

NUMERICAL PALINDROMES: PART 2

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INTRODUCTION

"Numerical Palindromes: Part 1", by Susan Thorpe in the November 1996 Word Ways, dealt with what I describe as numerical palindromes of order 2. It was her work that led to my own effort.

For the purposes of this article, a numerical palindrome is defined as follows. Divide a word into n groups of letters, each group containing the same number of letters. Using $A=1, B=2 \dots$ total the letters in each group. For example, ALKALIZE splits into $n=4$ equal groups of letters, AL-KA-LI-ZE, and the group totals are 13, 12, 21 and 31. Then the word is a numerical palindrome of order n if each group's total is the palindrome of the total of the corresponding group an equal distance from the other end of the word. In the example, 13 is the palindrome of 31, and 12 the palindrome of 21. Hence, ALKALIZE is a numerical palindrome of order 4. Evidently when the number of groups is odd, the central group must have a palindromic total.

The group totals written end-to-end form a number palindrome, but for the purposes of this article, the stricter condition above is applied: group totals (greater than 9) may not be split so as to achieve a single large number palindrome. Thus, Thus 23132 is acceptable if derived from 2-3-1-3-2, or from the impossible 2-313-1 or 23-1-32, but not from 23-13-2, nor from 231-32 nor 23-132.

A small problem that arises is whether to consider a group total of $(0)2$ as a palindrome of 20, since the palindrome of 2 is clearly 2, not 20. For example, ABABA = 1-2-1-2-1 is a neat numerical palindrome of order 5; if we accept 20 as a palindrome of 2, we also have ABATA = 1-2-1-20-1; the more groups we work with, the more acceptable this seems because of the lack of results! In this article, 01, 02 and 03 are accepted as palindromes of 10, 20 and 30.

Normal palindromes such as MADAM need not be numerical palindromes; in this case, the only possibility is order 1, and that is spoiled by the M, whose 13 is not palindromic. On the other hand, LEPPEL is a palindrome which is also a numerical palindrome of order 2. Contrariwise, numerical palindromes may be palindromes, but are rarely so.

There are two special cases of interest: when $n=1$, the whole word is totalled, and when n equals the number of letters in the word, the totals are simply the values of each letter.

The following words are all to be found in major dictionaries (OED, Web 2 and 3, OSPD, Stedman's Medical Dictionary, Pulliam and Carruth's *The Complete Word Game Dictionary*, American Heritage) or in past issues of *Word Ways*, or are proper names. A few which are of interest, but for which I have no respectable source, are indicated with a question mark. Acronyms were included at my discretion. Hyphenation is usually not shown.

NUMERICAL PALINDROMES OF ORDER 1

In this special case, we will assume the (sole) group total must itself be palindromic; even so, there are more than 72,000 qualifying words, so the following list is highly selective. A selection of recognisable words was made from the total indicated in brackets after the group total. The shortest (S) and longest (L) words found with a given numerical value are given. Thus, the letters of AGBA total 11, as do the letters of 34 other words.

The reader will note that the lists of common words below confirm the counts given, in that sufficient words to give a "flavour" of the answers can be found for some totals purely among words beginning with an A, whereas for other totals a few examples nearly exhaust the alphabet. The difficulty of finding examples is greatest when either the required total is small (dictating short words with letters near the beginning of the alphabet), or when the required total is large (dictating very long words consisting of letters from the end of the alphabet).

11 (34): AGBA, AIA, BACE, BADD, BAGA, BAH, BED, CABDA (L), CAG, DEB, EF or Fe (S), FAD, HAB

22 (209): ABEAM, ACME, AMEBA, ARAB, ARC, BABEL, BEAN, BLAG, CABANA, CABBALA (L), CABBIE, CALF, CAME, CAR, CHEF, COCA, COD, DALE, DEAL, DECADE, DIED, EEL, GO (S), HAM, LEAD, MACE, NAG, OAF, PEA

33 (676): ABATED, ACHAEAN, ACTED, ADDENDA, AIDS, ALIBI, ALOE, AUK, AWED, BAILED, BANANA, BARGE, BASK, BEGS, BIRD, CADET, CHACALACA(L), CHEAP, COMB, CUED, DALEK, DEADEN, OR(S)

