

# The Kaypro II

*Stiff competition for the Osborne 1*

by Peter McWilliams

All of a sudden, portable computers are proliferating like rabbits, with companies eyeing the impressive sales of the Osborne 1. The Osborne 1 was created by Adam Osborne, of course, who occasionally likes to think of himself as the Henry Ford of the personal computer industry.

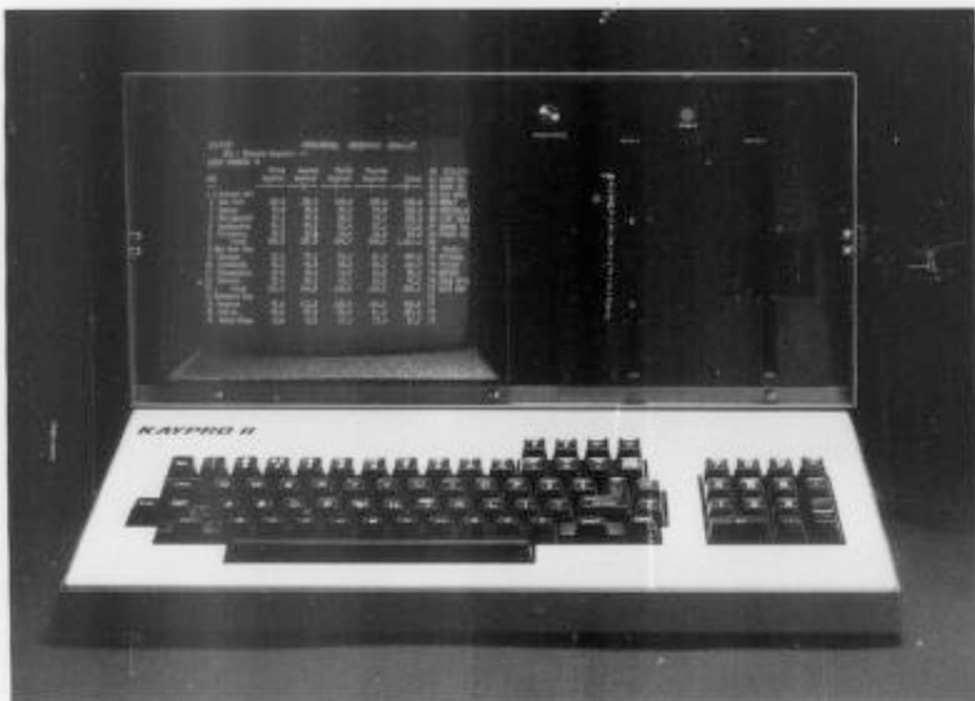
It's time, however, for Adam to move over. Andy is here.

Andy is Andy Kay, a soft-spoken MIT graduate who designed and manufactured the first digital voltmeter back in 1952. Like Adam, Andy has invented a portable personal computer and named it after himself—the Kaypro II (originally called the Kaycomp II). There's also a Kaypro 5, but I'll get to that a little bit later.

Both Adam's and Andy's computers retail for exactly the same price and look very much alike cosmetically. I found the Kaypro II an impressive machine, in some ways equal to the Osborne 1 and in some ways superior. Let's take a closer look.

## Construction

Until the introduction of the Kaypro II, Andy Kay's company had been designing and manufacturing test equipment for the aerospace industry. Test equipment must be rugged, and Non-Linear Systems has incorporated its flair for sturdiness into its personal computer. The machine, in fact, looks as if it could take on Conan the Barbarian—and win.



The Kaypro II, a portable CP/M-based computer.

At present, the computer has an all-metal case, faceplate, and keyboard plate, combined to give it a fashionable high-tech look. The case will eventually be plastic. (Contrary to popular belief, plastic is a much better material for cases than metal; it has more give and can take continual abuse without obvious signs of wear.)

The Kaypro weighs in at 26 pounds, light enough for the portable computer ball park. The Osborne 1 weighs 24½ pounds; and when the Kaypro II comes out with the plastic case, they'll probably be identical in weight.

Maybe it's the case, maybe it's the nonsense design, maybe it's knowing

that the computer is made by a company with 30 years' experience in packaging delicate electronic instruments for portable use (Non-Linear Systems manufactures the world's smallest oscilloscope). Whatever the reason, in my opinion, it's the only personal computer at any price that can be described as truly rugged. The Kaypro II would be at home in Marlboro country.

The back of the Kaypro II has a handle and becomes the top of the case for carrying. The AC cord wraps around

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four corner posts on the corners of the backplate. The keyboard folds over the screen and floppy-disk drives and is held in place by two plastic latches, forming the bottom of the closed unit. (For even more protection, there's a soft plastic carrying case available.)

The Kaypro II is well vented and requires no built-in cooling fan. I left the machine on for 36 hours straight, and it didn't even get warm. Some personal computers get very warm after only a few hours of use. It's a particular problem with machines that have built-in floppy-disk drives because heat is a big factor in disk wear.

