# The Future of Hand-Held Devices, IBM Style

By Carol Venezia

In this, our fifteenth-anniversary issue, we've devoted a lot of space to discussing the future of high technology. Some of the predictions we've made in these pages may be difficult to envision coming true. But after we spoke with IBM about what's cooking at its Almaden research center, the vision became clearer.

We had the opportunity to delve into the mind and the ideas of IBM Fellow Dr. Ted Selker, who heads the User Systems Ergonomics Research (USER)
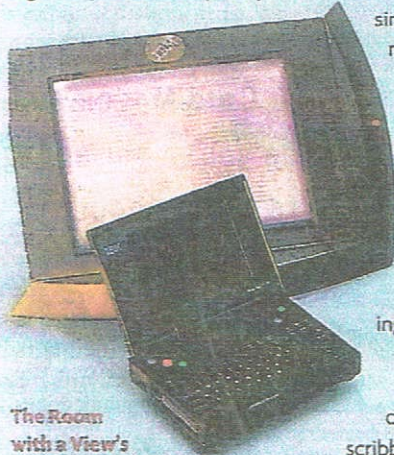
The Room with a View's viewboard (top) and the diminutive Palm PC 110.

group at IBM's Research Division in San Jose, California. The USER group comprises about 20 people (half of them students from Stanford and other universities, and half of them IBMers) who research and develop ways of making interfacing with computers more intelligently planned, useful, and intuitive. A great example of this group's work is IBM's TrackPoint pointing device, which Dr. Selker invented.

The products discussed here may seem fantastic, but they are all based on the same premises: Technology should be useful but unobtrusive; it should have a distinct purpose and fulfill a need. And it should do all of this as effectively and easily as a ballpoint pen performs its task.

TECHNOLOGY TO GO

The advent of the Windows CE hand-held PC may have brought us closer to truly useful mobile computing, but IBM's vision of a wallet PC takes this idea one step further: A typical trifold wallet is outfitted with a miniscanner, a display area, and a keyboard. It's a PC, pager, Web browser, PIM, PDA, and more, all in your back pocket. The wallet would also offer a "chameleon card"—a single card with a programmable magnetic stripe that would take the place of all of your credit cards.

Another idea that qualifies as useful and unobtrusive technology to go is the electronic carbon-copy pad. This product takes an interesting approach to mixed media: You give someone a note you've scribbled out (like one of those notes you've scribbled on napkins in restaurants), but you also have an electronic record for yourself. This process greatly increases the *tangibility* of computer use, a feature that is often lacking in today's PCs—one of the major reasons why many consumers find PCs unapproachable.

Another portable idea from the USER group involves IBM's Palm Top PC 110, a miniature 486-based PC that's been a great success in Japan. The version we saw adds two intriguing features. First, there's a clip on the back, so you can attach the fully functional, Windows 95–compatible PC to your belt loop. Second, the display panel is hinged and opens in the back, so when you return to your desk, you can project the screen's image onto the wall. A proposal currently on the table from the USER team is for an inexpensive tablet-size PC for schools. It would replace the paper notebooks that grade-school children carry.

This PC (about the size of a paperback book) has a touch screen and an infrared transceiver, which can be used to download assignments nightly, upload the student's work in the morning, and correct it. The education PC's keyboard is another unique feature: It's LCD-based, so you can change it from letters to numbers to symbols, depending on the task.

A ROOM WITH A VIEW

Perhaps the most fascinating prototype that we saw was the Room with a View. This product (a working model of which currently resides in Dr. Selker's office) addresses two necessities of human nature: to be oriented (why do you think you spend so much time arranging those Win 95 icons on your PC's desktop?) and to be productive.

The Room with a View operates something like a virtual-reality office. Instead of having bookshelves in your office, you'd have a projection of those shelves and their contents on the wall. If you want-
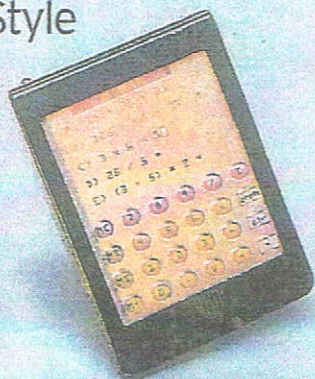
The education PC's display keyboard can change with the assignment.

ed a book from the shelf, you'd simply pick up your "viewboard" (a high-resolution LCD-based tablet), point it at the image of the book on the wall, and retrieve the book by shooting it with the viewboard's built-in laser. The information contained in the book would now be right in front of you, in an easy-to-use format.

TRACKPOINT ON A STICK

The remote control is a useful device, but it's also an idea run amuck. Remember when you had just one remote for your TV? Well, now you have five, and they're all gigantic. Out of this confusion came the idea for a universal, TrackPoint-based remote.

This remote control would rely on a GUI with pie-shaped menus instead of on physical buttons to perform tasks, like changing channels or adjusting volume. You would make selections through specified, easy-to-remember movements. But the beauty of it is that you'd need only one remote for everything, and it would be easy to use and no larger than a good Cuban cigar.

Electronic Post-It notes (left), the wallet PC, and the TrackPoint remote.