Puzzle Corner

INTRODUCTION

I am very pleased to report that my son David will be attending MIT this coming September. Who knows, maybe in a few years, he will take over "Puzzle Corner" and run it for another 40 years!

It has been a year since I reviewed the criteria used to select solutions for publication. Let me do so now.

As responses to problems arrive, they are simply put together in neat piles, with no regard to their date of arrival or postmark. When it is time for me to write the column in which solutions are to appear, I first weed out erroneous and illegible responses. For difficult problems, this may be enough; the most publishable solution becomes obvious. Usually, however, many responses still remain. I next try to select a solution that supplies an appropriate amount of detail and that includes a minimal number of characters that are hard to set in type.

A particularly elegant solution is, of course, preferred, as are contributions from correspondents whose solutions have not previously appeared. I also favor solutions that are neatly written, typed or sent via e-mail, since these produce fewer typesetting errors.

PROBLEMS

J/A 1. The end (for now) of the Kells saga:

"Now the wife was really getting steamed. Nevertheless, the third hand, I was sure, was safe. I had KQ1098 of spades and 26 good points, no singleton king or doubleton queen or anything like that. Almost the best hand I've ever held in my whole life. I opened two spades, which we play as forcing to game. The opponents competed and the final contract was four spades doubled."

With that powerful a hand, surely you couldn't have gone down very much.

He burst out screaming. "You just don't get it! It was they who bid four spades and made it! I doubled so loud it set off the fire alarm. Delayed the game at least 20 minutes. When we came back, the dummy came down with nothing higher than a six! I figured we'd score thousands of points. But I'll never forget the way declarer laughed at me as I helplessly watched him gather his ninth trick while he still had the ace of spades remaining in his hand. Then my wife turned beet-red, hyperventilated and bellowed at me 'Three strikes, you're out, get lost!'"

At that point he burst out sobbing again. He was too distraught to say anything more about this catastrophic deal.

Can you deduce what it was?

J/A 2. It is a fairly standard geometry problem to find various points using only a compass and straightedge. Alfredo Peralta-Maninat, however, wants you to find the midpoint of a line segment using only a compass (i.e. no straightedge). To be clear, let me add that the *construction* does not use a straightedge, but proving that the construction is correct is not similarly constrained.

J/A 3. Richard Hess is much too non-conventional to use a wristwatch. Instead, he gives himself a hotfoot or two.

You are given some matches and two shoelaces. The laces burn irregularly like fuses. One takes 50 minutes to burn completely when lit from either end; the other takes 24 minutes. Your job is to burn the laces in a way to accurately time exactly 31 minutes.

SPEED DEPARTMENT

Nelson Perez wants a common English word that changes its meaning and pronunciation when it is capitalized.
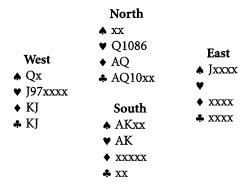
SOLUTIONS

M/A 1. Larry Kells continues his bridge saga:

"The next time I dealt, I had seven hearts, headed by J97 and 11 points. I decided to open three hearts in hopes of keeping the opponents out of the auction. Fat chance! By the time the smoke cleared they were again in slam, and again they made it after I doubled."

Sounds like you don't have the defensive strength to double a slam.

"But the slam they bid was six hearts! They never showed the slightest interest in any other suit. I had just seen how I shouldn't double a slam with a ragged six-card trump suit, but this time I had seven trumps and I still couldn't beat their slam!"

My former Baker House colleague, John Rudy, compliments Kells on this "neat" problem, and offers the following solution:

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                        North
                        ♠ xx
                        ♥ Q1086
           West         ♦ AQ              East
           ♠ Qx         ♣ AQ10xx          ♠ Jxxxx
           ♥ J97xxxx                      ♥
           ♦ KJ         South             ♦ xxxx
           ♣ KJ         ♠ AKxx            ♣ xxxx
                        ♥ AK
                        ♦ xxxxx
                        ♣ xx
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"Assume North won the contract with East on lead. Anything East leads helps declarer, so let's assume it is a spade, which is the most benign.

