BYTE News....

ATARI'S NEW COMPUTERS. The recently announced Atari Model 400 and 800 personal computers are major entries into the market. The 8 K nonexpandable 400 (suggested retail $500) sports a touch audio feedback keyboard and a single read only memory cartridge slot, plus cassette I/O. It also has 16 color graphics with eight luminance levels (!) The 48 K expandable 800 (suggested retail $1000 with 8 K and cassette recorder) has additional color features, full keyboard, 8 K BASIC, high resolution graphics, two read only memory cartridge slots, and much more. Both units use a modified 6502. Availability: August 1979 (limited quantities); full availability: Fall 1979. More details next month.

TI'S NEW PERSONAL COMPUTER. Rumors are flying about Texas Instruments' impending entry into the personal computing market. The unit will reportedly use the TMS 9900 processor with 40 K of read only memory circuits, will generate 20 lines of 40 characters on a standard television, will have provisions for accommodating video disk players and video tape recorders, and will have sophisticated sound production. Sources predict a mid-1979 unveiling.

TI AND GTE DEVELOPING HOME DATA RETRIEVAL SYSTEMS. Since Labor Day, Texas Instruments has been testing a "Teletext" home information system which displays on a standard home television set via a decoder unit. The decoder can be internal or external to the television set. It is expected that the decoder should add about $50 to the television's cost. The data is transmitted during the frame blanking time. The viewer can elect to view the data, the standard picture, or the data superimposed on the picture. Testing should continue throughout 1979. FCC approval is required.

Last October General Telephone & Electronics gave a presentation and demonstration to the FCC of their system, which uses a microprocessor. It would allow a user to retrieve data from a number of different data banks and have it appear on their television screen. The system is still in a very early stage of development.

A television based data retrieval system, called Viewdata, is already in operation in Great Britain. It was developed by the British Post Office.

WORD PROCESSING PRINTERS USING DOT MATRIX ARE COMING. All present word processing printers use character impact printing mechanisms and are expensive (typically over $2000). The most popular are the Selectric, Diablo and Qume printers. Dot matrix printers are faster and cheaper but produce crudely formed characters generally considered undesirable for word processing applications. However, several companies are working on dot matrix printers to improve their printing quality. By moving the dots closer together to 1000 dots per inch or closer, characters can be formed which are very close to those of the Selectric. Further, since the dot matrix is under direct processor control, changing a character font requires only a program change rather than a type element change. Imagine being able to change from standard to italic type faces using only software! Although the initial entries (from RC Sanders Technology Systems Inc) in this area will cost more than present impact units, costs should decrease substantially to well below present units.

8080/8085 MICROPROCESSOR PRICES DROP. The 8085, Intel's 1 chip version of the 8080 with added features is now selling for $10 in OEM (original equipment manufacturer) quantities. The 8080 is now down in the $4 to $5 range. Actually the 8085 is in effect cheaper than the 8080 since it does not need extra support devices and works off only 5 VDC. Therefore, most of the new 8080 designs now use the 8085. It is expected that the 8085 will be down in the $4 to $5 range by year's end. The importance of this is that the microprocessor is now insignificant in cost compared to memory and peripheral circuits.

WILL 16 BIT PROCESSORS TAKE OVER? Not yet, at least. There is reason to question whether or not 16 bit processors have achieved the success in the personal computer marketplace achieved by the 8 bit machines. The fact is that there have been at least three 16 bit mainframes available in the personal computer marketplace for over a year now, namely the Technico 9900 computer, the Alpha-Micro computer, and the Heath H-11 computer. Although all three provide better performance than the 8 bit machines, their acceptance does not compare to the smaller machines. It will be interesting to see if any 16 bit mainframes using the Intel 8086 processor will be forthcoming in the near future.

16 BIT PROCESSORS TO BE SECOND-SOURCED. Intel has entered into an agreement with National Semiconductor for the latter to also manufacture the 8086, Intel's 16 bit processor. Zilog has also arranged for second sourcing of their new Z-8000 16 bit processor, but does not expect to be in production until the middle of the year. Intel has been in production on the 8086 since May of last year.

