

# The Making of a Robot

BY JON C. HALTER

**"Mike"** is a robot. Computer-controlled to operate with a "mind" of his own, he can find his way around a room full of obstacles.

The amazing Mike may earn a place on the family tree of future R2-D2s and C-3POs. But even more extraordinary is his 17-year-old creator, Tod Loofsborrow, of Westfield, N.J.

"I've always been fascinated with mechanical things," Tod explains, in telling how he put Mike together in only a few months, at a cost of \$450. "My parents say I first showed a lot of interest in robots when I was six years old. We were visiting the world's fair in Montreal, and I was really impressed with a robot exhibit."

And as if building a working robot weren't enough, Tod then proceeded to write a book about his project, *How to Build a Computer-Controlled Robot* (\$7.95 from Hayden Books, Rochelle Park, N.J.) has since sold out its first printing of 5000 copies.

In the book, Tod describes the step-by-step development of Mike, whose name is short for "Microtron."

*Mobility* was the first stage. Powered by an automobile battery inside him, Mike can pull up to 150 pounds, or carry 600 pounds, while guided by a control box attached to him with a cable.

In stage two, Mike gets *independence*, and becomes, Tod says, "a true robot." An "ultrasonic transducer" in Mike sends out four sound waves every second. While the human ear can't hear them, Mike uses them to gauge how far he is from objects. He measures how long it takes each signal to be reflected back to his transducer and changes his course to avoid hitting anything. If he should bump into something that the sound waves miss, eight "impact sensors" tell him to back up and move around.

"Mike is mainly a summer project," Tod explains. So stage three—*advanced sensory systems*—is still in the future. Tod plans to program the robot to respond to a whistle, and then to a voice command. A "word template" in Mike's computer will match the words he "hears" with sounds stored in his memory. When they agree, Mike will move as ordered.

Even more ambitious is an "image sensor," to let Mike "see" objects in his path. A voice, and a body with arms and legs are also planned for Mike.

Tod's electronic accomplishments do not mean he is a science wizard, who

spends all his time in a basement workshop. "Two years ago I knew nothing about this field," Tod confesses, and building Mike was a start-from-scratch, part-time project.

