ALL-DIAGONAL EIGHT-SQUARES

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When I first subscribed to Word Ways and enquired about word squares with diagonal words, Jeff Grant commented that such items were rare and hard to find. That is true, but here is a rather belated reply!

An eight-square is a square array of eight different 8-letter words placed in rows, so that column 1 is the same word as row 1, column 2 the same as row 2, and so on. Contrary to the opinion of one soi-disant expert, words of length 1 to 7 are inadmissible. All word squares necessarily have a palindromic NW-SE diagonal, and in the squares below, this palindrome is a word. In the squares below, the diagonal starting on the NW corner is also a word, as is the diagonal starting in the SE corner: alert readers will spot the implication that the word on this diagonal is a reversible word. As palindromic words and reversible words are scarce, so are all-diagonal squares. In the case of 9-squares, I found squares with all three diagonals, but never in the same square. I conclude that the squares below are the largest all-diagonal squares ever published. The squares in this article are one-tenth as common as ten-squares.

In fact, out of over three-quarters of a million 8-letter words, there were just 496 reversible words (you could say 2 x 248), and only 170 palindromes. The squares below were selected from 212, with a bias to dictionary words. I could not construct a square without proper nouns. I found no squares starting F, J, O, P, Q, or U-Z at the top left. The squares on the following pages are in order of top row word within palindrome. The most popular palindromes were: AAAAAAAA 149, HRRRRRRH 17, SAAASAAS 11, EEEEEEEE 9, SISSIS 5, SNERRENS 5, ANNEENNA 3, ANASSANA 2, SEISSIES 2, with ANNAANNA, ANTEETNA, KNITTINK, LIIIIIL, MMMMMMM, SFISSIFS, SHALLAHS, SNIBBINS, TUUTTUUT occurring just once each. Following each square are the diagonals, as read from NE or SW, NW, and SE. The square below is one of a few that has place names as ten of the eleven items (the palindrome being the exception).

MYSATIYAY Mys Atiya, Bulgaria, 42°28, 27°35
YIALOVAS (Potamos) Yialovas, Greece, 36°57, 21°42
SALANANG (Phou) Salanang, Laos, 19°47, 102°35
ALALANDA *(Tawil) al-`Alanda, Libya, 33°03, 11°36
TONAIJAR (Ouled) Tonaijar, Morocco, 34°30, -5°49
IVANJSKI Ivanjski (Bok), Croatia, 45°20, 16°44
YANDAKLY †(Rodnik) Yandakly, Turkmenistan, 37°49, 64°38
ASGARIYE (Chah-e) `Asgari-ye (Kamran), Iran, 31°50, 54°26
* or ALALANGA (Quebrada) Alalanga, Peru, -14°39, -74°14
† or YANGAKLY (Kolodets) Yangakly, Turkmenistan, 38°21, 64°14
AAAAAAA Pa, a Brooklyn business name
MILLISLE Millisle, UK, 54°36, -5°32
ELSILLIM Naqb el-Sillim, Egypt, 27°46, 28°33

Place names are from the NIMA database. ITIS is the Integrated Taxonomic Information System of the USDA (Dept. of Agriculture). Pa is the Palindromicon. Latitude precedes longitude.

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The following three look different, but have the same diagonals:

**D A S G U P T A** author of History of Indian Philosophy, US Census

**A R P A A L A N** Arpaalan, Turkey, 40°22, 37°52

**S P A N I A R D** OED

**G A N G A N T A** Ganganta, 14°03, -10°45

**U A I A N A R I** Cachoeira Grande de Uaianari, Brazil, 0°41, -64°13

**P L A N A E I N** Greek to wander, hence "planet"

**T A R T R I T E** OED

**A N D A I N E S** Saint-Michel-des-Andaines, France, 48°35, -0°25

AAAAAAA Pa, a Brooklyn business name

**D R A G N E T S** OED tip 2, 1955q

**S T E N G A R D** Stengard, Sweden, 57°45, 14°42

**D O M B O S H A** Dombosha, Zimbabwe, -19°55, 31°34

**O R B E R T A L** Orber Tal, Germany, 50°15, 9°21

**M B A N G A R I** Mbangari, South Africa, -24°12, 31°38

**B E N G A L I E** (Baie du) Bengalie, Vietnam, 20°44, 107°00

**O R G A N M A N** OED organ 8, 1626q

**S T A L M E N T** OED

**H A R I A N T E** OED verme

AAAAAAA Pa, a Brooklyn business name

**D R A G N E T S** OED tip 2, 1955q

**S T E N G A R D** Stengard, Sweden, 57°45, 14°42

**D U N S M A L A** Dunsmala, Sweden, 56°32, 14°46

**U R T A A R A L** (Ostrov) Urta-Aral, Kazakhstan, 45°23, 73°52

**N T A N T A M A** Ntantama, South Africa, -27°09, 30°20

**S A N G A M I N** (Dahane) Sangamin, Afghanistan, 34°10, 63°32

**M A T A N A N I** Matanani, Cameroon, 4°59, 8°55

**A R A M A E A N** OED

**L A M I N A T E** OED

**A L A N I N E S** OED

AAAAAAA Pa, a Brooklyn business name

**D R A G N E T S** OED tip 2, 1955q

**S T E N G A R D** Stengard, Sweden, 57°45, 14°42

The following three look different, but have the same diagonals:

