It has been a year since I specified the size of the backlogs for the various kinds of problems that are printed. Currently, I have a large queue of regular problems and a comfortable supply of bridge problems. Speed problems, however, remain in short supply.

PROBLEMS

M/J 1. The following problem is from Larry Kells. You are East sitting behind the dummy. The contract is 4 no-trump and your partner has led the diamond 3. The bidding and hands are below.

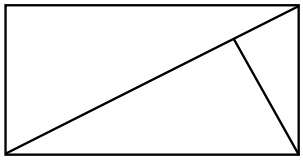
S	*W*	*N*	*E*
1C	Pass	1H	3D
Pass	Pass	3S	Pass
3NT	Pass	Pass	4D
Pass	Pass	4NT	Pass
Pass	Pass		

♠K Q 7 2
♠A Q 8 3
♠K
♠Q 5 3 2

♠5 4 3
♠6 5
♠A Q J 8 7 6 2
♠10

How should you defend?

M/J 2. Richard Hess attributes the following problem to Karl Scherer. The 1 × 2 rectangle below is dissected into three similar right triangles of different sizes, with legs in the ratio of 2 to 1. You are to dissect a square into the least number of different-sized similar right triangles with legs in the ratio of 2 to 1.



M/J 3. I received the following problem independently from Ray Brunsberg and from Dick Miekka, who credits H. R. Lewis and Lewis's daughter.

Eight utterly altruistic and very clever gnomes are trapped in a cave with a wicked witch and a lot of black and white hats. She'd like to kill them all but figures she might as well take her time. So she proposes the following entertaining game. She's going to line them all up, one behind the next, facing the entrance of the cave. She will "poof" out the lights and place a hat, either black or white, on each gnome's head. The she'll "poof" the lights back on. Each gnome will be able to see the hats of the gnomes in front of him, but not his own or those of the gnomes behind him. Starting with the gnome at the back of the line, she'll ask what color hat he has on. He must answer her question out loud. If he answers correctly, he lives (although he can't make any sound other than to answer her question). If he answers incorrectly, he dies, completely silently. All gnomes that are alive at the end will be set free. The witch gives them a few happy minutes to consider their fate. Instead of pondering the meaning of life (which doesn't seem terribly applicable at the moment) or the meaning of death (which is applicable but depressing), they instead devise a strategy. How many gnomes will escape?

SPEED DEPARTMENT

An astronomy quickie from Ken Rosato. The names of what three astronomical entities can be derived from each other by substituting a single letter and rearranging the others?

SOLUTIONS

J/F 1. The following solution is from Joe Feil.

"This hand is complicated, but 4 no-trump can be won by South with either a spade or heart lead, as shown in the examples below.

"Case 1: After West leads the spade queen, South takes it with the spade king and leads a small diamond. West must take it with the ace, or South can set up the diamonds by later forcing out the ace with a small diamond, giving him 10 tricks. West now leads another high spade. South ducks and takes the next spade with the ace in his hand. The case of West switching to a heart in the third or fourth lead is discussed below. East has discarded clubs on the first two spades but now has to discard a heart. If he discards a diamond, South wins the fifth diamond. If a third club, South takes his club king, leads to the board's club ace, and loses a club, setting up the fourth club as his 10th trick. South leads the king and 5 of diamonds, putting East into the lead. Whether he leads a heart, club, or diamond, South wins East's return and takes the heart king, the club ace, the club king, and the diamond jack. South plays the diamond 10, squeezing West. If he discards a heart, South wins two hearts. If he discards a spade, the spade 6 and heart ace win.

"Case 2: West plays the first three cards as in case 1 above, but he switches to a low heart on the fourth trick. South takes it with the king of hearts in the dummy and leads to the ace of spades, stripping East of his last heart (a club discard allows South to set up the clubs). South now leads the king and 5 of diamonds, putting East into the lead and producing the same end play as in case 1.

"Case 3: If West leads a heart at the beginning, South wins with the king of hearts on the board, followed by playing the diamond queen. Again West must take the diamond ace. If he continues with hearts, South wins in dummy, goes to his hand with the king of spades, and plays the king and 5 of diamonds. East takes the diamond and returns either a diamond or a club. South wins in his hand with the 10 of diamonds or king of clubs, then plays the other card. South plays the diamond jack, discarding a spade on the board. West must discard a heart to prevent South's ace and 9 of spades from winning. South now leads the 6 of clubs, whereby West is squeezed. Discarding another heart allows the heart on the board to win as a spade is discarded. Discarding a spade allows South's ace and 9 of spades to win.

"Case 4: West initially leads a spade as in case 1 and shifts to a heart at the third trick, or initially leads a heart as in case 3 and shifts to a spade at the third trick. The hands after trick three are the same in either case.

