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Une année vraiment magique

Trouvez-vous toutes les caractéristiques et propriétés de ce carré doublement magique ?

二千十八

Excellente année

MMXVIII

2018

2*1009 = 12 + (34*59)

(1*2)-3!! + 4! * (5!-6)

1*2345-6*7*8+9

12*34*5+67-89

8E8_{15}

Merci à Abdul Alafrez, Philippe Socrate et Jean-Marc Falcoz
BONNE ANNÉE
HAPPY NEW YEAR
GLÜCKLICHES NEUES JAHR

2
0
1
∞
de bonheur santé & paix

Alain Zalmanski
1 rue Albert 1° - 78110 Le Vésinet
alain.zalmanski@gmail.com
“ALBATROSS” ECKLER: A Belated Tribute

ANIL
Perth, Australia

This eulogy for a eu-logologist, sent to Kickshaws Jan.’17, was unused. It’s still and forever timely.

Albert Ross Eckler, our wonderful editor for so many years, truly resembled this tired old punny sobriquet. He had a huge wingspan and flew above all of logology, carrying the journey over a long distance and in many directions. I have little to add to the very informative obituary in the Feb 2017 WW, except one more voice of praise for the master guru of logology, author, editor, and seeker out of new directions for word play. To me he was a mentor as well, and an encyclopedia of the genre, often and unselfishly pointing me to predecessors of my ideas as well as adding insights and suggestions. Like Martin Gardner, he tirelessly answered all his mail and strove to aid and encourage all would-be wordsmiths. I owe much to this gentle giant.

My sincere sympathy goes out to Faith, who backed him all the way and enabled him to make such an unequalled contribution. I’m privileged to have known them.
TRANSPOSALS IN SENTENCES

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

WORD GROUPS LIMITED TO A SPECIFIC NUMBER OF WORDS

7 DAYS OF THE WEEK

DON and MAY got married on MONDAY my SEA DUTY started on TUESDAY
I looked SEEDY as DAWN broke on WEDNESDAY the YARD was always SHUT on a THURSDAY
my DIARY entry ‘F’ refers to FRIDAY Is SARA on DUTY on a SATURDAY?
SANDY did a ‘U’ turn on SUNDAY

12 MONTHS OF THE YEAR

did JAY RUN A mile in JANUARY? he wants to BURY his FEAR of dying in FEBRUARY
a CHARM offensive is on the MARCH AL let RIP in APRIL
MY goodness, what A bloom of flowers in MAY JU (short for Judy) visited the N.E. in JUNE
JU (Judy again) met LY (Lionel) in JULY the U.S.A. TUG boat was called ‘AUGUST’
my PET liked the dying EMBERS in cold SEPTEMBER she had a ROBE over her COT in OCTOBER
he must MOVE the BREN gun in NOVEMBER she left a CRÈME bun on her BED for Santa on the 24th DECEMBER

8 PLANETS

MY dreams RECUR - always about MERCURY i’VE been sitting out in the SUN looking at VENUS
HER pill AT bedtime tasted like the EARTH! SAM always stressed the R in MARS
i RIP a piece of JUTE which looks like JUPITER! heTURNS in A circle mimicking the rings of SATURN
the U.S. RUN A course about URANUS a NUN showed PETE the planet NEPTUNE
COLOURS

there is NO GEAR in the ORANGE car

theOWL flew along the LEY line which was painted YELLOW

REG, from the N.E., looked ill and had turned GREEN

I saw the INDI car GO past as a streak of INDIGO

we LOVE IT, that shade of VIOLET

REG drinks GIN with his GINGER ale

the colour of the CAP HE bought was a horrible PEACH!

he bought a MELON in mistake for a LEMON

CREATURES

the BAR of the trap BIT into the unfortunate RABBIT ………

I suggested that GERT stay away from the TIGER

the LAD used a ROPE to catch the LEOPARD

the RED BAG frightened the BADGER

the REST of the HAM was given to the HAMSTER

THIS ROC (bird) was not as large as an OSTRICH

i saw it FLUTTER BY, that BUTTERFLY

HEY, that GROUND is unsuitable for racing a GREYHOUND

the UPPER side of the ICON bore a picture of a PORCUPINE

THE PLANE was smaller than the ELEPHANT!

should SHE, OR shouldn’t she, buy a HORSE?

in the sea, he HAS his FIRST encounter with a STARFISH
EACH of THE lions ran more slowly than the CHEETAH
MORE MATS were needed in the cage containing the MARMOSET
we all had a GO AT catching the furtive GOAT
LIAM removed A nasty SPUR from the MARSUPIAL
I TELL the PIPERS about a bat called the PIPISTRELLE
at first she was COOL but then she CRIED on seeing the CROCODILE
on the ATOLL, from behind A shipwrecked RIG, appeared an ALLIGATOR
the FIG fruits on the trees provided FARE for the GIRAFFE
RON smelt the GAS produced by the ORANGS!

and a pantomine reference to finish off with:
in the corner, ALL NICE and dressed in RED, sat CINDERELLA
51.1.1  Distinct Summands – Dutch by Andrzej Bartz, Fuerth, Germany

VEERTIG + VEERTIEN + DERTIEN + TIEN + ZES + VIER + DRIE = NEGENTIG
( 40 + 14 + 13 + 10 + 6 + 4 + 3 = 90 )

51.1.2  Distinct Summands – Spanish by Andrzej Bartz, Fuerth, Germany

CATORCE + TRECE + DOCE + ONCE + CUATRO + TRES + DOS + UNO = SESENTA
( 14 + 13 + 12 + 11 + 4 + 3 + 2 + 1 = 60 )

51.1.3  Distinct Summands – Portuguese by Andrzej Bartz, Fuerth, Germany

OITENTA + SETENTA + DEZESEIS + ONZE + OITO + SETE + SEIS + DOIS = DUZENTOS
( 80 + 70 + 16 + 11 + 8 + 7 + 6 + 2 = 200 )

51.1.4  Ho Ho Ho by Frank Mrazik, Montreal, Quebec

HAPPY + HOLIDAYS + AND + SEASON’S = GREETINGS
( Please solve in base 16 )

51.1.5  Around The World by Paul Boymel, Potomac, Maryland

O M A N x T O G O = T A N Z A N I A

51.1.6  Small Change by Frank Mrazik, Montreal, Quebec

G I M M E + A + D I M E = D A D D Y

Make DADDY the greatest in bases 11, 12, 13, 14, 15, and 16.
SOLUTIONS TO ALPHAMETICS, Vol. 51, Number 1

51.1.1 Distinct Summands - Dutch by Andrzej Bartz, Fuerth, Germany

\[ 6118925 + 61189217 + 4189217 + 9217 + 310 + 6218 + 4821 = 71517925 \]

51.1.2 Distinct Summands - Spanish by Andrzej Bartz, Fuerth, Germany

\[ 5431950 + 39050 + 8150 + 1250 + 574391 + 3906 + 816 + 721 = 6060234 \]

51.1.3 Distinct Summands - Portuguese by Andrzej Bartz, Fuerth, Germany

\[ 4791390 + 2191390 + 51612172 + 4361 + 4794 + 2191 + 2172 + 5472 = 58613942 \]

51.1.4 Ho Ho Ho by Frank Mrazik, Montreal, Quebec

\[ \text{fc998} + \text{f4e6bc8d} + \text{c7b} + \text{d2cd47d} = 10223671d \]

51.1.5 Around The World by Paul Boymel, Potomac, Maryland

\[ 9246 \times 5909 = 54634614 \]

51.1.6 Small Change by Frank Mrazik, Montreal, Quebec

\[ \begin{align*}
85447 + 3 + 9547 &= 93996 \quad \text{(base 11)} \\
5988b + 4 + 698b &= 64662 \quad \text{(base 12)} \\
b755a + 6 + c75a &= c6cc0 \quad \text{(base 13)} \\
a655c + 3 + b65c &= b3bbd \quad \text{(base 14)} \\
d866c + 7 + e86c &= e7ee1 \quad \text{(base 15)} \\
c766b + 4 + d76b &= d4dda \quad \text{(base 16)}
\end{align*} \]
DISTURBING VERBING AND PRE-VERBING

ROGER E. RONDEAU
Dayton, Ohio

As a word lover I’m beginning to accept some of the butchering that has been going on with the English language. I realize that the language will continue to change and evolve in response to the needs of the people using it, but it still took me a while to accept the fact that ‘unique’ is no longer unique, that ‘fewer’ and ‘less than’ are interchangeable, that bad could mean good, and the word ‘like’ can be used as any part of speech. I also don’t cringe anymore when TV’s talking heads or radio’s wagging tongues contribute to the assault with daily redundancies, as with future plans, past history, forward progress, etc. Even our president recently stated, “We will get rid of redundancy and duplication that wastes your time and your money.”

But verbing is something else. This one will take a little longer rehab time. We don’t have a dialogue anymore, we dialogue. We don’t have a strategy, we strategize. We repurpose furniture. Athletes medal, and they even podium. I heard a TV voice refer to someone being funeralized! Calvin got it right when he told Hobbs “Verbing weirds language.”

