

# MATCHED TERMINAL DELETIONS

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## 1. Kickshaws Challenge

In Kickshaws of Feb 2002, Dave Morice asked for words beginning and ending in the same letter, which revealed other words (say, core words) when the terminal letters were discarded. He asked for the longest source words beginning with each letter of the alphabet, in each of four categories: the revealed word reads forwards; reads backwards; reads a different word forwards from backwards (called 'both' below, his example was STARS = TAR + RAT); and reads the same backwards and forwards (palindrome).

I added a self-imposed restriction that the source word should have at least six letters. I managed to find examples for almost all the 4 x 26 categories. There were, indeed, so many examples that this article can only contain perhaps 2% of them. Apart from the requested longest examples, selection is personal, based on familiarity. The reverse examples are given more space because they are more difficult to spot. The effect of this method of selection is to give a misleading impression of how many examples were found in each category, so here is a summary:

Counts of initial letters A to Z for F, R, B, P:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
F:	757	5	84	506	935	10	216	122	39	2	34	108	110	177	70	31	1	441	5238	641	8	0	27	2	33	1
R:	258	4	29	120	227	8	67	133	36	1	49	52	72	81	25	12	0	139	545	134	3	3	17	0	14	0
B:	200	8	35	171	219	12	80	103	23	0	22	57	63	75	20	7	1	98	965	250	3	0	15	1	10	0
P:	50	4	8	16	19	1	10	24	12	0	21	13	27	30	18	12	3	22	73	26	10	2	9	5	4	6

Overall, the forward examples account for two-thirds of the total, the 'both' examples account for one-sixth, the reverse examples for one-seventh, and the palindromes are easily the rarest at less than one thirtieth.

The words I failed to find were: forwards words beginning with V, reverse words beginning Q, X, or Z, 'both' words beginning J, V or Z, and palindromes beginning with J. However, we can fill these gaps (except for Q) by using 5-letter words, thus:

(all OED except where noted)

XENOX (a) = ENO, ONE

JUNIJ = UNI, INU

ZIETZ = IET, TEI

VENOV = ENO, ONE

These are all of the type Both, but also may be viewed as providing some solution for Forwards and Reverse. The Palindrome deficiency is made good by: JAQAJ → AQA.

The method of selection obscures which core words which are most popular, so here are the most popular in each category. The most popular core words are all palindromic, led by ELLE and ARRA:  
ELLE: CELLEC, DELLED, GELLEG, HELLEH, KELLEK, MELLEM, NELLEN, RELLER, SELLES, TELLET, VELLEV, ZELLEZ  
ARRA: CARRAC, GARRAG, HARRAH, KARRAK, MARRAM, NARRAN, QARRAQ,

SARRAS, TARRAT, WARRAW, XARRAX. (Naturally, all are in the Palindromicon, except TELLET (eg Roy Tellet OED serviette), and CARRAC (OED stay 1420))

The most popular 'both' core words are OLLA and (necessarily) ALLO  
ALLO and OLLA: FALL OF, HALLOH, HOLLAH, ROLLAR, SOLLAS, TALLOT,  
WALLOW, YALLOY. All are in the OED somewhere, except Y-alloy (Chambers). Sollas is also  
in the Western Isles.

The most popular forwards or reverse core words are INNE and ITTE, each found six times  
forwards and twice backwards:

INNE: DINNED, MINNEM, RINNER, SINNES, TINNET, WINNEW, MENNIM, SENNIS  
ITTE: DITTED, LITTEL, NITTEN, RITTER, SITTES, TITTET, DETTID, SETTIS (All in  
OED somewhere except WINNEW, which is in Web 1)

There are plenty of examples fit for party games, as well as logological curiosa: here are a few  
instances. Forwards and backwards animals are contained in MACULUM, there is a plant  
containing a hake, and one containing lice. Interestingly, removing Ds from both ends can either  
result in an antonym (DEDUCATED), or a synonym (DEVERTEBRATED). Does Evandale get  
vandalised? Do orgies need forgiving? How easily does an hairbrush become a large airplane? How  
do you link Russian currency with oil? Complete: "it may be lawfull, but it's ?????". And what  
would you expect to find in a man-dream?! And what does PEPSI inside lead to? What happens if  
you burn a rasher of bacon? What does a rambler do? Does speculation lead to this? Distinguish  
between a soldier and a diplomat (hint: sword). What would you do to a tesseract?

All words below can be found in the OED somewhere, except a = ITIS animal, f = ITIS fern, m =  
ITIS monera, p = ITIS plant, B = Bloomsbury Thesaurus, Ch = Chambers, S = Stedman, TEA =  
The Electronic Alveary, W1/2/3 = Webster 1/2/3. ITIS is the Integrated Taxonomic Information  
System, a cooperative database.