1	Ace of spades
2-3	Take ♣AQ (finesse if West plays the jack)
4	Return South with the king of spades
5-6	Take the top two ♦ (finesse if necessary)
7	Ruff a club with the king of hearts
8	Ruff a ♦ with whatever ♥ is needed to beat West
9	Ruff a club with the ace of hearts
10	Ruff a spade with whatever ♥ is needed.

Now you are in dummy with the good 10 of clubs and two trumps that beat West (via a finesse). Lead the club and West is end-played.

M/A 2. Nob Yoshigahara notes that, ignoring colons, a 24-hour digital watch has many palindromes, e.g., 1:01:01 and 23:55:32. Indeed, Nob asserts that there are 660 of them and asks you to find: (i) the two closest such times, (ii) the two such times whose difference is closest to 12 hours, and (iii) the longest time span without such a time.

Aaron Hirshberg and his friendly computer offer the following solution:

(i) If you are allowing for leading zeros, the two closest times are 01:11:10 and 1:11:11, which are one second apart. If you are not allowing for leading zeros, 9:59:59 and 10:00:01 are two seconds apart.

(ii) The times 1:33:31 and 13:33:31 are exactly twelve hours apart.

(iii) The times 15:55:51 and 20:00:02 are 14651 seconds apart, of 4 hours, 4 minutes, and 11 seconds apart.

M/A 3. Frank Rubin wants you to find a positive integer solution to the equations:

$$a^2 + b^3 = c^4$$

$$a^4 + b^6 = d^7$$

Note that we are looking for four values that satisfy both equations.

Unfortunately, this problem was misprinted and the exponents were not raised and thus, instead of beginning with a squared, we had a times two.

However, a few readers figured out the *intended* problem, most likely because the problem was printed before with a different typo. Rather than run it a third time, I am giving the solution found by Dave Wellington:

Let $a=A(A^4+B^6)^{12}$ and $b=B(A^4+B^6)^8$.
Then $a^4+b^6 = [(A^4+B^6)^7]^7$.

So letting $d=(A^4+B^6)^7$, satisfies the second equation; Sim-

ilarly letting $c=(A^2+B^3)^{1/4}(A^4+B^6)^6$ satisfies the first equation.

So we just need to find A and B such that $(A^2+B^3)^{1/4}$ is an integer.

One solution is $A=3^3$ and $B=2\times3^2$.

This gives (after some simplification):

$a=3^{147}\times65^{12}$, $b=2\times3^{98}\times65^8$, $c=3^{74}\times65^6$, and $d=3^{84}\times65^7$.

BETTER LATE THAN NEVER

1999 N/D 2. I should have made it clear that *Technology Review* has solutions to the one rope and the max number of ropes problem. Walter Cluett believes that if one actually cuts out the original problem and reassembles the pieces according to the one rope solution pictured in **M/A 2000**, there are two caps and hence, three, not one, ropes are formed.

This is hard for me to judge. D. Greenberg and R. Hess wrote in agreement with W. Cluett. Have others tried it?

OTHER RESPONDERS

Responses have also been received here from G. Blondin, J. Chandler, D. Dechman, B. Deitrick, S. Feldman and A. Hirshberg. Also, from L. Iori, B. Layton, G. Leibowitz, R. Lester, M. Lindenberg, T. Lydon, C. Muehe, K. Rosato, R. Sackheim, E. Sard, I. Shalom, J. Stuart, M. Teague and R. Tooley.

PROPOSER'S SOLUTION TO SPEED PROBLEM
polish

Send problems, solutions and comments to Allan Gottlieb, New York University, 715 Broadway, 10th floor, New York, NY 10012, or to gottlieb@nyu.edu.

— *Edited by Owen W. Ozier '98*