

Computers Find a Home (Yours)

By RICHARD W. LANGER

POCKET calculators, digital watches, and C.B.'s, the trio of consumer items that recently made your local retailers' sales figures jump, are small potatoes compared to the latest entry in the electronic 70's—the microcomputer. Within the next five years, it wouldn't be surprising if 90 percent of all American homes had computers.

Microcomputers come in several stages and sizes, and serve different purposes. Some may not look the way you always thought a computer should look, if you thought about it all. In fact, you probably won't even know some of them are there, because they will have been built into appliances and gained access to your home without the manufacturers advertising their presence.

Known as "dedicated" computers, they are designed to perform only one set of tasks. The computer in Singer's new sewing machine, for instance, replaces hundreds of mechanical parts, offering better control and greater variety in stitching. Amana's Touch-Matic range can initiate and carry out a number of tasks at once—defrosting, baking, broiling, warming.

It can't yet take the meat out of the freezer when you call from the office, although it could handle the call from the office; it's only the physical transport, at the moment, that impedes its obedience.

Meanwhile, other microcomputers can do things like take care of your income tax forms, help the kids with their home-

Continued on Page C4

Richard Langer, who writes about gardening is currently building a computer at home.

The Computer Finds A Home (Yours)

Continued From Page C1

work, listen to the baby, work out the handicapping at the golf club. The difference between these micros and the one in the sewing machine is that these have to be told which of those things to do. In other words, they need to be programmed.

Computer hobbyists, with the time and inclination to tinker with electronics and programs, are in the vanguard of the home computer revolution. They are delegating to their personal computers a wide variety of tasks, from timing the music while they practice the flute to more or less running and re-designing the house in computergraphic sketches. (In other words, you can move around the furniture and elements of the floor plan in a vast number of combinations when arranging a new house or apartment.)

In a microautomated house, a small computer can control the lights, heat, and air-conditioning to increase efficiency and decrease fuel bills; it can alert you to water seepage in the basement. The same computer can be instructed to keep track of what's in stock in the pantry, or water the garden while you're away on vacation.

As self-updating daily calendar, it will remind you to send out Aunt Martha's birthday card and warn you that the warranty on your car is due to expire in five days. What the computer can do is pretty much limited only by the imagination of the user, and the availability of software.

What's software? With a phonograph, you need a record. With a home computer, you need software. To play Beethoven's Ninth, you put on the record of Beethoven's Ninth. To get your computer to figure out your income tax, you give it the income tax program. The problem is, there aren't many ready-made programs on software around yet.

Take the phonograph analogy one step further, speeding up the tempo geometrically as you do so. Right now, home computers are at the stage phonographs were in the 1950's. A lot of hobbyists are putting kits and component parts together. The joy is

Attending Computer Fairs

If you want a preview of tomorrow microcomputerized, several home computer shows are coming up where you can look, try out, and ask questions to your heart's content. "Fairies," as they are usually called, are open to the public and are amazingly well attended—a show in San Francisco earlier this year, for instance, drew some 13,000 people.

The annual Personal Computing Show in Atlantic City is the oldest and most established exhibit—that is to say, this is its second year. Being held at the Shelbourne Hotel on the Boardwalk Saturday and Sunday, it's an excellent introduction to home computers. Take a suitcase for the free literature; you won't have time to read it at the show. Admission is \$10. For further information, call (609) 653-1188.

If you're heading north rather than south, the aptly dubbed Computermania is being held at Boston's Commonwealth Pier today, tomorrow and Saturday. Admission is \$12. For further information, call (800) 258-5473.

In New York, at the Coliseum, the Personal Computing Expo will be held Oct. 28, 29 and 30. Sponsored by Byte magazine, it will include many technical forums. Admission is \$5. For further information, call 753-4920.

as much in the system itself as in what it can do.

Of course, phonographs went on to become the hi-fis and stereos of the 60's and now they're almost as common as television sets. The same thing is happening with computers, except in their case, it won't take a decade.

