

# ABSTEMIOUS, PRIME, FIBONACCI, SQUARE WORDS

REX GOOCH

Welwyn, Herts, England

## INTRODUCTION

Firstly, I should like to apologize in advance should anyone be able to point out that braver efforts than mine have appeared in Word Ways before. Still, it is not without interest to compare the state of knowledge in (mainly) 1972 with that of today. The common theme among these types of words is that only certain letters are permitted, though not every permitted letter must be used, and more than one copy of each letter is permitted. These words are relatively scarce--roughly one in every thousand words or fewer. Some readers may wish to glance first at the table in the Summary at the end to get an overview. I have indicated hyphens for some words only.

The words themselves all appear in the Oxford English Dictionary, Webster's New International Dictionary of the English Language (Second Edition), the Official Scrabble Players Dictionary, The Complete Word Game Dictionary by Tom Pulliam and Gordon Carruth, or Stedman's Medical Dictionary. Other references are indicated by the following codes:

- AAE California University Publications in American Archeology and Ethnology 16.234
- AmHer American Heritage Dictionary
- ATHS American Thesaurus of Slang
- BIW Wordsworth Book of Intriguing Words
- BT Bloomsbury Thesaurus
- Ch The Chambers Dictionary
- CIWL C.F. and F.M. Vöglein, Classification and Index of World's Languages (1977)
- CSD Chambers Scots Dictionary by Alexander Warrack
- DAW Dictionary of Archaic Words by James Orchard Halliwell
- DCV Dictionary of Cebuano Visayan (Philippines)
- DJE Dictionary of Jamaican English
- DSU Eric Partridge, Dictionary of Slang and Unconventional Words
- EDD English Dialect Dictionary
- EDFC Everymans Dictionary of Fictional Characters by William Freeman
- F&W Funk and Wagnalls New Standard
- IPFB Quentin Crewe's International Pocket Food Book by Michael Beazley
- Lo Longmans Dictionary
- MI Musical Instruments: A Comprehensive Dictionary by Sibyl Marcuse

NZ Nomenclator Zoologicus  
 PCon The Palindromicon by Jeff Grant  
 OED vf Oxford English Dictionary variant form  
 TCD The Century Dictionary  
 TNWD The New Welsh Dictionary by Evans and Thomas  
 Web 3 Webster's Third New International Dictionary  
 Wyy-ppp Word Ways magazine, year and page (W? reference lost)

## ABSTEMIOUS WORDS

These are facetiously named, for they are words with no vowels, yet the very word used to describe them contains the five normal vowels in order (as, indeed, in FACETIOUSLY!). A subset of abstemious words also omits any Y, which is often used as a vowel. We might call these penta-abstemious and hexa-abstemious respectively, or even pentabstemious and hexabstemious (the Latin-based sexabstemious invokes unwelcome thoughts). A subset of the words with no AEIOUY also omits the W when used as a vowel (as in Welsh). What then remains are mainly abbreviations and acronyms. Nevertheless, there are a few interesting words amongst the various categories.

### Abstemious Words With No Y (Hexabstemious)

The record length for such a word is stated in W72-108 to be six, giving the single example CRWTHS. I have included a selection of "words" of lengths four and five that I found, along with all longer words. Such words constitute a little over 0.03% of all words of length four or more. I thoughtfully omit the entire Hebrew, Arabic, Farsi and other vowelless vocabularies! Secret examples include KGB and NKVD, but not CIA or NSA.

#### Length 4 (from 315)

BBBC (Ch)	BBFC (Ch)	BLDG	BLVD	BRRH (vf)	BRRR
BRWK (vf)	BVMS	CLLR (Ch, I was one)		CMDR (Ch)	CRWD
CWMS	CWRT (place)	DDVP (Web addendum)		DHSS (Ch)	DRWN (vf)
FRCP, FRCS, FRGS etc		FRWT (BIW)	FTHM (Ch)	GCHQ (secret)	
GMBH (Ch, Company type)		HWNT	HWSZ	JHVH (forbidden Hebrew name)	
KCMG (etc: honour)		KMPS (etc: AmHer)		MMMM (Roget)	MPHM (vf)
MSST (vf)	MTBF (Ch)	MVDS (Ch)	MWCH (vf)	MWFF (vf)	MWNK
NKVD (Soviet intelligence)		PFFT	PHTT (vf)	PPPP (music)	PRWS
PSHT	PSST	PWLL	PWNT	PWTS (Web3)	RCMP
RHMS (Web3)	RNVR	RSPB	RSVP	RWCH	SCHW
SCLC	SDLP	SHHH (W81-155)	SHTG (Ch)	SLBM	SLCM
SMMT	SNCC	SNCF	SNWK (vf)	SPCK	SPQR
SRBC	SRMN	SSBN	SSRC	SWCH	SWLC (vf)
SWLD	SWRD (vf)	SWTH	TBSP	TCDD	TCHK (vf)
TCHT (vf)	TCNQ	THRW	THWS (vf)	TPRW	TSCK (vf)
TSPS (Ch)	TTFN	TWCH	TWNG (vf)	TWRN (vf)	TWTH (vf)
VDQS	VLCC	VLDL	VMFF (vf)	VSSH (vf)	VVLL (Ch)
WLCN (vf)	WRHT (vf)	WRNS	WRST (vf)	WRTH (vf)	WRVS
WSCH (vf)	WTWT (vf)	XWLD	ZZZZ (ATHS)		