### FORWARDS + REVERSE (BOTH)

- |  |  |                             |
|--|--|-----------------------------|
| 6 AGNATA (f) = GNAT, TANG                                    | 8 ADELAIDA = DELAID, DIALED                        |                             |
| 9 ARENIFERA (a) = RENIFER (a), REFINER                       |  |                             |
| 6 BELAMB = ELAM, MALE  | 6 BELIMB = ELIM (Gwynedd), MILE                    |                             |
| 7 CARONIC (W2) = ARONI (a), INORA CATARAC = ATARA, ARATA (a) |  |                             |
| 7 CENELEC (Ch, acronym) = ENELE, ELENE                       |  |                             |
| 6 DEFEND = EFEN, NEFE  | 6 DEVILD = EVIL, LIVE                              | 7 DELUDED = ELUDE, EDULE    |
| 7 DRAGGED = RAGGE, EGGAR                                     | 8 DEVELLED = EVELLE, ELLEVE                        |                             |
| 6 ESTATE = STAT, TATS  | 7 EREMITTE = REMIT, TIMER                          | 8 ELAPIDAE = LAPIDA, ADIPAL |
| 8 EMUNGERE (Ch, Latin) = MUNGER, REGNUM                      |  |                             |
| 6 FAR-OFF = AROF, FORA                                       | 7 FALL-OFF = ALL OF, FOLLA                         |                             |
| 7 GALLING = ALL-IN, NILLA                                    | 7 GETTING = ETTIN, NITTE                           | 8 GLEGGING = LEGGIN,        |
| NIGGEL   | 9 GRAVELING = RAVELIN, NILEVAR (= Norethandrolone) |                             |
| 6 HEARTH = EART, TRAE  | 7 HELLISH = ELLIS, SILLE                           | 8 HEFFORTH = EFFORT, TROFFE |
| 6 ISTARI (wizards in The Hobbit) = STAR, RATS                |  | 7 ISMAILI = SMAIL, LIAMS    |
| 6 KRAJAK = RAJA, AJAR  | 7 KINNOCK = INNOC, CONNI (m)                       |                             |
| 6 LOWELL = OWEL, LEWO  | 7 LAMINAL = AMINA, ANIMA                           |                             |
| 8 LETHERAL (S) = ETHERA, AREHTE                              |  |                             |
| 6 MERISM = ERIS, SIRE  | 6 MUTISM = UTIS, SITU                              |                             |
| 7 MACULAM = ACULA (a), ALUCA (a)                             |  | 7 MARRISM = ARRIS, SIRRA    |
| 7 MYOPIISM = YOPIS, SIPOY                                    |  |                             |
| 6 NANTEN (p) = ANTE, ETNA                                    | 6 NATION = ATIO, OITA (Pulliam)                    | 7 NAPPERN = APPER, REPPA    |

- 6 OPORTO = PORT, TROP (It is a port) 6 OSWAYO (N Pa) = SWAY, YAWS 7 OREGANO = REGAN, NAGER  
 6 PAT-COP = ATCO (SW NJ), OCTA 6 PREAMP = REAM, MAER  
 6 QALPAQ = ALPA, APLA  
 6 RANTER = ANTE, ETNA 7 RAVELER (W2) = AVELE, ELEVA (W Wis)  
 7 REMOVER = EMOVE, EVOME 8 REVELLER = EVELLE, ELLEVE  
 6 SEMITS = EMIT, TIME 6 SEVENS = EVEN, NEVE 6 SLACKS = LACK, KCAL  
 6 SLEETS = LEET, TEEL 6 SLOOPS = LOOP, POOL 6 SPEEDS = PEED, DEEP  
 6 STOOLS = TOOL, LOOT 6 STRAPS = TRAP, PART 6 SWARDS = WARD, DRAW  
 7 SPACERS = PACER, RECAP 8 SLANDERS = LANDER, REDNAL (Shropshire)  
 8 STERNALS = TERNAL, LANRET 9 STROSSERS = TROSSER, RESSORT  
 6 TABLET = ABLE, ELBA 6 TOMENT (W2) = OMEN, NEMO 7 TALLEST = ALLES, SELLA  
 7 TANNEST = ANNES, SENNA  
 6 UINEAU = INEA, AENI 6 USTAVU = STAV, VATS  
 6 WALLOW = ALLO, OLLA 7 WOLLENW = OLLEN, NELLO  
 6 XXXXIX = XXXI, IXXX (all in OED citations)  
 6 Y-ALLOY (Ch) = ALLO, OLLA 6 YEVERY = EVER, REVE

