural of amarone, a very dry Italian wine [Dictionary of Wine, S Collin, 2010]</td>
</tr>
<tr>
<td>San Marino</td>
<td>anamorsin</td>
<td>A protein that in humans is encoded by the CIAPIN1 gene. [Wikipedia, CIAPIN1]</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>Asia Baudria</td>
<td>Great grandchild of Irene Fleming of Lampman, Saskatchewan, Canada, who died on 21 June 2006 [canadianobits.com]</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>leeno</td>
<td>(Scots) a thread gauze [English Dialect Dictionary]</td>
</tr>
<tr>
<td>Slovenia</td>
<td>violanes</td>
<td>Plural of violane, a diopside (mineral) of a fine blue or violet colour [Webster’s Third New International Dictionary]</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>Monosol</td>
<td>Brand name of a proprietary line of soluble colors specially adapted for converting to insoluble pigments, to be used in the manufacture of printing inks and paints [Condensed Chemical Dictionary, F M Turner, 1942]</td>
</tr>
<tr>
<td>Location</td>
<td>Person/Word</td>
<td>Details</td>
</tr>
<tr>
<td>---------------</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>Allison Osmonds</td>
<td>Persons names Allison Osmond, such as a dermatopathologist in Saskatoon, Canada, and a service coordinator in Brisbane, Australia <a href="https://www.linkedin.com">linkedin.com</a>. There are other Allison Osmonds on the Net.</td>
</tr>
<tr>
<td>Somaliland</td>
<td>dollmanias</td>
<td>Various obsessions involving dolls. ‘It’s no secret that I have dollmania. I have more dolls than I can count’ [designbreakonline.com]</td>
</tr>
<tr>
<td>South Ossetia</td>
<td>Taoist Houses</td>
<td>Taoist dwellings or places of learning ‘…diverse places of learning: Confucian Academies, Taoist Houses, or Buddhist temples.’ [China’s Search For Good Governance, D Zhenglai, 2011, p203]</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Antizana</td>
<td>A volcano in Napo province, northern Ecuador [geonames.org]</td>
</tr>
<tr>
<td>Thailand</td>
<td>laithand</td>
<td>Variant of ‘lach(e)and’; lagging, tardy, negligent [Dictionary of the Older Scottish Tongue]</td>
</tr>
<tr>
<td>The Gambia</td>
<td>megahabit</td>
<td>A predominant habit ‘Reading isn’t just a megahabit that sticks with me across time and circumstances, it’s something I love.’ [Towards an Identity Model of Habits: Part III, April 8 2016, biju-sukumaran.com]</td>
</tr>
<tr>
<td>Togo</td>
<td>toog</td>
<td>A small knoll, mound or hillock, especially one covered with tufts of coarse grass or heather. [Scottish National Dictionary]</td>
</tr>
<tr>
<td>Transnistria</td>
<td>intrastrains</td>
<td>In biological research, organisms within the same strain ‘The large variability observed between mouse strains and intrastrains suggest a wide range of individuality that could occur in the human.’ [Basic Biology and clinical Impact of Immunosenescence, G Pawelec, 2003]</td>
</tr>
<tr>
<td>Location</td>
<td>Word</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>tindarid</td>
<td>According to the online Wiktionary, ‘any member of the Tindaridae’. Unfortunately, these are errors for tindariid and Tindariidae, which refer to certain deep-sea clams. In capitalised form, the adjective Tindarid (‘of Tyndareus’) is used in Edmund Spenser’s epic poem 'The Faerie Queene' (1590) to denote a daughter of the mythical Spartan king Tyndareus. ‘The faire Tindarid lasse.’ [Spenser: The Faerie Queene, A C Hamilton, 2014, p495]</td>
</tr>
<tr>
<td>Turks and Caicos Islands</td>
<td>saccoi</td>
<td>A plural of saccos, an Eastern bishop’s vestment [Collins Scrabble Dictionary, 2019]</td>
</tr>
<tr>
<td>Uganda</td>
<td>dangau</td>
<td>In Malaysia and Indonesia, a small temporary Hut ‘A farmer took us to his dangau, a tiny windowless hut in the rice field.’ [Daughter of Independence, B Alcock, 2013, p30]</td>
</tr>
<tr>
<td>Ukraine</td>
<td>knaurie</td>
<td>Variant of knavrie, an early form of ‘knavery’ (trickery), not recorded in any dictionary, but used in some Middle English texts ‘A connyng knacke of knaurie spicite with spite.’ (A cunning knack of knavery spiced with spite) [Churchyard’s Misery of Flanders, etc’, T Churchyard, 1579]</td>
</tr>
<tr>
<td>Western Sahara</td>
<td>Hasara</td>
<td>A village and municipality in Gulmi District in the Lumbini Zone of central Nepal [Wikipedia]</td>
</tr>
</tbody>
</table>
OUT WITH THE OLD AND IN WITH THE NEW is a well known saying. What it also has is two pairs of opposites: OUT and IN OLD and NEW.

Words which form a word with the opposite meaning by the addition of the prefixes UN- or IN- or DIS- etc. (such as unsure and insane and dismount) are not allowed here.