Then there’s pre-verbing, or taking a perfectly useful verb that doesn’t need fixing and pre-fixing it into a pre-tensious redundancy. A recent robo phone call informed me that I’d been pre-selected to receive a discount on an insurance policy. Was I selected before I was selected? How does that work? Have you ever wondered how you pre-board an airplane? Or how you pre-register, get pre-approved for pre-admission to a class? How are shows pre-recorded or pre-taped? I wonder if pre-recorders cost more than recorders. Yesterday my wife was pre-occupied pre-sorting, pre-soaking, and pre-treating some laundry when she asked me to pre-heat the oven to 350 degrees for a cake to-be. I pre-tended to do it but instead, I only heated the oven. The cake was sumptuous. If I had pre-heated the oven, would the cake have been presumptuous?

I guess, as a wordo, I’m predisposed, preconditioned, predestined, preordained, and prepared for preconceived ideas about prejudging the predominant use of pre-verbs.
In the August 2017 edition of Word Ways, it was reported that the most downloaded article during the preceding 12 months had been “Words with Two Pairs of Like Letters”, written by me, and originally published in 1973. The article had been downloaded 5049 times in those 12 months, and downloaded over 30,000 times since first becoming downloadable in 2009.

The original article sought to find examples of words with two double letters (but ignoring the very difficult combinations JJ, QQ, VV and XX) – words such as **dumbbell** (double B and double L), **buccaneer** (double C and double E) and **razzamataz** (two occurrences of double Z). The original article found words and names for 196 of the 253 possible combinations, leaving 57 gaps. The total of 253 is arrived at by noting that double A can be combined with 22 double letters, double B can be combined with 21 double letters, and so on. This gives the sum (22+21+20+...+3+2+1), which comes to 253.

The original article did not show which words were capitalised and which were not. Also, the original article did not associate specific reference works to specific words; a list of reference sources was given (W3, W2, etc), but there was no info about which words were taken from which sources. I’ve taken the opportunity here to re-present the original list of words, with capitalisation (or not) and sources made clear.

However, the main purpose of this article is to update the original list of words presented. I have managed to fill many of the 57 gaps, as well as finding better words (and/or better sources) to replace some of the words (and/or sources) in the original article. In assessing whether a new word or source is better or not, I have been guided by the following criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common words are better than uncommon ones</td>
<td></td>
</tr>
<tr>
<td>Unhyphenated words are better than hyphenated ones</td>
<td></td>
</tr>
<tr>
<td>Uncapitalised words are better than capitalised ones</td>
<td></td>
</tr>
<tr>
<td>Words with double letters not split by a hyphen are better than those with double letters split by a hyphen</td>
<td></td>
</tr>
<tr>
<td>Later sources are better than earlier sources (eg W3 better than W2)</td>
<td></td>
</tr>
</tbody>
</table>
Less obscure sources are better than obscure sources (eg dictionaries better than Hodge/TIG)
Modern spellings are better than older spellings
Dictionary headwords are better than words only appearing in illustrative quotations
Printed sources are better than internet sources
Any word or name better than none at all

Occasionally, there are instances where these criteria may be contradictory. For example, is a short uncommon word better than a longer common word? Is a short capitalised word better than a longer uncapitalised one? And so on. Here’s a specific example: in the table below, the aa-ll example is paanwallah, a pretty unfamiliar/uncommon word found in the OED. Much more familiar to a general audience would be Gyllenhaal, the surname of Jake Gyllenhaal, the American actor. Which is the better offering – paanwallah or Gyllenhaal? I would argue that paanwallah is the better example – it’s uncapitalised, and the fact that it’s in the OED means it will still be findable by logologists in 50 or even 100 years time, whereas Jake Gyllenhaal may be a forgotten actor 50 or 100 years hence.

The table below summarises the position regarding improved words and sources, and the remaining number of gaps:

