

Computers

The computer field may be starting to shake out a bit. Very few truly new computers were introduced at CES. The expected introduction by Sharp of its computer that they have been selling in England, did not materialize.

Casio

One surprise introduction came from Casio with their FX-9000P computer. The unit looks very much like the HP 85 and 83 machines. It has a relatively small (5 inch) CRT, full keyboard and numeric keypad, and plug-in memory modules built into the main unit. The major innovation is that the "slot-in" memory packages have an on-board battery power system so that you can turn off the computer and remove the memory cartridges and they will not forget what you have programmed into them. The screen has a high resolution 256 x 128 pixel graphic display; together with its graphic command software, graphs, diagrams and charts can be displayed. At the show they had a cute display of a time clock with a little man walking continuously across the screen.



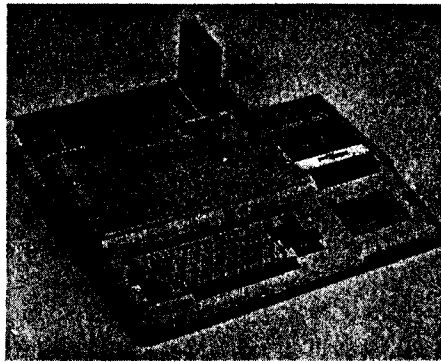
The Casio FX-9000P has removable memory units with on-board battery power.

The FX-9000P has a powerful set of graphic commands built-in to its basic language. These commands allow points, straight lines, curves and rectangles to be drawn relative to the X and Y axis. For example, a circle could be drawn with the following very simple one statement program, "DRAW (COS(A),SIN(A))."

October availability is promised for this system. Price for a 12K system with 4K Basic is projected at \$1000.

APF

APF introduced the Imagination Machine II. Several versions of this system exist, however the System III was the one being most highly touted at CES. It features an 11K RAM, a powerful Basic in a 14K ROM, complete 53-key



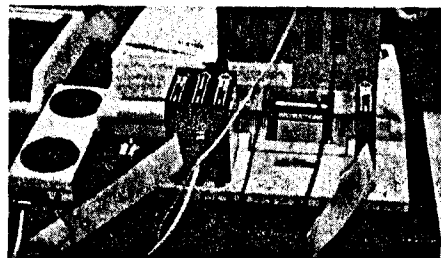
The APF Imagination Machine II is self-contained and priced from \$399.

keyboard and a 32 character by 16 line screen format. It also features alpha-numeric in up to eight colors, built-in sound synthesizer and built-in dual track cassette tape.

The expansion box that plugs into the back of the Imagination Machine can't help but remind one of a hobbyist's bread board kludge into which plug 8-track-size boxes containing memory and various interfaces.

The System III has an optional a mini-floppy disk which stores 72K bytes per single side diskette. Two floppy disks can be handled with the mini-floppy disk interface.

In the System III, the game playing machine is no longer a separate component to be set in the top of the keyboard unit. Rather it is a self-contained unit of CPU, keyboard and cassette with place for the video monitor to sit on top of them. The System III is priced at \$1195. The computer alone sells for \$395; this is a \$200 reduction from last year's price. According to Sy Lipper, it is APF's intention to compete and beat Radio Shack despite the built-in advantage of Radio Shack's 6,000+ stores. With this new configuration of the Imagination Machine, APF just may have a chance to do it.



Back side of an APF Imagination machine showing interface unit and four I/O modules.

Astrovision promises a keyboard and Zgrass graphics system for the Bally Arcade later this year.

Bally/Astrovision

Another former video game manufacturer has taken the next step into a computer system. Although Bally announced a keyboard unit for their video game system a few years ago, it was never put into production. Now Astrovision has shown and promised us a computer keyboard, "The Z-Grass 32," to go along with the Bally Arcade. The Arcade plugs into the keyboard unit and gives the user an additional 32K of memory and 24K of ROM. The additional 24K of ROM contains system software that "makes this the easiest computer to use."

Astrovision has elected not to go along with the industry-wide movement to Basic only. The Z-Grass system has several powerful capabilities for creating graphs, visual displays, interactive teaching systems, advanced video games, electronic music and video animation.

Z-Grass itself is a programming language. The software includes a full-screen text editor, point, line, box, and circle commands; 160 x 100 pixel resolution in four colors; and string manipulation including match, concatenation and replacement. It also includes multi-dimensional arrays and string arrays and advanced user extensibility at several levels.

In addition, with the basic Arcade video game unit, Astrovision has elected to include the audio cassette interface and the Basic programming cartridge. Although the keyboard with the basic Arcade unit is not a full-stroke keyboard it is possible to write programs in Basic and save them on cassette tape. Consequently this is now one of the lowest cost basic programming units (\$299.95) and one of the most powerful, extensible units with the Z-Grass keyboard. Delivery is promised in August 1981. Price of the keyboard unit is \$599.

Astrovision also introduced five new game cartridges for the Arcade: Galactic Invasion, Music Maker I, Space Fortress, Grand Prix Demolition Derby, and Bio-rhythms. This brings the total number of game cartridges up to 24. Most cartridges are priced at \$29.95. For information, write Astrovision, 6460 Busch Blvd, Suite 215, Columbus, OH 43229. Telephone (614) 885-0130.

