GEOMETRICAL WORDS: PART 1

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The letters which make the three words \textsc{ALL}, \textsc{WEDDED} and \textsc{SERENENESS} (or it could be \textsc{NAGNAGGING}) occur in the ratios 2:1, 3:2:1 and 4:3:2:1 respectively. These words can be shown diagrammatically with like letters in the same rows:

\[
\begin{array}{cccccccc}
A & E & E & S & S & S \\
W & D & D & E & E & E \\
L & D & D & E & E & E \\
\end{array}
\]

In the Kickehas of Word Ways 1970, David Silverman gave the name \textit{pyramid} to words which have one of one letter, two of two letters, three of three letters etc. In \textit{Brush Up Your Webster's}, in February 1972, Alden Myles and John Standish introduced the concept of pair pyramid words as words made up of two pyramid sequences. They cited \textsc{LETTER} which has a letter ratio of twice 2:1 and \textsc{WAWASKEESHES}, the American elk, with a letter ratio of twice 3:2:1. In February 1973, Ralph Beaman presented a comprehensive collection of \textit{Twelve-Letter Pair Pyramid Words} including \textsc{RHODODENDRON} and \textsc{LIKELINESSES}. These we can show diagrammatically as:

\[
\begin{array}{cccccccc}
E & H & K & N \\
N & R & R & L & L & I & I \\
D & D & D & O & O & O & E & E & S & S \\
\end{array}
\]

In the current article, I replace the term \textit{pyramid} with \textit{triangle} as, properly, a pyramid is a 3-dimensional form with a polygonal base and an apex. Part 1 of \textit{Geometrical Words} considers words which make sets of triangles. Part 2 looks at words which make other geometrical shapes. The sources of the words are given at the end of Part 2.

Throughout \textit{Geometrical Words Part 1}, the reader should be aware that the letters along the edge of a triangle may spell a word. These I call \textit{edge} words. Some edge words read downwards (\textsc{END} above) whilst others read upwards (\textsc{ELK} and \textsc{SIN} above). In some cases an edge word and its reversal can be read downwards and upwards respectively (\textsc{WED} and \textsc{DEW} above). Two words provide special edge letter sequences: \textsc{BACABA}, read upwards, and \textsc{ZYZZYX}, read downwards, spell \textsc{ABC} and \textsc{XYZ} respectively:

\[
\begin{array}{cccccccc}
C & X & Y & Z \\
B & B & Y & Y \\
\end{array}
\]

When the letters of a word make a set of triangles as distinct from a single triangle, they can be arranged in more than one way in relation to each other. For example, there are two ways of making a pair of 2:1 triangles from the six letters of \textsc{NOTION}:

\[
\begin{array}{cccccccc}
T & I & T & I \\
O & N & N & O & O
\end{array}
\]

From henceon, the letters making a set of triangles are depicted in just one of their two, or more, potential arrangements, specifically the one which makes the best use of edge words. In the case of \textsc{NOTION}, this would be the first alternative shown. But \textsc{NOTION} has an extra feature; not only do the edge letters of the triangles spell out \textsc{TO} and \textsc{IN}, but the whole triangles spell out \textsc{TOO} and \textsc{INN}. Other pairs of 3-letter triangles can be made from \textsc{AFFAIR}, \textsc{BALLAD}, \textsc{CICADA}, \textsc{DIEPPE},
EXCESS, FULFIL, GARAGE, HAWAII, INSIST, JOJOBA, KOKIE, LONDON, MEMNON, NEATEN, ONIONS, PIPING, QUOQUE (Latin: also), RUMOUR, SORROW, TESTER, UNEVEN, VELVET, WIRIER, XERXES, YOYLLLE and ZIGZAG.

Table 1

<table>
<thead>
<tr>
<th>Possible sets of TRIANGLES from groups of 3 to 33 letters</th>
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</thead>
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<table>
<thead>
<tr>
<th>A</th>
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<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<td>*6</td>
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</table>

* indicates a set of triangles for which a word was found

We continue with words which make sets of two triangles, the triangles progressively increasing in size. Then we move on to words which make sets of three triangles and so on. The longest word for which I made a set of triangles had 33 letters. Of words with 33 letters and fewer, those with 2, 4, 5, 7, 8, 11, 14 and 17 letters cannot make sets of triangles. In theory, it is possible to make sets of triangles from all the other lengths of word up to, and including, length 33 (Table 1). In practice,
however, it depends on the relative number of each of the different letters in the word. In some cases no word was found which would satisfy a particular set of triangles. For example, I am not aware of any 27-letter word which makes nine 2:1 triangles. In other cases only a single word was found. Where several examples were found, two or more words are listed, together with the occasional phrase. The longer words are predominantly medical and chemical terms. The number of letters in a word is shown in brackets; hyphens are not shown.