<table>
<thead>
<tr>
<th>Number</th>
<th>Meaning</th>
<th>Code in * column below</th>
</tr>
</thead>
<tbody>
<tr>
<td>89</td>
<td>no changes - same words, same sources</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>same words, but better sources</td>
<td>1</td>
</tr>
<tr>
<td>105</td>
<td>better words, same sources or better sources</td>
<td>2</td>
</tr>
<tr>
<td>47</td>
<td>gaps filled</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>remaining gaps</td>
<td>4</td>
</tr>
<tr>
<td>253</td>
<td>total combinations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Original offering</th>
<th>Source</th>
<th>Combo</th>
<th>*</th>
<th>New offering</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>raadzaal</td>
<td>W3</td>
<td>aa-aa</td>
<td>0</td>
<td>raadzaal</td>
<td>W3</td>
</tr>
<tr>
<td>Jerubbal</td>
<td>W2</td>
<td>aa-bb</td>
<td>2</td>
<td>babbelas</td>
<td>OED (variant spelling of 'babbelas', a hangover)</td>
</tr>
<tr>
<td>Occaanechy</td>
<td>Hodge</td>
<td>aa-cc</td>
<td>2</td>
<td>occaacioun</td>
<td>OED (pre-17th century spelling of 'occasion')</td>
</tr>
<tr>
<td>Adderlaake</td>
<td>TIG</td>
<td>aa-dd</td>
<td>2</td>
<td>supraaddition</td>
<td>OED (an unhyphenated spelling of 'supra-addition', in an 1868 quote, listed at 'supra-')</td>
</tr>
<tr>
<td>heenraad</td>
<td>W3</td>
<td>aa-ee</td>
<td>0</td>
<td>heenraad</td>
<td>W3</td>
</tr>
<tr>
<td>Word</td>
<td>Source</td>
<td>Letters</td>
<td>Type</td>
<td>Notes</td>
<td></td>
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<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>taaffeite</td>
<td>W3</td>
<td>aa-ff</td>
<td>0</td>
<td>taaffeite</td>
<td></td>
</tr>
<tr>
<td>Baambrugge</td>
<td>TIG</td>
<td>aa-gg</td>
<td>2</td>
<td>meshuggaas</td>
<td></td>
</tr>
<tr>
<td>Kibrothhattaavah</td>
<td>W2</td>
<td>aa-hh</td>
<td>2</td>
<td>aarrghh, OSPD 5th edition</td>
<td></td>
</tr>
<tr>
<td>aalii</td>
<td>W3</td>
<td>aa-ii</td>
<td>0</td>
<td>aalii</td>
<td></td>
</tr>
<tr>
<td>markkaa</td>
<td>W3</td>
<td>aa-kk</td>
<td>0</td>
<td>markkaa</td>
<td></td>
</tr>
<tr>
<td>Dwaarkill</td>
<td>TIG</td>
<td>aa-ll</td>
<td>2</td>
<td>paanwallah, OED</td>
<td></td>
</tr>
<tr>
<td>Sammaa</td>
<td>W2</td>
<td>aa-mm</td>
<td>2</td>
<td>aandblommetjie, OED</td>
<td></td>
</tr>
<tr>
<td>Annaas</td>
<td>W2</td>
<td>aa-nn</td>
<td>2</td>
<td>baardmannetjie, OED (inflection of 'baardman')</td>
<td></td>
</tr>
<tr>
<td>waahoo</td>
<td>W3</td>
<td>aa-oo</td>
<td>0</td>
<td>waahoo, OED</td>
<td></td>
</tr>
<tr>
<td>Koppieskraal</td>
<td>TIG</td>
<td>aa-pp</td>
<td>2</td>
<td>Maatschappij, OED</td>
<td></td>
</tr>
<tr>
<td>Kaarre</td>
<td>TIG</td>
<td>aa-rr</td>
<td>2</td>
<td>aarrghh, OSPD 5th edition</td>
<td></td>
</tr>
<tr>
<td>assbaa</td>
<td>W2</td>
<td>aa-ss</td>
<td>2</td>
<td>pussyclaat, OED</td>
<td></td>
</tr>
<tr>
<td>Kibrothhattaavah</td>
<td>W2</td>
<td>aa-tt</td>
<td>2</td>
<td>kittawaax, OED (a 17th century plural of 'kittiwake')</td>
<td></td>
</tr>
<tr>
<td>Uusimaa</td>
<td>TIG</td>
<td>aa-uu</td>
<td>1</td>
<td>Uusimaa, Wikipedia (region of Finland)</td>
<td></td>
</tr>
<tr>
<td>Pyyvaara</td>
<td>TIG</td>
<td>aa-yy</td>
<td>2</td>
<td>Jumhouriyya, Britannica.com (part of the name &quot;Divehi Raajjeyge Jumhouriyyaa&quot;, an alternative name for the Republic of the Maldives)</td>
<td></td>
</tr>
<tr>
<td>Waz-za-ar-tar</td>
<td>Hodge</td>
<td>aa-zz</td>
<td>2</td>
<td>Izzatdaar, Wikipedia (the title of a 1990 Bollywood film)</td>
<td></td>
</tr>
<tr>
<td>gibblegabbler</td>
<td>W2</td>
<td>bb-bb</td>
<td>2</td>
<td>fliibertigibbet, W3</td>
<td></td>
</tr>
<tr>
<td>odd-jobber</td>
<td>W3</td>
<td>bb-dd</td>
<td>2</td>
<td>addubbe, OED (a 15-16th century spelling of 'adub')</td>
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<tr>
<td>Caribbee</td>
<td>F&amp;W</td>
<td>bb-ee</td>
<td>2</td>
<td>beeribber, W2</td>
<td></td>
</tr>
<tr>
<td>subbailiff</td>
<td>W2</td>
<td>bb-ff</td>
<td>0</td>
<td>subbailiff, W2</td>
<td></td>
</tr>
<tr>
<td>Oggebbio</td>
<td>TIG</td>
<td>bb-gg</td>
<td>2</td>
<td>weggebobble, OED</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bb-hh</td>
<td>3</td>
<td>Mohhabbazee′n, OED (low and ridiculous farces in ancient Egypt, in an 1836 quote, listed at 'perform')</td>
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<tr>
<td></td>
<td></td>
<td>bb-ii</td>
<td>3</td>
<td>rabbining, W2 &amp; OED ('rabb' listed as a verb)</td>
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<tr>
<td>subbookkeeper</td>
<td>W2</td>
<td>bb-kk</td>
<td>0</td>
<td>subbookkeeper, W2</td>
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<tr>
<td>dumbbell</td>
<td>W3</td>
<td>bb-ll</td>
<td>0</td>
<td>dumbbell, W3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bb-mm</td>
<td>3</td>
<td>Rabbathammana, encyclopedia.kids.net.au (In the Bible, Rabbathammana was one of the names given to the chief city of the Ammonites, later changed to Philadelphia by Ptolemy Philadelphius)</td>
<td></td>
</tr>
<tr>
<td>bb-ww 3</td>
<td>yellow-webbed</td>
<td>Wikipedia (the article on 'Wilson's storm petrel' says that some authors have also called this bird the 'yellow-webbed storm petrel')</td>
<td></td>
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<td>bb-yy 3</td>
<td>cubbyew</td>
<td>W2</td>
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<tr>
<td>abbozzo</td>
<td>W3</td>
<td>abbozzo</td>
<td>W3</td>
<td></td>
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<tr>
<td>acciaccatura</td>
<td>W3</td>
<td>moccuddum</td>
<td>Wikipedia (an 18th century spelling of 'muqaddam')</td>
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<td></td>
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<tr>
<td>buccaneer</td>
<td>W3</td>
<td>buccaneer</td>
<td>W3</td>
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</tr>
<tr>
<td>acciduus</td>
<td>OED (in the biological name <em>Celestus occiduus</em>, the galliwasp, a West Indies lizard, listed at 'galliwasp')</td>
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<tr>
<td>flaccidezza</td>
<td>F&amp;W</td>
<td>cc-zz</td>
<td>0</td>
<td>flaccidezza (a disease of silkworms)</td>
<td></td>
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<tr>
<td>fuddy-duddy</td>
<td>W3</td>
<td>dd-dd</td>
<td>2</td>
<td>granddaddy</td>
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<td>sadducee</td>
<td>W3</td>
<td>dd-ee</td>
<td>0</td>
<td>sadducee</td>
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<td>W3</td>
<td>ll-ll</td>
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<td>W3</td>
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<td>TIG</td>
<td>ll-uu</td>
<td>2</td>
<td>pillouuair</td>
<td>OED</td>
</tr>
<tr>
<td>hollowwort</td>
<td>W2</td>
<td>ll-ww</td>
<td>2</td>
<td>swallowwort</td>
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<td>3</td>
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<tr>
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<td>W2</td>
<td>ll-zz</td>
<td>2</td>
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<td>nimmy-pimmy</td>
<td>W2</td>
<td>mm-mm</td>
<td>2</td>
<td>ammopalladammonium</td>
<td>OED</td>
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<tr>
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<td>W3</td>
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<td>2</td>
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<td>emmergoose</td>
<td>W2</td>
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<td>2</td>
<td>mummyhood</td>
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<td>doppelkummel</td>
<td>W2</td>
<td>mm-pp</td>
<td>2</td>
<td>immunosuppression</td>
<td>W3</td>
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<td>narrow-rimed</td>
<td>W2</td>
<td>mm-rr</td>
<td>2</td>
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<td>0</td>
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<td>mm-uu</td>
<td>2</td>
<td>nuummite</td>
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<td></td>
<td></td>
<td>mm-ww</td>
<td>4</td>
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<td>Ommayyad</td>
<td>F&amp;W</td>
<td>mm yy</td>
<td>0</td>
<td>Ommayyad</td>
<td>F&amp;W</td>
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<tr>
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<td>3</td>
<td>shlimmazzel</td>
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<td>W3</td>
<td>nn-nn</td>
<td>0</td>
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<td>Pannacook</td>
<td>W3</td>
<td>nn-oo</td>
<td>2</td>
<td>hootenanny</td>
<td>W3</td>
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<td>nn-pp</td>
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<td>Variant 2</td>
<td>Variant 3</td>
<td>Variant 4</td>
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<td>W3</td>
<td>nn-tt</td>
<td>0</td>
<td>flannelette</td>
<td>W3</td>
</tr>
<tr>
<td>Quunnipieuck Hodge</td>
<td>Hodge</td>
<td>nn-uu</td>
<td>2</td>
<td>annuum</td>
<td>OED (Capsicum annuum is the scientific name for capsicum, shown at 'capsicum')</td>
</tr>
<tr>
<td>Bowwetegoweninnewug</td>
<td>Hodge</td>
<td>nn-ww</td>
<td>2</td>
<td>unnawwnedd</td>
<td>OED (a 13th century spelling of 'unawned')</td>
</tr>
<tr>
<td>Budennyyy TIG</td>
<td>nn-yy</td>
<td>2</td>
<td>pennys</td>
<td>OED (a Middle English plural of 'penny')</td>
<td></td>
</tr>
<tr>
<td>Cannizzaro W3</td>
<td>nn-zz</td>
<td>0</td>
<td>Cannizzaro</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>toolroom W3</td>
<td>oo-oo</td>
<td>0</td>
<td>toolroom</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>whippoorwill W3</td>
<td>oo-pp</td>
<td>2</td>
<td>bootstrapper</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>kookaburra W3</td>
<td>oo-rr</td>
<td>2</td>
<td>gooseberry</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>foolishness W3</td>
<td>oo-ss</td>
<td>2</td>
<td>footless</td>
<td>W3</td>
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<tr>
<td>buttinhook W3</td>
<td>oo-tt</td>
<td>2</td>
<td>tattoo</td>
<td>W3</td>
<td></td>
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<tr>
<td>Suurkloofberge TIG</td>
<td>oo-uu</td>
<td>2</td>
<td>Neusiooc</td>
<td>OED (a 15th century spelling of 'Neusiok', a North American Indian people)</td>
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<tr>
<td>bowwood W3</td>
<td>oo-ww</td>
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<td>bowwood</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>oo-yy</td>
<td>3</td>
<td>wyyfhood</td>
<td>OED (an old spelling of 'wifewhood', from a 1440 quote)</td>
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<td>muzzlewood W3</td>
<td>oo-zz</td>
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<td>W3</td>
<td></td>
</tr>
<tr>
<td>whippersnapper W3</td>
<td>pp-pp</td>
<td>0</td>
<td>whippersnapper</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>narrow-hipped W2</td>
<td>pp-rr</td>
<td>2</td>
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<td>W3</td>
<td></td>
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<td>grasshopper W3</td>
<td>pp-ss</td>
<td>2</td>
<td>suppress</td>
<td>W3</td>
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<td>Appomattoc W2</td>
<td>pp-tt</td>
<td>2</td>
<td>outtopping</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>Oppuurs TIG</td>
<td>pp-uu</td>
<td>0</td>
<td>Oppuurs</td>
<td>TIG (place in Belgium)</td>
<td></td>
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<tr>
<td></td>
<td>pp-ww</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Poyyappatti TIG</td>
<td>pp-yy</td>
<td>2</td>
<td>oppsyurs</td>
<td>OED (a Middle English spelling of 'opposite')</td>
<td></td>
</tr>
<tr>
<td>Happizzez W2</td>
<td>pp-zz</td>
<td>2</td>
<td>frizzletopped</td>
<td>OED (an unhyphenated spelling of 'frizzle-topped', having frizzled hair, from a 1567 quote)</td>
<td></td>
</tr>
<tr>
<td>tirrwirr W2</td>
<td>rr-rr</td>
<td>2</td>
<td>tirralirra</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>embarrass W3</td>
<td>rr-ss</td>
<td>0</td>
<td>embarrass</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>atterr W2</td>
<td>rr-tt</td>
<td>2</td>
<td>atterrate</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>Tuupovarra TIG</td>
<td>rr-uu</td>
<td>2</td>
<td>luurrve</td>
<td>OED (a 19th century spelling of 'lurve', a colloquial/humorous form of the verb 'love')</td>
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<tr>
<td>arrowworm W3</td>
<td>rr-ww</td>
<td>2</td>
<td>arrowwood</td>
<td>W3</td>
<td></td>
</tr>
<tr>
<td>Farrakhsiyyar F&amp;W</td>
<td>rr-yy</td>
<td>0</td>
<td>Farrakhsiyyar</td>
<td>F&amp;W (a land grant in India)</td>
<td></td>
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</tbody>
</table>

*Note: W3, W2, F&W: Words used in this context.*
Can readers fill any of the 10 gaps, or offer further improvements?