44 (1628): ABELIAN, ACCOLADE, ACCORD, ADVICE, ANAEMIA, ANON, BADLY, BARDS, BEADIER, BEDAUBED, BEHEADS, BENDS, BESIDE, BIDDY, BIRO, BLENCH, BONDED, BORED, BUBBLE, BUNG, CANCER, CARGO, DEFACEABLE (L), SY (S)

55 (2836): ABNEGATE, ACCENTED, ACCRETE, ADZES, AFLOAT, AGENCY, AGREES, ALLEY, ALLUDE, AORTA, ARGON, ASPEN (from ASP), ATONE, AUDIT, AWAKEN, AXING, AZTEC, BACCHANALIA (L), BARKER, BASALT, TOT (S)

66 (4254): ABLATING, ABOLISH, ABOUNDED, ABREAST, ABSORBED, ABSTAIN, ABUSER, ACETYL, ADDENDUM, ADJACENCY, ADMITS, AFFLICTED, AGENTS, ALCOHOL, ALIASES, ALIGHTED, ALREADY, AMICABLY, ANACARDIACEAE (L), WRY (S)

77 (5358): ABASHEDLY, ABJECTIVE, ABLENESS, ABRASIVE, ABSCESED, ABSORBABLE, ABUNDANT, ABUTTAL, ACCELERATED, ACCOUNT, ACCUSING, ACTUALS, ADDICTIVE, ADEQUACY, ADMIRALS, ADULTS, AFFECTIVE, ALPHABETIC, BACILLARIACEA? or HALBERDHEADED? (L), SWOT (S)

88 (6258): ABORIGINAL, ABREACTION, ABROGATES, ABSCONDING, ACCEPTABLY, ACCESSION, ACCRETION, ACROSTIC, ADVISOR, ADVOWER, AFFILIATES, AGITATING, AGNOSTIC, AGREEMENT, ALLERGIES, ALLOCATES, AMBUSHES, ANCHOVY, CHAMAECEPHALIC or GAMMACHILAMBDA (L), XYST (S)