**FORWARDS ONLY**

- 6 AHAKEA (p) → HAKE 6 ALICEA (p) → LICE 6 AMISSA → MISS  
 6 ARUNTA → RUNT 7 APEPSIA → PEPSI 9 ASTEROIDA → STEROID  
 16 ARHYNCHOBDELLIDA (a) → RHYNCHO BDELLID (literally = snout leech)  
 6 BICARB → ICAR 7 BRUNANB → RUNAN  
 8 CAMELIAC → AMELIA 8 CODINIAC → ODINIA (a) 10 CORINTHIAC → ORINTHIA  
 8 DIGNIFYD → IGNIFY 8 DRIBBLED → RIBBLE 9 DEDUCATED → EDUCATE  
 9 DEVOLUTED → EVOLUTE 13 DEVERTEBRATED → EVERTEBRATE  
 7 EDUCATE → DUCAT 7 ESCAPEE → SCAPE  
 8 EVANDALE (also SW Ohio) → VANDAL 9 ESCALLOPE → SCALLOP  
 13 EVENTILATIONE → VENTILATION  
 6 FORGYF → ORGY 7 FORGIAF → ORGIA 8 FORDEALF → ORDEAL  
 6 GUNDOG → UNDO 7 GRICING → RICIN 9 GUTTERING → UTTERIN  
 10 GLISTERING → LISTERIN  
 7 HEIGHTH → EIGHT 8 HAIRBUSH → AIRBUS 10 HALLELUIAH → ALLELUIA  
 10 HALLHEARTH → ALL-HEART 11 HYPOCRITISH → YPOCRITIS  
 6 ILINEI (a) → LINE 8 IOCULARI → OCULAR 9 ISKANDERI (a) → SKANDER  
 7 JUBARAJ → UBARA  
 6 KOPECK → OPEC 6 KOSSAK → OSSA 9 KNYCHTLYK → NYCHTLY  
 7 LAWFULL → AWFUL 8 LENTICEL → ENTICE 10 LUNIVERSEL → UNIVERSE  
 11 LEPTOSPIRAL → EPTOSPIRA  
 8 MAN-DREAM → ANDREA 9 MAGNETISM → AGNETIS (a)  
 12 MATHEMATICAM → ATHEMATICA  
 6 NIOWAN → IOWA 6 NOONAN (N Dak) → OONA 6 NUNTON (W. Isles) → UNTO  
 8 NICENIAN → ICENIA 12 NIGROMANCIEN → IGROMANCIE  
 6 OBONGO → BONG 6 OTELLO → TELL 7 OLIVERO → LIVER  
 8 OCOSINGO (Chiapas, S Mex) → COSING  
 6 PERSEP → ERSE 7 PRINSEP → RINSE  
 8 PLATELAP → LATE-LA (late-La Tène!!)  
 6 QUZZAQ → UZZA  
 6 RASHER → ASHE 6 ROPIER → OPIE 6 ROUSER → OUSE

- 7 RABIDER → ABIDE                      7 RAMBLER → AMBLE                      8 RELAPSER → ELAPSE  
 8 REVOLVER → EVOLVE                  9 REGRETTER → EGRETTE                  9 RUN-SCORER → UNSCORE (!)  
 12 RIMBELLISHER → IMBELLISHE 14 REVOLUTIONIZER → EVOLUTIONIZE  
 11 SLUMBERINGS → LUMBERING                  11 SWALLOWINGS → WALLOWING  
 11 SWORDSMITHS → WORDSMITH                  12 SHOCK-BOTTLES → HOCK-BOTTLE  
 12 SMOULDERINGS → MOULDERING                  12 SPECULATIONS → PECULATION  
 12 SWORD-BEARERS → WORD-BEARER                  13 SLAVISHNESSES → LAVISHNESSE  
 13 SOIL MECHANICS → OIL-MECHANIC                  14 SLOCKING-STONES → LOCKING-STONE  
 16 STABLE-COMPANIONS → TABLE-COMPANION  
 8 TEMPTYST → EMPTYST                      8 TICEMENT → ICEMEN                      8 TRAVERST → RAVERS  
 9 TRAIL-CART → RAILCAR                      10 TRAVELLEST (Shakespeare) → RAVELLES  
 12 TROUGH-CLOSET → ROUGH CLOSE (Staffs)  
 7 UPAPALU (a) → PAPAL                      8 USHABTIU → SHABTI  
 6 WINDOW → INDO (usu Indo-)                  7 WHARROW → HARRO                      8 WRING-JAW → RINGJA  
 8 XENOPLAX (a) → ENOPLA (W2)                  9 XANTHONYX (W92-216) → ANTHONY  
 6 YAXLEY (also Cambs) → AXLE                  6 YEARLY → EARL                      6 YEASTY → EAST  
 8 YACHTERY → ACHTER (Pulliam)  
 9 ZUNDERERZ → UNDERER

### PALINDROMES (assume all in Palindromicon, except when stated)

- 6 AMAAMA → MAAM                      7 AKAJAKA → KAJAK                      7 ATERETA → TERET  
 8 AMASSAMA → MASSAM                      9 ANASASANA → NASASAN  
 6 BABBAB → ABBA  
 6 CABBAC → ABBA                      6 CANNAC → ANNA  
 6 DELLED → ELLE                      7 DRAKARD → RAKAR                      8 DREPPERD → REPPER  
 6 EKEEKE → KEEK                      6 EPEEPE → PEEP                      6 ESEESE → SEES  
 8 EEEEEEEE → EEEEEEE  
 6 FINNIF → INNI (OED)  
 6 GANNAG → ANNA                      6 GELLEG → ELLE                      8 GNIPPING → NIPPIN  
 6 HALLAH → ALLA                      6 HANNAH → ANNA                      7 HAZIZAH → AZIZA  
 8 HRRRRRRH → RRRRRR  
 7 IKAZAKI → KAZAK                      8 IRASSARI → RASSAR  
 6 KALLAK → ALLA                      7 KAYAYAK → AYAYA  
 6 LEMMEL → EMME                      7 LLEWELL → LEWEL  
 7 MURORUM (OED, Latin) → URORU 7 MUTATUM → UTATU                      9 MALAYALAM → ALAYALA  
 6 NELLEN → ELLE                      6 NOTTON → OTTO                      7 NENONEN → ENONE  
 6 ONOONO → NOON                      6 OTOOTO → TOOT                      8 OOCOOCO → OCOOCO  
 8 OOROORO → OROORO  
 7 PANANAP → ANANA                      9 PARAPARAP → ARAPARA  
 6 QARRAQ → ARRA                      6 QAZZAQ → AZZA  
 6 RELLER → ELLE                      7 ROTATOR → OTATO  
 6 SANNAS → ANNA                      6 SPOOPS → POOP                      6 STOOT → TOOT  
 7 S-LEVELS → LEVEL                      7 SULULUS → ULULU                      8 STERRETS (p) → TERRET  
 9 SHALALAHS → HALALAH  
 7 TRADART → RADAR                      8 TRENNERT → RENNER  
 6 USUUSU → SUUS                      7 UAGAGAU → AGAGA                      7 UDUDUDU → DUDUD  
 6 VELLE → ELLE                      7 VITATIV → ITATI  
 6 WALLAW → ALLA                      7 WOHOHOW (OED) → OHOHO

