A. ROSS ECKLER
Morristown, New Jersey

Well, can you? Freely translated, this enigmatic title invites you, the reader, to discover what is logologically unusual about it. Obviously, it is composed of three-letter isograms (words with no repeated letters), but the property is more subtle than this. Read on only if you have given up. In the first word, the letter occurring earliest in the alphabet, A, occurs in the second position; the letter occurring next in the alphabet, C, occurs in the first position; and the letter occurring latest in the alphabet, N, occurs in the third position. In other words, if we replace each letter by its alphabetical ranking, the word CAN can be encoded by the sequence 213. Similarly, the word YOU is encoded by 312, and DIG by 132. In fact, the six words of the title are encoded by six different sequences, corresponding to the six different ways in which the integers 1, 2, and 3 can be arranged.

There appears to be no established terminology describing this branch of wordplay. Let us call the numerical sequence introduced above the letter-rank sequence associated with a word. To avoid ambiguity, the concept of letter-rank sequence should be applied only to isograms.

Some attention has been given in the past to searching for long words with strictly-increasing letter-rank sequences, i.e., words in which the letters are in alphabetical order. A brief discussion can be found, for example, on page 166 of Dmitri Borgmann's Language on Vacation (Scribner's, 1965). Perhaps the most complete list of long words with letters in alphabetical order was compiled by Leslie E. Card of Urbana, Illinois several years ago from Webster's Second Unabridged Dictionary:

5 abhor, acloy, ablow, abort, Achim, achir, Achis, achor, adeps, adept, adfix, Adino, adlos, adopt, adoxy, Aegir, aegis, agist, aglow, ahint, aknow, Alost (lace), amost, (Blanche) Amory, befit, befop, begin, below, benty, birsy, blowy, bortz, borty, celt, cens, certy, Chimu, chipt, chirt, chist, chort, clort, clost, copsy, demos, denty, dinos, dirty, dorty, druvy, Emory, empty, filmy, first, fisty, flopt, Forst, forty, ghost, glipy, gipsy, glory, glost, gorst, gorsy, hinou, horst, horsy, klops, Knop's (solution)
6 Achlor, acnow, acorsy, adempt, adipsy, agnosy, almost, befit, begirt, behnt, beknow, biopsy, cestuy, chints, deflux, dehors, dehort, Deimos, dennis, dluvy, dimpsy, ghosty
7 Adelops, egilops
8 aegilops
Words with letters in reverse alphabetic order are somewhat harder to find. Some five-letter examples are WRONG, SPOKE, PRONE, POLED, SOLED and TONED. SPONGE appears to be the only common six-letter word, and SPONGED and WRONGED the only common seven-letter ones.

As the title of this article proves, it is easy to find words corresponding to the six possible letter-rank sequences of size three. Can this feat be accomplished for longer words? In the table below, we present the commonest uncapitalized words corresponding to each of the 24 possible letter-rank sequences. These were obtained by searching through the word-frequency lists of Henry Kucera and W. Nelson Francis's book *Computational Analysis of Present-Day American English* (Brown University Press, 1967).

To find the word corresponding to a given letter-rank sequence in the table, (1) delete the highest number in the letter-rank sequence and look for that row headed by the reduced letter-rank sequence, (2) note the position of the highest number in the sequence and look in the corresponding column. This is easier to do than explain; for example, if the letter-rank sequence is 3241, look for the word at the intersection of row 321 (3241 with 4 deleted), and the third column (4 is in the third position in the sequence), which is MIND.