In 1975, someone took an electronic

chip, like the one in your digital watch but a thousand times more complex, stuck it in a case, and called it a microcomputer. In 1976, microprocessors developed into a multimillion dollar hobby market. More than 200 computer stores opened across the country, with local retailers selling small computers to the public for anywhere from \$500 to \$5,000.

In 1976, microprocessors developed into a multimillion-dollar hobby market. More than 200 computer stores opened up nationwide—local retailers selling small computers to the public for, amazingly, anywhere from \$500 to \$5,000.

Throughout 1976, personal computing was mostly a do-it-yourself affair, albeit a tremendously fascinating one.

Either you were a "hardware" enthusiast—that is, you built computers from the numerous kits available—or you were a "software" nut—that is, you developed programs to activate the computers.

In 1977, with Christmas fast approaching, at least in the minds of marketing men, it looks as if personal computers will be the special gift this year with the "in" crowd. Talk abounds of Sears and Macy's entering the fray. Radio Shack already has. For \$599.95 it sells a ready-to-plug-in home computer, composed of a keyboard, a microprocessor, a video monitor, and a cassette recorder. Looking like a television set with half an electric typewriter sitting next to it, the TRS-80, to any 20th-century American, is familiar-looking enough not to intimidate. But Radio Shack's real marketing coup is that it's also selling programs (its own software) to go along with the machine.

With the computer you get free cassettes for blackjack and backgammon. (Games seem to be what home computerists try out first). Computer games such as Star Trek, incidentally, bear about the same relationship of complexity to video games such as Pong as directing the invasion of Normandy does to hand wrestling.

Other programs available for the Radio Shack computer include Education Math I (\$19.95), which is a multiplication-addition-subtraction tutorial for your children; the Kitchen Program (\$4.95), including menu planning, conversion tables, directory and message center; and personal finance (\$14.95) to handle checkbook balancing. The Payroll Program (\$19.95) handles up to 15 employees and will help out any Mom-and-Pop bookkeeping operation.

Commodore Business Machines is but a step behind Radio Shack with its futuristic one-piece home computer, the PET (Personal Electronic Transactor). Expected to sell for under \$800 complete, it has the capability to teach languages as well as mathematics, answer the telephone, log calls, make calls—in fact, to function as a super programmable calculator cum video display. And, of course, it will play games too.

Maybe that's the real secret behind the mushrooming growth of home computers. Building a kit is like putting together a giant jigsaw puzzle. Writing a program is like working out a giant crossword puzzle. Playing Star Trek and other computer games is more addicting than potato chips. Whatever the case, I see the future and it computes—probably by this Christmas.

Home computer includes keyboard, microprocessor, video monitor, and cassette recorder: \$599.95, Radio Shack.



Just Hook It To the Typewriter

Among the people using computers at home is Karen Brothers, who belongs to a food co-op in Wayland, Mass. So does her home computer, which calculates and prints out the bills for co-op members.

Robert Powell is finishing high school this year, and so is his computer. Remember the days when the teacher gave higher marks to the kid who typed his papers? Robert Powell's home computer is hooked up to his typewriter; he can type in rough text as he works on his paper, make corrections and additions on the video screen, press a button, and the computer will type out a perfect copy, with justified right margins.

Jack Glick set up a sensing device under the mattress of a baby bed and programmed a computer, to which he connected the sensing device, to monitor a sleeping child's heartbeat and respiration. Any irregularity, any indication of the symptoms so often leading to crib death, and the computer would set off an alarm.

John Borders thought there must be an easier way to keep track of all the scores and other data needed to keep the coaches of Manteca High in California up to date on what was happening during wrestling tournaments. So he took his home computer, complete with appropriate program, to the matches.

Dr. Ronald McLachlan is a dentist with a microcomputer. Its whir is as soft as his ultrasonic drill, but the computer is faster. At least when it comes to billing it is. Dr. McLachlan had never even seen a computer until the day he decided to go out and buy his own. He programmed it not only to handle his billing and accounting, but to do a cost analysis of the time spent on fillings versus root canals.