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SPECIAL 15-PAGE SECTION:

Building homes the high-tech way

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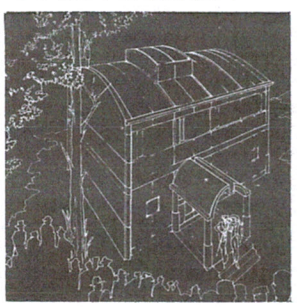
For '85: new directions in high-tech housing

AN OVERVIEW

By EVERETT H. ORTNER



Is it possible that while rising costs have ruled out a custom-designed house for most people, computers may bring it back? That seems to be the message from many sources: from companies like Wickes Lumber (see below), whose computers customize general house plans to individual needs; from architect Donald Greenberg of Cornell University, who predicts that, with computer-aided design and drafting (CADD), there will be architectural "common data bases" and "drawing will be mostly automatic"; from R. Bruce Patty, president of the American Institute of Architects, who sees computers as the most significant change in architectural practice "since the invention of the T-square." Certainly, it's the message from Japan, where giant factories—the largest of their kind in the world—produce housing components that are designed, produced, and assembled by computerized systems.

But the world of high technology that this 15-page section of POPULAR SCIENCE explores touches many other changing areas, too: of materials, design, and technology. How about a high-tech wood house (drawing above) with a skin of bolt-on plywood panels? It's the award-winning design of Chicago architect Michael S. Siegel. Wood is unquestionably a material of the future—it's versatile and it's renewable. But then it also seems clear that all current materials will figure heavily in the future: concrete and steel, obviously, and plastics in many forms, even as a structural material ["Foam Home," PS, Jan. '84]. Plain earth, too, seems to have a future as a building material. PS articles on rammed-earth technology, the process of molding building bricks out of earth [PS, Dec. '81, Nov. '82], have received extraordinary attention.

What about earth as a sheltering material? Some of the attraction of earth-sheltered home design seems to be waning. Costs and energy savings have been disappointing; materials failures have been common. But there have been many success stories, too. One of them, the Lovins house, which author Marty Carlock writes about in this section, is also an exemplar of all the ingenious energy-saving technologies that have been devised in the last decade: superinsulated walls and windows resulting in a zero heating bill, solar collectors for domestic hot water, water-conserving toilets, and so on. But the Lovins house cost $500,000 or so. That's also the ticket for Boston Edison's experimental Impact 2000 house, which uses $60,000 worth of photovoltaic cells to generate 4.3 kilowatts of electricity. For most of us, that's not the way to go—for now, anyway.

What is the way to go? Much of today's high-tech building technology suggests what tomorrow's standard technology will be like: a technology built on computerized factory manufacture. Indeed, the threat from foreign manufacturers, eyeing the huge American housing market, might have much the same impact on our present archaic, labor-intensive building technology that the Japanese auto industry has had on Detroit.

Factory technology is not new to America, but it is a small component of our housing industry. And much of that technology has been devoted to turning out houses of the poorest quality —the jerry-built mobile homes that litter our landscapes. But the prospects seem to be improving rapidly, as PS Group Editor Al Lees points out in his column, "Shop Talk," farther back in this issue. Several factory-built modular homes were displayed at the annual National Assn. of Home Builders show in Houston, and Lees concludes with: "The modular concept has never been launched in so many exciting directions at once—all healthy signs for our developing housing technology."

CADD HOUSE

By V. ELAINE SMAY

"I'm interested in a passive-solar house of contemporary design," I said to Tolland, Conn., architect Dennis Davey. He sat down at his Apple Lisa computer and started pushing its palm-size "mouse" around the desk top. As he shoved it to the left and zipped it back to the right, a tiny rectangle on the left side of the screen moved to the center, growing large as it traveled. "Let's start with the floor plan," he said.

Davey, who designs houses and small commercial buildings in the Hartford, Conn., area, is one of a handful of architects in small firms who have traded T-square and drafting board for a computer. Even without commissioning such an architect, though, you can take advantage of computer design for your next house. The giant chain, Wickes Lumber, sells a series of house plans that can be computer-customized to meet your needs.

Davey bought his first computer, an Apple II, in 1979. "Around 1982 I started seriously looking at computers that do architectural drafting," he told me. "They were $80,000—and above." These powerful computer-aided-design-and-drafting (CADD) systems are trickling into the offices of large architectural firms, but their cost makes them prohibitive for most small firms.