LLYN	LYCH	LYDD (place)	LYMB	LYMM (vf, also place)	
LYNX	LYYN	MWDY (vf)	MYCH	MYCK	MYLL
MYLN	MYRR	MYST	MYTH	NWYN	NYST
PHYZ	PLYT	PNYX	PRYS	PTYX (Ch)	PWYR
PYGG	PYNT	PYTT	QWHY (vf)	RHYD (place)	RHYL (place)
RHYS (Ch)	RWLY	RWYN	RYFT	RYND	RYNT
RYYT	SCRY	SCYT	SHYT (vf)	SKYR	SLYP
SPRY	STRY	STYX	SVYN (vf)	SWYK	SWYR
SYLK (vf)	SYNC	SYRT	SYYK	THYG	THYH
THYS (Ch)	TRYP	TRYT	TWYS	TYMP	TYND
TYPP	TYPY	VDYR (vf)	VRYT	VYCH	VYFF
VYNY	VYYS (vf)	WGLY (vf)	WHYN	WHYS	WHYT
WRYK (vf)	WYCH	WYCK (vfa and place)	WYNN	WYFF	WYLD
WYLW	WYLY	WYND	YDYT	WYRT	WYSS
WYYS	XYST	YCCH	YMPN	YGGR (Ch)	YHWH (Ch)
YKYT	YLLS	YLYK	YYFT (vf)	YNYS (place)	YSSH
YTCH	YVYL	YWYS		ZYXT	

**Length 5** (from 766 words)

BLYMY	BLYTH (vf and place)		BRYNT	BYRST	CHYLY
CLYNG	CRYPT	CRYST	CWYRN (vf)	CYSTS	CYVYL (vf)
DRWRY	DRYLY	DRYTH	DYSYN	DYSS	FLYBY
FRYST	FRYTH (vf and location near me)		FYLTH (Ch)	GHYLL	GLYNN
GLYPH	GRYLL (Ch)	GRYYP (vf)	GYNNY	GYPY	GYPY
GYYST (vf)	HLYNN (Ch)	HRYCG (Ch)	HWYLL (vf)	HYMNS	HYNNY
HYRST	HYZYD (Med)	KLYFT (Ch)	KNYLL	KYGHY	KYZYL
LWGYT (vf)	LYCHT	LYMPH	LYNCH	LYYST (vf)	MWRYT (vf)
MYRRH	MYTHS	NYGHY	NYMPH	NYNTY (vf)	PHYNX
PHYSY	PRYCK	PRYSS	PSYCH	PWLLY (vf)	PWNYS (vf)
PWYND	PYGMY	PYTHY	QWHYL (vf)	QWYTT (vf)	RHYDD (place)
RHYMY	RHYND (vf and place)		RYFLY	RYGHY (vf)	RYVYN
SCHYL	SCHYR	SCHYT (vf)	SCKYN (vf)	SCYLD	SCYTH
SHYLY	SKYLL	SKYND	SLYDD (vf)	SLYLY	SMYTH
SNYBB (vf)	SPRYT (vf)	SPYLT	SPYRR	SQWYR (vf)	SSRYN (vf)
STRYD	STYLY	STYMY	STYNK (vf)	STYTH	SWMYR
SWYCH	SYCHT	SYLPH	SYNCH	SYNCS	SYNTH
SYTCH (vf)	THRYN	THYLL	THYMY	THYNN	TRYST
TRYYS	TWYCH	TWYLL	TWYYS	TYCHT	TYMYR
TYWYN (place)	VGGLY (vf)	VYCHT	VYTCH	WHYCH	WHYDD (vf)
WHYTT	WRYLY	WYCCH	WYLLY	WYRCH	WYTCH
XYLYL	XYSTS	YCHYN (vf)	YDYLL (vf)	YFRYD	YGYLD
YHYNG (vf)	YKNYT	YLYCH	YLYFT	YMYNT	YTWYN
ZYXST	ZZYZX (Town, US)		ZZYZZ (Pcon)		

**Length 6** (from 454 words)

BLYSSH (vf)	BYRKYN	BYSZYN	CHRYST (vf)	CHYMNY (vf)	CRYPTS
CYNDYR	CYNWYD (place)	CYSTYL	DRY-FLY	DYRKYN (vf)	FLYBYS
FLYSCH	FRYSKY (vf)	FYRRYS	FYXYLL	GHYLLS	GLYCYL
GLYKYS (Ch)	GLYPHS	GRYGHY	GYGYLL	GYLMYR	GYRTHY