"South plays dummy's ace of hearts to strip out East's last heart, leads to the club king to play the three high diamonds, and then leads his last (low) diamond to East. East's return of the queen of clubs is ducked in the dummy as West discards a heart. East's next club lead then squeezes West."

J/F 2. Quite a number of readers misread this problem and assumed that you meet one truth-teller and one liar. I went back and reread the problem and believe it is quite clearly stated that the inhabitants of Othertown include both truth-tellers and liars, so you might meet two truth-tellers, one from each city.

The following solution, from Chatchawin Charoen-Rajapark, does appear to me to be correct. Not surprisingly, the single question he asks is quite involved.

"The solution I came up with solved not only the originally stated problem but also a more general problem with less restrictive assumptions: (i) Truthtown is allowed to be populated by both TTTs and FFFs and (ii) only one stranger (from which town we don't know), not two, is required to answer the question. The question, to be asked while you are pointing to one of the two roads, is:

"QA: Do you answer 'Yes' to the question 'Is it true that (a) if you are from Truthtown then this road does not lead to Truthtown and (b) if you are from Othertown then this road leads to Othertown?'

"QA will solicit the same answer regardless of the stranger's hometown and personality type. If he answers 'Yes,' the road leads to Othertown; if 'No,' it leads to Truthtown. The analysis below applies to the more general problem stated above.

"Let TT stand for 'Truthtown,' OT stand for 'Othertown,' Sa be the statement 'If you are from TT then this road does not lead to TT,' Sb be the statement 'If you are from OT then this road leads to OT,' and QB be the question 'Is it true that Sa and Sb?'

"Then QA is simply the question 'Do you answer "Yes" to QB?'

"Suppose you point to the road leading to OT. If the stranger is from TT, then he knows that Sa is true (since he is from TT and the road does not lead to TT) and that Sb is also true (since he is not from OT and the statement 'If P then Q' is always true when P is false). If the stranger is from OT, then he knows that Sa is true (since he is not from TT and the statement 'If P then Q' is always true when P is false) and that Sb is also true (since he is from OT and the road leads to OT). And so, regardless of the stranger's hometown, he knows that Sa and Sb are both true. A TTT would then answer 'Yes' to QB; consequently, he answers 'Yes' to QA. An FFF, on the other hand, would lie and falsely answer 'No' to QB; so his answer to QB would not be 'Yes'; consequently, since he lies, he falsely answers 'Yes' to QA. Therefore, when you point to the road leading to OT, the stranger always answers 'Yes' to QA regardless of his hometown and personality type.

"An analysis similar to the above shows that if you point to the road leading to TT, the stranger always answers 'No' to QA regardless of his hometown and personality type."

BETTER LATE THAN NEVER

2007 J/F 1. Fred Tydeman writes that Puzzle Corner May 1974 showed that the number of legal bridge auctions is $4 \times (22^{35} - 1)/3 + 1 = 1.28745\ldots \times 10^{47}$, which differs from the expression in 2007 J/F 1; so it looks like "Ed" was correct in not trusting Harvard students.

In addition, the expression for number of ways to play has a typo; it should be $4 \times (13!)^4$. That number can happen only if the bid is no trump and each player has all 13 cards in one suit.

Y2009. Several readers have responded with improvements.

$2 = 2 + 00 \times 9$ (this works for 2008, 2007, etc.)

$18 = (2 + 00) \times 9$

2009 S/O 2. I printed an "anonymous" solution in the January/February issue. Joel Karnofsky, the author, kindly responded and pointed me at his original e-mail, in which his name is clearly stated. Either my computer printer or my vision had a bad day. Sorry for the error.

N/D 3. Scott Howlett notes that the solution on the website assumes that the counterfeit coins are always lighter than the true coins. The problem simply stipulates that they are different (lighter or heavier) from the true coins. This breaks the solution, because you might not round up to find the weight of a true coin (you might need to round down). His solution, now also on the website, permits counterfeit coins to be heavier as well.

OTHER RESPONDERS

Responses have also been received from F. Cann, J. Chandler, J. Hardis, S. Heeschen, J. Horton, S. Lerman, R. Marks, T. Mita, V. Nadkarni, W. Nissin, E. Passow, S. Samuels, E. Sheldon, E. Signorelli, K. Szolusha, T. Terwilliger, N. Weiss, and J. Zemba.

PROPOSER'S SOLUTION TO SPEED PROBLEM

Planets Saturn and Uranus and the constellation Taurus.

Saturn – "T" + "U" –> Uranus – "N" + "T" –> Taurus – "U" + "N" –> Saturn ■

Send problems, solutions, and comments to Allan Gottlieb, New York University, 715 Broadway, Room 712, New York, NY 10003, or to gottlieb@nyu.edu. For other solutions and back issues, visit the Puzzle Corner website at cs.nyu.edu/~gottlieb/tr.