These sentences have two pairs of opposites:

THE WARMED UP SOUP SOON COOLED DOWN

THE OLD DARK HOUSE NOW APPEARED IN A NEW LIGHT

TELLING THE ANSWER GIVES MORE SATISFACTION THAN ASKING THE QUESTION

THE SHOP OPENS WHEN THE WEATHER’S DRY BUT CLOSES WHEN IT’S WET

THE NEW UNDERLAY WAS NOT MEANT TO OVERLAY THE OLD CARPET

THE BARBERS OPENED IN THE MORNING BUT CLOSED IN THE AFTERNOON

THE TEMPERATURE ROSE DURING THE DAY THEN FELL AT NIGHT

INSIDE IT WAS HOT Whilst OUTSIDE IT WAS COLD

THE PROS OF LOSING WEIGHT OUTWEIGHED THE CONS OF GAINING WEIGHT

SHARES ROSE WHEN THE MARKET OPENED BUT FELL WHEN IT CLOSED

HIS BAD COLD WAS SOON CURED WITH GOOD HOT DRINKS

THE HEAVY RAIN STARTED SUDDENLY, EASING OFF TO LIGHT RAIN GRADUALLY

THE END OF THE WAR SAW THE BEGINNING OF PEACE

THE OPTIMIST OFTEN SMILES WHILE THE PESSIMIST SELDOM DOES

OPTIMISTS SEE CUPS HALF FULL WHILE PESSIMISTS SEE HALF EMPTY ONES

HIS FATHER WAS ON THE WAR PATH BUT, AS USUAL, HIS MOTHER MADE PEACE

CARS STOP AT THE RED TRAFFIC LIGHT AND START WHEN THE LIGHT IS GREEN

IN THE TENNIS MATCH, HE WON THE SINGLES BUT LOST THE DOUBLES

COMPARED TO A NOISY TOWN, THE COUNTRY IS QUIET

SHE SLEPT LYING DOWN, THEN WOKE WITH HER ALARM AND JUMPED UP
AWAY ON HOLIDAY NEAR THE SEA, HE WAS FAR FROM HOME

HIS MORNING ‘RUN’ STARTED AT A QUICK PACE BUT ENDED IN A SLOW WALK

AT THE BACK OF THE COLD FRONT, THE WEATHER WAS WARM

IN SPRING, THE SAP OF PLANTS RISES WHILE IN THE AUTUMN IT FALLS

HE LIKED TO PLAY ‘SCRABBLE’ BOTH BEFORE AND AFTER WORK

IN SUMMER, THE SUN RISES EARLY AND SETS LATE

JACK PLAYED FAST AND LOOSE WITH JILL

HE GAVE IN TO HIS SURROUNDINGS AND TOOK THE ROUGH WITH THE SMOOTH

SHE TRIED TO TAME THE FERAL CAT BUT HE WAS REALLY WILD

FATHERS AND MOTHERS SHOULD TEACH THAT IT IS BETTER TO GIVE THAN TO RECEIVE

BRIEF ANSWERS TO QUESTIONS ARE PREFERABLE TO LENGTHY ONES

MULTIPLYING AND DIVIDING ARE HARDER THAN ADDING AND SUBTRACTING

THE BACK GARDEN WAS FULL OF COLOUR BUT THE FRONT GARDEN WAS EMPTY

THE ASCENT OF THE MOUNTAIN WAS DIFFICULT BUT THE DESCENT WAS EASY

HAVING DEPARTED A FEW MINUTES LATE, THE TRAIN ARRIVED AT ITS DESTINATION EARLY

THE ATTACK FROM ABOVE INITIATED A STRONG GUN DEFENCE FROM BELOW

These sentences have three pairs of opposites

MRS BLACK LIKED LEAN BACON WHILE HER FRIEND MR WHITE LIKED FAT BACON

THE WIFE HAD COLD FEET WHILE HER HUSBAND HAD WARM HANDS

BROTHER JACK WAS AN URBAN CHAP BUT SISTER JILL WAS THE SUBURBAN TYPE

FOR A MAN AND A WOMAN TO BECOME HUSBAND AND WIFE THEY HAVE TO SAY ‘FOR BETTER FOR WORSE’.

WE WENT OUT WHEN THE WEATHER WAS WARM BUT STAYED IN WHEN IT WAS COLD

HE STARTED THE CROSSWORD EARLY IN THE DAY AND FINISHED IT LATE AT NIGHT

HIS WIFE NEVER LOOKED DOWN, BUT RATHER LIVED IT UP WHEN HER HUSBAND DIED

NASTY COLD NIGHT WEATHER LATER GAVE WAY TO A NICE WARM SUNNY DAY

THE LAST BATSMAN CAME IN BUT WENT OUT AFTER BEING BOWLED BY HIS FIRST BALL
Word pairs with this sort of reduplication are quite common in the language. Even more common are those where, although not exact repeats, they have close similarity through other forms of assonance – alliteration, rhythm and simple change of a vowel sound. There are well over one hundred examples of these various formations, so the impulse to create them must be strong. The power of rhyme and rhythm is obvious from its widespread use in poetry, but how did it become so set in our psyche?

Parents seem to have an instinctive tendency to use words with repeated syllables when trying to introduce babies to the recognition and then repeating of simple items of speech. MAMA, having rhythm and repetition, is so much more effective than MA on its own, and MAMAMA is less easy to remember and repeat. The double syllable seems to be ideal in terms of rhythm and reinforcement. PAPA, DADA, NANA, PEE-PEE, BYE-BYE, GEE-GEE, WEE-WEE, TUMTUM and so on follow the pattern. Later, pairs with less than perfect duplication are introduced - TOE-TOES, DIN-DINS, JIMJAMS, BOW-WOW, MUMMY and DADDY. Maybe the adoption of affectionate name forms also relates to the use of baby talk -FIFI, MIMI, COCO, LULU, BIBI, KIKI, GIGI, TINTIN.