Where to next? One possibility is that we might decide to treat **aa-bb** and **bb-aa** differently. For example, the **oo-tt** example above is **tattoo**, but the doubled letters appear in the order **tt-oo**. We could seek an **oo-tt** example where the doubled letters appear in that order – for example, **bloodletting**. This would increase the total number of words to be sought to 462 (=22x22-22), an additional 209 words. Alternatively, we could tackle the difficult combinations with a double J, double Q, double V or double X. But I suspect there will be so few of these, and they will be very obscure.
List of Printed Sources
W3   Webster’s Third Edition
W2   Webster’s Second Edition
TIG  Times Index Gazetteer
Hodge Handbook of American Indians North of Mexico, Frederick Webb Hodge
OED  Oxford English Dictionary, online edition
WGD  Webster’s Geographical Dictionary, 1969
OSPD  Official Scrabble Players Dictionary, 5th edition
Smith’s Bible Dictionary  2004 edition

List of Websites
Wikipedia
Merriam-Webster Unabridged
Britannica.com
encyclopedia.kids.net.au
www_definitions_net
Travel-australia.org
Biblical-baby-names.com
These sentences contain adjacent homophones:
The seaside is an AIRIER AREA than the city
She ATE EIGHT chocolates
BAIRD (surname) BARED his knuckles
In the Arctic temperatures, the BARE BEAR was far from warm
She thought that her BEAU’S BOWS (ties) were very elegant
At the agricultural show, his huge BEET BEAT the others
The weekly meetings of the BOARD BORED him to tears
The cottage had a water BUTT BUT not an outside tap
We parted and said BYE, BY the train
When they are dead, the butcher CARVES CALVES
His CASH CACHE was in the safe
CLARK’S CLERKS did all his work for him
Margaret COURT CAUGHT the tennis ball
The COWARD COWERED when confronted by his boss
His CURRENT CURRANT crop was prolific
the beavers built a DAMN DAM which blocked the river
Did the gloomy DANE DEIGN to smile?
Did DI DIE suddenly?
The stag’s DOES DOZE near their fawns
The EWE YOU chose was the best of the bunch
Red EYED, I’D been watching too much television
FAY’S PHASE of withdrawal was only temporary
The FLOOR’S FLAWS indicated that some new linoleum was overdue
The batsman hit him FOR FOUR
Those in the FORT FOUGHT the enemy from above
FRANK’S FRANCS were rapidly running out
GERRY’S JERRIES were used as plant containers
When drinking, a rat should neither GNAW NOR chew
GRAY’S GRAZE was hardly visible
The newly installed fireplace had a GREAT GRATE
In a game of charades, the GUEST GUESSED the right answer
The GUY’S GUISE was transparent
Do the HARE’S HAIRS stand on end when it runs?
An obedient child, HE’D HEED his mother’s words
The goat HERD HEARD the farmer’s voice urging them to go into their pen
The HOARSE HORSE was in no condition to be ridden
HUGH’S HUES in his paintings were a shock to the eye
A duck enthusiast, IDA’S EIDERS were dear to her
There was no INN IN the tea total community
His two first names were JEAN GENE
Sadly, JEAN’S GENES had fundamental flaws
Everyone called KAY KAYE Miss ‘Oh’!
I KNOW NO reason why she shouldn’t be in the team
The cattle LOAD LOWED on the way to market
As usual, the annual MAIZE MAZE was a great success

At the court MARTIAL, the MARSHALL was dismissed

MATT’S MATS were dirty and unkempt

The MAYOR’S MARES were currently in their stables

MOANER MONA got on everyone’s nerves

You must NOT KNOT the thread

According to the head NUN, NONE of the trainee nuns was up to scratch

Her ODE OWED its composition to her poetic trait

OUR HOUR of refreshment was at lunchtime each day

The cat’s PAWS PAUSE abruptly when he reaches his food bowl

The fishmongers was referred to as the PLAICE PLACE

The REVUE’S REVIEWS were not at all complimentary

The destructive boy REX WRECKS everything around him

RHODES’ ROADS are frequently used by tourists

Inspired, one frosty day she wrote a RIME RHYME

His ROUGH RUFF was hard on his neck

The SAIL SALE attracted many seafarers

I SEE SEA views from all my windows

She SENT SCENT for her sister’s birthday

The maths book contained a SINE SIGN

Conjuring involves a SLIGHT SLEIGHT of the hand

She STAYED STAID throughout her adult life

Their aim was to STEAL STEEL from building sites

The narrow sea passage was a STRAIGHT STRAIT
The word ‘STYX’ STICKS from lessons on mythology
Look, THEY’RE THERE already!
It was a stone he THREW THROUGH the window
He scored TWO TOO few points in the game of darts
Butchers USE EWES for meat
Driving along in his car, why did VERE VEER so suddenly?
The children said “WE’LL WHEEL the overloaded barrow but…
…we never said WE’D WEED the garden”
A WHALE’S WAILS carry miles under water
In ‘Double, double, toil and trouble’, WHICH WITCH is which?
In the eighteenth century, a WHIG’S WIGS were masterpieces
The winner WON ONE more match than the rest of the competitors
WOOD WOULD make an excellent tree house

With 3 adjacent homophones: I WRITE ‘WRIGHT’ RIGHT across the page
MEAN SIDEWALKS

ANIL
Perth, Australia

This is my fourth M.S. but they won’t be numbered in future. Since the much-regretted demise of Kickshaws, I shall be using this title for my kickshaws as a sort of regular ‘column’.

Art without humour is like Jehovah without Jesus. — *Anon.*  (Okay I made it up. Maybe.)

• STRAY UNI-VERSE
I’ve mostly worked on Animal Uni-verses, but this one is presumably peculiar to the human animal.

*Stray Thoughts*
Stray thoughts come on like twitches
from dark, fey hidden niches.
You’ve no say in these glitches;
they give no warning, no itches.
They can irk and be bitches,
maybe echo ad pitches
and annoy, these mind switches.
They can curse you like witches,
and can burden with hitches,
or can put you in stitches—
or can click and bring riches!
(Or be zilches like quiches.)

• MY ALPHABETICAL DAY

• SCIENCE IS SHIT!  (But nice shit, and conscious shit.)
I was amazed and amused to discover that science and shit have a common Proto-Indo-European root! Web 3 and, in greater detail, Eric Partridge’s Origins relate both to “to shed”—split off (as a piece of knowledge; know), divide, dissect, analyse (= science), cut out, throw off, excrete. Partridge ties these three words (science, shit, shed) to a host of other related words, some quite surprising: sciolism, conscience, conscious, conscientious, unconscionable, plebiscite, prescient, nescient, nice; shot, scot, sheet, shut, shutter, shuttle, skeet, skit (vb. & n.), skittish, skittle, scoot, scout 2, shyster; shingle, ab/scission, scissors, rescind, abscissa, schedule, schism, schizophrenia, and maybe shout.

Science/shit and many other pairs from the above list make nice additions to the strange bedfellows in my article “Vanilla Vaginas” (’10-150).

There is no shortage of contrarians who believe that science and shit are still related. I must now be careful not to brag that I am “full of science”.

• ERRATUM: pages 193b-206a in the August 2016 Kickshaws were from me, by error unattributed.
• ANOTHER TENNIS PUN
Here’s one that came too late for my article on the subject (16-164).

FIVE SETTERS a pack of dogs that hang around outside the tennis court hoping someone will hit a ball over the fence that they can chase down and slobber up

• APT SPOONERISM
At the Hopman Cup tennis tournament in Perth in January 2017 the temperature reached 41° (= 106° F). One participant, Heather Watson, might well have cried: “Weather? Hot sun!!”

• 2-LETTER 2-WORD PALINDROMIC 4x4 WORD SQUARES
These eight squares (definitions below) seem trivial but may be the only possible examples of their type with Scrabble words in Collins Scrabble Dictionary, authority for international tournaments. All but ESES (= esses) are in Chambers Official Scrabble Words. Official Scrabble Players Dictionary lacks anan, eses, esse, oppo and sese. Web3 lacks naan, sese and eses. All twelve are in OED. Thanks to Jeff Grant for OED and suggestions. Compare Dave Morice’s Dict. of Wordplay, pp. 248-9, word unit squares.

The first two are palindromes and double-tautonyms (tautonymic words + tautonymic lines).

1. ANAN 2. ESES
   NANA   SESE
   ANAN   ESES
   NANA   SESE

These four are both letter and word palindromes, and their words are palindromes in themselves. They’re not tautonyms but are word and letter “flip” tautonyms.

