

WORDS HAVING THREE RARE LETTERS

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For several years, logologists have been wrestling with the problem of finding an English word containing the four rarest letters JQXZ. In Problem 131 (The Antifrequency Crusade) of Beyond Language (Scribner's, 1967), Dmitri Borgmann first surveyed the situation and suggested such coinages as JEZEBEL QUIXOTE and QUIZ-JINXING. In the May 1968 Word Ways he pointed out that ARJUZ-ANXESQUE might be defined as the style or manner characteristic of the small French town of Arjuzanx. However, in the May 1970 Word Ways Darryl Francis reported that he had located the small village of ZIQ-XHAFEJ in an Albanian gazetteer. Although many logologists will argue that this is not a bona-fide English-language word, it seems likely that no better candidate can be found.

In this article, we consider a closely related problem. There are 3,276 different ways that three letters can be chosen from the alphabet with repetition allowed (i. e., each letter is replaced after drawing, so that it can be drawn more than once). For each possible combination of letters, can one discover a word which uses them? For example, can one find a word containing the letters JXQ, or a word containing the letters QQZ? We have adopted a somewhat more conservative definition of a word -- it must appear in boldface type in either Webster's Second or Third Editions. Hyphenated words are allowed, but single words from multi-word phrases have been excluded.

Since a list of 3,276 examples would make the article intolerably long, we have restricted our attention to the rarer combinations of letters. We have investigated 182 examples -- enough, hopefully, to convince the reader that there are no impossible letter-combinations outside the scope of our list. At present, we know of only 20 letter-combinations for which Websterian words apparently do not exist. We say apparently, for we are sure that at least a few of the holes can be filled by sharp-eyed readers. After the Websterian sources have been exhaustively mined, it may be permissible to complete the list using other dictionaries. For example, the perfectly acceptable XXX word HEXAHYDROXYCYCLOHEXANE is found as a main entry in the Random House Unabridged Dictionary.

What letter-combinations were considered? Somewhat arbitrar-

ily, we divided the twelve most uncommon letters into four groups of three apiece: JQX, FKZ, BVW and HMY. The letters JQX were each given weights of one, FKZ, weights of two, BVW, weights of three, and HMY, weights of four. Any combination of these letters was assigned a score equal to the sum of the weights; for example, JQZ and JJF both have scores of 4, but HKX has a score of 7. Clearly, the difficulty of finding a word with three rare letters decreases (on the average) as the score increases. All 182 three-letter combinations having scores less than or equal to 7 are listed in the table below. Each combination has its score listed next to it.

Next to each letter-combination we have listed the commonest example we could find of a word containing those letters. The following table gives the pecking-order that has been established. In each case, a word having a given numerical label is not found in any dictionary higher on the list.

Webster's Pocket Dictionary	no label
7th Edition of Webster's Collegiate	7
3rd Edition of Webster's Unabridged	3
2nd Edition of Webster's (main entry)	2
2nd Edition of Webster's (cited in list)	2 (parenthesis)
2nd Edition of Webster's (below the line)	2 (asterisk)

It is quite likely that readers will be able to upgrade several words in the list.

Finally, it is worth noting an analogous two-letter problem: can words be found in the Webster Pocket Dictionary for each of the 351 possible ways that two letters can be selected from the alphabet with repetition allowed? Words corresponding to several letter-pairs are hard to find: QW (squawk, squaw), JQ (jonquil, jacquard), JX (juxtapose, jinx), QX (exquisite, quixotic, exchequer), JJ (jejune, jujitsu, jujube) and XX (executrix). However, only one letter-pair -- QQ -- appears to be completely absent.

BBJ 7 jabber	BKK 7 stockbroker
BBQ 7 quibble	BKQ 6 quickbeam 3
BBX 7 bandbox	BKX 6 textbook
BFF 7 buff	BKZ 7 bazooka
BFJ 6 justifiable	BQQ 5 Albuquerquean 3
BFK 7 bookshelf	BQV 7 vanquishable 7
BFQ 6 qualifiable* 2	BQW 7 squawbush 2
BFX 6 flexible	BQX 5 (extraequilibrium) 2
BFZ 7 fabulize 3	BQZ 6 bezique 7
BJJ 5 jujube	BVX 7 vibex 3
BJK 6 jackboot	BWX 7 oxbow
BJQ 5 jumboesque* 2	BXX 5 Oxylabrax* 2
BJV 7 objective	BXZ 6 (oxybenzyl) 2
BJW 7 jawbreaker	BZZ 7 buzz
BJX 5 jukebox	
BJZ 6 Jezebel 7	FFF 6 fluff