The tendency to produce these assonant doubletons is no new thing and not uniquely a feature of English. We have MURMUR, COUSCOUS, DODO, DUM-DUM, CANCAN, TUTU, HURDY-GURDY, PAWPAW, BERI-BERI, PIRI-PIRI, BRIC-A-BRAC, FOL-DE-ROL and others. Many of purely English origin go back a few centuries, with meanings that may have changed somewhat over time. But we continue to create more in modern decades, apparently unable to resist the allure of this type of formation.

Notable among both old and new are examples of words that are to some degree derogatory, ranging from the slightly condescending to the racially offensive – GOODY-GOODY, PALSY-WALSY, AIRY-FAIRY, EASY-PEASY, FIDDLE-FADDLE, FLIM-FLAM, FUDDY-FUDDY, HOITY-TOITY, HOTCH-POTCH, NAMBY-PAMBY, RIFF-RAFF, RAGBAG, DILLY-DALLY, SHILLY-SHALLY, CLAP-TRAP, TITTLE-TATTLE, ARTY-FARTY, WISHY-WASHY, FUDDY-DUDDY, FUZZY-WUZZY, and NIGNOG.

With some of the pairs, the two halves work together to provide the meaning – for example WILLY-NILLY, TELL-TALE, TUTTI-FRUTTI, TIP-TOP, RAG-BAG, RAT-A-TAT, PEG-LEG, NITTY-GRITTY, AIRY-FAIRY, FAT-CAT, BIG-WIG, FLIP-FLOP, WHEELER-DEALER, and HAPPY-CLAPPY. In others one half is there just to support the meaningful part by reinforcing the sound with an assonant echo, as in CHIT-CHAT, DILLY-DALLY, EASY-PEASY, FUDDY-DUDDY, FIDDLE-FADDLE, HURLY-BURLY, Higgledy-Piggledy, Hotch-Potch, Itsy-Bitsy, Jim-Jams, Lovey-Dovey, MISH-
MASH, OKEY-DOKEY, PALSY-WALSY, RIFF-RAFF, ROLY-POLT, HELTER-SKELTER, WISHY-WASHY, ZIG-ZAG. This leaves a few others to list – BOO-HOO, DOODAH, HUMDRUM, HOBNOB, HIP-HOP, HEIGH-HO, HUGGER-MUGGER, PITTER-PATTER, RAG-TAG-, TIC-TAC and WHATNOT and the names HUMPTY-DUMPTY and GEORGIE-PORGY.

But how about pairs in common usage which do not seem to belong with most of the others? A word like ILLWILL fits the pattern but does not feels to have been created because of its rhyming parts, and is the companion formation to GOODWULL. Similarly BRAIN DRAIN and COP SHOP, although being more memorable due to rhyme, do not have the feel of being made-up expressions. Again, repeated words like TUT TUT, YUM YUM and HEAR HEAR just seem to be used for emphasis, rather than for gaining new meaning. Likewise with appellation such as Tricky Dickie.

Finally, what would be a fitting derogatory expression for someone obsessed with matters of this kind? Perhaps –

NERDY-WORDY
PUNK WHIZ 23

ANIL
Perth, Australia

An old series of Pun Quizzes returns from 2014-52, to practice your groaning on. They’re like cryptic crossword clues but harder without the benefit of cross letters.

1. Quit after counting backwards steadfastly until you reach zero. (4 2 7)
2. the fallback plan when Egypt gets extremely pressed for cash (7 7)
3. how to avoid losing your head, literally but secretly (4 2 5 4 3) ———
4. how local motives drive laws, usually on old tracks (4|4)
5. The garden is overplanted. (Ith’s dithguthting!) (3 4 8)
6. p.c. name for far future mail delivery individual (4|5)
7. enthusiastic nymphomaniac who gives a dam (5 6)
8. describing the original Eden orphan moth (2 6)
9. (un)employed riding a wild Indian dog (2 3 5)
10. create a line by taffy-pulling a dot (7 1 5)
11. ...and kill a penny at the same time (4|4) ———
12. Don’t take a defeat lying down. (5 2 4)
13. One divides my wealth. [rebus] (5)
14. proffer arguments for Brexit (3|5)
15. we are, you are, they are (3 5 4)
16. one resembling a starf (4|4)
17. a whacky humour (4|5)
18. autumn leaves (6 5)
19. a kind of typo typo (4)
20. painting the town Red (11)
21. laugh up-uproariously (6 2)
22. His days are ‘numbered’. (3|4) ———
23. the Beatles’ 100cm girlfriend (4)
24. one third of a cat yard waffle (5|4)
25: having puppies again and again (2|7)
26. covered only in blue feathers (5 2 1 3|4)
27. dogtags, army gear and a little cash (7 8)
28. a tiny cot no bigger than Elizabeth II (5-4 3)
29. to have an unflattering ceiling mirror (4 4 2 8)
30. researchers getting it on with the natives (8 12) ———
31. symbology as practised by the hard of hearing (4|5)
32. totally successful deception by a complete idiot (7 4)
33. the holding power of a belligerent small dog’s bite (3|6)
34. where a rich person is plagued by bees and chiggers (2 3 6)
35. why crazy Quasimodo had to call the Vampire busters (4 2 3 6)
36. elephants, whales, sequoias, fungal networks, coral reefs, Gaia (5|7)
ANSWERS to Punk Whiz 23

1. stop at nothing
2. pyramid selling
3. keep it under your hat
4. railroad
5. The plot thickens.
6. posthuman
7. eager beaver
8. no mother
9. on the dhole
10. stretch a point
11. coincide
12. stand to lose