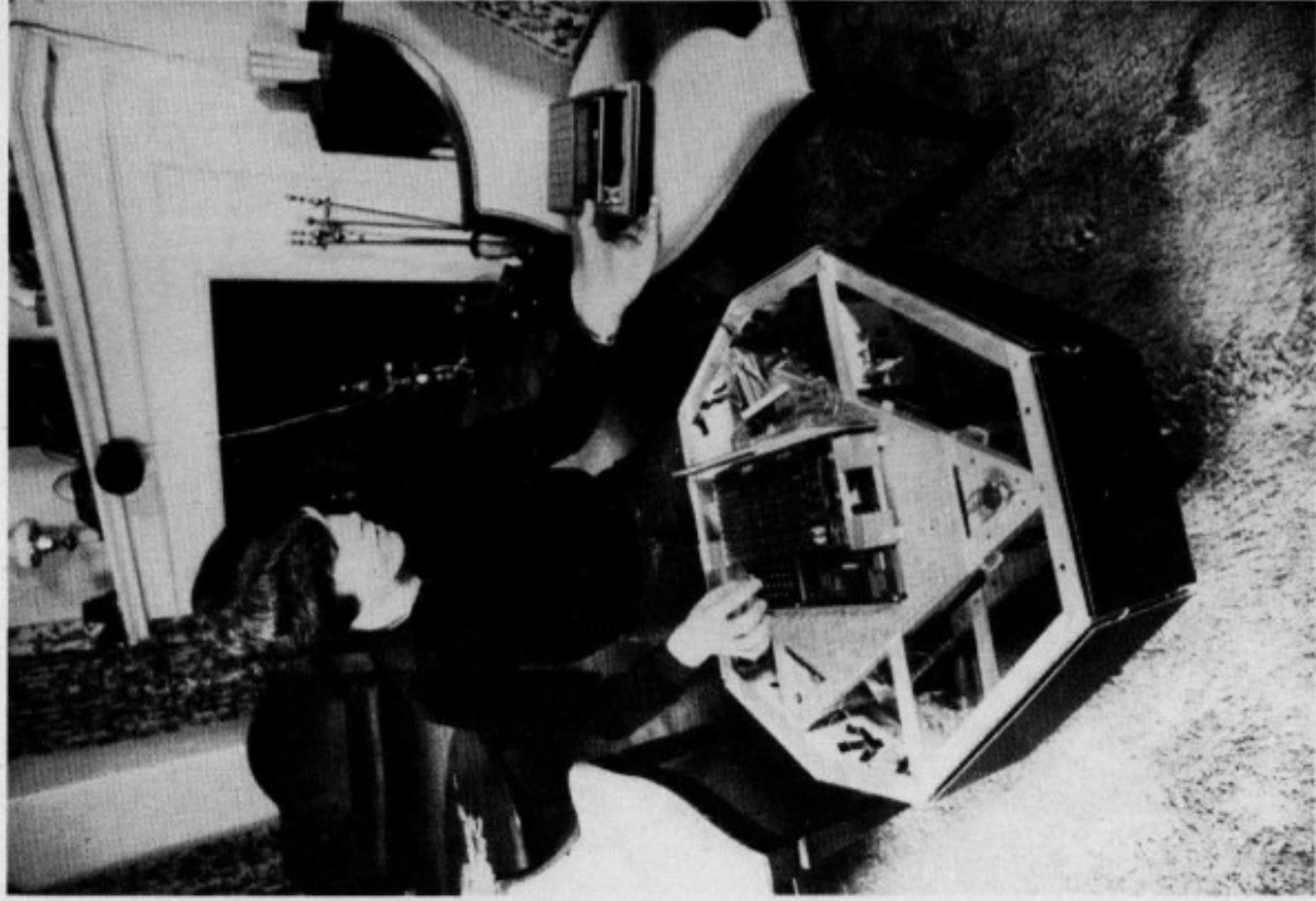
A high school senior, Tod runs on the cross-country team, keeps six tanks of salt- and fresh-water fish at home, plays chess once a week at a local club, studies astronomy, and scuba dives, whenever he can find the chance.

Not surprisingly, Tod is a good student who *enjoys* school. ("I'm really learning a lot," he says.) Does he plan a

career in electronics? "I'm not sure yet," Tod admits. "I am also interested in creative writing, and I might make that my career."

No doubt he will succeed in either area, as the amazing Mike, and Tod's well-written book prove. And, in his book, while outlining his future plans to give his robot eyes, ears, arms, and legs, Tod himself explains why he will probably do well in *anything* he tries:

"Some people say that I am a dreamer. But that's what they said when I started." ♦



# How I Built "Gismo"

By David Wiatrowski

*Editor's Note: Since plans for the robot, "Gismo the Great," first appeared in Boys' Life in 1956, thousands of readers have sent in self-addressed, stamped envelopes for a free reprint. Some have actually constructed a robot from the plans. One of the most impressive Gismos was recently built by 14-year-old David Wiatrowski, of Waukegan, Ill. A member of Scout Troop 55, chartered to St. Dismas Church, David here shares his experience with BL readers:*

Some things used to build the original Gismo in 1956 are no longer easy to find, so I had to improvise. I used a metal wastebasket for his head; a coffee can for his neck; and a plastic lard can for his upper body.

I used an empty brake-fluid can for the lower body; downspouts for legs; and large juice cans for shoes. Then, I spray painted him with aluminum.

I bought a 7-r.p.m. motor from Gismo's designer, Glenn Wagner, who had offered them in the original article, and still had a few available. Following the plans, I made the robot so that his eyes and heart flash, his arms and head turn, and he rings a bell and talks.

My Gismo has been a lot of fun. He was the main attraction at a Cub Scout blue-and-gold banquet; was displayed several times at the public library; and helped me win an outstanding award at my school science fair. He also entertains neighborhood children by answering their questions.