---------------- TWO TRIANGLES ----------------

BABOON (6)

A + N
B B O O

Also: see list on previous pages.

WINNOWING (9)

G + I
W W N N N

Also: BEGINNING, INNOCENCE, TINNINESS.
and the Agamemnon word SUSUHUNAN.

ONESIDEDNESS (12)

I O
N N + D D
S S S E E E

Also: CONDESCENDED, STATISTICIAN.

INCONVENIENCE (13)

V
I I
O + E E E
C C N N N N N

Also: NONSYNONYMOUS, CONCRENCENCES.

CEREBROSCLEROSES (16)

B
L O O
C C + R R R
S S S E E E E

Also: PROAPPROPRIATION.

---------------- THREE TRIANGLES ----------------

AGAMEMNON (9)

G + E + O
A A M M M N N T T T N N S S S

Also: CHARACTER, DEWLAPPED.

SENSATIONIST (12)

E
A + O + I I
A A M M M N N T T T N N S S S

Also: ANTICIPATING, DISTINCTNESS.

ANTITETANICALLY (15)

E
C + I I + N N
L L T T T A A A

Also: FANTASTICATATIONS.

CONTRADISTINCTIONS (18)

A
C C + O O + S S
T T T N N N N I I I

Also: ISOTRANSPLANTATION, RADIocardioGRAPHIC and MARGaret THATCHer P.M.

PREPOSTEROUSNESS (16)

T
U + N + E E E E
P P O O S S S S

Also: IRRESPONSIVENESS, UNAssAILABLENESS and INTELLIGENCE TEST.
DIASTEROISOMERISMS (19)

A + O
D + M M + E E E
R R I I I S S S S

Also: STEREOROENTGENOGRAM.

ELECTROCONTRACTILITIES (22)

A + N
R R + O O + I I I
E E E C C C T T T T

Also: URETEROSIGMOIDOSTOMIES.

The phrase INTERNATIONAL ATOMIC TIME (23)

C + O O
R E E
L + A A A + N N N
M M T T T T I I I I

--------------- FOUR TRIANGLES --------------

CARRIAGELESS (12)

G + L + C + I
A A E E R R S S

Also: PRECIPITATED, FORAMINIFERA, SAN FRANCISCO and THE END IS NIGH.

INTUSSUSCEPTION (15)

P + O + E + U U
I I N N T T S S S

CHARACTERISTICALLY (18)

H E
S + Y + I I I + T T
R R L L C C C A A A A

Also: ACROMIOCLAVICULAR, CARCINOMATOTICALLY.

MECHANICOINTELLECTUAL (21)

M O
U + I I I + N N N + A A A
T T C C C E E E L L L

PARASYMPATHETICOMIMETICS (24)

O R
P P + C C + E E + S S S
T T M M M A A A A I I I I

Also: the combined seasons SPRING SUMMER AUTUMN WINTER.

AUTOSTANDARDIZATION (19)

R O
U + S + Z + T T T T
D D I I I N N N A A A A

Also: EXTRAINTRACRANIALY.

CHOLECYSTOSTOMIZES (22)

H M
Y + Z + I I I + S S S S
C C T T E E E O O O O

Also: RADIOCARDIOPHICALLY, ESTABLISHMENTARIANISMS, ACROKERATOELASTOIDOSIS.
<table>
<thead>
<tr>
<th>HETEROTRANSPLANTABILITIES (25)</th>
<th>H + L + N + I</th>
<th>S + A + E + T</th>
<th>P + O</th>
<th>R</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTHROPEUMOROENTGENOGRAMS (26)</td>
<td>H + U + N + E</td>
<td>G + T</td>
<td>O</td>
<td>O</td>
<td>R</td>
</tr>
<tr>
<td>COUNTERIMMUNOELECTROPHORETICS (29)</td>
<td>S + N + C + T</td>
<td>M</td>
<td>R</td>
<td>R</td>
<td>E</td>
</tr>
<tr>
<td>COUNTERIMMUNOELECTROPHORETICALLY (32)</td>
<td>P + Y + A + U</td>
<td>M</td>
<td>M + N + C + T</td>
<td>L</td>
<td>L</td>
</tr>
</tbody>
</table>

---------- FIVE TRIANGLES ----------

| NONDOMESTICATED (15) | S + M + A + I + C | O + E + T | T | N | N | D | D |
| ESTABLISHMENTARIAN (18) | B + L + H + M + I | T | N | E | S | A | A | A |
| INTRAPROTOPLASMICALLY (21) | N + C + Y + M | R | T | O | O | L | L | L | A | A |
| THYROPARATHYROIDECTOMIES (24) | C + P | D | H + Y | R | R | R | T | T | O | O | O |
| TRIFLUOROMETHYLDEOXYURIDINE (27) | H + M | X + U + T | D | E | E | E | I | O | O | R | R |
| NAPHTHYLPARAROSANILINE (22) | S + Y + E + O + N | H | L | L | R | P | P | A | A | A | A |

Also: NASOPHARYNGOLARYNGOSCOPE.