13. MoneY
14. propound
15. the three ares
16. starfish
17. slapstick
18. winter comes
19. type
20. McCarthyism
21. double up
22. pothead
23. Rita (meter maid)
24. pussyfoot

25. recurring
26. naked as a jaybird
27. Private property
28. queen-size bed
29. look down on yourself
30. physical anthropology
31. semiotics
32. perfect fool
33. pugnacity
34. in the clover
35. bats in [his/the] belfry
36. macrobiotics
REMVPING SEPARATED, ALPHABETICALLY - ADJACENT, LETTERS

SUSAN THORPE
Great Missenden, Buckinghamshire, England
thorpeds@hotmail.com

The 2 alphabetically - adjacent letters to be removed from the word must:
be in alphabetical order in the word
be separated by one or more letters
have no duplicates in the word

removing

AB  DARBY (a first name) - DRY  TARBUCK (surname) - TRUCK
BC  BACH - AH  BOTCHER - OTHER  BRACE - RAE  BRACT - RAT  BRUCE - RUE
CD  CANDY - ANY  CEDAR - EAR  CHAD - HA  CLONED - LONE  CORD - OR
    CROWD - ROW  CRUDE - RUE  SCOLDING - SOLING
DE  BODGE - BOG  DALE - AL  DAME - AM  DANE - AN  DIANE - IAN  DIES - IS
    DIET - IT  DINE - IN  DONE - ON  DRAPE - RAP  DREAM - RAM  DRIED - RID
    FUDGE - FUG  HODGE - HOG  HURDLE - HURL  JUDGE - JUG  LODGE - LOG
    SMUDGE - SMUG
EF  DEAF - DA  LEAFY - LAY  SERIF - SRI
FG  FAGS - AS  FANG - AN  FIGS - IS  FLOG - LO  FOREGO - OREO (name of a biscuit)
    FORGE - ORE
GH  GARTH - ART  GASH - AS  GRAPH - RAP  GUSH - US  GUSHED - USED
HI  CHAIN - CAN  CHAIR - CAR  THESIS - TESS
IJ  INJUN - NUN  INJURE - NURE (a river in Italy)  INJURY - NURY (a first name)
JK  JERKIN - ERIN
KL  KILN - IN  KILT - IT  SKITTLER - SITTER  SNORKEL - SNORE
LM  BOLAM (surname) - BOA  CLUMP - CUP  LUMP - UP  SLUMP - SUP
Some words offer a choice of letters which can be removed:

LEMON - EON  LEMON - LEO  MINCED - MINE  MINCED - ICED

Removing the same 2 letters from transposals can produce the same word:

PORES - POE  PROSE - POE
REVERSED VOWEL COUNTRIES

SUSAN THORPE
Great Missenden, Buckinghamshire, England
thorpeds@hotmail.com

In BRAZIL and ITALY the same 2 vowels (A and I) occur in reverse order. Brazil and Italy could be
described as reversed vowel countries. Here are others:

2 VOWELS

A E - E A  FRANCE - GERMANY, ENGLAND, DENMARK, KENYA, NEPAL
A I - I A  BRAZIL MALI SPAIN - CHINA, FINLAND, IRAN, IRAQ ITALY LIBYA SYRIA
A O - O A  GABON LAOS - POLAND JORDAN NORWAY TONGA OMAN
E I - I E  BENIN - CHILE NIGER
E U - U E  PERU - TURKEY

3 VOWELS

A A E - E A A  BANGLADESH JAN MAYEN - GRENADA
A A I - I A A  BAHRAIN, GAZA STRIP, MALAWI - GIBRALTAR
A A O - O A A  BARBADOS - BOTSWANA
A A U - U A A  MACAU, PALAU - UGANDA
A I I - I I A  HAITI - INDIA, TRINIDAD

4 VOWELS - a selection

AEOO - OOE A  CAMEROON - NORTH KOREA
AIAI - IAIA  VATICAN CITY - CHRISTMAS ISLAND (tautonymic vowels)
AIUA - AUIA  ANTIGUA - ANGUILLA, AUSTRIA

NAMIBIA and TAJIKISTAN have palindromic vowels  A I I A
The Disko Magic Square

Jeremiah Farrell
Indianapolis, Indiana

Our DISKOS are tokens marked with raised domino pips that can easily be identified by touch alone. We will demonstrate how to use such tokens in several mathematical puzzles and games. We also have in mind some non-trivial magic tricks with DISKOS which can be performed effectively by a blind magician for a blind (or not) subject. The teacher can use ordinary dominoes instead of DISKOS if necessary but not always as elegantly.

We illustrate our ideas with a revised version of the ancient Chinese Lo Shu magic square puzzle thought to date from 2200 B.C. Nine DISKOS are labeled from blank (zero) to eight pips and are to be arranged in a 3x3 array so that each row and column sum to the same total. It is possible to include the two main diagonals in the common total but we do not insist on this – especially with younger children. Figure 1 is one of the 72 solutions to this puzzle which will look different to the eye.

![Figure 1](image)

The teacher can decide whether or not to announce in advance to the class that the magic total is 12. Older students certainly should be able to determine this for themselves.

Sooner or later the subject will be able to solve the puzzle and the real magic begins! The blind magician asks the subject to turn the nine DISKOS face down and then, as often as they like, to carefully interchange any two rows or any two columns until the solution is effectively lost. Of course the interchanges do not change the magic constant of 12 for the square and the magician should emphasize this to the subject.