- 99 (6554):** ABOMINATES, ABORIGINES, ABOMINATES, ABSORBERS, ACCLIMATISED, ACCOMPANIES, ACCOMPLICES, ACCOMPLISH, ACQUIRING, ADAPTIONS, ADDRESSEES, ADJUTANCY, ADVOCATOR, AFFORESTED, AFFRONTS, AIRSHIPS, ALTERNACY, AMELIORATE, CAESALPINIACEA? or the shorter ANTICACHECTIC (L), WORRY (S)
- 101 (6425):** ABHORRENT, ABSOLVING, ACCELERANTS, ACCELERATOR, ACCORDIONS, ACROBATISM, ACRONYMIC, ACROSTICAL, ADAPTATION, ADVISEDLY, AEROGRAPHIC, AISLELESS, ALGORIST, ALLUSIVE, ALUMNUS, ALVEOLITE, AMIABILITY, AMPLITUDE, AMPUTATED, ANACHRONISM, LARDIZABALACEAE (L), WURST (S)
- 111 (6380):** ABJURATION, ACANTHUSES, ABRACHIOCEPHALI (L), ACCORDINGLY, ACCURSEDLY, ACQUIRERS, ADDITIVELY, ADEQUATELY, ADROITEST, ADULATORS, ADULTERATED, ADVERBIALY, ADVERSELY, AEROSTATIC, AFORETIMES, AGGRANDIZES, ALLRGORISM, ALLOKINETIC, ALLUVIUM, ALTOGETHER, AMERENGLISH, MUZZY (S)
- 121 (5913):** ABROGATIONS, ABSTRACTLY, ACCENTUATOR, ACCOMMODATOR, ACCOMMODATOR, ACCOMPANYING, ACQUITTING, ADVERTISER, AERODYNAMICAL, AGGLUTOGENIC, ALLOTROPIC, ALPHANUMERIC, ALTERNATING, AMBASSADRESS, ARCHIDIDASCALIANE? or the shorter ANTICEPHALALGIC (L), WUZZY (S)
- 131 (5285):** ABOMINABLENESS, ABSOLUTISM, ACCOUNTANTS, ACCUMULATIVE, ACCURSEDNESS, ACETONITRILE, ADMINISTERS, ADMONITORIAL, ADSORPTION, ADVERSENESS, AESTHETICISM, AGGLUTINIZE, AGRONOMIST, ALBATROSSES, ALLITERATOR, ALLOTMENTS, ALTAZIMUTH, ANTICIPATION, ANTIOXIDANT, CHEIROBRACHIALGIC (L), UNTRULY (S)
- 141 (4508):** ABOLITIONARY, ABSTINENTLY, ABSTRACTIONS, ABSTRACTNESS, ACCUSTOMEDLY, ACCUSATIVELY, ACKNOWLEDGEDLY, ACOUSTICALLY, ANAESTHETIST, ANAMORPHOUS, ANASTOMOSES, ANTIMONOUS, ANYTHINGARIAN, APPELLATORY, ARISTOLOGICAL, ASSIMILATION, ASYMPTOTIC, SILICOFLAGELLIDAE or TRIAKAIDEKAPHOBIA (L), SKYRWYT (S)
- 151 (3785):** ABDOMINOSCOPY, ACCOMPLISHMENT, ACETYLCHOLINES, ADMISSIBILITY, ALLELOTROPY, ALLOMORPHISM, AMBIDEXTROUS, ANTHROPOPHAGIC, ANTICIPATORY, ANTISEMITISM, APPLICATIVELY, ARCHIEPISCOPACY, ARTLESSNESS, ASTONISHEDLY, AUDACIOUSNESS, AUDIOLOGISTS, AUTHENTICALLY, BENEVOLENTLY, PHALANGOPHALANGEAL (L), ZYZZYVA (S)
- 161 (3001):** ABORTIONISTS, ABSTEMIOUSLY, ACQUAINTANCESHIP, ACRYLONITRILE, ADMINISTRATOR, AMORTIZATION, ANAGLYPTOGRAPH, ANTIHISTAMINES, ASPHYXIATION, ASSIMILATORY, ASTOUNDINGLY, AUTOCRATICALLY, AUTONOMICALLY, BIBLIOGRAPHICALLY, CAPITULATORY, FACIOCEPHALALGICALLY (L), TORTULOUS (S)
- 171 (2419):** ALLITERATIVELY, ALLOTROPICALLY, ALPHANUMERICALLY, ANGIOCARDIOGRAPHY, APOCALYPTICALLY, APPROXIMATION, ASSENTIVENESS, BACTERIOLYSINS, CALAMITOUSNESS, CAPRICIOUSNESS, CHARACTERIZATION, CIRCUMNAVIGATING, ENCEPHALOMALACICALLY or MECHANOCARDIOGRAPHIC (L), TIZZWOZZ or the longer SUSURROUS (S)
- 181 (1827):** ABSTEMIOUSNESS, ACCOMMODATIVENESS, AETIOTROPICALLY, AMPHITHEATRICALY, ANTICOAGULATIONS, AUTOBIOGRAPHIST, AUTOINTOXICATED, BITUMINIFEROUS, CAUTERIZATIONS, CHEIROBRACHIALGICALLY or PERICARDIACOPHRENICAE (L), COMMISSIONAIRES, COMPRESSIVELY, CONTAGIOUSNESS, CONTIGUOUSLY, CONVENTIONALLY, CORROSIVENESS, SYNSPOROUS (S)
- 191 (1463):** AGRICULTURALIST, ANTIVIVISECTION, ARCHAEOASTRONOMY, ASYMPTOTICALLY, AUTONOMOUSLY, BURGOMASTERSHIP, CHOLECYSTECTOMY, COMMUTATIVITY, COMPARTMENTALIZE, CONTEMPTIBLENESS, CONTORTIONIST, DISTINCTIVENESS, ECHOENCEPHALOGRAPHICS or ENCEPHALORRHACHIDIANS (L), ENCEPHALOMYELITIS, EXPOSTULATION, EXPRESSIVITY, EXTEMPORANEOUS, INIQUITOUSLY, MONSTROUSLY (S)
- 202 (963):** ANTISTROPHICALLY, APPROPINQUATION, CITRICULTURIST, COMFORTLESSNESS, COMPREHENSIBILITY, COMPRESSIBILITIES, CONSERVATORSHIP, CORNUCOPIOSITY, CROSSMULTIPLY, DEMONSTRATIVELY, DETERMINATIVENESS, DISASTROUSNESS, HEMIHYDRANENCEPHALIES (L), HYPEROXYGENIZE, IMPECUNIOUSNESS, INDISTINGUISHABLY, INEXPRESSIVELY, SUMPTUOUSLY (S)
- 212 (761):** CARNIVOROUSNESS, CIRCUMTERRESTRIAL, CONSPICUOUSNESS, CONSTRUCTIVIST, CONTENTIOUSNESS, GINGIVOGLOSSITIS, HYPERTHYROIDISM, INSTRUMENTATION, INTERDENOMINATIONAL, INTROSPECTIVELY, MAGNETOENCEPHALOGRAMS (L), MERETRICIOUSNESS, MISCONSTRUCTION, PHOTOSYNTHESIS, POLYUNSATURATED, TWISTYWISTY? or the longer ROYSTEROUSLY (S)

