MORE PURPLE TURTLES (PART 1)

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Dan Tilque's The Purple Turtle in the August 2004 issue demonstrated that some of the simplest ideas are often the most appealing. There are 325 possible substitutions (not 375), and Dan listed 224 of these (not 277). By extending the search to include the Oxford English Dictionary, Second Edition (oed), etc., and locations other than US place names, I managed to fill all the gaps. Not having a program for this particular exercise, I didn't find it a particularly easy task. Some letters are more difficult to substitute than others. The letter W is one such, and I note that WAWA occurs six times in Dan's list. Q and X substitutions can also pose problems, which is why in the list below RIQQ (an Egyptian tambourine) and FIXX (a surname), amongst other words, occur several times. Vowel-consonant substitutions can also be difficult and, again, some words are used more than once.

| AJ | AIAIA / JIJIJ | AL | YAAS (US yes - oed) / YLLS (hills - oed) |
|----|--|----|---|
| AQ | AOROA (New Zealand) / QOROQ (Iran) | AS | AIDA / SIDS |
| AT | | AV | AOA (Century Dicthe Banyan tree) / VOV (9th letter of Yiddish alphabet - Web3) |
| AX | | AZ | AELA (Estonia) / ZELZ (Poland) |
| BE | BIRB (a minute barb or beard - oed) / EIRE | BQ | BANAB (Iran) / QANAQ (Greenland) |
| BU | BEB (bib v. to drink - oed) / UEU (Angola) | | |
| CQ | COROC (Laos) / QOROQ (see AQ) | CU | ICC (I pronoun - oed) / IUU (yew - oed) |
| CX | , and out of the state of the s | | |
| DE | DIRD (shock - oed) / EIRE | DO | DAD / OAO (cemetery in Fiji Islands) |
| DQ | RIDD (rid v oed) / RIQQ | DU | ADD / AUU (awe - oed) |
| DX | FIDD (fid n oed) / FIXX | | |
| EF | EIE (Scots eye - edd) / FIF (five - oed) | EJ | AEAEA (Circe - Random House Dic.) / AJAJA (roseate spoonbill - Web2) |
| EL | IEE (eye - oed) / ILL | EN | EURE (destiny - oed) / NURN (to utter- oed) |
| EQ | EAE (eye - oed) / QAQ (a god of fire) | EV | EAES (eyes - oed) / VAVS (OSPD) |
| EW | (This is a second of the seco | EX | AEIE (any - oed) / AXIX, Dar bou (Tunisia) |
| EZ | IEE (see EL) / IZZ (Oman) | | |
| FQ | RIFF (a string of onions - oed) / RIQQ | FU | HOFFS (houghs-oed) / HOUUS (house -oed) |
| FX | COFFS (buys-oed) / COXXS (cock 1546 citn. oed) | FZ | MUFFLE / MUZZLE (both Web2) |
| GQ | RIGG (rig - oed) / RIQQ | GU | HOGGS (hogs - oed) / HOUUS (see FU) |
| GX | FIGG (the surname of a near neighbour here) / FI | XX | |
| HJ | HUHU (a New Zealand beetle-oed) / JUJU (oed) | НО | HANAH (a name-edd suppl) /QANAQ (see BQ |
| HR | HUHU (see HJ) / RURU (New Zealand owl - oed) | HX | AHIHA / AXIXA (Brazil) |
| IJ | IEI (Ethiopia) / JEJ (Afghanistan) | IM | IEREI (Somalia) / MEREM (Indonesia) |
| IN | IUI (a language) / NUN | IP | IOI (joy - oed) / POP |
| IQ | IAI (var of IAAI below) / QAQ (see EQ) | IV | IAI (see IQ) / VAV (= vau - oed) |
| IW | IAAI (a language) / WAAW (dial. wow - edd) | IX | IEREI (Somalia) / XEREX (a Canadian Co.) |