In 1983 Davey saw the Apple Lisa [PS, June '83]. It had a 32-bit processor, which meant it could do complicated tasks, such as graphics, fast. And it had a mouse: Move the mouse, and the arrow on the screen moves in tandem. For design and drafting, the mouse is your pencil: You can draw freehand with it or choose from an array of shapes and patterns stored in the program. Davey sprang for the $12,000 cost of the computer, printer, and software (for design and drafting he uses a program called LISADRAW). "I was about to hire drafting help, so I knew it would pay back quickly," he said.

At the screen Davey demonstrated the speed and accuracy of computer design, and the razzmatazz, as he calls it. With one move of the mouse he zipped the arrow to the top of the screen and chose a pattern from one of LISADRAW's menus, doing it so fast I couldn't read the menu. "The mouse has become an exten-

Continued

sion of my hand," he said. In an instant a pattern shaded in the wall thickness on my floor plan.

As Davey listened to my requests, the various rooms grew and shrank within the plan. He'd work for a while on one section at full size (¼ inch equals one foot), then shrink the image so that we could see the whole plan at once. "Let's put a coat closet in the foyer," he said after he had centered an entry door —automatically—on the facade. A closet-shaped rectangle dropped into place on the screen. "Oops, the front door opens up against the closet. I'll just reverse the door." And the door symbol did a somersault, landing with its opening facing the other direction. "With a computer," he said, chuckling at my delight, "if you make a mistake, it's easy to fix."

When we were both satisfied with the floor plan, Davey duplicated it, then flipped the copy to see if I preferred it reversed. "You only draw an object once with computer drafting," he pointed out. He gave me more options as he worked on the elevation. First, he put horizontal siding on the house, then duplicated the house and showed it with vertical siding. He duplicated it again and enlarged the kitchen windows. Finally, he made a third copy and drew in clerestory windows. In mere minutes I had a choice of four facades.

The whole process took about an hour. When I OK'd the plan, Davey made a printout. "One drawback of my system," he admitted, "is that my printer takes only 8½-by-11-inch paper." For my design, the printer spewed out 15 sheets of paper, which Davey pasted together into a two-by-three-foot whole. Had I been an actual client, I would have studied the plan for a week or two. Then we would have met again in front of Lisa's CRT.

Computer-modified house. When you buy a house plan from Wickes Lumber's Computer-Assisted Planning service, you choose from a catalog of 28 and pay $200 for a set of basic plans. You note the changes you'd like right on those plans: Windows and doors can be relocated, window sizes and styles can be changed, and the house can be enlarged, for example. Your marked-up plans go to Wickes's computer center in Atlanta. In two to three weeks your computer-revised plan, elevations, materials and cutting list, and printouts detailing the construction of each wall panel arrive back at the store. Once you approve the plans, Wickes quotes a price, good for 60 days, on the materials. "For $35,000 to $65,000 a do-it-yourselfer can get into a customized house that otherwise might cost $50,000 to $125,000," said Rick Clapp, Wickes's director of packaged homes.

(Wickes also has a kitchen-planning service, available in seven test markets: Endicott, N.Y.; Exton, Pa.; Wilmington, N.C.; Bakersfield, Calif.; College Park, Ga.; New Braunfels, Texas; and Baton Rouge, La. Sears has a similar service in all stores. At Wickes, the salesperson enters data about your kitchen into a computer in the store, and you see a floor plan and elevations on the screen. At Sears, the computer design is done outside. Both stores provide printouts of the plan, elevations, and a list of cabinets needed—and their prices.)

TALKING HOUSE/SMART HOUSE

By WILLIAM J. HAWKINS

"Living-room light," he says as he gets up from the chair.

"What do you want me to do with it?" asks the house.

"Dim it," he replies. The light narrows to a soft glow.

"The light is now dimmed," reports the house. "Anything else?"

"No."

Step into Andrew Alloco's Miami home. When you do, you too can become the master of an electronic servant that not only dims lights but controls the air conditioning, heating, water heater, telephone, pool water, Jacuzzi, and burglar alarm, too. Speak, and Alloco's Apple II computer listens. Command, and it obeys, remotely controlling a variety of devices throughout the house. And at the appropriate time, it conveys its information to you orally through a speaker system.