“The constant sum of any row or column remains 12 so if you gave me any two DISKOS in, say, a row, I would be able to easily name the value of the third DISKO in that row,” says the magician.

“Instead,” he adds, “I want you to choose any three DISKOS in the grid but to make it hard on me, make sure they are each from a different row and column – that is, no two in the same row or the same column.” The subject then selects any two of the
three chosen DISKOS and hands them to the magician. The magician immediately and correctly names the third.

As an example, suppose Figure 1 represents the face-down square after the interchanges and suppose the subject selects the 2, 5, and 8. No matter which two of these three are handed to the magician, he can always identify the third.

This magic trick is not easy to see through, even for professional mathematicians, yet it is simple to perform if the magician knows base 3 arithmetic. Figure 2 is a representation of Figure 1 in modified base 3 notation. One could in fact use regular dominoes here in place of making DISKOS.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>02</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>61</td>
<td>00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>30</td>
<td>62</td>
</tr>
</tbody>
</table>

Figure 2

The right-most unit’s digit is, as usual in base 3, 0, 1, or 2. The left-most units however are 0 (0x3), 3 (1x3) or 6 (2x3). These two digit numbers still sum to the same numbers as in Figure 1. Hence the 2-5-8 selection is imagined as 02, 32, and 62 by the magician. It will always be the case that either the left digit or the right digit must be the same number (here right is 2) while the remaining digit cycles through its three possibilities (here the left is 0, 3 or 6). After a little practice even very young magicians can use this information to perform this rather astounding trick.
THE INSIDE AND OUTSIDE OF FOUR LETTER WORDS

SUSAN THORPE
Great Missenden, Buckinghamshire, England
thorpeds@hotmail.com

Letters are given their alphabetical values A = 1 to Z = 26

In each of the four categories addition, subtraction, multiplication and division, the first and last letters of a 4-letter word work together (H + O in HERO = 23) to give the same result as the second and third letters working together (E + R in HERO = 23):

**addition**

<table>
<thead>
<tr>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>+</td>
<td>1</td>
<td>=</td>
</tr>
<tr>
<td>B</td>
<td>E</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>B + D = 6 = E + A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 + 4 = 5 + 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B A F E
B + E = 7 = A + F
(a place in Senegal)

<table>
<thead>
<tr>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>A</td>
<td>T</td>
<td>S</td>
</tr>
<tr>
<td>B + S = 21 = A + T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B E V Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B + Y = 27 = E + V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B O E R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B + R = 20 = O + E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C A G E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C + E = 8 = A + G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C O G S</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C + S = 22 = O + G</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**subtraction**

<table>
<thead>
<tr>
<th>S</th>
<th>L</th>
<th>I</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>S - P = 3 = L - I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>12</td>
<td>9</td>
<td>16</td>
</tr>
</tbody>
</table>

**multiplication**

<table>
<thead>
<tr>
<th>C</th>
<th>E</th>
<th>L</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>C x T = 60 = E x L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>12</td>
<td>20</td>
</tr>
</tbody>
</table>

**division**

<table>
<thead>
<tr>
<th>D</th>
<th>R</th>
<th>I</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>D ÷ B = 2 = R ÷ I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>18</td>
<td>9</td>
<td>2</td>
</tr>
</tbody>
</table>
FEED  F + D = 10 = E + E

GAYS  G + S = 26 = A + Y

HALE  H + E = 13 = A + L

HANG  H + G = 15 = A + N

HEAD  H + E = 9 = E + D
(a place in Sweden)

INDI  I + I = 18 = N + D

JIBA  J + A = 11 = I + B
(a place in Yemen)

JOIN  J + N = 24 = O + I

JUDO  J + O = 25 = U + D

KICA  K + A = 12 = I + C
(a place in Serbia)

LAMB  L + B = 14 = A + M

LINK  L + K = 23 = I + N

LOAD  L + D = 16 = O + A

LOBE  L + E = 17 = O + B

LOPS  L + S = 31 = O + P

MORT  M + T = 33 = O + R

NODE  N + E = 19 = O + D

ONYX  O + X = 39 = N + Y

POUT  P + T = 36 = O + U

SOOK  S + K = 30 = O + O
(a female crab)

SOWS  S + S = 38 = O + W

SPUR  S + R = 37 = P + U

STOP  S + P = 35 = T + O
SUMO \( S + O = 34 = U + M \)
TONI \( T + I = 29 = O + N \)
TUST \( T + T = 40 = U + S \)
(a place in Czechoslovakia)
WISE \( W + E = 28 = I + S \)
WISE \( W + I = 32 = I + W \)
(a girl’s first name)

**SUBTRACTION**

HEAD \( H - D = 4 = E - A \)
\[
\begin{array}{cccc}
4 & 2 & 1 & 3 \\
4 & 3 & 1 & 2 & 1
\end{array}
\]

HOLE \( H - E = 3 = O - L \)

IRJA \( I - A = 8 = R - J \)
(*Irja* is a diminutive of Irene)

JEDI \( J - I = 1 = E - D \)

JOFA \( J - A = 9 = O - F \)
(a clothing brand name)

KICE \( K - E = 6 = I - C \)
(a surname)

LYRE \( L - E = 7 = Y - R \)

MOCA \( M - A = 12 = O - C \)
(a place in Puerto Rico)

OSIE \( O - E = 10 = S - I \)
(a place in Poland)

PODE \( P - E = 11 = O - D \)

ROBE \( R - E = 13 = O - B \)

ROAD \( R - D = 14 = O - A \)

ROMP \( R - P = 2 = O - M \)