Also: DEHYDROGENIZING, LIGHTHANDEDNESS, DEMAGNETIZATION and GOLDEN HAND SHAKE.

Also: BUREAUCRATISATIONS, HYPERPARASITICALLY, and APPLIED MATHEMATICS and WEDDING ANNIVERSARY.

Also: GONARTHROMENINGITIDES, BENZALPHENYLHYDRAZONE.

Also: AEROHYDROTHERAPEUTICALLY.
ELECTROCARDIOPHONOGRAPHIC (25)

T E E
D + L + G + I I + R R R R
A A P P H H C C C O O O O
Also: SPHENOSALPINGOSTAPHYLUS.

RADIOELECTROPHYSIOGRAPHIES (28)

C T L L
D + Y + A A + H H + I I I I
P P S S R R R E E E E O O O O
Also: HYPERBETA LIPOPROTEINEMICALLY and DIRECTOR OF PUBLIC PROSECUTIONS.

ENCEPHALOMYELONEUROPATHICALLY (29)

T I
H H
U + M + R + A A A A + O O O O
P P Y Y C C E E E E E L L L L
Also: its transposale NEUROENCEPHALOMYELONEUROPATHICALLY.

ARTHROPNEUMOROENTGENOGRAPHICALLY (32)

Y C
M L L
I + U + G G + N N N N + A A A A
T T P P E E E O O O O R R R R

---------- SIX TRIANGLES ----------

GLYCEROPHOSPHATASE (18)

G + Y + L + C + R + T
E E O O P P H H S S A A
Also: BRACHYTHERAPEUTICS and AGENTS PROVOCATEURS.

ONCE IN ROYAL DAVID'S CITY (21)

T + S + V + R + L + C C
A A O O D D N N Y Y I I I I
Also: LAPAROSALPINGECTOMIES, CARDIOTHERAPEUTICALLY.

CORYNEBACTERIOPHAGICALLY (24)

T B
N + H + P + G + L L + R R
Y Y E E I I O O C C C C A A A
The phrase WOMEN'S ROYAL VOLUNTARY SERVICE (27), known as the WRVS:

W U C
T + I + M + N N + S S + A A
V V L L Y Y O O O E E E R R
The phrase DISTINGUISHED CONDUCT MEDAL (25)

A C C
O + L + H + M + G + I I I I
N N U U E E S S T T D D D D

URETHROCYSTOMETROGRAPHICALLY (28)

G A A
I + P + U + S + E E + O O O O
L L C C H H Y Y T T T T R R R R
Also: RADIOELECTROPHYSIOGRAPHING and FEDERAL BUREAU OF INVESTIGATION.
SEVEN TRIANGLES

SCHIZOPHRENOCENICALLY (21)
Z + Y + A + P + S + G + R
O O E E L L C C H H I I N N
Also: LAPARONEPHRECTOMIZING and PUBLIC HEALTH INSPECTOR.

VENTRICULOSUBARACHNOIDAL (24)
D + H + V + S + E + B + N N
R R I I C C U U L L O O A A A

LARGE TRIANGLES

The dictionary-sanctioned word which makes a triangle with the letter ratio 5:4:3:2:1 remains as elusive as ever; the only representatives are cleverly coined words such as Sir Jeremy Morse’s linenslessnesses. However, a few words make sets of triangles which include one of size 5:4:3:2:1...

URETEROUREROSTOMIES (21) makes a rather painful statement:

I S S
O O O
R R R R + U U
E E E E E T T

Also: SIGM IDOS SIGM I DOSTOMY, INSTITUTIONAL ISATIONS.

TRANSURETEROURERERTALS (21)

L A T T T
O + N + E E E E E E
S S U U U R R R R R

Also: CYCLOELECTROLYTICALLY.

CHILOGNATHOGLOSSOSCHISES (24)

T + A + N + O O O O
I I L L G G S S S S S

HYPERSTEREOROENTGENOGRAPHIC (27)

S + I + A + Y + R R R R
P P T T T N N G G E E E E E

As a break from the routine of working at a desk, I sometimes retire to a more comfortable chair to analyse lists of words resting on my lap. Appropriately, it was during one such session that I found TETRAETHYLMONOTHIONOPYROPHOSPHATE. A word with 33 letters, it includes a giant 6:5:4:3:2:1 triangle. And this concludes my triangular offering as I do not have any...

S R R
E E E E
H H H H
T T T T T + I + M + A A
O O O O O O N N Y Y P P P