Alloco's talking house is one of perhaps hundreds scattered across the country. Off-the-shelf products are now available to convert a variety of home-computer brands into house controllers. And there are stand-alone systems. For example, General Electric's HomeMinder [this issue] is a computer designed specifically for the remote control of home appliances. It now seems likely that computers will take control of future homes, and, from what I've learned, that's only the beginning. We may someday live in something called a "smart house."

"We can eliminate the possibility of electric shock and electrical fires," says David MacFadyen, Smart House project director for the National Assn. of Home Builders (NAHB). "Homes of the future won't be passive. They'll be intelligent—smart houses—and they'll be equipped with smart appliances."

MacFadyen's plan: Eliminate all high-voltage AC wiring, and replace it with low-voltage DC. Then eliminate all present home appliances. Replace them with low-voltage models that use a microprocessor to communicate with the house circuitry.

"Plug in a smart iron," says MacFadyen, "and it tells the house how much power it needs. Plug in a smart radio, and it does the same thing. Each appliance receives just enough power to make it work." That conserves energy, and it makes the system shock- and fire-proof. "Nothing happens if a child touches the outlet or if there's a short in the system," he says. "Without an appliance plugged into the outlet, the house won't be told to turn on the power."

Appliances will also communicate with the home's central computer. When the clothes in the dryer are finished, you won't hear a bell in the basement. Instead the computer will tell you via video monitors installed throughout the house. "The monitors can be used for entertainment, too," adds MacFadyen. "When you want to watch a videotape in the bedroom, the computer will turn on the VCR in the den and send you the movie."

All this will require an enormous cooperative effort among electronics and appliance manufacturers, and plans have already begun. I attended the first Smart House conference held late last year in Washington, D.C., where NAHB first posed the concept. Representatives from 100 companies and government agencies crammed a meeting room to listen. At present, 25 have signed with NAHB to develop products or services for the first test house, scheduled to be completed next year in Maryland.

Meanwhile, many other companies have already begun work to produce electronic products for future homes. For instance, Integrated Communication Systems, BellSouth Corp., and The Southern Co. have created TranstexT, a system that combines the control of home appliances and in-home information services with the telephone and TV (see left center photo, facing page). Your TV graphically displays a telephone's push buttons and a list of items such as home security, banking, and electronic shopping. To make a selection, you use your telephone to dial the number shown on the screen. But not all products need to be as sophisticated as TranstexT to be clever. For example, Brand-Rex Co. is about to introduce a three-in-one outlet box and cable system (bottom photo). In one pass, cabling and connectors for telephone, TV antenna, and AC power are added throughout a home.

Undoubtedly, the highly organized research and development efforts of major manufacturers will make the high-tech intelligent house a reality. But don't discount such computer buffs as Andrew Alloco, who always seem to be one step ahead of everyone else. Alloco is currently perfecting a pocket device to allow remote communication with his house at all times. What lies in *his* future? Like other futurists, his ideas could come from just about anywhere:

"Are you busy?" he asked as I was leaving.

"I'm thinking," said the house.

"About what?"

"About how nice it would be to own a robot."

CONCRETE: HIGH-TECH VERSATILITY

By RICHARD LAYNE

It has long been known that walls of versatile, inexpensive concrete will shut out frigid Canadian winters and blazing Arizona summers alike. But sky-high fuel prices have spurred energy-conscious builders and engineers to make concrete even more appealing to home buyers. The result? A new generation of concrete technologies geared to fast, durable construction, low cost, and great energy savings.

Continued

Home & Design

Sunday, September 9, 1984 The Miami Herald Section H

Let your house do the talking

It obeys your every wish: 'Heat the tub'

By PETER HAMM
Herald Staff Writer

Some time soon, says a South Florida home builder, you will walk up to the front door and tell the house you're home.

Don't fumble in the dark for the keys. Say, "I'm home." Let the computer do the rest.

The elderly will hear a stern voice over speakers a few times a day. "It's time for your medicine," the house will say. A few minutes later, "It's past time — take your medicine now." A few minutes later, the computer will say, "the hell with you, I'm calling the police," as it will if your heartbeat slows, or you haven't taken the mail out of the box.