3. ANNA 4.† ESSE 5. OPPO 6. OTTO
   NAAN   SEES   POOP   TOOT
   NAAN   SEES   POOP   TOOT
   ANNA   ESSE   OPPO   OTTO

† #4 can form a true sentence: Esse sees, sees esse!—When existence sees, it can only see itself! By a stretch the other squares can also make fun sentences. I’ll spare you. But it’s fun. Try it.

Squares 1 and 3 and also 2 and 4 share the same letters and can be combined to produce two 4-word non-palindromic double squares (different across and down). It also works reading ‘sideways’.

7. ANAN 8. ESES
   NANA   SESE
   NAAN   SEES
   ANNA   ESSE

Selected meanings:
ANAN signals a failure to hear or understand.
* ANNA former Indian monetary unit and coin.
ESES = esses, plural of the letter S.
ESSE existence or essence.
* NAAN a type of Indian bread.
NANA grandmother (Brit.) or child’s nurse or nursemaid (US).
OPPO opposite number (sweetheart, friend, associate, or counterpart in another organisation).
OTTO attar, a rose oil perfume.
SESE = sessa, a Shakespearian interjection perhaps meaning “enough said”.
* This letter-flip pair are punny synonyms, Indian money = Indian “bread”!
WHAT’S REALLY MAGIC
ABOUT MAGIC SQUARES

by
Jeremiah Farrell

We propose several new concepts about magic squares suitable for all sorts of audiences – even for television. Our first example is an adaptation of an old trick, which is an ideal presentation for classrooms of all ages.

Presentation: “I am going to fill this 4x4 grid with integers of your choice. Roll a die for our starting number and tell me what it is. If you don’t have any dice you may do this mentally.”

Suppose they roll a 5. You write 5 on a tablet and secretly write 50 on the tablet’s reverse as it is placed on the chalk tray of the blackboard. The class is then asked to choose an order of the grid’s rows and you write the numbers in order in their choice of rows. Perhaps this is the result.

```
  9  10  11  12
 17  18  19  20
  5   6   7   8
 13  14  15  16
```

“Now someone choose any number on the grid.” Suppose they select 10. “I circle 10 and cross out the rest of the numbers in the 10’s row and column. Now someone else choose a number not already crossed off.” This is repeated until four numbers are selected. Suppose the four are 10, 16, 5 and 19.

“Now someone please add these four.” No matter what four they choose the sum will always be 50 for a 5 start and your unexpected reveal of 50 on the back of the tablet will usually astonish the audience.

This is our version of an effect described by Martin Gardner in Chapter 2 of his book Mathematical Puzzles and Diversions (1962 Simon & Schuster), a collection of his “Mathematical Games” columns from Scientific American. It also appears in one form as the “Egyptian Fortune Telling Tablet” by Subir Kr. Dhar in issue 24, Dec. 1973 of Sam Dalal’s Swami.
Any $n \times n$ grid with the integers consecutively placed in the rows (or in the columns) will always have the same sum in our selection process. For any start integer $m$, positive, zero or negative, the final sum for an $n \times n$ grid will be $mn + n(n^2-1)/2$.

The most popular $n$'s are $n=3$, 4, or 5 and $mn$ will thus be added respectively to 12, 30, or 60. In the above example $m = 5$ so we add $5(4) = 20$ to 30 to obtain the final 50. Negatives are OK too. If a 2 is rolled and the roller chooses to make it -2, we subtract 8 from 30 to obtain a new constant of 22 and count in order -2, -1, 0, 1, and so on.

It is of some value to give the class the problem of explaining fully why this technique always works. Perhaps they can notice that the rows and columns each differ by the same numbers so that our choice will always choose the same $2n$ numbers.

Other methods can expand our magic to more common squares. For example in the 4x4 case we start by using the numbers in this grid whose construction is straight forward.

<table>
<thead>
<tr>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

These numbers sum to $4^3$ and can be rearranged into a remarkable magic square.

The bold 4x4 outlined grid represents one solution. The border cells mark the start of a tiling of the plane by the solution grid. Alternately it can be regarded as a folding of the 4x4 into a torus. There are 36 sets of four squares that sum to the magic constant 16.
Before we comment further about this square we perform some magic using it. First we hide the number 16 under a slip of paper. Then ask a member of our audience to choose any number. Suppose he selects and circles a 5. Other members are asked to form a square with the circled 5 as a corner and then add the four numbers. The four always total 16!

The square is also magic with constant 16, not only on the rows and columns but also on all eight diagonals including the broken ones. Note also the four corners of any 2x4 rectangle for instance.

It is a fact that for all \( n \) equaling 3 or greater our method will always produce an \( n \times n \) magic square with constant \( n^2 \) at least on rows, columns, and the two main diagonals.

For \( n=3 \) this grid is used.

\[
\begin{array}{ccc}
3 & 4 & 5 \\
2 & 3 & 4 \\
1 & 2 & 3 \\
\end{array}
\]

We leave to the reader the problem of using these nine numbers in a \( 3 \times 3 \) magic square with constant \( 3^2=9 \).

For \( n = 5 \) we like the “Greek Cross” square constructed from the following grid.

\[
\begin{array}{ccccc}
5 & 6 & 7 & 8 & 9 \\
4 & 5 & 6 & 7 & 8 \\
3 & 4 & 5 & 6 & 7 \\
2 & 3 & 4 & 5 & 6 \\
1 & 2 & 3 & 4 & 5 \\
\end{array}
\]
The bold-face 5x5 grid is a solution. The outer border describes the folding of the grid into a torus so as to identify 25 small Greek crosses that each sum to the magic constant 25. The 25 are each centered at one of the 25 entries in the 5x5 grid.

A Greek Cross has orientation of one of two types:

For example the two crosses centered at 1 are:

3
7 1 7 OR 9
7

Before pointing out for the audience that this square is magic on all rows, columns and diagonals we ask volunteers to select a Greek Cross and add the five numbers. The sum will always be our previously predicted 25, the magic constant of the square.

The 4x4 square above is our modification of one using 16 consecutive numbers.

Our solution requirements make this puzzle one of what is called by Dame Kathleen Ollernshaw a most-perfect magic square. This remarkable lady published when she was 87 years old (Most-Perfect Pandiagonal Magic Squares, The Institute of Mathematics and its Applications, 1998, Great Britain, University Press, Cambridge) a complete solution set for all 4k=n such squares. With her co-author David Brée, this was the first time a complete enumeration of an infinite subset of magic squares was completed.

Some mathematical background. There are \( \frac{(16!)}{(4!)(3!)(3!)(2!)(2!)} = 6054048000 \) ways of filling the grid with the 16 tokens that will look different to the eye. If we don’t count reflections and rotations as different this reduces to 756756000 different placements.
The generic term “tokens” usually refers to the numbers that are used in our squares but need not always to be so. We later will employ playing cards and even colors and shapes as tokens.

In his November 1999 *Scientific American* column “Mathematical Recreations” Ian Stewart notes that Ollerenshaw’s “most perfect” requirement is for any magic square of size $4n \times 4n$ with the property that any two-by-two block of adjacent entries have the same sum. He adds “The discovery of the (complex) formula and its proof, leads deeper into combinatorics, so I’ll stop here, except to say that for the doubly even orders of 4, 8, 12 and 16, the numbers of different most-perfect magic squares are 48; 368, 640; 2.22953 \times 10^{10}$ and $9.322433 \times 10^{14}$.”

Martin Gardner in vol. 395, 17 Sept. 1998 of *Nature* also reports on the achievement. “Dame Kathleen Ollerenshaw, one of England’s national treasures, has solved a long standing, extremely difficult problem...”

For the $4 \times 4$ Gardner points out that every broken diagonal sums to 30 as well as every row and column. Also, every $2 \times 2$ square sums to 30 and also any two cells a diagonal hop apart add up to 15.

![Dame Kathleen Ollerenshaw](image)

Dame Kathleen Ollerenshaw

*(1912 – 2014)*

We can add more magic to the $4 \times 4$ most perfect magic square. Our handout dedicated to Martin Gardner at the “Gathering for Gardner V”, April 2002, Atlanta, Georgia was entitled “Five Card Study” and follows.
FIVE CARD STUDY
A Magic Divination

by Jeremiah Farrell

In his third collection of Scientific American columns, Martin Gardner describes the familiar trick of using five cards to divine a selected number that is based on the binary number system [G66]. Most mathemagicians are quite aware of this old chestnut. It has appeared on countless cereal boxes and in virtually all magic kits that have been sold for perhaps the last 100 years. To the young magician, however, it remains a fine introduction to both magic and mathematics and can still be highly recommended.

Our Five Card Study is a new effect, also based on five cards, that will confuse even the most sophisticated mathemagician. The five cards we have in mind are two-sided and a listing appears at the end of this article.

The effect: The magician shows the subject the road-map wheel with the 16 nodes, or stations, and the five colored routes between them. He explains its use with an example. “Suppose we decide to travel the red, green and yellow lines and choose to start at Station 3. We could go red to Station 14, green to Station 0 and, finally, end at Station 11 by traveling yellow.”