- 6 XANNAX → ANNA  
 7 XXXXXXXX → XXXXX (both OED)
- 6 YESSEY → ESSE  
 6 ZELLEZ → ELLE  
 7 ZZZZZZZZ → ZZZZZ
- 6 XEMMEX → EMME  
 7 YSAMASY → SAMAS  
 6 ZZZZZZZZ → ZZZZZ  
 8 ZZZZZZZZZZ → ZZZZZZZ
- 7 ZOONOOZ → OONOO  
 9 ZZZZZZZZZZ → ZZZZZZZZ

**REVERSE ONLY**

- 6 AHSALA ← LASH  
 6 ASRAMA ← MARS  
 6 ASSOTA ← TOSS  
 7 ARANULA ← LUNAR  
 7 ASSERTA (Pulliam) ← TRESS  
 9 ALLEMANIA ← INAMELL
- 6 BEDUMB ← MUDE  
 6 CYSTIC ← ITSY (TEA)  
 8 CROCONIC ← INOCOR (= amrinone lactate, TEA)
- 6 DAMMED ← EMMA  
 6 DEVOWD ← WOVE
- 6 EDNIWE ← WIND  
 6 ENROBE ← BORN  
 7 EDICULE ← LUCID  
 7 ENOLASE ← SALON  
 7 EROSIIVE ← VISOR  
 8 EDEN-LIKE ← KILNED
- 6 FARR-OF ← ORRA  
 6 GANING ← NINA  
 7 GYNNING ← NINNY  
 9 GALLETING ← NITELLA
- 6 HENOCH ← CONE  
 6 HYDITH ← TIDY  
 10 HOTTENROTH ← TORNETTO
- 6 IGNOSI ← SONG  
 6 ILLUPI ← PULL
- 6 JACOBJ ← BOCA  
 6 KASACK (W1) ← CASA  
 7 KORIACK ← CAIRO
- 6 LETULL ← LUTE  
 7 LOVE-ALL ← LAEVO  
 8 LADYGILL (S Lanark) ← LIGYDA
- 6 MEGRUM ← URGE  
 7 MORETUM ← UTERO
- 6 NAERUN ← UREA  
 6 NYRWAN ← AWRY  
 8 NEURODIN (S) ← IDORUE
- 6 OHTOMO ← MOTH  
 6 OSSIDO ← DISS
- 6 PRECIP ← ICER  
 6 RAMMER ← EMMA
- 6 ALLATA ← TALL  
 6 ASRAOA (= Wallichia, Palmae, monocot) ← OARS  
 6 ATAOGA ← GOAT  
 7 ARECINA (p) ← NICER  
 8 ALL AT SEA ← ESTALL  
 10 ASTROPORPA (a) ← PROPORTS  
 7 BETHUMB ← MUHTE  
 7 CAMMOCC ← COMMA
- 6 DECARD ← RACE  
 8 DELIVER'D (Shakespeare) ← REVILE  
 6 EFFUME ← MUFF  
 6 ESSOME ← MOSS  
 7 ELATIVE ← VITAL  
 7 ENOLATE ← TALON  
 7 ESURIVE ← VIRUS  
 9 EFFOLIATE ← TAIL-OFF  
 7 FASTOLF ← LOTSA  
 7 GAGGING ← NIGGA  
 7 GYPPIING ← NIPPY
- 6 HLIOTH ← TOIL  
 8 HERETOUGH ← GOTERE
- 6 ILLABI ← BALL  
 7 ISRAELI ← LEARS
- 6 KEDLOK ← OLDE
- 6 LOVELL ← LEVO  
 7 LYTTELL ← LETTY  
 8 LEAFFULL ← LUFFAE (a)
- 6 MOLSOM ← OSLO  
 8 MEDULLAM ← ALLUDE  
 6 NECNON ← ONCE  
 8 NAPERONN ← NOREPA (a)
- 6 OPSAGO (= Withania, Solanaceae, dicot) ← GASP  
 6 OTSEGO (also N Mich) ← GEST  
 8 PEDIPALP ← LAPIDE  
 6 REEPER ← EPEE
- 6 APSARA ← RASP  
 7 ADENOTA ← TONED  
 7 ASAYAMA ← MAYAS  
 8 ANACOLIA (p) ← ILOCAN
- 6 DEFILD ← LIFE  
 9 DESSIROND ← NORISSE  
 6 EMULGE ← GLUM  
 7 EDENITE ← TINED  
 7 ELLIPSE ← SPILL  
 7 ERESOPE ← POSER  
 7 EYECARE ← RACEY  
 9 ESTOILLEE ← ELLIOTS
- 7 GRECING ← NICER  
 8 GREGGING ← NIGGER
- 6 HOPYTH ← TYPO
- 6 ILLIGI (a) ← GILL  
 8 IERONIMI ← MINORE
- 6 KYNOCK ← CONY
- 6 LYDALL ← LADY
- 8 LESIONAL ← ANOISE  
 6 MYRIAM ← AIRY  
 8 MEGACOSM ← SOCAGE  
 6 NYLLAN ← ALLY  
 8 NAVATION ← OITAVA
- 8 ORELIANO ← NAILER  
 7 REDIMAR ← AMIDE