STED \( S - D = 15 = T - E \)
STON S - N = 5 = T - O
Ston is a city in Croatia

TONS T - S = 1 = O - N

TUBA T - A = 19 = U - B

UBRE U - E = 16 = R - B
(a place in Italy)

VYDA Y - D = 21 = V - A
(a first name)

XYBA X - A = 23 = Y - B
(a company name)

YUA E Y - E = 20 = U - A
(a species of flea beetle)

ZUCH Z - H = 18 = U - C
(a surname)

ZUDI Z - I = 17 = U - D
(a place in China)

ZWAD Z - D = 22 = W - A
(a surname)

ZYAB Z - B = 24 = Y - A
(a first name)

MULTIPLICATION

6 3 2 1 6 x 1 = 3 x 2

ACCIC A x I = 9 = C x C
1339 1 x 9 = 3 x 3
(Acci is a Roman place name in Spain)

AAEA A x E = 5 = E x A
(a road name in Hawaii)

BABA B x A = 2 = A x B
(Baba is a girl’s first name)
B A J E  B x E = 10 = A x J  
(a place in Angola)

B A N G  B x G = 14 = A x N

B A R I  B x I = 18 = A x R  
(a place in Italy)

B H A D  B x D = 8 = H x A  
(a place in India)

C A C A  C x A = 3 = A x C  
(a Roman goddess)

C L A D  C x D = 12 = L x A

D A D A  D x A = 4 = A x D  
(father)

D A T E  D x E = 20 = A x T

F A F A  F x A = 6 = A x F  
(an island in Tonga)

G A G A  G x A = 7 = A x G

K A K A  K x A = 11 = A x K  
(a place in Iran, also a first name)

M A M A  M x A = 13 = A x M

O C E A  O x A = 15 = C x E  
(a girl’s first name)

P A P A  P x A = 16 = A x P

Q A Q A  Q x A = 17 = A x Q  
(a place in Iraq)

S A S A  S x A = 19 = A x S  
(a place in Israel)
DIVISION

6  2  1  3  6 ÷ 3  =  2 ÷ 1

D  R  I  B  D ÷ B = 2 = R ÷ I
4  18  9  2  4 ÷ 2  =  18 ÷ 9

O  L  D  E  O ÷ E = 3 = L ÷ D

T  E  A  D  T ÷ D = 5 = E ÷ A
(tead is early English for a torch)
The MARTIN Game
by Jeremiah and Karen Farrell

The MARTIN diagram uses each letter of the name to form nine chemical symbols.

The Game. Two players alternately select nodes trying to obtain three nodes with a common letter or three nodes of the same color obtaining all the letters of MARTIN.

The three sides of the large triangle and the three sides of the small labeled triangles have the six letters of MARTIN.

To be completely fair both players have only four plays and if First cannot win in four moves the win is awarded to Second.
How to win at MARTIN.

First can always win by opening with one of Mn, Ra, or Ti. If Second chooses another of these three, First selects the last one. When Second then chooses any other node he will be threatening and when First blocks the threat First will have an unstoppable double threat.

To be more complete we show the following graph of misses, i.e., nodes with no letter in common.

After First chooses one of the three, say Ra, and Second chooses one of the six, say Tm, First forces one of Tm’s misses, here Rn or Ir. Suppose Ir is forced by First choosing Rn. Then First has a double threat with Am.

This game is a variation of a diagram used by the Glasgow mathematician Thomas H. O’Beirne described in the article that follows.

Transposals Between U.S. Place Names

Eric Tentarelli
tentarelli@netzero.net

In *Word Ways* in November 1973 (“An Onomastic Study (Part 3”), Dmitri Borgmann searched for names of U.S. cities, towns, or villages that were transposals of each other. The longest well-mixed pair he found consisted of 9-letter names: MASTERSON, Texas, and SEARSMONT, Maine.

It is worthwhile to revisit this topic in hopes of finding longer examples. We take as our source the database of the U.S. Board on Geographic Names, an agency responsible for standardizing place names as used by the U.S. federal government. Their data set includes incorporated towns, such as SEARSMONT, and unincorporated communities, such as MASTERSON. It is accessible at www.usgs.gov/core-science-systems/ngp/board-on-geographic-names. For transposals, we will follow A. Ross Eckler and others in taking “well-mixed” to mean the names have no tetragrams in common; Borgmann appears to have applied a comparable threshold because he mentioned the 11-letter names ENGLISHTOWN, New Jersey, and SHINGLETOWN, California, but acknowledged they were not well-mixed enough.

If we begin at the maximum length found by Borgmann, we find dozens of 9-letter pairs, so we will limit ourselves to highlighting two pairs that are especially satisfying because each town is incorporated and has a one-word name:

BONDURANT, Iowa – DUNBARTON, New Hampshire
LIVERPOOL, Texas – ROOPVILLE, Georgia

There are more than 30 pairs of 10-letter names and more than 20 pairs of 11-letter names. Rather than listing them all, we present the 11-letter names that form the longest pair in which both towns have single-word names:

DARDANELLES, Oregon – LANDERSDALE, Indiana

We find only two 12-letter pairs:

INDIAN STREAM, Maine – SAINT MEINRAD, Indiana
COSSART CREEK, Delaware – STOCKER ACRES, Vermont

Finally, three pairs are tied for longest at 13 letters each:

ALPINE TERRACE, Ohio – RAINTREE PLACE, Mississippi
NORTH STRABANE, Pennsylvania – TENANTS HARBOR, Maine
POPLAR ESTATES, Tennessee – TRES PAPALOTES, Texas
Of the names shown above with 11 letters or more, all but two, INDIAN STREAM and NORTH STRABANE, are unincorporated.

