

# Dual Duel

**THIS ISSUE'S PUZZLES**

**1. Pistols at Dawn.** After a three-way argument about probabilities, actuaries Al, Ben, and Chad agreed to a duel. They would draw straws to see who would shoot first, second and third. They would stand at corners of an equilateral triangle, fire single shots in order of the draw and continue the cycle until only one survived. The shooter may aim wherever he chooses. Research on marksmanship reveals that Al is 100% accurate; Ben, 75%; and Chad, 60%. If Chad drew the first shot he had decided his chances would be improved if he missed intentionally since Al would surely fire at Ben, given a chance. Assuming that strategy, calculate the probabilities of survival for each. Is there a problem with this puzzle?

**2. Queens vs. Jacks.** South, on lead at ♠ 6, needs four more tricks to make the slam. The offense has all the jacks, but the defense has the queens. The cards are exposed for all to see; will declarer succeed? If so, how? If not, why? This bridge problem was presented to me by David McCann.

	♠ A 7	
	♥ —	
	♦ J 8	
	♣ J	
	<b>NORTH</b>	
♠ K Q	WEST	EAST
♥ A 8 7		♠ —
♦ —		♥ Q 9
♣ —		♦ Q 9
		♣ Q
	<b>SOUTH</b>	
	♠ J 9	
	♥ K J	
	♦ K	
	♣ —	

**ANSWERS TO LAST ISSUE'S PUZZLES**

**1. Four Cubes.** A small rectangular aquarium had a base of "a" square inches and was partially filled with "i" inches of water. Four six-inch cubes were then placed on the bottom (not stacked), one at a time. The water level increased by 1 inch when the first cube was inserted; further increased by some unknown amount when the second cube was placed inside; and by one and one-half inches each for the third and fourth cubes. What was the water level after the fourth cube was inserted? This is a modification of a puzzle submitted by Bill Graham.



**THE ANSWER IS:** The water reached a height of nine inches from the bottom of the aquarium. The increase in water level varied because the first cube was not fully submerged. Since the impact of the

fourth cube was the same as the third cube, previous cubes were fully submerged and the one and one-half increase is due solely to the water displaced by the 216 cubic inch volume of the 6 inch cube.

1/3

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Page 73

PLEASE MAIL ALL ANSWERS TO ALAN GOLDBERG, PUZZLES EDITOR, 303 BLUE RIDGE ROAD, LOUISVILLE, KY 40223; OR E-MAIL TO [CONTPUZZLE@AOL.COM](mailto:CONTPUZZLE@AOL.COM); OR FAX TO (502) 245-5260. THE NAMES OF THOSE WHO SEND CORRECT SOLUTIONS WILL BE ACKNOWLEDGED IN A FUTURE ISSUE OF *CONTINGENCIES*.

This gives the area of the base of the aquarium as  $216/1.5$ , or 144 sq. in. When the first cube was inserted, the water level rose only 1 inch, representing an increased volume of 144 cu. in. This equals two thirds of the volume of the cube, therefore the cube was submerged only two-thirds, or 4 inches; thus the original water level was three inches. The four six-inch cubes exactly fit the 144 sq. in. base and hence accounted for the first six inches of height; adding the original three inches of water brings the total height to nine inches. [The base must have been either  $12 \times 12$  or  $6 \times 24$ .] The second cube increased the water level by two inches, the number which accounts for the total

increases of six inches. An alternate calculation for the second cube uses the volume of two cubes (432 cu. in.) plus the original water ( $144 \times 3$  cu. in.); this total divided by the 144 sq. in. base yields a height of six inches. Thus, the two cubes were fully submerged and the increased height due to the second cube was two inches. A similar process verifies the increase due to the third and fourth cube. The fish were not happy!

**2. A Pair of Fours.** South, declarer at 6 notrump, needs four more tricks to make the slam. Can South succeed with the hands shown below? What is the result if East's  $\spadesuit 4$  is changed to the  $\clubsuit 4$ . This

doubleheader is a modification of a problem posed by David McCann.

	$\spadesuit$ —		
	$\heartsuit$ Q 3 2		
	$\diamondsuit$ Q		
	$\clubsuit$ 3		
	<b>NORTH</b>		
$\spadesuit$ 7 5		<b>WEST</b>	<b>EAST</b>
$\heartsuit$ J 5			$\spadesuit$ 9 6
$\diamondsuit$ —			$\heartsuit$ 8 7
$\clubsuit$ Q			$\diamondsuit$ 4
			$\clubsuit$ —
		<b>SOUTH</b>	
		$\spadesuit$ J 8	
		$\heartsuit$ 9 6	
		$\diamondsuit$ 3	
		$\clubsuit$ —	

THE ANSWER IS: When East has the  $\diamondsuit 4$ , declarer succeeds with either of two approaches. South leads the  $\heartsuit 9$  and West must cover. Dummy wins the  $\heartsuit Q$  and leads the  $\diamondsuit Q$  followed by a heart which endplays East in spades. Alternatively, South wins by leading the  $\spadesuit J$  followed by a diamond to dummy's  $\diamondsuit Q$ . West must discard the remaining spade, but is endplayed when put on lead with the  $\clubsuit Q$ . For the puzzle with East holding the  $\clubsuit 4$ , declarer again succeeds but with a different line of play. The  $\spadesuit J$  is led and dummy discards the  $\diamondsuit Q$ . South now leads the  $\diamondsuit 3$  and West discards a spade while dummy throws a heart. East, however, must discard the  $\clubsuit 4$  in order to keep a spade and both hearts. South now leads the  $\spadesuit 8$  to put East on lead and simultaneously squeezes West. West can't keep both the  $\clubsuit Q$  and guard the  $\heartsuit J$ ; and dummy's discard comes after West chooses his fate.

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