This is the house that Andrew Allocco built. Allocco, 39, is president of Better Homes Construction Services, located near Dadeland. He has opened a new division of the company — the Computer House division.

Allocco, armed with nine construction licenses and a knack for hardware and software, has made his house talk. Computer talk isn't new, but Allocco's house is. His house converses with the owner — and runs the house via voice commands.

The Pinecrest home, Allocco says, is the first to be both computer-controlled and voice-activated.

The house, just off Old Cutler Road, does quite a bit. But, Allocco says future houses will do even more. He and his wife, a real estate broker, are going to build homes from scratch to accommodate computers.

The houses will care for the handicapped and needy, catch burglars and hold onto them, cook the dinner, store an entertainment library, as well as run air conditioning, draperies and solar panels on the roof. The houses of the future, says Allocco, will interact with robot servants, which happens to be his next project.

The price for this, he admits, will not be cheap in the beginning.

Cost hard to guess

"Our clients aren't going to be poor, at least for a while. The cost is hard to guess at — it would depend on the existing structure and how much somebody wants the computer to do — we would be starting somewhere around $40,000."

For this, homeowners will be trained to use the terminals and wireless microphones. And, the computer won't listen to just anybody.

"We map your voice like a key," says Allocco. He demonstrates. "Announce," he tells his home.

"Yes, Master, how can I help you?"

"Family room light," says Allocco.

"What do you want me to do with the family room light?"

"Dim it," Allocco tells the machine.

"The family room light is now dimmed," he is told. When a stranger tries the same commands, the computer won't oblige.

Alarms can be turned on, or reset. The pool filter is turned on or off. The air conditioning is altered. Allocco can call his home and talk to the computer, telling it to turn up the hot tub because he's on his way home from work.

The computer can be made to tell you how many people are in the house, through infrared heat sensors. If there's one more than there are supposed to be, it calls an alarm company and tells them. Or, it can catch the thief itself.

"What I want to see," says Kathleen Allocco, "is a big cage outside. One that the computer will drop over a bad guy and hold him. Or, it could just zap him with something."

Silliness, perhaps, to Kathleen Allocco, but she has gotten stranger requests as a real estate agent — like hidden rooms whose steel walls will protect inhabitants from enemies — or the police.

An innovator

"I turned that down," Allocco said with a laugh.

Andrew Allocco has always been an innovator, says his wife, since the time as a child he rigged his bedroom with alarms to keep a maid out. His father was in construction and Andrew worked weekends and summers from an early age.

When the time came to go to college, he picked a little-known, but up-and-coming major called nuclear engineering. For four years, Allocco studied automating merchant vessels. He served for four years aboard merchant ships as an engineering officer, before marrying Kathleen and settling down on Long Island, working as an inspector of heavy machines and nuclear facilities for an insurance company.

The Alloccos purchased a night club in Nassau County — and Allocco says his disco was the first to have strobe and other lights run by computer. After their two children were born, they moved to Miami, and Allocco went to work for Farm Stores as an engineer in the company's milk production plant.

"His people at Farm Stores used to say that Andy could talk to the machines," says Katheleen. "He'd walk by a piece of equipment, and say, 'That motor's going to go tomorrow. Replace it.' Then, they wouldn't get around to it for whatever reason, and the next day, the thing would burn out.

"He can be very annoying to be around sometimes."

"The man is a wizard," said Realtor Carlos Dominguez, who taught Alloco real estate at Miami-Dade Community College. "He is a genius — the smartest person I've ever met."

Andrew has state licenses as a general contractor, a mechanical contractor, an air conditioning contractor, a roofing contractor, an electrical contractor, a commercial pool contractor, a plumbing contractor, and is Dade certified as a master electrician and master plumber.

"Whatever he wants, he never gives up until he gets it," Kathleen adds. "He teaches the kids the same thing."