MICROCOMPUTER STANDARDS ARE FINALLY COMING. After several years of manufacturers going their own way in hardware and software design and causing numerous problems for users trying to interface components, the IEEE (Institute of Electrical and Electronic Engineers), the most powerful electrical engineering organization, is working to cure the problem. They expect to soon issue their first standard, which will standardize the S-100 bus. This should eliminate the problem of those S-100 compatible boards which do not work in many S-100 mainframes, (as so many S-100 system users learned the hard way). The fact that a board plugs into an S-100 bus does not guarantee that it will work. Now users can look for the statement "meets IEEE S-100 standards" to insure compatibility.

Standards are also being developed for relocatable loaders, mnemonic standards (particularly between the 8080 and Z-80), a floating point math standard for use with hardware floating point integrated circuits, Intel SBC bus and the National Micro bus standards (which will enable 6800 peripheral devices to work easily with 8080 and Z-80 integrated circuits). It is expected that the floating point standard will be appearing next after the S-100 standard.

PASCAL PICKS UP STEAM. The Pascal language is now the second most popular microcomputer high level language, second only to BASIC. Versions are already available for systems using the following processors: 8080, Z-80, 9900 and LSI-11. Soon two more will be added to the list: the 6502 (for Apple II systems) and a Western Digital chip set which executes Pascal machine code directly.

The popularity of Pascal is due to the fact that the language allows very concise expression of algorithms and is easy to use. It is block structured, has extensive data types and good control structures, providing nonverbose, easily understandable code. However, a large memory and a large disk system is required. Further, the versions currently available still lack certain features, which in time, I am sure, will be implemented. Pascal is considered a real programmer's language, whereas BASIC is considered by many to be a beginner's language.

Credit for the increasing popularity of Pascal goes to Dr Ken Bowles at the University of California—San Diego, who, with his students, has written several Pascal versions and is coordinating and standardizing the different available versions to increase software portability from system to system.

WHAT WILL HAPPEN TO MEMORIES IN 1979? This past year saw dramatic improvements in semiconductor memories that permitted large memory systems at low cost in microcomputer systems. There are already a great many home systems with 65 K of memory, and some with more. The significant areas of improvement are:

SEQUENTIAL MEMORIES: Look for ready availability of 256 K CCD (charged-coupled device) and bubble memories. 1 M byte versions will not be available until 1980. Costs will still be significantly greater than disks. This means that these devices will be used mainly for buffer applications and will not impact the disk storage area.

PROGRAMMABLE MEMORIES: They will be faster, cheaper, and more dense. 16 K dynamic programmable memories organized as 16 K by 1 bit and 2 K by 8 bit will be available that can operate on a single 5 VDC power supply. Also, look for refresh circuitry to be external to the memory devices.

ERASABLE READ ONLY MEMORIES: This year will see the availability of the 32 K erasable read only memory, organized as 4 K by 8 bits. A circuit will be introduced which combines a 1 K programmable memory and a 1 K read only memory. On power up, the program from the read only memory is loaded into the programmable memory. However, if the power fails, the program is retained in the read only memory section and bootstraps itself back into the programmable memory when power is restored.

6502 PROCESSOR MOST POPULAR OF THEM ALL. The 6502 processor will soon be the most widely manufactured processor circuit. It is already being made by MOS Technology, Synertek and Rockwell. Now it will also be made by Electronic Memories & Magnetics, and negotiations are under way with General Instrument. According to the most recent sales reports there are more 6502 ICs being manufactured than any other processor, including the 8080 and Z-80. The 6502 is currently being used in the APPLE, PET, KIM and several other personal computer systems. However, most of the production goes to high volume dedicated game use.

VIDEO DISPLAY TERMINALS ARE CHANGING. More and more CRT terminal manufacturers are introducing terminals utilizing the new video display controller chips that operate in conjunction with a processor. The result is that the component count decreases and performance increases. The most popular video display terminal, up to now, has been the ADM-3A. This was the first video display terminal to break the $1000 barrier and currently sells at around $800. However, Hazeltine, Perkins-Elmer and others have recently introduced terminals having essentially the same features as the ADM-3A and selling for around $700 with the likelihood that they will soon sell in the $600 range. On the other hand, these companies have also introduced terminals with extended features beyond the ADM-3A, which sell in the $800 range. It is rumored that Lear Seigler will soon replace the ADM-3A, which is an all TTL design, with a microprocessor-controlled unit. LS has been known for their aggressive pricing practices in the past, and their new terminals could set new price and performance levels.

Sol Libes
ACGNJ
995 Chimney Rdg
Springfield NJ 07081