HRYGGR (Ch)	HYDRYL (Ch)	HYGHTH	KHLYST (vf)	KLYFFT	KNYGHT (vf)
KYGHTH	KYTLYN	LYDDYR	LYMPHY	LYNGBY	LYSYLS
LYTTYN	MYCHTY (vf)	MYDRYF (vf)	MYRRHS	MYRRHY	MYRTLY
NYMPHS	NYRVYL	PHYSYK	PHYTYL	PLYCHT	PRYGHT
PSYCHS	PWDYLL	PYRRYL	PYSSYD (vf)	QWYGHT (vf)	RHYTHM
RYCHLY (vf)	RYMPYL (vf)	SCHYLD	SCHYTZ	SCLYNK (vf)	SCRYBB (Ch)
SHRYFT (vf)	SKYRBY	SLYTHY (vf)	SMYDDY	SPHYNX (vf)	SPRYLY
SPYCST (vf)	SQWYFT (vf)	SSRYFT (vf)	STRYCH	STRYNT	STWNYS
STYNCH	STYRYL	SWYCHT	SYKYLL	SYLPHS	SYLPHY
SYLYPP	SYNCHS	SYPRYS	SYZYG	THRYDD (vf)	THRYLL
THRYNG	THRYYS (vf)	THMYL	TRYSTS	TRYSTY	TRYWTH (vf)
TRYYST	TWYFYL	TWYNCH	TYDDYN	TYKYLL	TYLWCH (place)
TYMMYR	TYNDWR (place)	TYXHYL	VLYCCH (vf)	VRCHYN (vf)	VYCKYR
VYRNWY (BT)	VYSYTY (vf)	WHYDYR	WHYTHY	WRYGHT	WYRKYN
WYSNYT	WYTYNG	XYLLYX (UK Ltd)		XYLYLS	YBLYND
YPYGHT	YRYSSH	YSSYNG (vf)	YYLDYD	ZYZZYX (NZ)	

**Length 7** (from 187 words)

BLYTHLY (vf)	BYRNYST	CHYNCHY (vf)	CRYMYCH (place)	CRYMYLL
CYSTYLS	CYTYNG	CYTYZYN (vf)	DYFFRYN (place)	DYSTYLL (vf)
FLYTTYN (vf)	FYLBYRD (vf)	FYSCHYN (vf)	GLYCYLS	GLYNDWR (place)
GLYSSYN	GYPSYFY	GYPSYRY	HRYGGTH (Ch)	KHLYSTS (vf)
KYNDLYN (vf)	LLYWYDD (TNWD)	LYTTYLL (vf)	MYSTYRY (vf)	NYGHTLY (vf)
NYMPHLY	NYTHYNG	PHYTYLS	PRYKKYN (vf)	PYLGRYM
QYRGHYZ (Web3)	QYRQHYZ (W72-108)		RHYTHMS	RYPPYLL (vf)
RYYNCYN (vf)	SCHRYFT (vf)	SCHYVYR	SCQWYRT (vf)	SHYLYNG
SKYRWYT	SPRYGHT (vf)	SQWYNSY (vf)	STRYKLY	STYNYLL (place)
STYPPYL	SWFFRYD (place)	SYCHDYN (place)	SYCHTYN (place)	SYDLYNG
SYLVYRN	SYNYGHT	THRYFFT (vf)	THWNDYR	TRYWMPH
TYCRWYN (place)	TYDYNGS (vf)	VMTHYNK (vf)	VPRYCHT (vf)	VYSYBLY (vf)
WHYSHLY	WRYMPYL (vf)	WYLDYNG	WYSTYLL	YCLYPYD
YMYDDYS	YMYNSYD	YSTYKYD		

**Length 8** (from 74 words)

BRYNGWYN (place)	BYRYNNYN	CRYMMYCH (place)	DRYSLWYN (place)	DRYSNYNG
DYSTYNCT (vf)	FYYRYRYN (The Century Dict)		GWYNFRYN (place)	KYRYMYRY
KYTYLYNG	LLYNCLYS (place)	LYNTTYLL (vf)	MWRTHRYS	MYNYSTYR (vf)
PYGGYSNY	QVYTCHYN (vf)	QWHYKKYN (vf)	RYBSCHYN (vf)	SCHYTTYL
SHYRLYNG (vf)	STRYNCHT	STRYNGTH	STYRLYNG	SWYNYSTY (vf)
SYDLYNGS	SYMPHYSY	THRYFFYN (vf)	THYMBYLL	THYXTYLL
TWYLYGHT (vf)	WHRYTTYN (vf)	WRYMPLYD (vf)	WYRMCYNN (vf)	WYSSLYCH (vf)
YNYSYBWL (place)				

