WORD PLAY

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This is an excerpt from Mr. Gardner's forthcoming book on word play. It will be Chapter 7 in that book entitled "Entangled Words and Numbers".

Alphamagic Squares

Surely the most fantastic 3 x 3 magic square ever discovered is one constructed by Lee Sallows, a British electronics engineer who works for the University of Nijmegen in Holland:

5	22	18
28	15	2
12	8	25

It would be hard to guess its amazing property. For each cell, count the number of letters in the English word for its number, then place these counting numbers in the corresponding cell of another 3 x 3 matrix. For example, "five" has four letters, so 4 goes into the top left corner of the new matrix. Here is the result:

4	9	8
11	7	3
6	5	10

Not only is it another magic square, but its integers are in consecutive order! Sallows calls the first square the *li shu* (*li* for his first name Lee), and the second square its alphamagic partner. His computer investigations of alphamagic squares in more than twenty languages are reported in his two-part article "Alphamagic Squares" in *Abacus* (Vol. 4, 1986, pp. 28-45, and 1987, pp. 20-29, 43).

Physicist friend Mamikon Mnatsakanian noticed a further coincidence. The two magic consonants, forty-five and twenty-one each spell with nine letters, the number of cells in each square.

Decode a Number

The first ten letters of the alphabet, ABCDEFGHIJ, code the name of a number less than 100. Each letter standards for a different digit. What's the number?

Eighty-four

The 46th Psalm and Shakespeare

It has long been noticed that the 46th word of the 46th Psalm is shake, and the 46th word from the end is spear! Moreover, Shakespeare was 46 when the King James translation was published in England in 1611. There is more! The 14th word is will, the 32nd word from the end (the final Selah is not counted) is am, preceded by I. The sum of 14 and 32 is 46!

Alas, these are all amazing coincidences. J. Karl Franson, writing in *Word Ways* (August 1994) revealed that in an earlier English translation of the Bible, by Richard Taverner, all the numerology given above was there! The Taverner translation was in 1559, 25 years before Shakespeare was born. The coincidences are more astonishing when one learns that the wording of Psalm 46 is not the same in the two translations!

Allan Slaight, writing on "The Bard and the Bible" in Puzzler's Tribute (A.K. Peters, 2001), edited by David Wolfe and Tom Rodgers, reports still another coincidence. If numbers are assigned to Shakespeare according to the following scheme:

1	2	3	4	5	6	7	8	9	0
S	H	A	K	E	S	P	E	A	R
E									

the numbers add to 46.

The Urantia Cult

My book The Great Urantia Mystery (Prometheus, 1995) is about a strange religious movement founded by the American psychiatrist William S. Sadler. The cult is based on a massive "Bible" called The Urantia Book (UB). The book claims to have been channeled by a sleeping man in contact with higher beings from other planets. The name of the mysterious channeler has never been revealed. In my book I argue that he was Wilfred Custer Kellogg, like Dr. Sadler, a former Seventh-day Adventist. He was married to the sister of Dr. Sadler's wife.

On page 1234 (note the 1234) of the UB, three numbers are assigned to the sleeping contact person: 3-17-126-4-384-6-37, 182314, and 3641852. Note that there are seven numbers in the first sequence, six digits in the second, and seven digits in the third. There are seven letters in Wilfred, six in Custer, and seven in Kellogg. It is hard to believe this a coincidence. Is there some way to decode the three sequences to get the accrual names of the sleeper?

In my book I make an effort to find such correlations, but none are entirely satisfactory. Since the book was published I have found a better correlation for the second sequence. Consider the name CHRIST JESUS. The first letter is C, we move 2 steps to arrive at R, 3 more steps to T, 4 steps to U, 1 step to S, then back to the beginning for 8 steps to E. The letters obtained in this way, 123418 are the six letters of CUSTER.

This still seems too contrived. If any reader can find better correlations I would be grateful to receive the results.

Mrs. White and 666

For many decades Seventh-day Adventist leaders proclaimed that the Roman Catholic Church is the Antichrist. They proved this by a curious technique. They added the Roman numerals in VICARIUS FILII, one of the Pope's titles, to obtain 666, the number of the Beast in Revelation 13:18. W is taken as double U, and U was written as V by the Romans:

$$
\begin{array}{ll}
V - & 5 \\
I - & 1 \\
C - & 100 \\
A - & \\
R - & \\
I - & 1 \\
U - & 5 \\
S - & \\
\\
F - & \\
I - & 1 \\
L - & 50 \\
I - & 1 \\
I - & 1 \\
\\
D - & 500 \\
E - & \\
I - & \underline{\quad 1} \\
& 666
\end{array}
$$

To the great embarrassment of the Adventist church, someone discovered that precisely the same technique applied to the full name of Ellen Gould White, the prophetess and cofounder of the Adventist movement! Here's how it's done:

```
E –
L –        50
L –        50
E –
N –

G –
O –
U –         5
L –        50
D –       500

W –        10
H –
I –         1
T –
E –       ____
          666
```

Today's more enlightened Adventists may still think Catholicism is the Antichrist (after all this was the firm opinion of Mrs. White), but understandably they no longer buy their former interpretation of 666.

A Ten Coincidence

The last letters of eighT, ninE, and teN spell TEN.

What's the Question?

A ticket agent, responding to a lady's question, said 2222222. The lady had asked how long the train would be in the station. His response was "Two to 2:00 to 2:22." Said the lady, "Are you the train's whistle?"

Three Names

At a college social gathering the students were asked to pin their names on the front of their clothing. A girl pinned 317537 on her blouse. Another girl pinned 31573. To find out their first names, turn the page upside down.