After the subject understands the wheel, he is shown the five colored cards with the numbers on them. “All 16 numbers are on one side or the other of each of these colored cards,” notes the magician, “and you may turn the five cards so that any combination of numbers is showing.”

After the subject is satisfied with his placement of the five cards, he is asked to secretly jot down one of the 16 stations (0-15). The magician has previously written a prediction on a slip of paper.

Privately, the subject notes on which of the five colored cards his number appears, and, using these colors as routes (traveling the black line if his number appears on the white card) he travels from his station number on the road-map wheel. When he has completed his route, he informs the magician “I have arrived.”

Even though the magician does not know the subject’s start, routing, or end, he now directs the subject to continue traveling by calling out certain colors. It is found that the journey always ends at the magician’s predicted station.

Another effect: The magician displays the 4x4 magic square that uses the numbers 0, 1, 2, . . . , 15 and marvels at the many ways the magic sum 30 appears on the board.
“Mathematicians call such a fecund magic square ‘Most-Perfect’ and the ancients considered such squares to be endowed with mystical powers,” he says. The magician claims to have studied the powers of the square and proceeds to demonstrate.

“Choose one of the 16 numbers – do not tell me which one it is of course. I now show you five colored cards with the numbers of the square printed on one side or the other of each of them.”

He holds each card in turn up to the subject’s face, deliberately showing both sides, and places the cards down in front of the subject.

The magician allows the subject to turn over any of the five cards he cares to and adds, “I am going to ask you five simple yes-no questions and to make it harder on me, I want you to secretly choose to be either ‘convivial’ and always tell the truth, or, to be ‘contrary’ and always lie. That is, to tell five straight truths or five straight lies to the questions.”

The questions are all of the form “Is your number here?” for each of the five cards and the “yes” responses are put to one side.

The magician glances at the magic square grid and quickly and correctly names the subject’s number. (You may wish to have the subject write his number down earlier for verification.)

The method: No matter how the five colored cards are turned there will always be exactly one number of the 16 that either appears on all five cards or fails to appear on all five cards. This is called the “forced” number. Let us suppose as an example that the magician chooses 2 to be the forced number.

Turn the cards so that 2 appears on each one. Suppose the subject selects the number 6, and decides to lie. He will say his number appears on the red, green and blue cards. On the magic square, the magician mentally starts at 2 (the force), crosses the red edge to 15, the blue edge to 8, and the green edge to 6 the chosen number. If at any time the edges of the square are reached, the magician jumps to the other side of the square for blue or red yeses. For example, for the chosen 6, the magician could have started at the forced 2, go red to 15, then green to 1 and blue jump across to 6 as before. If the subject had decided to tell the truth instead of lying, he would have said yes to the yellow and white cards. Starting at 2 as before, the magician crosses yellow to 9 and a yes for white will always mean to make a (unique) diagonal hop - here to 6. (He could have started from 2, diagonally hopped to 13 and then crossed yellow to 6.) The road-map wheel works in a similar manner (recalling that a white card yes means travel the black line).
When the magician was holding the five cards up to the subject, he was really identifying his forced number and simply laid the cards down accordingly. If the magician had chosen 2 as the force, and the subject decided later to turn the blue and yellow cards over, the magician merely changes the force to 14 – a blue, yellow move from 2.

Follow-up trick: After performing the above effect the magician scoops up the yes responses (or the noes) and secretly turns them over. This changes the force to the subject’s initial choice. In our example, turning yellow and white makes the force 6.

Show the subject the road-map wheel with the 16 nodes and the colored routes between them. Explain its use if this has not already been done. Have the subject choose another number and to note which of the cards his number is on. Ask him to travel from his new number on the colored routes he has selected. He will, much to his amazement, land on his first choice – 6 in our example.

The road-map wheel can be used to easily force a specific number on the entire audience by placing the five cards appropriately on an overhead screen (or on a TV monitor).

Either the magic square or the wheel can be regarded as a two-dimensional depiction of a five dimensional hypercube. Neither is a complete graph of the 5-cube since this would be overly confusing in two dimensions. Instead the 32 nodes are reduced by half by regarding each of the 16 numbers as being listed twice on the 32 nodes – once for convivial and once for contrary. This also reduces by half the number of other parts of the 5-cube. The reader will be able to find the 16 nodes, 40 lines, 40 faces, 20 cubes, and 5 tesseracts on the wheel by following the various colors. For a more complete discussion of hypercubes see [G75]. For another magic trick on the 4-cube, or tesseract, see [F02]. Most-Perfect magic squares are discussed in [OB98] and [P02].

BIBLIOGRAPHY


THE FIVE COLORED, DOUBLE SIDED CARDS
Another magic example is “Acey-Deucey”.

ACEY – DEUCEY

The effect: The magician shows the subject the road-map wheel with the eight nodes and the colored routes between them. He explains its use with an example. “Suppose we decide to travel the red, green and yellow lines and choose to start at the ace of clubs. We could go red to the two of hearts, green to the two of spades and, finally, end on the ace of hearts by traveling yellow.”

After the subject understands the wheel, he is shown the four colored cards with the aces and deuces on them. “All eight cards are on one side or the other of each of these colored cards,” notes the magician, “and you may turn the four cards so that any combination of playing cards is showing.”

After the subject is satisfied with his placement of the four cards, he is given a deck consisting of the four aces and four deuces which he shuffles thoroughly. He deals a card face-down to the magician and also to himself. Both look at their dealt cards.

Privately, the subject notes on which of the four colored cards his dealt card appears, and, using these colors as routes he travels from his dealt card on the road-map wheel. When he has completed his route, he informs the magician “I have arrived.”

Even though the magician does not know the subject’s start, routing, or end, he now directs the subject to continue traveling by calling out certain colors. It is found that the journey always ends on the magician’s freely dealt card.

The method: No matter how the four colored cards are turned, there will always be exactly one card among the eight aces and deuces that either appears on all four cards or fails to appear on all four cards. This is called the “forced” card. The subject will always end on this card if he follows the directions correctly. Knowing this, the magician can easily find a route from the forced card to his own dealt card.

To facilitate locating the forced card the magician should note where the ace of spades, with its oversized pip, appears on the four cards. Trace those colors from the ace of spades on the wheel to find the force. For instance, suppose the ace of spades appears on the red and yellow cards. This will mean that the forced card is the ace of clubs. If the magician is dealt, say, the two of spades, he will direct the subject to travel the yellow and blue to arrive at the magician’s card.
A variation: Mentally note the forced card and ask the subject to draw a card from the eight card deck. Allow him to secretly choose to be "convivial" and always tell the truth, or, to be "contrary" and always lie.

Then ask him to tell you which of the colored cards his card is on. Trace his yes responses from the forced card and, whether or not he was lying, you will always end on his card.

Another variation: The road-map wheel can be used to force the same card on everyone in an audience. Explain how to trace the colored routes and arrange the four colored cards so that a card of your choice is to be forced. Everyone in the audience, after choosing one of the eight cards, will travel to that forced card.
This square is a magic Acey-Deucey on the diagonals. The main diagonals are four spades and four diamonds. The half diagonals are four hearts and four clubs. The 1-3 diagonals are the black aces, the red aces, the black twos and the red twos.

<table>
<thead>
<tr>
<th>R</th>
<th>G</th>
<th>R</th>
<th>G</th>
<th>R</th>
<th>G</th>
<th>R</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>2H</td>
<td>2C</td>
<td>AD</td>
<td>AH</td>
<td>2S</td>
<td>2D</td>
<td>AC</td>
</tr>
<tr>
<td>2C</td>
<td>AD</td>
<td>AS</td>
<td>2H</td>
<td>2D</td>
<td>AC</td>
<td>AH</td>
<td>2S</td>
</tr>
<tr>
<td>2D</td>
<td>AC</td>
<td>AH</td>
<td>2H</td>
<td>2S</td>
<td>AC</td>
<td>AH</td>
<td>2H</td>
</tr>
</tbody>
</table>

Fold R (Red) and B (Blue) into a torus, i.e., top to bottom and right to left. G and Y are Green and Yellow. The color markers need not be printed on the grid as they can easily be memorized. This square then can be used to magically find a spectator’s choice by knowing only his color choices on the questions.