222 (478): ASTROPHOTOGRAPHY, CONSERVATIONISTS, CONVERSATIONISTS, DEMONSTRATIVENESS, ECHOENCEPHALOGRAPHICALLY (L), FLUOROPHOTOMETER, HISTOPHYSIOLOGY, HYPERVITAMINOSIS, INCOMMENSURABILITY, INEXPRESSIVENESS, MICROSTRATIFICATION, PARLIAMENTARIZATION, PHOTOCOMPOSITION, PROTOZOOLOGIST, SUMPTUOUSNESS or the shorter TOPSYTURVILY (S).

232 (351): ADRENOCORTICOTROPIN, ANTHROPOMORPHOUS, ANTIVIVISECTIONISM, CONSTITUTIONALIZE, COUNTERSUGGESTION, DEINSTITUTIONALIZE, ELECTROENCEPHALOGRAPHY, ENCEPHALOMENINGOPATHICS (L), ENTEROBACTERIOLOGIST, ILLUSTRIOUSNESS, INCONSEQUENTIALITY, MONOSYMMETRICALLY, PALAEOANTHROPOGRAPHY, RETROSPECTIVENESS, SURSUMVERSIONS or ULTRALUXURIOUS (S)

242 (229): CONTRADISTINCTIVELY, COUNTEREXPOSITION, DEPARTMENTALIZATIONS, INSTITUTIONALIZES, INSURMOUNTABILITY, INTERTRANSPICUOUS, LYMPHANGIOADENOGRAPHIES or PELVOCEPHALOGRAPHICALLY (L), MONOTONOUSNESSES, PAROXYTONIZATION, PECTIN METHYLESTERASE, PNEUMONOPLEURITIS, SEMIQUANTITATIVELY, TELETRANSPORTATION, UNTRUSTWORTHY (S), UNQUESTIONINGNESS

252 (156): BALLISTOCARDIOGRAPHICALLY (L), CONSTITUTIONALISMS, COUNTERPROPORTION, DEOXYCORTICOSTERONE, ELECTROPHYSIOLOGIST, HISTOMORPHOLOGICALLY, HONORIFICABILITUDINITY, HYPERSENSITIZATION, HYPOPHYSOPRIVUS (S), IMMUNOHISTOLOGICALLY, OVERPOPULOUSNESS, PETROMYZONIFORMES, PHILOSOPHICOTHEOLOGICAL, PROCONSERVATIONIST, TRANSVENTRICULARLY, UNINSTRUCTIVENESS, UNSELFCONSCIOUSNESS (inferred)