The absence of a noisy fan makes the Kaypro II an ideal computer to use where silence is required. Writers (like myself) who find their concentration broken by the slow drone of a fan will find the Kaypro II a blessing.



Kaypro 5's hard-disk system offers 5.5 megabytes of storage.

The input and output connectors, as well as the on/off and reset switches, are conveniently located at the rear of the machine. I say conveniently because one trend in portable computers is to put them in front, which can result in a confusing array of cables and connectors right under your nose (not to mention the possibility of accidentally resetting or turning off the machine in the middle of an important session).

The Kaypro II contains a standard RS-232C serial interface and a Centronics-type parallel printer interface. Although the parallel port is the standard for printers, a supplied program called CONFIG lets you use RS-232C printers.

### The Screen

The Kaypro II comes with a built-in 9-inch green-phosphor video display, which has four times the usable viewing space of the Osborne's 5-inch screen. The green screen is much easier on the eyes than the old standard black-and-white one; after a full day at the green screen, your eyes won't look the way they might the morning after the night before. The Kaypro II displays lines of characters that are large, sharp, clear, and a full 80 columns wide. (Both the Osborne I and the Kaypro II display 24 lines.) Currently, the Osborne I displays only a 52-character line, but by the time you read this, Osborne's

80-column adapter should be available for \$185.

While the screen characters of the Kaypro II are easier to read than the displays of the Apple II, TRS-80 Model III, Commodore VIC-20, or Atari, they're still not as sharp and fully formed as the IBM Personal Computer's or Televideo 802's (which to be fair, use specially designed video monitors that take up lots of space and cost plenty).

### The Keyboard

The Kaypro II's keyboard is superb. Manufactured by a company named Keytronics, it's the same keyboard used in Digital Equipment Corporation's expensive VT100 terminal (minus the programmable-function keys). The company's decision to include such a fine keyboard is comparable to putting Porsche engines in all VW's with no increase in price. The keyboard has a firm and solid feel and even has a separate numeric keypad and separate cursor-movement keys (even the IBM Personal Computer doesn't have that). In fact, the cursor keys are individually programmable to meet the cursor-movement demands of any program.

The keyboard is also detachable and, unlike other computers with detachable keyboards, uses a standard telephone cord (like the one that goes between the handset and the phone). If

## At a Glance

**Name:** Kaypro II Portable Computer

### Uses

Business, home

### Manufacturer

Kay Computers

A Division of Non-Linear Systems Inc.

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Del Mar, CA 92014

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### Standard Features

Z80 microprocessor; 64K bytes of RAM; 9-inch green-phosphor video display; 80-character by 24-line upper/lowercase display; dual 5 1/4-inch floppy-disk drives that store 191K bytes of data per disk; RS-232C and parallel interface; full-travel numeric keypad with 14-key numeric pad. Standard software includes CP/M, SBASIC, Profitplan, Select, and communication software.

### Base List Price

\$1795

\$4500 (Kaypro 5 with built-in 5.5 megabyte hard disk)

### Documentation

Kaypro owner's manual, SBASIC manual, Profitplan and Select manual, and CP/M 2.2 manual

### Popular Options and Accessories

Comes as complete hardware/software system

### Other Languages Available

Any CP/M-compatible language

you ever want to have the keyboard a long way away from the screen (heaven knows why), you can purchase a 25-foot telephone extension cord for \$9.95 from your local Radio Shack.

### Internals

The Kaypro II's microprocessor is the ever-popular Z80. Since it's the microprocessor used by manufacturers in well over 90 percent of today's personal computers, there's little else that can be said about it. Memory? A full 64K bytes of RAM (random-access read/write memory).

### Mass Storage

The standard Kaypro II comes with two built-in double-density 5¼-inch floppy-disk drives. Each disk can hold 191K bytes of data. With technology advancing in the floppy-disk field, double density is becoming the standard. Osborne Computer recently announced a double-density upgrade for its floppy-disk drives, bringing them up to 184K bytes per disk.

Although I wasn't able to review it, Non-Linear Systems has just introduced the Kaypro 5. It's identical to the II except for its single 5¼-inch floppy-disk drive and Winchester hard-disk drive! The Kaypro 5 is the first portable computer to use the 5¼-inch hard disks, which are proliferating as prices fall, and the drive adds a very respectable 5.5 megabytes of on-line storage to the Kaypro. The whole unit retails for \$4500.

At a recent computer industry show, Adam Osborne criticized Non-Linear Systems for putting a hard disk in its computer, asserting that today's miniature hard disks do not have the tolerances needed for portable operation. Evidently, Non-Linear Systems disagrees, although only time will tell whether the jostling a portable computer is put through will affect the hard disk.

### Software

Alas, the Kaypro II won't do graphics and, therefore, won't play flashy computer games. It also won't turn your house lights off at night or start your Mr. Coffee in the morning. It will,

however, run any of the thousands of programs written for the CP/M operating system.

Cleverly, the Kaypro people have designed the disk drives to accept most CP/M programs available in the Xerox 820 single-density 5¼-inch format, the most common for CP/M. All you do is buy the Xerox disk, copy it on the Kaypro to another disk, and you're off and running.

