

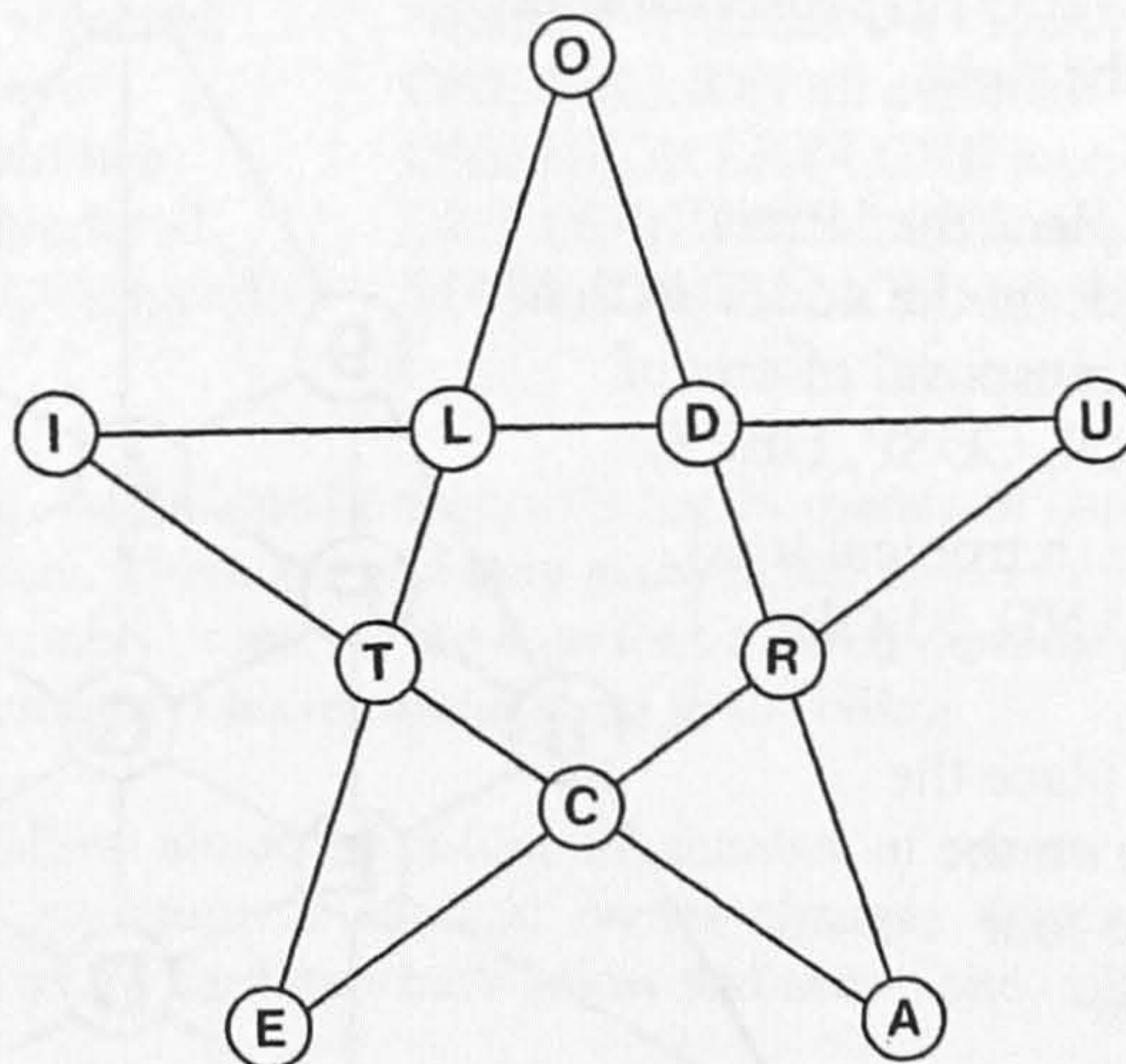
- (2) Place the 16 letters of OSCAR THUMPBUNDLE in the 16 nodes so that each of the 12 lines is a transposal of one of these words: BEND, BOTH, BUMP, CANT, CLOP, CURE, DIOR, HARM, LIMN, PADS, SHEL (Silverstein, American artist/writer), SUIT.

Our results appear in the "Answers and Solutions" section.

Another puzzle-game, PENTALPHA, is played on the pentagram below (a $(10_2, 5_4)$ configuration). It is thought to date back to Rameses I (1400-1366 B.C.) since it was found incised on the great roofing slabs of the Temple of Kurna at Thebes.

