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FIFTEEN-LETTER TRANSDELETION PYRAMIDS

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There are two bibles in the world of Scrabble. There's the American bible, the Official Tournament and Club Word List, and there's the British bible, Official Scrabble Words, 4th Edition. Both sources are used widely throughout the world that plays English-language Scrabble Some countries use one or the other source, and some countries use both sources together. The combination of these two sources is often referred to as "world dictionary".

To assist Scrabble players, there is a computer program called Lexpert. Lexpert has a range of Scrabble-related functionality. It can find transpositions of a given set of letters, it can build lists of words satisfying various criteria, it can identify words that have a specific pattern of letters in particular positions, and so on. Lexpert is available for desktop PCs, and also for pocket PCs. The functionality available for pocket PCs is a subset of that available for desktops. Lexpert contains all the "world dictionary" words, plus many other longer words (of length 10-15 letters) extracted from Webster's Tenth New Collegiate Dictionary.

One of Lexpert's capabilities is to find all the words that can be built from some or all of a specified set of letters. For example, if I enter AEINRST into Lexpert, it comes back with all the 7-letter words that can be made from those letters, as well as all the 6-letter words, 5-letter words, and so on.

A good Scrabble friend of mine, Nick Deller, recently wrote a program that made use of the word files built into Lexpert. He concluded that only 28 of the 3178 15-letter words were capable of successful transdeletion from 15 letters down to 2 letters, effectively a set of 28 transdeletion pyramids. He supplied me with a list of the 28 words, but gave me no clues as to what the actual series of transdeletions were—that is, what the component 14-letter, 13-letter, etc., words were. A good couple of hours manipulating Lexpert soon turned up at least one transdeletion pyramid starting with each of the 28 given 15-letter words. These examples are given below.

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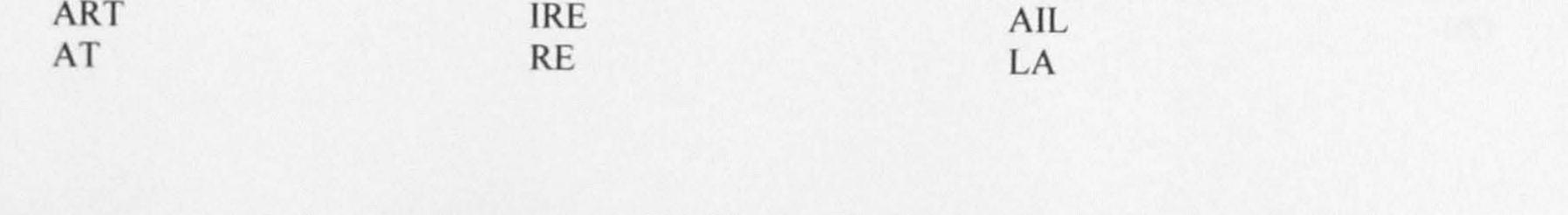
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I have not attempted to identify all the different words that could be used in effecting transdeletions of the 28 15-letter specimens. I felt it sufficient merely to prove that there is at least one pyramid for each of the 28 15-letter words.

Interestingly, only two of these 28 pyramids are capable of being extended upwards to 16 letters. The last of the pyramids, the one beginning with UNDERESTIMATION, is the only one starting with a singular noun, capable of being pluralized. It can obviously be extended to the 16-letter level by starting it with UNDERESTIMATIONS. Also, the twelfth pyramid, which begins with INTERMEDIATIONS, can be extended to INDETERMINATIONS. Perhaps other pyramids can be extended upwards. Can any Word Ways reader extend any other pyramids here to more than 15 letters?

My Scrabble-playing programmer friend Nick Deller also determined that the number of 14-letter words in Lexpert capable of being transdeleted down to just 2 letters was 156. For words of length 13, 12, 11, ... 3 the corresponding numbers are 530, 1914, 5396, 13530, 23684, 28705, 26467, 18988, 11256, 4958 and 1161.