A Black Hole

Write down any number, count its letters, then write the word for the number. Count the letters in the new word, and again write down the name of that number. Continue in this way, counting each number word to get a new number. After a short number of steps you will reach 4. It is what mathematician Michael Ecker named a black hole because its four letters end the sequence. Four is the only number with this property, namely that of counting the letters in its own name.

.

3.14159265358979. . . .

Dozens of clever sentences, even poems, have been constructed for remembering the digits of famous irrational numbers such as pi, e, and the square root of 2. The number of letters in each word of the mnemonic gives the digits. For pi, the best known mnemonic, constructed by British astronomer Sir James Jeans, is: "How I want a drink, alcoholic of course, after the heavy chapters involving quantum mechanics."

> When the teacher said "Pi r squared" (the formula for the area of a circle given its radius r),
> Tommy raised his hand. "You're mistaken, teacher, pie are round."

I once perpetrated the following couplet:
>Pi goes on and on and on,
> And e is just as cursed.
>I wonder, "How does pi begin,
> When its digits are reversed?"

Write the word pie like this:

$$\text{ᗡIƐ}$$

Hold the page up to a mirror and you'll see the first three digits of pi!

Mamikon Mnatsakanian, an Armenian physicist, carried this curiosity further. Write pi to seven decimals:

$$3\ 1\ 4\ 1\ 5\ 9\ 2\ 6$$

In a mirror you'll see the phrase "Easy [as] pie."

"Which transcendental number do you like best, pie or e?"
"I prefer pi," she replied palindromically.

In spite of Tommy's remark above, that pies are not square, here are some ways to show that pies are indeed square. Using the code A = 1, B = 2, C = 3, and so on, the letters of PIE add to 49, a square number. PIE ALA MODE adds to 81, another square. RAISIN PIE sums to

the square 100, COCONUT PIE to square 121, and ESKIMO PIES to square 121. The P of PI is square 16, I has a value of square 9. The sum of 16 and 9 is the square 25, and the product of the two numbers is another square, 144. Nine divided by 16 gives a decimal fraction with the repeating period 5625, the square of 75.

Shown below are the capital letters of the alphabet. Cross out all those with left-right symmetry (letters that look the same in a mirror). The remaining letters form groups whose number of letters, taken clockwise, gives 31416.
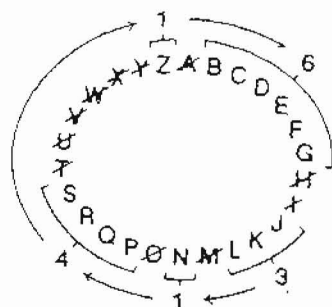
If you divide the circumference of a spherical pumpkin by its diameter what's the result? Pumpkin pi. (Thanks to John Evans.)

In Book II, Chapter 9 of H.G. Wells's novel <u>The War of the Worlds</u> a sentence begins "For a time I stood regarding. . . ." By an amazing coincidence, the number of letters in each word gives pi to six digits! This was discovered (how he discovered it beats me!) by Michael Keith, of Richmond, Virginia. He includes it in an unpublished work titled <u>How I wish I could recollect pi</u> - - a title that gives pi to seven digits!

An ABC curiosity

One thousand is the smallest number with a name that contains <u>a</u>. One billion is the smallest number with a name that contains <u>b</u>. And one octillion is the smallest with a name that contains <u>c</u>.

An AEIOU curiosity

1,084 is the smallest integer with a name that includes the five vowels in <u>aeiou</u> order.

52 Cards

From a full deck deal cards one at a time to the table, spelling A-C-E, a card for each letter. Continue dealing to spell T-W-O, T-H-R-E-E, and so on until you spell K-I-N-G. Surprise! The spelling terminates on the last card of the deck!

A Property of Forty

Forty is the only number word with its letters in alphabetical order. The only number name with its letters in reverse alphabetical order is one.

Double it

What U.S. coin doubles in value if you take away half? A half dollar. Remove half and it becomes a dollar.

A Linguistic Proof

Here's a novel way to prove that 11 plus 2, minus 1, equals 12. Write ELEVEN. Add TWO to make ELEVENTWO. Cross out the three letters of ONE. This leaves ELEVTW, an anagram of TWELVE.

A Frightened 6

Why is 6 afraid of 7? Because 789 (seven ate nine).

How Many Cookies?

Jim and his sister Joan discovered a jar of cookies in the kitchen cupboard. Jim 81, Joan 812. (Jim ate one, Joan ate one too.)

Ollie License

When Ollie Lee bought a new car he requested a license plate with the number 337 31770. Why? Turn the page upside down.

Odd vs even

ODD spells with an odd number of letters.
EVEN spells with an even number of letters.

Using the cipher A = 1, B = 2, etc., ODD sums to 23, an odd number. EVEN sums to 46, an even number that is twice 23.

The cipher sum of EVEN PLUS EVEN is 160, an even number. The sum of ODD PLUS ODD is 114, an even number. And the sum of ODD PLUS EVEN is 127, an odd number. (Thanks to Owen O'Shea for the above curios.)

All prime numbers are odd except 2. This makes 2 a very odd prime.

FOUR is an even number with an even number of letters. Its cipher sum is 60, an even number.

A Strange Number

Arrange the ten digits in alphabetical order: 8549176320. This artificial number has peculiar properties. Divide it by 5 and you get 1709835264, a number with all ten digits. Divide it once more by 5. Result: 341967052.8. Again, all ten digits!

Now divide by 4. The quotient is 85491763.2, the original alphabetical sequence with no zero at the end. Amazing? No, because 5 x 5 x 4 = 100, which puts a decimal point two spaces left from the end.

Drop me a line if you can discover any other strange properties of 8549176320.