Miss L.S. Sutherland describes the play seen at Crete in 1938:

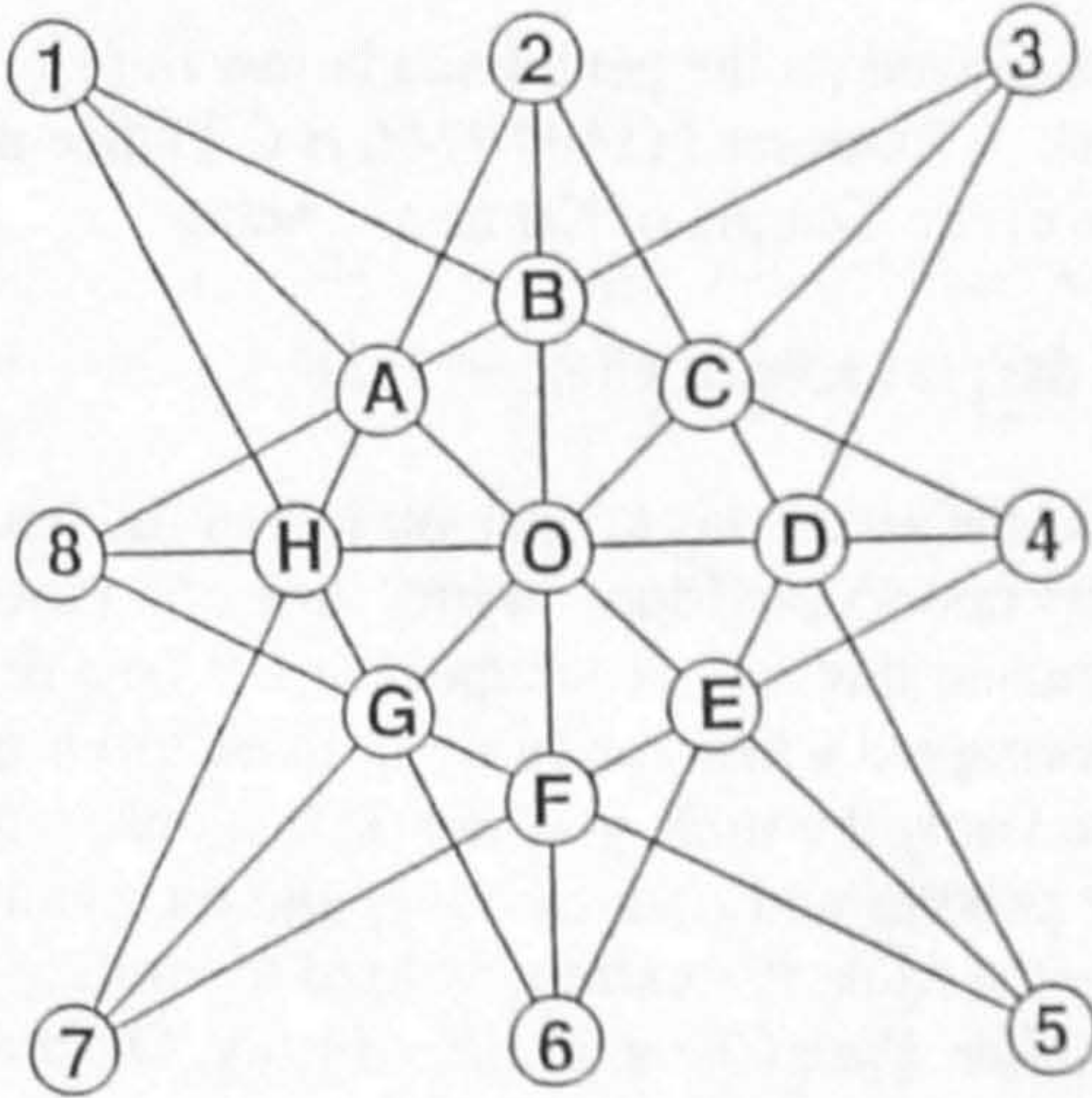
You have nine pebbles, and the aim is to get each on one of the ten spots. You put your pebble on any unoccupied spot, saying 'one', and then move it through another, 'two', whether this spot is occupied or not, to a third, 'three', which must be unoccupied when you reach it; these three spots must be in a straight line. If you know the trick, you can do this one-two-three trick for each of your nine pebbles and find it a berth, and then you win your money. If you don't know the trick, it's extremely hard to do it. (p. 28, *A History of Board-Games Other Than Chess*, H.J.R. Murray, Oxford Univ. Press, 1951.)



PENTALPHA. The five lines transpose into LUDI, TOLE, ROAD, ATIC, and CURE, all NI3 main entries.

We have labeled the nodes of PENTALPHA so that we have an easy mnemonic for successful play. Can the reader discover our method before turning to the "Answer and Solutions" section?