7 ROGATOR ← OTAGO	8 REGAGNER ← ENGAGE	8 RESUFFER ← EFFUSE
8 RETRACER ← ECARTE	9 RETINULAR ← ALUNITE	
6 SERIFS ← FIRE	6 SPIRITS ← TRIP	7 SECRETS ← TERCE
7 SLIP-UPS ← PUPIL	8 SEEDNESS ← SENDEE	8 SELINESS ← SENILE
8 STOLPERS ← REPLOT	9 SENATRESS ← SERTANE	9 SEROTINUS ← UNITORE
9 STRANGERS ← REGNART		
6 TESLET ← ELSE	6 TYRANT ← NARY	7 TTRACT ← CARTE
7 TYE-LIFT ← FILEY (also N Yorks)	8 TREK-CART ← RACKER	9 TESSERACT ← CARESSE
6 ULLUCU (Pulliam) ← CULL	6 UTFARU ← RAFT	
6 VACLAV ← ALCA	7 VAVILOV ← OLIVA	
6 WODROW ← ORDO	8 WESSELOW ← OLESSE	
6 YEARBY (Cleveland) ← BRAE	7 YAKKITY ← TIKKA	7 YTTERBY ← BRETT

## 2. Repeated "peels"

It is natural to ask if further peeling of like letters from each end (iteratively) would reveal another core word. In particular, staying with a minimum core of four letters, if we keep removing pairs of letters one at a time from the ends, how many words might be found? Note that we do not insist on finding a new word every time. In fact, about 250 words yielded words for at least two peelings.

Unfortunately, the champion is the word consisting of 43 Zs, which yields further words of 23, 17, 11, 9, and 7 Zs, for five successful peelings (and many unsuccessful ones). More interestingly, I found just one word which had three successful peelings, the square brackets indicating an unsuccessful peel (in general below, they represent non-words):

DEREGISTERED → [EREGISTERE] → REGISTER → EGISTE (personal name, OED) → GIST. I call this type FFF, in line with previous terminology, because three strips each reveal a Forward word.

The remaining words only endure two successful strips, so are of types FF, PP etc. A small selection follows. Regardless of any impression given by the selection, types BB and BF are rare. RB, RR and RF are not quite so rare, yet I found ten or fewer examples of each. These directions are always with respect to the original word.

Most of the words I found were of 8 or 9 letters, though some were longer: the latter show a few examples of unsuccessful strips, such as this:

RENCHAINER → ENCHAINE → [NCHAIN] → CHAI, This is of type FF.

### Type BB

REUELLER → EUELLE + ELLEUE. either → UELL + LLEU (W2)

STEWARTS → TEWART + TRAWET. either → EWAR + RAWE

### Type BF

ADELAIDA → DELAID + DIALED. DELAID → ELAI

DEVELLED → EVELLE + ELLEVE. EVELLE → VELL. REVELLER has the same sequence

### Type RB

RELESSER → ESSELE. [ELESSE] → LESS + SSEL

REPORTER → ETROPE. [EPORTE] → PORT + TROP. DEPORTED is similar.

RESILIER → ESILIE. [ESILIE] → SILI + ILIS      RETRACER → ECARTE. [ETRACE] → TRAC + CART  
 SHAMIANAHS → [HAMIANAH] → ANAIMA → MIAN + NAIM

**Type RR**

RENNEFER (a) → EFENNE. [ENNEFE] → FENN      RESSIMER → EMISSE. [ESSIME] → MISS  
 SETIREMES → EMERITE. [ETIREME] → MERIT

**Type RF**

DELETED → ETTELE. [ELETTE] → LETT. RELETTER is similar.  
 REGAGNER → ENGAGE. [EGAGNE] → GAGN      REROLLER → ELLORE. [EROLLE] → ROLL  
 RESUFFER → EFFUSE. [ESUFFE] → SUFF      REWINDER → EDNIWE. [EWINDE] → WIND  
 SIGILLIS → ILLIGI (a). [IGILLI] → GILL      SNEDDINS → NIDDEN. [NEDDIN] → EDDI  
 STATTITS → TIT-TAT. [TATTIT] → ATTI

**Type FR**

NO ILLUSION (B) → [OILLUSIO] → ILLUSI → SULL      RENGAGER → ENGAGE → GAGN  
 SENTIRES → ENTIRE → RIT'N      SERRATES → ERRATE → TARR  
 SILLABIS → ILLABI → BALL      STAGGARTS → TAGGART (OSPD) → RAGGA

**Type FB**

RELAPSER → ELAPSE → LAPS + SPAL      RESPIRER → ESPIRE → SPIR + RIPS  
 RESTATER → ESTATE → STAT + TATS      RESTORER → ESTORE → STOR + ROTS  
 SATROPAS → ATROPA → TROP + PORT      SEWELLES → EWELLE → WELL + LLEW  
 SWALLOWS → WALLOW → ALLO + OLLA