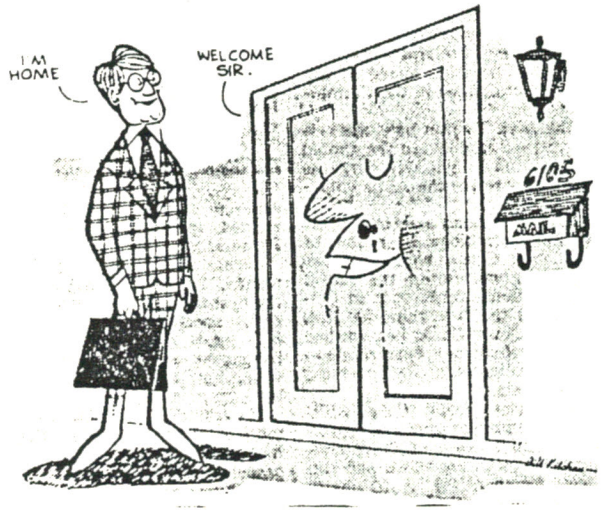
The kids — Andrew and Kelly — are remarkable themselves. Kelly, 12, recently finished a grueling four-week study program with the Greater Miami Opera — the youngest ever admitted to the special program.

The seventh-grader at Dade's talented center at Southwood Jr. High, she was chosen as the outstanding vocal performer in the state at a major competition. She has been awarded music scholarships by the Miami Music Club and by the state Federation of Music Clubs.

Fourteen-year-old Andy quietly is making a 14-year-old's fortune in the stock market. He already owns about 300 shares of stock in dozens of companies, stockpiles a tidy collection of gold and silver, and gives advice to his parent's friends on investment strategy.

Allocco has taken an existing, "off the shelf" computer system and altered its electronics.

"This is an expensive toy right now," Allocco said. "In the future, I think it's going to be standard. It's like being one of the first people who ever had a refrigerator or a telephone — that's certainly standard now."



Talking houses won't be cheap

COMPUTER—DISABILITY News

THE COMPUTER RESOURCE QUARTERLY FOR PEOPLE WITH DISABILITIES

VOLUME 1, ISSUE 3 WINTER, 1984-85

LATEST IN COMPUTERIZED ENVIRONMENTAL SYSTEMS: A HOUSE THAT OBEYS VOICE COMMANDS

For persons with severe disabilities, a new computerized "house of the future" is now available through a firm located in Miami, Florida. The environmentally shapeable model responds to vocalized requests made anywhere within its walls, and also to commands made over a user pre-coded telephone line.

This house with a "brain" accepts and responds to requests to dim the lights, raise the temperature level, or answer the phone. It can respond to informational queries as well; for instance, persons who ask the house's main computer to state the time or date will receive a vocalized response indicating the correct information. Additionally, persons who are not mobile will likely be particularly pleased by the vocally controlled house security system.

The firm which designed this home is also equipped to custom design and install a system in any existing home or business. Demonstration of the home or of the system is available on request, along with cost estimates. **Contact:** Andrew or Kathleen Allocco, Better Homes Construction Services, Computer House Division, P.O. Box 33156, Miami, FL 33156; tel. (305) 667-0003.

JOB TRAINING AT INDIANA EASTER SEAL CENTER BENEFITS EMPLOYERS *AND* EMPLOYEES

Computer job training is one of the most important new vistas in rehabilitation. At the Crossroads Rehabilitation Center in Indianapolis, Indiana, progress in the computerized job training area is particularly promising. Titled the "Information Processing Career Training Program," the Crossroads program offers course work in data entry, word processing, and computer programming. Last year, nearly all of the individuals who completed the ten-month curriculum available at Crossroads were able to find jobs.

Students in the computer training division are selected following a special vocational evaluation week, during which aptitudes and interests are measured. Once accepted, students undergo rigorous schooling in such computer-relevant areas as COBOL, program debugging, and business systems. Job-seeking and retention skills are also stressed as integral to the individual's ability to access the job market.

Roger Miller of Ft. Wayne, Indiana is one person whose life has been significantly enhanced by the Crossroads efforts. Mr. Miller is quadriplegic, having sustained a broken neck and spinal cord injury during an accident several years ago. Miller's interest in amateur radio operation and microprocessing led to a similar fascination with computer programming, and 2 years ago to enrollment at Crossroads. Following completion of his studies, he is solidly and happily employed as a computer programmer with Mutual Security Life Insurance Company in Ft. Wayne, Indiana. "I have nothing but positive things to say about Crossroads," Miller says. "It's true the individual must take the initiative, that the training is only as good as the person, but this program really provides a unique and special opportunity for persons with disabilities."