**Length 9**

BWLCHGWYN (?)	DYSCYVYRS (?)	DYSSYMYLS (?)	DYSSYVYRS (?)	DYSTYLLST (?)
DYSTYNCTS (?)	DYSYVYRST (?)	GRYNSTYNG (DAW)		LYGHTNYNG (vf)
MYGHTTYST (vf)	MYSCHYVYS (vf)	PRYMPRYNT (vf)	RHYDYMWYN (?)	SCHYNGYLL (vf)
SCRYMPPYS	SCYRMYSSH	SKRYSSMYS (vf)	SLYGHYLY (vf)	SPLYNTYNG (vf)
SPYTWYSLY (vf)	STRYNKYLL (vf)	SWYFFVYLL (vf)	SWYNSHYRD (vf)	THRYDDYTH (vf)
THRYTHYNG (vf)	TSRKTSRYR (place, AAE)		TYNSYLLYN	



**Length 10**

BRYGYRDYLL	CWMYSTWYTH (place)	DYSCYVYRST (?)	DYSSYMYLST (?)
DYSSYVYRST (?)	LLWYNDYRYS (place)	MYNSTRYLSY (vf)	SLYPSTRYNG (vf)
STRYPPLYNG (vf)			

**Length 11**

BWLCHYMYRDD (place)	GLYNDYFRDWY (place)	SWYNGYLLYNG (vf)	TWYNDYLLYNG (vf)
---------------------	---------------------	------------------	------------------

**Length 12**

MYNYDDYSLWYN (F&W)	YSBYTYCYNFYN (place)
--------------------	----------------------

**Length 13**

YSBYTYYSTWYTH (place)
-----------------------

**Length 18**

GRYFFYGRYFFYGRYFFS (Finnegan's Wake)
--------------------------------------

**PRIME WORDS**

Murray Pearce was credited in W72-051 with the invention of prime words, by which is meant words consisting only of letters occupying a prime position in the alphabet (BCEGKM QS W, at positions 2,3,5,7,11,13,17,19,23). Actually, his definition also included A, which I omit on the basis that 1 is not a prime. He gave three examples with an A, plus KEG, and asked for the longest prime word. In W72-108, Darryl Francis produced a number of words of length eight, and two plurals of length ten (A/EMBASSAGES), but all his words included an A. Perhaps I should call mine "purely prime" words! These words are a little more common than the hexabstemious words above, so the inclusion of the A would greatly expand the list. I present a selection of the shorter ones, and all the longer ones I found.

**Length 4 (from 125)**

BEBE	BECE (Ch)	BECK	BEEB	BEEK	BEEM
BEES	BEGS	BEKE	BEME	BESE	BESS
BEWE	CECE	CEEM	CEES	CEGB (Central Elec Gen Bd)	
CEGE	CEME	CESE	CESS	CEWE	CWMS
EBBE (vf)	EBBS	ECCE	ECKE (Ch)	ECKS (Med)	EKKS (pl.)
EES E	EGGE	EGGS	EKES	EMBE	EMES
EMME	ESES	ESSE	EWES	GCMG (Ch, decoration & KCMG)	
GCSE (Ch, public exam)		GECK	GEEK	GEES	GEGG
GEMM	GEMS	GESC (Ch)	GESE (Ch)	GESS	GEWE
KEBB	KECK	KEEK	KEEM	KEES (Ch)	KEGS
KEKE	KEMB	KEME	KESK	KEWE	MECK
MEEK	MEES	MEGS	MEKE	MEME	MEMS
MESE	MESS	MEWE	MEWS	MMES (Ch)	MSEC
SCEG	SCEW	SCWE	SECE	SECG (vf)	SECK
SECS	SEEK	SEEM	SEES	SEEW	SEGE
SEGG	SEKE	SEKK	SEMB	SEME	SEQQ (Ch)

SESE	SESS	SEWE	SEWS	SKEE	SKEG
SKEM	SKEW	SKWE	SMEC	SMEE	SMEW
SWEB	SWEE	SWEM	SWME	WEBB	WEBS
WECG (Ch)	WECK	WEEK	WEEM	WEES	WEGG
WEKE	WEMB	WEME	WEMS	WESE	WESS
WEWE					