**S H A M M A S A** (Wadi Ganis esh) Shammasa, Sudan, 15°17, 34°25

**H A L B A D A N** Halbadan, Finland, 62°51, 21°07

**A L B A H A C A** Web2

**M B A B A R A M** in the Australian South-East Marine Region*

**M A H A A A L I** Mahaa Ali, Yemen, 14°49, 43°33

**A D A R A T A R** Ot 2 after adorative ST

**S A C A L A I T** OED sac-à-lac

**A N A M I R T A** Anamirta cocculus, Chambers cocculus

*http://aqua.hba.marine.csiro.au:7373/nddq/owa/ndd_search.Browse_Citation?txtSession=114

AAAAAAA Pa, a Brooklyn business name

**S A B B A T I A** OED

**A I T A B B A S** Ait Abbas, Algeria, 36°33, 4°13
<table>
<thead>
<tr>
<th>Location</th>
<th>Coordinates</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smabacka, Sweden</td>
<td>64°27, 20°49</td>
<td></td>
</tr>
<tr>
<td>Mala Khan, Afghanistan</td>
<td>30°29, 63°23</td>
<td></td>
</tr>
<tr>
<td>Bai Banda, Pakistan</td>
<td>34°19, 73°01</td>
<td></td>
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<tr>
<td>Akcaagil (Koyu), Turkey</td>
<td>40°12, 38°04†</td>
<td></td>
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<tr>
<td>Chantso, Taiwan</td>
<td>25°02, 121°07</td>
<td></td>
</tr>
<tr>
<td>Kandi Sim, Pakistan</td>
<td>26°43, 69°04</td>
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<tr>
<td>Antaloma (Cerro)</td>
<td>-11°49, -76°15</td>
<td></td>
</tr>
<tr>
<td>Stabacka, Finland</td>
<td>62°24, 21°21</td>
<td></td>
</tr>
<tr>
<td>Talaghan, Iran</td>
<td>36°23, 50°25*</td>
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<tr>
<td>Agcaagil, Turkey</td>
<td>40°12, 38°04†</td>
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<tr>
<td>Kandi Sim, Pakistan</td>
<td>26°43, 69°04</td>
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<tr>
<td>Antaloma (Cerro)</td>
<td>-11°49, -76°15</td>
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<tr>
<td>Estrelia, Colombia</td>
<td>3°46, -76°27</td>
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</tr>
<tr>
<td>Stealing</td>
<td>OED occasional 1, 1563q</td>
<td></td>
</tr>
<tr>
<td>Tettanto (Ozero)</td>
<td>68°29, 70°36</td>
<td></td>
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<tr>
<td>Rat-eaten</td>
<td>OED rat c</td>
<td></td>
</tr>
<tr>
<td>El Aalali, Lebanon</td>
<td>34°12, 35°46</td>
<td></td>
</tr>
<tr>
<td>Lyntalls</td>
<td>OED limtel 1, 1601q</td>
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<tr>
<td>Teliet, Algeria</td>
<td>28°44, 7°37</td>
<td></td>
</tr>
<tr>
<td>Anthanan</td>
<td>Anna Anna, Pa, personal name, my twins!</td>
<td></td>
</tr>
<tr>
<td>Etettel</td>
<td>OED ettle 1a, 1400q</td>
<td></td>
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<tr>
<td>Sellette</td>
<td>OED</td>
<td></td>
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<tr>
<td>Almasnaa</td>
<td>Al-Masna’a, Oman</td>
<td>23°46, 57°38</td>
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<tr>
<td>Liantang</td>
<td>Liantang, China</td>
<td>32°52, 118°38</td>
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<tr>
<td>Manoendi (Kaap)</td>
<td>Manoendi, Indonesia</td>
<td>-0°38, 135°22</td>
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<tr>
<td>Anoetos</td>
<td>Ano Aetos, Greece</td>
<td>38°01, 24°27</td>
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<tr>
<td>Steering</td>
<td>OED</td>
<td></td>
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<tr>
<td>Nantiria</td>
<td>Nantiria, Mozambique</td>
<td>-13°26, 39°22</td>
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<tr>
<td>Andonian</td>
<td>US Census</td>
<td></td>
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<tr>
<td>Agisgang (River)</td>
<td>Agisgang (River), Philippines, 13°30, 120°35</td>
<td></td>
</tr>
<tr>
<td>Anne Enna</td>
<td>Anne Enna, Pa, personal name</td>
<td></td>
</tr>
<tr>
<td>Ainarrag</td>
<td>Ain Ar Rag, Western Sahara, 25°50, -13°17</td>
<td></td>
</tr>
<tr>
<td>Garrania</td>
<td>(Bir el) Garrania, Libya, 31°10, 15°04</td>
<td></td>
</tr>
</tbody>
</table>
Two squares, with diagonals similar to some previous ones.