It is also possible for the audience to choose four entries, one from every column and row and the magician will be able to identify any one of the four from the other three by simply observing balance.
Magicians are no doubt familiar with the old puzzle of placing the 16 face cards of a deck into a 4 x 4 magic square. An early reference is Jacques Ozanam’s 1694 edition Récréations Mathématique et Physiques. One example with its magic wheel follows.
Notice the four corners of the square use each denomination and each suit exactly once and then both the denominations and suit are knight 4-hops through the square. The same effects can be accomplished here as were done in “Five Card Study” using the colored cards:

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>AS KH QH JS</td>
<td>AH KS QS JH</td>
</tr>
<tr>
<td></td>
<td>AC KC QC JD</td>
<td>AD KD QD JC</td>
</tr>
<tr>
<td>BLUE</td>
<td>AS KC QS JC</td>
<td>AC KS QC JS</td>
</tr>
<tr>
<td></td>
<td>AH KD QH JD</td>
<td>AD KH QD JH</td>
</tr>
<tr>
<td>GREEN</td>
<td>Ace or Jack</td>
<td>King or Queen</td>
</tr>
<tr>
<td>YELLOW</td>
<td>AS KS QC JC</td>
<td>AC KC QS JS</td>
</tr>
<tr>
<td></td>
<td>AH KH QD JD</td>
<td>AD KD QH JC</td>
</tr>
<tr>
<td>BLACK</td>
<td>Any Red Card</td>
<td>Any Black Card</td>
</tr>
<tr>
<td>LINE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When the five cards are placed front side up the “forced” card is the Jack of Diamonds.
NORWICH BUMSTEAD
DIVINES ALL!
THE NORWICH BUMSTEAD DIVINATION

The effect: The subject secretly chooses one of the fifteen letters in the name NORWICH BUMSTEAD. The magician then asks the subject to separate the five colored cards into two piles; one that contains the words that have his chosen letter in them and the other that contains those words that do not have his letter.

Even though the magician does not know which pile is which, he is quickly able to discern that subject’s choice by a mere glance at the mystic NORWICH BUMSTEAD diagram.

The method: The mystic diagram can be thought of as a torus, or doughnut shape, by bending the half-red upper edge over to join the half-red lower edge, and then joining the half-blue ends to form the torus. This need not actually be done, of course, since it is easy to imagine that “A” is connected to the “B” via a blue edge, or that the “W” is connected through a red edge to the “S”, and so on. With this proviso, every letter (and Norwich himself in the lower right-hand corner) is connected to exactly four other letters by crossing one of the four colors Red, Blue, Yellow or Green.

When the subject separates the five colored cards, the magician simply notes the colors in either pile. He mentally traces the colors in that pile, starting from the Norwich square in the lower right. If the white card is in his chosen pile, the magician makes a (unique) diagonal jump over one square to account for it. For example, suppose Red, Green and White are in one pile. From Norwich the magician crosses Red to “R”, Green to “W” and then does the White diagonal hop to land on “U”, the chosen letter. Had he traced the other pile instead, i.e., Blue and Yellow, he could have gone Yellow to “C” and then Blue to “U” reaching the same spot. It is worth noting that the colors in any pile may be traced in any order; they will always locate the same letter.

<table>
<thead>
<tr>
<th>IS YOUR LETTER IN</th>
<th>IS YOUR LETTER IN</th>
<th>IS YOUR LETTER IN</th>
<th>IS YOUR LETTER IN</th>
<th>IS YOUR LETTER IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRAINED</td>
<td>OBSCURED</td>
<td>HUMORIST</td>
<td>HOMEWARD</td>
<td>WISHBONE</td>
</tr>
</tbody>
</table>
A romantic word is one that has a well-formed Roman numeral embedded within it. Accordingly, EXHIBITION is one such because it displays X I I I, but ACCLAIM would not qualify for the label, since C C L I M is not well-formed, as required. The value of a romantic word is the numerical equivalent of the Roman numeral it displays, so EXHIBITION would have a value of 13. Given the specific values of two dozen romantic words in the list below, can you unearth the actual words themselves? Answers may vary, but the best answers are the longest ones.

1. 4 4 13. 5 0 7
2. 6 4 14. 5 5 4
3. 9 2 15. 6 0 2
4. 9 6 16. 6 5 1
5. 9 9 17. 6 5 4
6. 1 0 7 18. 1 0 4 1
7. 2 0 4 19. 1 2 0 1
8. 2 0 6 20. 1 5 5 1
9. 2 5 1 21. 1 6 0 1
10. 3 0 1 22. 2 0 0 2
11. 3 1 0 23. 2 0 5 1
12. 4 0 2 24. 3 0 5 1
**ROMANTIC WORDS** — Answers

1. **EXPLOSIVES**  
2. **REFLEXIVE**  
3. **EXCITING**  
4. **EXCAVATING**  
5. **EXECUTRIX**  
6. **CHAUVINISTS**  
7. **CONSECUTIVE**  
8. **CONCAVITY**  
9. **ACCELERATION**  
10. **CONCOCTIONS**  
11. **COCCYX**  
12. **CODIFIES**  
13. **DEVIATIONS**  
14. **DELIVERY**  
15. **DECERTIFIES**  
16. **DECLASSIFY**  
17. **DECLARATIVE**  
18. **HOMOSEXUALITY**  
19. **MOCCASINS**  
20. **MAUDLIN**  
21. **MENDACIOUS**  
22. **AMMUNITION**  
23. **SOMNAMBULISTS**  
24. **MAMMALIAN**
COLLOQUY

ALAN FRANK writes:

I recently ran into a couple of things for which WW readers should need no explanation. On page 13 of the September, 2017 Scientific American is the sentence, "A team led by Jean-Jacques Hublin of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, has recovered more human fossil and stone tools, along with compelling evidence that this site is far older than the revised estimate." And a building near my house is labeled with its name, "Amherst Zion Church."

The sentence contains all letters of the alphabet, with a 125-letter pangrammatic window "Jacques Hublin of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, has recovered more human fossil and stone tools, along w." Pulling in the end of the previous sentence gives a 115-letter window: "Now new evidence is re[writing the Jebel Irhoud story again. A team led by Jean-Jacques Hublin of the Max Planck Institute for Evolutionary Anthropology in Leipzig..." That's too long to set any records; I thought that the single-sentence one was more interesting.

And the church has all the vowels in order. It took an embarrassingly long time for me to notice it.

JEFF GRANT sent the following:

Alphabetic Trigrams

Many words contain an alphabetic trigram, for example dabc Hick, define, roughing, hijack, calmness, somnolent, canopy, popquiz, first and student. I recently came across the following on a news website:

‘There have been many reports of rising Afghanophobia in Pakistan.’ [inews.co.uk, 27 Oct 2016 (Net)]

The word Afghanophobia has two alphabetic trigrams (agh, nop). The similar terms Afghanophobe and Afghanophile have also been used online. Are there other words containing two alphabetic trigrams?
The letters are each assigned their alphabetical numerical value (a = 1 to z = 26). The letters following the first letter are added or subtracted to equate numerically to the first letter.

3 LETTER WORDS

A = O - N (boy’s name)  B = U - S  C = A + B
D = I - E  E = D + A (girl’s name)  F = A + E (var. ‘foe’)
G = U - N  H = O - G  H = U - M  I = D + E
J = O - E  K = - I + T  L = E + G
M = I + D  M = O - B  N = I + E  O = R - C
P = I + G  Q = U - D (Egypt)  R = O + C
S = O + D  T = O + E  U = T + A (Japanese poem)
V = I + M  W = H + O  X = Y - A (cricket-like insect genus)
Y = I + P  Z = A + Y (dial. ‘say’)

4 LETTER WORDS

A = B - U + T  B = O - R + E  C = A + G - E
D = A + L - I  E = A + R - N  F = A + R - M
G = O - L + D  H = A + N - G  I = V + E - R
J = A + D + E  K = E - N + T  L = A + M - B
M = E - L + T  N = O + D - E  O = N + Y - X
P = O - S + T  Q = U + O - S (whose)  R = E + A + L
S = A + M + E  T = A - B + U  U = M + P - H
V = O + L - E  W = A + R + D  X = Y + S - T
Y = E + A + S  Z = E + T + A
5 LETTER WORDS

A = L - G + A - E  
B = A + R + B - S  
C = L - A + C - K  

D = E - L + L - A  
E = I - R + I + E (19th Cent. var. 'eerie' OED)  
F = E - L + T - S 

G = R - A - N + D  
H = E + A - R + T  
I = T - E + M - S 

J = O + H + A - N  
K = I + N + G - S  
L = E + A - N + T 

M = E - D + O - C  
N = G + A - I + O  
O = P - I + U - M 

P = E + T - R + I  
Q = U + E + E - N  
R = O + U - N - D 

S = H + I - R + T  
T = H + I + N - K  
U = S + I - N + G 

V = O + T - E - R  
W = A + S - P + S  
X = I - R + I + X 

Y = A - B + A + Y  
Z = E + B + R + A 
(Palindromicon)

6 LETTER WORDS

A = U - N - T + I + E  
B = A + C - K + E + D  
C = H - A + S - E - R  

D = U - F + F - L - E  
E = N + E + R - G - Y  
F = I + C + K - L - E 

G = R + O - C - E - R  
H = O - R - N + E + T  
I = N - K + E - R + S 

J = A + C - O + B + S  
K = I - D - N - E + Y  
L = O - O + K + E - D 

M = A + S - T - E + R  
N = A - T + T - E + R  
O = X - Y + G - E + N 

P = A + D + D + L - E  
Q = U + A + C + K - S  
R = A + T - T + L + E 

S = E + A + L + E - D  
T = H + R - O + N - E  
U = S + H - E + R - S 

V = A + N - D - A + L  
W = A + L + K - E + D  
X = A - N + N - A + X 

Y = O - U + T - H + S  
Z = O + M + B - I + E 
(Word Ways May 1974 p94)
HEBREW SCANDINAVIAN CHARADES

STEVE KAHAN
Hollis Hills, New York

In the past, we’ve had occasion to examine both Hebrew charades and scandinavian charades, so now it’s inevitable that we consider their amalgamation – *Hebrew scandinavian charades*. An apt illustration of this genre is the word SEPARABLE, which results from concatenating EL, BAR, and APES and then reading the result from right to left.