**Length 5 (from 79)**

BECKE (Ch)	BECKS	BEEBE (EDFC)	BEEKE	BEGEM	BEGGS (Med)
BEKKE	BEMEW	BESEE	BESEM	BESEW	BESME
BMEWS (Ch)	CEESE	CEGGE	CESSE	EMCEE	EMMEW
ESSEE	ESSES	ESSEW	GECKS	GEEKS	GEESE
GEGGE	GEMEW	GEMME	GEMSE (Ch)	GESEM	GESSE
KECKS	KEEKS	KEMES	KEMSE	KESSE	KWEEK
MEBBE	MEECE	MEESE	MESEM	MESES	MESSE
MEWSE	SCEGG	SCEME	SEBEK (BT)	SECKE	SEECE
SEEGE	SEEKE	SEEKS	SEEMS	SEESE	SEGES (vf)
SEGGE	SEKKE	SEMBE	SEMEE	SEMES	SEMME
SESCE	SESSE	SEWEE	SKECK	SKEEG	SKEES
SKEGG (Ch)	SKEGS	SKEME	SKEWS	SMECK	SMEEK
SMEES	SMEKE	SMEWK	SMEWS	SWEEK	SWEEM
WEBBE	WEEKE	WEEKS	WEEMS	WEESE	WEGGE
WEKKE	WEMBE	WESSE			

**Length 6 (from 33)**

BEEBEE	BEG BEG	BEGECK	BEGESS	BESEEK	BESEEM
BESEGE	BESEKE	BESSES	CEESSE	CESSES	EMCEES
EMESSES	ESSSSE	GEEGEE	GEGGEE	GEWEBE (Ch)	GEWMEW
KEB-EWE	KEEKKE	KEGMEG	MESSES	MEWSES (Ch)	SECESS
SEESEE	SEEWEE	SEGGES (vf)	SEMEME	SEMESE	SEMSEM
SKEWES	SKEWSE	SMEEKS	SWEMME	WEEWEE	

**Length 7**

BEEBEEK (IPFB)	BEEBEEES	BESEEKE	BESEEMS	EBBECKE (?)
GEE-GEES	KECKSES (pl. kecks)		KEMEMEK (Pcon)	MESEEMS
MESSEGE (vf)	SEEBECK	SEESEES (Web3)	SEEWEEES (Pcon)	SEMEMES
SEMSEMS	SESESES (Pcon)	SKEWESS (?)	SKEWGEE	SSSSSSS (Pcon)
SWESSES (vf)	WEEWEEES			

**Length 8**

EEEEEEEE (Pcon)	KEEK-KEEK	MEKE MEKE (BT)	SWEE-SWEE
-----------------	-----------	----------------	-----------

**Length 9**

SEGE-SEGES (MI)	SEKE-SEKES (MI)
-----------------	-----------------

**Length 10**

SEE-SEE-SEES (W85-202)



## FIBONACCI WORDS

In W72-51, readers were invited to find words containing solely the letters whose position in the alphabet corresponded to the basic Fibonacci sequence 1,1,2,3,5,8,13,21... in which each term is the sum of the previous two. The corresponding letters are ABCEHMU (we ignore the fact that 1 appears twice). Darryl Francis responded in W72-109 with two words of length seven (BACCHAE, CAMBUCA), and three of length eight (AMAHUACA, CACHUCHA, CHAMACEA). In W79-086, CACHECACHE was claimed as the longest Fibonacci word. Among the types of words in this article, Fibonacci words are of intermediate scarcity, more common than the primes, but half as common as the pentabstemious words.

**Length 4 (from 239)**

ABAC	ABBA	ABBE	ABUE	ACCA	ACHE
ACME	AEAC	AECE (Ch)	AECH	AHEM	AHHA (Ch)
AHUM	AMAH	AMBA	AMBE	AMBU	AMEE
AMMA	AMMU	AUBE	AUCA	AUCH	BABA
BABE	BABU	BACE	BACH	BAEC (Ch)	BAHU (Ch)
BAME	BAUM	BEAM	BEAU	BEBE	BEEB
BEEM	BEMA	BEME	BUBA	BUCC	BUCE
BUCH	BUMB	CAAM	CABA	CACE	CAMB
CAME	CAUM	CECA	CECE	CEEM	CEME
CHAA	CHAB	CHAH	CHAM	CHAU	CHEB
CHEE	CHUB	CHUM	CUBA	CUBB	CUBE
CUCA	CUMB (Ch)	EACH	ECCA	ECCE	ECHE
EECH (Ch)	EHEU	EMBE	EMEU	EMMA	EMME
EUCH	HAAB	HAAM	HABU	HACE	HAEC
HAEM	HAHA	HAMA (Ch)	HAME	HAMM (Ch)	HAUE (Ch)
HAUM	HEAH	HEAM	HEBE	HECH	HEEB
HEHE	HEME	HEUE	HUAM	HUBB	HUCH
HUHU	HUMA	HUME (also place)	HUMH	HUMH	MAAC
MAAM	MABE	MACC (Ch)	MACE	MACH	MAHA
MAHE	MAHU	MAMA	MAME	MAUM	MECH
MEHE	MEME	MEUM	MUCE	MUCH	MUEE
MUME	MUMM	MUMU	UCCA	UCHE	UHUH
UMBE	UMBU (Ch)	UMMA	UUUC		