262 (120): 26 ANTHROPOCLIMATOLOGIST, ANTIANTHROPOMORPHISM, CHOLECYSTOCOLOSTOMY, HEMANGIOENDOTHELIOBLASTOMA (L), MAGNETOHYDRODYNAMICIST, NONSPIRITUALIZATION, OVERSCRUPULOUSLY or SYMPHYOSTEMONOUS (S), PHARYNGOTONSILLITIS, PSEUDOHYPERTROPHIES, REMISREPRESENTATIONS, UNCONTROVERTABLENESS, VAPOROSULPHUREOUS

272 (71): DIPHENYLAMINECHLOROARSINE (L), PHOTOPOLYMERIZATION, SUPERSUPERABUNDANTLY, SYRINGOSYSTROPHY? or the longer HYDROXYTRYPTOPHAN (S), TRANSUBSTANTIATIVELY, TRUSTWORTHINESSES, and medical terms

282 (46) ACROCEPHALOSYNDACTYLICALLY (L), CHOLECYSTGASTROSTOMY, COUNTERDEMONSTRATIONS, OVERSCRUPULOUSNESS (S), and medical terms

292 (29): ANTHROPOMORPHOTHEISTS, HETEROTRANSPLANTABILITIES (L), NORLEUCYTRYPTOPHAN (S), PSEUDOINTERNATIONALISTIC, and medical terms

303 (29): PRESIDENTIALVICEPRESIDENTIAL or the shorter COUNTERCHARACTERISTICALNESS (L), PROTOERYTHROCYTICALLY (S)

313 (16): FORMALDEHYDESULPHOXYLATES, MACRONORMOCHROMOBLASTICALLY (L), POLYTETRAFLUOROETHYLENE, PROSTATOCYSTOTOMIZES (S) and medical terms

323 (8): COSTOTRANSVERSECTOMIZES (S), RADIOIMMUNOELECTROPHORETICS (L), etc

333 (7): HEPATOCHOLANGIOENTEROSTOMIZE (L), URETHROCYSTOMETROGRAPHY (S), etc

From here, we include every word

343 (5): ARTERIOLONEPHROSCLEROTICALLY, LAPAROSALPINGOOPHORECTOMIZED, OCTAMETHYLCYCLOTETRASILOXANE, OCTAMETHYLPYROPHOSPHORAMIDE, URETEROPYELONEPHROSTOMY

353(3): COUNTERIMMUNOELECTROPHORETIC, UVULOPALATOPHARYNGOPLASTY, VENTRICULOCISTERNOSTOMIZED

363 (1): DACRYOCYSTOETHMOIDOSTOMIZES

373 (1): ERYTHROTHROMBOMONOBLASTOSIS

383 (3): TRANSURETEROURETEROSTOMIZE, URETEROPYELONEPHROSTOMIZING, URETEROTRIGONOSIGMOIDOSTOMY

393 (1): DIAMINOPROPYL TETRAMETHYLENEDIAMINE

This is the first break: I found no words with letters adding to 404, 414, 424, nor adding to 444, or 464.

- 434 LAPAROHYSTEROSAPINGOOOPHORECTOMY
- 454 TETRAETHYLMONOTHIONOPYROPHOSPHATE
- 474 LAPAROHYSTEROSALPINGOOOPHORECTOMIZING
- 484 CONJUNCTIVODACRYOCYSTORHINOSTOMIZES

For readers seeking a compatible partner, I might suggest a superior alternative to matching horoscope signs. Here is a brief selection, together with the optimum age for romance.

- 33 Aimée, Diane, Fred, Gilda, Helga
- 44 Anais, Andy, Brenda, Brian Ebner, Emile, Helen, Hugh, Jeanie
- 55 Arlene, Babette, Camille, Cindy, Conrad, Edmond, Edwin, Freya, Gabriela, Hadrian, Michele
- 66 Annabelle, Bathsheba, Caligula, Charlene, Charles, Cheops, Frances, Jerome, Jessica, Ophelia, Owen, Rosie

NUMERICAL PALINDROMES OF ORDER 2

In Part 1, Susan Thorpe, presented a selection of numerical palindromes of order 2, with group totals up to 99. They were a selection of the 726 she discovered. I worked from a longer list of 3253. Here are the words of order 2 with three-digit group totals, in alphabetic order. Since the order is 2, the totals shown are for each half of the words. It will be noted that all are palindromes, the highest being 151.

