

# The Farmer Goes to Market

the town of Floyd's Knob, Indiana had only 37 registered automobiles, or thought it would be safe to appoint his cousin, Henry Stables, who was a cutup, as its traffic commissioner. Soon regretted his decision. When he awoke one morning, it found that a sign of signs had been erected imposing confusing restrictions on turns at every intersection in town.

The citizens were all for tearing down these signs until the police chief, a cousin of the mayor, made a surprising discovery. Motorists passing through town became so exasperated that they later made a prohibited turn. The police chief found that the town was losing even more money from these fines than from its speed trap on an out-of-the-way country road.

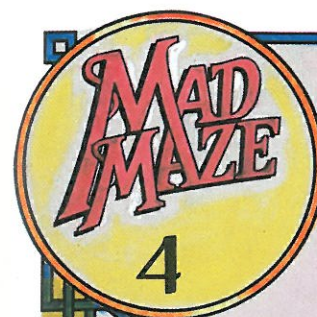
Of course everyone was overjoyed, particularly because the next day was Saturday and Moses MacAdam, the county's richest farmer, was due to pass through town on his way to the county seat. They expected to extract a large fine from Moses, believing it to be impossible to drive through town without at least one traffic violation. But Moses had been secretly studying the signs. When Saturday morning came, he astonished the entire town by driving from his farm through town to the county seat without a single violation!

Can you discover a route that Moses could have taken? Enter town on the road at the left and exit on the road at the right. At each intersection you must follow one of the arrows. That is, you may turn in a given direction only when there is a curved

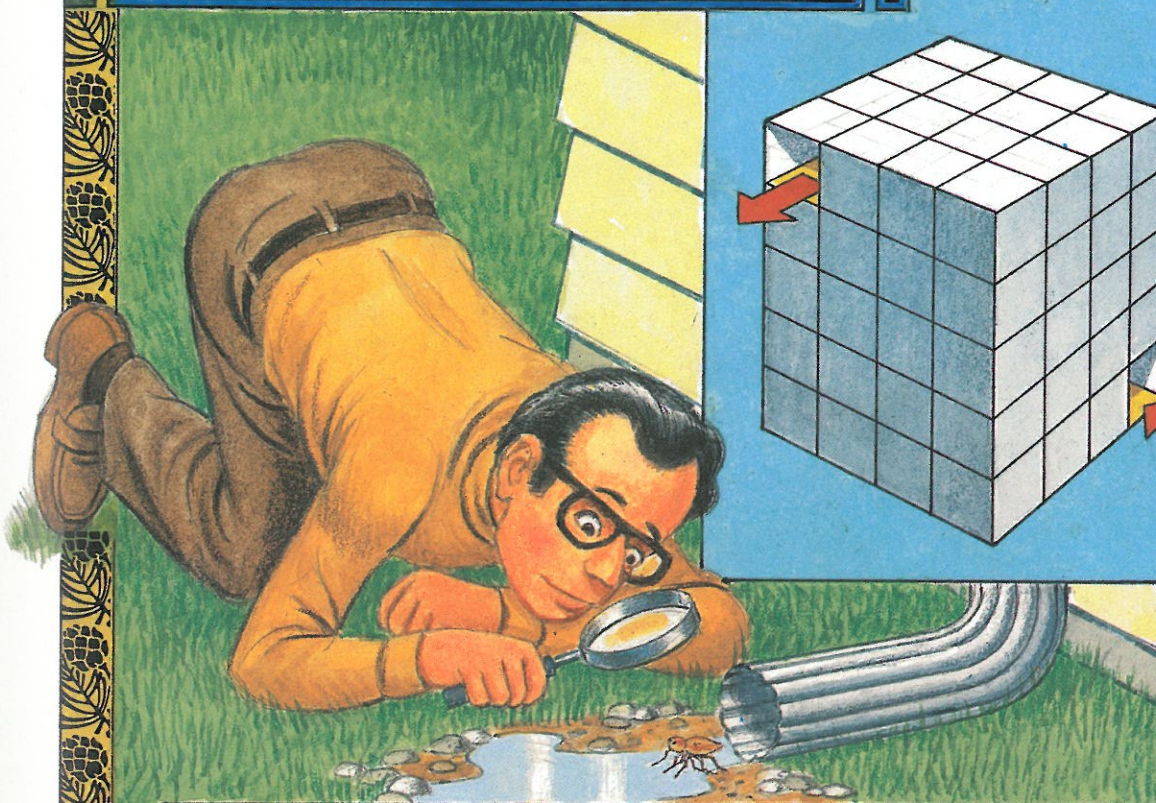
line in that direction, and you may go straight only when there is a straight line to follow. You may leave an intersection only at the head of an arrow. U-turns or backing up is not allowed.

As you can see, at the first intersection you can only go straight. At the second intersection you encounter you can again only go straight. At the third intersection you can go straight or turn north. Suppose you turn north. At the next intersection you can only turn east. True, there is a line that curves to the west, but there's no arrowhead pointing west, so you can't leave that intersection in a westerly direction.

In this map, and in the other city maps in the book, there are driveways drawn inside the blocks. The driveways are only decorative; you can't use them as part of your route through a maze.



# The Itsy Bitsy Spider



Fred was discussing a problem with his architect:

"I have a terrible itsy bitsy spider infestation. Actually, it's only one itsy bitsy spider, but he's very persistent. He spins a web on the roof that clogs up the gutter. When it rains, he is washed down the water spout. But then along comes the sun and dries up all the rain and the itsy bitsy spider climbs up the spout again. And there's not a damn thing I can do about it."

"Don't worry," said the architect. "He may be persistent but spiders aren't that bright. I suggest we put a maze at the bottom of the water spout; then the spider won't be able to find his way back up."

The architect came back the next day with the diagram shown at the right. "What I propose is this: we run the water spout into a large metal box. The box will contain many small chambers on five levels. The water will come in at the top, on Level A, will travel from chamber to chamber, and will drain out at this opening on Level E. There has to be a path through the box, otherwise the water won't be able to drain

figure out how to get back through the box and back into the water spout.

"The solid black lines represent walls, which the spider cannot get through. I've used yellow to indicate floors. If the spider's on a yellow square, he cannot travel from that point down to the next level. If a square is not colored yellow, then he can travel down to the corresponding square in the level below. To figure out whether the spider can travel up, you have to check out the corresponding square in the level above. If that square has no floor, then the spider can travel up. If the square does have a floor (that is, it's colored yellow), then the spider cannot travel up."

"This sounds like a perfectly reasonable plan to me," said Fred. "In fact, I can't figure out how to get through the box myself." So, they built the box and added it to the water spout. The first rainstorm did wash the spider through the box, but, unfortunately, after the sun dried up the rain the spider went back into the box, traveled through it and back up the water spout. Can you discover a path the spider could take to get through the box? You have to go in the