**Length 5 (from 215)**

ABACA	ABCEE (Ch)	ABEAM	ABECE	ACCUB	ACEAE (Ch)
ACHMA	ACHME	ACHUE	AMBHA (Ch)	AMEBA	BABEE
BACCA	BACHA	BACHE	BAMAH	BAMBA	BAMBU (Ch)
BAUCH	BAUME	BEACH	BEAMA (Ch)	BECHE	BECUM
BEECH	BEHEM	BEUCH	BUCCA	BUCHE (Ch)	BUCHU
BUMME	CAABA	CAAMA	CACAM	CACHE	CACHU (Ch)
CAECA	CAHCH	CAUCH	CAUMA	CEACE	CECHE
CECUM	CHACE	CHAMA	CHAMB (Ch!)	CHAME	CHAMM
CHAUE	CHAUM	CHEAM (Surrey)	CHEUE	CHUBA	CHUBB



CUACH (Ch)	CUBBE	CUBEB	CUBUB	CUCHE	CUECA
CUMBU	CUMEC (Ch)	ECHEA	EMBUE	EMCEE	EUCHE (Ch)
HABUB (Ch)	HACHA (Ch)	HACHE	HAECC (Ch)	HAECE (Ch)	HAHAM
HAMAC	HAMME (Ch)	HAUBE	HAUCE (Ch)	HAUCH	HAUME
HEACH	HEAME (Ch)	HEBBE	HECHA (Ro)	HECHE	HEEME
HEMAH (Ch)	HEUAU	HEUCH	HUACA	HUBAM	HUBBA
HUCHE	HUHUH	MACAC	MACAU (India)	MACCA	MACHA (BT)
MACHE	MAHEM	MAHUA	MAMBA	MAMBU	MAMEA
MAMEE	MAMMA	MAMME	MAUMA	MAUME	MEACE
MEACH	MEBBE	MECCA	MECHE	MECUM (Ch)	MEECE
MEECH	MUCHA (Med)	MUCHE	MUMBE	MUMME	UBHAU (Ch)
UCHEE	UHHUH	UMBAU			

**Length 6 (from 124)**

ABBACE	ABECHE	ACCUMB	ACHEBE (Lo)	ACUMBA (Ch)	AHUACA
AMAMAU	AMBACH	AMEBAE	AUCUBA	AUHUUH	AUMUCE (Ch)
BACABA	BACACH	BACCAE	BACHAU (place)	BAUBEE	BECAME
BEEBEE	BUCCAE	BUCHCH	BUMBEE	CACCHE	CACHUA
CAECUM	CAMACA	CAMBUC	CHABBE	CHA-CHA	CHACMA
CHAMMA	CHEBEC	CHUCHU	CUBEBA (Ch)	CUBEBE (Ch)	CUBUBE
CUCUBE	CUMBHA	EMBACE	EMBEAM	HACHEE	HAMACA
HAMEAU (Ch)	HAMMAM	HAUHAU	HEAUME	HECCHE	HECUBA
(witch)	HUBBUB	HUCCHE	HUMHUM	HUMMUM	MACACA (Ch)
MACCHE	MACHAM	MACUCA	MAECCA (Ch)	MAEMAE	MAHBUB
MAHUME	MAMAMU	MAMMAE	MAMMAM	MAMMEA (Ch)	MAMMEE
MAU-MAU (Kenyan terrorists)		MECCHE	MEHCHE	MUCCHE	MUU-MUU
UCUUBA					

**Length 7**

AAAAAAA (Pcon)	ABABBCC (Ch)	ABEBAEA (NZ)	ABEECEE	AECHMEA (AmHer)
AECUMBE (Ch)	BABUCHE (Ch)	BACCHAE (Ch)	BAMBUBA (?)	BEBAUCH
BEECHAM (Sir Thomas)		CABACHE	CABBACH (vf)	CACHACA
CACHCHE (vf)	CACHUCA (vf)	CAHUCHU (Ch)	CAMBACE	CAMBUCA
CHACCHE	CHACHEM	CHAMAEA (Ch)	CHECHEM	CHEECHA
CUMACEA (?)	EBAUCHE	EMBAMMA	EMBUCHE (Ch)	HABACUC (Lo)
HAMAMAH (Pcon)	HEACHAM (place)	HEHEHEH (Pcon)	HUMMAUM	MACABAA
MACAUBA (Ch)	MACCABA (vf)	MACHCHE (vf)	MACUMBA	MAECCHE (vf)

**Length 8**

ABABBCBC (Ch)	ABBAABBA (Ch)	AMAHUACA (Web3)	BABAMAMA (mntns, Stieler's Atlas)
BEACH BUM	CACHUCHA	CHACCHAC	CHAMACEA
CHEUACHE (vf)	EEEEEEEE (Pcon)	HEMAMEBA	MACAHUBA (Ch)
MACCUBAU (vf)	MUCHACHA	MUCHACHE	CHEE-CHEE
			MACCABEE (Ch)