**Type PP**

GWALLAWG → WALLAW → ALLA  
 KINNIK-KINNIK → [INNIKKINNI] → [NNIKKINN] → NIKKIN → IKKI  
 SEE-SEE-SEES → [ESEESEE] → ESEESE → SEES      SHADDAHS → HADDAH → ADDA  
 SHALALAHS → HALALAH → ALALA      SIMILLIMIS → [IMILLIMI] → MILLIM → ILLI  
 SNELLENS → NELLEN → ELLE. STELLETS also ends ELLE  
 TATTARRATTAT → [TTARRATT] → TARRAT → ARRA

**Type FF**

DEBELLED → EBELLE → BELL. REBELLER, SABELLERS also give BELL  
 DEDUCATED → EDUCATE → DUCAT      DELIMITED → ELIMITE (TEA, drug) → LIMIT  
 DEMITTED → EMITTE → MITT      DEPILATED → EPILATE → PILAT  
 DESPENSED → ESPENSE → SPENS      DESPICED → ESPICE → SPIC  
 DESPORTED → ESPORTE → SPORT      DESPRAYSED → [ESPRAYSE] → SPRAYS → PRAY  
 DIODONTOID → [IODONTOI] → ODONTO (Longman) → DON'T  
 ETHERATE → THERAT → HERA  
 LETERNEL → ETERNE → TERN. SATERNAS, SETERNES also give TERN.  
 MANDREAM → ANDREA → NDRE      REGISTER → EGISTE → GIST  
 REMOTIVER → EMOTIVE → MOTIV      REQUITER → EQUITE → QUIT  
 REVERSER → EVERSE → VERS      REVISITER → EVISITE (W2) → VISIT  
 REVOLUTER → EVOLUTE → VOLUT      SESTERNES → ESTERNE → STERN  
 STRUMPETS → TRUMPET → RUMPE      SUSPICASUS → [USPICASU] → SPICAS → PICA

It may be possible to derive other words from some of the above sequences by using some of the reverse words as new starting points, to form a tree: however, this would not conform the concept of successive peeling from one root word.

### 3. Removing multiple letters from each end

For this, the rules are similar to those of the Kickshaws challenge, except that we may remove an identical pair, triplet, etc of letters from each end. In all, these result in about one-sixth of the results obtained from single-letter removal. One major reason is the 4-letter minimum core: removing five letters from each end means we are restricted to 14-letter words and longer. At the shortest length (8 letters minimum), there are plenty of examples, with a lack only of source words beginning F, J, Q, W and X. For the sake of space, we ignore initial letters of the source words (though most initial letters of core words are given in the 2x2 and 2x3 lists). We also ignore the types B/F/R/P because there are many examples below. Many of type B in the lists are presented as type F or R only, because of the obscurity of the other word. The selection of examples is based on familiarity of the core words.

Palindromic examples exist: eg for 2x2 AMMA ↔ TEAMMATE among many; for 2x3 MAKAM ↔ AKAMAKAMAKA; but 2x4 onwards produce simply the all-Z words.

The core words which appear most often are:

**Remove 2x2 letters - most common core words appear 3 times**

ARIS & SIRA: DESIRADE (Guadeloupe, W Indies), HEARISHE, TSARISTS

CHES: ENCHESEN, ISCHESIS (S), SECHESSE

CNES: SECNESSE, ENSENCEN, ESSENCES

ETAR & RATE: KARATEKA, LYRATELY, STRATEST

Example of a longer core but fewer occurrences: STAND: ANSTANDAN, TO STAND TO

**Remove 2x3 letters - most common core word appear 3 times**

AFTER: DAY AFTER DAY, MAN AFTER MAN, ONE AFTER ONE

**Remove 2x4 letters - most common core words appear 5 and 6 times**

UPON: HARM UPON HARM, LINE-UPON-LINE, LUFF UPON LUFF, PILE UPON PILE, SALT UPON SALT, WHIP-UPON-WHIP

AFTER is similar, appearing in phrases flanked by four letters.

Slightly more subtle is ANDRE: FLOW AND REFLOW, FLUX AND REFLUX, PASS AND REPASS. Other multiple occurrences of core words are similarly of little merit. Removing 2x5 letters or 2x6 letters leads to similarly boring results, and that was the end of the search.

In the following lists, the core words may read backwards or forwards: often they read in both directions, eg DAOR and ROAD, but in this case ROAD is not mentioned because it occurs with that meaning in the source word or phrase. Many more questions present themselves, such as: is there really evil in Leeville, and is it good to live there?

DNE = A Dictionary of New English 1963-1972 by Barnhart Steinmetz and Barnhart. Longmans 1973.

**Remove 2x2 letters (selection from over 2000)**

ABLE ← STABLEST	ACES ← RESECARE	ACNE ← THENCATH	ACOL ← RELOCARE
AGGIE → STAGGIEST (OSPD)		ALLO → CHALLOCH (Dum & Gall)	
ANDRE → STAND-REST	ANIMES ← RESEMINARE	ANTI → MEANTIME	ARCHIE → STARCHIEST
ATLAS ← RESALTARE	AVON ← RENOVARE	BALD → RYBALDRY	BATS ← LESTABLE
BAUD → RIBAUDRI	BAWD → RYBAWDRI	BRACE ← ONE-CARBON (or 2?)	
BUTT → UNBUTTUN	CALL ← CALLACCA, also → ESCALLES		CAROL → ESCAROLES
CENT → RECENTRE	CERTA → INCERTAIN (opposites)		CHAP → ESCHAPES
CHAR → ISCHARIS	CHIN → ESCHINES	CRIB → ESCRIBES	CROW → ESCROWES