- 141 ACROCEPHALOSYNDACTYLICALLY
- 141 CERVICOOCULOACOUSTICALLY
- 101 CHEMOSEROTHERAPIES
- 101 DEXTROCLINATIONS
- 111 FLUOROPHOTOMETER
- 101 HYPERPLASTICALLY
- 101 INTRAARTICULARLY
- 101 LIEUTENANT-GENERALS
- 111 MACROCRYOGLOBULINS
- 101 MEGALOSPLANCHNICALLY
- 121 MONOTONOUSNESSES
- 111 NONPROSEQUITUR
- 121 OMNIVOROUSNESSES
- 151 POLYRADICULONEUROPATHIES
- 101 PREOVIPOSITION?
- 101 RETROPHARYNGEALS
- 111 STERNOTRYPESIS
- 101 SUBTERPOSITION
- 101 SUPERSCRPTION
- 111 TELIOSPORIFEROUS
- 101 THIOSEMICARBAZONES
- 101 TRANSITIONTINT
- 101 TRICHOCYSTICALLY
- 101 UNINTERMITTENT
- 101 VALVOPLASTICALLY

The largest totals for any word, to my knowledge, are 560 for PNEUM-ONOUltrAMICROSCOPICSILICOVOLCANOCONIOSIS and 507 for COMICOMEN-CLATURISTDISPROPORTIONABLENESS. It is therefore highly unlikely that any word will have a half-total of more than about 250; indeed the total should be much less when we apply the constraint that the two halves must have mirror totals. If one 3-digit group total is of the form abc, the other must be cba; as neither can exceed 250, a and c must be less than 3, and probably less than 2, as found above. If less than 2, then each group total must itself be a palindrome, as found.

The commonest numerical palindrome is 44-44; here are its 152 "homonyms":

ABDOMINALGIA, ACETONEMIC, ALLSIZED?, ANATHEMATE, ANONYMAE, ANTIDOTE, ANTIMASK, ANTISERB?, ARTELRIE, ARYSTE, ATHANASIAN, BARRELAGEs?, BEETLEEYED?, BIDDYBIDDY, BLOODCUP?, BOGTORCH?, BOLOBOLO?, BRAWLIER, BULIMICS, CANCEROCIDAL, CARMINATED, CAUSEFUL, CHROMICS, CLEAVAGECELL?, COADUNATED, COMMENTE, COMMINLI, COMMUNED, CUTEST, CUTSET (maths), DEPENDABLY, DESIGNATED, DESPIGHT, DETANNATED, DEWLIGHT, DISLIKES, DIVIDIVI, DIVINING, DIZENING, DYNAMICS, EARTHISH, ENDURATE, ENTERATE, EPAGOMENIC, EPHORATE, EPIMANIKIA, ESTRAY, ESTURE, EVAGINATED, EVELIGHT, EXODUS, FARSIGHT, FIBRINATED, FIBRINEMIC, FOLKvang?, FOREDUNE, FOREHOOF, FOREOATH, FOREPINE, FORERANK, FORETALK, GAMEREFUGE?, GARROTED, GUMCOPAL?, HABRONEMIC, HEMOCOELIC, HERMITAN, HOUGLY, INFOOTED, INFORCER, INFORMAL, KEEWATIN, KILLGREN?, KORRAY, LAPORTEA?, MASKERAT, MIMICISM, MISCALLS, MISCOLLE, NEYUER, NEYWAT, OOMANTIA, OPALIZED, ORKNEY, PALMBRANCH?, PECTASES, PECTIZED, PIGLATIN?, PINELLAS?, PISTES?, POMARY, POMPOM, PREENING, PREEXCEL, PUBERATE, PUGGLY, PYCTES, QUAEQUAE, RATELIER, RAYENY, RAYNEY, RAYNYE, REATTAIN, RECREENT, RECRYAND, RELIIANT?, RELINING, REPEATER, RETAILER, SADTUNED?, SCIMETAR, SEARAGWEED?, SEASNIPE, SEBRIGHT?, SHAPEFUL, SHELLIER, SHELLMEN, SKEINING, SPEDEFUL, SPINEY, SPINKS, SPITES, STEURE, STEWAT, STEYNE, SUBBASES, SUDARY, SYXT, TAWNEY, TENEBRES, TENEBRIO, TENESMIC, TERAPINE, TESTES, TOITOI, TSETSE, TWAYNE, UNDERATE, UNDERDOG, UNDEREAT, UNDERGOD, UNDERLIE, UNHASPED, UNITES, VANGUARD, WATURE, YAREST, YENTES, YENYEN, YRAYNE, ZAQZAQ?, ZEMZEM