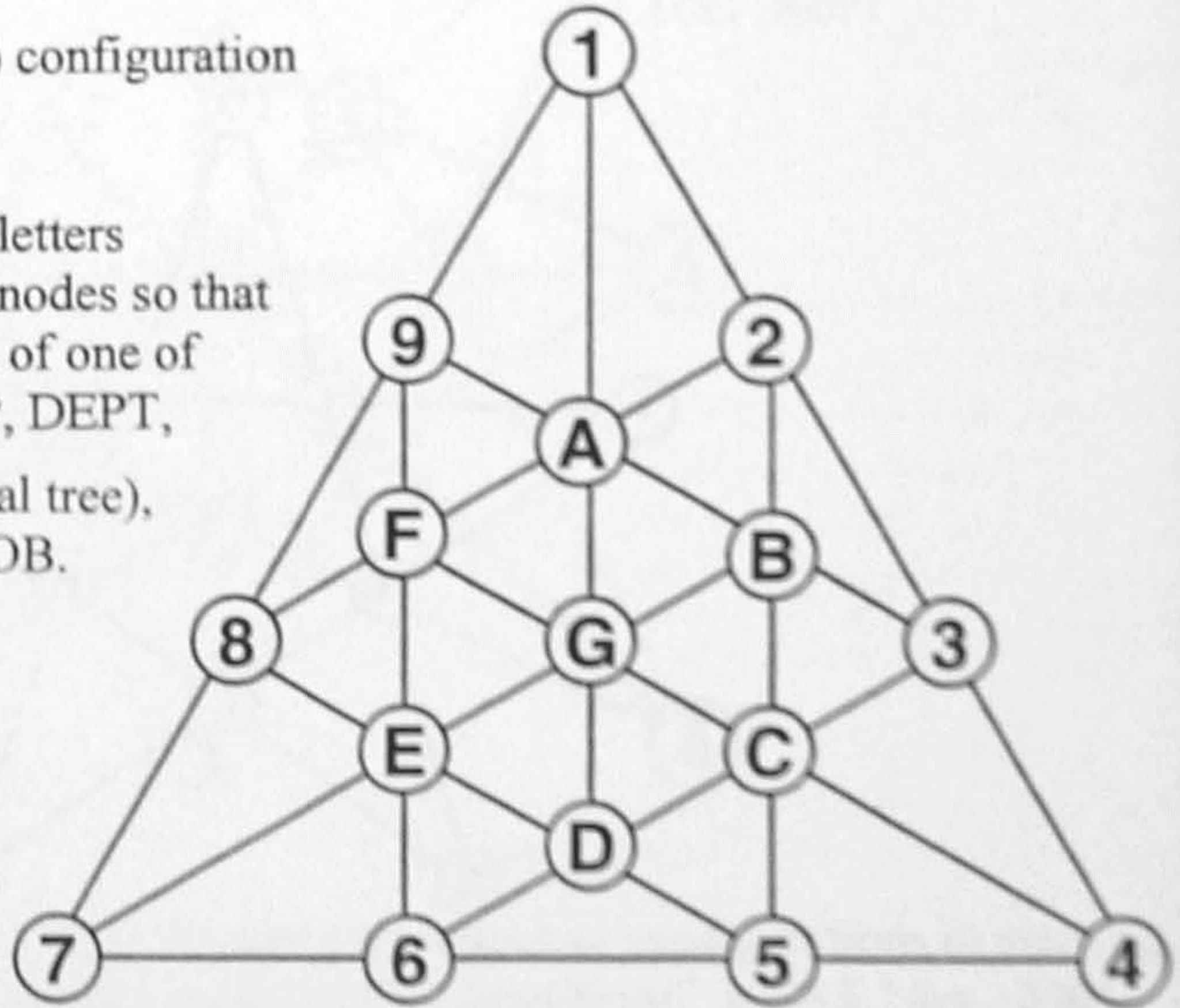
It is impossible to generalize PENTALPHA to BRUNES' STAR as it stands; there will always be at least four blank nodes. However, if we allow an extra node 0 (unfortunately destroying the configuration balance!) the reader should be able to play a game that leaves only one node blank.



As another example of a $(16_3, 12_4)$ configuration consider the diagram at the right.

(1) We ask the reader to place the letters OSCAR THUMPBUNDLE on the nodes so that each of the 12 lines is a transposal of one of these words: BRIT, CORN, CUSP, DEPT, DUMB, HUNT, MAHO (a tropical tree), MICE, PHIL, REAL, SAND, SLOB.

(2) It is also possible to place the following sixteen words on the nodes so that each of the four nodes of a given line contains a common letter: EAU, EMS, ERN, GOP (India), LAR, LIE, LUG, MIG, MON, NAG, OUR, RIP, SAP, SIN, SOL, UMP. The line labels will form PELARGONIUMS.



One can also show that a PENTALPHA type puzzle is possible here with no extra nodes (see Answers and Solutions).