STOWINGE OED stow, 1641q
TUvangen Tuvangen, Sweden, 59°43, 14°47
OVERSEME OED
WARRENER OED
INSEEING OED
NGENINGI Ngeningi, Tanzania, -5°20, 39°46
GEMENGED OED white, 1000q (g has Anglo-Saxon form)
ENERGIDS OED energid
EEEEE Pa, Ulysses, James Joyce
SUERENES OED sweerness 1, 1456q
SENEREUS Senereus, Romania, 46°20, 24°39

AMTASHAH Amtashah, Sudan, 10°49, 24°54
MIANPARA Mianpara, Bangladesh, 23°20, 90°04
TANGURMI Tangurmi, Nigeria, 10°42, 12°10
ANGARBAH Angarbah, Pakistan, 35°47, 71°58
SPURVERS OED spurrer
HARBERIE OED
ARMARIAN OED
HAIHSENG Hai-hseng, Burma, 21°34, 98°00
HRRRRRH hr-r-r-r-r-rh, Pa, EDD
AINARRAG Ain Ar Rag, Western Sahara, 25°50, -13°17
GARRANIA (Bir el) Garrania, Libya, 31°10, 15°04

SHABABIK Shababik, Israel, 33°03, 35°37
HELOUANI Karm el Helouani, Syria, 35°31, 36°05
ALLUSION OED
BOULTERS OED boulter
AUSTERNE OED austere
BAIERTAL Baiertal, Germany, 49°41, 9°45
INORNATA Grindelia inornata angusta, ITIS plant
KINSELAE (Quercus) kinselae (glandulosa), ITIS plant
KNITTINK Pa
SELLETTE OED
ETTELLES OED ettle 1a, 1400q
NGKESILL Ngkesill, Palau, 7°13, 134°23
GIANTRIE OED giantry, 1611q
KACHAINA Kachaina, Niger, 14°52, 8°20
ENHOLDEN OED pyrite 1, 1567q
STALLIAN OED stallion
IRIDIAE OED
LINEATUS OED hen-hawk. Buteo lineatus is the blue hen-hawk
LEANNESS OED

LIILIL Pa, Yapese
NICOLAUS OED boon 1, 1641q: Nicolaus Damascenus
SUALOCIN Web2 Sualocin

GLASTIGS OED glaidtig, 1925q
LASTAREH (Kuh-e) Lastareh, Iran, 33°44, 51°15
ASTERINA Asterina, Web2, under Asterinidae (starfish genus)
STENSDAL Stensdal, Norway, 63°32, 9°36
TARSIIDA perhaps misspelling for Tarsiidae, but see below*
IRIDITIS OED
GENADISH Genadish, Iran, 30°42, 56°11
SHALASHA Shalasha, Sudan, 10°31, 26°41

*P. D. Jenkins, Catalogue of Primates in the British Museum (Natural History) and elsewhere in the British Isles, Part 4, Suborder Strepsirrhini, including the subfossil Madagascan lemurs and family Tarsiida. [British Museum (Natural History), London, 1987]
SEISSIES Pa, plural of place in Ethiopia
GATNITSA Gatinitsa, Russia, 54°36, 37°23
ASTINTAG Astintag, China, 38°48, 89°12

SPILETS OED spillet
PENVIGHT OED
INNUFARA In-Nufara, Malta, 36°02, 14°16
LLUNLUN (Cerro) Llunlun, Peru, -11°29, -76°34
LIFLEASE OED lifeless 1, 1000q
EGALANTE Egalante, Mozambique, -17°19, 37°36
THRUSTEN OED thring A2, 1400q
STANEENS Dict. of Newfoundland Eng, 2d ed, 1982 + 1990 sup
SHALLAHS Pa, plural of family name
SENENES Senennes, Norway, 70°21, 22°27
SENENNES Senennes, Belgium, 50°18, 4°53

GŁOTTONS OED glutton
LAURELIA Laurelia nova-zelandiae, OED pukatea
OUTASITE OED outasight
TRANSVAL Transval, Brazil, -4°23, -39°11
TESSIERA now known as Spermacoce, family Rubiaceae
OLIVETAN Olivetan, OED
NITARASI Nitar Asi, Bangladesh, 24°57, 90°28
SAELANIA Saelania jamesii tauricum, ITIS plant
SISSIIS siissii's, Pa, possessive of Tuvaluan verb
GATNITSA Gatinitsa, Russia, 54°36, 37°23
ASTINTAG Astintag, China, 38°48, 89°12
AMPUSIS Orthoporus ampussis naguresis, ITIS animal
MIONHANA Lago Mionhana, Mozambique, -26°41, 32°22
PONGUENE Ponguene, Congo, Dem Rep, -4°12, 16°01
UNGARTER OED
SHURREY Loch Shurrery, UK, 58°29, -3°38
SAETERMO Saetermo, Norway, 69°16, 18°13
INNERMAN inner man, OED man, 3b
SAERYONG Saeryong-ni, North Korea, 41°09, 127°51
SNERRENS Pa, Danish
AINARRAG Ain Ar Rag, Western Sahara, 25°50, -13°17
GARRANIA (Bir el) Garrania, Libya, 31°10, 15°04