Regarding the least common words corresponding to first group totals from 01 to 99, I found no words corresponding to $x0-0x$ ($x=1$ to 9), which would require the words to start with letters towards the end of the alphabet and to finish with letters close to the beginning. I also found no numerical palindromes for 18-81, 19-91, 91-19, and only one each for 71-17 (SYRIACAL) and 92-29 (XYLOPHAGID), though Susan Thorpe (see Part 1) has provided phrases in all these cases.

In the following sections, the number of words originally found is stated first. No words of more than order 9 were found.

NUMERICAL PALINDROMES OF ORDER 3

Of the 328 found, we select some words of interest. First, those having all three group totals the same:

22-22-22 MIMICS

33-33-33 MASONDEWE, ROMTHY

44-44-44 PHEOCHROMICS

55-55-55 PURPUROUS

77-77-77 MICROSPECTROSCOPES

Next we select their near cousins, with the same digits within each total:

22-1-22 VAV 22-6-22 TBEARD 22-33-22 MISNIM
 33-4-33 ROACHY 33-8-33 ORGANS 33-9-33 RODENS
 33-11-33 LUGDOR, OREFUL, ROBINS 33-44-33 PELODYTID
 44-33-44 PUGILLARY 44-66-44 UNDEROXIDIZE
 44-55-44 LUFENGOSPIRA, PENINVARIANT
 55-9-55 ULVACEOUS 55-22-55 PATRICIANISM
 55-33-55 LYCOMARASMIN, SOUTHERLY
 66-55-66 PAPULONECROTICS
 88-55-88 OCCLUSOREHABILITATION

Here are "heavyweights" with at least one group totalling more than 80 (excluding those already listed), and "heavy middleweights" with any group total over 70:

74-88-47 MICROPHYSIOLOGICAL	64-88-46 ORBITOZYGOMATIC
86-88-68 PYLOROMYOTOMIZE	
75-66-57 MONTMORILLONOID	57-44-75 MOTIVELESSLY
75-22-57 OUTSIDEDNESS	65-77-56 OVARIODYSNEURIC
74-44-47 PROPIOLALDEHYDE	76-66-67 PULVERATRIFICIOUS
75-33-57 SOUTHEASTERN	75-55-57 SOUTHWESTERN
71-44-17 SPOUSEBREACH	74-33-47 TOURNAMENTAL
74-44-47 UNSTRENGTHEN	75-44-57 UNUSEFULNESS

The other multiple "homonyms" follow (note especially REXISM!):

23-33-32	MIASMATIC, REXISM, SACRIFIER, SCAPLERIE, SCARIFIER
31-22-13	SLOGHE, VIKKID, VISCID
32-22-23	SIDEBOARD, WIKKER
32-44-23	MENTIONED, SIDESTICK, YFASTENED
34-09-43	MATAGASSE, PREDRY
34-33-43	MILOMETER, OENOMETER, SORORY, VICENNIUM
42-33-24	MONOMELIC, OVERCLIMB
43-22-34	PRINCEITE, PRINCEKIN
43-33-34	MOONRAKER, POLLTAKER, THOMASITE
43-55-34	MICROWELDING, QUADRIPLANAR, TREVORITE
53-44-35	SCHWANNOMATA, SCULLDUGGERY
64-33-46	PYRENOCARPIC, TESTAMENTATE

NUMERICAL PALINDROMES OF HIGHER ORDER

For numerical palindromes of order 4, the 4-letter words fall into three categories: (a) palindromes, (2) those needing 2 to be treated as 02, etc, (3) those that do not (AULA, BLUB, BULB, GLUG, LULU). Category (c) is clearly a little special.