The Crossroads venture is intended to achieve a threefold goal—benefits to

Computerized Homes

We are heading into an era where quantum advances are being made in electronics and the most startling development will soon touch individuals in the form of computerization of home and business. When we hear the word computerization we immediately think of those cold-hearted computers used by large organizations to keep records and record data such as bank statements, credit card purchases, and other details requiring exact recording.

We all have had the opportunity to "disagree" with a computer written letter or demand only to find out that there was no real person responsible for the computer's errors. At that point our tendency is to believe that computers are large, irresponsible, faulty devices that always seem to aid the large organizations.

With the development and large scale marketing of the personal computer, the general public now has the ability to utilitize a computer to serve their own needs. It is quite possible right now to interface a computer with other devices to automate a residence or business to the wishes of the owner. The following represents just some of the abilities in this field. Most are available now and more will be developed with time.

For the Home

Environmental Control: Turn ON/OFF the heating and/or air conditioning, by pre-timed event, by voice command or manually.

Open or close windows, control ventillation fans, open or close shades and/or draperies.

Monitor and record temperature and humidity conditions in various areas.

Energy Useage & Cost: Monitor and record complete energy useage for home including cost projections based on cost of electricity.

Control environmental equipment within an energy budget.

Monitor and control a solar water heating system or a solar electricity generating system.

Security: Monitor entire house status including exterior grounds, swimming pool, driveways, patios, interior rooms, and initiated measures to confuse, trap or scare an intruder.

Inform the owner of the number of persons in the house or on the grounds.

Automatically notify the owner of any type of security, fire, or other emergency, including medical. Automatically take the necessary measures to call for help.

Monitor the condition of the phone lines to sense if line has been tapped, cut or altered in any way & notify owner.

Control a closed circuit television system & start video tape system to record intrusion.

Safety: The system can alert the owner to special weather alerts.

Can sound an alarm if person or pet falls in pool.

Can alert occupants & fire department of a first-stage smoke condition.

Entertainment: The computer system can control the music and sound throughout the house and gardens.

The television and video tape systems can be controlled.

Pre-planned taping of special television channels can be arranged.

The computer system can host a number of entertainment activities including voice actuated adventure games and standard computer games.

Voice Control: The computer system has the ability to understand the voice commands of persons authorized to command the system. A user can control all of the lights in and around the house (ON/OFF/DIM/BRIGHTEN) by simply saying same. The house will reply via speech synthesis through a wireless microphone or through the house speaker system. The user can control certain devices such as swimming pool, spa, jacuzzi, sauna, air conditioning, heat, fans, telephone, television, radio, appliances, etc.

For Business

Business and Industrial Uses: All of the home applications can be adapted to business and industrial uses. It is possible to monitor and control process systems in a manufacturing plant, keep inventory, automatically prepare reports and purchase orders for ordering raw materials. Log energy useage for different processes used in different manufacturing processes. Log labor costs and efficiency, etc.

A computer system can be used to record the running time of a machine, automatically notify management of a service interval and even print a report stating just what is to be done, by whom, and the parts, tools, time & material required.

Aid for People with Disabilities: A computer system that is voice actuated can be an aid to persons who are severely disabled. The writing of letters or other documents can be accomplished by loading a word processing program and using a phonetic alphabet.

This will allow a person to write letters without touching the computer keyboard. Written documents can be stored on disk for future work, printed on paper or even transferred to other computers or other persons using computers via the telephone lines.

The other applications in home and work settings are also of great benefit to people with disabilities.

For more information concerning the "TALKING COMPUTER HOUSE" contact: Andrew Allocco, Jr., Better Homes Construction Services, Inc., Computer House Division, Post Office Box 561045, Miami, Florida 33156; phone (305) 667-0003 or (305) 666-0003.

Be Involved In Federal Legislation JOIN NAPRFMR

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Pre-planned taping of special television channels can be arranged.

The computer system can host a number of entertainment activities including voice actuated adventure games and standard computer games.

Voice Control: The computer system has the ability to understand the voice commands of persons authorized to command the system. A user can control all of the lights in and around the house (ON/OFF/DIM/BRIGHTEN) by simply saying same. The house will reply via speech synthesis through a wireless microphone or through the house speaker system. The user can control certain devices such as swimming pool, spa, jacuzzi, sauna, air conditioning, heat, fans, telephone, television, radio, appliances, etc.