As an extension of this topic, we can explore transposals where each element consists of a town name followed by its corresponding state name. Such pairs can be well-mixed only if the towns are in different states, so this is one of the rare instances where a short transposal is, by virtue of its frugality, arguably more interesting than a long one. Our results range from 8 to 15 letters.

8 letters:
ELO, IDAHO – DALE, OHIO

9 letters:
ALDEN, OHIO – LEON, IDAHO

10 letters:
DOREMA, OHIO – MOORE, IDAHO
ELDEAN, OHIO – LEONE, IDAHO
RHODES, IOWA – SEWARD, OHIO

11 letters:
RAINBOW, UTAH – RATHBUN, IOWA

12 letters:
ANN, MINNESOTA – ENNIS, MONTANA
BARRET, KANSAS – STAR, NEBRASKA
DOVER, MONTANA – MORTON, NEVADA

13 letters:
ALOYS, NEBRASKA – BOYLE, ARKANSAS
BEECH, ARKANSAS – CHASE, NEBRASKA
BENA, MINNESOTA – SIEBEN, MONTANA
ROME, MINNESOTA – ROSEMONT, MAINE

14 letters:
HEBRON, ARKANSAS – SHARON, NEBRASKA
15 letters:

IMBODEN, ARKANSAS – MADISON, NEBRASKA

We regretfully observe that ELO is flagged as a historical designation, but on the positive side we note that the longest pair consists of two incorporated towns.

Instead of appending state names, we can pursue another reasonable extension of this query by seeking transposals between U.S. place names of any type, not just municipalities. The database of the U.S. Board on Geographic Names includes a wide range of geographic features, from airports and arches to wells and woods.

Below we present the longest well-mixed transposal pairs thus found, from 17 letters on up. In a few cases, more than one location with a given name exists, so we provide the city and state or county and state for only one example. With one exception, the names contain nouns that make it self-evident what types of features they are.

17 letters:

EAST DIAMOND SPRING (Maricopa County, Arizona) and SAINT REGIS POND DAM (Lawrence County, Mississippi)

HURSTLE BRADEN MINE (Anderson County, Tennessee) and ISLAND NUMBER THREE (Chippewa County, Michigan)

18 letters:

BOULDER SPRING TRAIL (Lake County, Oregon) and DILLENBURG'S AIRPORT (Shawano, Wisconsin)

GREENUP LOCKS AND DAM (Greenup, Kentucky) and LAKES END CAMPGROUND (McKenzie Bridge, Oregon)

KELLER RANCH AIRPORT (Johnson City, Texas) and PARRILLA CREEK NORTH (Duval County, Texas)

19 letters:

NORTH PARK GOLF COURSE (Allison Park, Pennsylvania) and SOUTH PRONG CLEAR FORK (a stream in Fentress County, Tennessee)

20 letters:

GOOD ELEMENTARY SCHOOL (Irving, Texas) and OLD SHONGALOO CEMETERY (Shongaloo, Louisiana)
Borgmann had also posed the challenge of finding the longest trio of transposals among U.S. town names, offering three trios of 8-letter names: ALDERSON-LEONARDS-ROSELAND, CAROLINE-COLERAIN-CORNELIA, and MONTROSE-ROSEMONT-SOMERTON, the last of these not being well-mixed by our present definition. We can improve on that result by presenting a quartet of 8-letter names, each of which is well-mixed relative to the others:

ASHERTON, Texas
HANSROTE, West Virginia
NORTH SEA, New York
OSHANTER, Pennsylvania

One might be surprised this is not a quintet. Although there are unincorporated communities called Sheraton Forest, Sheraton Oaks, Sheraton Park, and Sheraton Place, there does not appear to be a U.S. town called simply SHERATON. Of course, this would not be well-mixed relative to ASHERTON regardless.

The longest well-mixed trio we find consists of 9-letter names. Although having two of the names end in -TON is not ideal, they nonetheless satisfy our criterion that no two names should have any tetragram in common:

BERLAMONT, Michigan
LAMBERTON, Minnesota
MARBLETON, Wyoming

When the trio challenge is expanded to encompass U.S. place names of all types, the longest sets appear to be three trios of 12-letter names. We conclude our study by listing them:

CAMELOT HOUSE (a former building at Southern Virginia University in Buena Vista, Virginia)
COTEAU HOLMES (an unincorporated community in St. Martin Parish, Louisiana)
THOMAS COULEE (a valley in Phillips County, Montana)

EL DADO SPRING (a spring in McKinley County, New Mexico)
GOLDEN RAPIDS (rapids on the St. John River in Aroostook County, Maine)
GRISDALE POND (a pond in Grays Harbor County, Washington)
KING PROSPECT (a manganese mine in Bradley County, Tennessee)

POCKET SPRING (a spring in Cassia County, Idaho)

STEPPING ROCK (a pillar-shaped rock formation in McCreary County, Kentucky)
IT’S “KNOW” CONTEST
A Quinquagenary Tribute to the New York Magazine Competition

DON HAUPTMAN
New York, New York
donhauptman@nyc.rr.com

Chacun à son Brew: An oral history of beer. • Tatami Manville: Much-married Tokyo playboy. • Idol Curiosity, by Margaret Mead, author of Yes, Icon. • George Abbott’s first words: “Play doctor.”
Epiphany at Tiffany: The Biography of Walter Hoving.