AAAA, ABBA, ABTA, ACCA, ADDA, AEEA, AFFA, AGGA, AHHA, AIIA, AKKA, ALKALIFY, ALKALIZE, ATHERMIC, AULA, AVVA, BEEB, BEET, BIIB, BLUB, BULB, BULT, DEED, DEHORNED, DEVILADE, DIVIDIVI, ECCE, EGGE, GLOSSOPODIUM, GLUG, HALTERED, KAAK, KEEK, KINESIOMETER, LIPOIDIC, LULU, MONOMETALLIC (42-33-33-24), ONESIDEDNESS, PELYCOLOGIES, POLICIAL, REVIVABILITY (45-32-23-54), SCABBARD, SNEDDENS, SUBPAPILLARE (42-33-33-24), URETEROPYELONEOSTOMIZING (87-88-88-78), VIATICAL

Numerical palindromes of order 5 belong to categories (a) and (b): ABABA, ABATA, AVIVA, BEDET, BEGET, BEHET, BUILT, CIVIC, DEKED, EBATE, EBIBE, IGIGI, KAIKAK. Numerical palindromes of order 6 also belong to categories (a) and (b), except for LAULAU which is in category (c): BIGGIT, DEBTED, DEGGED, KAKKAK (11-1-11-11-1-11), LAULAU (12-1-21-12-1-21). Numerical palindromes of order 7 are exclusively categories (a) and (b): DEBATED, DEBITED, DEEDEED, DEIFIED, DEVIVED, EDIFIDE, HADADAH, HAGIGAH. There are only two numerical palindromes of order 8, GLUGGLUG and KEEKKEEK, and one of order 9, ABBADABBA.

SPECIAL CASES

Some words belong to more than one order; for example, BAULKS may be split BAU-LKS (24-42) or BA-UL-KS (03-33-30).

2 or 3 groups: BAULKS, DIATHERMANCY, DIKKOP, FORNICATRICE, KAJANG, PYJAMA, TALUKA, UNDEROXIDIZE, VERTICILLARY, VIKKID, WIKKER

2 or 4 groups: AAAA, ABBA, ACCA, ADDA, AEEA, AFFA, AGGA, AHHA, ALKALIFY, ALKALIZE, ATHERMIC, BEEB, BIIB, BULT, DEED, DIVIDIVI, ECCE, GLOSSOPODIUM, GOATMARJORAM?, KINESIOMETER, LIPOIDIC, LULU, MONOMETALLIC, ONESIDEDNESS, PELYCOLOGIES, POLICIAL, REVIVABILITY, SUBPAPILLARE, VIATICAL

3 or 6 groups: DEBTED

3 or 9 groups: ABBADABBA

I found just 103 palindromes out of 3658 numerical palindromes, though many are of little interest, being short acronyms. Here is a selection:

order 2: ABBA, ADDA, AJJA, DEED, DETANNATED, ECCE, GOOG, IMMI, LEPPPEL, ROOR, SAMMAS, TALLAT

order 3: ABBADABBA, ADA, AGA, AHA, AKA, AVA, BAB, DAD, DID, EKE, EVE, GAG, GIG, HAH, HEH, KKK, VIV

order 4: AKKA, EGGE, KAAK, KEEK, SNEDDENS

order 5: ABABA, CIVIC, DEKED, EBIBE, IGIGI, KAIKAK,

order 6: DEGGED, KAKKAK

order 7: DEEDEED, DEIFIED, DEVIVED, EDIFIDE, HADADAH, HAGIGAH

order 8: KEEKKEEK

There is more than one case above of a queried word from biology for which I can readily source a version ending in AE but not in A; CAESALPINIACEA is an example. Presumably botanical Latin follows normal Latin rules, and the AE indicates probably either the genitive singular or nominative plural of a feminine noun, in which case I might be permitted the A nominative (i.e., most common) case. Is there an expert in the Linnaean system who can comment?