**Length 9**

ABABBCBCC (Ch)	AMAMAMAMA (Pcon)	BACABACHE (?)	CHACHACHA
HEH-HEH-HEH (Pcon)	MEH-MEH-MEH (DSU)	MMMM-HMMMM (Pcon)	

**Length 10**

CACHE-CACHE	HUBBA-HUBBA
-------------	-------------

**Length 14**

BUBUBUBUBUBUBU (DJE)



## SQUARE WORDS

Square words are those consisting solely of letters in positions in the alphabet corresponding to square numbers, so often referred to as perfect squares. (Why then never a reference to perfect cubes, and what are imperfect squares?) The letters corresponding to positions 1,4,9,16,25 are ADIPY. In response to a surmise in the Feb 1972 issue of Word Ways that PAID was the longest such word, a number of readers submitted longer words, the longest being PAYDAY from Mary Youngquist and PAPAYA from Philip Cohen. In W79-086, IPPIAPPA was claimed to be the longest square word. In 73-003, Dmitri Borgmann suggested whimsically (i.e., in a Borgmannesque fashion) that the longest was of sixteen letters: YIPPI-I-AY! YIPPI-I-AY! These are in fact the scarcest of the word types mentioned so far in this article, occurring only about 0.01% of the time.

**Length 4 (from 75)**

AAAA (Tahitian interj.)		ADAD	ADAI (W70-196)	ADAP (vf)
ADAY	ADDA	ADDY (?)	ADID (Ch)	ADIP (Med)
AIAY (Ch)	AIDA (Puccini)	AIIA (NZ name)	AIPI	APAY
APIA (Lo)	APII	APIP (?)	APPA (CIWL)	
AYYA (cape, Crimea)		DAAD (Pcon)	DADA	DADD (vf)
DADP (Med)	DADY (vf)	DAID	DAPA	DAPI (?)
DDAY	DIAD	DIAP (Ch)	DIDD (vf)	DIDY
DIPD (vf)	DYAD	DYDD (TNWD)	IAAI (Pcon)	IAIP (vf)
IDDI (IPFB)	IDDY (W82-095)	III (Pcon)	IPID	IPPI (Pcon)
PAAP (Pcon)	PADA	PADD	PADI	PADY (vf)
PAID	PAIP	PAPA	PAPP (vf)	PAPY
PAYP (W90-170)	PIAI	PIAY	PIPA	PIPI
PIPP (vf)	PIPY	PPPP	PYAP (W90-170)	YAAP (W71-125)
YAAAY (Pcon)	YAID	YAIP (vf)	YAPA	YAPP
YAYA	YAYP (W71-125)	YDAD	YDAY	

**Length 5 (from 47)**

AAAAA (Pcon)	ADADA (Pcon)	ADAPA (?)	ADIDA (Pcon)	AIAIA (Pcon)
AIDIA (Pcon)	AIPIA (Pcon)	APAID	APAPA (Pcon)	APAYA (BT)
APAYD (vf)	APIDA (?)	APIPA (Pcon)	APPAY	AYAYA (Pcon)
AYIYA (Pcon)	DADAD (Pcon)	DADAP	DADDA (vf)	DADDY
DIDDY	DIDID (Pcon)	DIP AD (Lo, diploma)		DIPPD (vf)
DIPPY	IPAID	IPIDA (?)	IYAYI (Pcon)	PADDA (Ch)
PADDI (vf)	PADDY	PAPAY (vf)	PAPIA	PAPPA (vf)
PAPPI	PAPPY	PAYAP (Pcon)	PIAYA	PIPAI (Ch)
PIPID	PIPI (vf)	PIPPY	YAPPY	YAYAY (Pcon)
YIPPY (Ch)	YPAID	YPAYD		

**Length 6 (from 25)**

AAAAAA (Pcon)	ADAPID	ADIIDA (Pcon)	AIAIAI (Web2 below)	
APAAPA (Pcon)	APPAID	APPAYD (Ch)	DADAYA (NZ)	DAD-DAD (Pcon)
DAY PAY	DIAPID (?)	DIDIDA (?)	IPIPI (Pcon)	PAPAIA
PAPAYA (Ch)	PAPIAY	PAPPAP (Pcon)	PAYDAY	PIDPAD
PIPIDA (?)	PIP-PIP	YAYYAY (DCV)		



**Length 7**

AAAAAAA (Pcon) ADIAIDA (Pcon) APPAPPA (Pcon) AYA-YA-YA (Pcon) DADDY-DA (CSD)  
 PAIAIAP (Pcon) PAPAYAD PAPPAYA (vf)

**Length 8**

IDAPPADI (Pcon) IPPI-APPA (Web3)

