Puzzle Corner

INTRODUCTION

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 comfortable supply of regular problems and speed problems. Bridge problems, however, are in short supply.

There was an unfortunate typo in **N/D2** introduced in the printing process that rendered the problem impossible. The corrected version is offered below as **M/A3**.

Finally, let me mention correspondence from two longtime contributors. Matthew Fountain sent a lovely letter in which he noted that he has been submitting problems and solutions since 1978. My classmate and fellow Baker House resident, John Rudy, has also corresponded mentioning that he, like me, cruised the "Inside Passage."

PROBLEMS

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!"

Can you reconstruct the deal and play?

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.

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

$$a2 + b3 = c4$$
$$a4 + b6 = d7$$

Note that we're looking for four values that satisfy both equations.

SPEED DEPARTMENT

Here is one from Rob Bianchini. Each item below contains the initials of words that will make it correct. Complete the missing words. For example, "16 = O. in a P." becomes "Ounces in a Pound."

1000 = W. that a P. is W.
29 = D. in F. in a L. Y.
64 = S. on a C.
40 = D. and N. of the G. F.
3 = R. C.
76 = T. in the B. P.

SOLUTIONS

N/D 1. Robert Bart offers us the following Bridge end-game study in which South, on lead, needs six tricks for his no-trump contract. Are they available? Yes, six tricks are available, as Subrata Sircar demonstrates here:

	North ♠ J3 ♥ 4 ♦ ♣ Q642	
West ♠ 65 ♥ ♦ 86432 ♣		East ♠ ♥ Q ♦ KJ7 ♣ J98
	South ♠ 92 ♥ J ♦ AQ9 ♣ 5	

South plays the spade 9 to the J, and returns the 3 to the 2 and 6 in West. West must return a diamond which South wins cheaply in hand. At this point, then, East has played one diamond, and had to discard two cards on spades.

If East discards the heart queen and a diamond, she has one diamond left which will drop under the ace; South will win one spade, one heart, three diamonds and a club. If East discards the heart queen and a club, South plays the heart J and squeezes East in the minors, making two major suit tricks, two or three diamonds and one or two clubs. So East cannot discard the heart queen.

Similarly, East cannot discard two clubs on the spades, since then South wins one spade, two diamonds and three clubs. So East must have discarded one diamond at least, and hence has at most one diamond left.

South can then cash two more diamonds, leaving the following position:

	North ♠ - ♥ - ♦ - ♣ Q6	
West ♠ - ♥ - ♦ 86 ♣ -		East ♠ - ♥ ? ♦ - ♣ ??
	South ♠ - ♥ J ♦ - ♣ 5	

which leaves East squeezed in the round suits. South will either

win the heart jack and club queen or the last two clubs in North depending on which two cards East keeps.

Overall, a combination end play (to force the diamond finesse) and one-way automatic squeeze.

Nifty—I only hope I find this play at the table!

N/D 2. As mentioned above there was an unfortunate typo in the original printing of this problem and the correct version is now M/A 3.

N/D 3. Robert Bishop, MIT Professor Emeritus of Economics, wants you to find the longest English word such that if it is reduced by one letter at a time, another English word can be formed of the remaining letters—down to a final one-letter word. For example, galleons, galleon, gallon, along, long, log, go, o.

The longest sequence found has 16 entries. Richard Hess reports that in Borgmann's book, "Language on Vacation," we can find:

O	ORIENT	INTOLERATION
NO	RETINOL	INTERLOCATION
TON	RELATION	INTERLOCATIONS
NOTE	NATROLITE	INTEROSCULATION
TENOR	INTOLERANT	INTEROSCULATIONS
	LORETTONIAN	

Guy Steele coincidentally did a computer study of this problem last spring and sends us the following report:

"As it happens, I was investigating this problem back in April. Using a word list of over 170,000 English words and word forms, I wrote a program to create a database that would list, for each word, all the words of one fewer letter, created by deleting one letter and then rearranging the remainder, that had the property that you could continue the process to create a chain all the way back to the word 'A,' 'I' or 'O.' The database constitutes a directed acyclic graph, where the words 'A,' 'I' and 'O' have no out-pointers and words that are maximal have no in-pointers.

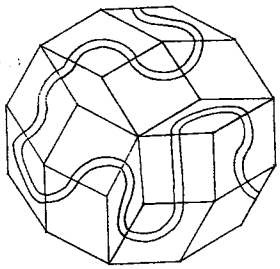
"Of course, the contents of the database depend on the original word list. Using my particular word list, the database has a unique longest word; its length is 16. Of course, there are many paths from this word down to a single-letter word; here is the path that I regard as 'most natural' (that is, using words that are, to me, the least obscure):

reconsolidations *[reconsolidation]*
reconsolidation *[decolonisation]*
decolonisation *[consolidation]*
consolidation *[conditionals]*
conditionals *[dislocation]*
dislocation *[solidation, isotonical, coalitions]*
coalitions *[locations, isolation, colonitis, coitional, coalition]*
locations *[stolonic, solation, location, colonist]*
colonist *[soliton, lotions]*
lotions *[tonsil, stolon, lotios, lotion]*
tonsil *[toils, Solti, loins, lions, lints, linos]*
lions *[soli, soil, Sion, silo, olin, oils, noli, nils, lois, loin, Lnos, Lion, lins, lino, ions]*
soil *[Sol, osi, oil, LSI, los, lio, ISO, ILS]*
oil *[I/O, ol, lo, li, lo, IL]*
lo *[o]*
o

"Note the British spelling of 'decolonisation.' Next to each word is listed the set of words that are possible next choices in the chain at that step."

BETTER LATE THAN NEVER

1999 J/F 2. We now have received many solutions to Nob Yoshigahara's "rope problem," including from Alan Taylor (alan.taylor@alum. mit.edu) and Don Dechman.



Nob had asked how to cut the original figure into 15 rhombi, then rearrange them into a dodecagon with just one rope (the original had three ropes).

One solution appears here and others can be obtained by request to *Technology Review.*

OTHER RESPONDERS

Responses have also been received from F. Bachner, A. Barsa, J. Bernstein, D. DeLong, B. Deitrick, S. Feldman, R. Giovanniello, J. Grossman, J. Hardis, S. Hsu, T. Juster, P. Latham, R. Lax, D. Leep, A. Lowenstein, T. Maloney, R. Marshall, A. Ornstein, J. Rudy, E. Sard, C. Smith, B. Wake, A. Wasserman, D. Wellington, C. Weigert, J. Wright and A. Zaklad.

PROPOSER'S SOLUTION TO SPEED PROBLEM

Words that a Picture is Worth; Days in February in a Leap Year; Squares on a Chessboard; Days and Nights of the Great Flood; Ring Circus; and Trombones in the Big Parade.

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*

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