Fifteen Hebrew scandinavian charades can be similarly constructed from the sixty components that are presented below, wherein fifteen decoys have been included to heighten the challenge. Are you up for it?

<table>
<thead>
<tr>
<th>A C I D</th>
<th>B U S</th>
<th>G N A T</th>
<th>O I L</th>
<th>R O T</th>
</tr>
</thead>
<tbody>
<tr>
<td>A C N E</td>
<td>C I T E</td>
<td>G N U</td>
<td>O N</td>
<td>R U T</td>
</tr>
<tr>
<td>A I L</td>
<td>C O N</td>
<td>I F</td>
<td>O R</td>
<td>S A C</td>
</tr>
<tr>
<td>A I M</td>
<td>E L</td>
<td>I R E</td>
<td>O R B</td>
<td>S A D</td>
</tr>
<tr>
<td>A L U M</td>
<td>E M</td>
<td>I S</td>
<td>P O T</td>
<td>S E E</td>
</tr>
<tr>
<td>A M</td>
<td>E M I T</td>
<td>I T</td>
<td>P U S</td>
<td>S E T</td>
</tr>
<tr>
<td>A R C</td>
<td>E M U</td>
<td>L E D</td>
<td>R A M</td>
<td>S I R</td>
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<td>G A M</td>
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BONUS: Find a Hebrew Scandinavian charade with four constituent parts.
HEBREW SCANDINAVIAN CHARADES – Answers

SOL + LED + ROB = SOLLEDROB  →  BORDELLOS
YAW + AT + SAC = YAWATSAC  →  CASTAWAY
LID + OF + FAD = LIDOFFAD  →  DAFFODIL
RIA + NO + BED = RIANOBED  →  DEBONAIR
SET + ACID + ARE = SETACIDARE  →  ERADICATES
RE + IRE + IF = REIREIF  →  FIERIER
EM + ARC + AM = EMARCAM  →  MACRAME
AIL + ON + GAM = AILONGAM  →  MAGNOLIA
TEN + IT + RAM = TENITRAM  →  MARTINET
EN + RUT + CON = ENRUTCON  →  NOCTURNE
SEE + LO + RAP = SEELORAP  →  PAROLEES
SAD + NUT + OR = SADNUTOR  →  ROTUNDAS
ROT + ALUM + IS = ROTALUMIS  →  SIMULATOR
EMIT + REP + PUS = EMITREPPUS  →  SUPPERTIME
POT + EL + BAT = POTELB Bat  →  TABLETOP

BONUS:

EL + CAN + RE + BAT = ELCANREBAT  →  TABERNACLE
ANAGRAM QUIZ 24

ANIL
Perth, Australia

1. freed? (5)
2. belt at (6)
3. A-I crave (7)
4. hear, tend (8)
5. risen case (9)
6. or hi-fried (9)
7. is cast o’er (9)
8. on X cruise (9)
9. a bail jerk (4|5)
10. act to hurt (3|6)
11. peer rim set (10)
12. deigns design (6)
13. awe-rajw area (5)
14. nous = I gram (9)
15. in front case (3 8)
16. earn meeting (2 9)
17. a cross-evert (2-9)
18. Co. ever rips. (4|6)
19. a chaw flit tic (6 6)
20. Ye mar, rot for. (11)
21. re mean misdo (3|8)
22. “Sodom year!” (4|5)
23. in debt here (2 2 3 3)
24. Is a lame me, as ail. (7)
25. Clad site}s, etc., laid. (8)
26. Am pair-lit air-it lamp. (9)
27. Enter firing, nit fingerer! (9)
28. seen at top t]ent, top seat (10)
29. one men hap|pen on, aht ’em (9)
30. I spur so I get ego trip. Sus, I! (11)
31. Sat in, felt last net if nil set aft. (5 4)
32. Rich vats I visit, char[t rich ‘visa’. (9)
33. neat cut up, uncut, tape at cute pun (9)
34. I meet, nail a timeline, tie ’em a nil. (9)
35. “ISN’T” du|ds unit (Suit dn., I’d stun!) (6)
36. “Blame Shep (Lamb), sheep!” (Bleep! Sham!) (9)
ANSWERS

ANAGRAM QUIZ 24, Anil
1. defer 10. cutthroat 19. facial twitch 28. potentates
2. battle 11. perimeters 20. reformatory 29. phenomena
3. avarice 12. signed 21. misdemeanor 30. prestigious
4. adherent 13. aware 22. doomsayer 31. final test
5. increases 14. ignoramus 23. be in the red 32. archivist
6. horrified 15. for instance 24. malaise 33. punctuate
7. ostracise 16. in agreement 25. citadels 34. eliminate
8. excursion 17. co-traverses 26. impartial 35. nudist
9. jailbreak 18. overprices 27. interfering 36. blaspheme
STICKING TO MY PUNS
Still More Wordplay in Everyday Situations

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From The Wall Street Journal, December 7, 2017:

“A Manhattan man who stole tens of thousands of dollars from women he met on
the dating app Tinder was sentenced Wednesday to at least two years in prison. . . .
‘Through a series of elaborate scams, [he] exploited dates and acquaintances, swiping
tens of thousands of dollars left and right as he emptied victims’ wallets and accounts,’
Manhattan District Attorney Cyrus Vance Jr. said in a statement.”

The pun is clever, though some might question the propriety of a public official’s
flippancy in such serious circumstances. Still, this confirms my long-held theory
that wordplay can be effectively deployed in the most unlikely places.

It’s time for another roundup of puns drawn from my own experiences. Here’s
the Official Originality Disclaimer: Though the following incidents and associated
quips really happened, Internet searches revealed that I was anticipated in some cases.
Acknowledgments, sort of, appear at the end of this article.

• As a favor, I agreed to pick up a snack for a friend at a gourmet fast-food
emporium. En route, I sent him an e-mail message with a link to the menu.
Subject line: “URL of Sandwich.”

• An out-of-town guest accompanied me to an appointment, which required us to
traverse Central Park on foot in chilling weather. Unaccustomed to the distance,
a trek I had made hundreds of times, he repeatedly asked a question familiar
to numerous families on car trips: “Aren’t we there yet?” I riposted: “For us
New Yorkers, this is a walk in the park!”

• Dining at a restaurant in Boston, a city where seafood is especially popular,
my companion considered ordering the monkfish. She asked the waiter if
it was acidic. I broke in: “No, it’s ascetic.”

• Visiting a hospitalized friend, I observed that he was doing his usual work,
despite the difficult circumstances, and conducting business with a smartphone.
I suggested that an iPad would make it all easier. He might, I wryly continued,
request a prescription for the device. Then the doctor could say: “Take this tablet
and call me in the morning.”
On hearing an ancient joke: “The last time I encountered that chestnut, it was roasting on an open fire.”

I sent someone a link to a podcast titled “You Are What You Eat,” adding a note that this hoary bromide is by now well past both its shelf life and sell-by date.

At a shopping mall in Las Vegas, I was surprised that a major department store hadn’t yet opened for the day, even though it was almost noon. Peering through the door, I spotted a janitor cleaning the floor. “Hmmm,” I mused. “I thought this was the city that never sweeps.”

An acquaintance told me that he had just taken one of those home DNA-kit tests. He expressed bafflement as to why the instructions called for such a copious amount of saliva—more, he thought, than could possibly be needed by the lab. “I can’t recall the reason,” I replied. “But it’s on the tip of my tongue.”

Every hotel-room thermostat is a bit different, so it can sometimes take a while to master the controls and interpret the cryptic screen icons. But recently, one such gizmo in Washington, D.C., had me totally stumped. Repurposing an old joke in a newly appropriate context, I complained to the management: “I can’t figure this out, even though my I.Q. is above room temperature.”

I’m sometimes asked for professional referrals. But I had to decline when queried about finding an electrician. “I have no connections.”

During a meeting of a literary salon, focusing on an essay by Adam Smith, a participant announced that he couldn’t find the passage under discussion. I quipped: “Because it was written by the invisible hand.”

Cinema Corner: Based on a recommendation, I streamed The Ninth Gate (1999), a thriller wherein Johnny Depp plays an evil rare-book dealer. Several online reviewers questioned the unrealistic depictions of presumed experts handling priceless books—for example, while smoking. But no one mentioned Johnny’s stashing an expensive tome behind a hotel mini-bar. That would risk damage, I reasoned, from at least two sources: the heat exhaust and the possibility of leaks. This improbable scene suggested a slightly revised old saying: “It’s all water under the fridge!”

To conclude as we began, with a news item from 2017: Last April, a foundation created by the founders of Dannon yogurt donated one million dollars to Juilliard, the famous school that trains classical musicians. Apparently, no one at the time pointed out that this generous contribution lent new meaning to the word culture.
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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