For Business

Business and Industrial Uses: All of the home applications can be adapted to business and industrial uses. It is possible to monitor and control process systems in a manufacturing plant, keep inventory, automatically prepare reports and purchase orders for ordering raw materials. Log energy useage for different processes used in different manufacturing processes. Log labor costs and efficiency, etc.

A computer system can be used to record the running time of a machine, automatically notify management of a service interval and even print a report stating just what is to be done, by whom, and the parts, tools, time & material required.

Aid for People with Disabilities: A computer system that is voice actuated can be an aid to persons who are severely disabled. The writing of letters or other documents can be accomplished by loading a word processing program and using a phonetic alphabet.

This will allow a person to write letters without touching the computer keyboard. Written documents can be stored on disk for future work, printed on paper or even transferred to other computers or other persons using computers via the telephone lines.

The other applications in home and work settings are also of great benefit to people with disabilities.

For more information concerning the "TALKING COMPUTER HOUSE" contact: Andrew Allocco, Jr., Better Homes Construction Services, Inc., Computer House Division, Post Office Box 561045, Miami, Florida 33156; phone (305) 667-0003 or (305) 666-0003.

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Fran Hathaway

Futuristic 'House With a Brain' Not Too Far Off

Someday in the not too distant future, a youthful generation will smile in amusement when we describe how once we turned on the kitchen light with a finger or pulled open the living room drapes by hand.

That's because they will be accomplishing such tasks with voice commands. They will open and close doors, turn the airconditioning on and off, monitor a security system, dim the lights, dial the phone and turn on the TV simply by talking to their built-in home computer system.

What's being called "the house with a brain" may be only five to 10 years off, according to Andy Allocco. Allocco is a nuclear engineer, computer hobbyist and home builder in Miami, and he's installed such a system in his own house. The idea began as an expensive toy. But one day he demonstrated it to someone who said, "That would be great for a (quadriplegic)."

Andy hadn't thought of that. But yes, a quadriplegic could regain considerable control of his environment. The builder was so intrigued that he joined the Florida Paraplegic Association to learn how such systems could be of even greater help to the disabled.

At this point, of course, the price tag is a serious consideration. Andy installed his system in an existing home for $50,000. He will incorporate one in a new home he's building, and he thinks that will reduce the cost.

"But according to the Florida Paraplegic Association," he noted, "it costs about $60,000 a year to provide intensive care for a quad. And this system is new. The price will come down."

We're going to be hearing a lot more about high-tech homes. The May issue of *Popular Science* includes an article on the subject which, incidentally, mentions Andy. And the more affordable the technology becomes, the more we'll see it in action. Andy thinks the price may drop fairly quickly.

"I remember when the first calculators sold for $200," he said. "Now you buy them for $3 in the supermarket. Five or 10 years is a very short time in computer history."

Even today, however, the cost per person would be less if several disabled people lived in the same facility or in adjoining apartments. The system works for a family of four if properly "trained" to recognize particular words.

For example, a person might say, "kitchen." The computer would reply, "What do you wish me to do to the kitchen light?" The human would order, "Dim it" or "Turn it on." The system's success hinges on accurate speech. It would be user friendly only to the people living in the house.

Andy thinks the possibilities are limitless. A system can monitor electrical consumption throughout a home and give the owner a printout detailing it. A person who can't recall when he last visited the dentist or doctor can ask for and receive a copy of his complete medical history.

"You tell me what you want it to do, I can do it," Andy said. "Each day, I add more to the system. In time, it will be like buying a refrigerator. You buy what you want and plug it in."

His next house probably will include a robot as a mobile information center. He also foresees lots of business applications. For more information, you can reach him in Miami at 667-0003.

But it's the applications for the disabled that I find thrilling. There must be millions of partially or totally disabled people who would be overjoyed to talk their way around their home or business. Add to that the people who love and can afford expensive toys and you have the beginnings of a market, which has not escaped Andy Allocco's notice.

The speed of high-tech development is both dizzying and exciting. One wonders what else future generations will find amusing about the way we lived our lives in 1985. 'Heck, I used a slide rule in college," Andy said. "To them, that will seem very old-fashioned."

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