FFJ	5	jiffy	HXZ	7	hydroxyzine 3
FFK	6	skiff	JJJ	3	jejuno-jejunostomy 2
FFQ	5	quaff	JJK	4	Jogjakarta 3
FFV	7	affadavit	JJM	6	jejunum 7
FFW	7	waffle	JJQ	3	
FFX	5	affix	JJV	5	jeremejevite 3
FFZ	6	zaffer 7	JJW	5	jimberjawed 3
FHJ	7	jackfish 3	JJX	3	
FHQ	7	squawfish 7	JJY	6	jejunely 7
FHX	7	foxhound	JJZ	4	
FJJ	4	jeremejeffite 2	JKK	5	jackknife
FJK	5	flapjack	JKM	7	jackhammer 7
FJM	7	Jeffersonianism 7	JKQ	4	quarter-jack 3
FJQ	4		JKV	6	jackslave 2
FJV	6	juvenilify 2	JKW	6	lockjaw
FJW	6	jewish 7	JKX	4	jukebox
FJX	4	jury-fixer 2	JKY	7	jaywalk
FJY	7	jiffy	JKZ	5	katzenjammer 7
FJZ	5		JMQ	6	jacqueminot 3
FKK	6	kickoff	JMX	6	juxtamarine 2
FKQ	5	quick-freeze	JMZ	7	katzenjammer 7
FKV	7	(five-week) 2	JQQ	3	(quinquejalous) 2
FKW	7	wakeful	JQV	5	
FKX	5	flax-sick 3	JQW	5	(square-jawed) 2
FKZ	6	quick-freeze	JQX	3	
FMQ	7	squamiform 3	JQY	6	jequirity 7
FMX	7	exemplify	JQZ	4	
FQQ	4	quinquefoliate 7	JVV	7	Juvavian 2
FQV	6	quiverful 3	JVW	7	(jewel-loving) 2
FQW	6	squawfish 7	JVX	5	juxtapositive 2
FQX	4	(half-quiXotic) 2	JVZ	6	rejuvenize 3
FQY	7	qualify	JWW	7	jewelweed 7
FQZ	5	quick-freeze	JWX	5	jaw-box 2
FVX	6	fixative	JWZ	6	jazzbow 3
FVZ	7	favorize* 2	JXX	3	
FWX	6	waxflower 3	JXY	6	jasponyx 3
FWZ	7	frowzy	JXZ	4	
FXX	4	fixfax* 2	JYZ	7	jazzy
FXY	7	exemplify	JZZ	5	jazz
FXZ	5				
FZZ	6	fuzz			
			KKK	6	kickback
HJJ	6	hajji 7	KKQ	5	quickwork 3
HJK	7	jackhammer 7	KKV	7	vikinglike* 2
HJQ	6	(quasi-Jewish) 2	KKW	7	kickshaw
HJX	6	jack-in-the-box 7	KKX	5	kickxia 2
HJZ	7	Jezebelish 3	KKZ	6	kamikaze
HKQ	7	quick-lunch 7	KMQ	7	kumquat
HKX	7	hexakistetrahedron 3	KMX	7	Kluxism 3
HQQ	6	Qashqai 3	KQQ	4	(quick-questioning) 2
HQX	6	exchequer	KQV	6	quicksilver
HQZ	7	Qyrghyz 3	KQW	6	squawk
HXX	6	xanthotoxin 3	KQX	4	

KQY 7	quickly	QWW 7	squaw-weed
KQZ 5	quick-freeze	QWX 5	
KVX 6	vixenlike* 2	QWZ 6	{well-quizzed} 2
KVZ 7	kuvasz 3	QXX 3	
KWX 6	workbox	QXY 6	quixotry 7
KWZ 7	zweiback	QXZ 4	quixotize 3
KXX 4		QYZ 7	quizzically 7
KXY 7	karyorrhesis 3	QZZ 5	quizzical
KXZ 5		VVX 7	volvox 7
KZZ 6	zigzack* 2	VWX 7	{wax-covered} 2
MQQ 6	quinquennium 7	VXX 5	convexo-convex 3
MQX 6	quixotism 7	VXZ 6	extravaganza
MQZ 7	quizmaster 3	VZZ 7	{overdazzle} 2
MXX 6	maxixe 7	WWX 7	waxwork
MXZ 7	extemporize	WXX 5	paxwax 3
QQQ 3	Qaraqalpaq 3	WXZ 6	Maxwell-Boltzmann 3
QQV 5	equivoque 7	WZZ 7	whizzing
QQW 5		XXX 3	
QQX 3		XXY 6	xylanthrax 2
QQY 6	quinquennially 7	XXZ 4	
QQZ 4	Qazaq 3	XYZ 7	azoxy 3
QVV 7	equivalve 3	XZZ 5	azoxazole* 2
QVW 7	quarter-wave 3	ZZZ 6	razzmatazz 7
QVX 5	overexquisite* 2		
QVZ 6	ventriloquize 7		