CUBA → RECUBARE	DAIL → ESDAILES	DANA → REDANARE	DART ← ESTRADES
DEARD ← ANDRAEDAN, also ONDRAEDON		DEWAR ← STRAWEDST	DIRT ← ENTRIDEN
DISCO → PEDISCOPE	DOTS ← ON-STODON	EDDIE ← STEDDIEST	EDNA ← STANDEST
ELAND → ICELANDIC	ELBA ← STABLEST	ENTER ← THRETNETH	EPEE ← STEEPEST
EPIC ← RECIPERE	EVIL →, LIVE ← LEEVILLE (SE La)		FLUE → REFLUERE (Ch)
FRING → REFRINGRE	GAGA → MEGAGAME (DNE)		GALA → REGALARE
GALE → MEGALEME	GENERA → REGENERARE	GENT → URGENTUR	GERM → ANGERMAN
GIRT ← ESTRIGES	GLIA → TAGLIATA	GNOMEN ← ERNEMONGER	
GO METRIC (Ch) → ALGOMETRICAL (W2)		HAFT ← ANTFAHAN, also ENTFAHEN	
HAND → ALHANDAL	HANS → ENHANSEN	IDOL ← ALLODIAL	IGNORES → SEIGNORESSE
IMAN ← NONAMINO (W2)	INCA → THINCATH	INCH → THINCHTH	INKY → THINKYTH
INTRO → SAINTROSA (Minn)		IRBM ← CAMBRICA	IRON ← TENORITE
ITEM ← LAMETILA (a)	JAMAR → CAJAMARCA (Department, N Peru)		KING → LIKINGLI
KNOW → UNKNOWUN	LAND → ISLANDIS	LEAR ← ISRAELIS	
LIAM ← ISMAILIS (see MAIL)		LIFE ← THE FILTH (B = police)	
LINE ← LAENILLA (a)	LINES → SELINESSE	LITER → ALLITERAL	LIVER → DELIVERDE
LUCID ← AEDICULAE (Pulliam)		MAIL → ISMAILIS, also LEMAILLE	
MALI → NEMALINE	MANDY → REMANDYRE	MANE → REMANERE	MAPS ← ERSPAMER
MATING → ERMATINGER	MEDIA → REMEDIARE	MEND → ESMENDES	MILL → ARMILLAR
NABS ← DESBANDE	NELL ← GALLENGA	NERD ← GEDRENGE	NESS ← DESSENDE
NETS ← DISTENDI	NODES ← ESSEDONES (W2)		NOMO → SYNOMOSY
NORA → NANORANA (a)	NOVA → RENOVARE	NOWT ← ENTWONEN	ORAL ← MALAROMA (W2)
OVEN → ANOVENAN	PACT → AEPACTAE	PARA → REPARARE	
PATS ← ANSTAPAN, also LESTAPLE		PAUL → ESPAULES	PERT ← ESTREPES
PETA → REPETARE, also TEPETATE (W2)		PETE → REPETERE (Ch)	PLUM → DEPLUMDE
POND → REPONDRE	POST → EMPOSTEM	PRIME → REPRIMERE	QUIRE → REQUIRERE (Ch)
QUORE → AEQUOREAE (a)	RAND → ERRANDER	RANGE → STRANGEST, also THRANGETH (thrang)	
RANT → ERRANTER	RATE → KARATEKA, LYRATELY, STRATEST		RICE → THRICETH
RICK → ERRICKER	RIDE → STRIDEST	RIPS ← INSPIRIN	ROLF ← DEFLOUDE
ROMA ← SEA-MORSE	ROTS ← ENSTOREN	RUBRA ← STAR-BURST	RUCK → STRUCKST
RUMBLE → THRUMBLETH	SCRIBE → DESCRIBEDE	SELL ← BYLLESBY, also ESSELLES	
SELMA ← SEAMLESSE	SENILE ← SEELINESSE	SEWER ← SHREWESSH	SIDE → RESIDERE
SIGN → DESIGNDE	SILO → BASILOBA (a)	SIPS ← DESPISDE	
SIRE ← CHERISCH, also DESIREDE		SNAG ← ERGANSER	SPAM → ERSPAMER
SPICE → RESPICERE	STAB → LESTABLE	STAMEN → TESTAMENTE	STRIFE → RASTRIFERA (a)
SYNTH ← SEHTNYSSE	TACK → ESTACKES	TANIT ← OSTINATOS	TAPER ← HEREPATHE
TARE ← OPERA TOP	TARGET ← INTEGRATIN	TATI ← EDITATED, also USITATUS (Ch)	
TEAT → ESTEATES	TEMPER → ATTEMPERAT	TEST → ATTESTAT, also INTESTIN	
THESIS → ESTHESISSES (OSPD)		THIN → GETHINGE	THIS → ANTHISAN
THUS → AETHUSAE (p), also ENTHUSEN		TINE → RETINERE	TORQUE → RETORQUERE
TRAIN → ESTRAINES	TREE → T'STREETTS	TRIG → ESTRIGES	TRUG ← ENGURTEN
UNIC ← LACINULA	UNIT → HAUNITHA	UNTIE → STUNTIEST (stunty)	
VASA → REVASARE	VERSA → REVERSARE	VESSEL → LEVESSELLE	
VEST → INVEST IN, also REVESTRE		VICKI → SIVICKISI (a)	VINCE → REVINCERE
WISE → REVISERE	WARD ← TO DRAW TO	WERE ← THEREWTH	WONK ← UNKNOWUN
YALI ← AHILAYAH	YNCE → THYNCETH	YURTS ← DESTROYDE	ZACH → KAZACHKA
ZOLA ← IEALOZIE			