This year marks the 50th anniversaries of Woodstock and the moon landing. But another momentous event worthy of celebration is the semicentennial of the beloved New York Magazine Competition, which began on January 13, 1969. (Yes, I should have published this tribute at the start of the year, but as Hawthorne might have remarked to Archimedes: “Better Nate than lever!”)

Some background: Each Competition posed a challenge involving a pun, wordplay, or another humorous, recreationally linguistic premise. The contests had an enthusiastic, obsessive, almost cultlike following. They ran sort of weekly until July 24, 2000.

For all 31½ years, every Competition, a total of 973, was edited by Mary Ann Madden (1932-2016). The number of entries ranged between 1,500 and 3,000, but some drew many more. A smaller core group of ingenious and witty people submitted persistently. Indeed, some of us regulars were so dedicated that we shamelessly violated the draconian “one entry only” ukase, using pseudonyms for multiple submissions.

The New York Magazine Competition wasn’t the first of its species, having been preceded by similar contests in several British magazines. In turn, it inspired later ones, such as The Washington Post “Invitational,” which continue to this day, and Twitter hashtag games.

In assignments over three decades, readers were dared to create:


Via search, you can find many, if not all, Competition results online, courtesy of Google Books and the Internet Archive. Selections were compiled into three books: Thank You for the Giant Sea Tortoise (Viking, 1971), Son of Giant Sea Tortoise (Viking, 1975), and Maybe He’s Dead (Random House, 1981). I trust that the titles are self-explanatory! All are out of print but can be obtained from used/rare book dealers, both online and IRL. (In the early 1970s, I was in the Navy, usually stationed overseas, so the issues arrived past the submission deadlines. But four of my contributions appear in the final volume.)
Following are a few of my favorite submissions by fellow Competitors. These are mostly drawn from the early years because my sense is that people were cleverer then. As for the thorny issue of originality, there was no Internet or Google decades ago, and thus no way for any of us to discover if our coruscating quips had been anticipated.

- Germany’s Unknown Soldier: Anonymous Bosch. (John H. Dorenkamp, Worcester, Mass.)
- *truncheon*, n., afternoon meal at which club sandwiches are served. (Mel Taub, N.Y.C.)
- Answer: Plague, Famine, Pestilence, and Death. *Question:* Name three deductible expenses and a capital loss. (Jim McDonough, Bronxville, New York)
- *O Tempura O Morays:* Japanese seafood restaurant. (Eve Gelofsky, Verona, N.J.)
- C/O Le Porter: How to address the tip you neglected to leave at your Paris hotel. (Rorri Feinstein, Bayside, New York)
- Tom Perdue: Author of *Remembrance of Chickens Past.* (Hank Levinson, N.Y.C.)
- First words of Richard Nixon: “I am not a baby.” (Dr. Bicycle, N.Y.C.)
- Epitaph for Jacques Brel: “You can change the name of that show now.” (Donald Wigal, N.Y.C.)

Now here are samples of my own published entries. By my count, I was in 122 Competitions, and won a coveted prize seven times. Full disclosure: I have repurposed all of these in past *Word Ways* articles, so this is a quick single-paragraph roundup:

Apparel of Monkeys: Costumers, Planet of the Apes. • Curie-o’s: radioactive cereal. • *A Scent of Man:* The Compleat Bloodhound’s Manual. • Ra Ra Avis: Cheer infrequently heard in Hertz board meetings. • *Chapter 11:* Neil Simon’s only unsuccessful play. • Mean Cuisine: Packaged meals for macho types. • *Headline:* Podiatrist Sued, Callus Neglect Alleged. • What’s never included with the portable hot tray? A Salton battery. • *I, of the Needle:* Cleopatra’s Secret Diaries. • What makes the next Kleenex pop up? Connective tissue. • Proposed TV series: *Tarara Boom, D.A.*: Stripper turned prosecutor fights big-city crime. • Cyrano de Bergerac: *Plus ça change, plus c’est la même nose.*

The magazine revived the Competitions online from 2013 to 2016. But it was never quite the same.

Finally, about those prizes. Mostly, a free subscription to the magazine, or an extension of your existing one. That certainly wasn’t the primary incentive for passionate participants. So what was?

In a *Wall Street Journal* article about the Competitions (January 8, 1978), Kitty Yancey, a contributor in Knoxville, Tenn., suggested that the motivations involved both intelligence and snobbism: “It makes you think you’re clever . . . People are trying to show off their knowledge.” Further: “It’s challenging. You have to do some thinking.”

Sounds right to me. I second the notion!

*The examples in the lead paragraph are my own published Competition entries.*
INSTRUCTIONS TO AUTHORS

Word Ways is interested in receiving original articles (non-fiction, fiction or poetry) relating to recreational logology. All articles should be sent to the editor, Jeremiah Farrell, 9144 Aintree Dr., Indianapolis, Indiana 46250 (wordways@butler.edu).

Authors are encouraged to send computer-ready articles in Microsoft Word with the following specifications:

- Title: 14 pt Times New Roman BOLD
- Text: 12 pt Times New Roman
- Page Size: 7 inches horizontal, 9 inches vertical

Diagrams and the like should be drafted in black or India ink in a form suitable for photo-offset.

In non-fiction articles, the responsibility for the accuracy of any statement rests primarily with the author. The general scope of any investigation should be defined: for example, a statement that words have been taken from the Merriam-Webster Collegiate Dictionary or the Merriam-Webster Unabridged Dictionary, Third Edition, or place names taken from the Times Index-Gazetteer of the World. If a word or name comes from an unusual source, this should be identified. Footnotes in general should be avoided; references can be given either in the text or at the end of the article.

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