Unfortunately, this standardization is not always the case in the computer industry. For instance, while the Osborne I is a CP/M machine, the disk drives use a format that is only for the Osborne. Because not all software houses supply CP/M programs in the Osborne format, the amount of software available to you is severely limited.

Adam Osborne started the "Great Software Giveaway" with the Osborne I. With the purchase of that computer, you get CP/M, Wordstar, Mailmerge, MBASIC, CBASIC, and Supercalc. Not to be a slouch in the software department, the Kaypro II includes CP/M, Select, SBASIC, Profitplan, and Utilize. Let's compare software.

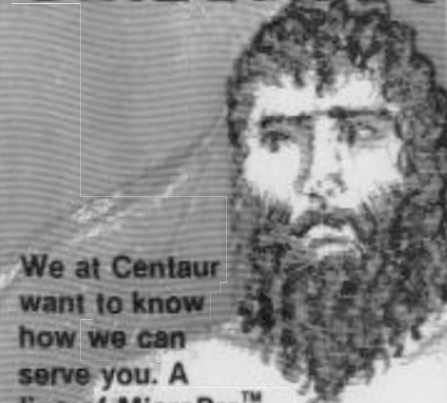
CP/M is CP/M. But the Kaypro II does include Utilize, a program that makes CP/M menu-driven and easier for the novice to use. The CP/M round goes to the Kaypro.

Microsoft's MBASIC (which comes with the Osborne I) is probably the most popular form of BASIC today with numerous books and programs written for and about it. If you're an experienced programmer, you might find some of the advanced features of Topaz Programming's SBASIC (which comes with the Kaypro II) useful. However, I think MBASIC is the better choice. The BASIC round goes to the Osborne I.

Supercalc (included with the Osborne I) and Profitplan (included with the Kaypro II) are both electronic spreadsheet programs similar to the ever-popular Visicalc. Each has features the other doesn't, but both are complete and useful for planning. Call this round a draw.

This leaves us with the word-processing programs: Wordstar and Mailmerge

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for the Osborne 1 and Select for the Kaypro II. I found Select easy to learn but cumbersome to use. Wordstar is harder to learn but easier to use. Wordstar is far more powerful than Select, especially when used with Mailmerge (a mailing-list program). Select is great for someone who writes a letter or two a month and wants to spend the rest of the time programming or using an electronic spreadsheet. But if you want to do a great deal of serious word processing, Wordstar is the better way to go. The word-processing round goes to the Osborne 1.

The Kaypro II also comes with a simple terminal program that lets you use the RS-232C port and a modem to hook up to databases like CompuServe, Dow Jones News/Retrieval Service, or The Source. The Term program makes the Kaypro II emulate an ADM-3 terminal, a computer-industry standard.

In general, the software offered with the Osborne 1 is a better selection than that offered with the Kaypro II. But

remember that because the Kaypro II runs any standard CP/M program, you could go out and buy MBASIC or Wordstar for it.

### A Few Conclusions

Many portable computer owners I've talked to think of their computers as respectable and inexpensive first-computer systems that will serve them nicely until either their ship comes in or the price of personal computers drops dramatically. When the word "portable" is mentioned, others think of a machine to be used on the road but not in the office or in the home.

The Kaypro II, on the other hand, is all the personal computer many people will ever need. The keyboard is superior to many you'll find on full-sized microcomputers, the 9-inch video display is comfortable for the eyes, and the disk-drive capacity is more than adequate. The executive will find the combination of small size, large screen, and total silence an irresistible com-

bination for a personal office computer. The Kaypro II will sit silently on the corner of a desk all day, taking up very little room. It's possible that you might find yourself buying a Kaypro II as an inexpensive and portable first computer—and never buying a second.

Are you ready for the bad news about the Kaypro II? For the next few months it may be hard to buy one. Demand will probably outstrip production for some time to come. You may have to put in a deposit and wait a month—or even three or four—before you can get your very own Kaypro II. Osborne 1s are ready and waiting for your immediate purchase.

The Kaypro II and the recently introduced Kaypro 5 show Non-Linear Systems is serious about becoming a major company in the portable computer arena. The firm has apparently taken the advice of Adam Osborne who recently said no computer manufacturer can afford to rest on its laurels. His company is now a case in point. □



Hello thayuh. This is Eben Flow, proprietor of the Fish or Cut Bait Company, buyer and seller of lobstah bait for 49 years. My hobbies are collecting linoleum samples, squashing flies and playing pac-person on my home computer.

But here on Martinicus Rock, off the coast of Maine, the power can be a tad erratic. So, to cure the brownout and blackout problems, and to keep them spikes and surges off my picture tube, I got me a **MAYDAY** Uninterruptible Power Supply from SUN RESEARCH. Them fellas fixed me up real good and real light on my pocketbook, too. Got me a **MAYDAY** for my mini-calcaputer with a voltage regulator and everything for only 325 clams. They even included the battery in a nice waterproof box. Handy out here, you know. Now, if **MAYDAY** would only keep them sea dogs out of my barrel. . .

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