Moving up to five-letter words, one must consider a total of 120 different cases. As can be seen, there are no particularly unusual words on this list, either; all can be found in the Kucera-Francis list:
However, it was a considerably greater challenge to find six-letter words corresponding to each of the 720 possible arrangements of letter-rank sequences. In fact, it became necessary to use a considerable number of words too rare to appear in Kucera and Francis at all. In a handful of cases, it was not possible to adhere to the requirement that the word be uncapitalized; therefore, capitalized words were allowed whenever they were clearly better-known than the uncapitalized alternatives. All words can be found in boldface type in Webster’s Second or Third Editions, or can be easily derived from such boldface words (-ing, -ed, -s, etc.).
35214 verbal muslin morgen molten embark surety
35241 single jungle moving inhume embira quires
35412 thrice putsch jounce isotac innate golden
35421 winked gushed formed jolted lonima longer
41235 trails quaint garden lactim paints gadfly
41253 viable mudism handle facile jacket
41325 uncles judges revolt palter remits safety
41352 wrath swarth marine salute septum magnet
41523 tocin suitor launch marvel length savory
41532 picked subtle paused person native market
42135 trials sgent petals phasor plants plenty
42153 wrecked typhus rewash rebush rectum neatly
42315 trends suclat ocular plover sprout ideals
42351 ungird muckna method Nimrod hegira melody
42513 spiral swivel sexual mental octave resalt
42531 volume luetic metric perula risque sourly
43125 wonder number sought player points mighty
43152 zonate jugate herald sleuth plaque nearby
43215 wrongs sunlit pounds nectar sleazy recast
43251 thecla owlish jingle pleura fedora midway
43512 unload switch smutch postal phrase mincer
43521 united joined poured listed lingua linear
45123 unpack murance studio glance ophism models
45132 sprang myself forced prison praise inches
45213 unreal orphan oxygen induce locate organs
45231 spring outing motile noetic ophite stormy
45312 thread myriad normal proven strewn prices
45321 worked pushed stupid proved strive turkey
51234 urchin tubers thumps salvor radium radios
51243 placed stable marble fabled radish ladies
51324 soaken stamen sauger salver throws safely
51342 tragic mobile saying ransom ramose simply
51423 trance nuclei paunch sequin tergum panels
51432 rocked public marked raised making object
52134 solemn ordain obtain sector tedious theory
52143 urbane subage retalk scathe signum thinly
52314 social ordeal thumbs silver tophus silent
52341 ungild xylose period refund shinya worthy
52413 spinal stench unwrap rental scramble timely
52431 uphold myellic thymic should torque phones
53124 pleach preach trucks slayer teacup widely
53142 upland symbol toward phasic trisul planes
53214 vulgar sypher trunks sliver todays uneasy
53241 trifle ruling squire nebula plinth signet
53412 zodiac prince source spruce sprawl legacy
53421 smiled stored linked showed shrewd pilfer
No attempt has been made to compile the corresponding seven-letter word list. In fact, it is rather unlikely that words corresponding to each of the 5040 possible letter-rank sequences can be found. Unfortunately, Jack Levine's A List of Words Containing No Repeated Letters, the best single source of seven-letter isograms, is inadequate for this task. He lists 10,304 seven-letter isograms, or an average of about two per letter-rank sequence, but some letter-rank sequences will have a dozen representatives and others, none at all.

How many letter-rank sequences are likely to be missing in Levine? One cannot tell without checking the entire list, a tedious task. However, one can estimate the number of missing letter-rank sequences by means of a probabilistic argument. It is only necessary to make the plausible assumption that the philological processes that generated the words in Levine were independent of the letter-rank sequences associated with these words -- for example, the fact that one word had the sequence 1372465 did not predispose another word to end up with the sequence 2675143. If one makes the additional (but less reasonable) assumption that each of the letter-rank sequences had one chance in 5040 of being selected by the philological process (an equiprobability assumption), then it is an easy matter to write down the formula giving the (average) number of sequences omitted in a sample of 10,304 words: $5040 \cdot \exp\left(-\frac{10304}{5040}\right)$, or about 655 sequences. If one replaces this assumption with one that allows some letter-rank sequences to be preferred over others, then one can show mathematically that the number of missing sequences must be larger than 655 no matter what this preference is -- it is not necessary to specify it in detail. To fill in the missing 655-plus holes, one needs to draw on a much larger vocabulary of isograms outside Levine's list -- surnames, geographical place names, and the like.