**Length 9**

PIP-PIP-PIP

**CUBE WORDS AND WORDS OF HIGHER POWERS**

Following the definitions above, cube words would consist solely of the letters in positions 1 and 8 of the alphabet (AH), and fourth power (biquadratic) words would consist of the letters AP. Higher power words would consist solely of the letter A. (We could, of course, wrap around the end of the alphabet, but, since 26 is only divisible by 2 and 13, repeated cycling would include many letters, which spoils the challenge.) Such words are decidedly scarce, so I include some three-letter examples. For the sake of completeness:

**Words common to all higher powers**

AAA (Ch) AAAA (Tahitian interj) AAAAA (Pcon) AAAAAA (Pcon)  
 AAAAAAA (Pcon)

**Cube words** (all Fibonacci, additional to A-only words above)

AAH (OSPD) AAP (Ch) AHA HAA HAH AHAH (?)  
 AHHA (Ch) HAHA (garden feature) AHAHA (Pcon) HAHAH (Pcon)  
 AHAHA (Pcon) HA HA HA! HAH-HAH (vf)

**Biquadratic words** (a subset of square words, additional to A-only words above)

AAP (Ch) APA (Ch) APP (Ch) PAA PAP  
 PPA (Ch) APAP (?) APPA (CIWL) PAAP (Pcon) PAPA  
 PAPP (vf) APAPA (Pcon) PAPPA (vf) APAAPA (Pcon) PAPPAP (Pcon)  
 APPAPPA (Pcon)

**WORDS FALLING INTO MORE THAN ONE CATEGORY, AND SUMMARY**

The following table summarises the permitted letters for words in each category, and deduces the permitted letters for combinations of categories. Biquadratic words are a subset of square words, using A and P only (just P if also abstemious), e.g. PAPA. All Cube words are also Fibonacci.

On the next page, I give four-letter or longer words in various category combinations. The champion word is perhaps BEEBEE (Hindustani, an inferior kind of mem-sahib), but the garden feature HAHA is rather nice.

Categories	Permitted letters	Permitted letters if also abstemious	Percentage of words of 4-letters or more
Pentabstemious	no AEIOU	—	0.17
Hexabstemious	no AEIOUY	—	0.03
Fibonacci	ABCEHMU	BCHM	0.06
Square	ADIPY	DP(Y)	0.01
Cube	AH	H	0.002
Prime	BCEGKMQSW	BCGKMQSW	0.04
Fibonacci and Square	A	impossible	
Fibonacci and Cube	AH	H	
Fibonacci and Prime	BCEM	BCM	
Square and Cube	A	impossible	
Square and Prime	impossible	impossible	
Cube and Prime	impossible	impossible	

**Fibonacci and Hexabstemious:**

4 BBBC (Ch)      CMHC (?)      MCHC (Med)      MMMM (Ro)  
 5 HMMMM (ATHS)  
 9 MMMM-HMMMM (Pcon)

**Prime and Hexabstemious:**

4 BBBC (Ch)      BBC'S (?)      BCGS (vaccines)      BSSC (Lo)      CWCW (TNWD)  
 CWMS      GCMG (Ch)      GSSG (?)      KCMG (Ch)      MBSC (Lo)  
 MMMM (Ro)      MSCS (pl. MSc)      MWGM CHf      WGGG (vf)  
 5 KGWVK (Pcon)      MWSWM (TNWD)  
 7 SSSSSSS (movie name)

**Fibonacci and Cube:**

4 AAAA (Tahitian interj.)      AHAH (?)      AHHA (Ch)      HAHA (garden)  
 5 AAAAA (Pcon)      AHAHA (Pcon)      HA-HAH (vf)  
 6 AAAAAA (Pcon)      AHAAHA (Pcon, weapon)      HA HA HA!      HAH-HAH (vf)  
 7 AAAAAAA (Pcon)

**Fibonacci and Prime:**

4 BBBC (Ch)      BEBE      BECC (vf)      BECE (Ch)      BEEB  
 BEEM      BEME      CECE      CEEM      CEME  
 EBBE (vf)      ECCE      EEEE (Joyce: Ulysses)      EEME (vf)  
 EMBE      EMME      MEEM (surname)      MEME      MMMM (Ro)  
 5 BEEBE (EDFC)      BEEME (vf)      CEBEC (Inc. Canada)      CEMME (vf)      EEECE (EDD)  
 EMCEE      MEBBE      MEECE  
 6 BEEBEE      EBE-EBE (DBS)      EE-EE-EE (EDD)      EME-EME (Pcon)      MEMMEM (Pcon)  
 8 EEEEEEEE (Joyce: Ulysses)

**Fibonacci, Prime and Hexabstemious:**

BBBC (Ch)      MMMM (Roget)

**Fibonacci and Square and Cube:**

AAAA (Tahitian interjection)      AAAAA      AAAAAA      AAAAAAA

PY'D (OED) is an attempt at the only non-trivial remaining category, that of **square and pentabstemious**.