**Remove 2x3 letters**

ARGOT ← PHYTOGRAPHY	ATAN → TARATANTAR	BORDE → REDBORDERED
CHENI (a) → TESCHENITES	CHOLE → PSYCHOLEPSY	CHONI → CINCHONICIN (Pulliam)
CINO → DISCINODIS (a)	COVE → RED-COVERED (Ch)	DALI → ILAD ← DAEDALIDAE (W2)
DRET ← AMSTERDAMS	DUTT ← INETTUDINE	ERGO → UNDERGROUND
FFAR ← INGRAFFING	FIAR ← INGRAIFING (ingraif)	FORAN → EYE-FOR-AN-EYE
GNIT ← POTTING-POT	GREGA → CONGREGACON	
ITEM ← KOSMETIKOS (Ch, Greek)	IWER ← THEREWITHE	JAAJ ↔ AJAJAJAJA (both Pcon)
KALA → SHAKALASHA	LAKH → KHALAKHKHA (W2)	LOST → ANALOSTANA (a)
MELBA ← ENTABLEMENT	MERE ← ENTEREMENT	MERY ← ENTYREMENT
NICOL → LES NICOLLES (Guernsey)	NOIS ← SESSIONSES	
OGRE ← UNDERGROUND (sic, OED worm)		OLINE → GASOLINE GAS
OWRE ← UNDERWOUND (W92-242)	PESTA → TEMPESTATEM	PICA → SUSPICASUS
PITY → HOPPITY-HOP	QUEL → LESQUELLES (OED, Fr)	RAIL → INGRAILING
RAIN → INGRAINING	RAKA → SHIRAKASHI (W2)	ROCHE → MICROCHEMIC
ROSS → INGROSSING	SHEEP → RIN-SHEEP-RIN (or run/run)	SION → SESSIONSES
TORY → NESTORYNES	TROUSE → RED-TROUSERED	TURIN → GESTURINGES
VOOR ← INGROOVING (ingroove)	WEDI → SCHWEDISCH (Ger)	WEET → ENSWEETENS
WHISKE → RED-WHISKERED (a)	YALP ← ALL-PLAY-ALL	YWER ← THERE-WYTHE

**Remove 2x4 letters**

ANAMEL ← GENTLEMAN-AGENT (W2)		AWAK ← ISHIKAWAISHI
CYTE ← LICKETY-CLICK	DAOR ← RAIL-ROAD-RAIL	
ETTY → BUMPETTY-BUMP, → YACKETTY-YACK		FOETA ← AMYLATE OF AMYL
GNIP ← PING-PING-PING	GNIT ← TING-TING-TING	KAWA → ISHIKAWAISHI
KOOT ← TOOK-TOOK-TOOK	LIAS ← STAYSAIL-STAY	LINGS → TICKLING-STICK
MORF ← HOME-FROM-HOME, ← LIMB FROM LIMB (B), ← LITH FROM LITH		
NEET ← NINETEEN-NINE	NOME → TRIANOMETRIA	OELE → MENTO-ELEMENT
PETY → CLIPPETY-CLIP	REPS ← CENTS-PER-CENT	REVE ← EVER-EVER-EVER
SPER → CENTS-PER-CENT (see REPS)	TEEP ← PEET-PEET-PEET (W80-251)	TOOP ← POOT-POOT-POOT (CSD)
TRON ← WESTNORTWEST	WELLFIELD (Lancs etc) → FAREWELL FIELDFARE	

**Remove 2x5 letters**

ALED ← , DELA →, CREME DE LA CREME		
AROF ← FORA →, TOOTH FOR A TOOTH (B)		
ATTEN → DANCE ATTENDANCE	CARE ← COUNTER-ACCOUNT	
EASTBY (N Yorks) → NORTHEAST-BY-NORTH (also SOUTHEAST-BY-SOUTH)		
ENOB ← WHALEBONE-WHALE	ESSEL ← SPACELESSE-SPACE	FLAH ← PENNY-HALF-PENNY
HYDR → OXIDE-HYDROXIDE	I-NESS → PATCHINESS PATCH	KRAP ← CROSSPARK CROSS (Devon)
MODEL ← TWANGLEDOM TWANG	NETTA ← DANCE ATTENDANCE (Ch)	
SEMIT ← THREE-TIMES-THREE	SSEL ← STATELESS STATE	STEEM ← GREEK MEETS GREEK
TODIS → AGREE TO DISAGREE (B)	WEST-BY → NORTHWEST-BY-NORTH (also SOUTHWEST-BY-SOUTH)	
YTRE ← CLICKERTY-CLICK		

**Remove 2x6 letters**

AND'T → HITHER AND THITHER  
 NEGO ← OGEN → FIBRINOGENFIBRIN (S, phrase?)

2x7 has nothing interesting, but 2x8 has EVAH ← PATIENCE! HAVE PATIENCE!