| | JO | JIJIJ (a tree) / OIOIO (a plantain) | JP | HAJJ (hadj-oed) / HAPP (hap= chance- oed) | | |
|-------|--|---|-----|--|--|--|
| | JQ | JANAJ (Egyptian village) / QANAQ (see BQ) | JU | JAJ (Ethiopia) / UAU (Hawaiian petrel) | | |
| | JV | JAJ (see JU) / VAV (see IV) | JW | HAJJAH (Yemen)/HAWWAH(Hebrew 'Eve') | | |
| | JX | JANAJ (see JQ) / XANAX (a brand of alprazolam - Random House Dic. 2nd Ed. 1987) | | | | |
| | | KAK (dial. cack - edd) / OAO (see DO) | KQ | RIKK (Web2 - same as RIQQ) / RIQQ | | |
| | | AKK (Akk Emma - oed) / AUU (awe - oed) | KX | KERKES (kirks = churches - oed)/ XERXES | | |
| | | ILL / IOO (yea - oed) | LQ | SHILL (sonorous a oed) /SHIQQ (a jinn in | | |
| | | ILL / IUU (yew - oed) | LX | FILL / FIXX pre-Islamic mythyedncm) | | |
| | | MUM / OUO (Mali) | MQ | RIMM (rim, a membrane - oed) / RIQQ | | |
| | | IMMES (immeasurable - oed) / IUUES (Jew - oe | | | | |
| | | INN / IOO (see LO) | NQ | RINN (run - oed) / RIQQ | | |
| | | FINN / FIXX | 114 | Territ (run ocu), rugg | | |
| | | OAO (see DO) / PAP | 00 | OIO (Hawaiian ladyfish) / QIQ (mutiny-Klingon) | | |
| | | OEO (New Zealand) / TET (tate - oed) | OV | OAO (see DO) / VAV (see IV) | | |
| | | DOOE (doe - oed) / DWWE (due - oed) | OX | OEO (New Zealand) / XEX (El Xex in | | |
| | | | | Guatemala) | | |
| | PQ | RIPP (reap - oed) / RIQQ | PU | OPPER (Chile) / OUUER (over - oed) | | |
| | PX | FOPP (fop n oed / FOXX (a surname) | | | | |
| | QR | SHIQQ (see LQ) / SHIRR (to gather - oed) | QS | RIQQ / RISS (rise - oed) | | |
| | | RIQQ / RITT (ride - oed) | QU | AQQ, Ra's al (Oman) / AUU (see KU) | | |
| | | AQQAL, Magharat al(Lebanon) / AVVAL (Uzbek. | | AQQAD, Al (Yemen) / AWWAD (S Arabia) | | |
| | | QAQA (Lesotho) / XIXI (China) | QY | RIQQ / RIYY, Jabal ar (Yemen) | | |
| | 11. | RIQQ / RIZZ, Qoubbet Sahn er (Lebanon) | 4 | | | |
| | RV | REER (rear - oed) / VEEV (vivid - edd) | RW | RARE / WAWE (waw - oed) | | |
| | | FIRR (fir tree - oed) / FIXX | | | | |
| | | ASS / AUU (see KU) | SX | FOSS (force n oed) / FOXX | | |
| | | GROTTE (groat - oed) / GROUUE (grow - oed) | | FITT (fit - oed) / FIXX | | |
| | | | UX | UEU (see BU) / XEX (see OX) | | |
| | | IUU (see CU) / IZZ ad Din (Syria) | | | | |
| | | VIV / XIX (see AX) | | | | |
| | | SEWWES / SEXXES (sixes - Middle English Dic., Ed. Hans Karath 1959) | | | | |
| - 117 | XY NAXXAR (a Maltese town) / Muhsin an NAYYAR (Iraq) | | | | | |
| | XZ FIXX / FIZZ | | | | | |
| | YZ IYYAR (the post-exilic name of one of the Jewish months - oed) / IZZAR, Koudia Beni (Algeria) | | | | | |
| - | 77 | | | | | |

Dan's longest set of PTs, based on the tautonymic letter pattern 2A2A, has 14 elements. However, the palindromic letter pattern 2A2 will accept all 25 substitutions from B through Z resulting in a set of PTs with 25 elements, the longest possible. All 25 2A2 words can be found in *The Palindromicon 11* (Word Ways Monograph Series 6, 2002). It follows that 300 of the 325 possible substitutions can be represented by using the 2A2 pattern i.e. all except the 25 which would involve substituting only two of the three As in AAA to make BAB through ZAZ, which would break the rules of the game. But all this would be boring in the extreme. The palindromic pattern A22A is nearly as fecund, all except AOOA being in *The Palindromicon II*. I couldn't even find an acceptable AOOA on the internet!

References: edd-English Dialect Dictionary; edncm-Everyman's Dictionary of Non-Classical Mythology; OSPD-Official Scrabble Players Dictionary; Web2/3-Webster's 2nd/3rd Editions. Locations, taken from The United States Board on Geographic Names, are identified by country. Unreferenced palindromes can be found in *The Palindromicon 11* (Word Ways Monograph Series 6, 2002).